SYMBOL TABLE 1 -- 51 / 250

```
RANDM1  DL        RANDM2  FP       JUNK    FP       CONST   FP       CONSTX  DL
DBLONE  DL        FZERO   FP       CTABLE  FP       PROG    DL       XMOVE   DL
ATEMP   FP        MAXPOS  FP       XR42    DL       POUT    DL       CFFA    DL
.5      FP        BIGZER  FP       ICHK1   FP       FMONE   FP       BDCARG  FP
FTENT   FP        D.1     DL       FONE    FP       ROUNDR  DL       DD1A    DL
DISKC   DL        FSIX    FP       MTRUE   DL       WFALSE  DL       CHEB2X  FP
CHEBR2  FP        CHEBR1  FP       CHEBR   FP       CHEB.5  FP       SCPI/2  FP
SC2/PI  FP        SCX     FP       SC1     FP       SCBZER  FP       SCSGN   FP
SCTEM   FP        TC4/PI  FP       EXL2E   FP       EXBZER  FP       EXMAX   DL
EXRIG   FP        LONRIG  FP       LOG2    FP       POWT    FP       FARG    FP
/2108   FP
```

NO REFERENCE

```
ALGOI    ASER     ASIZE    ASTART   ATYPE    AX       BL20     BELLID
BSC      BSLF     CRT      CBIT     DONEIN   DM9      D60      D66
D        DDM1     D29      DM25     DM27     C9       ER7A     ER34A
ER60L    EPO1L    GR2      GR4      E        EOMCH    C10      GO3
CAVAIL   CFLAG    CMODE    CREAD    DECLO    DEPTH    DINAM    DSTAT
EAVAIL   FINC     FLAB1    FLAB2    FLAB3    FLAB4    FORAY    FORNO
FPFLAG   GO1      GO2      DKFLG3   CMPFLG   CCLO     DNAD     ERLO
IAVAIL   ITEMP    IDENT1   IDENT2   L        LR       LOAD     MINUTE
MAXNEG   MINPOS   N        NOEL     NC       O        OPCALL   OPA
OPAX     OWN      ONEOUT   PAREN    PBLOK    PLF      PREV2    PRFLAG
PUNT     PREV     ROUTCN   REXIT    RTEMP    RETURN   SETUP1   SECOND
SYNTAX   SMASK    SWTYPE   S        SLOC     SSLO     SWITCH   SC
TIME     T        TERM     TSLF     TSLO     TEST21   TSFLAG   TST
UNFSUB   WHAMI    WRITEX   WTEMP    XR13     XR21     XR22     XR30
XR33     XR40
```

END OF PASS 0

SYMBOL TABLE 2 == 618 / 1672

ABIT	01636	ABS	02065	ACMASK	01644	ALGOL	20001	ALINK	03442	AMASK	01643
APTYPE	05711	ARMASK	01645	ASER	02124	ASIZE	04300	ASTART	04310	AT10	02766
ATAD	02732	ATEMP	05712	ATEV	02704	ATNA	02733	ATN	02664	ATNTAB	02740
ATNTPT	02767	ATPAD	02736	ATYPE	04311	AX	04312	BASEMI	03303	BASEZB	03311
BBIT	02042	BDC10	23624	BDC11	23655	BDC1	23313	BDC2	23322	BDC4	23326
BDC5	23327	BDC6	23336	BDC7	23372	BDC8	23424	BDC9	23622	BDCARB	05742
BDCOVF	23645	BELLID	01774	BIGC	06312	BIGZER	01606	BINDEC	23631	BINEXP	04313
BL20	01534	BLANKS	01556	BLEUM	01533	BPRSUB	02155	BSC	04314	BSLF	00236
BS	04440	C10	01531	C2	01570	C9	03570	CAVAIL	04315	CBIT	01640
CCLO	06050	CEOF	03571	CFFA	05720	CFLAG	04316	CH2	06310	CH3	06311
CHAR	20157	CHEB2X	05726	CHEBF	02422	CHEB5	02426	CHEBL	02403	CHEBR1	05732
CHEBR2	05730	CHEBR	05734	CHEBY	02376	CHMASK	01646	CLEAN	20011	CLIST	01742
CLOCK	02063	CMASK	01674	CMODE	04317	CMPFLG	14446	CODECH	20164	COMCAL	20013
CON1	20375	CON2	20403	CON3	20435	CON4	20446	CON5	20450	CON6	20503
CONDEC	20506	CONEXP	20424	CONFIN	20561	CONST1	20351	CONST2	20441	CONST3	20464
CONST	06304	CONSTX	06306	CONVRT	20563	COS	02430	COT	02522	COTTAB	02632
COTTPT	02663	CRCHAR	01536	CREAD	04320	CRLF	01535	CRT	01432	CRUD	17776
CRUMP	06261	CTABLE	01710	CVT1	20571	CVT2	20577	CVT3	20623	CVT7	20645
CVTMPL	20657	D128	01630	D14	01666	D22	01573	D24	01574	D29	03552
D30BX	01672	D30	01621	D46	01624	D60	01622	D64	01626	D66	01625
D68	01627	D77	01665	DAREA	03565	DBGID	02042	DBLOCK	05707	DBLONE	01670
DCTR	06313	DD1A	01500	DDM1	03542	DECID	01775	DECLO	04321	DEPTH	04322
DINAM	04323	DINC	06314	DISK2	05000	DISKC	05036	D.1	01562	DKFLG1	05750
DKFLG2	04401	DKFLG3	04400	DM21	03556	DM25	03557	DM27	03560	DM2	01623
DM4	01565	DM5	01566	DM9	01567	DMASK	01645	DNAB	13750	DONEIN	20326
D	01760	DSKFLG	17774	DSKUP	05744	DSTAT	04324	DTYRE	01706	DUNFLT	02115
DVCK	23035	DVDCHK	02315	EAVAIL	04325	EFORM	23450	EGRESS	02211	EIGHT	01617
ELAPS	02046	ENDIN	20320	ENDJB1	20135	ENDJOB	20143	ENDREC	02252	ENTIER	23074
EOMCH	02017	EPMASK	01647	ER10	01304	ER11	21316	ER12	21333	ER13	21344
ER14	21355	ER15	21366	ER16	21412	ER17	21420	ER18	21433	ER19	21445
ER1	21110	ER20	21454	ER21	21460	ER22	21476	ER23	21504	ER24	21523
ER25	21527	ER26	21541	ER27	21546	ER28	21552	ER29	21566	ER2	21137
ER30	21602	ER31	21610	ER32	21620	ER33	21636	ER34A	21645	ER34	21647
ER35	21657	ER36	21702	ER37	21724	ER38	21736	ER39	21774	ER3	21151
ER40	22010	ER41	22026	ER42	22036	ER43	22130	ER44	22137	ER45	22151
ER46:	03533	ER46	22164	ER47	22232	ER46L	03377	ER48	22245	ER49	22254
ER4	21160	ER50	22267	ER51	22300	ER52	22311	ER53L	02352	ER53	22321
ER54AL	01472	ER54L	01473	ER54	22340	ER55	22356	ER56	22371	ER57	22404
ER5	21200	ER60L	22417	ER60	22417	ER61L	22436	ER61	22436	ER62L	22452
ER62	22452	ER6	21215	ER7A	21225	ER7	21227	ER8	21250	ER9	21266
ERAT	20700	ERAVAL	04377	ERFLAG	04376	ERILL	20774	ERLINE	22176	ERLOOP	21014
ERLO	06325	ERMISS	20757	ERNEAR	20732	ERROR	21004	ERX1	06252	ERX2	06253
ERX3	06254	E	01767	ETABLE	05000	ETMASK	01702	EX7	03071	EXBIG	03066
EXRZER	03062	EXEC	20000	EXER	03011	EXEXMK	03070	EXL2E	03060	EXMAX	03064
EXOEID	01707	EXOR	03015	EXP3	01660	EXPCVT	01524	EXPERR	01501	EXPFLG	04326
EXPIN	02015	EXP	06315	EXPSUB	02770	EXPTAB	03040	EXPTPT	03072	EXSP	03013
FALSE	02044	FARG	05712	FFORM	23544	FILLS	03567	FINC	04327	FINI	22724
FINISH	20301	FIVE	01570	FLAB1	04330	FLAB2	04331	FLAB3	04332	FLAB4	04333
FMONE	01614	FMOVE	23523	FOB1	22747	FOB	22735	FONE	01612	FORAY	04334
FORNO	04335	FOUR	01631	FPFLAG	04336	FSIX	03540	FTENT	01504	FTST	23461
FUDGE	03522	FULL	02277	FZERO	01610	GETPRU	05713	GO1	04337	GO2	04340
GO3	04305	GUENO	01604	GR1	01700	GR2	01636	GR4	01641	IAVAIL	04341

Symbol	Val	Symbol	Val	Symbol	Val	Symbol	Val	Symbol	Val	Symbol	Val
ICHK1	17770	ICHKEX	23131	ICHKXR	05704	IDENT1	06001	IDENT2	06013	INLOOP	20245
INPUT	20156	INTCHK	23102	INTDIV	23133	INXT	22714	ITABLE	05000	ITEMP	04342
ITST	03213	.5	01604	JUNK	06000	KFALSE	20672	KTRUE	20670	LAST	22566
LBIT	01641	LB	04302	LENGTH	04003	LINENO	04343	LINKR	01473	LINK	22656
LNEXP	03321	LO12	03211	LO1BB	03210	LOADC	05040	LOAB	04344	LOF	05724
LOG2	03204	LOGNEG	01477	LOG	03073	LOGTAB	03152	LOGTPT	03212	LOGZER	01477
LONBIG	03200	LOP	03107	LOWERR	01475	LRUN	02153	L	02005	MAXNEG	03544
MAXPOS	03546	MINID	02002	MINPOS	03550	MINUTE	01550	MODO1	01662	MODO2	01663
MODO3	01664	MOVE	05025	MSSG	05041	NC	04700	NEWWRD	20203	NOEL	04345
N	02007	NUOB	04346	NXWRD	22673	010000	01661	010	01617	017777	01634
02006	01673	033	01575	037777	01635	03777	01633	040	01576	053	01577
05700	03561	060	01603	07777	01675	077	01632	OBJLO	01701	OBLO	01601
ONEOUT	06330	ONE	01532	OPA	04347	OPAX	04350	OPCALL	04304	OPOINT	04001
OPOUT	01564	O	02010	OUTBUF	04100	OUTCON	20524	OUTID	20744	OUTLIN	20713
OUTMOV	23551	OUT	23430	OVER	01400	OVFCHK	02605	OVFL	23014	OWN	04351
PACK	23600	PAREN	01756	PAVAIL	06262	PBLOK	04352	PLF	04353	PLINK1	03405
PLINK2	03433	PLINK3	03500	PLINK4	03510	PLINK5	03462	PLINK6	03464	PLINK7	03436
PLINK	03461	PLUSID	01762	PUUT	06264	POW1	03261	POW2	03273	POW3	03264
POW4	03317	POW5	03243	POWMPY	03226	POWSUB	03216	POWT	17776	POWXR	05705
PR2	23172	PR3	23206	PR4	23207	PR5	23221	PR6	23232	PR7	23234
PR8	23242	PR9	23261	PREV2	04354	PREV	06320	PRFLAG	04355	PRFLT	23307
PRINT5	02207	PRINT6	02160	PROG	06324	PRTSM1	23475	PRTSM2	23510	PRTSM3	23520
PRX1	06255	PRX3	06256	PRXT	06260	PUNT	04356	RANDM1	03562	RANDM2	05702
RBIT	01642	RD2SUB	02131	RDASUB	02126	RDBLK	05744	RDBSUB	02234	RDDISK	22476
RDMSUB	02321	RDOP	01657	RDTSUB	20213	RESFIL	02221	RESTOR	02146	RETEND	01653
RETURN	00004	REXIT	04357	RNDU	02374	RND	05706	ROUNDR	01554	ROUND	23051
ROUTIN	20530	RRF	03564	RTEMP	04360	RUNCLK	04000	RUNOUT	20126	$CRT	23662
$HORT	23732	$IND	06257	$PRINT	23154	$TAG	23703	$TRING	23737	*ERAT	20704
*ERLIN	22177	*MOV*	01602	*NOP*	01655	*SIX2*	01656	/2108	05714	/2110	05710
/2112	03356	/5112	05735	/6134	05740	SAVE*	06323	SC1	02516	SC2/PI	02512
SC5	02520	SCBZER	02514	SCPI/2	02510	SC	04700	SCSGN	05716	SCTEM	05720
SCX1	05722	SCX2	05723	SCX	05714	SECOND	01552	SERR1	23012	SETFIL	02215
SETUP1	22620	SETUP	22573	SEVEN	01572	SGNEXP	06316	SIDXR	00000	SIGNF	02072
SIGN	01651	SIN	02431	SINTAB	02474	SINTPT	02521	SIX	01571	SLOC	04361
SMASK	01650	SPACES	01544	SPCH	02041	SGRSUB	03335	S	02024	SSLO	04362
STAR	03560	START	20020	SUPRES	23571	SWAP	22561	SWEXIT	05710	SWITCH	04363
SWTYPE	01652	SYMB	06317	SYNTAX	02151	TAB2	23726	TAN	02525	TANTAB	02610
TANTPT	02062	TC4/PI	02656	TC8	02660	TC9	02661	TCC8T	02566	TCEXIT	02563
TEMP*	06322	TEMP	04364	TEN	01531	TENT	01525	TERM	04365	TEST21	04370
THREE	01620	THRUW	02333	TIME	01546	TRAPL	00205	TRAPT	03553	TRPFLG	04402
TRP	23024	TRPSV	05700	TRUE	02043	T	02025	TSFLAG	04371	TSLF	04366
TSLO	04367	TST	04372	TSTSUB	02104	TWO	01616	TXR2	00212	TYPA	05006
TYPE	05321	TYP	05010	UFLCHK	02311	UFLO1	23030	UFLO	23047	ULAB2	22121
ULAB3	22103	ULAB4	22111	ULAB5	22116	ULAB	22045	UNDEF	20334	UNFLOT	23060
UNFSUB	01455	VAVAIL	06203	VECLO	05755	WFALSE	01542	WHANI	04373	WRITEX	04374
WRTBLK	05751	WRTDSK	22476	WRTOP	01650	WRTSUB	02260	WTEMP	04375	WTRUE	01540
XMOVE	01704	XR00	00000	XR01	00001	XR02	00002	XR03	00003	XR10	00004
XR11	00005	XR12	00006	XR13	00007	XR20	00010	XR21	00011	XR22	00012
XR23	00013	XR30	00014	XR31	00015	XR32	00016	XR33	00017	XR40	00020
XR41	00021	XR42	00022	XR43	00023	XTAG	01676	Y1	20073	YCOLON	20110
YCOMMA	20117	YMASK	01677	YUICKS	20054	YPLUS	20113	YSEMI	20123	ZERO	01610

END OF PASS 1

```
              20000              LOC 20000                                                      00001
20000  0000000              OCT 0                    EXIT TO 225 EXECUTIVE                       00002
20001  2600020    ALGOL     BRU START                EXECUTIVE TRANSFERS CONTROL TO THIS LOCATION 00003
20002  2600011              BRU CLEAN                 TRANSFER TO CLEAN-UP ROUTINE               00004
20003  0000000              OCT 0                    SPARE                                      00005
20004  0214327              ALF ALG                                                             00006
20005  2000002              OCT -2                                                              00007*
20006  0001400              OCT 1400                                                            00008
20007  3775400              OCT 3775400                                                         00009
20010  0031000              OCT 31000                                                           00010
20011  2504002    CLEAN     LDZ                       CLEANUP ROUTINE JUST DOES A TERMINAL EXIT  00011
20012  2600000              BRU 8192                                                            00012
20013  0720000    COMCAL    SPB 0             1                                                 00013
20014  0000000              DEC 0                                                               00014
20015  2000000              OCT -0                                                              00015
20016  0014000              DEC 6144                                                            00016
20017  0020000              OCT 20000                                                           00017
                                                                                                00018
                                                                                                00019
       04000    RUNCLK     EQU 4000                                                            00020
       04001    OPOINT     EQU 4001          POINTER TO FIRST WORD AVAILABLE IN OUTPUT          00021
                                             BUFFER                                             00022
       04003    LENGTH     EQU 4003          NUMBER OF 64 WORD BLOCKS IN SOURCE PROGRAM         00023
                                                                                                00024
                                        ALL EXITS FROM THE COMPILER GO TO LOCATION              00025
                                        20000 WITH A SET EQUAL TO                               00026
                                              0 FOR A TERMINAL EXIT                             00027
                                              1 FOR INTERMEDIATE OUTPUT                         00028
                                              2 FOR AN INPUT CALL                               00029
                                              3 FOR AN OVERLAY CALL                             00030
                                              4 FOR AN OVERLAY DELETE                           00031
                                                                                            NAM00032
                                                                                            EJT00033
```

```
                20020              LOC 20020                                                                                      00034
     20020   2504002     START  LDZ                                                                                              00035
     20021   0305756            STA DKFLG1                                                                                        00036
     20022   0004376            LDA ERFLAG                                                                                        00037
     20023   2514001            BMI ERROR                THERE ARE SOME                                                          00038
     20024   2601004                                                                                                             00039
     20025   0004346            LDA NUOB                 CHECK FOR UNDEFINEDS                                                     00040
     20026   2516002            BNZ ER42                 THERE ARE SOME
     20027   2602036                                                                                                             00041
     20030   0306257            STA $IND                                                                                        0*00042
     20031   2506013            SXG 0                                                                                            00043
     20032   0004401            LDA DKFLG2               CHECK IF DISK OPERATION NEEDED                                          00044
     20033   2516002            BNZ                                                                                              00045
     20034   0722573            SPB SETUP    1                                                                                   00046
     20035   1003562            DLD RANDM1                                                                                       00047
     20036   1305702            DST RANDM2                                                                                       00048
     20037   3500004            RIN                                                                                              00049
     20040   0004402            LDA TRPFLG               RUN IN TRAPMODE                                                         00050
     20041   2516002            BNZ                                                                                              00051
     20042   2600052            BRU *+8                  NO                                                                      00052
     20043   0003553            LDA TRAPT                                                                                        00053
     20044   0300205            STA TRAPL                                                                                        00054
     20045   1003554            LDD TRAPT+1                                                                                      00055
     20046   1300206            LDD TRAPL+1                                                                                      00056
     20047   0001676            LDA XTAG                                                                                         00057
     20050   0300212            STA TXR2                                                                                         00058
     20051   3100001            SET TRPMODE                                                                                      00059
     20052   0521610            LDX ZERO     1                                                                                   00060
     20053   2626324            BRU PROG     1                                                                                   00061

     20054   2504002     YOICKS LDZ                                                                                              00062
     20055   0306001            STA JUNK+1                                                                                       00063
     20056   0760157            SPB CHAR     3                                                                                   00064
     20057   2101675            CAB 07777                                                                                        00065
     20060   2600073            BRU Y1                                                                                           00066
     20061   2600062            BRU *+1                                                                                          00067
     20062   2511003            SRD 3                    SHIFT DIGIT INTO Q                                                      00068
     20063   0005001            LDA JUNK+1                                                                                       00069
     20064   2001677            EXT YMASK                                                                                        00070
     20065   0201700            SUB GR1                                                                                          00071
     20066   2504040            CHS                                                                                              00072
     20067   2511000            SRD 0                                                                                            00073
     20070   2512203            SLD 3                                                                                            00074
     20071   0306001            STA JUNK+1                                                                                       00075
     20072   2600157            BRU CHAR                 GET NEXT CHARACTER                                                      00076
     20073   2101755     Y1     CAB CLIST+11             COLON                                                                  00077
     20074   2600076            BRU *+2                                                                                          00078
     20075   2600110            BRU YCOLON                                                                                       00079
     20076   2101762            CAB CLIST+16             PLUS                                                                    00080
     20077   2600101            BRU *+2                                                                                          00081
     20100   2600113            BRU YPLUS                                                                                        00082
     20101   2102035            CAB CLIST+59             COMMA                                                                   00083
     20102   2600104            BRU *+2                                                                                          00084
     20103   2600117            BRU YCOMMA                                                                                       00085
```

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20104    2101757            CAB  CLIST+13                                                                    00086
20105    2600107            BRU  *+2                                                                         00087
20106    2600123            BRU  YSEMI                                                                       00088
20107    2600157            BRU  CHAR                                                                        00089
20110    0006001   YCOLON   LDA  JUNK+1                                                                      00090
20111    0306000            STA  JUNK                                                                        00091
20112    2600054            BRU  YUICKS                                                                      00092
20113    0006000   YPLUS    LDA  JUNK                                                                        00093
20114    2504032            ADD                                                                              00094
20115    0306000            STA  JUNK                                                                        00095
20116    2600054            BRU  YUICKS                                                                      00096
20117    0666000   YCOMMA   LDX  JUNK      3                                                                 00097
20120    0006001            LDA  JUNK+1                                                                      00098
20121    0360000            STA  0         3                                                                 00099
20122    2600054            BRU  YUICKS                                                                      00100
20123    2506013   YSEMI    SXG  0                                                                         0*00101
20124    0626322            LDX  TEMP*     1                                                                 00102
20125    2620002            BRU  2         1      RETURN TO OBJECT PROGRAM                                   00103
                                                                                                          NAM00104
                                                                                                          EJT00105
```

```
                                                                                    00106
                                             RUNOUT  IS THE TERMINAL EXIT WHEN THE OBJECT    00107
                                             PROGRAM HAS RUN OUT OF DATA.   ENDJOB DUMPS     00108
20125   0723737   RUNOUT  SPB  $TRING   1    WHATEVER REMAINS IN THE OUTPUT BUFFER AND       00109
20127   0009005           DEC  5                  PRINT OUT OF DATA MESSAGE                  00110
20130   0377225           JCT  377225                                                       00111
20131   0452460           ALF  NO                                                           00112
20132   0462660           ALF  OF                                                           00113
20133   0242163           ALF  DAT                                                          00114
20134   0216060           ALF  A                                                            00115
20135   0645755   ENDJB1  LDX  VECLD   2      FUDGE DBLOCK FOR WRITEDISK                     00116
20136   0040002           LDA  2       2                                                    00117
20137   0305707           STA  DBLOCK                                                       00118
20140   0005756           LDA  DKFLG1          CHECK FOR DISK USAGE                         00119
20141   2516002           BNZ                                                               00120
20142   0722476           SPB  WRTDSK  1                                                    00121
20143   2506013   ENDJOB  SXS  0                                                   0*00123
20144   2506016           SET  PBK                                                   00124*
20145   0604001           LDX  OPOINT  3                                             00125
20146   0001535           LDA  CRLF            CODE FOR CARRIAGE RETURN AND LINE FEED  00126
20147   0364100           STA  OUTBUF  3                                             00127
20150   1400001           INX  1       3                                             00128
20151   0001533           LDA  BLEOM           OUTPUT EOM                            00129
20152   0364100           STA  OUTBUF  3                                             00130
20153   1704001           STX  OPOINT  3                                             00131
20154   2504002           LDZ                                                        00132
20155   2600000           BRU  0               TERMINAL EXIT                         00133
                                                                                  NAM00134
                                                                                  EJT00135
```

