SYMBOL TABLE 1 -- 21 / 250

ITICON	DL	ETICON	DL	FZERO	FP	CONST	FP	CH2	DL
GO3	DL	CONSTX	DL	FMONE	FP	CCLO	DL	DBLONE	DL
CTABLE	FP	SIDSPB	DL	OPCALL	DL	POWSPB	DL	FONE	FP
ASIZE	FP	LB	FP	JUNK	FP	.5	FP	BIGZER	FP
DISKC	DL								

NO REFERENCE

APTYPE	FRFRM	ER40	ER55	EXP3	EPMASK	EXOEND	$AMASK
CMPFLG	ICHK1	DNAD	ICHKXR	FARG	BDCARG	ERX2	ERX3
CRUMP	LNKRET	072	PFLAG	PRQA	POWT	POWXR	ONEOUT
PRX1	PRX3	PRXT	POUT	RUNCLK	RANDM2	RND	SIND
MOV	/2108	/2110	/2202	/2230	/2210	/2211	/2310
/2316	/2306	/2307	/2303	/2308	/6134	/6109	/6128
/6119	/5112	/5114	/5107	/5152	/5143	SYNTAX	TXR2
TRPSV	SIDXR	SAVE*	WRSSPB	XMOVE	XR20	YOVER	

END OF PASS 0

SYMBOL TABLE 2 -- 1049 / 1672

AAUCHS	02027	ABCON	30241	ABIT	01632	ABLOCK	30150	ABLOOP	30333	ABLP2	30356
ABMOVE	30372	ABOUT	30401	ABSID	02312	ABSSUB	01442	ACALL1	26557	ACALL2	26576
ACMASK	01640	ADJUST	20226	AGO	02314	AL1	20630	AL2	20635	AL3	20612
ALGOL	20001	ALID	02564	ALLIST	02655	ALLOOK	20602	AMASK	01637	APAR2	27003
APARAM	26741	APCON	26734	APTYPE	05710	ARMASK	01641	ARRID	02264	ASER	01423
ASID	02265	ASIZE	04300	ASSID	02313	ASSIGN	22512	ASSI	22543	ASSR	22567
ASTART	04310	ATEMP	05711	ATNSUB	01447	ATYPE	04311	AX	04312	BAPOS	31270
BARRAY	22604	BASS2	27264	BASSGN	27231	BBIT	02176	BBRACK	30200	BCOLON	30247
BDCARG	05723	BEGID	02266	BEGIN1	30623	BEGIN	02567	BELLID	01752	BFOR	23417
BGOTO	24355	BIF0	23023	BIF1	23045	BIF2	23051	BIF3	23054	BIF4	23057
BIF5	23062	BIF	23004	BIGC	06312	BIGZER	01606	BINEXP	04313	BIO1	26327
BIOPRO	26311	BLIST1	30644	BLIST2	30673	BLIST	30632	BLOCK1	30726	BLOCK2	30732
BLOCK3	30736	BLOCK4	30746	BLOCK	30675	BMASK	02202	BOOLID	02267	BOPRO	26331
BOUT	25336	BPAR1	24711	BPAREN	24700	BPROC1	24506	BPROC2	24515	BPROCB	24500
BPROCI	24476	BPROCR	24502	BPROC	24462	BPRSPB	02050	BPRSUB	01407	BQUOTE	25307
BRUEND	02100	BRUFOR	02026	BSC	04314	BSLF	00236	BS	04440	BSTEP	23621
BSWTCH	30426	CALLIN	25206	CAVAIL	04315	CBIT	01634	CCLO	06050	CFLAG	04316
CFUDGE	20323	CH2	06310	CH3	06311	CHAIN0	27702	CHAIN1	27720	CHAIN2	27714
CHAIN3	27662	CHAIN4	27725	CHAIN	27631	CHAR	20276	CHLOOP	27705	CHMASK	01642
CLEAN	20011	CLIST	01720	CLOCK	01461	CLOOP1	21413	CLOOP	21403	CMASK	01664
CMODE	04317	CMPFLG	14446	CODECH	20303	COMASK	02203	COMID	02270	CON1	21231
CON2	21237	CON3	21271	CON4	21302	CON5	21304	CON6	21337	COND3	23373
COND4	23414	CONDEC	21342	CONEXP	21260	CONIN	21441	CONLF1	02172	CONLF	02171
CONLO	02173	CONMIN	21416	CONPL	21420	CONST1	21205	CONST2	21275	CONST3	21320
CONST	06304	CONSTX	06306	CONVRT	21452	COSSUB	01437	COT	01467	CREAD	04320
CROUTE	21376	CRT	01432	CRTSPB	02072	CRUDLO	02030	CRUD	17776	CRUMP	06261
CTABLE	01666	CTAG	02200	CVT1	21460	CVT2	21466	CVT3	21512	CVT7	21534
CVTMUL	21546	D10	01620	D11	02112	D12	02113	D13	02114	D14	01656
D15	02115	D16	02116	D17	02117	D18	02120	D19	02104	D20	02105
D21	02121	D22	01573	D23	02122	D24	01574	D25	02123	D26	02141
D27	01575	D28	02142	D29	02124	D30B8	01662	D30	01624	D31	02143
D32	01576	D33	02125	D34	02126	D35	02127	D36	02130	D37	02107
D38	02131	D39	02132	D40	02133	D41	02106	D43	01577	D44	02134
D45	02135	D4	02110	D52	02136	D55	02137	D56	02140	D5	01570
D60	01625	D6	01571	D77	01655	D7	01572	D8	01617	D9	02111
DA1	30107	DA2	30110	DAB	30145	DACON	30071	DAI	30142	DARRAY	30075
DAR	30140	DATAID	02577	DBEGIN	30564	DBID	02271	DBLOCK	05706	DBLONE	01660
DBOOI	27521	DCTAG	02201	DCTR	06313	DDATA	30030	DEC2	27575	DECID	01753
DECLAR	27554	DECLID	02304	DECLO	04321	DECP1	24764	DECORO	24715	DEFINE	27727
DEFNEW	27772	DEFREF	30005	DELOOP	30010	DEOUT	30020	DEPTH	04322	DETYPE	02164
DINAM	04323	DINC	06314	DINTGR	27517	DISK1	05000	DISK2	05000	DISKC	05036
DKFLG2	04401	DLABEL	25761	DM2	01626	DM9	01622	DMASK	01641	DNAD	13750
DNFSPB	02051	DODO1	24276	DODO	24265	DOID	02601	DOWN	27502	DPARAM	27104
DPROC1	24621	DPROC2	24624	DPROC3	24630	DPROC4	24647	DPROC5	24661	DPROC	24574
DREAL1	27542	DREAL	27531	D	01744	DSKFLG	04400	DSTAT	04324	DSTRNG	30556
DSW1	30501	DSW2	30521	DSW3	30531	DSW4	30546	DSWTCH	30465	DTYPE	02216
DUNFIT	01410	DVTST	01402	EAVAIL	04325	EDIT1	20341	EDIT2	20374	EDIT	20325
EDOUT	20365	EDSPB	02074	EIGHT	01617	ELAPS	01444	ELSEID	02602	EMPTST	25472
ENDID	02604	ENDSTR	25402	ENTSUB	01445	EOMCH	01775	EPARAM	26705	EPMASK	01643
EQMASK	02204	ER10	31313	ER11	31315	ER12	31317	ER13	31321	ER14	31323
ER15	31325	ER16	31327	ER17	31331	ER18	31333	ER19	31335	ER1	31271
ER20	31337	ER21	31341	ER22	31343	ER23	31345	ER24	31347	ER25	31351

ER26	31353	ER27	31355	ER28	31357	ER29	31361	ER2	31273	ER30	31363
ER31	31365	ER32	31367	ER33	31371	ER34A	31373	ER34	31375	ER35	31404
ER36	31406	ER37	31410	ER38	31412	ER39	31414	ER3	31275	ER40	31416
ER41	31420	ER43	31422	ER44	31424	ER45	31426	ER4	31277	ER52	31430
ER55	31432	ER56	31434	ER5	31301	ER6	31303	ER7	31305	ER8	31307
ER9	31311	ERAVAL	04377	ERFLAG	04376	ERLU	02031	ERROR	31436	ERWRIT	20257
ERX1	06252	ERX2	06253	ERX3	06254	E	01745	ETABLE	05000	ETABL0	02034
ETICON	02320	ETINIT	02446	ETMASK	02205	EXOEND	02020	EXP3	01600	EXPFLG	04326
EXPID	01773	EXP	06315	EXPSUB	01443	FARG	05711	FCT1	25611	FCT2	25612
FCTID	02272	FCTI	25626	FERROR	31461	FETCHP	26423	FETCH	22016	FILL21	20734
FILLS	01657	FILUP	25160	FILTYP	02221	FINC	04327	FISUB1	22741	FISUB	22725
FIVE	01570	FLAB1	04330	FLAB2	04331	FLAB3	04332	FLAB4	04333	FMONE	01614
FONE	01612	FOR1	23504	FOR2	23510	FORASS	23470	FORAY	04334	FOREL1	23611
FOREL2	23613	FORERR	01405	FORGO1	23645	FORGO	23637	FORID	02611	FORNO	04335
FORX1	02101	FORX2	02102	FOUND1	21007	FOUND	21000	FOUR	02103	FPCK	22601
FPFLAG	04336	FPSUB1	22764	FPSUB2	22774	FPSUB	22756	FRFRM	02140	FTYPE	02242
FUDST	22562	FULL	25414	FZERO	01610	GETOUT	01440	GO1	04337	GO2	04340
GO3	04306	GOID	02612	GO	21013	GOSW	21756	GOTO1	24376	GOTO2	24403
GOTOID	02273	GOTO	24363	GOTWRD	25376	GR1	02161	GR1S3	02162	GR2	01632
GR3S1	02247	GR4	01635	GR5	02163	GR7	02164	HARD21	20700	IAMASK	02206
IAVAIL	04341	ICHK1	17776	ICHKXR	05703	ID1CH	02552	ID2CH	02557	IDCHK	20575
IDDONE	20551	IDENT1	06001	IDENT2	06013	IDENT	20521	IDLOOK	21050	IDOUT	21152
ILOOP1	21065	ILOOP2	21073	ILOOP	21061	INDEC	27472	INPID	02274	INPUT	20275
ISWTCH	27523	ITABLE	05000	ITEMP	04342	ITICON	02316	ITINIT	02322	,5	01604
JUNK	06000	KAB	30262	KAND	22434	KAOP	22216	KARB1	30163	KARRAY	30152
KASS1	22517	KASS2	22537	KASSGN	22475	KBEGIN	30600	KBOB	22426	KCMNT	27431
KDATA	30033	KDIV	22266	KDO	24331	KELSE1	23305	KELSE2	23323	KELSE3	23336
KELSE4	23347	KELSE5	23360	KELSE6	23370	KELSE	23375	KEQUAL	22337	KEQUIV	22450
KEXP	22323	KFALSE	21561	KFCT	25567	KFOR1	23553	KFOR2	23573	KFOR3	23635
KFOR	23543	KGOTO	24360	KGTE	22401	KGT	22362	KIF1	23112	KIF2	23131
KIF3	23154	KIF	23070	KIMP2	22442	KIMP3	22472	KIMPLY	22460	KINP12	25027
KINP1	25011	KINP2	25054	KINP3	25112	KINPUT	24766	KLABEL	24346	KLINK1	25564
KLINK2	25547	KLINK	25543	KLTE	22377	KLT	22360	KMINUS	22224	KMNT0	27317
KMNT1	27364	KMNT2	27366	KMNT3	27407	KMNT4	27422	KMNT5	27324	KMNTEX	27362
KMNTIP	27331	KMPSC	21640	KMULT	22256	KNEQ	22655	KNOT	22424	KOR	22446
KPARAM	26466	KPAREN	27220	KPEEK	27415	KPLUS	22213	KPRINT	25214	KPRNT1	25245
KPRNT2	25261	KPRNT3	25264	KPRNT5	25267	KPRNT6	25225	KREL1	22332	KREL2	22341
KREL3	22374	KREL4	22413	KREL	22325	KSIDIV	22300	KSTEP	23724	KSUBSQ	22625
KSWTCH	24412	KTHEN1	23225	KTHEN2	23246	KTHEN3	23263	KTHEN4	23260	KTHEN5	23272
KTHEN	23203	KTRUE	21557	KUMIN1	22252	KUMIN	22230	KUNT10	24153	KUNT11	24172
KUNT12	24216	KUNT13	24234	KUNT15	24162	KUNT2A	24043	KUNT2B	24051	KUNT2	24261
KUNT3	24061	KUNT4	24067	KUNT5	24074	KUNT6	24105	KUNT7	24122	KUNT8	24132
KUNT9	24136	KUNTIL	24027	KUNTM	24207	KUNTP	24205	KWHILE	23662	LAST21	20741
LASTID	21106	LBIT	01635	LB	04302	LDADBL	02077	LDST1	22120	LDST2	22122
LDST3	22130	LENGTH	04003	LETIN	20544	LETTER	20443	LINENO	04343	LINK	01470
LNKFLG	04403	LNKRET	25364	LNKSPB	02076	LNSUB	01451	LOAB1	21763	LOAD2	21775
LOADGN	21721	LOAD	04344	LOADST	22102	LOADUN	22143	LOCID2	02035	LODRI	22066
LOOP21	20715	LPAR1	27077	LPAR2	27102	LPARAM	27057	L	01763	MAGIC	02165
MAL1	20756	MAL2	20766	MAL3	20772	MCOMP	31160	MINID	01760	MOCON	21424
MODC1	01652	MODC2	01653	MODC3	01654	MODIDN	02036	MODUN	02037	MORALB	20642
MORID	21103	MOSUB	22703	MOVE	05025	MSSG	05040	MSYMB	31241	NCP1	26213
NCP2	26224	NCP3	26275	NCP4	26346	NCP5	26413	NCP6	26215	NCPSTB	26132
NC	04700	NCSTO1	21157	NCSTO	21154	NEWCON	21431	NEWWRD	20407	NEXTCH	27426
NOEDIT	20400	NOEL	04345	NOENT	21200	NOTAL1	20754	NOTALG	20650	NOTGO	21043

NOTIM1	21132	NOTIN	21120	NOTYPE	02166	NOVER	02032	N	01765	NUOB	04346
NWID1	20541	010000	01651	0100	02147	0124	02150	013677	02160	017777	01630
02000	01663	0200	02151	032	02141	033	01575	034	02142	037777	01631
03777	01627	037	02143	0400	02152	040	01576	053	01577	06002	02155
06000	02150	060	01603	0700	02153	0711	02154	072	02144	073	02145
074	01625	07700	02157	07777	01665	077	02146	OBJLO	02174	OBLO	01601
ONEOUT	06330	ONE	01621	OPA	04347	OPAX	04350	OPCALL	04304	OPOINT	04001
O	01760	OUT21	20752	OUTBUF	04100	OUTC1	21375	OUTC2	21446	OUTCON	21360
OUTPID	02275	OVER	01400	OVTST	01400	OWNARY	30412	OWNCHK	27624	OWNDEQ	27617
OWNID	02620	OWN	04351	PAIROK	21604	PARAM1	26527	PAREN	01734	PARID	02276
PAVAIL	06262	PBLOK	04352	PC2OR3	20505	PCALL1	26613	PCALL2	26617	PCALL3	26660
PCALL4	26621	PCALL5	26651	PCALL6	26667	PCALL7	27051	PCALL8	27153	PCALL9	27215
PEEK1	20472	PFLAG	02021	PLF	04353	PLINK	01412	PLUSID	01740	PMASK	02207
PMCHK	21655	POUT	06264	POWSPB	02052	POWSUB	01411	POWT	17776	POWXR	05704
PPARAM	27117	PPARM1	27146	PRCID	02300	PREEXP	21647	PREV2	04354	PREV	06320
PRFLAG	04355	PRFP	25273	PROCID	02277	PROG	06324	PROSPB	02054	PRQA	14643
PRTSPB	02056	PRTSUB	01415	PRX1	06255	PRX3	06256	PRXT	06260	PUNT	04356
RANDM2	05701	RBID	02301	RBIT	01636	RBOOL	25746	RD2SPB	02061	RD2SUB	01422
RDASPB	02060	RDASUB	01421	RDBSPB	02064	RDBSUB	01464	RDDSPB	02063	RDMSUB	01450
RDTSPB	02055	RDTSUB	01413	READ	21630	REALID	02302	REPEAT	21716	RESFIL	25155
RESTFL	01462	RESTOR	01436	RESTR	25125	RETDN	02040	RETINP	02043	RETNCR	02044
RETRD	02041	RETREL	02045	RETRPT	02042	RETSTP	02046	RETSUB	02047	RETURN	00004
REXIT	04357	RIPRT	25271	RMASK	02210	RND	05705	RNDSPB	02057	RNDSUB	01417
ROUND	31471	ROUTE	21572	RPID	02305	RPROC	02220	RPT	21613	RSFSPB	02062
RSTFP	25143	RSTR	26336	RSTSPB	02075	RTE1	21704	RTE2	21707	RTEMP	04360
RUNCAL	20013	RUNCLK	04000	RWFIL	25201	$IND	06257	$TRSPB	02073	*ADD*	02215
ADO	02223	*BBMI*	02225	*BBNZ*	02226	*BBPL*	02224	*BBZE*	02227	*BEV*	02230
BMI	02544	*BNZ*	02543	*BRU*	02231	*BZE*	02233	*CAX*	02234	*CPL*	02235
CQX	02236	*DLD1*	02237	*DST*	02240	*EXT*	01645	*FAB*	02241	*FDV*	02242
FLD1	02243	*FLD*	02213	*FMP*	02244	*FST*	02245	*FSU*	02246	*LDA*	01610
LDX1	02247	*LDX2*	02250	*LDZ*	02251	*LMO*	02253	*MAQA*	02252	*MOV*	01602
NOP	01647	*SPB1*	02254	*SPB2*	02255	*STA*	02256	*STQ*	02257	*STX1*	02260
STX2	01650	*XAQA*	02262	/2108	05713	/2110	05715	/2202	05713	/2210	05721
/2211	05722	/2230	05715	/2303	05721	/2306	05717	/2307	05720	/2308	05722
/2310	05713	/2316	05715	/5107	05717	/5112	05713	/5114	05715	/5143	05723
/5152	05721	/6109	05715	/6119	05723	/6128	05717	/6134	05713	SAVE*	06323
SCID	02306	SC	04700	SETFIL	01463	SETGR4	21633	SETMOD	22053	SETOP	21733
SEVEN	01572	SEXIT	02232	SFUDGE	02167	SGNEXP	06316	SGNSUB	01453	SHOSPB	02070
SHOSUB	01426	SIDSPB	02024	SIDSUB	01403	SIDXR	00000	SIGN	01645	SINSUB	01454
SIX	01571	SLOC	04361	SMASK	01644	SPBSP	02270	SPCH	02017	SPCSYN	26113
SPEC1	25676	SPEC2	25700	SPEC3	25766	SPEC4	26033	SPECA	26035	SPECD	26075
SPECID	02303	SPECP	25773	SPEC	25630	SPECS	25764	SPECV	25656	SPFILL	25406
SQRSUB	01452	S	02002	SSBITS	02177	SSLO	04662	START1	20107	START	20074
STEP1	23756	STEP2	24004	STEP3	24013	STEPID	02634	STORI	22211	STOSC	21622
STOTST	27310	STPARM	25463	STR1	25512	STR2	25513	STR3	25517	STR4	25527
STR5	25533	STRACC	25355	STRBL	25506	STRCOM	25452	STRERR	02066	STRSUB	01434
STTYPE	02217	SUBINT	22641	SUBRTE	21674	SUBSC1	22662	SUBSC2	22672	SUBSC3	22677
SWBID	02307	SWERR	01457	SWEXIT	05707	SWHEAD	02541	SWIB	02640	SWITCH	04363
SWLDX	02022	SWSTX	02201	SWTCH1	24443	SWTCH2	24456	SWTCH3	24407	SWTYP2	02222
SWTYPE	01646	SYMBOL	20457	SYMB	06317	SYNTAX	02151	TAB	01430	TABSPB	02071
TAN	01460	TARITH	22005	TEMPCK	22134	TEMP*	06322	TEMB	04364	TEN	01620
TERM	04365	TEST21	04370	TEST	24244	THENID	02642	THREE	01623	THRET	02263
TIF1	22200	TIEUP	22156	TMASK	02211	TRIB	22046	TRPBLG	04402	TRPSV	05700
TRSYM	21711	T	02003	TSFLAG	04371	TSLP	04366	TSLQ	04367	TST	04372

TSTSPB	02067	TSTSUB	01425	TWOCH	20510	TWOID1	20571	TWOIDS	20561	TWO	01616
TXR2	00212	TYPA	05006	TYPE	06321	TYP	05010	UFTST	01401	UMASK	02212
UMID	02310	UNB10	31134	UNB11	31136	UNB12	31142	UNB13	31146	UNB14	31152
UNB1	31002	UNB2	31016	UNB3	31027	UNB4,5	31052	UNB4	31041	UNB5,5	31061
UNB5	31056	UNB6	31065	UNB7	31110	UNB8	31121	UNB9	31131	UNBLOK	30753
UNDEF	20417	UNFLOT	31501	UNFSUB	01455	UNTEMP	22070	UNTID	02646	UPID	02311
VALUE	26100	VARLO	02175	VAVAIL	06263	VCHECK	21171	VSPEC	25716	WHAMI	04373
WHILE1	23716	WHILID	02652	WHOSI	27465	WHOSYM	27452	WMASK	02213	WRAPP1	20255
WRAPUP	20240	WRITE	20205	WRITEX	04374	WRSSPB	02063	WRTBIL	26343	WRTOP	25173
WRTSUB	01465	WT2SPB	02065	WTEMP	04375	XMOVE	02537	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	01634	Y1	20042	YCOLON	20057	YCOMMA	20066	YLOOP	20023	YMASK	02214
YOICKS	20021	YOVER	02033	YPLUS	20062	YSEMI	20072	ZERO	01610		

END OF PASS 1

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                                                                    00001
**********************************************                      00002
                                                                    00003
   *   *  ***  *****   *    ***  *****                              00004
   **  * *   *   *     *   *   * *                                  00005
   * * * *   *   *     *   *     *                                  00006
   *  ** *   *   *     *   *     ***                                00007
   *   * *   *   *     *   *     *                                  00008
   *   * *   *   *     *   *   * *                                  00009
   *   *  ***    *     *    ***  *****                              00010
                                                                    00011
   **********************************                               00012
THE COMPILER IS STORED ON THE DISK IN THREE                         00013
OVERLAYS, NUMBERED 0,1, AND 3 TO PLEASE THE 2                       00014
235 EXEC,                                                           00015
     OVERLAY ONE CONTAINS THE LOWER MEMORY                          00016
CONSTANTS NEEDED AT COMPILE TIME.  THE COMPIL                       00017
TIME PACKAGE IMMEDIATELY CALLS IN THIS OVER-                        00018
LAY AND THEN WIPES OUT THE INSTRUCTIONS CALL-                       00019
ING FOR IT SO THAT IT IS CALLED FOR ONLY WHEN                       00020
IT IS NOT IN MEMORY                                                 00021
     OVERLAY THREE IS THE RUN-TIME PACKAGE, A                       00022
AND CONTAINS ITS OWN LOWER MEMORY PORTION                           00023
WHICH IS MOVED TO LOWER MEMORY BY THE EXEC,                         00024
                         STEVE GARLAND                              00025
                         KEVIN O'GORMAN                             00026
                         SARR BLUMSON                               00027
**********************************                                  00028
                                                                    00029
   *   *  ***  *****   *    ***  *****                              00030
   **  * *   *   *     *   *   * *                                  00031
   * * * *   *   *     *   *     *                                  00032
   *  ** *   *   *     *   *     ***                                00033
   *   * *   *   *     *   *     *                                  00034
   *   * *   *   *     *   *   * *                                  00035
   *   *  ***    *     *    ***  *****                              00036
                                                                    00037
**********************************                                  00038
                                                                   NAM00039
                                                                   EJT00040
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                                        ALGOL COMPILER FOR DARTMOUTH TIME-SHARING          00041
                                           --ASSEMBLED APRIL 28, 1966-                     00042
                                                                                           00043
                                                                                           00044
                                        MAXIMUM UNINTERRUPTIBLE PERIOD IS ,0737 SEC        00045
                                        ON 235.  THIS OCCURS AT THE CLEAR-BY-MOVE          00046
                                        OF THE 6K AREA.  THE TIME-SHARING EXEC (PH2)       00047
                                        MAY CRUMP A PROGRAM THAT TAKES MORE THAN           00048
                                        ,0259 SECS TO RESPOND TO AN INTERRUPT              00049
                                           YES, THIS COULD LEAD TO TROUBLE                 00050
                                                                                           00051
                                                                                           00052
                                                                                           00053
        05000           LOC 5000                                                           00054
05000   2640001 DISK1   BRU 1       2           RETURN TO EXEC -- NO FUDGING REQUIRED      00055
                                                                                           00056
                                                                                           00057
                                                                                           00058
                                        LINKAGE WITH 225 EXECUTIVE                         00059
                                                                                           00060
        20000           LOC 20000                                                          00061
20000   0000000         OCT 0               EXIT TO 225 EXECUTIVE                          00062
20001   2600074 ALGOL   BRU START             EXECUTIVE TRANSFERS CONTROL TO THIS LOCATION 00063
20002   2600011         BRU CLEAN           TRANSFER TO CLEAN-UP ROUTINE                   00064