```
                                              INPUT PROCESSES THE SOURCE PROGRAM BY            00136
                                              PICKING OFF ALGOL SYMBOLS, IDENTIFIERS,          00137
                                              AND CONSTANTS.  IDENTIFIERS AND CONSTANTS        00138
                                              ARE HANDLED BY SUBROUTINES OF INPUT,            00139
                                              WHILE ALGOL SYMBOLS CAUSE CONTROL TO BE          00140
                                              TRANSFERRED TO ROUTE.                            00141
         20156   2506053   INPUT   SXG 2           SET INDEX GROUP 2 FOR CHARACTER INPUT   2*00142
                                                                                              00143
                                                                                              00144
                                              CHAR PICKS OFF THE NEXT LEGITIMATE              00145
                                              CHARACTER FROM THE SOURCE PROGRAM,  FILL        00146
                                              CHARACTERS ARE IGNORED. CARRIAGE RETURNS        00147
                                              GENERATE AN EDITING PROCESS.  THE EOM           00148
                                              MARK CAUSES AN EXIT TO THE WRAPUP              00149
                                              ROUTINE.  CHAR USES INDEX GROUP 2              00150
                                              AS FOLLOWS.                                    00151
                                                 XR20 - WORKING STORAGE FOR EDITING          00152
                                                 XR21 - WORD INDEX IN SOURCE PROGRAM         00153
                                                 XR22 - CHARACTER INDEX IN WORD             00154
                                                 XR23 - EXIT SET ACCORDING TO MODE OF INPUT  00155
                                                                                              00156
         20157   1764364   CHAR    STX TEMP   3         SAVE EXIT                             00157
         20160   0557770           BXH 2      2         TEST CHARACTER COUNTER                00158
         20161   2600203           BRU NEWWRD           READ NEW WORD OF SOURCE PROGRAM       00159
         20162   0046310           LDA CH2     2         PICK UP CHARACTER IN WORD ALREADY READ  00160
         20163   1440001           INX 1       2         INCREMENT CHARACTER COUNTER          00161
         20164   2001646   CODECH  EXT CHMASK            TRIM TO LAST SIX BITS                00162
         20165   0300013           STA XR23             XR23 = INDEX FOR LOOKUP IN CLIST     00163
         20166   0001742           LDA CLIST   3         INTERNAL CODE FOR CHARACTER          00164
         20167   0604364           LDX TEMP    3         RESTORE EXIT                         00165
         20170   2102041           CAB SPCH             CHECK FOR SPECIAL CHARACTERS AND FUDGES  00166
         20171   2600174           BRU *+3              IT IS ONE . . . CHECK FURTHER         00167
         20172   2600160           BRU CHAR+1           IGNORE FILL CHARACTER                 00168
         20173   2600001           BRU 1       3         EXIT ACCORDING TO MODE OF INPUT      00169
         20174   2102001           CAB MINID-1          CHECK FOR CARRIAGE RETURN             00170
         20175   2600160           BRU CHAR+1           WASNT--MUST BE FILL--SKIP IT          00171
         20176   2600200           BRU *+2              CARRIAGE RETURN--CHECK EXIT           00172
         20177   2600160           BRU CHAR+1           AS BEFORE                             00173
         20200   0577532           BXH INLOOP+13        CHECK ENTRANCE TO CHAR                00174
         20201   2600001           BRU 1       3         WAS NOT INLOOP, GO BACK              00175
         20202   2600301           BRU FINISH           WAS INLOOP, LEAVE                     00176
                                                                                              00177
         20203   1420001   NEWWRD  INX 1       1         INCREMENT WORD POINTER               00178
         20204   0024377           LDA OUTBUF+11         PICK UP NEW WORD                     00179
         20205   0306311           STA CH3              STORE LAST CHARACTER                  00180
         20206   2510006           SRA 6                                                     00181
         20207   0306310           STA CH2              STORE SECOND CHARACTER                00182
         20210   2510006           SRA 6                GET FIRST CHARACTER                   00183
         20211   0641010           LDX ZERO    2         RESET CHARACTER POINTER              00184
         20212   2600164           BRU CODECH           RETURN                               00185
                                                                                              00186
                                              RUN-TIME INPUT ROUTINES                        00187
                                              RUN-TIME INPUT CALLS ARE COMPILED AT CALLIN A   00188
                                              S AN SPB TO RDISUB FOLLOWED BY THE NUMBER OF    00189
```

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                                          EVLAUES TO BE READ.  THE INPUT ROUTINE GOES T     00190
                                          O THE EXEC FOR THE INPUT CALL, DOES THE BCD T     00191
                                          O BINARY CONVERSION, STORES THE VALUES IN ASC     00192
                                          ENDING ORDER AT THE TOP OF THE OUTPUT BUFFER,     00193
                                          AND SUPPLIES POINTERS FOR RD2SUB.                 00194
                                          INDEX REGISTERS ARE USED AS FOLLOWS               00195
                                          XR01--LINKAGES TO THE PROGRAM AND EXEC            00196
                                          XR21--WORD POINTER FOR CHARACTER PICKUPU ROUT     00197
                                          INE                                              00198
                                          XR22--CHARACTER POINTER                          00199
                                          XR23--INPUT MODE AND RETURNS--FOR CONSTANT       00200
                                          CONVERSION ROUTINES.                             00201
                                          XR31--POINTER FOR STORE OF CONVERTED VALUES      00202
                                          XR32--SAVE OF XR31 FOR ERROR RECOVERY            00203
                                                                                          00204
20213   0020001   RDTSUB LDA 1       1    PICK UP NUMBER OF VARIABLES                      00205
20214   2512001          SLA 1            DOUBLE IT                                        00206
20215   1726322          STX TEMP*   1                                                     00207
20216   0306323          STA SAVE*                                                         00208
20217   0203561          SUB 05700                                                         00209
20220   2504522          NEG                                                               00210
20221   0300015          STA XR31                                                          00211
20222   0300010          STA XR32                                                          00212
20223   0201010          SUB TWO                                                           00213
20224   0305707          STA DBLOCK                                                        00214
20225   0300001          STA XR01                                                          00215
20226   0006323          LDA SAVE*                                                         00216
20227   0101010          ADD TWO                                                           00217
20230   2504006          MAQ                                                               00218
20231   1320000          DST 0       1                                                     00219
20232   0723737          SPB $STRING 1    IN GOES THE QUESTION MARK                        00220*
20233   0000001          DEC 1                                                             00221*
20234   0356055          OCT 356055                                                        00222*
20235   0001016          LDA TWO          CODE FOR INPUT CALL                              00223
20236   0720000          SPB 0       1    AND GO TO EXEC                                   00224
20237   2506023          SXS 2            PREPARE POINTERS                              2*00225
20240   0621510          LDX ZERO    1    ZERO WORD POINTER                                00226
20241   0641516          LDX TWO     2                                                     00227
20242   2504002          LDZ                                                               00228
20243   2504006          MAQ                                                               00229
20244   1306000          DST JUNK         CLEAR JUNK                                       00230
                                                                                          00231
20245   0700157   INLOOP SPB CHAR    3    PICK UP CHARACTER                                00232
20246   2101675          CAB 07777                                                         00233
20247   2600252          BRU *+3                                                           00234
20250   2600252          BRU *+2                                                           00235
20251   2600334          BRU UNDEF        IS DIGIT                                         00236
20252   2101775          CAB DECID        CHECK FOR DECIMAL POINT                          00237
20253   2600255          BRU *+2                                                           00238
20254   2600505          BRU CONDEC       IS DECIMAL POINT                                 00239
20255   2102015          CAB EXPID        CHECK FOR EXPONENT SYMBOL                        00240
20256   2600260          BRU *+2                                                           00241
20257   2600424          BRU CONEXP       IS EXPONENT SYMBOL                               00242
20260   2102002          CAB MINID        CHECK FOR MINUS SIGN                             00243
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20261   2600263           BRU *+2                                                              00244
20262   2600561           BRU CONMIN          IS MINUS SIGN                                    00245
20263   2102035           CAM CLIST+59        CHECK FOR COMMA                                  00246
20264   2600266           BRU *+2                                                              00247
20265   2600301           BRU FINISH                                                           00248
20266   2102001           CAS MINID+1         CHECK FOR CARRIAGE RETURN                        00249
20267   2600271           BRU *+2                                                              00250
20270   2600301           BRU FINISH                                                           00251
20271   2001646           EXT CHMASK          NONE OF THE ABOVE, SO STORE                      00252
20272   0304364           STA TEMP                                                             00253
20273   1006000           OLD JUNK                                                             00254
20274   2512200           SLD 6                                                                00255
20275   1306000           UST JUNK                                                             00256
20276   0004364           LDA TEMP                                                             00257
20277   2306001           ORY JUNK+1                                                           00258
20300   2600245           BRU INLOOP          AND GO BACK FOR MORE                             00259
                                                                                               00260
20301   0304364   FINISH  STA TEMP            END OF CONSTANT, LOOK AT IT                      00261
20302   1006000           OLD JUNK                                                             00262
20303   2514002           SZE ENDIN           NO STUFF                                         00263
20304   2500320                                                                                
20305   2504005           NAU                 PICK UP LAST THEREE DCHARACTERS                  00264
20306   2001641           EXT LBIT            MASK OFF BIT 1                                    00265
20307   2102042           CAS DBGID           CHECK FOR YOICKS                                 00266
20310   2600312           BRU *+2                                                              00267
20311   2600054           BRU YOICKS                                                           00268
20312   2102043           CAS TRUE                                                             00269
20313   2600315           BRU *+2                                                              00270
20314   2600070           BRU KTRUE           CONSTANT IS TRUE                                 00271
20315   2102044           CAS FALSE           CHECK FOR FALSE                                  00272
20316   2600320           BRU *+2                                                              00273
20317   2600072           BRU KFALSE                                                           00274
20320   0004364   ENDIN   LDA TEMP            HERE TO TERMINATE CONSTANT                       00275
20321   2102001           CAS MINID+1         CHECK FOR CARRIAGE RETURN                        00276
20322   2600242           BRU INLOOP+3        IF NOT LOOK FOR MORE                             00277
20323   2600325           BRU *+2             OTHERWISE RETURN                                 00278
20324   2600242           BRU INLOOP+3                                                         00279
20325   2506073           SXG 3                                                              3*00280
                                                                                               00281
                  DONEIN TERMINATES THE INPUT CALL                                             00282
                                                                                               00283
20326   0452100   DONEIN  BXL TRPSV    1                                                       00284
20327   2602452           BRU ER62L           NOT ENOUGH INPUT                                 00285
20330   2506013           SXG 0               EXIT                                           0*00286
20331   0723002           SPB SCRT     1                                                       00287
20332   0626322           LDX TEMP*    1                                                       00288
20333   2620002           BRU 2        1                                                       00289
                                                                                               00290
                                                                                               00291
20334   2001646   ONDEF   EXT CHMASK                                                           00292
20335   2504006           MAU                                                                  00293
20336   1306304           UST CONST           SET FIRST CHARACTER OF CONST                     00294
20337   0601062           LDX MODC1    3      SET CONSTANT MODE 1                              00295
20340   2504002           LDY                 CLEAR SOME THINGS                                00296
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20341    0306313         STA DCTR        COUNT OF DIGITS AFTER DECIMAL POINT          00297
20342    0306314         STA DINC        DECIMAL POINT FLAG                           00298
20343    0306315         STA EXP         EXPONENT                                     00299
20344    0306312         STA BIGC                                                     00300
20345    0306321         STA TYPE        TYPE OF CONSTANT                             00301
20346    2504022         LDQ                                                          00302
20347    0306316         STA SGNEXP      SIGN IS PLUS                                 00303
20350    2600157         BRU CHAR        AND LEAVE                                    00304
```
THE MANTISSA OF CONSTANTS. THE ACCUMULATED   00305
VALUE OF THE CONSTANT IS STORED IN CONST.   00306
BIGC CONTAINS TEN TIMES THE OVERFLOW FROM THE   00307
Q REGISTER OF CONST AND IS USED TO FACILITATE   00308
COMPUTATION. DINC IS 0 IF NO DECIMAL POINT   00309
HAS BEEN READ, 1 OTHERWISE. DCTR COUNTS THE   00310
NUMBER OF DIGITS AFTER THE POINT.   00311

```
                                                                                      00312
20351    2101661  CONST1 CAB 010000                                                   00313
20352    2600403         BRU CON2        CHARACTER NOT A DIGIT                        00314
20353    2600354         BRU *+1                                                      00315
20354    2001646         EXT CHMASK      TRIM TO DIGIT                                00316
20355    2504005         XAQ                                                          00317
20356    0306305         LDA CONST+1                                                  00318
20357    2504005         XAQ             Q = LOW ORDER BITS OF CONST.  A = DIGIT      00319
20360    1501531         MPY TEN                                                      00320
20361    0106312         ADD BIGC        ADD [HIGH ORDER BITS OF CONST] * 10          00321
20362    1306306         UST CONSTX      STORE CURRENT VALUE OF CONSTANT             00322
20363    2514002         BZE                                                          00323
20364    2600375         BRU CON1        CONSTANT LESS THAN 2EXP19                    00324
20365    2101633         CAB 03777                                                    00325
20366    2600371         BRU *+3                                                      00326
20367    2600371         BRU *+2                                                      00327
20370    2600157         BRU CHAR        TOO MANY DIGITS IN CONSTANT -- IGNORE THEM  00328
20371    2504006         MAQ                                                          00329
20372    1501531         MPY TEN         FOR VALUE OF BIGC TO ADD AFTER NEXT DIGIT   00330
20373    2504005         XAQ                                                          00331
20374    0306312         STA BIGC                                                     00332
20375    1306306  CON1   DLD CONSTX                                                   00333
20376    1306304         UST CONST                                                    00334
20377    0006313         LDA DCTR                                                     00335
20400    0106314         ADD DINC                                                     00336
20401    0306313         STA DCTR        DCTR=DCTR+DINC = NO. OF PLACES AFTER POINT   00337
20402    2600157         BRU CHAR                                                     00338
20403    2514002  CON2   BZE                                                          00339
20404    2600157         BRU CHAR                                                     00340
20405    2102015         CAB EXPID       CHECK FOR EXPONENT SIGN                      00341
20406    2600410         BRU *+2                                                      00342
20407    2600435         BRU CON3                                                     00343
20410    2101775         CAB DECID       CHECK FOR DECIMAL POINT                      00344
20411    2600524         BRU OUTCON                                                   00345
20412    2600414         BRU *+2                                                      00346
20413    2600524         BRU OUTCON                                                   00347
20414    0006314         LDA DINC                                                     00348
20415    2516002         BNZ                                                          00349
20416    2602417         BRU ER60        TWO DECIMAL POINTS                           00350
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20417    2504022            LDO
20420    0306314            STA  DINC              DINC=1                                        00351
20421    0001642            LDA  RBIT                                                            00352
20422    0306321            STA  TYPE                                                            00353
20423    2600157            BRU  CHAR              SET TYPE TO REAL                              00354
                                                                                                00355
                                                                                                00356
                            CONEXP  IS CALLED WHEN THE FIRST SYMBOL OF                           00357
                            THE CONSTANT IS THE EXPONENT SYMBOL                                  00358
                                                                                                00359
20424    2506053   CONEXP   SXG  2                                                            2*00360
20425    2504002            LDZ                                                                  00361
20426    0306314            STA  DINC                                                            00362
20427    0306313            STA  DCTR                                                            00363
20430    0306315            STA  EXP                                                             00364
20431    2504022            LDO                                                                  00365
20432    0305316            STA  SGNEXP                                                          00366
20433    2504006            MAQ                                                                  00367
20434    1306304            UST  CONST                                                           00368
20435    0501063   CONS     LDX  MODC2       3     SET INPUT MODE TO CONST2                      00369
20436    0001642            LDA  RBIT                                                            00370
20437    0306321            STA  TYPE              SET TYPE TO REAL                              00371
20440    2600156            BRU  INPUT                                                           00372
                                                                                                00373
                                                                                                00374
                            CONST2  CHECKS THE NEXT CHARACTER AFTER THE                          00375
                            EXPONENT CHARACTER *TEN* [TYPED AS $] FOR                            00376
                            THE SIGN OF THE EXPONENT.                                            00377
                                                                                                00378
20441    2101061   CONST2   CAR  010000                                                         00379
20442    2503450            BRU  CON5              CHARACTER NOT A DIGIT                         00380
20443    2600444            BRU  *+1                                                             00381
20444    2001646            EXT  CHMASK            TRIM TO DIGIT                                 00382
20445    0306315            STA  EXP                                                             00383
20446    0601664   CON4     LDX  MODC3       3     SET INPUT MODE TO CONST3                      00384
20447    2600157            BRU  CHAR                                                            00385
20450    2514002   CON5     SZE                                                                  00386
20451    2600157            BRU  CHAR              CHARACTER = SPACE                             00387
20452    2101762            CAR  PLUSID            CHECK FOR SIGN OF EXPONENT                    00388
20453    2600455            BRU  *+2                                                             00389
20454    2600446            BRU  CON4                                                            00390
20455    2102002            CAR  MINID                                                          00391
20456    2602417            BRU  ER60              ILLEGAL INPUT FORMAT                          00392
20457    2600461            BRU  *+2                                                             00393
20460    2602417            BRU  ER60              ILLEGAL INPUT FORMAT                          00394
20461    2504102            LMO                                                                  00395
20462    0306316            STA  SGNEXP            SET SGNEXP = -1                               00396
20463    2600446            BRU  CON4                                                            00397
                                                                                                00398
                                                                                                00399
                            CONST3   IS THE INPUT MODE WHICH BUILDS UP                          00400
                            THE EXPONENT OF THE CONSTANT.                                        00401
                                                                                                00402
20464    2101061   CONST3   CAR  010000                                                         00403
20465    2609203            BRU  CON6              CHARACTER NOT A DIGIT                         00404
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20466   2600467              BRU **1                                                                                  00405
20467   2001646              EXT CHMASK                TRIM TO DIGIT                                                   00406
20470   2504005              XAW                                                                                      00407
20471   0006315              LDA EXP                                                                                  00408
20472   2504005              XAW                                                                                      00409
20473   1501531              MPY TEN                                                                                  00410
20474   2504005              XAW                                                                                      00411
20475   2101665              CAB D77                                                                                  00412
20476   2600501              BRU **3                                                                                  00413
20477   2602417              BRU ER60                 EXPONENT OF CONSTANT TOO LARGE                                  00414
20500   2502417              BRU ER60                 EXPONENT OF CONSTANT TOO LARGE                                  00415
20501   0306315              STA EXP                  STORE CURRENT VALUE OF EXPONENT                                 00416
20502   2600157              BRU CHAR                                                                                 00417
20503   2516002   CON6       BNZ                                                                                      00418
20504   2600524              BRU OUTCON               CHARACTER NOT A SPACE                                           00419
20505   2600157              BRU CHAR                                                                                 00420
                                                                                                                      00421
                                                      CONDEC  IS CALLED WHEN THE FIRST CHARACTER                      00422
                                                      IN THE CONSTANT IS THE DECIMAL POINT                            00423
                                                                                                                      00424
20506   2504002   CONDEC LDZ                                                                                          00425
20507   2504006              MAW                                                                                      00426
20510   1306304              DST CONST                                                                                00427
20511   0306313              STA DCTR                                                                                 00428
20512   0306315              STA EXP                                                                                  00429
20513   0306312              STA BIGC                                                                                 00430
20514   2504022              LDO                                                                                      00431
20515   0306316              STA SGNEXP                                                                               00432
20516   0306314              STA DINC                                                                                 00433
20517   0001062              LDA MODC1                                                                                00434
20520   0300013              STA XR23                                                                                 00435
20521   0001642              LDA RBIT                                                                                 00436
20522   0306321              STA TYPE                                                                                 00437
20523   2600156              BRU INPUT                                                                                00438
                                                      OUTCON  DECIDES WHAT TO DO WITH THE CONSTANT                    00439
                                                                                                                      00440
20524   2102035   OUTCON CAB CLIST+59                 CHECK FOR VALID TERMINAL CHARACTER--COMMA                       00441
20525   2600527              BRU **2                  IS NOT    CHECK MORE                                            00442
20526   2600533              BRU **5                  IS--OK                                                          00443
20527   2102001              CAB MINID-1              CARRIAGE RETURN                                                 00444
20530   2602417              BRU ER60                 NO GOOD                                                         00445
20531   2600533              BRU **2                  OK                                                              00446
20532   2602417              BRU ER60                                                                                 00447
20533   0304364              STA TEMP                 SAVE TERMINATING SYMBOL                                         00448
20534   2506113              SXG 4                                                                              4*00449
20535   0720563              SPB CONVRT   1             BCD-BINARY                                                    00450
                                                      ROUTCN STORES PROCESSED INPUT VALUES AT THE T                  00451
                                                      OP OF THE OUTPUT BUFFER USING XR31 , WHICH WA                  00452
                                                      S SET AT RDTSUB, AS A POINTER                                  00453
20536   2506073   ROUTCN SXG 3                                                                                 3*00454
20537   0006317              LDA SYMB                 CHECK FOR SIGN                                                  00455
20540   3306304              FST CONST                                                                               00456
20541   2102002              CAB MINID                                                                               00457
20542   2300550              BRU **6                                                                                 00458
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20543    2600545          BRU  *+2                                                              00459
20544    2600550          BRU  *+4                                                              00460
20545    3200005          CAX                                                              CAX*00461
20546    3205304          FSC  CONST                                                           00462
20547    3306304          FST  CONST                                                           00463
20550    1006304          DLD  CONST                STORE CONSTANT                             00464
20551    1320000          DST  0          1                                                   00465
20552    1420002          INX  2          1                                                   00466
20553    2504002          LDX                                                                  00467
20554    0306317          STA  SYMB                 CLEAR SYMB                                 00468
20555    0552077          BXH  TRPSV+1  1           CHECK FOR    TOO MUCH INPUT                00469
20556    2602430          BRU  ERo1                                                            00470
20557    2506053          SXG  2                                                           2*00471
20560    2600320          BRU  ENDIN                                                           00472
20561    0306317  CONMIN  STA  SYMB                                                            00473
20562    2600245          BRU  INLUOP                                                          00474
                                                                                               00475
                                          CONVRT   CONVERTS THE INFORMATION BUILT UP           00476
                                          BY THE INPUT ROUTINES INTO A FLOATING POINT          00477
                                          CONSTANT,                                            00478
                                          CALLED BY OUTCON                                     00479
                                                                                               00480
20563    1006315  CONVRT  LDA  SGNEXP                                                          00481
20564    2515001          SPL                                                                  00482
20565    2600571          BRU  CVT1                                                            00483
20566    1006315          LDA  EXP                  CHANGE SIGN OF EXPONENT                    00484
20567    2504522          NEG                                                                  00485
20570    0306315          STA  EXP                                                             00486
20571    1006314  CVT1    LDA  DINC                 CHECK FOR DECIMAL POINT                    00487
20572    2514002          SZE                                                                  00488
20573    2600577          BRU  CVT2                 NO DECIMAL POINT                           00489
20574    1006315          LDA  EXP                  ADJUST EXPONENT BY NUMBER OF DECIMAL PLACES 00490
20575    0206313          SUB  DCTR                                                            00491
20576    0306315          STA  EXP                                                             00492
20577    1006304  CVT2    DLD  CONST                CHECK FOR MORE THAN 30 BITS IN CONSTANT    00493
20600    2301633          EXT  03777                                                           00494
20601    2514002          SZE                                                                  00495
20602    2600623          BRU  CVT3                 LESS THAN 30 BITS                          00496
20603    2515010          NOR  8                    NORMALIZE FOR MORE THAN 30 BITS            00497
20604    0000000          LDA  0                    NUMBER OF SHIFTS NEEDED                    00498
20605    2512013          SLA  11                   PUT NUMBER OF SHIFTS INTO EXPONENT POSITION 00499
20606    0304313          STA  BINEXP               SET BINARY EXPONENT                        00500
20607    0000000          LDA  XR00                                                            00501
20610    2504112          SBD                                                                  00502
20611    0300023          STA  XR43                 NUMBER OF SHIFTS LESS ONE                  00503
20612    0006304          LDA  CONST                                                           00504
20613    2571000          SRC  0          3         SHIFT ALL BUT ONE PLACE                    00505
20614    1101070          DAD  DBLONE                                                          00506
20615    2511001          SRD  1                    COMPLETES ROUNDING OF OVERSIZE CONSTANT    00507
20616    1306304          DST  CONST                                                           00508
20617    2301633          EXT  03777               CHECK TO SEE IF MORE SHIFT NEEDED          00509
20620    2515002          SNZ                                                                  00510
20621    0001073          LDA  02000               FUDGE FOR SPECIAL CASE OF CONSTANT ALL 1 BITS00511
20622    0204313          ADD  BINEXP              ADD BINARY EXPONENT COMPUTED BY SHIFT       00512
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20623  0106304   CVT3   ADD CONST          ADD CONSTANT TO EXPONENT                          00513
20624  0101672          ADD D30BB          ADD A BINARY EXPONENT OF 30                       00514
20625  0306304          STA CONST                                                            00515
20626  0006315          LDA EXP                                                              00516
20627  0304326          STA EXPFLG         SAVE SIGNED EXPONENT                              00517
20630  2514001          BMI                                                                  00518
20631  2504522          NEG                                                                  00519
20632  0306315          STA EXP            MAKE EXPONENT POSITIVE                            00520
20633  3005304          FLD CONST                                                            00521
20634  3101010          FAD FZERO                                                            00522
20635  2001674          EXT CMASK          TRIM TO LAST THREE BITS OF EXPONENT               00523
20636  2512001          SLA 1              DOUBLE IT                                         00524
20637  0300023          STA XR43                                                             00525
20640  0740657          SPB CVTMUL   2                                                       00526
20641  0006315          LDA EXP                                                              00527
20642  2001572          EXT SEVEN          TRIM OFF LAST THREE BITS                          00528
20643  0661660          LDX D14      3     SET XR43 TO LOCATION OF 10EXP7 IN TABLE           00529
20644  2510002          SRA 2              GET TWICE EXPONENT MOD 8                          00530
20645  2510001   CVT7   SRA 1                                                                00531
20646  0306315          STA EXP                                                              00532
20647  2514002          BZE                                                                  00533
20650  2620001          BRU 1        1     CONVERSION IS COMPLETED                           00534
20651  1460002          INX 2        3     ADVANCE COUNTER BY ONE POWER OF TEN               00535
20652  2516000          BEV                                                                  00536
20653  2600645          BRU CVT7           SKIP THIS POWER OF 10                             00537
20654  0740657          SPB CVTMUL   2     ADJUST BY POWER OF 10                             00538
20655  0006315          LDA EXP                                                              00539
20656  2600645          BRU CVT7                                                             00540
20657  0004326   CVTMUL LDA EXPFLG                                                           00541
20660  2514001          BMI                                                                  00542
20661  2600065          BRU *+4            NEGATIVE EXPONENT                                 00543
20662  3100002          MAG          A                                                       00544
20663  3501710          FMP CTABLE   3     OVERFLOW MAY OCCUR HERE                           00545
20664  2640001          BRU 1        2                                                       00546
20665  3500005          CQX                                                          CQX*00547
20666  3601710          FDV CTABLE   3     UNDERFLOW MAY OCCUR HERE                          00548
20667  2640001          BRU 1        2                                                       00549
                                                                                            00550
20670  2504002   KTRUE  LDZ                                                                  00551
20671  2600673          BRU *+2                                                              00552
20672  2504102   KFALSE LMO                                                                  00553
20673  2504006          MAG                CLEAR A REGISTER                                  00554
20674  0306317          STA SYMB           SET SYMB EQUAL TO A SPACE                         00555
20675  2504005          XAQ                LOGICAL VALUE BACK TO A                           00556
20676  1306304          DST CONST                                                            00557
20677  0002045          LDA BBIT           BOOLEAN TYPE BIT                                  00558
20700  0306321          STA TYPE                                                             00559
20701  2506073          SXG 3                                                          3*00560
20702  2600550          BRU CONMIN#9       PROCESS CONSTANT                                  00561
                                                                                         NAM00562
                                                                                         EJT00563
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                                                PRINT          AT LINE NO. XXXXX                           00564
20703   0621653   ERAT   LDX RETEND    1                                                                  00565
20704   1726253  *ERAT   STX ERX2      1                                                                  00566
20705   0723737          SPB $STRING   1                                                                  00567
20706   0000004          DEC 4                                                                            00568
20707   0216360          ALF AT                                                                           00569
20710   0433145          ALF LIN                                                                          00570
20711   0256045          ALF E N                                                                          00571
20712   0463360          ALF O.                                                                           00572
20713   2506013   OUTLIN SXG 0                                                                           0*00573
20714   0661532          LDX ONE       3                                                                  00574
20715   0001603          LDA 060                                                                          00575
20716   0306264          STA POUT                                                                         00576
20717   0004343          LDA LINENO                                                                       00577
20720   2504006          MAQ                                                                              00578
20721   0720723          SPB *+2       1                                                                  00579
20722   2600725          BRU *+3                                                                          00580
20723   1726255          STX PRX1      1                                                                  00581
20724   2603232          BRU PR6                                                                          00582
20725   2504022          LDO                                                                              00583
20726   0306261          STA CRUMP                                                                        00584
20727   2506113          SXG 4                                                                           4*00585
20730   0626253          LDX ERX2      1                                                                  00586
20731   2620001          BRU 1         1                                                                  00587
                                                PRINT          NEAR LINE NO. XXXXX                         00588
20732   0621653   ERNEAR LDX RETEND    1                                                                  00589
20733   1726253          STX ERX2      1                                                                  00590
20734   0723737          SPB $STRING   1                                                                  00591
20735   0000005          DEC 5                                                                            00592
20736   0452521          ALF NEA                                                                          00593
20737   0516043          ALF R L                                                                          00594
20740   0314525          ALF INE                                                                          00595
20741   0604546          ALF  NO                                                                          00596
20742   0335060          ALF .                                                                            00597
20743   2600713          BRU OUTLIN                                                                       00598
                                                ***********************************************           00599
                                                                                                          00600
                                                OUTPUT EXTERNAL IDENTIFIER                                00601
                                                XR2 POINTS TO ETABLE                                      00602
                                                                                                          00603
20744   2506016   OUTID  SET PBK                                                                          00604
20745   0664001          LDX OPOINT    3                                                                  00605
20746   0045000          LDA ETABLE    2                                                                  00606
20747   0304100          STA OUTBUF    3                                                                  00607
20750   1460001          INX 1         3                                                                  00608
20751   1440001          INX 1         2                                                                  00609
20752   2515001          BPL                                                                              00610
20753   2600746          BRU *+5                                                                          00611
20754   1764001          STX OPOINT    3                                                                  00612
20755   2506015          SET PST                                                                          00613
20756   2620001          BRU 1         1                                                                  00614
                                                ***********************************************           00615
                                                                                                          00616
                                                ERROR--SUSPECT MISSING                                    00617
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20757   1726252    ERMISS  STX ERX1      1        SAVE EXIT FROM ERMISS              00618
20760   0723737            SPB $TRING    1                                          00619
20761   0000010            DEC 8                                                    00620
20762   0372551            OCT 372551                                              00621
20763   0514651            ALF ROR                                                 00622
20764   0404062            ALF -=S                                                 00623
20765   0646247            ALF USP                                                 00624
20766   0252363            ALF ECT                                                 00625
20767   0604431            ALF  MI                                                 00626
20770   0626231            ALF SSI                                                 00627
20771   0452760            ALF NG                                                  00628
20772   0626252            LDX ERX1      1                                         00629
20773   2603737            BRU $TRING                                              00630
                                                                                   00631
                        ****************************************************       00632
                        ILLEGAL                                                    00633
20774   1726252    ERILL   STX ERX1      1                                         00634
20775   0723737            SPB $TRING    1                                         00635
20776   0000003            DEC 3                                                   00636
20777   0373143            OCT 373143                                             00637
21000   0452527            ALF LEG                                                 00638
21001   0214360            ALF AL                                                  00639
21002   0626252            LDX ERX1      1                                         00640
21003   2603737            BRU $TRING                                             00641
                                                                                EJT00642
```

21004	2504002	ERROR	LDZ			00643
21005	0300023		STA	XR43	INITIALIZE POINTER TO ERROR FLAGS	00644
21006	2506113		SXG	4	I AND TO KNOW WHICH, AND THIS SEEMED NICE 4*00645	
21007	0601701		LDA	OBJLO	CALCULATE ENDING ADDRESS	00646
21010	2504112		SBO		ADD TO ERAVAL	00647
21011	0204377		SUB	ERAVAL		00648
21012	0641676		LDX	XTAG	2		00649
21013	2741015		STO	*+2	2	SEE WHY IT HAD TO BE NEGATED	00650
21014	0723662	ERLOOP	SPB	$CRT	1	MAKE THINGS PRINT NICE	00651
21015	9500000		BXH	0	3	TEST FOR ALL DONE	00652
21016	2600143		BRU	ENDJOB	YOU DONT EXPECT ME TO EXECUTE THE STUFF	00653
21017	1066324		DLD	PROG	3	PICK UP ERROR CODE AND LINE NUMBER	00654
21020	1460002		INX	2	3	INCREMENT POINTER	00655
21021	0101676		ADD	XTAG		00656
21022	0300022		STA	XR42	SDET UP INDEXED BRANCH TO ERROR MESSAGE	00657
21023	2504001		LAO			00658
21024	0304343		STA	LINENO	SET LINE NO	00659
21025	2541025		BRU	*	2	BOY WILL THIS SCARE MY READERS BEFORE 2ND LO00660	
21026	2601116		BRU	ER1	STORAGE EXHAUSTED	00661
21027	2601137		BRU	ER2	IDENTIFIER TOO LONG	00662
21030	2601151		BRU	ER3	TOO MANY SYMBOLS	00663
21031	2601163		BRU	ER4	EXPRESSION TOO COMPLICATED	00664
21032	2601200		BRU	ER5	ADJACENT EXPRESSIONS	00665
21033	2601215		BRU	ER6	ILLEGAL SPECIFICATION	00666
21034	2601227		BRU	ER7	TWO DECIMAL POINTS IN CONSTANT	00667
21035	2601250		BRU	ER8	CONSTANTS ONLY	00668
21036	2601266		BRU	ER9	EXPONENT OF CONSTANT TOO LARGE	00669
21037	2601304		BRU	ER10	TOO MANY CONSTANTS	00670
21040	2601316		BRU	ER11	ILLEGAL SYMBOL AFTER EXPRESSION	00671
21041	2601333		BRU	ER12	ILLEGAL SYMBOL SEQUENCE	00672
21042	2601344		BRU	ER13	TWO NOTS	00673
21043	2601353		BRU	ER14	TWO RELATIONS TOGETHER	00674
21044	2601366		BRU	ER15	MIXED BOOLEAN AND ARITHMETIC	00675
21045	2601412		BRU	ER16	ILLEGAL VARIABLE	00676
21046	2601420		BRU	ER17	ARRAY NOT SUBSCRIPTED	00677
21047	2601433		BRU	ER18	ILLEGAL LEFT PART VARIABLE	00678
21050	2601445		BRU	ER19	ILLEGAL SUBSCRIPT	00679
21051	2601454		BRU	ER20	ERROR--SUSPECT MISSING CLOSE BRAKETT	00680
21052	2601460		BRU	ER21	NUMBER OF SUBSCRIPTS DOES NOT AGREE	00681
21053	2601476		BRU	ER22	ERROR SUSPECT MISSING THEN	00682
21054	2601504		BRU	ER23	NON-BOOLEAN EXPRESSION FOLLOWING IF	00683
21055	2601523		BRU	ER24	ERROR--SUSPECT MISSING SEMICOLON	00684
21056	2601527		BRU	ER25	MESSY CONDITIONAL	00685
21057	2601541		BRU	ER26	ILLEGAL LABEL	00686
21060	2601546		BRU	ER27	ERROR-SUSPECT MISSING CLOSE PAREN	00687
21061	2601552		BRU	ER28	DATA BLOCK NAME MISSING	00688
21062	2601566		BRU	ER29	ERROR IN PROCEDURE CALL	00689
21063	2601602		BRU	ER30	TROUBLE	00690
21064	2601610		BRU	ER31	MISSING DATA	00691
21065	2601620		BRU	ER32	DECLARATION SHOULD FOLLOW BEGIN	00692
21066	2601636		BRU	ER33	ILLEGAL DECLARATION	00693
21067	2601647		BRU	ER34	SYMBOL ALREADY DEFINED	00694
21070	2601667		BRU	ER35	ILLEGAL OCCURENCE OF BEGIN	00695
21071	2601702		BRU	ER36	BOUND PAIR ERROR--TOO MANY COLONS	00696

21072	2601724	BRU ER37	NO COLON IN BOUND PAIR	00697
21073	2601736	BRU ER38	UB LESS THAN LB	00698
21074	2601774	BRU ER39	ILLEGAL OCCURENCE OF DECLARATION	00699
21075	2602010	BRU ER40	ILLEGAL ASSIGNMENT TO FORMAL PARAMETER	00700
21076	2602026	BRU ER41	NOT IN	00701
21077	2602036	BRU ER42	UNDEFINED LABEL IN PROGRAM	00702
21100	2602130	BRU ER43	SPURIOUS QUOTE	00703
21101	2602137	BRU ER44	PROGRAM INCOMPLETE	00704
21102	2602151	BRU ER45	ERROR IN FOR STATEMENT	00705
21103	2602164	BRU ER46	ERROR IN POWER SUBROUTINE	00706
21104	2602232	BRU ER47	ERROR IN LN SUBROUTINE	00707
21105	2602245	BRU ER48	ERROR IN SQRT SUBROUTINE	00708
21106	2602254	BRU ER49	SUBSCRIPT OUT OF BOUNDS	00709
21107	2602267	BRU ER50	INTEGER TOO LARGE	00710
21110	2602300	BRU ER51	OVERFLOW	00711
21111	2602311	BRU ER52	ILLEGAL CALL BY VALUE	00712
21112	2602321	BRU ER53	WRONG NUMBER OF PARAMETERS	00713
21113	2602340	BRU ER54	PARAMETER TYPES DO NOT MATCH	00714
21114	2602356	BRU ER55	ILLEGAL ENTRY TO FOR STATEMENT	00715
21115	2602371	BRU ER56	ILLEGAL PROCEDURE DECLARATION	00716
				EJT00717

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                                                      ****************************************************  00718
                                                      STORAGE EXHAUSTED                                     00719
    21116   0723737   ER1   SPR  $TRING  1            CALLED BY ADJ1, ABLOOP, WRAPUP, DECLAR               00720
    21117   0000015         DEC 13                                                                         00721
    21120   0374751         OCT 374751                                                                     00722
    21121   0402751         ALF OGR                                                                        00723
    21122   0214460         ALF AM                                                                         00724
    21123   0634040         ALF TOO                                                                        00725
    21124   0604340         ALF  LO                                                                        00726
    21125   0452740         ALF NG=                                                                        00727
    21126   0406263         ALF =ST                                                                        00728
    21127   0405121         ALF ORA                                                                        00729
    21130   0272560         ALF GE                                                                         00730
    21131   0256730         ALF EXH                                                                        00731
    21132   0216462         ALF AUS                                                                        00732
    21133   0632524         ALF TED                                                                        00733
    21134   0776077         OCT 776077                                                                     00734
    21135   0621054         LDX GUEND  1                                                                   00735
    21136   2600704         BRU *ERAT                                                                      00736
                                                                                                           00737
                                                      ****************************************************  00738
                                                      IDENTIFIER TOO LONG                                   00739
    21137   0723737   ER2   SPR  $TRING  1            CALLED BY NWID1, OUT21                                00740
    21140   0000007         DEC 7                                                                           00741
    21141   0373124         OCT 373124                                                                      00742
    21142   0254563         ALF ENT                                                                         00743
    21143   0312651         ALF IFI                                                                         00744
    21144   0255100         ALF ER                                                                          00745
    21145   0634040         ALF TOO                                                                         00746
    21146   0604340         ALF  LO                                                                         00747
    21147   0452760         ALF NG                                                                          00748
    21150   2600703         BRU ERAT                                                                        00749
                                                                                                           00750
                                                      ****************************************************  00751
                                                      TOO MANY SYMBOLS                                      00752
                                                      CALLED BY NOTIN1, BLIST1, CHAIN3, DECPRO,            00753
                                                        DEFNEW, BLOCK                                       00754
    21151   0723737   ER3   SPR  $TRING  1                                                                 00755
    21152   0000007         DEC 7                                                                           00756
    21153   0376270         OCT 376270                                                                      00757
    21154   0442240         ALF MBO                                                                         00758
    21155   0436053         ALF L T                                                                         00759
    21156   0212243         ALF ABL                                                                         00760
    21157   0256020         ALF E F                                                                         00761
    21160   0314343         ALF ILL                                                                         00762
    21161   0252400         ALF ED                                                                          00763
    21162   2600703         BRU ERAT                                                                        00764
                                                      ****************************************************  00765
                                                      EXPRESSION TOO COMPLEX                                00766
                                                      CALLED BY NCSTO1, STOSC, TIEUP, BARRAY, NCP4,        00767
                                                        BLOCK                                               00768
    21163   0723737   ER4   SPR  $TRING  1                                                                 00769
    21164   0000012         DEC 10                                                                          00770
    21165   0372567         OCT 372567                                                                      00771
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21166    0475125        ALF PRE                                              00772
21167    0626231        ALF SSI                                              00773
21170    0404560        ALF ON                                               00774
21171    0634646        ALF TOO                                              00775
21172    0602346        ALF  CO                                              00776
21173    0444743        ALF MPL                                              00777
21174    0312321        ALF ICA                                              00778
21175    0632524        ALF TED                                              00779
21176    0776077        OCT 776077                                           00780
21177    2600703        BRU ERAT                                             00781
                  ********************************************************    00782
                  MISSING OPERAND OR DELIMITER                               00783
                  CALLED BY VCHECK, BPAR1, NCP2                              00784
21200    0723737   ER5  SPB STRING    1                                      00785
21201    0000012        DEC 10                                               00786
21202    0374431        OCT 374431                                           00787
21203    0626231        ALF SSI                                              00788
21204    0452760        ALF NG                                               00789
21205    0464725        ALF OPE                                              00790
21206    0512145        ALF RAN                                             00791
21207    0246046        ALF D O                                              00792
21210    0516024        ALF R D                                              00793
21211    0254331        ALF ELI                                             00794
21212    0443163        ALF MIT                                             00795
21213    0255160        ALF ER                                               00796
21214    2600703        BRU ERAT                                             00797
                  ********************************************************    00798
                  ILLEGAL SPECIFICATION                                      00799
                  CALLED BY SPEC, UBEGIN, BPAREN, BBRACK                     00800
21215    0720774   ER6  SPB ERILL    1                                      00801
21216    0000005        DEC 5                                                00802
21217    0624725        ALF SPE                                             00803
21220    0235126        ALF CIF                                             00804
21221    0312321        ALF ICA                                             00805
21222    0633146        ALF TIO                                             00806
21223    0456060        ALF N                                                00807
21224    2600703        BRU ERAT                                             00808
                  ********************************************************    00809
                  ILLEGAL CONSTANT FORMAT                                    00810
                  CALLED BY CON2, CON5                                       00811
                       CONSTANT HAS 2 DECIMAL POINTS                         00812
21225    0721232   ER7A SPB ER7+3    1                                      00813
21226    2600156        BRU INPUT                                            00814
21227    0306317   ER7  STA SYMB                                            00815
                       ILLEGAL CHARACTER FOLLOWING $                         00814
21230    0721232        SPB **+2      1                                      00815
21231    2600525        BRU OUTCON+1                                         00816
21232    1726254        STX ERX3      1                                      00817
21233    0720774        SPB ERILL     1                                      00818
21234    0000006        DEC 6                                                00819
21235    0254045        ALF CON                                             00820
21236    0626321        ALF STA                                             00821
21237    0456360        ALF NT                                               00822
21240    0254651        ALF FOR                                             00823
21241    0442163        ALF MAT                                             00824
21242    0606060        ALF                                                 00825
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21243  0600001        LDX  XR01   0                                                          00826
21244  2600703        BRU  ERAT.                                                             00827
21245  0620010        LDX  XR20   1                                                          00828
21246  0646254        LDX  ERX3   2                                                          00829
21247  2640001        BRU  1      2                                                          00830
                                                                                             00831
              .                     ********************************************************  00832
                                    CONSTANTS ONLY                                            00832
                                    CALLED AT LETTER                                          00833
21250  0723737  ER8   SPB  STRING  1                                                         00834
21251  0000013        DEC  11                                                                00835
21252  0374546        OCT  374546                                                            00836
21253  0454023        ALF  N-C                                                               00837
21254  0464502        ALF  ONS                                                               00838
21255  0632145        ALF  TAN                                                               00839
21256  0635021        ALF  T A                                                               00840
21257  0626062        ALF  S S                                                               00841
21260  0642262        ALF  UBS                                                               00842
21261  0235131        ALF  CRI                                                               00843
21262  0476360        ALF  PT                                                                00844
21263  0224664        ALF  BOU                                                               00845
21264  0452460        ALF  ND                                                                00846
21265  2600703        BRU  ERAT                                                              00847
                                    ********************************************************  00848
                                    EXPONENT OF CONSTANT TOO LARGE                           00849
                                    CALLED BY CONST3                                         00850
21266  0723737  ER9   SPB  STRING  1                                                         00851
21267  0000013        DEC  11                                                                00852
21270  0372567        OCT  372567                                                            00853
21271  0474645        ALF  PON                                                               00854
21272  0254563        ALF  ENT                                                               00855
21273  0504020        ALF   OF                                                               00856
21274  0502346        ALF   CO                                                               00857
21275  0456263        ALF  NST                                                               00858
21276  0214563        ALF  ANT                                                               00859
21277  0606340        ALF   TO                                                               00860
21300  0406043        ALF  O L                                                               00861
21301  0215127        ALF  ARG                                                               00862
21302  0256060        ALF  E                                                                 00863
21303  2600703        BRU  ERAT                                                              00864
                                    ********************************************************  00865
                                    TOO MANY CONSTANTS                                       00866
                                    CALLED BY NEWCON                                         00867
21304  0723737  ER10  SPB  STRING  1                                                         00868
21305  0000007        DEC  7                                                                 00869
21306  0376340        OCT  376340                                                            00870
21307  0466044        ALF  O M                                                               00871
21310  0214570        ALF  ANY                                                               00872
21311  0502346        ALF   CO                                                               00873
21312  0456263        ALF  NST                                                               00874
21313  0214563        ALF  ANT                                                               00875
21314  0626000        ALF  S                                                                 00876
21315  2600703        BRU  ERAT                                                              00877
                                    ********************************************************  00878
                                    ILLEGAL SYMBOL AFTER EXPRESSION                          00879
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                                                    CALLED BY PREEXP                                    00880
   21316   0720774   ER11   SPB ERILL    1                                                              00881
   21317   0000012          DEC 10                                                                      00882
   21320   0627044          ALF SYM                                                                     00883
   21321   0224043          ALF BOL                                                                     00884
   21322   0602046          ALF  FU                                                                     00885
   21323   0434346          ALF LLO                                                                     00886
   21324   0603145          ALF WIN                                                                     00887
   21325   0276025          ALF G E                                                                     00888
   21326   0674751          ALF XPR                                                                     00889
   21327   0256262          ALF ESS                                                                     00890
   21330   0314645          ALF ION                                                                     00891
   21331   0776077          OCT 776077                                                                  00892
   21332   2600703          BRU ERAT                                                                    00893
                                                    *****************************************           00894
                                                    ILLEGAL SYMBOL SEQUENCE                             00895
                                                    CALLED BY PMCHK,KSWTCH,NCP2,DEFINE                  00896
   21333   0720774   ER12   SPB ERILL    1                                                              00897
   21334   0000006          DEC 6                                                                       00898
   21335   0627044          ALF SYM                                                                     00899
   21336   0224043          ALF BOL                                                                     00900
   21337   0605225          ALF  SE                                                                     00901
   21340   0506425          ALF QUE                                                                     00902
   21341   0452325          ALF NCE                                                                     00903
   21342   0776077          OCT 776077                                                                  00904
   21343   2600732          BRU ERNEAR                                                                  00905
                                                    *****************************************           00906
                                                    TWO NOTS                                            00907
                                                    CALLED BY SUBRTE                                    00908
   21344   0723757   ER13   SPB STRING   1                                                              00909
   21345   0000004          DEC 4                                                                       00910
   21346   0376667          OCT 376667                                                                  00911
   21347   0405045          ALF O N                                                                     00912
   21350   0406362          ALF OTS                                                                     00913
   21351   0776077          OCT 776077                                                                  00914
   21352   2600732          BRU ERNEAR                                                                  00915
                                                    *****************************************           00916
                                                    TWO RELATIONS TOGETHER                              00917
                                                    CALLED BY RTE1                                      00918
   21353   0723757   ER14   SPB STRING   1                                                              00919
   21354   0000010          DEC 8                                                                       00920
   21355   0376366          OCT 376366                                                                  00921
   21356   0405051          ALF O R                                                                     00922
   21357   0254321          ALF ELA                                                                     00923
   21360   0633146          ALF TIO                                                                     00924
   21361   0456200          ALF NS                                                                      00925
   21362   0634627          ALF TUG                                                                     00926
   21363   0256330          ALF ETH                                                                     00927
   21364   0255160          ALF ER                                                                      00928
   21365   2600732          BRU ERNEAR                                                                  00929
                                                    *****************************************           00930
                                                    MIXED BOOLEAN AND ARITHMETIC TYPES                  00931
                                                    CALLED BY LOAD1, TARITH, KAOP, KBOP, ASS1,          00932
                                                       KWHILE, KSTEP, KELSE3, KELSE5, KUNT12, TEST      00933
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21366    0723737    ER15    SPB STRING  1                                          00934
21367    0000021            DEC 17                                                  00935
21370    0374431            OCT 374431                                              00936
21371    0672524            ALF XED                                                 00937
21372    0602246            ALF  BU                                                 00938
21373    0404325            ALF OLE                                                 00939
21374    0214560            ALF AN                                                  00940
21375    0214524            ALF AND                                                 00941
21376    0602151            ALF  AR                                                 00942
21377    0316330            ALF ITH                                                 00943
21400    0442563            ALF MET                                                 00944
21401    0312360            ALF IC                                                  00945
21402    0637047            ALF TYP                                                 00946
21403    0256260            ALF ES                                                  00947
21404    0314560            ALF IN                                                  00948
21405    0256747            ALF EXP                                                 00949
21406    0512562            ALF RES                                                 00950
21407    0623146            ALF SIO                                                 00951
21410    0456060            ALF N                                                   00952
21411    2600732            BRU ERNEAR                                              00953
                                                                                    00954
                    ************************************************************    00954
                    ILLEGAL VARIABLE                                                00955
                    CALLED BY FETCH, FETCHP                                         00956
21412    0720774    ER16    SPB ERILL   1                                          00957
21413    0000003            DEC 3                                                   00958
21414    0652151            ALF VAR                                                 00959
21415    0312122            ALF IAB                                                 00960
21416    0432560            ALF LE                                                  00961
21417    2600732            BRU ERNEAR                                              00962
                                                                                    00963
                    ************************************************************    00963
                    ARRAY NOT SUBSCRIPTED                                           00964
                    CALLED BY FETCH                                                 00965
21420    0723737    ER17    SPB STRING  1                                          00966
21421    0000010            DEC 8                                                   00967
21422    0372151            OCT 372151                                              00968
21423    0512170            ALF RAY                                                 00969
21424    0604546            ALF  NO                                                 00970
21425    0636062            ALF T S                                                 00971
21426    0642262            ALF UBS                                                 00972
21427    0255131            ALF CRI                                                 00973
21430    0476325            ALF PTE                                                 00974
21431    0246060            ALF D                                                   00975
21432    2600732            BRU ERNEAR                                              00976
                                                                                    00977
                    ************************************************************    00977
                    ILLEGAL LEFT PART VARIABLE                                      00978
                    CALLED BY FPCK, ASSI                                           00979
21433    0720774    ER18    SPB ERILL   1                                          00980
21434    0000007            DEC 7                                                   00981
21435    0432526            ALF LEF                                                 00982
21436    0636047            ALF T P                                                 00983
21437    0215163            ALF ART                                                 00984
21440    0606521            ALF  VA                                                 00985
21441    0513121            ALF RIA                                                 00986
21442    0224325            ALF BLE                                                 00987
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21443    0776077              OCT 776077                                                                    00988
21444    2600732              BRU ERNEAR                                                                    00989
                                          ************************************************                  00990
                                          ILLEGAL SUBSCRIPT                                                  00991
                                          CALLED BY KSUBSC, SUBSC1, KSWTCH                                   00992
21445    0720774     ER19    SPB ERILL     1                                                                00993
21446    0000004              DEC 4                                                                         00994
21447    0626422              ALF SUB                                                                       00995
21450    0622351              ALF SCR                                                                       00996
21451    0314763              ALF IPT                                                                       00997
21452    0776077              OCT 776077                                                                    00998
21453    2600732              BRU ERNEAR                                                                    00999
                                          ************************************************                  01000
                                          ERROR--SUSPECT MISSING CLOSE BRACKET                              01001
                                          CALLED BY SUBINT, SUBSC1                                          01002
21454    0720757     ER20    SPB ERMISS    1                                                                01003
21455    0000001              DEC 1                                                                         01004
21456    0766077              OCT 766077                                                                    01005
21457    2600732              BRU ERNEAR                                                                    01006
                                          ************************************************                  01007
                                          INCORRECT NUMBER OF SUBSCRIPTS                                     01008
                                          CALLED BY MOSUB, FPSUB, FPSUB2                                    01009
21460    0723737     ER21    SPB STRING    1                                                                01010
21461    0000013              DEC 11                                                                        01011
21462    0373145              OCT 373145                                                                    01012
21463    0254651              ALF COR                                                                       01013
21464    0512323              ALF REC                                                                       01014
21465    0636045              ALF T N                                                                       01015
21466    0644422              ALF UMB                                                                       01016
21467    0255160              ALF ER                                                                        01017
21470    0402060              ALF OF                                                                        01018
21471    0626422              ALF SUB                                                                       01019
21472    0622351              ALF SCR                                                                       01020
21473    0314763              ALF IPT                                                                       01021
21474    0626060              ALF S                                                                         01022
21475    2600732              BRU ERNEAR                                                                    01023
                                          ************************************************                  01024
                                          ERROR--SUSPECT MISSING @THEN@                                     01025
                                          CALLED BY KIF                                                     01026
21476    0720757     ER22    SPB ERMISS    1                                                                01027
21477    0000003              DEC 3                                                                         01028
21500    0346330              OCT 346330                                                                    01029
21501    0254534              OCT 254534                                                                    01030
21502    0776077              OCT 776077                                                                    01031
21503    2600732              BRU ERNEAR                                                                    01032
                                          ************************************************                  01033
                                          NON-BOOLEAN EXPRESSION FOLLOWING @IF@                             01034
                                          CALLED BY KIF                                                     01035
21504    0723737     ER23    SPB STRING    1                                                                01036
21505    0000014              DEC 12                                                                        01037
21506    0374546              OCT 374546                                                                    01038
21507    0454022              ALF N-B                                                                       01039
21510    0464643              ALF OOL                                                                       01040
21511    0252145              ALF EAN                                                                       01041
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21512   0602567              ALF  EX                                                                          01042
21513   0475125              ALF  PRE                                                                         01043
21514   0626231              ALF  SSI                                                                         01044
21515   0464560              ALF  ON                                                                          01045
21516   0212663              ALF  AFT                                                                         01046
21517   0255160              ALF  ER                                                                          01047
21520   0343126              OCT  343126                                                                      01048
21521   0347760              OCT  347760                                                                      01049
21522   2600732              BRU  ERNEAR                                                                      01050
                                                                                                             01051
                     *********************************************************                               01052
                     SUSPECT MISSING SEMICOLON                                                               01053
                     CALLED BY KMNT3,KCMNT                                                                    01054
21523   0720757   ER24   SPB  ERMISS   1                                                                      01054
21524   0000001              DEC  1                                                                           01055
21525   0156077              OCT  156077                                                                      01056
21526   2600793              BRU  ERAT                                                                        01057
                                                                                                             01058
                     *********************************************************                               01059
                     MESSY CONDITIONAL                                                                        01060
                     CALLED BY KTHEN, KTHEN2, KELSE1, BIF                                                     01061
21527   0723737   ER25   SPB  $TRING   1                                                                      01061
21530   0000007              DEC  7                                                                           01062
21531   0374425              OCT  374425                                                                      01063
21532   0625270              ALF  SSY                                                                         01064
21533   0602346              ALF  CO                                                                          01065
21534   0452431              ALF  NDI                                                                         01066
21535   0633146              ALF  TIO                                                                         01067
21536   0452143              ALF  NAL                                                                         01068
21537   0776077              OCT  776077                                                                      01069
21540   2600732              BRU  ERNEAR                                                                      01070
                                                                                                             01071
                     *********************************************************                               01072
                     ILLEGAL LABEL                                                                            01073
                     CALLED BY GOTO                                                                           01073
21541   0720774   ER26   SPB  ERILL    1                                                                      01074
21542   0000002              DEC  2                                                                           01075
21543   0452122              ALF  LAB                                                                         01076
21544   0254360              ALF  EL                                                                          01077
21545   2600732              BRU  ERNEAR                                                                      01078
                                                                                                             01079
                     *********************************************************                               01080
                     ERROR--SUSPECT MISSING CLOSE PAREN                                                       01081
                     CALLED BY KINP1, KPRNT1, FC12, KPAREN                                                    01081
21546   0720757   ER27   SPB  ERMISS   1                                                                      01082
21547   0000001              DEC  1                                                                           01083
21550   0746077              OCT  746077                                                                      01084
21551   2600732              BRU  ERNEAR                                                                      01085
                                                                                                             01086
                     *********************************************************                               01087
                     DATA BLOCK NAME MISSING                                                                  01088
                     CALLED BY KINP2, KINP3                                                                   01088
21552   0723737   ER28   SPB  $TRING   1                                                                      01089
21553   0000011              DEC  9                                                                           01090
21554   0372421              OCT  372421                                                                      01091
21555   0632160              ALF  TA                                                                          01092
21556   0224346              ALF  BLO                                                                         01093
21557   0234260              ALF  CK                                                                          01094
21560   0452144              ALF  NAM                                                                         01095
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21561   0256044        ALF  E M                                                        01096
21562   0315262        ALF  ISS                                                        01097
21563   0314527        ALF  ING                                                        01098
21564   9776077        JCT  776077                                                     01099
21505   2600703        BRU  ERAT                                                       01100
                                           ****************************************     01101
                                           MESSY PROCEDURE CALL                        01102
                                           CALLED BY KFCT, NCPSTO, PCALL4              01103
21566   0723737   ER29  SPB  $TRING  1                                                 01104
21567   0000011        DEC  9                                                          01105
21570   0372551        OCT  372551                                                     01106
21571   0514651        ALF  ROR                                                        01107
21572   0603145        ALF   IN                                                        01108
21573   0604751        ALF   PR                                                        01109
21574   0462325        ALF  OCE                                                        01110
21575   0246451        ALF  OUR                                                        01111
21576   0256023        ALF  E C                                                        01112
21577   0214345        ALF  ALL                                                        01113
21600   0776077        OCT  776077                                                     01114
21601   2600732        BRU  ERNEAR                                                     01115
                                           ****************************************     01116
                                           TROUBLE                                     01117
                                           CALLED BY BIF5, KTHEN, BFOR, SWTCH1, DPROC3, 01118
                                              DFCPRO, KBEGIN                           01119
21602   0723737   ER30  SPB  $TRING  1                                                 01120
21603   0000003        DEC  3                                                          01121
21604   0376351        OCT  376351                                                     01122
21605   0465422        ALF  OUB                                                        01123
21606   0432560        ALF  LE                                                         01124
21607   2600732        BRU  ERNEAR                                                     01125
                                           ****************************************     01126
                                           MISSING DATA                                01127
                                           CALLED BY KDATA, K1NP2                       01128
21610   0723737   ER31  SPB  $TRING  1                                                 01129
21611   0000005        DEC  5                                                          01130
21612   0374431        OCT  374431                                                     01131
21613   0525231        ALF  SSI                                                        01132
21614   0452760        ALF  NG                                                         01133
21615   0242153        ALF  DAT                                                        01134
21616   0216077        OCT  0216077                                                    01135
21617   2600703        BRU  ERAT                                                       01136
                                           ****************************************     01137
                                           DECLARATION NOT FOLLOWING BEGIN             01138
                                           CALLED BY BPROC2, DREAL1, DA2               01139
21620   0723737   ER32  SPB  $TRING  1                                                 01140
21621   0000013        DEC  11                                                         01141
21622   0372425        OCT  372425                                                     01142
21623   0234321        ALF  CLA                                                        01143
21624   0512163        ALF  RAT                                                        01144
21625   0314645        ALF  IUN                                                        01145
21626   0604546        ALF   NO                                                        01146
21627   0636026        ALF  T F                                                        01147
21630   0464343        ALF  OLL                                                        01148
21631   0466631        ALF  OWI                                                        01149
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21632   0452760           ALF  NG                                                                                               01150
21633   0222527           ALF  BEG                                                                                              01151
21634   0314560           ALF  IN                                                                                               01152
21635   2600703           BRU  ERAT                                                                                             01153
                  *********************************************************                                                     01154
                  ILLEGAL DECLARATION                                                                                           01155
                  CALLED BY BPROC1, BPROC, BPAREN, SPCSYM,                                                                      01156
                    KPARAM, WHOSYM, INDEC, ISWTCH, DREAL,                                                                       01157
                    OWNCHK, KDATA, KARR1, KAB, ABLP2, BSWTCH,                                                                    01158
                    DSW1, DBEGIN                                                                                                 01159
21636   0720774   ER33    SPB  ERILL   1                                                                                        01160
21637   0000004           DEC  4                                                                                                01161
21640   0242523           ALF  DEC                                                                                              01162
21641   0432151           ALF  LAR                                                                                              01163
21642   0216331           ALF  ATI                                                                                              01164
21643   0464560           ALF  ON                                                                                               01165
21644   2600732           BRU  ERNEAR                                                                                           01166
                  *********************************************************                                                     01167
                  SYMBOL ALREADY DEFINED                                                                                        01168
                  CALLED BY UNB6, UNB4, UNB3, BLIST, BLIST1                                                                     01169
21645   0044440   ER34A   LDA  BS      2                                                                                        01170
21646   0300021           STA  XR41                                                                                            01171
21647   1001704   ER34    DLD  XMOVE                                                                                            01172
21650   2400000           MOV  0                                                                                                01173
21651   2506013           SXG  0                                                                                        0*01174
21652   0646252           LDX  ERX1    2                                                                                        01175
21653   0045000           LDA  ITABLE  2                                                                                        01176
21654   2001702           EXT  ETMASK                                                                                           01177
21655   0300002           STA  XR02                                                                                            01178
21656   0720744           SPB  OUTID   1                                                                                        01179
21657   0723737           SPB  STRING  1                                                                                        01180
21660   0000005           DEC  5                                                                                                01181
21661   0602425           OCT  602425                                                                                           01182
21662   0263145           ALF  FIN                                                                                              01183
21663   0252460           ALF  ED                                                                                               01184
21664   0656631           ALF  TWI                                                                                              01185
21665   0252560           ALF  CE                                                                                               01186
21666   2600703           BRU  ERAT                                                                                             01187
                  *********************************************************                                                     01188
                  ILLEGAL OCCURRENCE OF -BEGIN-                                                                                 01189
                  CALLED BY DBEGIN                                                                                              01190
21667   0720774   ER35    SPB  ERILL   1                                                                                        01191
21670   0000010           DEC  8                                                                                                01192
21671   0462323           ALF  OCC                                                                                              01193
21672   0645151           ALF  URR                                                                                              01194
21673   0254523           ALF  ENC                                                                                              01195
21674   0256040           ALF  E O                                                                                              01196
21675   0466034           OCT  466034                                                                                           01197
21676   0222527           ALF  BEG                                                                                              01198
21677   0314534           OCT  314534                                                                                           01199
21700   0775077           OCT  775077                                                                                           01200
21701   2600703           BRU  ERAT                                                                                             01201
                  *********************************************************                                                     01202
                  BOUND PAIR ERROR--TOO MANY COLONS                                                                            01203
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                                                          CALLED BY BCOLON                                        01204
  21702  0723737   ER36   SPB $TRING   1                                                                          01205
  21703  0000017          DEC 15                                                                                  01206
  21704  0372246          OCT 372246                                                                              01207
  21705  0644524          ALF UND                                                                                 01208
  21706  0604721          ALF  PA                                                                                 01209
  21707  0315160          ALF IR                                                                                  01210
  21710  0255151          ALF ERR                                                                                 01211
  21711  0405140          ALF OR-                                                                                 01212
  21712  0406346          ALF -TO                                                                                 01213
  21713  0406044          ALF O M                                                                                 01214
  21714  0214570          ALF ANY                                                                                 01215
  21715  0601313          OCT 601313                                                                              01216
  21716  0131313          OCT 131313                                                                              01217
  21717  0131313          OCT 131313                                                                              01218
  21720  0131313          OCT 131313                                                                              01219
  21721  0131313          OCT 131313                                                                              01220
  21722  0126260          OCT 126260                                                                              01221
  21723  2600703          BRU ERAT                                                                                01222
                          ***********************************************                                         01223
                          NO COLON IN BOUND PAIR                                                                  01224
                          CALLED BY KAB                                                                           01225
  21724  0723737   ER37   SPB $TRING   1                                                                          01226
  21725  0000007          DEC 7                                                                                   01227
  21726  0374546          OCT 374546                                                                              01228
  21727  0601360          OCT 601360                                                                              01229
  21730  0314560          ALF IN                                                                                  01230
  21731  0224664          ALF BOU                                                                                 01231
  21732  0452460          ALF ND                                                                                  01232
  21733  0472131          ALF PAI                                                                                 01233
  21734  0516060          ALF R                                                                                   01234
  21735  2600703          BRU ERAT                                                                                01235
                          ***********************************************                                         01236
                          UB LESS THAN LB                                                                         01237
                          CALLED BY KAB                                                                           01238
  21736  0723737   ER38   SPB $TRING   1                                                                          01239
  21737  0000033          DEC 27                                                                                  01240
  21740  0372646          OCT 372646                                                                              01241
  21741  0516351          OCT 516351                                                                              01242
  21742  0214512          OCT 214512                                                                              01243
  21743  0625021          ALF S A                                                                                 01244
  21744  0515121          ALF RRA                                                                                 01245
  21745  0706260          ALF YS                                                                                  01246
  21746  0516445          ALF RUN                                                                                 01247
  21747  0602221          ALF  BA                                                                                 01248
  21750  0234260          ALF CKW                                                                                 01249
  21751  0215124          ALF ARD                                                                                 01250
  21752  0624040          ALF S--                                                                                 01251
  21753  0454663          ALF NOT                                                                                 01252
  21754  0602143          ALF  AL                                                                                 01253
  21755  0274643          ALF GOL                                                                                 01254
  21756  0126237          OCT 126237                                                                              01255
  21757  0644747          ALF UPP                                                                                 01256
  21760  0255160          ALF ER                                                                                  01257
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21761   0224664           ALF  BOU                                                    01258
21762   0452460           ALF  ND                                                     01259
21763   0432562           ALF  LES                                                    01260
21764   0626063           ALF  S T                                                    01261
21765   0302145           ALF  HAN                                                    01262
21766   0604340           ALF   LO                                                    01263
21767   0602551           ALF  WER                                                    01264
21770   0602246           ALF   BO                                                    01265
21771   0644524           ALF  UND                                                    01266
21772   0776077           OCT  776077                                                 01267
21773   2600703           BRU  ERAT                                                   01268
                                                                                      01269
                    *********************************************************         01269
                    ILLEGAL OCCURRENCE OF DECLARATOR                                  01270
                    CALLED BY BSWTCH, DA2, DOWN                                       01271
21774   0720774   ER39    SP3  ERILL    1                                             01272
21775   0000011           DEC  9                                                      01273
21776   0462323           ALF  OCC                                                    01274
21777   0645151           ALF  URR                                                    01275
22000   0254523           ALF  ENC                                                    01276
22001   0256046           ALF  E O                                                    01277
22002   0266024           ALF  F D                                                    01278
22003   0252343           ALF  ECL                                                    01279
22004   0215121           ALF  ARA                                                    01280
22005   0634651           ALF  TOR                                                    01281
22006   0776077           OCT  776077                                                 01282
22007   2600703           BRU  ERAT                                                   01283
                                                                                      01284
                    *********************************************************         01284
                    ILLEGAL ASSIGNMENT TO FORMAL PARAMETER                            01285
22010   0720774   ER40    SP3  ERILL    1                                             01286
22011   0000013           DEC  11                                                     01287
22012   0216262           ALF  ASS                                                    01288
22013   0312745           ALF  IGN                                                    01289
22014   0442545           ALF  MEN                                                    01290
22015   0636063           ALF  T T                                                    01291
22016   0466026           ALF  O F                                                    01292
22017   0465144           ALF  ORM                                                    01293
22020   0214360           ALF  AL                                                     01294
22021   0472151           ALF  PAR                                                    01295
22022   0214425           ALF  AME                                                    01296
22023   0632551           ALF  TER                                                    01297
22024   0776077           OCT  776077                                                 01298
22025   2602176           BRU  ERLINE                                                 01299
                                                                                      01300
                    *********************************************************         01300
                    NOT IN                                                            01301
                    CALLED BY MSYMB                                                    01302
22026   1001704   ER41    OLD  XMOVE                                                  01303
22027   2400000           MOV  0                                                      01304
22030   0723737           SPB  $TRING   1                                             01305
22031   0000003           DEC  3                                                      01306
22032   0374546           OCT  374540                                                 01307
22033   0636031           ALF  T I                                                    01308
22034   0456060           ALF  N                                                      01309
22035   2600732           BRU  ERNEAR                                                 01310
                                                                                      01311
                    *********************************************************         01311
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						UNDEFINED LABEL IN PROGRAM	01312
						CALLED BY WRAPUP	01313
22036	2506013	ER42	SXG 0				0*01314
22037	0723737		SPB STRING	1			01315
22040	0000004		DEC 4				01316
22041	0644524		ALF UND				01317
22042	0252631		ALF EFI				01318
22043	0452524		ALF NED				01319
22044	0133772		OCT 0133772				01320
22045	0641610	ULAB	LDX ZERO	2			01321
22046	0600002		LDX XR02	3			01322
22047	0005000		LDA ITABLE	3		POINTER WORD IN ITABLE	01323
22050	2511012		SRD 10				01324
22051	0306001		STA JUNK+1			NEXT ENTRY IN CLASS	01325
22052	2504002		LDZ				01326
22053	2512212		SLD 10				01327
22054	0300022		STA XR42			ETABLE POINTER	01328
22055	0065001		LDA ITABLE+13			IDENTIFIER [INTERNAL] WORD	01329
22056	2514001		SMI				01330
22057	2602121		BRU ULAB2			NEGATIVE -- GOTO NEXT	01331
22060	0306000		STA JUNK				01332
22061	0201641		SUB LBIT				01333
22062	2514001		SMI				01334
22063	2602121		BRU ULAB2			NOT LABEL -- GOTO NEXT	01335
22064	2001645		EXT DMASK				01336
22065	2516002		BNZ				01337
22066	2602121		BRU ULAB2			DEFINED -- GOTO NEXT	01338
22067	2506113		SXG 4				4*01339
22070	0006000		LDA JUNK				01340
22071	2001634		EXT 017777				01341
22072	2101706		CAB DTYPE				01342
22073	2602103		BRU ULAB3			LABEL	01343
22074	2602111		BRU ULAB4			DATA	01344
22075	0723737		SPB STRING	1			01345
22076	0000003		DEC 3				01346
22077	0626031		ALF SWI				01347
22100	0632330		ALF TCH				01348
22101	0606060		ALF				01349
22102	2602116		BRU ULAB5				01350
22103	0723737	ULAB3	SPB STRING	1			01351
22104	0000003		DEC 3				01352
22105	0432122		ALF LAB				01353
22106	0254360		ALF EL				01354
22107	0606060		ALF				01355
22110	2602116		BRU ULAB5				01356
22111	0723737	ULAB4	SPB STRING	1			01357
22112	0000003		DEC 3				01358
22113	0242163		ALF DAT				01359
22114	0216060		ALF A				01360
22115	0606060		ALF				01361
22116	0720744	ULAB5	SPB OUTID	1		OUTPUT THE UNDEFINED IDENTIFIER	01362
22117	0723062		SPB SCRT	1			01363
22120	2506013		SXG 0				0*01364
22121	0606001	ULAB2	LDX JUNK+1	3			01365