20003   0000000         OCT 0               SPARE                                          00065
20004   0214327         ALF ALG                                                            00066
20005   0000000         OCT 0               NUMBER OF OVERLAY INDICATING MAIN SYSTEM       00067
20006   0000000         OCT 0               LOCATION TO MOVE CODING TO IN LOWER 8K         00068
20007   3777777         OCT 3777777         - LENGTH OF CODING                             00069
20010   0000000         OCT 0               LOCATION TO MOVE FROM                          00070
20011   2504002 CLEAN   LDZ                 CLEANUP ROUTINE JUST DOES A TERMINAL EXIT      00071
20012   2600000         BRU 8192                                                           00072
20013   0720000 RUNCAL  SPB 0       1       GO TO EXEC FOR RUN-TIME PACKAGE                00073
20014   0000002         DEC 2               PLACED HERE TO LOWER ENTRANCE TO OVERLAY 3     00074*
20015   2000002         OCT -2                                                             00075*
20016   0013600         DEC 6016                                                           00076
20017   0020000         OCT 20000                                                          00077
20020   2600074         BRU START                                                          00078
                                                                                           00079
                                                                                           00080
        04000   RUNCLK  EQU 4000                                                           00081
        04001   OPOINT  EQU 4001            POINTER TO FIRST WORD AVAILABLE IN OUTPUT   00082
                                            BUFFER                                         00083
        04003   LENGTH  EQU 4003            NUMBER OF 64 WORD BLOCKS IN SOURCE PROGRAM  00084
                                                                                           00085
                                        ALL EXITS FROM THE COMPILER GO TO LOCATION         00086
                                        20000 WITH A SET EQUAL TO                          00087
                                             0 FOR A TERMINAL EXIT                         00088
                                             1 FOR INTERMEDIATE OUTPUT                     00089
                                             2 FOR AN INPUT CALL                           00090
                                             3 FOR AN OVERLAY CALL                         00091
                                             4 FOR AN OVERLAY DELETE                       00092
                                                                                   NAM00093
                                                                                   EJT00094
```

```
                                FOLLOWING ARE THE KEY-PUNCH EQUIVALENTS OF          00095
                                THE SPECIAL TELETYPE CHARACTERS --                  00096
                                     ARROW                          -78             00097
                                     SPECIAL INTEGER DIVIDE          78             00098
                                     LESS THAN                      *68             00099
                                     GREATER THAN                   -68             00100
                                     COLON                           =              00101
                                     =                               68             00102
                                     LEFT PARENTHESIS               QUOTE           00103
                                     LEFT BRACKET                   058             00104
                                     APOSTROPHE                      28             00105
                                     QUOTE                  RIGHT PARENTHESIS       00106
                                     RIGHT PARENTHESIS       LEFT PARENTHESIS       00107
                                     RIGHT BRACKET                  068             00108
                                     SEMICOLON                       58             00109
                                     EOM                            -58             00110
                                     CARRIAGE RETURN                *78             00111
                                                                                    00112
                                                                                    00113
                                YOICKS   IS A GENERAL TELETYPE DEBUGGING            00114
                                PATCH WITH THE FOLLOWING CONTROL CHARACTERS .       00115
                                     COLON - STORES WORKING ADDRESS                 00116
                                     COMMA - PATCHES WORKING ADDRESS WITH Q         00117
                                       +   -  INCREMENTS WORKING LOC                00118
                                SEMICOLON  -  TERMINATES YOICKS                     00119
                                                                                    00120
20021  1420001  YOICKS INX 1       1        ERASE YOICKS FROM SC                    00121
20022  2506053         SXG 2                                                      2*00122
20023  2504002  YLOOP  LDZ                                                        00123
20024  0306001         STA JUNK+1                                                 00124
20025  0760276         SPB CHAR    3                                              00125
20026  2101651         CAB 010000                                                 00126
20027  2600042         BRU Y1                                                     00127
20030  2600031         BRU *+1                                                    00128
20031  2511003         SRD 3       SHIFT DIGIT INTO Q                             00129
20032  0006001         LDA JUNK+1                                                 00130
20033  2002214         EXT YMASK                                                  00131
20034  0202161         SUB GR1                                                    00132
20035  2504040         CHS                                                        00133
20036  2511000         SRD 0                                                      00134
20037  2512203         SLD 3       PACK DIGIT INTO WORD                           00135
20040  0306001         STA JUNK+1                                                 00136
20041  2600276         BRU CHAR    GET NEXT CHARACTER                             00137
20042  2101733  Y1     CAB CLIST+11  CHECK FOR COLON                              00138
20043  2600045         BRU *+2                                                    00139
20044  2600057         BRU YCOLON                                                 00140
20045  2101740         CAB CLIST+16  CHECK FOR PLUS                               00141
20046  2600050         BRU *+2                                                    00142
20047  2600062         BRU YPLUS                                                  00143
20050  2102013         CAB CLIST+59  CHECK FOR COMMA                              00144
20051  2600053         BRU *+2                                                    00145
20052  2600066         BRU YCOMMA                                                 00146
20053  2101735         CAB CLIST+13  CHECK FOR SEMICOLON                          00147
20054  2600056         BRU *+2                                                    00148
```

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20055  2600072          BRU YSEMI                                          00149
20056  2600276          BRU CHAR          IGNORE ANY OTHER CHARACTER       00150
20057  0006001 YCOLON   LDA JUNK+1        YCOLON STORES PREVIOUS ADDRESS IN JUNK 00151
20060  0306000          STA JUNK                                           00152
20061  2600023          BRU YLOOP                                          00153
20062  0006000 YPLUS    LDA JUNK          YPLUS INCREMENTS THE ADDRESS IN JUNK 00154
20063  2504032          ADO                                                00155
20064  0306000          STA JUNK                                           00156
20065  2600023          BRU YLOOP                                          00157
20066  0666000 YCOMMA   LDX JUNK    3     YCOMMA PATCHES THE LOC IN JUNK WITH Q 00158
20067  0006001          LDA JUNK+1                                         00159
20070  0360000          STA 0       3                                      00160
20071  2600023          BRU YLOOP                                          00161
20072  0662037 YSEMI    LDX MODUN   3     YSEMI EXITS FROM THE DEBUGGING ROUTINE 00162
20073  2600276          BRU CHAR                                           00163
                                                                   NAN00164
                                                                   EJT00165
```

```
20074  0720076  START  SPB  *+2     1        CALL IN OVERLAY NO, 1 FOR COMPILER CONSTANTS 00166
20075  0000003         OCT  3                                                               00167
20076  0020001         LDA  1      1        CODE FOR OVERLAY CALL                       00168
20077  0720000         SPB  0      1        GET OVERLAY                                 00169
20100  0000000         OCT  0               SYSTEM CURRENTLY IN                         00170
20101  0000001         OCT  1               OVERLAY BEING CALLED                        00171
20102  0002400         OCT  2400            LENGTH OF OVERLAY BEING CALLED              00172
20103  0001400         OCT  1400            LOCATION TO STORE OVERLAY                   00173
20104  0002032         LDA  NOVER           PLANT TRANSFER AROUND OVERLAY CALL SO THAT   00174
20105  0621634         LDX  XTAG   1              IT IS NOT CALLED IN WHEN IT IS ALREADY 00175
20106  0320001         STA  ALGOL  1              IN MEMORY                             00176
20107  0004003  START1 LDA  LENGTH        NUMBER OF 64 WORD BLOCKS IN SOURCE PROGRAM   00177
20110  2002205         EXT  ETMASK          EXTRACT OUT FILE CODE                       00178*
20111  2512006         SLA  6               MULTIPLY BY 64                              00179
20112  2504522         NEG                                                              00180
20113  2504004         LQA                                                              00181
20114  0101634         ADD  XTAG            FORM ADDRESS OF LOCATION TO MOVE SOURCE TO   00182
20115  2504112         SBO                                                              00183
20116  0300011         STA  XR21            SET POINTER TO SOURCE PROGRAM               00184
20117  2504032         ADO                                                              00185
20120  0304353         STA  PLF             FIRST ESTIMATE OF WHERE PROGRAM MUST END    00186
20121  2406000         MOV  JUNK            SHOVE SOURCE PROGRAM AS FAR UP AS IT WILL GO 00187
20122  2504001         LAQ                                                              00188
20123  0102160         ADD  013677                                                      00189
20124  2504522         NEG                                                              00190
20125  2504006         MAQ                                                              00191
20126  0304100         STA  OUTBUF                                                      00192
20127  0001601         LDA  OBLO                                                        00193
20130  2504032         ADO                                                              00194
20131  2404100         MOV  OUTBUF          CLEAR 6K AREA FROM SAVE AREA TO SOURCE PROG  00195
20132  0304001         STA  OPOINT                                                      00196
20133  0300001         STA  XR01            SET NUMBER CELLAR COUNTER TO 0              00197
20134  3100010         SET  NFLPOINT                                                    00198
20135  2504010         WAI                                                              00199
20136  2600136         BRU  *                                                           00200
20137  2600137         BRU  *               IF THIS HAPPENS, YOU DESERVE TO HANG UP     00201
20140  3500004         RIN                                                              00202
20141  3200001         SET  NTPMODE                                                     00203
20142  2504102         LMO                                                              00204
20143  0304322         STA  DEPTH           INITIALIZE DEPTH OF BLOCKING                00205
20144  0001634         LDA  XTAG                                                        00206
20145  0304373         STA  WHAMI                                                       00207
20146  0002155         LDA  06002                                                       00208
20147  0304367         STA  TSLO                                                        00209
20150  0102107         ADD  D37                                                         00210
20151  0304366         STA  TSLF                                                        00211
20152  0002150         LDA  0124                                                        00212
20153  0304341         STA  IAVAIL                                                      00213
20154  0002154         LDA  0711                                                        00214
20155  0304325         STA  EAVAIL                                                      00215
20156  2504022         LDO                                                              00216
20157  0304317         STA  CMODE           SET CONSTANT INPUT MODE TO NORMAL           00217
20160  0001644         LDA  SMASK                                                       00218
20161  0304371         STA  TSFLAG          SET TSFLAG TO ALL TEMP LOCATIONS AVAILABLE  00219
```

```
20160  0001044
20161  0304471                3          SET TSFLAG TO ALL TEMP LOCATIONS AVAILABLE    00219
```



```
20162  0002174          LDA OBJLO                                                     00220
20163  0306262          STA PAVAIL      SET POINTER TO LAST LOC USED BY OBJECT PROG    00221
20164  0002175          LDA VARLO                                                     00222
20165  0306263          STA VAVAIL      SET POINTER TO LAST LOC USED FOR VARIABLES    00223
20166  0304441          STA BS+1                                                      00224
20167  0002146          LDA 077                                                       00225
20170  0300005          STA XR11        INITIALIZE SYMBOL CELLAR COUNTER              00226
20171  0002266          LDA BEGID                                                     00227
20172  0304777          STA SC+63       PAD END OF CELLAR JUST IN CASE                00228
20173  1002316          DLD ITICON      MOVE CONSTANTS FOR ITABLE INITIALIZATION      00229
20174  2402322          MOV ITINIT                                                    00230
20175  1002320          DLD ETICON      CONSTANTS FOR ETABLE INITIALIZATION           00231
20176  2402446          MOV ETINIT                                                    00232
20177  2506053          SXG 2                                                       2*00233
20200  0662037          LDX MODUN   3                                                 00234
20201  0641616          LDX TWO     2   SET CHARACTER COUNTER FOR SOURCE             00235
20202  1744314          STX BSC     2                                                 00236
20203  1744352          STX PBLOK   2                                                 00237
20204  2600325          BRU EDIT        EDIT FIRST LINE NUMBER                        00238
                                                                                    NAN00239
                                                                                    EJT00240
```

```
                                        WRITE STORES COMPILED INSTRUCTIONS IN MEMORY      00241
                                                                                          00242
20205  0304375  WRITE  STA WTEMP                                                         00243
20206  0004376         LDA ERFLAG                                                        00244
20207  2514001         BMI                      CHECK FOR PAST ERRORS, IF ANY NO WRITE   00245
20210  2640001         BRU 1       2            SO EXIT                                  00246
20211  1744374         STX WRITEX  2                                                     00247
20212  0006262         LDA PAVAIL                                                        00248
20213  2504032         ADD                                                               00249
20214  0306262         STA PAVAIL               UPDATE POINTER TO LAST LOCATION FILLED   00250
20215  2104353         CAB PLF                                                           00251
20216  2600221         BRU *+3                  NO OVERFLOW                              00252
20217  2600220         BRU *+1                                                           00253
20220  0740226         SPB ADJUST  2            SEE IF MORE ROOM IS AVAILABLE            00254
20221  0646262         LDX PAVAIL  2                                                     00255
20222  0004375         LDA WTEMP                                                         00256
20223  0340000         STA 0       2            STORE INSTRUCTION IN MEMORY              00257
20224  0644374         LDX WRITEX  2            RESTORE EXIT                             00258
20225  2640001         BRU 1       2            EXIT                                     00259
                                                                                          00260
                                                                                          00261