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22122    0577777        BXH  1           3                                                      01366
22123    2602047        BRU  ULAB+2                                                             01367
22124    1440002        INX  2           2                                                      01368
22125    0457700        BXL  64          2                                                      01369
22126    2602046        BRU  ULAB+1                                                             01370
22127    2600143        BRU  ENDJOB                                                             01371
                                                                                                01372
                        *********************************************************              01373
                        SPURIOUS QUOTE                                                          01374
                        CALLED BY STRBL, FULL, BQUOTE                                           01375
22130    0723737   ER43 SPB  $TRING      1                                                      01376
22131    0000004        DEC  4                                                                  01377
22132    0376247        OCT  376247                                                             01378
22133    0645131        ALF  URI                                                                01379
22134    0466462        ALF  OUS                                                                01380
22135    0603460        OCT  603460                                                             01381
22136    2600703        BRU  ERAT                                                               01382
                        PROGRAM INCOMPLETE                                                      01383
                        CALLED BY CFUDGE                                                        01384
22137    0723737   ER44 SPB  $TRING      1                                                      01385
22140    0000007        DEC  7                                                                  01386
22141    0374751        OCT  374751                                                             01387
22142    0462751        ALF  OGR                                                                01388
22143    0214460        ALF  AM                                                                 01389
22144    0314523        ALF  INC                                                                01390
22145    0404447        ALF  OMP                                                                01391
22146    0432563        ALF  LET                                                                01392
22147    0256060        ALF  E                                                                  01393
22150    2600143        BRU  ENDJOB                                                             01394
                                                                                                01395
                        *********************************************************              01396
                        ERROR IN FOR STATEMENT                                                  01397
                        CALLED BY BFOR, KFOR2, KWHILE, KSTEP, KUNT6                             01398
22151    0723737   ER45 SPB  $TRING      1                                                      01399
22152    0000010        DEC  8                                                                  01400
22153    0372551        OCT  372551                                                             01401
22154    0514651        ALF  RUR                                                                01402
22155    0603145        ALF   IN                                                                01403
22156    0602040        ALF   FO                                                                01404
22157    0516062        ALF  R S                                                                01405
22160    0632163        ALF  TAT                                                                01406
22161    0254425        ALF  EME                                                                01407
22162    0456360        ALF  NT                                                                 01408
22163    2600732        BRU  ERNEAR                                                             01409
                                                                                                01410
                        *********************************************************              01411
                        ERROR IN POWER SUBROUTINE                                               01412
                        CALLED BY BASEMI, BASEZR                                                01413
22164    0305712   ER46 FST  ATEMP                                                              01414
22165    1725252        STX  ERX1        1                                                      01415
22166    3500002        XAG              A                                                      01416
22167    0723662        SPB  $CRT        1                                                      01417
22170    0723154        SPB  $PRINT      1                                                      01418
22171    0723737        SPB  $TRING      1                                                      01419
22172    0000001        DEC  1
```

```
22173   0605760              OCT 605760                                                              01420
22174   3005712              FLD ATEMP                                                               01421
22175   0723154              SPB $PRINT   1                                                          01422
                                                  *************************************************  01423
22176   0621654   ERLINE LDX GOEND     1                                                             01424
22177   1726252   *ERLIN STX ERX1      1                                                             01425
22200   1746253          STX ERX2      2                                                             01426
22201   0723737          SPB $TRING    1                                                             01427
22202   0000004          DEC 4                                                                       01428
22203   0602163          ALF  AT                                                                     01429
22204   0604331          ALF  LI                                                                     01430
22205   0452560          ALF NE                                                                      01431
22206   0454633          ALF NO.                                                                     01432
22207   0060001          LDA 1         3                                                             01433
22210   2504000          MAJ                                                                         01434
22211   1706256          STX PRX3      3                                                             01435
22212   0601532          LDX ONE       3                                                             01436
22213   0621003          LDX 060       1                                                             01437
22214   1726264          STX PUOT      1                                                             01438
22215   0722217          SPB *+2       1                                                             01439
22216   2602221          BRU *+3                                                                     01440
22217   1726255          STX PRX1      1                                                             01441
22220   2603232          BRU PR6                                                                     01442
22221   6006261          LDA CRUMP                                                                   01443
22222   2504032          ADD                                                                         01444
22223   0306261          STA CRUMP                                                                   01445
22224   0201570          SUB FIVE                                                                    01446
22225   2514002          BZE                                                                         01447
22226   2600143          BRU ENDJOB                                                                  01448
22227   0626252          LDX ERX1      1                                                             01449
22230   0646253          LDX ERX2      2                                                             01450
22231   2620001          BRU 1         1                                                             01451
                                                  *************************************************  01452
                                                                                                     01453
22232   1725736   ER47   STX /5112     1           LOG OF ZERO OR NEGATIVE NUMBER                    01454
22233   0720774          SPB ERILL     1                                                             01455
22234   0000005          DEC 5                                                                       01456
22235   0215127          ALF ARG                                                                     01457
22236   0644425          ALF UME                                                                     01458
22237   0456360          ALF NT                                                                      01459
22240   0634660          ALF TO                                                                      01460
22241   0434560          ALF LN                                                                      01461
22242   0722177          SPB *ERLIN    1                                                             01462
22243   0625736          LDX /5112     1                                                             01463
22244   2620001          BRU 1         1                                                             01464
                                                  *************************************************  01465
                                                                                                     01466
22245   0723737   ER48   SPB $TRING    1           ERROR IN SORT SUBROUTINE                          01467
22246   0000003          DEC 3                                                                       01468
22247   0376250          OCT 376250                                                                  01469
22250   0516360          ALF RT                                                                      01470
22251   0462660          ALF OF                                                                      01471
22252   0723154          SPB $PRINT    1                                                             01472
22253   2602176          BRU ERLINE                                                                  01473
```

```
                                                                    **************************************************   01474
                                                                                                                       01475
     22254   0723737   ER49   SPB  STRING  1              SUBSCRIPT OUT OF BOUNDS                                       01476
     22255   0000010          DEC  8                                                                                   01477
     22256   0376264          OCT  376264                                                                              01478
     22257   0226223          ALF  BSC                                                                                 01479
     22260   0513147          ALF  RIP                                                                                 01480
     22261   0636046          ALF  T O                                                                                 01481
     22262   0646360          ALF  UT                                                                                  01482
     22263   0462660          ALF  OF                                                                                  01483
     22264   0224664          ALF  BOU                                                                                 01484
     22265   0452462          ALF  NDS                                                                                 01485
     22266   2602176          BRU  ERLINE                                                                              01486
                                                                    **************************************************   01487
                                                                    INTEGER TOO LARGE                                  01488
                                                                    CALLED BY UNFLOT                                   01489
     22267   0723737   ER50   SPB  STRING  1                                                                           01490
     22270   0000006          DEC  6                                                                                   01491
     22271   0373145          OCT  373145                                                                              01492
     22272   0632527          ALF  TEG                                                                                 01493
     22273   0255160          ALF  ER                                                                                  01494
     22274   0634646          ALF  TOO                                                                                 01495
     22275   0604321          ALF   LA                                                                                 01496
     22276   0512725          ALF  RGE                                                                                 01497
     22277   2600143          BRU  ENDJOB                                                                              01498
                                                                    **************************************************   01499
                                                                    OVERFLOW                                           01500
     22300   0723737   ER51   SPB  STRING  1                                                                           01501
     22301   0000003          DEC  3                                                                                   01502
     22302   0374665          OCT  374665                                                                              01503
     22303   0255126          ALF  ERF                                                                                 01504
     22304   0434666          ALF  LOW                                                                                 01505
     22305   0722177          SPB  *ERLIN  1                                                                           01506
     22306   3003546          FLO  MAXPOS                                                                              01507
     22307   0625740          LDX  /6154   1                                                                           01508
     22310   2620001          BRU  1       1                                                                           01509
                                                                    **************************************************   01510
                                                                    ILLEGAL CALL BY VALUE                              01511
                                                                    CALLED BY SPECS, SPECP, SPECA, SPECD, VALUE        01512
     22311   0720774   ER52   SPB  ERILL   1                                                                           01513
     22312   0000005          DEC  5                                                                                   01514
     22313   0252143          ALF  CAL                                                                                 01515
     22314   0436022          ALF  L B                                                                                 01516
     22315   0706065          ALF  Y V                                                                                 01517
     22316   0214364          ALF  ALU                                                                                 01518
     22317   0256060          ALF  E                                                                                   01519
     22320   2600703          BRU  ERAT                                                                                01520
                                                                    **************************************************   01521
                                                                    INCORRECT NUMBER OF PARAMETERS                     01522
     22321   0666000   ER53   LDX  JUNK    3                                                                           01523
     22322   0723737          SPB  STRING  1                                                                           01524
     22323   0000013          DEC  11                                                                                  01525
     22324   0373145          OCT  373145                                                                             01526
     22325   0234651          ALF  COR                                                                                 01527
```

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22326   0512523          ALF REC                          01528
22327   9636045          ALF T N                          01529
22330   0644422          ALF UMB                          01530
22331   0255160          ALF ER                           01531
22332   0462660          ALF OF                           01532
22333   0472151          ALF PAR                          01533
22334   0214425          ALF AME                          01534
22335   0632551          ALF TER                          01535
22336   0626060          ALF S                            01536
22337   2602176          BRU ERLINE                       01537
                                                          01538
                ****************************************  01539
                MISMATCHED PARAMETERS                    01540
22340   0606000   ER54   LDX JUNK     3                   01541
22341   0723737          SPB STRING   1                   01542
22342   0000012          DEC 10                           01543
22343   0374721          OCT 374721                       01544
22344   0512144          ALF RAM                          01545
22345   0256325          ALF ETE                          01546
22346   0516063          ALF R T                          01547
22347   0704725          ALF YPE                          01548
22350   0626024          ALF S D                          01549
22351   0466045          ALF O N                          01550
22352   0465360          ALF OT                           01551
22353   0442163          ALF MAT                          01552
22354   0233060          ALF CH                           01553
22355   2602176          BRU ERLINE                       01554
                                                          01555
                ****************************************  01556
                ILLEGAL ENTRY TO FOR STATEMENT           01557
22356   0720774   ER55   SPB ERILL    1                   01558
22357   0000010          DEC 8                            01559
22360   0254563          ALF ENT                          01560
22361   0517060          ALF RY                           01561
22362   0634060          ALF TO                           01562
22363   0264651          ALF FOR                          01563
22364   0606263          ALF  ST                          01564
22365   0216325          ALF ATE                          01565
22366   0442545          ALF MEN                          01566
22367   0636060          ALF T                            01567
22370   2602176          BRU ERLINE                       01568
                                                          01569
                ****************************************  01570
                ILLEGAL PROCEDURE DECLARATION            01571
22371   0720774   ER56   SPB ERILL    1                   01572
22372   0000010          DEC 8                            01573
22373   0374751          OCT 374751                       01574
22374   0462325          ALF OCE                          01575
22375   0246451          ALF DUR                          01576
22376   0256024          ALF E D                          01577
22377   0252343          ALF ECL                          01578
22400   0215121          ALF ARA                          01579
22401   0633146          ALF TIO                          01580
22402   0453360          ALF N.                           01581
22403   2600703          BRU ERAT
                ****************************************
                ILLEGAL ARGUMENT TO EXP
```

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22404   1725736   ER57   STX /5112    1                                                            01582
22405   0720774          SPB ERILL    1              ILLEGAL                                        01583
22406   0000005          DEC 5                                                                      01584
22407   0215127          ALF ARG                                                                    01585
22410   0644425          ALF UME                                                                    01586
22411   0456360          ALF NT                                                                     01587
22412   0634660          ALF TO                                                                     01588
22413   0256747          ALF EXP                                                                    01589
22414   0722177          SPB *ERLIN   1                                                             01590
22415   0625736          LDX /5112    1                                                             01591
22416   2620001          BRU 1        1                                                             01592
                                                                                                    01593
                         ***************************************************                        01594
                         INCORRECT INPUT FORMAT                                                     01595
                         CALLED BY ROUTCN, ER7
22417   0723737   ER60   SPB $TRING   1                                                             01596
22420   0000012          DEC 10                                                                     01597
22421   0373145          OCT 373145                                                                 01598
22422   0234651          ALF COR                                                                    01599
22423   0512523          ALF REC                                                                    01600
22424   0636031          ALF T I                                                                    01601
22425   0454764          ALF NPU                                                                    01602
22426   0636026          ALF T F                                                                    01603
22427   0405144          ALF ORM                                                                    01604
22430   0216337          OCT 216337                                                                 01605
22431   0512563          ALF RET                                                                    01606
22432   0517055          OCT 517055                                                                 01607
22433   2506013          SXG 0                                RETURN FOR ANOTHER TRY            0*01608
22434   0625322          LDX TEMP*    1                                                             01609
22435   2620000          BRU 0        1                                                             01610
                                                                                                    01611
                         ***************************************************                        01612
                         TOO MUCH INPUT                                                             01613
                         CALLED BY ROUTCN
22436   0723737   ER61   SPB $TRING   1                                                             01614
22437   0000005          DEC 5                                                                      01615
22440   0376346          OCT 376346                                                                 01616
22441   0405644          ALF O M                                                                    01617
22442   0642330          ALF UCH                                                                    01618
22443   0603145          ALF  IN                                                                    01619
22444   0476463          ALF PUT                                                                    01620
22445   0377777          OCT 377777                                                                 01621
22446   2506013          SXG 0                                                                  0*01622
22447   0723662          SPB SCRT     1               MAKE NICE OUTPUT                               01623
22450   0625322          LDX TEMP*    1                                                             01624
22451   2620002          BRU 2        1                                                             01625
                                                                                                    01626
                         ***************************************************                        01627
                         NOT ENOUGH INPUT                                                           01628
                         CALLED BY DONEIN
22452   2506113   ER62   SXG 4                                                                  4*01629
22453   0723737          SPB $TRING   1                                                             01630
22454   0000012          DEC 10                                                                     01631
22455   0604540          OCT 604540                                                                 01632
22456   0636025          ALF T E                                                                    01633
22457   0454664          ALF NOU                                                                    01634
22460   0273060          ALF GH                                                                     01635
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22461   0314547          ALF  INP                                                                    01636
22462   0646333          ALF  UT,                                                                    01637
22463   0602124          ALF   AD                                                                    01638
22464   0246044          ALF  D M                                                                    01639
22465   0465125          ALF  ORE                                                                    01640
22406   0377755          OCT  377755                                                                 01641
22467   0001610          LDA  TWO                               GET MORE INPUT                        01642
22470   0720000          SPB  0         1                                                            01643
22471   2565055          SXG  2                                                                     2*01644
22472   0621610          LDX  ZERO      1                                                            01645
22473   0601662          LDX  MUDC1     3                                                            01646
22474   0641610          LDX  TWO       2                                                            01647
22475   2600245          BRU  INLOOP                                                                 01648
        22417   ER00L    EQU  ER60                                                                   01649
        22430   ER01L    EQU  ER61                            '                                      01650
        22452   ER02L    EQU  ER62                                                                   01651
                                                                                                  NAM01652
                                                                                                  EJT01653
```

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22476   0005747   RDDISK  LDA RDBLK+3                                                            01654
22477   2514002           BZE                                                                    01655
22500   2602476           BRU *-2           CHECK FOR COMPLETION OF LAST READ                    01656
22501   2514000           BOD               CHECK FOR ERRORS                                     01657
22502   2602506           BRU *+4                                                                01658
22503   2510022           SKA 18                                                                 01659
22504   2516000           BEV                                                                    01660
22505   2602505           BRU *                                                                  01661
22506   1726323           STX SAVE*    1    SAVE RETURN                                          01662
22507   0605707           LDX DBLOCK   3    SET POINTER FOR WRITE                                01663
22510   0625755           LDX VECLO    1    FIND DOPE VECTOR                                     01664
22511   1020002           BLD 2        1    SWAP BUFFERS                                         01665
22512   2504005           XAU                                                                    01666
22513   1320002           BST 2        1                                                         01667
22514   0305707           STA DBLOCK                                                             01668
22515   2504005           XAU                                                                    01669
22516   0101631           ADD FOUR                                                               01670
22517   0305745           STA RDBLK+1       SET FOR NEXT READ                                    01671
22520   0305752           STA WRTBLK+1                                                           01672
22521   0625707           LDX DBLOCK   1                                                         01673
22522   2504002           LDZ                                                                    01674
22523   0320001           STA 1        1    SET WRITE FLAG                                       01675
22524   0320002           STA 2        1    SET ATOMIC ELEMENT POINTER                          01676
22525   0005750           LDA RDBLK+4                                                            01677
22526   0320000           STA 0        1                                                         01678
22527   2504032           ADD                                                                    01679
22530   2101624           CAB D40                                                                01680
22531   2602534           BRU *+3           MORE TO GO                                           01681
22532   2602566           BRU LAST          HES ON HIS LAST SHOT                                 01682
22533   2600126           BRU RUNOUT        I TOLD HIM ONCE                                      01683
22534   0305750           STA RDBLK+4                                                            01684
22535   2504040           CHS                                                                    01685
22536   0305746           STA RDBLK+2                                                            01686
22537   2504002           LDZ                                                                    01687
22540   0305747           STA RDBLK+3                                                            01688
22541   0060001           LDA 1        3                                                         01689
22542   2514002           BZE                                                                    01690
22543   2602561           BRU SWAP          OLD BUFFER WAS NOT WRITTEN                           01691
22544   0060000           LDA 0        3    PICK UP DISK ADDRESS                                 01692
22545   2504040           CHS                                                                    01693
22546   0305753           STA WRTBLK+2                                                           01694
22547   2504002           LDZ                                                                    01695
22550   0305754           STA WRTBLK+3                                                           01696
22551   0360001           STA 1        3    CLEAR WRITE FLAG                                     01697
22552   0001570           LDA FIVE          FLAG FOR DISK OPERATION                              01698
22553   0720000           SPB 0        1                                                         01699
22554   0005751           DEC WRTBLK                                                             01700
22555   2506015           SET PST                                                                01701
22556   0005754           LDA WRTBLK+3                                                           01702
22557   2514002           BZE               WAIT FOR LACEY                                       01703
22560   2602556           BRU *-2                                                                01704
22561   0001570   SWAP    LDA FIVE          FLAG FOR DISK OPERATION                              01705
22562   0720000           SPB 0        1                                                         01706
22563   0005744           DEC RDBLK                                                              01707
```

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22564   2506015           SET  PST                    DO LACEYS WORK FOR HIM              01708
22565   2602571           BRU  *+4                     FIX UP THINGS                       01709
                                                                                           01710
                                                                                           01711
22566   2504002   LAST    LDZ                                                              01712
22567   0317774           STA  DSKFLG                  SET END OF FILE                     01712
22570   2602544           BRU  SWAP-13                                                     01713
22571   0626323           LDX  SAVE*    1              RESTORE EXIT                        01714
22572   2620001           BRU  1        1              EXIT                                01715
                                                                                           01716
                                                                                           01717
        22476   WRTDSK  EQU  RDDISK                                                         01718
22573   2506113   SETUP   SXG  4                       WHEN IN DOUBT                     4*01719
22574   0006262           LDA  PAVAIL                                                      01720
22575   0101627           ADD  D68                                                         01721
22576   2001632           EXT  077                                                         01722
22577   0201631           SUB  FOUR                                                        01723
22600   2504004           LDA                                                              01724
22601   0101630           ADD  D128                                                        01725
22602   1306000           DST  JUNK                    SAVE THEM                           01726
22603   0201631           SUB  FOUR                                                        01727
22604   0305755           STA  VECLO                                                       01728
22605   0625755           LDX  VECLO    1              POINTER TO DOPE VECTOR FOR FILE     01729
22606   1006000           DLD  JUNK                                                        01730
22607   0305707           STA  DBLOCK                                                      01731
22610   1320002           DST  2        1                                                  01732
22611   1360022           DST  XR42                                                        01733
22612   0101627           ADD  D68                     CHECK FOR STORAGE EXHAUSTED         01734
22613   2106263           CAS  VAVAIL                                                      01735
22614   2602617           BRU  *+3                                                         01736
22615   2601116           BRU  ER1                                                         01737
22616   2601116           BRU  ER1                                                         01738
22617   0001626           LDA  D64                                                         01739
22620   2504006           MAG                                                              01740
22621   1340002           DST  2        2                                                  01741
22622   1360002           DST  2        3                                                  01742
22623   2504006           MAG                                                              01743
22624   1340000           DST  0        2                                                  01744
22625   1360000           DST  0        3                                                  01745
22626   0020003   SETUP1  LDA  3        1              INITIAL DISK OPERATION              01746
22627   0101631           ADD  FOUR                                                        01747
22630   0305745           STA  DSKOP+1                                                     01748
22631   2504022           LDO                                                              01749
22632   0305756           STA  DKFLG1                                                      01750
22633   2504002           LDZ                                                              01751
22634   0305747           STA  DSKOP+3                                                     01752
22635   0305750           STA  RDBLK+4                                                     01753
22636   2504040           CHS                                                              01754
22637   0305746           STA  DSKOP+2                                                     01755
22640   0001057           LDA  RDOP                                                        01756
22641   0305744           STA  DSKOP                                                       01757
22642   0001060           LDA  WRTOP                                                       01758
22643   0305751           STA  WRTBLK                                                      01759
22644   0001570           LDA  FIVE                                                        01760
22645   0720000           SPB  0        1                                                  01761
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22646   0005744        DEC  DSKOP                                                              01762
22647   2506015        SET  PST           DO LACEYS WORK FOR HIM                               01763
22650   2504102        LMO                                                                     01764
22651   0317774        STA  DSKFLG        STE END OF FILE OFF                                   01765
22652   2506033        SXG  1                                                                 1*01766
22653   0722476        SPB  RDDISK    1   START LOAD OF SECOND BUFFER                          01767
22654   2506013        SXG  0                                                                 0*01768
22655   2620001        BRU  1         1                                                        01769
                                                                                            NAM01770
                                                                                            EJT01771
```

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                22656      LINK    BSS  0                                                                          01772*
       22656    0005756            LDA  DKFLG1                                                                     01773
       22657    2516002            BNZ                                                                             01774
       22660    0722476            SPB  WRTDSK    1      WRITE OUT DISK BUFFER IF NECESSARY                        01775
                                                                                                                  01776*
                                               SCAN INPUT NAME                                                    01777*
       22661    0001603            LDA  060             PRESET TO BLANKS                                           01778*
       22662    2504006            MAQ                                                                             01779*
       22663    0305722            STA  CFFA+2          SET TO SCEARCH FOR DATA FILE                              01780*
       22664    0001603            LDA  060                                                                        01781*
       22665    1306264            DST  POUT                                                                       01782*
       22666    1306266            DST  POUT+2                                                                     01783*
       22667    1306270            DST  POUT+4                                                                     01784*
       22670    1705712            STX  ATEMP     3      SAVE LOCATION OF LINE NUMBER                              01785*
       22671    0601610            LDX  ZERO      0      WORD COUNT                                                01786*
       22672    0601610            LDX  ZERO      3      CHARACTER COUNT                                           01787*
       22673    0621010    NXWRD   LDX  ZERO      1      SHIFT CONTROL                                             01788*
       22674    0040001            LDA  1         2      PICK THREE CHARACTERS FROM THE NAME                       01789*
       22675    2504006            MAQ                   AND SAVE IN THE Q-REG.                                    01790*
       22676    2532207            SLD  7         1                                                                01791*
       22677    2001646            EXT  CHMASK                                                                     01792*
       22700    2101632            CAB  077              QUIT ON A FILL CHAR.                                      01793*
       22701    2602703            BRU  *+2                                                                        01794*
       22702    2602724            BRU  FINI                                                                       01795*
       22703    0306264            STA  POUT      3      OTHERWISE CONT. TO BUILD NAME                             01796*
       22704    0203566            SUB  STAR             LOOK FOR AN ASTERISK                                      01797*
       22705    2516002            BNZ  INXT             IF NOT PROCESS NEXT CHAR                                  01798*
       22706    2602714                                                                                           
       22707    0477772            BXL  6         3      IF THE ASTERISK IS IN THE 7TH POSITION                    01799*
       22710    2602714            BRU  INXT             MARK FOR A LIBRARY SCEARCH                                01800*
       22711    0001617            LDA  010                                                                        01801*
       22712    0305722            STA  CFFA+2                                                                     01802*
       22713    2602724            BRU  FINI                                                                       01803*
       22714    1460001    INXT    INX  1         3      INCREMENT POINTER FOR NEXT CHAR                           01804*
       22715    1420000            INX  6         1                                                                01805*
       22716    0437756            BXL  18        1      HAVE WE FINISHED WITH THE CURRENT WORD                    01806*
       22717    2602674            BRU  NXWRD+1          NO                                                        01807*
       22720    1440001            INX  1         2      YEP - GET NEXT WORD                                       01808*
       22721    1400001            INX  1         0                                                               01809*
       22722    0417775            BXL  3         0      ONLY UNPACK 3 WORDS                                       01810*
       22723    2602673            BRU  NXWRD                                                                      01811*
       22724    0723605    FINI    SPB  PACK      1      NOW PACK THE NAME SCANNED                                 01812*
       22725    1006264            DLD  POUT                                                                       01813*
       22726    1305720            DST  CFFA             AND SET UP THE CALL FOR FILE ADDRESS                      01814*
       22727    0003571            LDA  CEOF                                                                       01815*
       22730    0305723            STA  CFFA+3                                                                     01816*
                                                                                                                  01817*
                                               MOVE CALL TO TTY OUTPUT BUFFER                                     01818*
                                                                                                                  01819*
       22731    0001566            LDA  DM5                                                                        01820*
       22732    2504006            MAQ                   SET Q TO MOVE 5 WORDS                                     01821*
       22733    2506010            SET  PBK                                                                        01822*
       22734    0604001            LDX  OPOINT    3                                                                01823*
       22735    0000003    FOB     LDA  3             OPOINT + 5 MUST BE IN THE SAME                               01824*
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22736   0101570          ADD FIVE                                                            01825*
22737   2001632          EXT 077          DISK RECORD AS OPOINT                               01826*
22740   2104001          CAB OPOINT                                                           01827*
22741   2602747          BRU FOB1                                                             01828*
22742   2602747          BRU FOB1                                                             01829*
22743   0003567          LDA FILLS        ADD FILLS UNTIL THIS IS SO                          01830*
22744   0364100          STA OUTBUF  3                                                        01831*
22745   1460001          INX 1       3                                                        01832*
22746   2602735          BRU FOB                                                              01833*
22747   0000003   FOB1   LDA 3            MOVE THE CALL TO TTY BUFFER                         01834*
22750   0304001          STA OPOINT                                                           01835*
22751   2504032          ADU              LEAVE ROOM FOR EOF PUT BY 235                       01836*
22752   0101601          ADD OBLO                                                             01837*
22753   2405720          MOV CFFA         AND MAKE CALL FOR FILE ADDRESS                      01838*
22754   0001572          LDA SEVEN                                                            01839*
22755   2506015          SET PST                                                              01840*
22756   0720000          SPB EXEC    1                                                        01841*
                                                                                             01842*
                         COMPUTE PROGRAM PARAMETERS                                           01843*
                                                                                             01844*
22757   0004102          LDA OUTBUF+2                                                         01845*
22760   2510021          SRA 17                                                               01846*
22761   2516000          BEV SERR1        BIT 2 OFF MEANS THE FILE WAS NOT SAVED              01847*
22762   2603012
22763   0004100          LDA OUTBUF       GET THE BEG. DISK ADRS.                             01848*
22764   0305715          STA GETPRO+2                                                         01849*
22765   0004101          LDA OUTBUF+1                                                         01850*
22766   0304003          STA LENGTH       CHANGE THE LENGTH                                   01851*
22767   0103564          ADD RRF                                                              01852*
22770   0305713          STA GETPRO                                                           01853*
22771   2504002          LDZ                                                                  01854*
22772   0305716          STA GETPRO+3                                                         01855*
22773   0003565          LDA DAREA                                                            01856*
22774   0305714          STA GETPRO+1                                                         01857*
                                                                                             01858*
                         READ IN PROGRAM                                                      01859*
22775   2506053          SXG 2                                                                01860*
22776   0001570          LDA C2                                                               01861*
22777   0720000          SPB EXEC    1                                                        01862*
23000   0005713          DEC GETPRO                                                           01863*
23001   2506015          SET PST          DO LACEYS WORK FOR HIM                              01864
23002   2506013          SXG 0                                                                01865*
23003   0005716          LDA GETPRO+3     WAIT FOR READ COMPLETE                              01866*
23004   2514002          BZE                                                                  01867*
23005   2603003          BRU *-2                                                              01868*
23006   2516000          BEV                                                                  01869*
23007   2603012          BRU SERR1                                                            01870*
23010   0001620          LDA THREE                                                            01871*
23011   2600013          BRU COMCAL       CALL COMPILER BACK                                  01872*
23012   0605712   SERR1  LDX ATEMP   3                                                        01873*
23013   2600143          BRU ENDJOB                                                           01874*
                                                                                         NAM01875
                                                                                         EJT01876
```

```
23014   1725700   OVFL    STX  TRPSV    1                                                    01877
23015   2504002           LDZ                                                                01878
23016   0306257           STA  $IND                                                          01879
23017   0723737           SPB  $STRING  1                                                    01880
23020   0000003           DEC  3                                                             01881
23021   0374665           ALF  OV                                                            01882
23022   0255126           ALF  ERF                                                           01883
23023   0454666           ALF  LOW                                                           01884
23024   0600003   TRP     LDX  XR03     3                                                    01885
23025   0722177           SPB  *ERLIN   1                                                    01886
23026   0625700           LDX  TRPSV    1                                                    01887
23027   3003546           FLD  MAXPOS                                                        01888
23030   3500004   UFL01   RIN                                                                01889
23031   3100001           SET  TRPMODE                                                       01890
23032   2620000           BRU  0        1                                                    01891
23033   1725700   DVCK    STX  TRPSV    1                                                    01892
23034   2504002           LDZ                                                                01893
23035   0306257           STA  $IND                                                          01894
23036   0723737           SPB  $STRING  1                                                    01895
23037   0000006           DEC  6                                                             01896
23040   0372431           ALF  DI                                                            01897
23041   0653162           ALF  VIS                                                           01898
23042   0314645           ALF  ION                                                           01899
23043   0602270           ALF  BY                                                            01900
23044   0607125           ALF  ZE                                                            01901
23045   0514677           OCT  514677                                                        01902
23046   2603024           BRU  TRP                                                           01903
23047   3001616   UFLO    FLD  FZERO                                                         01904
23050   2603030           BRU  UFL01                                                         01905
                                                                                       NAM01906
                                                                                       EJT01907
```

```
                                        ROUND   CONVERTS A FLOATING POINT NUMBER INTO        01908
                                        AN INTEGER IN FLOATING POINT FORM                    01909
                                            CALLED BY ASSIGNMENT STATEMENTS, SUBSCRIPTS      01910
                                                                                            01911
   23051   3101604    ROUND  FAD  .5                                                         01912
   23052   3200010           SET  UFLPOINT                                                   01913
   23053   3101606           FAD  BIGZER                                                     01914
   23054   3560005           CQX                                                    CQX*01915
   23055   3160005           NOX                                                    NOX*01916
   23056   3100010           SET  NFLPOINT                                                   01917
   23057   2640001           BRU  1           2                                              01918
                                                                                            01919
                                        UNFLOT  CONVERTS A POSITIVE INTEGER IN               01920
                                        FLOATING POINT FORM TO AN INTEGER IN THE A           01921
                                        REGISTER                                             01922
                                            CALLED IN SWITCH AND ARRAY CALLS                 01923
                                        AND BY KAB                                           01924
                                                                                            01925
   23060   3101604    UNFLOT FAD  .5                                                         01926
   23061   3200010           SET  UFLPOINT                                                   01927
   23062   3101006           FAD  BIGZER                                                     01928
   23063   3306000           FST  JUNK                                                       01929
   23064   0006000           LDA  JUNK                                                       01930
   23065   2101606           CAB  BIGZER                                                     01931
   23066   2602267           BRU  ER50                                                       01932
   23067   2603071           BRU  *+2                                                        01933
   23070   2602267           BRU  ER50                                                       01934
   23071   0006001           LDA  JUNK+1                                                     01935
   23072   3100010           SET  NFLPOINT                                                   01936
   23073   2640001           BRU  1           2                                              01937
                                                                                            01938
                                        ENTIER  COMPUTES THE ALGOL FUNCTION ENTIER           01939
                                        (GREATEST INTEGER LESS THAN OR EQUAL TO)             01940
                                                                                            01941
   23074   3200010    ENTIER SET  UFLPOINT                                                   01942
   23075   3101606           FAD  BIGZER                                                     01943
   23076   3560005           CQX                                                    CQX*01944
   23077   3160005           NOX                                                    NOX*01945
   23100   3100010           SET  NFLPOINT                                                   01946
   23101   2620001           BRU  1           1                                              01947
                                                                                            01948
                                        INTCHK   CHECKS TO SEE WHETHER AX CONTAINS AN        01949
                                        INTEGER.  IF IT DOES, AN INSTRUCTION IS              01950
                                        SKIPPED ON EXIT.  IF THE RESULT IS NOT AN            01951
                                        INTEGER, A NORMAL RETURN OCCURS.                     01952
                                            CALLED BY EXP, POWER, INTDIV, SPRINT             01953
                                                                                            01954
                                        *** WARNING . . . THE CONTENTS OF AX AND QX          01955
                                            MUST BE SAVED ***                                01956
                                                                                            01957
   23102   1745704    INTCHK STX  ICHKXR  2       SAVE EXIT                                  01958
   23103   3317776           FST  ICHK1                                                      01959
   23104   1817776           SUB  ICHK1                                                      01960
   23105   2634001           BRU                                                             01961
```