                                        ADJUST  ADJUSTS PLF TO THE FINAL LOCATION         00262
                                        AVAILABLE FOR PROGRAM STORAGE.  PLF IS            00263
                                        ORIGINALLY SET TO THE FIRST LOCATION OF THE       00264
                                        SOURCE PROGRAM.  WHENEVER THE STORAGE             00265
                                        ALLOCATED FOR ARRAYS AND VARIABLES EXCEEDS        00266
                                        THE SPACE OCCUPIED BY THE REMAINING SOURCE        00267
                                        PROGRAM, PLF BECOMES IDENTICAL WITH VAVAIL,       00268
                                        BEFORE THEN, PLF IS ADJUSTED EACH TIME ADJUST     00269
                                        IS CALLED TO EQUAL THE SOURCE PROGRAM COUNTER     00270
                                                                                          00271
20226  0000011  ADJUST LDA XR21                 SOURCE PROGRAM COUNTER                   00272
20227  2106263         CAB VAVAIL                                                        00273
20230  2600233         BRU *+3                                                           00274
20231  2600232         BRU *+1                                                           00275
20232  0006263         LDA VAVAIL                                                        00276
20233  0304353         STA PLF                  PLF IS SET TO THE MINIMUM OF VAVAIL AND XR21 00277
20234  2106262         CAB PAVAIL                                                        00278
20235  2611271         BRU ER1                  STORAGE EXHAUSTED                        00279
20236  2611271         BRU ER1                  STORAGE EXHAUSTED                        00280
20237  2640001         BRU 1       2            MORE ROOM LEFT                           00281
                                                                                          00282
                                                                                          00283
                                        WRAPUP  CHECKS TO MAKE SURE COMPILATION           00284
                                        HAS BEEN SUCCESSFULLY COMPLETED, AND IF SO,       00285
                                        TRANSFERS CONTROL TO THE OBJECT PROGRAM.          00286
                                                                                          00287
20240  0002100  WRAPUP LDA BRUEND              TRANSFER TO ENDJOB ROUTINE               00288
20241  0740205         SPB WRITE   2            STORE INSTRUCTION                        00289
20242  0004441         LDA BS+1                                                          00290
20243  2514002         BZE                                                               00291
20244  0006263         LDA VAVAIL                                                        00292
20245  2106263         CAB VAVAIL                                                        00293
20246  2600251         BRU *+3                                                           00294
```

```
20247  2600251          BRU *+2                                          00295
20250  0006263          LDA VAVAIL                                       00296
20251  0306263          STA VAVAIL                                       00297
20252  2106262          CAB PAVAIL                                       00298
20253  2611271          BRU ER1              ONE LAST CHECK              00299
20254  2611271          BRU ER1                                          00300
20255  0001623  WRAPP1   LDA THREE                                       00301
20256  2600013          BRU RUNCAL                                       00302
                                                                         00303
20257  1744374  ERWRIT   STX WRITEX  2       WRITES ERROR FLAGS FOR RUNTIME MESSAGE 00304
20260  0304375          STA WTEMP           SAVE THINGS                 00305
20261  0004377          LDA ERAVAL                                       00306
20262  2504032          ADD                 INCREMENT ERAVAL            00307
20263  2100011          CAB XR21            CHECK FOR OVERRUN OF SOURCE 00308
20264  2600267          BRU *+3                                          00309
20265  2600240          BRU WRAPUP          TOO MANY ERROR MESSAGES--YOU SPAZZZ 00310
20266  2600240          BRU WRAPUP          YOU TOO                      00311
20267  0304377          STA ERAVAL                                       00312
20270  0644377          LDX ERAVAL  2       STE INDEX REGISTER           00313
20271  0004375          LDA WTEMP                                        00314
20272  0340000          STA 0       2       STORE THE BLOODY THING       00315
20273  0644374          LDX WRITEX  2       GET RETURN                   00316
20274  2640001          BRU 1       2       GO GET SOME MORE GOODIES     00317
                                                                         00318
                                                                        NAN00319
                                                                        EJT00320
```

```
                                        INPUT PROCESSES THE SOURCE PROGRAM BY                    00321
                                        PICKING OFF ALGOL SYMBOLS, IDENTIFIERS,                  00322
                                        AND CONSTANTS.  IDENTIFIERS AND CONSTANTS                00323
                                        ARE HANDLED BY SUBROUTINES OF INPUT,                     00324
                                        WHILE ALGOL SYMBOLS CAUSE CONTROL TO BE                  00325
                                        TRANSFERRED TO ROUTE,                                    00326
20275  2506053  INPUT  SXG 2                 SET INDEX GROUP 2 FOR CHARACTER INPUT          2*00327
                                                                                                 00328
                                                                                                 00329
                                        CHAR PICKS OFF THE NEXT LEGITIMATE                       00330
                                        CHARACTER FROM THE SOURCE PROGRAM.  FILL                 00331
                                        CHARACTERS ARE IGNORED, CARRIAGE RETURNS                 00332
                                        GENERATE AN EDITING PROCESS.  THE EOM                    00333
                                        MARK CAUSES AN EXIT TO THE WRAPUP                        00334
                                        ROUTINE.  CHAR USES INDEX GROUP 2                        00335
                                        AS FOLLOWS.                                              00336
                                          XR20 - WORKING STORAGE FOR EDITING                     00337
                                          XR21 - WORD INDEX IN SOURCE PROGRAM                    00338
                                          XR22 - CHARACTER INDEX IN WORD                         00339
                                          XR23 - EXIT SET ACCORDING TO MODE OF INPUT             00340
                                                                                                 00341
20276  1764364  CHAR   STX TEMP   3          SAVE EXIT                                          00342
20277  0557776        BXH 2       2          TEST CHARACTER COUNTER                             00343
20300  2600407        BRU NEWWRD             READ NEW WORD OF SOURCE PROGRAM                    00344
20301  0046310        LDA CH2     2          PICK UP CHARACTER IN WORD ALREADY READ             00345
20302  1440001        INX 1       2          INCREMENT CHARACTER COUNTER                        00346
20303  2001642  CODECH EXT CHMASK             TRIM TO LAST SIX BITS                              00347
20304  0300013        STA XR23               XR23 = INDEX FOR LOOKUP IN CLIST                   00348
20305  0061720        LDA CLIST   3          INTERNAL CODE FOR CHARACTER                        00349
20306  0664364        LDX TEMP    3          RESTORE EXIT                                       00350
20307  2102017        CAB SPCH               CHECK FOR SPECIAL CHARACTERS AND FUDGES            00351
20310  2600313        BRU *+3                IT IS ONE . . , CHECK FURTHER                      00352
20311  2600277        BRU CHAR+1             IGNORE FILL CHARACTER                              00353
20312  2660001        BRU 1       3          EXIT ACCORDING TO MODE OF INPUT                    00354
                                                                                                 00355
20313  2101775        CAB EOMCH              FUDGE OR SPECIAL CHARACTER                         00356
20314  2600323        BRU CFUDGE             FUDGE CHARACTER                                    00357
20315  2611424        BRU ER44               THATA ALL FOLKS                                    00358
20316  0002141        LDA 032                FUDGE FIRST, LINE-NUMBER LATER                     00359
20317  0306311        STA CH3                37 BECOMES (NON-INPUTTABLE) BELL                   00360
20320  0641621        LDX ONE     2          GET INDEX BACK IN STEP                             00361
20321  2504002        LDZ                    CODE FOR SPACE                                     00362
20322  2660001        BRU 1       3          EXIT WITH SPACE FOR CARRIAGE RETURN                00363
                                                                                                 00364
20323  2101752  CFUDGE CAB BELLID             WHICH FUDGE                                        00365
20324  2611424        BRU ER44               END-OF-MESSAGE FUDGE                               00366
                                                                                              EJT00367
```

```
                                        EDIT PICKS OFF THE LINE NUMBER FROM THE          00368
                                    TWO WORDS FOLLOWING THE FUDGED CR, STORES            00369
                                    THIS NUMBER IN LINENO, AND PLACES IT IN THE          00370
                                    OBJECT PROGRAM FOR ERROR MESSAGE REFERENCES.         00371
                                    THE NORMAL SCAN OF THE SOURCE BROGRAM IS THEN        00372
                                    RESUMED.                                             00373
                                                                                         00374
20325  1764342  EDIT   STX ITEMP   3      SAVE EXIT FROM CHAR                           00375
20326  0601610         LDX ZERO    0      COUNTER FOR NUMBER OF DIGITS IN LINE-NUMBER   00376
20327  1001610         DLD FZERO          CLEAR Q-REGISTER                              00377
20330  0760276         SPB CHAR    3      PICK UP NEXT CHARACTER-ID                     00378
20331  2101665         CAB 07777          CHECK FOR DIGIT                               00379
20332  2600365         BRU EDOUT          NOT A DIGIT -- END OF LINE-NUMBER             00380
20333  2600333         BRU *              NOT POSSIBLE -- OR SO WE HOPE                 00381
20334  1400001         INX 1       0      DIGIT . . . INCREMENT COUNT                   00382
20335  2001642         EXT CHMASK         TRIM TO VALUE                                 00383
20336  1501620         MPY TEN            ACCUMULATE LINE-NUMBER IN Q-REGISTER          00384
20337  0417773         BXL 5       0      CHECK COUNT -- ONLY FIRST 5 DIGITS ARE USED   00385
20340  2600276         BRU CHAR           GET NEXT CHARACTER-ID                         00386
20341  0664342  EDIT1  LDX ITEMP   3      RESTORE EXIT                                  00387
20342  0004321         LDA DECLO          LINE-NUMBER WRITE-INHIBIT FLAG FOR STRINGS,   00388
20343  2516002         BNZ                  DECLARATIONS, FORMAL PARAMETER LISTS        00389
20344  2600400         BRU NOEDIT         DO NOT WRITE LINE-NUMBER                      00390
20345  1744364         STX TEMP    2      SAVE REGISTER                                 00391
20346  0006262         LDA PAVAIL         LAST USED LOCATION                            00392
20347  0201616         SUB TWO            CHECK FOR SEQUENTIAL LINE-NUMBERS             00393
20350  0300012         STA XR22           BY LOOKING BACK TWO LOCATIONS                 00394
20351  0102074         ADD EDSPB          AND COMPARING WITH AN  SRB *+2,3              00395
20352  2140001         CAB 1       2                                                    00396
20353  2600355         BRU *+2            NOT AN SPB                                    00397
20354  1746262         STX PAVAIL  2      BACK UP PAVAIL BY TWO                         00398
20355  0006262         LDA PAVAIL         NEW (OR OLD) PAVAIL                           00399
20356  0102074         ADD EDSPB          SPB 3,3  INSTRUCTION AROUND LINENO IN PROGRAM 00400
20357  0740205         SPB WRITE   2      INCLUDED IN OBJECT PROGRAM                    00401
20360  2504001         LAQ                LINE-NUMBER TO A-REGISTER                     00402
20361  0304343         STA LINENO         SAVE LINE-NUMBER FOR COMPILE-TIME ERROR       00403
20362  0740205         SPB WRITE   2      AND FOR RUN-TIME ERROR                        00404
20363  0644364         LDX TEMP    2      RESTORE REGISTER                              00405
20364  2600276         BRU CHAR           RESUME SOURCE SCAN                            00406
20365  0557777  EDOUT  BXH 1       2      BACK OFF ONE CHARACTER IN SOURCE              00407
20366  2600374         BRU EDIT2          BACK OFF CHARACTER COUNTER                    00408
20367  0000011         LDA XR21           BACK OFF WORD COUNTER                         00409
20370  2504112         SBO                                                              00410
20371  0300011         STA XR21                                                         00411
20372  0641616         LDX TWO     2      SET CHARACTER COUNTER                         00412
20373  2600341         BRU EDIT1          AND SET THINGS BACK TO NORMAL                 00413
20374  0000012  EDIT2  LDA XR22           BACK OFF CHARACTER COUNTER ONLY               00414
20375  2504112         SBO                                                              00415
20376  0300012         STA XR22                                                         00416
20377  2600341         BRU EDIT1          SET THINGS BACK TO NORMAL                     00417
20400  2504001  NOEDIT LAQ                SKIP STORING LINE-NUMBER IN OBJECT            00418
20401  0304343         STA LINENO         BUT SAVE FOR COMPILE-TIME REFERENCE           00419
20402  0004321         LDA DECLO                                                        00420
20403  2101626         CAB DM2                                                          00421
```

```
20404  2600276          BRU CHAR                                                00422
20405  2660001          BRU 1       3                                           00423
20406  2600276          BRU CHAR                                                00424
                                                                                00425
20407  1420001  NEWWRD  INX 1       1       GET NEW WORD FROM SOURCE            00426
20410  0020000          LDA 0       1       WORD TO A-REGISTER                  00427
20411  0306311          STA CH3             DIVIDE INTO THREE CHARACTERS        00428
20412  2510006          SRA 6                                                   00429
20413  0306310          STA CH2                                                 00430
20414  2510006          SRA 6                                                   00431
20415  0641610          LDX ZERO    2       CHARACTER COUNTER                   00432
20416  2600303          BRU CODECH                                              00433
                                                                        EJT     00434
```

```
                                        UNDEF = UNDEFINED INPUT MODE.  THE NEXT          00435
                                        CHARACTER READ,OTHER THAN A SPACE,DETERMINES     00436
                                        THE INPUT MODE.                                  00437
                                                                                         00438
20417 2514001 UNDEF  BMI                                                                 00439
20420 2600457        BRU SYMBOL              CHARACTER AN ALGOL SYMBOL                   00440
20421 2514002        BZE                                                                 00441
20422 2600276        BRU CHAR                IGNORE A SPACE                              00442
20423 2101665        CAB 07777               DISTINGUISH BETWEEN LETTERS AND DIGITS      00443
20424 2600443        BRU LETTER                                                          00444
20425 2600426        BRU *+1                                                             00445
20426 2001642        EXT CHMASK              CHARACTER IS DIGIT                          00446
20427 2504006        MAQ                                                                 00447
20430 1306304        DST CONST               CONST = VALUE OF CONSTANT BEING READ        00448
20431 0661652        LDX MODC1  3            SET INPUT MODE TO CONST1                    00449
20432 2504002        LDZ                                                                 00450
20433 0306313        STA DCTR                DCTR=NO. OF DIGITS AFTER DECIMAL POINT=0    00451
20434 0306314        STA DINC                DINC = 0 BEFORE DECIMAL POINT, 1 AFTER      00452
20435 0306315        STA EXP                 EXP = EXPONENT = 0                          00453
20436 0306312        STA BIGC                BIGC IS EXCESS OF CONST OVER 2EXP19 * 10    00454
20437 0306321        STA TYPE                SET TYPE TO INTEGER                         00455