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23106   2640001          BRU  1          2      INTEGER CANNOT HAVE NEGATIVE EXPONENT          01962
23107   2510013          SRA  11                                                              01963
23110   2101621          CAB  D30                                                             01964
23111   2603114          BRU  *+3                                                             01965
23112   2603114          BRU  *+2                NUMBER LARGER THAN 2EXP30 IS NOT CONSIDERED   01966
23113   2640001          BRU  1          2            AN INTEGER BY INTCHK                     01967
23114   0317777          STA  ICHK1+1                                                         01968
23115   0657777          LDX  ICHK1+1    2                                                    01969
23116   0017776          LDA  ICHK1                                                           01970
23117   2552200          SLD  0          2      SHIFT OUT INTEGRAL PART                        01971
23120   2001647          EXT  EPMASK             MASK OFF EXPONENT PART                        01972
23121   2516002          BNZ                                                                  01973
23122   2603131          BRU  ICHKEX             NOT AN INTEGER                                01974
23123   2504005          XAU                                                                  01975
23124   2001651          EXT  SIGN               MASK OFF SIGN OF MANTISSA                     01976
23125   2516002          BNZ                                                                  01977
23126   2603131          BRU  ICHKEX             NOT AN INTEGER                                01978
23127   0645704          LDX  ICHKXR     2                                                    01979
23130   2640002          BRU  2          2      EXIT FOR AN INTEGER                            01980
23131   0645704   ICHKEX LDX  ICHKXR     2      RESTORE EXIT                                   01981
23132   2640001          BRU  1          2      EXIT FOR NON-INTEGER                           01982
                                                                                              01983
                                                SPECIAL INTEGER DIVIDE [REVERSE SLASH ON TTY]  01984
                                                SIGN[QX/AX] * ENTIER[ABS[QX/AX]]               01985
                                                                                              01986
23133   3306000   INTDIV FST  JUNK                                                            01987
23134   3500002          XAU             A                                                    01988
23135   3500005          CQX                                                               CQX*01989
23136   3606000          FDV  JUNK                                                            01990
23137   1720000          STX  SIDXR      1                                                 BAN*01991
23140   2514721          BAR  BMI        7                                                    01992
23141   2603145          BRU  *+4                NEGATIVE QUOTIENT                             01993
23142   0723074          SPB  ENTIER     1      TRUNCATE RESULT                               01994
23143   0620000          LDX  SIDXR      1                                                    01995
23144   2620001          BRU  1          1      EXIT                                          01996
23145   3100002          MAG             A                                                    01997
23146   3501614          FMP  FMONE              GET ABSOLUTE VALUE OF QUOTIENT                01998
23147   0723074          SPB  ENTIER     1      TRUNCATE                                      01999
23150   3100002          MAG             A                                                    02000
23151   3501614          FMP  FMONE              RESTORE SIGN                                  02001
23152   0620000          LDX  SIDXR      1                                                    02002
23153   2620001          BRU  1          1      EXIT                                          02003
                                                                                           NAM02004
                                                                                           EJT02005
```

OUTPUT ROUTINE CONVENTIONS . . .   02006
$IND IS SET TO ZERO AT THE BEGINNING OF RUN   02007
      TIME, AND IS STEPPED BY ONE FOR EVERY   02008
      WORD THAT IS OUTPUT ON ANY ONE LINE.   02009
THE STANDARD GE ROUTINE BDCA IS USED IN   02010
      UPPER MEMORY, BUT IS ESSENTIALLY   02011
      UNCHANGED.   02012
                                                              02013

03154	1706256	$PRINT	STX	PRX3	3		02014
03155	1726255		STX	PRX1	1		02015
03156	3305742		FST	BDCARG			02016
03157	0743102		SPB	INTCHK	2		02017
03160	2603307		BRU	PRFLT		NOT AN INTEGER . . .CONVERT IN FLOATING FORM	02017
03161	0661532		LDX	ONE	3		02018
03162	0005743		LDA	BDCARG+1			02019
03163	0621603		LDX	060	1	SPACE	02020
03164	2516001		BPL				02021
03165	2603172		BRU	PR2			02022
03166	3200005		CAX				CAX*02023
03167	3205742		FSU	BDCARG			02024
03170	0621576		LDX	040	1	MINUS SIGN	02025
03171	3305742		FST	BDCARG			02026
03172	1726264	PR2	STX	POUT	1	PUT SIGN IN OUTPUT	02027
03173	3200010		SET	UFLPOINT			02028
03174	3101000		FAD	BIGZER			02029
03175	3305742		FST	BDCARG			02030
03176	1005742		DLD	BDCARG			02031
03177	2901047		EXT	EPMASK		MASK OFF EXPONENT	02032
03200	1601525		DVD	TENI		SEPARATED AS TWO INTEGERS AT 19	02033
03201	1305742		DST	BDCARG			02034
03202	2514002		BZE				02035
03203	2603232		BRU	PR6		LESS THAN 100,000	02036
03204	0641010		LDX	ZERO	2		02037
03205	2504006		MAQ				02038
03206	0621532	PR3	LDX	ONE	1	INTEGER IN Q	02039
03207	2504002	PR4	LDZ				02040
03210	1621525		DVD	TENT	1	GET DIGIT IN A	02041
03211	2514002		BZE				02042
03212	2603234		BRU	PR7		DIGIT IS ZERO IF LEADING, SUPRESS	02043
03213	0366264		STA	POUT	3	PUT IN OUTPUT	02044
03214	1746260		STX	PRXT	2		02045
03215	0006260		LDA	PRXT			02046
03216	2516000		BEV				02047
03217	1440001		INX	1	2	XR2 IS ODD IF A NON-ZERO DIGIT PRECEEDED	02048
03220	1460001		INX	1	3	BUFFER POINTER	02049
03221	1420001	PR5	INX	1	1	COUNT DIGITS EXAMINED	02050
03222	0437772		BXL	6	1		02051
03223	2603207		BRU	PR4		GET NEXT DIGIT	02052
03224	0557776		BXH	2	2		02053
03225	2603242		BRU	PR8		DONE	02054
03226	0005743		LDA	BDCARG+1		LOW-ORDER HALF	02055
03227	2504006		MAQ				02056
03230	1440002		INX	2	2		02057
03231	2603206		BRU	PR3			02058
03232	0641010	PR6	LDX	TWO	2	PROCESS SECOND HALF ONLY	02059

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23233   2603206          BRU PR3                                                                02060
23234   0306264   PR7    STA POUT      3        PUT IN OUTPUT                                    02061
23235   1746260          STX PRXT      2                                                         02062
23236   0006260          LDA PRX1                                                                02063
23237   2514000          BOD                    DO NOT INX IF LEADING ZERO                       02064
23240   1460001          INX 1         3                                                         02065
23241   2603221          BRU PR5                                                                 02066
23242   0577776   PR8    BXH 2         3                                                         02067
23243   2603247          BRU *+4                                                                 02068
23244   2504002          LDZ                    PLACE SINGLE ZERO FOR ZERO RESULT                02069
23245   0306264          STA POUT      3                                                         02070
23246   1460001          INX 1         3                                                         02071
23247   0001603          LDA 060                TRAIL TWO BLANKS                                 02072
23250   0306264          STA POUT      3                                                         02073
23251   0306265          STA POUT+1    3                                                         02074
23252   1460002          INX 2         3                                                         02075
23253   0306264          STA POUT      3        TRAIL TWO MORE                                   02076
23254   0306265          STA POUT+1    3                                                         02077
23255   1706000          STX JUNK      3        SAVE BUFFER POINTER                              02078
23256   0621610          LDX ZERO      1        POINTER IN POUT                                  02079
23257   2506016          SET PBK                                                                 02080
23260   0604001          LDX OPOINT    3                                                         02081
23261   0026264   PR9    LDA POUT      1        TRANSFER 3 CHARACHTERS TO OUTPUT                 02082
23262   2512006          SLA 6                                                                   02083
23263   0126265          ADD POUT+1    1                                                         02084
23264   2512006          SLA 6                                                                   02085
23265   0126266          ADD POUT+2    1                                                         02086
23266   0364100          STA OUTBUF    3                                                         02087
23267   0006257          LDA $IND               INCREMENT INTERNAL LINE POINTER                  02088
23270   2504032          ADO                                                                     02089
23271   0306257          STA $IND                                                                02090
23272   1420003          INX 3         1                                                         02091
23273   1460001          INX 1         3                                                         02092
23274   1726260          STX PRXT      1                                                         02093
23275   0006260          LDA PRXT                                                                02094
23276   0256000          SUB JUNK                                                                02095
23277   2514001          BMI                                                                     02096
23300   2603261          BRU PR9                GET 3 MORE CHARACHTERS                           02097
23301   1704001          STX OPOINT    3                                                         02098
23302   2506015          SET PST                                                                 02099
23303   0626255          LDX PRX1      1                                                         02100
23304   0606256          LDX PRX3      3                                                         02101
23305   3100010          SET NFLPOINT                                                            02102
23306   2620001          BRU 1         1                                                         02103
                                                                                                 02104
                         NON-INTEGER ARGUMENT                                                    02105
                                                                                                 02106
23307   0601010   PRFLT  LDX ZERO      0        EXPONENT SIGN FLAG                               02107
23310   2514721          BAR BMI       7                                                 BAN*    02108
23311   2603655          BRU BDC11              NEGATIVE MANTISSA                                02109
23312   0001603          LDA 060                SPACE FOR POSITIVE NUMBER                        02110
23313   3305742   BDC1   FST BDCARG                                                             02111
23314   0306264          STA POUT               SIGN OF NUMBER                                   02112
23315   1005742          DLD BDCARG                                                             02113
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23316   2516001        BPL                                                                      02114
23317   2603322        BRU BDC2         POSITIVE EXPONENT                                       02115
23320   2504522        NEG                                                                      02116
23321   0601532        LDX ONE      0   SET EXPONENT SIGN FLAG ON                               02117
23322   2510013  BDC2  SRA 11                                                                   02118
23323   2504006        MAQ                                                                      02119
23324   1501524        MPY EXPCVI       .30103 B0                                               02120
23325   0306000        STA JUNK         P, TENTATIVE BASE 10 EXPONENT                           02121
23326   0641610  BDC4  LDX ZERO     2   SET COUNTER                                             02122
23327   1440002  BDC5  INX 2        2                                                           02123
23330   2516000        BEV              EXAMINE BINARY ESTIMATE OF                              02124
23331   2603336        BRU BDC6         BASE 10 EXPONENT BIT BY BIT                             02125
23332   0417777        BXL 1        0   APPLY POWER OF 10 TO BDCARG                             02126
23333   2603622        BRU BDC9         DIVIDE ON POSITIVE EXPONENT                             02127
23334   3100002        MAQ          A   MULTIPLY ON NEGATIVE                                    02128
23335   3541504        FMP FTENT    2                                                           02129
23336   2510001  BDC6  SRA 1                                                                    02130
23337   2516002        BNZ              SCALING DONE                                            02131
23340   2603327        BRU BDC5         NOT YET                                                 02132
23341   3305742        FST BDCARG                                                               02133
23342   1005742        DLD BDCARG                                                               02134
23343   0101600        ADD EXP3         0014000  EXPONENT 3                                     02135
23344   1201562        DSU D,1          .8                                                      02136
23345   2514001        BMI                                                                      02137
23346   2603624        BRU BDC10        LESS THAN .1                                            02138
23347   1005742        DLD BDCARG                                                               02139
23350   1201612        DSU FONE                                                                 02140
23351   2516001        BPL                                                                      02141
23352   2603624        BRU BDC10        GREATER THAN 1,                                         02142
23353   0006000        LDA JUNK         P                                                       02143
23354   2514002        BZE                                                                      02144
23355   0300000        STA 0            SIGN OF ZERO IS SPACE                                   02145
23356   1005742        DLD BDCARG                                                               02146
23357   2510013        SRA 11                                                                   02147
23360   2504522        NEG                                                                      02148
23361   0300001        STA 1            NEGATIVE EXPONENT                                       02149
23362   0005742        LDA BDCARG                                                               02150
23363   2512210        SLO 8                                                                    02151
23364   2531000        SRD 0        1   FIX MANTISSA RADIX POINT                                02152
23365   2514003        BOV                                                                      02153
23366   2603367        BRU *+1                                                                  02154
23367   1101554        DAD ROUNDR       ROUND TO SIX FIGURES                                    02155
23370   2514003        BOV                                                                      02156
23371   2603643        BRU BDCOVF       ROUNDING UP CAUSED OVERFLOW                             02157
23372   0703633  BDC7  SPB BINDEC+23    GET FIRST DIGIT                                         02158
23373   0306265        STA POUT+1                                                               02159
23374   0641610        LDX ZERO     2                                                           02160
23375   0703631        SPB BINDEC   3   GET DIGIT                                               02161
23376   0346267        STA POUT+3   2   PUT IN OUTPUT STRING                                    02162
23377   1440001        INX 1        2                                                           02163
23400   0457773        BXL 5        2                                                           02164
23401   2603631        BRU BINDEC       GO BACK FOR MORE                                        02165
23402   0006000        LDA JUNK                                                                 02166
23403   0517777        BXH 1        0                                                           02167
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23404   2504522           NEG                                                                                    02168
23405   0601610           LDX ZERO      0                                                                        02169
23406   2504112           SBO                                                                                    02170
23407   0306000           STA JUNK                                                                               02171
23410   2516001           BPL                                                                                    02172
23411   2603414           BRU **+3                                                                               02173
23412   0601532           LDX ONE       0                                                                        02174
23413   2504522           NEG                                                                                    02175
23414   2504006           MAG                                                                                    02176
23415   1601531           DVD TEN                                                                                02177
23416   2514002           BZE                                                                                    02178
23417   2603424           BRU BDC6                                                                               02179
23420   0306277           STA POUT+11                                                                            02180
23421   2504005           XAU                                                                                    02181
23422   0306300           STA POUT+12                                                                            02182
23423   2603430           BRU OUT                                                                                02183
23424   2504005   BDC6    XAU                               LEFT-JUSTIFY ONE-DIGIT EXPONENT                      02184
23425   0306277           STA POUT+11                                                                            02185
23426   0001603           LDA 000                                                                                02186
23427   0306300           STA POUT+12                                                                            02187
23430   0001575   OUT     LDA 033                           ADD PERIOD, EXPONENT SIGN                            02188
23431   0306260           STA POUT+2                                                                             02189
23432   0001603           LDA 060                                                                                02190
23433   0306274           STA POUT+6                                                                             02191
23434   0517777           RXH 1         0                                                                        02192
23435   0001576           LDA 040                                                                                02193
23436   0306276           STA POUT+10                                                                            02194
23437   0006000           LDA JUNK                                                                               02195
23440   2514002           RZE                                                                                    02196
23441   2603544           BRU FFORM                         USE F FORMAT                                         02197
23442   2504032           ADO                                                                                    02198
23443   2514001           BMI                                                                                    02199
23444   2603461           BRU FTST                          CHECK FURTHER ON SMALL EXPONENT                      02200
23445   2101571           CAS SIX                                                                                02201
23446   2603523           BRU FMOVE                         F-FORMAT MOVE DECIMAL POINT                          02202
23447   2603523           BRU FMOVE                         F-FORMAT MOVE DECIMAL POINT                          02203
23450   0743571   EFORM   SPB SUPRES    2                                                                        02204
23451   0001603           LDA 060                                                                                02205
23452   0306301           STA POUT+13                                                                            02206
23453   0306302           STA POUT+14                                                                            02207
23454   0001577           LDA 053                                                                                02208
23455   0306275           STA POUT+9                                                                             02209
23456   0723605           SPB PACK      1                                                                        02210
23457   0001566           LDA DM5                                                                                02211
23460   2603551           BRU OUTMOV                                                                             02212
                                                                                                            EJT02213
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                                                       A NUMBER WHICH IS LESS THAN .1 IS CHECKED          02214
                                                       TO SEE IF IT CAN BE SHIFTED RIGHT AND PRINTED      02215
                                                       IN THE F FORMAT WITHOUT LOSING SIGNIFICANCE        02216
                                                       BY COMPARING THE NUMBER OF TRAILING ZEROES         02217
                                                       WITH THE BASE 10 EXPONENT.                         02218
                                                                                                          02219
 23461   0743571   FTST    SPB SUPRES  2               SUPRESS TRAILING ZEROES AND OBTAIN COUNT           02220
 23462   0000000           LDA XR00                    NUMBER OF TRAILING ZEROES                          02221
 23463   0106000           ADD JUNK                    ACTUAL BASE 10 EXPONENT                            02222
 23464   2504032           ADD                                                                            02223
 23465   2514001           BMI                         CAN NUMBER BE PRINTED IN F FORMAT                  02224
 23466   2603451           BRU EFORM+1                 NOT WITHOUT LOSS OF ACCURACY                       02225
 23467   0661570           LDX FIVE    3               DESTINATION POINTER                                02226
 23470   0006000           LDA JUNK                                                                       02227
 23471   0101571           ADD SIX                                                                        02228
 23472   0300002           STA XR02                    POINTS TO DIGIT TO MOVE                            02229
 23473   0006265           LDA POUT+1                                                                     02230
 23474   0306266           STA POUT+2                  LEADING DIGIT IS PART OF NUMBER, AFTER ALL         02231
 23475   0046266   PRTSM1  LDA POUT+2  2               MOVE ONE DIGIT TO THE RIGHT                        02232
 23476   0306266           STA POUT+2  3                                                                  02233
 23477   0000003           LDA XR03                                                                       02234
 23500   2504112           SBO                                                                            02235
 23501   0300003           STA XR03                                                                       02236
 23502   0000002           LDA XR02                                                                       02237
 23503   2504112           SBO                                                                            02238
 23504   2514001           BMI                                                                            02239
 23505   2603510           BRU PRTSM2                  MOVING DIGITS COMPLETE - NOW MOVE ZEROES           02240
 23506   0300002           STA XR02                                                                       02241
 23507   2603475           BRU PRTSM1                                                                     02242
 23510   2504002   PRTSM2  LDZ                                                                            02243
 23511   0306266           STA POUT+2  3               FILL MOVED DIGITS WITH ZEROES                      02244
 23512   0000003           LDA XR03                                                                       02245
 23513   2504112           SBO                                                                            02246
 23514   2514001           BMI                                                                            02247
 23515   2603520           BRU PRTSM3                  TRANSFERS DONE ... REENTER MAINLINE                02248
 23516   0300003           STA XR03                                                                       02249
 23517   2603510           BRU PRTSM2                                                                     02250
 23520   0001575   PRTSM3  LDA 033                     PERIOD                                             02251
 23521   0306265           STA POUT+1                                                                     02252
 23522   2603545           BRU FFORM+1                                                                    02253
 23523   2516002   FMOVE   BNZ                                                                            02254
 23524   2603532           BRU *+6                                                                        02255
 23525   0006265           LDA POUT+1                                                                     02256
 23526   0306266           STA POUT+2                                                                     02257
 23527   0001575           LDA 033                                                                        02258
 23530   0306265           STA POUT+1                                                                     02259
 23531   2603544           BRU FFORM                                                                      02260
 23532   0006000           LDA JUNK                                                                       02261
 23533   2504522           NEG                                                                            02262
 23534   2504006           MAG                                                                            02263
 23535   0001564           LDA OPOUT                   DEC POUT+2                                         02264
 23536   2406267           MOV POUT+3                  MOVE DIGITS DOWN TO PLACE POINT                    02265
 23537   2504001           LAO                                                                            02266
 23540   2504522           NEG                                                                            02267
```

```
23541    0300001            STA  1                   LENGTH OF MOVE                      02268
23542    0001575            LDA  033                                                     02269
23543    0326266            STA  POUT+2   1           PLACE DECIMAL POINT                 02270
                                                                                         02271
                                         PRINT IN F FORMAT                               02272
                                                                                         02273
23544    0743571    FFORM   SPB  SUPRES   2                                              02274
23545    0723605            SPB  PACK     1                                              02275
23546    0001556            LDA  BLANKS                                                  02276
23547    0306267            STA  POUT+3                                                  02277
23550    0001565            LDA  DM4                                                     02278
23551    2504004    OUTMOV  LDA                                                          02279
23552    2504522            NEG                                                          02280
23553    0106257            ADD  $IND                UPDATE INTERNAL POINTER             02281
23554    0306257            STA  $IND                                                    02282
23555    0004001            LDA  OPOINT                                                  02283
23556    0101001            ADD  OBLC                                                    02284
23557    2506010            SET  PBK                                                     02285
23560    2406264            MOV  POUT                PLACE RESULTS IN OUTPUT AREA        02286
23561    2504005            XAQ                                                          02287
23562    2504522            NEG                                                          02288
23563    0104001            ADD  OPOINT                                                  02289
23564    0304001            STA  OPOINT                                                  02290
23565    2506015            SET  PST                                                     02291
23566    0626255            LDX  PRX1     1                                              02292
23567    0606250            LDX  PRX3     3                                              02293
23570    2620001            BRU  1        1                                              02294
                                                                                         02295
23571    0621572    SUPRES  LDX  SEVEN    1           SUPRESS TRAILING ZEROES            02296
23572    0601010            LDX  ZERO     0                                              02297
23573    0026264            LDA  POUT     1                                              02298
23574    2516002            BNZ                                                          02299
23575    2640001            BRU  1        2           NON-ZERO    EXIT                   02300
23576    0001603            LDA  060                                                     02301
23577    0326264            STA  POUT     1                                              02302
23600    1400001            INX  1        0           COUNT OF SUPRESSED DIGITS          02303
23601    5000001            LDA  1                                                       02304
23602    2504112            SBO                                                          02305
23603    0300001            STA  1                                                       02306
23604    2603573            BRU  SUPRES+2                                                02307
                                                                                         02308
23605    0641010    PACK    LDX  ZERO     2                                              02309
23606    0661010            LDX  ZERO     3                                              02310
23607    0046264            LDA  POUT     2                                              02311
23610    2512006            SLA  6                                                       02312
23611    0146265            ADD  POUT+1   2                                              02313
23612    2512006            SLA  6                                                       02314
23613    0146266            ADD  POUT+2   2                                              02315
23614    0366264            STA  POUT     3                                              02316
23615    1460001            INX  1        3                                              02317
23616    1440003            INX  3        2                                              02318
23617    0477773            BXL  5        3                                              02319
23620    2603607            BRU  PACK+2                                                  02320
23621    2620001            BRU  1        1                                              02321
```

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23622   3641504   BDC9    FDV FTENT   2                                                         02322
23623   2603336           BRU BDC6                                                              02323
                                                                                                02324
                                                                                                02325
23624   2504022   BDC10   LDO                      NOT QUITE . . . TRY ONE MORE                 02326
23625   0106000           ADD JUNK                                                              02327
23626   0306000           STA JUNK                                                              02328
23627   2504022           LDO                                                                   02329
23630   2603326           BRU BDC4                                                              02330
                                                                                                02331
23631   1005742   BINDEC  DLD BDCARG               GET ONE DECIMAL DIGIT                        02332
23632   2512204           SLD 4                                                                 02333
23633   2511001           SRD 1                                                                 02334
23634   1305742           DST BDCARG                                                            02335
23635   2511002           SRD 2                                                                 02336
23636   1105742           DAD BDCARG                                                            02337
23637   1305742           DST BDCARG                                                            02338
23640   2504006           MAQ                                                                   02339
23641   2512204           SLD 4                                                                 02340
23642   2600001           BRU 1       3                                                         02341
                                                                                                02342
23643   2504002   BDCOVF  LDZ                      OVERFLOW ON ROUNDING                         02343
23644   0517777           BXH 1       0                                                         02344
23645   0001623           LDA DM2                                                               02345
23646   2504032           ADO                                                                   02346
23647   0106000           ADD JUNK                                                              02347
23650   0306000           STA JUNK                                                              02348
23651   2514002           BZE                                                                   02349
23652   0300000           STA 0                                                                 02350
23653   1001560           DLD DD1A                 .1+1 IN LAST PLACE                           02351
23654   2603372           BRU BDC7                                                              02352
                                                                                                02353
                                                                                                02354
23655   3305742   BDC11   FST BDCARG                                                            02355
23656   3200005           CAX                                               CAX*02355
23657   3205742           FSU BDCARG                                                            02356
23660   0001576           LDA O40                                                               02357
23661   2603313           BRU BDC1                                                              02358
                                                                                                EJT02359
```

```
23662    1726255    SCRT    STX  PRX1     1
23663    2506016            SET  PBK
23664    0644001            LDX  OPOINT   2
23665    0001536            LDA  CRCHAR
23666    0344100            STA  OUTBUF   2
23667    1440001            INX  1        2
23670    1744001            STX  OPOINT   2
23671    2504002            LDZ
23672    0306257            STA  $IND
23673    0004001            LDA  OPOINT
23674    2101707            CAB  EXOEND
23675    2603727            BRU  TAB2+1
23676    2603677            BRU  *+1
23677    2504022            LDO
23700    0720000            SPB  0        1
23701    0641010            LDX  ZERO     2
23702    2603726            BRU  TAB2


23703    1726255    STAS    STX  PRX1     1
23704    2506010            SET  PBK
23705    0644001            LDX  OPOINT   2
23706    0006257            LDA  $IND
23707    2504006            MAB
23710    1601570            DVD  FIVE
23711    0201570            SUB  FIVE
23712    2516001            BPL
23713    2603002            BRU  SCRT
23714    2504005            XAQ
23715    2514002            BZE
23716    2603720            BRU  TAB2
23717    0001544            LDA  SPACES
23720    0344100            STA  OUTBUF   2
23721    1440001            INX  1        2
23722    0006257            LDA  $IND
23723    2504032            ADO
23724    0306257            STA  $IND
23725    2603707            BRU  STAB+4

23726    1744001    TAB2    STX  OPOINT   2
23727    0626255            LDX  PRX1     1
23730    2506015            SET  PST
23731    2620001            BRU  1        1

23732    0006257    SHORT   LDA  $IND
23733    0201573            SUB  D22
23734    2514001            BMI
23735    2620001            BRU  1        1
23736    2603062            BRU  SCRT
```

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```
                                    STRING OUTPUTTING ROUTINE,                    02410
                                        ENTERED BY AN SPB    ,1                   02411
                                        FOLLOWING THE SPB IS A WORD               02412
                                        GIVING THE NUMBER OF WORDS                02413
                                        IN THE STRING, THEN THE STRING            02414
                                        ITSELF,                                   02415
                                    THE ROUTINE WILL OPERATE CORRECTLY            02416
                                    IN ANY INDEX GROUP AND EXIT TO                02417
                                    THE INSTRUCTION FOLLOWING THE STRING.         02418
                                    CALLED BY PRINT STATEMENTS, ERROR MESSAGES,   02419
                                                                                  02420
  23737   0020001   STRING LDA 1        1                                         02421
  23740   1726000          STX JUNK     1         LENGTH OF STRING                02422
  23741   0106257          ADD $IND                                              02423
  23742   0201574          SUB D24                                               02424
  23743   2514001          BMI                                                   02425
  23744   2603747          BRU *+3                                               02426
  23745   0723662          SPB $CRT     1         ROOM LEFT ON SAME LINE FOR STRING 02427
  23746   0626000          LDX JUNK     1                                        02428
  23747   0020001          LDA 1        1                                        02429
  23750   2504522          NEG                                                   02430
  23751   2504005          XAQ                                                   02431
  23752   0006000          LDA JUNK               SET FOR MOVE                   02432
  23753   0101010          ADD TWO                                               02433
  23754   0101002          ADD *MOV*              ADDRESS OF STRING              02434
  23755   0621676          LDX XTAG     1                                        02435
  23756   2506016          SET PBK                                               02436
  23757   0323762          STA *+3      1         STORE MOVE INSTRUCTION         02437
  23760   0004001          LDA OPOINT                                            02438
  23761   0101601          ADD OBLO                                             02439
  23762   2504012          NOP                    FILLED WITH MOVE INSTRUCTION   02440
  23763   0626000          LDX JUNK     1                                        02441
  23764   0020001          LDA 1        1                                        02442
  23765   0104001          ADD OPOINT                                            02443
  23766   0304001          STA OPOINT             ADJUST OUTPUT POINTER          02444
  23767   2506015          SET PST                                               02445
  23770   0006257          LDA $IND                                             02446
  23771   0120001          ADD 1        1                                        02447
  23772   0306257          STA $IND               ADJUST LINE POINTER            02448
  23773   0006000          LDA JUNK                                             02449
  23774   0120001          ADD 1        1         CONSTRUCT RETURN ADDRESS       02450
  23775   0306000          STA JUNK                                             02451
  23776   0626000          LDX JUNK     1                                        02452
  23777   2620002          BRU 2        1                                        02453
                                                                                  02454
                                                                             NAM02455
                                                                             EJT02456
```

```
              33750              LOC 33750
    33750    1726323            STX PROG-1     1                                                02457
    33751    2504002            LDZ                                                             02458
    33752    2500011            RCS                                                             02459
    33753    2514001            BMI                                                             02460
    33754    2613770            BRU **+18                                                       02461
    33755    0306324            STA PROG                                                        02462
    33756    0626324            LDX PROG        1                                               02463
    33757    0020000            LDA 0           1                                               02464
    33760    2504012            NOP                                                             02465
    33761    2504012            NOP                                                             02466
    33762    2504012            NOP                                                             02467
    33763    2504012            NOP                                                             02468
    33764    2504012            NOP                                                             02469
    33765    2504012            NOP                                                             02470
    33766    2504012            NOP                                                             02471
    33767    2504012            NOP                                                             02472
    33770    2504012            NOP                                                             02473
    33771    2504012            NOP                                                             02474
    33772    2504012            NOP                                                             02475
    33773    2504012            NOP                                                             02476
    33774    2504012            NOP                                                             02477
    33775    2613751            BRU *-20                                                        02478
    33776    0626323            LDX PROG-1      1                                               02479
    33777    2613777            BRU *                                                           02480
                                                                                               02481
                                                                                               02482
                                                                                            NAM02483
                                                                                            EJT02484
```

ROUTINE TO POSITION OVERLAY FOR READING ONTO   02485
DISK.   02486
                                                      02487
```
         05000          LOC 5000                      02488
05000  2504002  DISK2   LDZ                           02489
05001  2500011          RCS                           02490
05002  2514000          BOD                           02491
05003  2605025          BRU MOVE                      02492
05004  2500007          TON                           02493
05005  0621610          LDX ZERO       1              02494
05006  0601010  TYPA    LDX ZERO       0              02495
05007  0025041          LDA MSSG       1              02496
05010  2516005  TYP     BNN                           02497
05011  2605010          BRU *-1                       02498
05012  2510406          SAN 6                         02499
05013  2500000          TYP                           02500
05014  1400001          INX 1          0              02501
05015  0417775          BXL 3          0              02502
05016  2605010          BRU TYP                       02503
05017  1420001          INX 1          1              02504
05020  0437772          BXL 6          1              02505
05021  2605006          BRU TYPA                      02506
05022  2516005          BNN                           02507
05023  2605022          BRU *-1                       02508
05024  2605000          BRU DISK2                     02509
05025  2504010  MOVE    WAI                           02510
05026  2605031          BRU *+3                       02511
05027  2605027          BRU *                         02512
05030  2500013          RON                           02513
05031  1005036          DLD DISKC                     02514
05032  2401400          MOV OVER                      02515
05033  0005040          LDA LOADC                     02516
05034  2640001          BRU 1          2              02517
05036  0031000  DISKC   OCT 31000                     02518
05037  3775400          OCT 3775400                   02519
05040  0014000  LOADC   OCT 14000                     02520
05041  0666237  MSSG    OCT 666237                    02521
05042  0236331          ALF CTI                       02522
05043  0016030          ALF 1 H                       02523
05044  0246011          ALF D 9                       02524
05045  0456646          ALF NWO                       02525
05046  0606033          ALF  .                        02526
                                                      02527
                                                   NAM02528
                                                   EJT02529
```

```
                01400           LOC 1400
      01400   2602305           BRU OVFCHK                                                                                      02530
      01401   2602311           BRU UFLCHK                                                                                      02531
      01402   2602315           BRU DVDCHK                                                                                      02532
      01403   0641676           LDX XTAG      2                                                                                 02533
      01404   2643133           BRU INTDIV    2                                                                                 02534
      01405   0621676           LDX XTAG      1                                                                                 02535
      01406   2622356           BRU ER55      1                                                                                 02536
      01407   2602155           BRU BPRSUB                                                                                      02537
      01410   2602115           BRU DUNFLT                                                                                      02538
      01411   2603216           BRU POWSUB                                                                                      02539
      01412   2603401           BRU PLINK                                                                                       02540
      01413   0641676           LDX XTAG      2                                                                                 02541
      01414   2640213           BRU RDTSUB    2                                                                                 02542
      01415   0641676           LDX XTAG      2                                                                                 02543
      01416   2643154           BRU $PRINT    2                                                                                 02544
      01417   0621676           LDX XTAG      1                                                                                 02545
      01420   2623051           BRU ROUND     1                                                                                 02546
      01421   2602126           BRU RDASUB                                                                                      02547
      01422   2602131           BRU RD2SUB                                                                                      02548
      01423   0641676           LDX XTAG      2                                                                                 02549
      01424   2642010           BRU ER40      2                                                                                 02550
      01425   2602104           BRU TSTSUB                                                                                      02551
      01426   0641676           LDX XTAG      2                                                                                 02552
      01427   2643732           BRU $HORT     2                                                                                 02553
      01430   0641676           LDX XTAG      2                                                                                 02554
      01431   2643703           BRU $TAB      2                                                                                 02555
      01432   0641676    CRT    LDX XTAG      2                                                                                 02556
      01433   2643662           BRU $CRT      2                                                                                 02557
      01434   0641676           LDX XTAG      2                                                                                 02558
      01435   2643737           BRU $TRING    2                                                                                 02559
      01436   2602140           BRU RESTOR                                                                                      02560
      01437   2602450           BRU COS                                                                                         02561
      01440   0621676           LDX XTAG      1                                                                                 02562
      01441   2620135           BRU ENDJB1    1                                                                                 02563
      01442   2602065           BRU ABS                                                                                         02564
      01443   2602770           BRU EXPSUB                                                                                      02565
      01444   2602046           BRU ELAPS                                                                                       02566
      01445   0641676           LDX XTAG      2                                                                                 02567
      01446   2643074           BRU ENTIER    2                                                                                 02568
      01447   2602604           BRU ATN                                                                                         02569
      01450   2602321           BRU RDMSUB                                                                                      02570
      01451   2603073           BRU LOG                                                                                         02571
      01452   2603535           BRU SQRSUB                                                                                      02572
      01453   2602072           BRU SIGNF                                                                                       02573
      01454   2602431           BRU SIN                                                                                         02574
      01455   0621676    UNFSUB LDX XTAG      1                                                                                 02575
      01456   2623060           BRU UNFLOT    1                                                                                 02576
      01457   0645710           LDX SWEXIT    2                                                                                 02577
      01460   2640001           BRU 1         2                                                                                 02578
      01461   2602063           BRU CLOCK                                                                                       02579
      01462   2602221           BRU RESFIL                                                                                      02580
      01463   2602215           BRU SETFIL                                                                                      02581
      01464   2602234           BRU RDRSUB                                                                                      02582
                                                                                                                                02583
```

```
01465    2602260            BRU WRTSUB                                                            02584
01466    2602525            BRU TAN                                                               02585
01467    2602522            BRU COT                                                               02586
01470    0621676            LDX XTAG       1                                                      02587
01471    2622650            BRU LINK       1          LINKAGE TO LINK                             02588
01472    2506013   ER54AL   SXG 0                                                               0*02589
01473    0621676   ER54L    LDX XTAG       1                                                      02590
01474    2622340            BRU ER54       1                                                      02591
         01473    LINKR    EQU ER54L                                                              02592
01475    0621676   LOWERR   LDX XTAG       1                                                      02593
01476    2622254            BRU ER49       1          ERROR IN LN                                 02594
01477    0641676   LOGNEG   LDX XTAG       2                                                      02595
01500    2642232            BRU ER47       2                                                      02596
         01477    LOGZER   EQU LOGNEG                                                             02597
01501    0641676   EXPERR   LDX XTAG       2                                                      02598
01502    2642404            BRU ER57       2                                                      02599
                                                                                          NAM02600
                                                                                          EJT02601
```

```
                                            FOR OUTPUT ROUTINE                                         02602
    01504    0006000    FTENT  FDC  1B1                                                                02603
    01505    0000000
    01506    0022400           FDC  10B4                                                               02604
    01507    0000000
    01510    0037100           FDC  1E2B7                                                              02605
    01511    0000000
    01512    0072342           FDC  1E4B14                                                             02606
    01513    0000000
    01514    0156765           FDC  1E8B27                                                             02607
    01515    1604000
    01516    0332160           OCT  332160                                                             02608
    01517    1571160           OCT  1571160                                                            02609
    01520    0656356           OCT  656356                                                             02610
    01521    0265552           OCT  265552                                                             02611
    01522    1527023           OCT  1527023                                                            02612
    01523    1403722           OCT  1403722                                                            02613
    01524    0404202    EXPCVT DEC  .3010380                                                           02614
    01525    0303240    TENT   DEC  100000                                                             02615
    01526    0023420           DEC  10000                                                              02616
    01527    0001750           DEC  1000                                                               02617
    01530    0000144           DEC  100                                                                02618
    01531    0000012    TEN    DEC  10                                                                 02619
    01532    0000001    ONE    DEC  1                                                                  02620
    01533    0777755    BLEOM  OCT  777755                                                             02621
    01534    0006000    BL20   ALF  0 0                                                                02622
    01535    0777237    CRLF   OCT  777237                                                             02623
    01536    0777737    CRCHAR OCT  777737                                                             02624
    01540    0635164    WTRUE  ALF  TRU                                                                02625
    01541    0256060           ALF  E                                                                  02626
    01542    0262143    WFALSE ALF  FAL                                                                02627
    01543    0622560           ALF  SE                                                                 02628
    01544    0606060    SPACES ALF                                                                     02629
    01545    0606060           ALF                                                                     02630
    01546    0633144    TIME   ALF  TIM                                                                02631
    01547    0256016           ALF  E =                                                                02632
    01550    0604431    MINUTE ALF   MI                                                                02633
    01551    0456233           ALF  NS.                                                                02634
    01552    0606225    SECOND ALF   SE                                                                02635
    01553    0256233           ALF  CS.                                                                02636
    01554    0000000    ROUNDR OCT  0000000                                                            02637
    01555    0414336           OCT  0414336                                                            02638
    01556    0606060    BLANKS ALF                                                                     02639
    01560    0146314    DD1A   OCT  0146314              .1+1  IN LAST PLACE                            02640
    01561    1463150           OCT  1463150                                                            02641
    01562    1003146    D.1    OCT  0003146                                                            02642
    01563    0631463           OCT  0631463                                                            02643
    01564    0006266    OPOUT  DEC  POUT+2                                                             02644
    01565    3777774    DM4    DEC  -4                                                                 02645
    01566    3777773    DM5    DEC  -5                                                                 02646
    01567    3777767    DM9    DEC  -9                                                                 02647
    01570    0000005    FIVE   DEC  5                                                                  02648
    01571    0000006    SIX    DEC  6                                                                  02649
    01572    0000007    SEVEN  DEC  7                                                                  02650
```

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01573    0000026    D22     DEC 22
01574    0000030    D24     DEC 24
01575    0000033    033     OCT 33
01576    0000040    040     OCT 40
01577    0000053    053     OCT 53
01600    0014000    EXP3    OCT 0014000
01601    0004100    OBLO    OCT 4100
01602    2400000    *MOV*   MOV 0
```

THE MODIFIER OF THE COMPILER SHOULD BEAR IN   02661
MIND THAT CERTAIN ROUTINES CAN BE CALLED AT   02662
EITHER RUN-TIME OR COMPILE-TIME. AMONG THESE   02663
ARE ENDJOB, THE INTEGER PART OF PRINT, ROUND,   02664
AND INTCHK.   02665
                                                     02666
                                                     02667
                                                     02668

```
01603  0000060   U60    OCT 60
01604  0002000   .5     FDC .5
01605  0000000
02606  0170000   BIGZER FDC 0B30
01607  0000000
       02151     SYNTAX EQU 1129
01610  0000000   FZERO  FDC 0
01611  0000000
01612  0006000   FONE   FDC 1B1
01613  0000000
01614  0006000   FMONE  FDC -1
01615  2000000
       01010     ZERO   EQU FZERO
01616  0000002   TWO    OCT 2
01617  0000010   EIGHT  DEC 8
01620  0000003   THREE  DEC 3
01621  0000036   D30    DEC 30
01622  0000074   D60    DEC 60
01623  3777776   DM2    DEC -2
01624  0000050   D40    DEC 40
01625  0000102   D66    DEC 66
01626  0000100   D64    DEC 64
01627  0000104   D68    DEC 68
01630  0000200   D128   DEC 128
01631  0000004   FOUR   DEC 4
01632  0000077   U77    OCT 77
01633  0003777   U3777  OCT 3777
01634  0017777   U17777 OCT 17777
01635  0037777   U37777 OCT 37777
01636  0400000   ABIT   OCT 400000
01637  0000000          OCT 0
       01636     GR2    EQU ABIT
01640  0020000   CBIT   OCT 20000
01641  1000000   LBIT   OCT 1000000
01642  0040000   RBIT   OCT 0040000
01643  3760000   AMASK  OCT 3760000
01644  0177777   ACMASK OCT 177777
01645  3757777   ARMASK OCT 3757777
01646  3777700   CHMASK OCT 3777700
01647  3774000   EPMASK OCT 3774000
01650  1777777   SMASK  OCT 1777777
01651  2000000   SIGN   OCT -0
01652  1400000   SWTYPE OCT 1400000
01653  2621013   RETEND BRU ERLOOP-11
01654  2620142   GOEND  BRU ENDJOB-11
01655  2504012   *NOP*  NOP
01656  1740000   *STX2* STX 0        2
01657  1200001   RDUP   Z12 1
```

LEAVE ADDRESS ONLY   * 02697
LEAVES HIGH-ORDER TAGS ONLY   * 02698
                                                     02699
LEAVE 6-BIT CHARACTER ONLY   02700
REMOVE EXPONENT   02701
LEAVE SIGN BIT   02702
                                                     02703
SWITCH TYPE   02704
                                                     02705
                                                     02706
                                                     02707
                                                     02708
DISK READ   02709

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* 02691
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```
01600   3700001   WRTOP  Z37 1                DISK WRITE                              02710
01601   0010000   O10000 OCT 10000                                                   02711
01602   2620350   MODC1  BRU CONST1-11                                               02712
01603   2620440   MODC2  BRU CONST2-11                                               02713
01604   2620465   MODC3  BRU CONST3-11                                               02714
01605   0000115   D77    DEC 77                                                      02715
01606   0000016   D14    DEC 14                                                      02716
01607   0000000   DBLONE DDC 1                                                       02717
01671   0000001
01672   0170000   D3088  DEC 3088                                                    02718
01673   0002000   O2000  OCT 2000                                                    02719
01674   3777770   CMASK  OCT 3777770                                                 02720
01675   0007777   O7777  OCT 7777                                                    02721
01676   0020000   XTAG   OCT 20000                                                   02722
01677   3400000   YMASK  OCT 3400000                                                 02723
01700   0200000   GR1    OCT 0200000                                                 02724
01701   0006324   OBJLO  DEC PROG                                                    02725
01702   3776000   ETMASK OCT 3776000                                                 02726
01704   0004020   XMOVE  OCT 4020                                                    02727
01705   3777754          DEC -20                                                     02728
        01645     DMASK  EQU ARMASK                                                  02729
01706   1100000   DTYPE  OCT 1100000                                                 02730
01707   0001300   EXOEND OCT 1300                                                    02731
        01641     GR4    EQU LBIT                                                     02732
        01400     OVER   EQU 1400                                                    02733
                                              CONSTANTS FOR CONSTANT CONVERSION      02734
01710   0006000   CTABLE FDC 1B1                                                     02735
01711   0000000
01712   0022400          FDC 10B4                                                    02736
01713   0000000
01714   0037100          FDC 1E2B7                                                   02737
01715   0000000
01716   0053720          FDC 1E3B10                                                  02738
01717   0000000
01720   3072342          FDC 1E4B14                                                  02739
01721   0000000
01722   0107032          FDC 1E5B17                                                  02740
01723   1000000
01724   0123641          FDC 1E6B20                                                  02741
01725   0200000
01726   0142304          FDC 1E7B24                                                  02742
01727   1320000
01730   0156765          FDC 1E8B27                                                  02743
01731   1604000
01732   0332160          FDC 1E16B54                                                 02744
01733   1571157
01734   0656356          FDC 1E32B107                                               02745
01735   0265552
01736   1527023          FDC 1E64B213                                               02746
01737   1403722
01740   1777777          OCT 1777777                                                 02747
01741   1777777          OCT 1777777                                                 02748
                                                                                     02749
                                                                                 EJT02750
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01742  0010000   CLIST   OCT 10000
01743  0010001           OCT 10001
01744  0010002           OCT 10002
01745  0010003           OCT 10003
01746  0010004           OCT 10004
01747  0010005           OCT 10005
01750  0010006           OCT 10006
01751  0010007           OCT 10007
01752  0010010           OCT 10010
01753  0010011           OCT 10011
01754  3405064           OCT 3405064
01755  3600016           OCT 3600016
01756  3405052   PAREN   OCT 3405052
01757  3004075           OCT 3004075
01760  3600161           OCT 3600161
01761  2242004           OCT 2242004
01762  2262005   PLUSID  OCT 2262005
01763  0000121           OCT 0121
01764  0000422           OCT 0422
01765  0001123           OCT 1123
01766  0001424   D       OCT 1424
01767  0001725   E       OCT 1725
01770  0002426           OCT 2426
01771  0002727           OCT 2727
01772  0000030           OCT 0030
01773  0003131           OCT 3131
01774  2000001   BELLID  OCT 2000001
01775  3400070   DECID   OCT 3400070
01776  3405065           OCT 3405065
01777  3405064           OCT 3405064
02000  3600216           OCT 3600216
02001  2000003           OCT 2000003
02002  2262006   MINID   OCT 2262006
02003  0000041           OCT 0041
02004  0000042           OCT 0042
02005  0003743   L       OCT 3743
02006  0000044           OCT 0044
02007  0004145   N       OCT 4145
02010  0004246   O       OCT 4246
02011  0004447           OCT 4447
02012  0000050           OCT 0050
02013  0004751           OCT 4751
02014  0000000           OCT 0
02015  3400067   EXPID   OCT 3400067
02016  2242002           OCT 2242002
02017  2000002   EOMCH   OCT 2000002
02020  3600316           OCT 3600316
```

PROVIDES INTERNAL IDENTIFIERS FOR ALGOL   02751
SYMBOLS, SPECIAL CODES FOR CONTROL CHARACTERS   02752
AND, FOR LETTERS, THE INITIAL INDEX FOR THE   02753
ALLIST LOOKUP, FOR ALGOL SYMBOL, THE TAG   02754
BITS GIVE THE FOLLOWING INFORMATION   02755
                                                          02756

CHARACTER	GROUP	SUBGROUP	PREV	U	NUMBER	
						02757
0						02758
1						02759
2						02760
3						02761
4						02762
5						02763
6						02764
7						02765
8						02766
9						02767
APOSTROPHE	6		2	1	52	02768
COLON	7	0	LOOK FOR =			02769
OPEN PAREN	6		2	1	42	02770
SEMICOLON	4		2		61	02771
=	7	1	LOOK FOR /			02772
BACK SLASH	1	2	1		4	02773
+	1	3	1		5	02774
A						02775
B						02776
C						02777
D						02778
E						02779
F						02780
G						02781
H						02782
I						02783
BELL [NON-INPUTTABLE]						02784
.	6		0		56	02785
QUOTE	6		2	1	53	02786
QUESTION MARK [STRINGS ONLY]						02787
LESS THAN	7	2	LOOK FOR =			02788
CR						02789
-	1	3	1		6	02790
J						02791
K						02792
L						02793
M						02794
N						02795
O						02796
P						02797
Q						02798
R						02799
TAB						02800
$	6		0		55	02801
*	1	2	1		2	02802
EOM						02803
GREATER	7	3	LOOK FOR =			02804

```
02021   2222001              OCT 2222001        ARROW        1        1         1                  1 02805
02022   0000000              OCT 0              SPACE                                                02806
02023   3600416              OCT 3600416        /            7        4         LOOK FOR =            02807
02024   0005162      S        OCT 5162          S                                                    02808
02025   0005763      T        OCT 5763          T                                                    02809
02026   0006364              OCT 6364           U                                                    02810
02027   0006565              OCT 6565           V                                                    02811
02030   0006766              OCT 6766           W                                                    02812
02031   0000067              OCT 0067           X                                                    02813
02032   0007170              OCT 7170           Y        *****                                       02814
02033   0000071              OCT 0071           Z                                                    02815
02034   2000000              OCT 2000000        LINE FEED                                            02816
02035   3003076              OCT 3003076        ,            4                  1         1       62 02817
02036   3002074              OCT 3002074        CLOSE PAREN  4                  1                 60 02818
02037   3403053              OCT 3403053        [            6                  1         1       43 02819
02040   3002073              OCT 3002073        ]            4                  1                 59 02820
02041   2000004      SPCH     OCT 2000004       FILL                                                 02821
                                                                                                     02822
02042   0256262      OBGID    ALF ESS           YIPESS                                               02823
02043   0516425      TRUE     ALF RUE           TRUE                                                 02824
02044   0436225      FALSE    ALF LSE           FALSE                                                02825
02045   0100000      8BIT     OCT 100000                                                             02826
                                                                                                  NAM02827
                                                                                                     02828
                                                                                                  EJT02829
```

```
02046  2504202   ELAPS  LAC                                                                 02830
02047  0204000          SUB  RUNCLK                                                         02831
02050  2504005          XAW                                                                 02832
02051  00u1606          LDA  BIGZER                                                          02833
02052  1306000          UST  JUNK'                                                          02834
02053  0006000          FLD  JUNK                                                           02835
02054  3500005          CQX                                                           CQX*02836
02055  3100005          NOX                                                           NOX*02837
02056  3603540          FDV  FSIX                                                           02838
02057  0040001          LDA  1          2                                                   02839
02060  2516002          BNZ                                                                 02840
02061  2602352          BRU  ER53L                                                          02841
02062  2640002          BRU  2          2                                                   02842
02063  2504202   CLOCK  LAC                                                                 02843
02064  2602050          BRU  ELAPS+2                                                        02844
                                                                                            02845
02065  2516721   ABS    BAR  BPL       7                                              BAN*02846
02066  2620001          BRU  1          1    ARGUMENT POSITIVE                              02847
02067  3100002          MAQ             A                                                   02848
02070  3501614          FMP  FMONE           CHANGE SIGN FOR NEGATIVE ARGUMENT              02849
02071  2620001          BRU  1          1                                                   02850
                                                                                            02851
                                                                                            02852
02072  2516721   SIGNF  BAR  BPL       7                                              BAN*02853
02073  2602076          BRU  *+3                                                            02854
02074  3001014          FLD  FMONE           ANSWER IS -1 IF NEGATIVE                       02855
02075  2620001          BRU  1          1                                                   02856
02076  2514722          BAR  BZF       7                                                    02857
02077  2602102          BRU  *+3                                                            02858
02100  3001612          FLD  FONE            ANSWER IS 1 IF POSITIVE                        02859
02101  2620001          BRU  1          1                                                   02860
02102  3100002          MAQ             A    ANSWER IS 0 IF ZERO                            02861
02103  2620001          BRU  1          1                                                   02862
                                                                                         EJT02863
```