20440 2504022        LDQ                                                                 00456
20441 0306316        STA SGNEXP              SGNEXP = 1 = +                              00457
20442 2600276        BRU CHAR                                                            00458
20443 0304364 LETTER STA TEMP                                                            00459
20444 0662036        LDX MODIDN 3            SET INPUT MODE TO IDENT                     00460
20445 0004323        LDA DINAM                                                           00461
20446 2516002        BNZ                     CHECK CONSTANT-ONLY FLAG                    00462
20447 2611307        BRU ER8                 **** DINAMIC DECLARATIONS NOT YET ALLOWED   00463
20450 2506073        SXG 3                   SET INDEX GROUP 3 FOR INDENTIFIER COUNTERS 3*00464
20451 0621621        LDX ONE    1            IDENT1 WORD COUNT = 1                       00465
20452 0641610        LDX ZERO   2            IDENT2 WORD COUNT = 0                       00466
20453 0601616        LDX TWO    0            IDENT2 CHARACTER COUNTER = 2                00467
20454 0004364        LDA TEMP                                                            00468
20455 2001642        EXT CHMASK                                                          00469
20456 2600544        BRU LETIN               STORE FIRST CHARACTER OF IDENTIFIER IN IDENT1
                                                                                         00470
20457 2001645 SYMBOL EXT SIGN                CHOP OFF SIGN BIT                           00471
20460 0306317        STA SYMB                                                            00472
20461 2102164        CAB GR7                                                             00473
20462 2601572        BRU ROUTE                                                           00474
20463 2600464        BRU *+1                 FOR SYMBOLS IN GROUP 7, CHECK TO SEE IF THE 00475
                                             SYMBOL BEING READ IS COMPOSED OF TWO        00476
                                             CHARACTERS OR ONLY ONE                      00477
20464 2001642        EXT CHMASK              TRIM TO SECOND CHARACTER OF TWO CHAR SYMBOL  00478
20465 0304364        STA TEMP                                                            00479
20466 0457776        BXL 2      2                                                        00480
20467 2600505        BRU PC2OR3              PICK UP 2ND OR 3RD CHAR IN WORD             00481
20470 0020001        LDA 1      1            PICK UP FIRST CHARACTER IN NEW WORD         00482
20471 2510014        SRA 12                  SHIFT CHARACTER TO LAST 6 BITS              00483
20472 2104364 PEEK1  CAB TEMP                CHECK CHARACTER FOR SECOND PART OF SYMBOL   00484
20473 2600475        BRU *+2                                                             00485
20474 2600510        BRU TWOCH               FORM TWO CHAR SYMBOL                        00486
20475 0006317        LDA SYMB                HERE FOR ONLY ONE CHAR SYMB                 00487
20476 2510046        SCA 6                   SHIFT NUMBER OF SYMBOLS TO Q @ 19           00488
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20477  2001642          EXT  CHMASK                                          00489
20500  0300013          STA  XR23                                            00490
20501  0062552          LDA  ID1CH   3     LOAD INTERNAL IDENTIFIER FOR ONE CHAR SYMBOL 00491
20502  0306317          STA  SYMB                                            00492
20503  0662037          LDX  MODUN   3     SET INPUT MODE TO UNDEFINED       00493
20504  2601572          BRU  ROUTE                                           00494
20505  0046310  PC2OR3  LDA  CH2     2                                      00495
20506  2001642          EXT  CHMASK                                          00496
20507  2600472          BRU  PEEK1                                           00497
20510  0006317  TWOCH   LDA  SYMB                                           00498
20511  2510046          SCA  6             SHIFT NUMBER OF SYMBOLS TO Q @ 19 00499
20512  2001642          EXT  CHMASK                                          00500
20513  0300013          STA  XR23                                            00501
20514  0062557          LDA  ID2CH   3     LOAD IDENTIFIER FOR TWO CHAR SYMBOL 00502
20515  0306317          STA  SYMB                                            00503
20516  0760276          SPB  CHAR    3     ADJUST X-REGISTERS FOR CHAR READ  00504
20517  0662037          LDX  MODUN   3                                       00505
20520  2601572          BRU  ROUTE                                           00506
                                                                     EJT00507
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                                IDENT  IS THE INPUT MODE WHICH BUILDS UP                    00508
                                IDENTIFIERS AND ALGOL WORDS,  THE IDENTIFIER             00509
                                IS STORED IN TWO PARTS - (1) IDENT1, WHICH IS            00510
                                THE PART OF THE IDENTIFIER AFTER THE LAST                00511
                                SPACE, AND (2) IDENT2 WHICH IS THE PART                  00512
                                PRECEEDING THE LAST SPACE,  EACH TIME A SPACE            00513
                                IS ENCOUNTERED IDENT1 IS CHECKED TO SEE IF IT            00514
                                IS AN ALGOL WORD BY ALLOOK,  IF IT IS BOTH               00515
                                IDENT1 AND IDENT2, IF NECESSARY, ARE                     00516
                                ASSIGNED INTERNAL IDENTIFIERS,  IF NOT,                  00517
                                IDENT1 IS JOINED TO IDENT2 AND CONTROL                   00518
                                REMAINS IN IDENT.                                        00519
                                 XR30  IDENT2 CHAR COUNT                                 00520
                                 XR31  IDENT1 WORD COUNT                                 00521
                                 XR32  IDENT2 WORD COUNT                                 00522
                                 XR33  IDENT1 CHAR COUNT                                 00523
                                  ENTERED IN GROUP 2                                     00524
                                                                                         00525
                                                                                         00526
20521  2514001  IDENT  BMI                                                              00527
20522  2600551        BRU  IDDONE          ALGOL SYMBOL TERMINATES IDENTIFIER           00528
20523  2514002        BZE                                                              00529
20524  2600575        BRU  IDCHK           SPACE - CHECK IDENT1 FOR ALGOL WORD          00530
20525  2001642        EXT  CHMASK          LETTER OR DIGIT TREATED HERE                 00531
20526  0304364        STA  TEMP                                                        3*00532
20527  2506073        SXG  3                                                           00533
20530  0577776        BXH  2       3                                                   00534
20531  2600541        BRU  NWID1           START NEW WORD OF IDENT1                     00535
20532  0201603        SUB  060             SUBTRACT FILLER CODE FROM CHAR              00536
20533  0477777        BXL  1       3       SKIP SHIFT FOR LAST CHAR IN WORD            00537
20534  2512006        SLA  6                                                           00538
20535  0126001        ADD  IDENT1  1       ADD CHAR TO IDENT1                          00539
20536  1460001        INX  1       3       INCREMENT CHARACTER COUNTER                 00540
20537  0326001        STA  IDENT1  1                                                   00541
20540  2600275        BRU  INPUT                                                       00542
                                                                                         00543
20541  0537766  NWID1  BXH  10      1                                                   00544
20542  2611273        BRU  ER2             IDENTIFIER TOO LONG                         00545
20543  1420001        INX  1       1                                                   00546
20544  2512014  LETIN  SLA  12                                                          00547
20545  0102156        ADD  06060           ADD FILLER CODE                             00548
20546  0661610        LDX  ZERO    3       SET CHAR COUNTER TO 0                       00549
20547  0326001        STA  IDENT1  1                                                   00550
20550  2600275        BRU  INPUT                                                       00551
                                                                                         00552