SUBSCRIPT TESTING

```
02104  0020001   TSTSUB LDA 1         1                          02864
02105  0300002          STA XR02                                 02865
02106  0240002          Z32 2         2                          02866
02107  2516721          BAP BPL       7                          02867
02110  2601475          BRU LOWERR                          BAN*02868
02111  0140000          Z31 0         2                          02869
02112  2514721          BAP BMI       7                          02870
02113  2601475          BRU LOWERR                          BAN*02871
02114  2620002          BRU 2         1                          02872
                                                                 02873
                                                                 02874
02115  0200010   DUNFLT SET UFLPOINT                             02875
02116  0101606          FAD BIGZER                               02876
02117  0306000          FST JUNK                                 02877
02120  0006001          LDA JUNK+1                               02878
02121  2512001          SLA 1                                    02879
02122  0100010          SET NFLPOINT                             02880
02123  2640001          BRU 1         2                          02881
                                                                 02882
                                                                 02883
02124  0621676   ASER   LDX XTAG      1                          02884
02125  2622010          BRU ER40      1                     EJT02885
```

```
02126   0020001   RDASUB  LDA  1          1                                                              02886
02127   0305707           STA  DBLOCK                                                                    02887
02130   2620002           BRU  2          1                                                              02888
                                                                                                         02889
02131   0645707   RD2SUB  LDX  DBLOCK     2                                                              02890
02132   0040000           LDA  0          2     POINTER FOR BLOCK                                         02891
02133   2140001           CAB  1          2     NUMBER OF ELEMENTS IN BLOCK                               02892
02134   2602137           BRU  *+3                                                                       02893
02135   2602153           BRU  LRUN             TERMINATE PROGRAM FOR LACK OF DATA                        02894
02136   2602153           BRU  LRUN             TERMINATE PROGRAM FOR LACK OF DATA                        02895
02137   0101616           ADD  TWO                                                                       02896
02140   0340000           STA  0          2                                                              02897
02141   0105707           ADD  DBLOCK                                                                    02898
02142   0306000           STA  JUNK             FORM ADDRESS OF DATA WORD                                 02899
02143   0646000           LDX  JUNK       2                                                              02900
02144   1040000           DLD  0          2     GET DATA WORD                                             02901
02145   2620001           BRU  1          1                                                              02902
                                                                                                         02903
02146   0020001   RESTOR  LDA  1          1     RESTOR PERFORMS THE RESTORE FUNCTION, SET-                02904
02147   0300002           STA  XR02             TING A DATA BLOCK POINTER BACK TO ZERO                    02905
02150   2504002           LDZ                                                                            02906
02151   0340000           STA  0          2                                                              02907
02152   2620002           BRU  2          1                                                              02908
                                                                                                         02909
02153   0621076   LRUN    LDX  XTAG       1                                                              02910
02154   2620126           BRU  RUNOUT     1                                                              02911
                                                                                                         02912
                                                                                                         02913
02155   2514001   BPRSUB  BMI                                                                            02914
02156   2602207           BRU  PRINT6                                                                    02915
02157   1001540           DLD  WTRUE            BOOLEAN VALUE IS FALSE                                    02916
02160   1305742   PRINT6  DST  BDCARG                                                                    02917
02161   1726255           SIX  PRX1       1                                                              02918
02162   0001623           LDA  DM2                                                                       02919
02163   2504006           MAQ                                                                            02920
02164   2506016           SET  PBK                                                                       02921
02165   0004001           LDA  OPOINT                                                                    02922
02166   0101616           ADD  TWO                                                                       02923
02167   2101707           CAB  EXCEND                                                                    02924
02170   2602173           BRU  *+3                                                                       02925
02171   2602172           BRU  *+1                                                                       02926
02172   0722211           SPB  EGRESS     1     CALL FOR INTERMEDIATE OUTPUT                              02927
02173   0004001           LDA  OPOINT                                                                    02928
02174   0101601           ADD  OBLO                                                                      02929
02175   2405742           MOV  BDCARG                                                                    02930
02176   0004001           LDA  OPOINT                                                                    02931
02177   0101616           ADD  TWO                                                                       02932
02200   0304001           STA  OPOINT                                                                    02933
02201   0006257           LDA  $IND                                                                      02934
02202   0101616           ADD  TWO                                                                       02935
02203   0306257           STA  $IND                                                                      02936
02204   2506015           SET  PST                                                                       02937
02205   0626255           LDX  PRX1       1                                                              02938
                                                                                                         02939
```

```
02206   2620001            BRU 1          1                                                      02940
02207   1001542   PRINT5   DLD WFALSE                                                            02941
02210   2602160            BRU PRINT6                                                            02942
                                                                                                 02943
02211   0001655   EGRESS   LDA *NOP*                                                             02944
02212   0317777            STA 8191                                                              02945
02213   2504022            LDD                                                                   02946
02214   2617777            BRU 8191                        GET TO 20,000 THE HARD WAY            02947
                                                                                                 02948
02215   0645755   SETFIL   LDX VECLO      2                POINTER TO DOPE VECTOR                02949
02216   0040002            LDA 2          2                POINTER TO BUFFER IN USE              02950
02217   0305707            STA DBLOCK                       POINTER                              02951
02220   2620002            BRU 2          1                                                      02952
                                                                                                 02953
02221   1726322   RESFIL   STX TEMP*      1                RESTORE DISK FILE                     02954
02222   0722224            SPB *+2        1                                                      02955
02223   2602226            BRU *+3                                                               02956
02224   0641676            LDX XTAG       2                                                      02957
02225   2642476            BRU WRTDSK     2                                                      02958
02226   0626322            LDX TEMP*      1                                                      02959
02227   0005747            LDA DSKOP+3                                                           02960
02230   2514002            BZE *-1                          CHECK FOR LAST READ COMPLETE BEFORE SETUP   02961
02231   2602227            BRU DSKOP+3                                                           
02232   0641676            LDX XTAG       2                                                      02962
02233   2642573            BRU SETUP       2                                                     02963
                                                                                                 02964
02234   0645707   RDBSUB   LDX DBLOCK     2                PICK UP FILE POINTER                  02965
02235   0040002            LDA 2          2                                                      02966
02236   2140003            CAB 3          2                CHECK FOR END-OF-RECORD               02967
02237   2602242            BRU *+3                          OK                                   02968
02240   2602252            BRU ENDREC                       OI VEY                               02969
02241   2602252            BRU ENDREC                                                            02970
02242   0101616            ADD TWO                                                               02971
02243   0340002            STA 2          2                UPDATE                                02972
02244   0105707            ADD DBLOCK                       FORM ADDRESS                         02973
02245   0101616            ADD TWO                                                               02974
02246   0306000            STA JUNK                                                              02975
02247   0646000            LDX JUNK       2                                                      02976
02250   1040000            DLD 0          2                GET VALUE                            02977
02251   2620001            BRU 1          1                EXIT                                 02978
                                                                                                 02979
02252   2506033   ENDREC   SXG 1                                                           1*02980
02253   0722256            SPB *+3        1                FUDGE RETURN                          02981
02254   2506013            SXG 0                                                           0*02982
02255   2602234            BRU RDBSUB                                                            02983
02256   0641676            LDX XTAG       2                GO ON UP                             02984
02257   2642476            BRU RDDISK     2                                                      02985
                                                                                                 02986
02260   0645707   WRTSUB   LDX DBLOCK     2                PICK UP POINTER                       02987
02261   2504022            LDD                                                                   02988
02262   0340001            STA 1          2                                                      02989
02263   0040002            LDA 2          2                                                      02990
02264   2140003            CAB 3          2                CHECK FOR END-OF-RECORD               02991
02265   2602270            BRU *+3                                                               02992
```

```
02266   2602277        BRU FULL            GUESS WHAT                                      02993
02267   2602277        BRU FULL                                                            02994
02270   0101616        ADD TWO                                                             02995
02271   9340002        STA 2       2       UPDATE IT                                       02996
02272   0105707        ADD DBLOCK          FORM ADDRESS                                    02997
02273   0101616        ADD TWO                                                             02998
02274   0300002        STA XR02                                                            02999
02275   3340000        FST 0       2       WRITE OUT VALUE                                 03000
02276   2620001        BRU 1       1       EXIT                                            03001
                                                                                           03002
02277   2506033   FULL SXG 1                                                             1*03003
02300   9722303        SPB *+3     1                                                       03004
02301   2506013        SXG 0                                                             0*03005
02302   2602260        BRU WRTSUB                                                          03006
02303   0641676        LDX XTAG    2                                                       03007
02304   2642476        BRU WRTDSK  2                                                       03008
                                            BOOLEAN FUNCTIONS FOR AAU ERROR CHECKS          03009
02305   2504102   OVFCHK LMO                   OVERFLOW                                    03010
02306   2514725        BAR B00     7                                                       03011
02307   2504002        LDZ                                                                 03012
02310   2640002        BRU 2       2                                                       03013
02311   2504102   UFLCHK LMO                   UNDERFLOW                                   03014
02312   2514726        BAR B00     7                                                       03015
02313   2504002        LDZ                                                                 03016
02314   2640002        BRU 2       2                                                       03017
02315   2504102   DVDCHK LMO                   DIVIDE CHECK                                03018
02316   2514730        BAR BDC     7                                                       03019
02317   2504002        LDZ                                                                 03020
02320   2640002        BRU 2       2                                                       03021
                                                                                        EJT03022
```

```
02321   0040001   RDMSUB  LDA 1      2    RANDOM MAY APPEAR WITH ONE OR NO ARGUMENTS         03023
02322   2516002           BNZ                                                                03024
02323   2602336           BRU THROW                                                          03025
02324   1005702           DLD RANDM2             APPEARS WITH ARGUMENT                        03026
02325   2512205           SLD 5                                                              03027
02326   1105702           DAD RANDM2                                                         03028
02327   1101562           DAD D.1                                                            03029
02330   2001647           EXT EPMASK             ANYTHING ODD AND NOT TOO LARGE              03030
02331   1305702           DST RANDM2                                                         03031
02332   3500005           CQX                                                          CQX*03033
02333   3005702           FLD RANDM2                                                         03034
02334   3100005           NOX                                                          NOX*03035
02335   2640002           BRU 2      2                                                       03036
                                                                                             03037
                                                CALL OF RANDOM WITH AN ARGUMENT CAUSES       03038
                                                INITIALIZATION BEFORE ACCESS                 03039
                                                                                             03040
02336   2001643   THROW   EXT AMASK                                                          03041
02337   0300001           STA XR01                                                           03042
02340   0040001           LDA 1      2                                                       03043
02341   2001644           EXT ADMASK                                                         03044
02342   2516002           BNZ LINKR             ILLEGAL ARGUMENT                             03045
02343   2601473                                                                              
02344   0020000           LDA 0      1                                                       03046
02345   2001643           EXT AMASK                                                          03047
02346   0300001           STA XR01              SKIP TRANSFER THUNK                          03048
02347   0020000           LDA 0      1          SHOULD BE MARKER FOR END OF THUNKS           03049
02350   2514002           BZE                                                                03050
02351   2602355           BRU *+4               IT WAS                                       03051
02352   1766000   ER53L   STX JUNK   3                                                       03052
02353   0641676           LDX XTAG   2                                                       03053
02354   2642321           BRU ER53   2          ERROR -- MORE THAN ONE ARGUMENT             03054
02355   1725700           STX RND    1          ADDRESS OF MARKER                           03055
02356   0520002           LDX XR02   1                                                       03056
02357   0742361           SPB *+2    2                                                       03057
02360   2602362           BRU *+2                                                            03058
02361   2620003           BRU 3      1          GOTO THUNK                                   03059
02362   0020000           LDA 0      1          GET FIRST WORD OF RESULT                     03060
02363   2001646           EXT CHMASK                                                         03061
02364   0306000           STA JUNK                                                           03062
02365   0742321           SPB RDMSUB 2                                                       03063
02366   0000000           DEC 0                                                              03064
02367   0006000           LDA JUNK                                                           03065
02370   2514002           BZE                                                                03066
02371   2602374           BRU RNDO                                                           03067
02372   2504112           SBO                                                                03068
02373   2602364           BRU *-7                                                            03069
02374   0625700   RNDO    LDX RND    1          EXIT                                         03070
02375   2620001           BRU 1      1                                                       03071
                                                                                        EJT03072
```

				03073
				03074
		THE FOLLOWING ROUTINES ARE BASED ON THE		03075
		TABLES AND METHODS FOUND IN		03076
		C. W. CLENSHAW - CHEBYSHEV SERIES FOR		03077
		MATHEMATICAL FUNCTIONS . THE ROUTINES WERE		03078
		WRITTEN AT DARTMOUTH COLLEGE BY		03079
		RONALD M. MARTIN FOR USE WITH THE DARTMOUTH		03080
		TIME-SHARING SYSTEM. THEIR USE FOR ANY OTHER		03081
		PURPOSE WITHOUT THE EXPRESS PERMISSION OF		03082
		THE AUTHOR IS STRICTLY PROHIBITED.		03083
				03084
		CHEBYSHEV POLYNOMIAL EVALUATION ROUTINE		03085
				03086
		ENTRANCE IS SPB CHEBY,1 WITH N IN A, X IN AX,		03087
		AND ADX[A[N]] IN XR2, A[N-1] FOLLOWS A[N],		03088
		EXIT WITH F[X] IN AX.		03089

```
02376  0305726   CHEBY   FST  CHEB2X                                      03090
02377  0105726           FAD  CHEB2X                                      03091
02400  0305726           FST  CHEB2X                                      03092
02401  0200005           UAX                                              03093
02402  0305730           FST  CHEBR2              B[R+2]=0                03094
02403  0305732   CHEBL   FST  CHEBR1              B[R+1]=0                03095
02404  0005726           FLD  CHEB2X                                      03096
02405  0100002           MAU         A                                   03097
02406  0505732           FMP  CHEBR1                                      03098
02407  0205730           FSU  CHEBR2                                      03099
02410  0140000           FAD  0      2            A[R]                    03100
02411  0305734           FST  CHEBR               B[R]=2*X*B[R+1]-B[R+2]+A[R]  03101
02412  2514002           BZE                                             03102
02413  2602422           BRU  CHEBE                                      03103
02414  2504112           SBU                                            03104
02415  1440002           INX  2      2                                   03105
02416  0005732           FLD  CHEBR1                                      03106
02417  0305730           FST  CHEBR2                                      03107
02420  0005734           FLD  CHEBR                                      03108
02421  2602403           BRU  CHEBL                                      03109
02422  0205730   CHEBE   FSU  CHEBR2                                      03110
02423  0100002           MAU         A                                   03111
02424  3502426           FMP  CHEB.5              F[X]=.5*[B[0]-B[2]]     03112
02425  2620001           BRU  1      1                                   03113
```

		LOWER MEMORY CONSTANT	03114
			03115

```
02426  0002000   CHEB.5  FDC  .5                                          03116
02427  0060000
```

			03117
		SINE - COSINE ROUTINE	03118
			03119
		ENTRANCE IS SPB SIN,1 OR SPB COS,1	03120
		WITH X IN AX, EXIT WITH F[X] IN AX.	03121
			03122

```
02430  0102510   COS     FAD  SCP1/2                                      03123
02431  0100002   SIN     MAU         A                                   03124
02432  0502512           FMP  SC2/PI              SERIES PRODUCES SIN[[1/2]*PI*X]  03125
```

```
02433   0305714         FST SCX                                             03126
02434   3102516         FAD SC1                                             03127
02435   3200010         SET UFL                                            03128
02436   3102514         FAD SCBZER              DDC 31B8                    03129
02437   0305716         FST SCSGN              ODD=NEG (IN SCSGN+1)         03130
02440   3100010         SET NFL                                            03131
02441   3500005         CGX                                                03132
02442   3100005         NOX                                                03133
02443   0305720         FST SCTEM                                           03134
02444   3005714         FLD SCX                                             03135
02445   3205720         FSU SCTEM              X BETWEEN -1 AND 1           03136
02446   0305714         FST SCX                                             03137
02447   0100002         MAG           A                                    03138
02450   3505714         FMP SCX                                             03139
02451   0305720         FST SCTEM                                           03140
02452   3105720         FAD SCTEM                                           03141
02453   3202516         FSU SC1               2*X**2-1 FOR EVEN SERIES      03142
02454   1745723         STX SCX2       2                                   03143
02455   0642521         LDX SINTPT     2       COEFFICIENTS FOR CHEBY       03144
02456   0002520         LDA SC5               N=5 FOR CHEBY                 03145
02457   1725722         STX SCX1       1                                   03146
02460   0722376         SPB CHEBY      1       EVALUATE CHEBYSHEV SERIES    03147
02461   0100002         MAG           A                                    03148
02462   3505714         FMP SCX               COMPLETE THE EVALUATION       03149
02463   0005717         LDA SCSGN+1           CORRECT SIGN IF NECESSARY     03150
02464   2516000         BEV                                                03151
02465   2602471         BRU *+4                                            03152
02466   0305720         FST SCTEM                                           03153
02467   3200005         CAX                                                03154
02470   3205720         FSU SCTEM                                           03155
02471   0645723         LDX SCX2       2                                   03156
02472   0625722         LDX SCX1       1                                   03157
02473   2620001         BRU 1          1                                   03158
02474   0624315  SINTAB FDC -6.70279                                       03159
02475   0003707              1603E-9                                       03160
02476   0666370         FDC 1.184961                                       03161
02477   0537256              858E-6                                        03162
02500   3721606         FDC -1.36587                                       03163
02501   2342142              5135E-4                                       03164
02502   3752253         FDC 9.118010                                       03165
02503   0107310              007E-3                                        03166
02504   3775557         FDC -2.85261                                       03167
02505   0106204              5692E-1                                       03168
02506   0012432         FDC 2.552557                                       03169
02507   1643372              925                                           03170
                                              LOWER MEMORY CONSTANTS       03171
02510   0009110  SCP1/2 FDC 1.570796                                       03172
02511   0773250              327                                           03173
02512   0002427  SC2/PI FDC 6.366197                                       03174
02513   1460333              724E-1                                        03175
02514   0174000  SCBZER DDC 31B8                                           03176
02515   0000000
02516   0006000  SC1    FDC 1                                              03177
02517   0000000
```

```
02520   0000005   SC5    DEC 5                                                              03178
02521   0002474   SINTPT DEC SINTAB                                                         03179
                                                                                            03180
                                 TANGENT - COTANGENT ROUTINE                                03181
                                                                                            03182
                                 ENTRANCE IS SPB TAN,1 OR SPB COT,1                         03183
                                 WITH X IN AX,  EXIT WITH F(X) IN AX,                       03184
                                                                                            03185
02522   0305720   COT    FST SCTEM                                                          03186
02523   3002510          FLD SCPI/2                                                         03187
02524   0205720          FSU SCTEM                                                          03188
02525   0100002   TAN    MAG      A                   TAN SERIES PRODUCES TAN[[1/4]*PI*X]   03189
02526   3502650          FMP TC4/PI                                                         03190
02527   0305714          FST SCX                                                            03191
02530   0102510          FAD SC1                                                            03192
02531   0200010          SET UFL                                                            03193
02532   0102514          FAD SCBZER                     DDC 3188                            03194
02533   0305716          FST SCSGN                       EVEN=TAN, ODD=NEG COT              03195
02534   0100010          SET NFL                                                            03196
02535   3500005          CWX                                                                03197
02536   0100005          NOX                                                                03198
02537   3305720          FST SCTEM                                                          03199
02540   3005714          FLD SCX                                                            03200
02541   0205720          FSU SCTEM                       X BETWEEN -1 AND 1                 03201
02542   0305714          FST SCX                                                            03202
02543   0005717          LDA SCSGN+1                                                        03203
02544   2514000          ROD                                                                03204
02545   2602566          BRU TCCOT                                                          03205
02546   3305720          FST SCTEM                                                          03206
02547   0100002          MAG      A                                                         03207
02550   3505720          FMP SCTEM                                                          03208
02551   3305720          FST SCTEM                                                          03209
02552   0105720          FAD SCTEM                                                          03210
02553   0202510          FSU SC1                         2*X**2-1 FOR EVEN SERIES          03211
02554   1745723          STX SCX2     2                                                     03212
02555   0642662          LDX TANTPT   2                  COEFFICIENTS FOR CHEBY            03213
02556   0002060          LDA TC8                         N=8 FOR CHEBY                      03214
02557   1725722          STX SCX1     1                                                     03215
02560   0722376          SPB CHEBY    1                  EVALUATE CHEBYSHEV SERIES         03216
02561   0100002          MAG      A                                                         03217
02562   3505714          FMP SCX                         COMPLETE THE EVALUATION           03218
02563   0645723   TCEXIT LDX SCX2     2                                                     03219
02564   0625722          LDX SCX1     1                                                     03220
02565   2620001          BRU 1        1                                                     03221
02566   3100002   TCCOT  MAG      A                                                         03222
02567   0502426          FMP CHEB.5                       COT SERIES PRODUCES COT[[1/2]*PI*X]  03223
02570   0305714          FST SCY                                                            03224
02571   0100002          MAG      A                                                         03225
02572   3505714          FMP SCX                                                            03226
02573   3305720          FST SCTEM                                                          03227
02574   0105720          FAD SCTEM                                                          03228
02575   0202510          FSU SC1                          2*X**2-1 FOR EVEN SERIES         03229
02576   1745723          STX SCX2     2                                                     03230
02577   0642663          LDX COTTPT   2                   COEFFICIENTS FOR CHEBY           03231
02600   0002001          LDA TC9                          N=9 FOR CHEBY
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02601	1725722		STX	SCX1	1		03232
02602	0722376		SPB	CHEBY	1	EVALUATE CHEBYSHEV SERIES	03233
02603	3605714		FDV	SCX		COMPLETE THE EVALUATION	03234
02604	3305720		FST	SCTEM			03235
02605	3200005		CAX				03236
02606	3205720		FSU	SCTEM		CHANGE SIGN FOR NEG COT	03237
02607	2602565		BRU	TCEXIT			03238
02610	3616165	TANTAB	FDC	1.038051			03239
02611	0545475			085E-9			03240
02612	3633703		FDC	1.445818			03241
02613	0170073			659E-8			03242
02614	3653301		FDC	2.013765			03243
02615	1477064			769E-7			03244
02616	3672741		FDC	2.804816			03245
02617	1513764			136E-6			03246
02620	3712436		FDC	3.906636			03247
02621	1546171			955E-5			03248
02622	3732165		FDC	5.441703			03249
02623	0324776			817E-4			03250
02624	3747704		FDC	7.586101			03251
02625	1232505			578E-3			03252
02626	3707325		FDC	1.067539			03253
02627	0071560			286E-1			03254
02630	0007424		FDC	1.770147			03255
02631	1236065			423			03256
02632	3601340	COTTAB	FDC	-1.49057			03257
02633	3600216			6242E-10			03258
02634	3621012		FDC	-2.07611			03259
02635	3223447			4255E-9			03260
02636	3634074		FDC	-2.69171			03261
02637	3522260			2336E-8			03262
02640	3654475		FDC	-4.02799			03263
02641	3763522			8191E-7			03264
02642	3675035		FDC	-5.61254			03265
02643	2622151			9263E-6			03266
02644	3715336		FDC	-7.83173			03267
02645	2006717			0733E-5			03268
02646	3735576		FDC	-1.10040			03269
02647	2220110			5918E-3			03270
02650	3755744		FDC	-1.60455			03271
02651	2702347			3382E-2			03272
02652	3775354		FDC	-3.17203			03273
02653	3356527			8386E-1			03274
02654	0002551		FDC	6.688682			03275
02655	1536353			844E-1			03276
						LOWER MEMORY CONSTANTS	03277
02656	0006427	TC4/PI	FDC	1.273239			03278
02657	1463633			545			03279
02660	0000010	TC8	DEC	8			03280
02661	0000011	TC9	DEC	9			03281
02662	0002610	TANTPT	DEC	TANTAB			03282
02663	0002632	COTTPT	DEC	COTTAB			03283
							03284
						ARCTANGENT ROUTINE	03285

						03286
			ENTRANCE IS SPB ATN,1 WITH X IN AX.			03287
			EXIT WITH ARCTAN[X] IN AX.			03288
02604	3305714	ATN	FST SCX			03289
02605	2504002		LDZ		FLAG=0	03290
02606	2516721		BAR BPL	7	IS ABS[X] LQU 1	03291
02607	2602673		BRU *+4			03292
02610	2504032		ADD		FLAG681	03293
02611	3200005		CAX			03294
02612	3205714		FSU SCX			03295
02613	3202516		FSU SC1			03296
02614	2516721		BAR BPL	7		03297
02615	2514722		BAR PZE	7		03298
02616	2602704		BRU ATEV			03299
02617	2504502		CPL		FLAG68=1 OR =2	03300
02700	3002516		FLD SC1			03301
02701	3500005		CCX			03302
02702	3605714		FDV SCX			03303
02703	3305714		FST SCX			03304
02704	0305716	ATEV	STA SCSGN		- ADJUST, ODD +, EVEN -	03305
02705	3005714		FLD SCX			03306
02706	3100002		MAG	A		03307
02707	3505714		FMP SCX			03308
02710	3305720		FST SCTEM			03309
02711	3105720		FAD SCTEM			03310
02712	3202516		FSU SC1		2*x**2-1 FOR EVEN SERIES	03311
02713	1745723		STX SCX2	2		03312
02714	0642767		LDX ATNTPT	2	COEFFICIENTS FOR CHEBY	03313
02715	0002766		LDA AT10		N=10 FOR CHEBY	03314
02716	1725722		STX SCY1	1	EVALUATE CHEBYSHEV SERIES	03315
02717	0722376		SPB CHEBY	1		03316
02720	3100002		MAG	A		03317
02721	3505714		FMP SCX		COMPLETE THE EVALUATION	03318
02722	0005716		LDA SCSGN			03319
02723	2516001		BPL			03320
02724	2602733		BRU ATNA		NO ADJUSTMENT NECESSARY	03321
02725	3305720		FST SCTEM		ADJUST RESULT, ABS[X] GRT 1	03322
02726	2514000		BOD			03323
02727	2602736		BRU ATPAD		[PI/2]-ARCTAN[1/X]	03324
02730	3200005		CAX		-[PI/2]-ARCTAN[1/X]	03325
02731	3202510		FSU SCPI/2			03326
02732	3205720	ATAD	FSU SCTEM			03327
02733	0645723	ATNA	LDX SCX2	2		03328
02734	0625722		LDX SCX1	1		03329
02735	2620001		BRU 1	1		03330
02736	3002510	ATPAD	FLD SCPI/2			03331
02737	2602732		BRU ATAD			03332
02740	0622161	ATNTAB	FDC 2.008505			03333
02741	0261162			764E-9		03334
02742	3630333		FDC -1.33033			03335
02743	3143115			8398E-8		03336
02744	3646715		FDC 8.648877			03337
02745	1506536			864E-8		03338
02746	3601470		FDC -5.69916			03339

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02747    2157552              6167E-7                                                          03340
02750    5676001         FDC 3.821036                                                          03341
02751    1316425              594E-6                                                            03342
02752    5704440         FDC -2.62151                                                          03343
02753    3351341              9611E-5                                                           03344
02754    5723020         FDC 1.857429                                                          03345
02755    0177773              733E-4                                                            03346
02756    5735127         FDC -1.38119                                                          03347
02757    3351120              5004E-3                                                           03348
02760    5752663         FDC 1.113584                                                          03349
02761    1143327              206E-2                                                            03350
02762    5764471         FDC -1.05892                                                           03351
02763    2003420              9245E-1                                                           03352
02764    0007415         FDC 1.762747                                                           03353
02765    0066302              174                                                               03354
                                                      LOWER MEMORY CONSTANTS                    03355
02766    0000012    AT10   DEC 10                                                               03356
02767    0002740    ATNTPT DEC ATNTAB                                                           03357
                                                                                               03358
                                                      EXPONENTIAL ROUTINE                       03359
                                                                                               03360
                                                      ENTRANCE IS SPB EXP,1 WITH X IN AX,       03361
                                                      EXIT WITH EXP(X) IN AX,                   03362
                                                      ERROR EXIT IS BRU EXPERR WITH             03363
                                                      MACHINE INFINITY IN AX AND RETURN TO      03364
                                                      CALLING ROUTINE IN XR1.                   03365
02770    3100002    EXPSUB MAG           A                                                      03366
02771    5503060           FMP EXL2E                 LOG2(E)                                    03367
02772    3305714           FST SCX                                                              03368
02773    3102516           FAD SC1                                                              03369
02774    3200010           SET UFL                                                              03370
02775    3103062           FAD EXHZER                DDC 3068                                   03371
02776    3305710           FST SCSGN                 SAVE FOR 2**N                              03372
02777    3100010           SET NFL                                                              03373
03000    3500005           CNX                                                                  03374
03001    3100005           NOX                                                                  03375
03002    3205714           FSU SCX                   T FOR 2**(-T)                              03376
03003    1005710           DLD SCSGN                 CHECK RANGE                                03377
03004    2003070           EXT EXEXMK                MASK OUT EXPONENT                          03378
03005    2512200           SLB 0                     TRANSFER SIGN                              03379
03006    2203064           DCB EXMAX                 DDC 225                                    03380
03007    2603015           BRU EXOK                                                             03381
03010    2603013           BRU EXSP                  CHECK SPECIAL CASE                         03382
03011    5005060    EXER   FLD EXBIG                 MACHINE INFINITY                           03383
03012    2601501           BRU EXPERR                ERROR EXIT                                 03384
03013    2514722    EXSP   BAR BZE       7                                                      03385
03014    2603011           BRU EXER                  T=0 AND N=256                              03386
03015    2512230    EXOK   SLB 30                                                               03387
03016    1305710           DST SCSGN                                                            03388
03017    3305714           FST SCX                                                              03389
03020    3105714           FAD SCX                                                              03390
03021    3202510           FSU SC1                   TRANSLATE FOR T* SERIES                    03391
03022    1745723           STX SCX2      2                                                      03392
03023    0643072           LDX EXPTPT    2           COEFFICIENTS FOR CHEBY                     03393
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 03024   0005071          LDA  EX7          N=7 FOR CHEBY                             03394
 03025   1725722          STX  SCX1    1                                             03395
 03026   0722376          SPB  CHEBY   1    EVALUATE CHEBYSHEV SERIES                 03396
 03027   3305720          FST  SCTEM                                                 03397
 03030   0005720          LDA  SCTEM                                                 03398
 03031   0105710          ADD  SCSGN        ADJUST EXPONENT [ADD N]                   03399
 03032   3305720          STA  SCTEM                                                 03400
 03033   3305720          FLD  SCTEM                                                 03401
 03034   6645723          LDX  SCX2    2                                             03402
 03035   6625722          LDX  SCX1    1                                             03403
 03036   2620001          BRU  1       1                                             03404
*03040   3615122   EXPTAB FDC  -1.32151      CHEBYSHEV COEFFICIENTS FOR 2**[-X]       03405
 03041   3750650               6381E-9                                              03406
 03042   3643453          FDC  5.341187                                             03407
 03043   0357265               688E-6                                               03408
 03044   3604074          FDC  -1.85069                                             03409
 03045   3530024               0714E-6                                              03410
 03046   3713401          FDC  5.345305                                             03411
 03047   1131060               818E-5                                               03412
 03050   3755360          FDC  -1.23571                                             03413
 03051   2412067               4082E-3                                              03414
 03052   3756575          FDC  2.144055                                             03415
 03053   1026004               599E-2                                               03416
 03054   3770012          FDC  -2.48762                                             03417
 03055   2215351               4339E-1                                              03418
 03056   3005723          FDC  1.456999                                             03419
 03057   1737063               875                                                  03420
                                             LOWER MEMORY CONSTANTS                   03421
 03060   3005705   EXL2E  FDC  1.442695                                             03422
 03061   0507312               041                                                  03423
 03062   0170000   EXBZER DDC  30B8                                                 03424
 03063   0000000
 03064   0000000   EXMAX  DDC  255
 03065   0000377                                                                    03425
 03066   1777777   EXBIG  OCT  1777777                                              03426
 03067   1777777          OCT  1777777                                              03427
 03070   3774000   EXEXMK OCT  3774000                                              03428
 03071   0000007   EX7    DEC  7                                                    03429
 03072   0003040   EXPTPT DEC  EXPTAB                                               03430
                                                                                    03431
                                             LOGARITHM ROUTINE                       03432
                                                                                    03433
                                             ENTRANCE IS SPB LOG,1 WITH X IN AX.     03434
                                             EXIT WITH LOG[ABS[X]] IN AX.            03435
                                             IF X LSS 0 EXIT IS BRU LOGNEG.          03436
                                             IF X EQU 0 EXIT IS BRU LOGZER.          03437
                                             IN BOTH CASES RETURN IS STILL IN XR1.   03438
                                                                                    03439
 03073   2516722   LOG    BAR  BNZ     7                                            03440
 03074   2603077          BRU  **3                                                  03441
 03075   3005206          FLD  LONBIG        ERROR EXIT                              03442
 03076   2601477          BRU  LOGZER                                               03443
 03077   3305714          FST  SCY                                                  03444
 03100   2604002          LDZ                 FLAG FOR ERROR EXIT                    03445
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03101   2516721           BAR  BPL      7                                              03446
03102   2603107           BRU  LOP                                                     03447
03103   3200005           CAX                                                          03448
03104   3205714           FSU  SCX                                                     03449
03105   3305714           FST  SCX                                                     03450
03106   2504102           LMO                         ERROR - SET FLAG                 03451
03107   0305724    LOP    STA  LOF                                                     03452
03110   0005714           LDA  SCX                                                     03453
03111   2510013           SRA  11                                                      03454
03112   2504112           SBO                                                          03455
03113   2511023           SRD  19                                                      03456
03114   2003070           EXT  EXEXMK                                                  03457
03115   0103062           ADD  EXBZER                 EXPONENT OF 30                   03458
03116   1305716           DST  SCSGN                                                   03459
03117   0005714           LDA  SCX                                                     03460
03120   2003070           EXT  EXEXMK                                                  03461
03121   0103210           ADD  LO1B8                  ADJUST EXPONENT [ADD 1]          03462
03122   0305714           STA  SCX                                                     03463
03123   3005714           FLD  SCX                                                     03464
03124   3202516           FSU  SC1                    ADJUST X FOR SERIES [LOG[1+X]]   03465
03125   3305714           FST  SCX                                                     03466
03126   3105714           FAD  SCX                                                     03467
03127   3202516           FSU  SC1                    ADJUST FOR T* SERIES            03468
03130   1745723           STX  SCX2     2                                              03469
03131   0643212           LDX  LOGTPT   2             COEFFICIENTS FOR CHEBY          03470
03132   0003211           LDA  LO12                   N=12 FOR CHEBY                   03471
03133   1725722           STX  SCX1     1                                              03472
03134   0722376           SPB  CHEBY    1             EVALUATE CHEBYSHEV SERIES       03473
03135   3305720           FST  SCTEM                                                   03474
03136   3005716           FLD  SCSGN                                                   03475
03137   3500005           COX                                                          03476
03140   3100005           NOX                                                          03477
03141   3100002           MAQ               A                                          03478
03142   3503204           FMP  LOG2                   LN[2]                           03479
03143   3105720           FAD  SCTEM                                                   03480
03144   0645723           LDX  SCX2     2                                              03481
03145   0625722           LDX  SCX1     1                                              03482
03146   0005724           LDA  LOF                                                     03483
03147   2514001           BMI                                                          03484
03150   2601477           BRU  LOGNEG                 ERROR EXIT                      03485
03151   2620001           BRU  1        1                                              03486
03152   3574214    LOGTAB FDC  -1.08450                                               03487
03153   2166103                8655E-10                                               03488
03154   3612754           FDC  6.895602                                               03489
03155   0557543                732E-10                                                03490
03156   3625500           FDC  -4.42095                                               03491
03157   3433171                6981E-9                                                03492
03160   3637057           FDC  2.863025                                               03493
03161   0722621                065E-8                                                 03494
03162   3650003           FDC  -1.87727                                               03495
03163   2667054                9957E-7                                                03496
03164   3666476           FDC  1.250467                                               03497
03165   1267317                362E-6                                                 03498
03166   3701012           FDC  -8.50296                                               03499
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03167   0401024                7541E-6                                                                          03500
03170   0715713         FDC 5.947071                                                                            03501
03171   1006065                199E-5                                                                           03502
03172   0724340         FDC -4.33275                                                                            03503
03173   0326164                8886E-4                                                                          03504
03174   0743345         FDC 3.367069                                                                            03505
03175   0514217                256E-3                                                                           03506
03176   0754166         FDC -2.94372                                                                            03507
03177   3403373                5152E-2                                                                          03508
03200   0776575         FDC 3.431457                                                                            03509
03201   1001460                505E-1                                                                           03510
03202   0003005         OCT 0003005                                                                             03511
03203   1715424         OCT 1715424                                                                             03512
                                                            LOWER MEMORY CONSTANTS                               03513
03204   0002613   LOG2  FDC 6.931471                                                                            03514
03205   1102775                806E-1                                                                           03515
03206   1774000   LONBIG OCT 1774000                                                                            03516
03207   2000001         OCT 2000001                                                                             03517
03210   0004000   LO188 DEC 188                                                                                 03518
03211   0000014   LO12  DEC 12                                                                                  03519
03212   0003152   LOGTPT DEC LOGTAB                                                                             03520
                                                                                                                03521
03213   1725740   ITST  STX /0134    1                                                                          03522
03214   0621076         LDX XTAG      1                                                                         03523
03215   2623102         BRU INTCHK    1                                                                         03524
                                                                                                                03525
03216   0500002   POWSUB XAQ          A                                                                         03526
03217   2514722         BAR BZE       7                                            BASE = 0            BAN*03527
03220   2603311         BRU BASEZR                                                                              03528
03221   2514721         BAR BMI       7                                            BASE IS NEGATIVE            03529
03222   2603303         BRU BASEM1                                                                              03530
03223   0500002         XAQ           A                                            CHECK FOR INTEGER EXPONENT 03531
03224   8745213         SPH ITST     -2                                                                         03532
03225   2603021         BRU LNEXP                                                                               03533
03226   0625740   POWMPY LDX /0134    1                                                                         03534
03227   2516721         BAR BPL       7                                            EXPONENT IS POSITIVE        03535
03230   2603243         BRU POW3                                                   NEGATIVE EXPONENT           03536
03231   0500002         XAQ           A                                                                         03537
03232   0317776         FST POWT                                                                                03538
03233   0200005         CAX                                                                            CAX*03539
03234   0501014         FMP FMONE                                                                               03540
03235   3306000         FST JUNK                                                                                03541
03236   0500005         CQX                                                                            CQX*03542
03237   0001012         FLD FONE                                                                                03543
03240   0617776         FDV POWT                                                                                03544
03241   0100002         MAG           A                                                                         03545
03242   2603244         BRU *+2                                     QX = 1/BASE        JUNK = -EXP              03546
03243   0306000   POW3  FST JUNK                                    EXPONENT                                    03547
03244   1001012         FLD FONE                                                                                03548
03245   1317776         FST POWT                                                                                03549
03246   1006000         FLD JUNK                                                                                03550
03247   2613013         SRA 11                                                                                  03551
03250   0201021         SUB DS0                                                                                 03552
03251   2604522         NEG                                                                                     03553
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03252	0300002		STA XR02			03554
03253	0006000		LDA JUNK			03555
03254	2001647		EXT EPMASK		MASK OFF EXPONENT	03556
03255	2551000		SRD 0	2	TRUNCATE	03557
03256	0500002		XAQ	A		03558
03257	0306000		FST JUNK		BASE	03559
03260	2603264		BRU POW3			03560
03261	0100002	POW1	MAQ	A		03561
03262	0506000		FMP JUNK			03562
03263	0306000		FST JUNK		NEXT [2**N]-TH POWER OF BASE	03563
03264	2504005	POW3	XAQ			03564
03265	2516000		REV			03565
03266	2603273		BRU POW2			03566
03267	0100002		MAQ	A	THIS FACTOR BELONGS	03567
03270	0517776		FMP POWT			03568
03271	0317776		FST POWT			03569
03272	0006000		FLD JUNK			03570
03273	2504005	POW2	XAQ			03571
03274	2511001		SRD 1			03572
03275	2201610		DCR FZERO			03573
03276	2603261		BRU POW1			03574
03277	2603301		BRU *+2			03575
03300	2603261		BRU POW1			03576
03301	0017776		FLD POWT		= ANSWER	03577
03302	2620001		BRU 1	1		03578
03303	0500002	BASEMI	XAQ	A		03579
03304	2514722		BAR BZE	7		BAN*03580
03305	2603317		BRU POW4		EXPONENT = 0 , ANSWER IS ONE	03581
03306	0743213		SPB ITST	2		03582
03307	2603333		BRU ER46L		EXPONENT NOT AN INTEGER	03583
03310	2603226		BRU POWMPY			03584
03311	0500002	BASEZR	XAQ	A		03585
03312	2516721		BAR BPL	7		BAN*03586
03313	2514722		BAR BZE	7		03587
03314	2603333		BRU ER46L		EXPONENT NOT STRICTLY POSITIVE	03588
03315	0500002		XAW	A		03589
03316	2620001		BRU 1	1	EXIT WITH ZERO	03590
03317	0001612	POW4	FLD FONE		ANSWER IS 1	03591
03320	2620001		BRU 1	1		03592
03321	0306000	LNEXP	FST JUNK		EXPONENT	03593
03322	0005746		LDA /6134			03594
03323	0305705		STA POWXR			03595
03324	0500002		XAQ	A		03596
03325	0723073		SPB LOG	1		03597
03326	0100002		MAQ	A		03598
03327	0506000		FMP JUNK			03599
03330	0722770		SPB EXPSUB	1		03600
03331	0625705		LDX POWXR	1		03601
03332	2620001		BRU 1	1		03602
03333	0641676	ER46L	LDX XTAG	2		03603
03334	2642164		BRU ER46	2		03604
						EJT03605

							03606
							03607
03335	0305712	SQRSUB	FST	FARG			03608
03336	2514721		BAX	BMI	7	IS ARGUMENT POSITIVE	03609
03337	2603377		BRU	ER48L		SQUARE ROOT OF A NEGATIVE NUMBER	03610
03340	1005712		DLD	FARG			03611
03341	2001647		EXT	EPMASK			03612
03342	2514002		BZE				03613
03343	2620001		BRU	1	1		03614
03344	0201647		SUB	EPMASK		ADD ONE TO EXP	03615
03345	2511001		SRU	1			03616
03346	1305714		DST	/2108			03617
03347	0005712		LDA	FARG			03618
03350	2001033		EXT	03777			03619
03351	0201647		SUB	EPMASK		ADD ONE TO EXP	03620
03352	2510001		SRA	1			03621
03353	2305714		ORY	/2108			03622
03354	1725716		STX	/2110	1		03623
03355	0621010		LDX	ZERO	1		03624
03356	0500005	/2112	CQX				CQX*03625
03357	0005712		FLD	FARG			03626
03360	0605714		FDV	/2108			03627
03361	0105714		FAD	/2108			03628
03362	1420001		INX	1	1		03629
03363	0305714		FST	/2108			03630
03364	0005714		LDA	/2108			03631
03365	0101647		ADD	EPMASK		SUBTRACT ONE FROM EXPONENT	03632
03366	0305714		STA	/2108			03633
03367	1403774		BXL	4	1		03634
03370	2603356		BRU	/2112			03635
03371	0500005		CQX				CQX*03636
03372	0005714		FLD	/2108			03637
03373	0625710		LDX	/2110	1		03638
03374	2514005		BOV			TURN OFF OVERFLOW	03639
03375	2603376		BRU	*+1			03640
03376	2620001		BRU	1	1		03641
							03642
03377	0641676	ER48L	LDX	XTAG	2		03643
03400	2542245		BRU	ER48	2		03644
							EJT03645

UPON ENTRY   03646
    XR01   PROCEDURE HEADING   03647
    XR02   CALLING SEQUENCE   03648
                                                                     03649
USE OF OTHER REGISTERS   03650
    XR03   POINTS TO END OF PROCEDURE   03651
    XR11   ACTUAL ARRAY HEADING   03652
    XR12   FORMAL ARRAY HEADING   03653
                                                                     03654

```
03401  1706000  PLINK  STX JUNK    3                                03655
03402  0020001         LDA 1       1                                03656
03403  0300003         STA XR03              ADDRESS OF EXIT FROM PROCEDURE   03657
03404  1440001         INX 1       2         POINT TO FIRST THUNK            03658
03405  0040000  PLINK1 LDA 0       2                                03659
03406  2514002         BZE                                          03660
03407  2603500         BRU PLINK3            END OF ACTUAL PARAMETERS        03661
03410  2001635         EXT 037777                                  03662
03411  0305711         STA APTYPE                                   03663
03412  1420002         INX 2       1         POINT TO FORMAL PARAMETER TYPE  03664
03413  0020000         LDA 0       1                                03665
03414  2514002         BZE                                          03666
03415  2602353         BRU ER53L+1                                  03667
03416  2001635         EXT 037777                                  03668
03417  2105711         CAB APTYPE                                   03669
03420  2603510         BRU PLINK4            TYPES NOT IDENTICAL -- CHECK SOME MORE   03670
03421  2603423         BRU *+2                                      03671
03422  2603510         BRU PLINK4            TYPES NOT IDENTICAL -- CHECK SOME MORE   03672
03423  2001644         EXT ACMASK                                   03673
03424  2101636         CAB ABIT                                     03674
03425  2603427         BRU *+2                                      03675
03426  2603442         BRU ALINK            ARRAY                   03676
                                     TYPES NON-ARRAY, AND IDENTICAL, CHECK FOR   03677
                                     TYPE REAL.                     03678
03427  0005711         LDA APTYPE                                   03679
03430  2001644         EXT ACMASK                                   03680
03431  2514002         BZE FUDGE            LINK TRANSFER THUNK     03681
03432  2603522                                                      03682
03433  0000002  PLINK2 LDA XR02                                     03682
03434  0101016         ADD TWO                                      03683
03435  2720001         STO 1       1        FILL BRU IN THUNK LINK  03684
03436  0040000  PLINK7 LDA 0       2                                03685
03437  2001643         EXT AMASK                                    03686
03440  0300002         STA XR02             ADDRESS OF NEXT THUNK   03687
03441  2603405         BRU PLINK1                                   03688
                                                                    03689
                                     ARRAY NAME AS PARAMETER        03690
                                                                    03691
03442  0040001  ALINK  LDA 1       2        LOCATION OF ACTUAL ARRAY HEADING   03692
03443  0300005         STA XR11                                     03693
03444  0020001         LDA 1       1                                03694
03445  2001643         EXT AMASK            LOCATION OF F.P. HEADING  03695
03446  0300006         STA XR12                                     03696
03447  2506033         SXG 1                                      1*03697
03450  0040000         LDA 0       2        FORMAL NUMBER OF SUBSCRIPTS  03698
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03451	2001045		EXT	ARMASK		3757777	03699
03452	2516002		BNZ				03700
03453	2603462		BRU	PLINK5		NUMBER UNKNOWN -- ARRAY JUST PASSED ON	03701
03454	0040000		LDA	0	2	FORMAL SUBSCRIPT COUNT	03702
03455	0220000		SUB	0	1	ACTUAL SUBSCRIPT COUNT	03703
03456	2001043		EXT	AMASK			03704
03457	2516002		BNZ				03705
03460	2601472		BRU	ER54AL		WRONG NUMBER OF SUBSCRIPTS	03706
03461	2603464		BRU	PLINK6			03707
03462	0020000	PLINK5	LDA	0	1	ACTUAL SUBSCRIPT COUNT	03708
03463	2740000		STO	0	2	DO NOT CHANGE SIGN	03709
03464	0003556	PLINK6	LDA	DM21			03710
03465	2504004		LDA				03711
03466	0000005		LDA	XR11			03712
03467	2504032		ADD				03713
03470	2506016		SET	PBK			03714
03471	2703474		STO	*+3			03715
03472	0000006		LDA	XR12			03716
03473	2504032		ADD				03717
03474	2400000		MOV	0		MOV SUBSCRIPT INFORMATION TO FORMAL ARRAY	03718
03475	2506015		SET	PST			03719
03476	2506013		SXG	0			0*03720
03477	2603436		BRU	PLINK2+3		BACK FOR MORE PARAMETERS	03721
							03722
03500	0020002	PLINK3	LDA	2	1	END OF ACTUAL PARAMETERS	03723
03501	2516002		BNZ				03724
03502	2602353		BRU	ER53L+1			03725
03503	0000002		LDA	XR02			03726
03504	2504032		ADD				03727
03505	2700000		STO	0	3	FILL EXIT FROM PROCEDURE	03728
03506	0666000		LDX	JUNK	3		03729
03507	2620003		BRU	3	1		03730
							03731
						APPARENT MISMATCH, BUT FORMAL PARAMETER	03732
						TYPED NOTYPE INDICATES ACTUAL PARAMETER MAY	03733
						BE REAL OR INTEGER TYPE	03734
							03735
03510	2101656	PLINK4	CAB	*STX2*		CHECK FOR NOTYPE [EXTRACTED]	03736
03511	2601473		BRU	ER54L		NOT NOTYPE--MISMATCHED PARAMETERS	03737
03512	2603514		BRU	*+2			03738
03513	2601473		BRU	ER54L		NOT NOTYPE--MISMATCHED PARAMETERS	03739
03514	0005711		LDA	APTYPE			03740
03515	2001634		EXT	017777			03741
03516	2001642		EXT	RBIT			03742
03517	2516002		BNZ				03743
03520	2601473		BRU	ER54L		NOT ARITHMETIC TYPE	03744
03521	2603433		BRU	PLINK2			03745
							03746
03522	0000002	FUDGE	LDA	XR02			03747
03523	0101616		ADD	TWO			03748
03524	2720001		STO	1	1	FILL THUNK LINK	03749
03525	0040000		LDA	0	2	LINK IN CALLING SEQUENCE	03750
03526	2001643		EXT	AMASK			03751
03527	0300002		STA	XR02		UPDATE THUNK POINTER	03752

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03530   0020000     LDA 0        1                                                          03753
03531   1725711     STX APTYPE   1                                                          03754
03532   0300001     STA XR01            POINT TO TRANSFER THUNK LINK                         03755
03533   0000002     LDA XR02                                                                 03756
03534   0101616     ADD TWO                                                                  03757
03535   2720000     STO 0        1      FILL TRANSFER THUNK LINK                             03758
03536   0625711     LDX APTYPE   1                                                           03759
03537   2603430     BRU PLINK7                                                               03760
                                                                                       NAM03761
                                                                                       EJT03762
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03540    0017000    FSIX    FDC  6                                                              03763
03541    0000000                                                                                03764
03542    3777777    DDM1    DDC  -1                                                             03764
03543    3777777                 .                                                             03765
03544    1777777    MAXNEG  OCT  1777777                                                        03765
03545    3777777            OCT  3777777                                                        03766
03546    1777777    MAXPOS  OCT  1777777                                                        03767
03547    1777777            OCT  1777777                                                        03768
03550    2006000    MINPOS  OCT  2006000                                                        03769
03551    0000000            OCT  0                                                              03770
03552    0000035    D29     DEC  29                                                             03771
03553    2643014    TRAPT   BRU  OVFL      2        ***WARNING - TRAPT MUST BE ODD***           03772
03554    2643047            BRU  UFLO      2                                                     03773
03555    2643033            BRU  DVCK      2                                                     03774
         00205      TRAPL   EQU  205                                                            03775
03556    3777753    DM21    DEC  -21                                                            03776
03557    3777747    DM25    DEC  -25                                                            03777
03560    3777745    DM27    DEC  -27                                                            03778
03561    0005700    05700   OCT  5700                                                           03779
                                                                                                03780
03562    0001555    RANDM1  OCT  0001555           FOR RANDOM                                   03781
03563    1555555            OCT  1555555                                                        03782
03564    1200000    RRF     Z12  0                                                              03783*
03565    0006000    DAREA   OCT  6000                                                           03784*
03566    0000054    STAR    ALF  CO*                                                            03785*
03567    0777777    FILLS   OCT  777777                                                         03786*
03570    0000011    C9      DEC  9                                                              03787
         01531      C10     EQU  TEN                                                            03788
         01570      C2      EQU  FIVE                                                           03789
         20000      EXEC    EQU  8192                                                           03790
03571    0555555    CEOF    OCT  555555                                                         03791
                                                                                             NAM03792
                                                                                             EJT03793
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04300		LOC 4300			03794
04300	ASIZE	BSS 2	FOATING ARRAY SIZE		03795
04302	LB	BSS 2	BOUND PAIR -- LOWER BOUND		03796
04304	OPCALL	BSS 2	OPERAND INFO [ARRAYS, DATA]		03797
04306	GO3	BSS 2	BACKUP INFO IF -TO - NOT AFTER -GO -		03798
04310	ASTART	BSS 1	NCC LO FOR ARRAY IDENTIFIER LIST		03799
04311	ATYPE	BSS 1	TYPE [PROCEDURES, FORMAL PARAMETERS]		03800
04312	AX	BSS 1	SUBSCRIPT INDICATOR FOR LOADGN		03801
04313	BINEXP	BSS 1			03802
04314	BSC	BSS 1	BLOCK SYMBOL CELLAR COUNTER		03803
04315	CAVAIL	BSS 1	CONSTANT TABLE POINTER		03804
04316	CFLAG	BSS 1	COLON-FLAG FOR BOUND PAIRS IN ARRAY DECL		03805
04317	CMODE	BSS 1	SWITCH FOR CONSTANT MODE		03806
04320	CREAD	BSS 1	CONSTANT HAS BEEN READ FLAG		03807
04321	DECLO	BSS 1	LOCATION OF *BRU* AROUND DECLARATION		03808
04322	DEPTH	BSS 1	BLOCKING DEPTH COUNTER		03809
04323	DINAM	BSS 1	CONSTANTS-ONLY FLAG		03810
04324	DSTAT	BSS 1	DECLARATION LEGAL FLAG		03811
04325	EAVAIL	BSS 1	ETABLE POINTER		03812
04326	EXPFLG	BSS 1			03813
04327	FINC	BSS 1	IDENTIFIER FOR INCREMENT		03814
04330	FLAB1	BSS 1	LO OF FOR LIST ELEMENT COMPUTATION		03815
04331	FLAB2	BSS 1	LO OF TEST FOR DONE		03816
04332	FLAB3	BSS 1	EXIT FROM LOOP		03817
04333	FLAB4	BSS 1	INDEX IN NC FOR RUNNING VARIABLE		03818
04334	FORAY	BSS 1	FUNNING VARIABLE SUBSCRIPTED FLAG		03819
04335	FORNO	BSS 1	FIRST ELEMENT IN FOR LIST FLAG		03820
04336	FPFLAG	BSS 1	FOR FORMAL PARAMETER ASSIGNMENTS		03821
04337	GO1	BSS 1	BACKUP XR SAVE		03822
04340	GO2	BSS 1	BACKUP XR SAVE		03823
04341	IAVAIL	BSS 1	ITABLE POINTER		03824
04342	ITEMP	BSS 1	VERY TEMPORARY REGISTER SAVE		03825
04343	LINENO	BSS 1	COMPILE-TIME LINE NUMBER		03826
04344	LOAD	BSS 1	*LDA* OR *FLD* -- LOADGN		03827
04345	NOEL	BSS 1	NUMBER OF ELEMENTS -- VARIOUS SOURCE LISTS		03828
04346	NUOB	BSS 1	NUMBER OF UNDEFINED OBJECTS		03829
04347	OPA	BSS 1	OPERAND ADDRESS		03830
04350	OPAX	BSS 1	OPERAND SUBSCRIPT ADDRESS		03831
04351	OWN	BSS 1	NON-ZERO IN OWN DECLARATIONS		03832
04352	PBLOK	BSS 1	PREVIOUS LO IN BS		03833
04353	PLF	BSS 1	LAST LOCATION AVAILIABLE TO OBJECT		03834
04354	PREV2	BSS 1	PREVIOUS PREV. [ROUTE PUTS SYMB IN PREV]		03835
04355	PRFLAG	BSS 1	TAB SUPPRESSION FLAG		03836
04356	PUNT	BSS 1	SIMPLE INCREMENT FLAG		03837
04357	REXIT	BSS 1			03838
04360	RTEMP	BSS 1			03839
04361	SLOC	BSS 1			03840
04362	SSLO	BSS 1			03841
04363	SWITCH	BSS 1	COMMUTATIVE OPERATION FLAG		03842
04364	TEMP	BSS 1	VARIOUS TEMPORARY USES		03843
04365	TERM	BSS 1	COMMENT LOOP SYMBOL-ONLY FLAG		03844
04366	TSLF	BSS 1	END OF CURRENT TEMPORARY STORAGE AREA		03845
04367	TSLO	BSS 1	BEGINNING OF CURRENT TEMPORARY STORAGE AREA		03846
04370	TEST21	BSS 1	XR SAVE FOR NOTALG		03847

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04371   TSFLAG BSS 1        TEMPORARY STORAGE AVAILIABILITY FLAG         03848
04372   TST    BSS 1        TEMPORARY STORE INSTRUCTION                  03849
04373   WHAMI  BSS 1        WHERE-AM-I FLAG                              03850
04374   WRITEX BSS 1        USED BY -WRITE-                              03851
04375   WTEMP  BSS 1        USED BY -WRITE-                              03852
04376   ERFLAG BSS 1                                                    03853
04377   ERAVAL BSS 1                                                    03854
04400   DKFLG3 BSS 1                                                    03855
04401   DKFLG2 BSS 1                                                    03856
04402   TRPFLG BSS 1        NO TRAP FLAG                                 03857
                                                                        03858
00000   XR00   EQU 0        VERY TEMPORARY                              03859
00001   XR01   EQU 1        NUMBER CELLAR COUNTER [NOC]                  03860
00002   XR02   EQU 2        MISCELLANEOUS EXITS                          03861
00003   XR03   EQU 3        MISCELLANEOUS EXITS                          03862
                                                                        03863
00004   XR10   EQU 4        RETURN AFTER TIEUP                           03864
00005   XR11   EQU 5        SYMBOL CELLAR COUNTER [SCC]                  03865
00006   XR12   EQU 6        MISCELLANEOUS EXITS                          03866
00007   XR13   EQU 7        EXIT FROM LOADGN AND A FEW OTHERS            03867
                                                                        03868
00010   XR20   EQU 8        WORKING STORAGE FOR EDIT                     03869
00011   XR21   EQU 9        WORD INDEX IN SOURCE                         03870
00012   XR22   EQU 10       CHARACTER INDEX IN WORD                      03871
00013   XR23   EQU 11       MODE OF INPUT [I.E, EXIT FROM CHAR]          03872
                                                                        03873
00014   XR30   EQU 12       IDENT2 CHARACTER COUNT                       03874
00015   XR31   EQU 13       IDENT1 WORD COUNT                            03875
00016   XR32   EQU 14       IDENT2 WORD COUNT                            03876
00017   XR33   EQU 15       IDENT1 CHARACTER COUNT                       03877
                                                                        03878
00020   XR40   EQU 16                                                   03879
00021   XR41   EQU 17       INDEX IN ITABLE OF LAST-READ IDENTIFIER      03880
00022   XR42   EQU 18                                                   03881
00023   XR43   EQU 19                                                   03882
                                                                        03883
00212   IXR2   EQU 212                                                  03884
                                                                        03885
00004   RETURN EQU XR10     RETURN AFTER COMPILING A BRIDGE              03886
04700   NC     EQU 4700     NUMBER CELLAR                                03887
04700   SC     EQU 4700     SYMBOL CELLAR                                03888
04440   BS     EQU 4440     BLOCK SYMBOL CELLAR                          03889
00236   BSLF   EQU 236                                                  03890
06001   IDENT1 EQU 6001     IDENTIFIER ACCUMULATOR                       03891
06013   IDENT2 EQU 6013     IDENTIFIER ACCUMULATOR                       03892
05000   ETABLE EQU 5000     EXTERNAL IDENTIFIER TABLE                    03893
05000   ITABLE EQU 5000     INTERNAL IDENTIFIER TABLE                    03894
14446   CMPFLG EQU 6438                                                 03895
06000   JUNK   EQU 6000                                                 03896
06050   CCLO   EQU 6050                                                 03897
04100   OUTBUF EQU 4100     OUTPUT BUFFER                                03898
                                                                     NAM03899
                                                                     EJT03900
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05700              LOC 5700                                                                      03901
05700     TRPSV    BSS 1                                                                         03902
00000     SIDXR    EQU XR00                                                                      03903
17776     CRUD     EQU 17776                                                                     03904
17776     ICHK1    EQU CRUD                                                                      03905
17776     POWT     EQU CRUD                                                                      03906
13750     DNAD     EQU 6120                                                                      03907
05702     RANDM2   BSS 2                                                                         03908
05704     ICHKXR   BSS 1                                                                         03909
05705     POWXR    BSS 1                                                                         03910
05706     RND      BSS 1                                                                         03911
05707     DBLOCK   BSS 1                                                                         03912
05710     SWEXIT   BSS 1                                                                         03913
05711     APTYPE   BSS 1      ACTUAL PARAMETER TYPE FOR LINKAGE CHECK       03914
05712     FARG     BSS 0      INSURES ATEMP STARTS IN EVEN LOCATION         03915
05712     ATEMP    BSS 26                                                                        03916
05744     DSKOP    BSS 5                                                                         03917
05744     RDBLK    EQU DSKOP                                                                      03918
05751     WRTBLK   BSS 4                                                                         03919
05755     VECLO    BSS 1                                                                         03920
05756     DKFLG1   BSS 1                                                                         03921
                                                                                                03922
05714     /2108    EQU ATEMP+2      FOR SORT                                03923
05716     /2110    EQU ATEMP+4                                                                    03924
                                                                FOR OTHER MATH ROUTINES          03925
05714     SCX      EQU ATEMP+2                                                                    03926
05716     SCSGN    EQU ATEMP+4                                                                    03927
05720     SCTEM    EQU ATEMP+6                                                                    03928
05722     SCX1     EQU ATEMP+8                                                                    03929
05723     SCX2     EQU ATEMP+9                                                                    03930
05724     LOF      EQU ATEMP+10                                                                   03931
05726     CHEB2X   EQU ATEMP+12                                                                   03932
05730     CHEBR2   EQU ATEMP+14                                                                   03933
05732     CHEBR1   EQU ATEMP+16                                                                   03934
05734     CHEBR    EQU ATEMP+18                                                                   03935
                                                                FOR POWER                        03936
05736     /5112    EQU ATEMP+20                                                                   03937
05740     /6134    EQU ATEMP+22                                                                   03938
                                                                FOR OUTPUT                       03939
05742     BDCARG   EQU ATEMP+24                                                                   03940
06330     UNEOUT   EQU 3288                                                                       03941
                                                                FOR LINK                         03942
05713              ORG ATEMP+1                                                                    03943*
05713     GETPRO   BSS 4                                                                          03944*
05720     OFFA     BSS 4                                                                          03945*
01617     O10      EQU EIGHT                                                                       03946*
                                                                FOR DISK ROUTINES                03947
17774     DSKFLG   EQU 8188                                                                        03948
                                      STORAGE FOR SERVICE ROUTINES COMMON TO BOTH                 03949
                                      RUN- AND COMPILE-TIME                                       03950
06252              LOC 6252                                                                        03951
06252     ERX1     BSS 1           COMPILE TIME ERROR XR SAVE                                     03952
06253     ERX2     BSS 1           COMPILE TIME ERROR XR SAVE                                     03953
06254     ERX3     BSS 1           COMPILE TIME ERROR XR SAVE                                     03954
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06255    PRX1    BSS 1                                                      03955
06256    PRX3    BSS 1                                                      03956
06257    $IND    BSS 1                                                      03957
06260    PRXT    BSS 1                                                      03958
06261    CRUMP   BSS 1                                                      03959
06262    PAVAIL  BSS 1           OBJECT PROGRAM POINTER                     03960
06263    VAVAIL  BSS 1           VARIABLE STORAGE POINTER                   03961
06264    POUT    BSS 15                                                     03962
06304    CONST   BSS 2           HOLDS CONVERTED CONSTANT                   03963
06306    CONSTX  BSS 2           PROVISIONAL VALUE OF CONSTANT MANTISSA     03964
06310    CH2     BSS 1           CHARACTER ACCUMULATOR                      03965
06311    CH3     BSS 1           CHARACTER ACCUMULATOR                      03966
06312    BIGC    BSS 1           HIGH ORDER BITS OF CONST*10                03967
06313    DCTR    BSS 1           DECIMAL POINT FLAG                         03968
06314    DINC    BSS 1                                                      03969
06315    EXP     BSS 1           ABSOLUTE EXPONENT OF CONSTANT              03970
06316    SGNEXP  BSS 1           SIGN OF EXPONENT OF CONSTANT               03971
06317    SYMB    BSS 1           HOLDS LAST SYMBOL READ                     03972
06320    PREV    BSS 1           PREVIOUS SYMBOL                            03973
06321    TYPE    BSS 1           TYPE IN EXPRESSIONS                        03974
06322    TEMP*   BSS 1           XR SAVE                                    03975
06323    SAVE*   BSS 1           XR SAVE                                    03976
06324    PROG    BSS 0                                                      03977
06325    ERLO    EQU PROG-1                                                 03978
                                                                           03979
T05000                          END DISK2                                   03980
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1 ERRORS IN ABOVE ASSEMBLY