20551  0760602  IDDONE SPB  ALLOOK  3       CHECK IDENT1 FOR AN ALGOL WORD              00553
20552  2600561        BRU  TWOIDS          IDENT1 IS AN ALGOL WORD                     4*00554
20553  2506113        SXG  4                                                           00555
20554  0761050        SPB  IDLOOK  3       LOOK UP IDENT2 IN TABLE AND PROCESS         2*00556
20555  2506053        SXG  2                                                           00557
20556  0662037        LDX  MODUN   3       SET INPUT MODE TO UNDEF                     00558
20557  0006317        LDA  SYMB                                                        00559
20560  2600457        BRU  SYMBOL          PROCESS ALGOL SYMBOL                        00560
                                                                                         2*00561
20561  2506053  TWOIDS SXG  2
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20562  0557777          BXH 1      2     BACK OFF ONE CHARACTER IN SOURCE PROGRAM   00562
20563  2600571          BRU TWOID1                                                   00563
20564  0000011          LDA XR21                                                    00564
20565  2504112          SBO                                                         00565
20566  0300011          STA XR21                                                    00566
20567  0641616          LDX TWO    2                                                00567
20570  2601572          BRU ROUTE                                                   00568
20571  0000012  TWOID1  LDA XR22                                                    00569
20572  2504112          SBO                                                         00570
20573  0300012          STA XR22                                                    00571
20574  2601572          BRU ROUTE                                                   00572
                                                                                    00573
                                                                                    00574
20575  0760602  IDCHK   SPB ALLOOK  3     CHECK IDENT1 FOR AN ALGOL WORD            00575
20576  2601572          BRU ROUTE         IT IS                                     00576
20577  0621610          LDX ZERO   1      SET IDENT1 TO ZERO                        00577
20600  0661616          LDX TWO    3                                                00578
20601  2600275          BRU INPUT                                                   00579
                                                                                    00580
                                  ALLOOK CHECKS TO SEE IF IDENT1 IS AN ALGOL       00581
                                  WORD,                                            00582
                                  ENTER IN GROUP 2 FROM IDDONE, IDCHK              00583
                                                                                    00584
20602  1760004  ALLOOK  STX RETURN 3     SAVE EXIT                                 00585
20603  0306317          STA SYMB                                                    00586
20604  0000015          LDA XR31                                                    00587
20605  2514002          BZE                                                         00588
20606  2600650          BRU NOTALG        IDENT1 = 0                                00589
20607  0006317          LDA SYMB                                                    00590
20610  2514002          BZE                                                         00591
20611  2600614          BRU *+3                                                     00592
20612  0006002  AL3     LDA IDENT1+1                                                00593
20613  2600620          BRU *+5                                                     00594
20614  0006002          LDA IDENT1+1      LOAD FIRST WORD OF IDENT1                 00595
20615  2102314          CAB AGO           ALPHANUMERIC =GO -                        00596
20616  2600620          BRU *+2                                                     00597
20617  2601013          BRU GO                                                      00598
20620  2510014          SRA 12                                                      00599
20621  0300013          STA XR23                                                    00600
20622  0061720          LDA CLIST  3      LOAD CODE FOR FIRST CHAR OF IDENT1        00601
20623  2510006          SRA 6             A = INDEX IN ALLIST TO BEGIN SEARCH       00602
20624  2514002          BZE                                                         00603
20625  2600650          BRU NOTALG        NO ALGOL WORD BEGINS WITH THAT LETTER     00604
20626  0300013          STA XR23                                                    00605
20627  0062654          LDA ALLIST-13                                               00606
20630  2002213  AL1     EXT WMASK         TRIM TO WORD                              00607
20631  2106002          CAB IDENT1+1                                                00608
20632  2600635          BRU AL2                                                     00609
20633  2600642          BRU MORALG        CHECK REMAINDER OF WORD FOR A MATCH       00610
20634  2600650          BRU NOTALG        IDENT1 IS NOT AN ALGOL WORD               00611
20635  1460001  AL2     INX 1      3      NO MATCH YET - CHECK NEXT WORD IN LIST    00612
20636  0062654          LDA ALLIST-13                                               00613
20637  2514001          BMI               MINUS SIGN INDICATES START OF NEXT WORD   00614
20640  2600630          BRU AL1                                                     00615
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20641  2600635          BRU AL2                LOOP TO FIND NEXT WORD IN ALLIST                00616
20642  0600015 MORALG   LDX XR31    0         IDENT1 WORD COUNT                               00617
20643  0062655          LDA ALLIST  3         A = NEXT THREE CHARACTERS IN ALLIST             00618
20644  2516001          BPL                                                                   00619
20645  2600756          BRU MAL1               MORE WORD TO CHECK                             00620
20646  0417776          BXL 2       0                                                         00621
20647  2601000          BRU FOUND              WORD IN TABLE                                  00622
20650  0662036 NOTALG   LDX MODIDN  3         RESET INPUT MODE TO IDENT                      00623
20651  2506073          SXG 3                                                                3*00624
20652  0437777          BXL 1       1                                                        00625
20653  2600754          BRU NOTAL1             IDENT1 = 0                                     00626
20654  0000015          LDA XR31               IDENT1 WORD COUNT                              00627
20655  0304370          STA TEST21                                                           00628
20656  0000014          LDA XR30               IDENT2 CHAR COUNT                              00629
20657  2101621          CAB ONE                                                              00630
20660  0001572          LDA SEVEN              MUST FILL IN TWO CHARACTERS A WORD             00631
20661  2600700          BRU HARD21             MUST FILL IN ONE CHARACTER A WORD              00632
20662  0004370          LDA TEST21             IDENT2 AN INTEGRAL NUMBER OF WORDS             00633
20663  2001642          EXT CHMASK             TRIM TO IDENT1 CTR                             00634
20664  2504522          NEG                                                                  00635
20665  2504006          MAQ                    Q CONTAINS COMPLEMENT OF NO. OF WORDS TO BE M00636
20666  0000016          LDA XR32               IDENT2 WORD COUNT                              00637
20667  0102035          ADD LOCID2             ADDRESS OF IDENT2                              00638
20670  2504032          ADO                    A = LOC TO STORE IDENT1                        00639
20671  2406002          MOV IDENT1+1           MOVE IDENT1 TO END OF IDENT2                   00640
20672  0600017          LDX XR33    0          IDENT2 CHAR COUNT = IDENT1 CHAR COUNT          00641
20673  0004370          LDA TEST21                                                           00642
20674  2001642          EXT CHMASK                                                           00643
20675  0100016          ADD XR32                                                             00644
20676  0300016          STA XR32               ADJUST IDENT2 WORD COUNT                       00645
20677  2600752          BRU OUT21                                                            00646
                                                                                             00647
20700  0101570 HARD21   ADD FIVE                                                            00648
20701  0300015          STA XR31               LENGTH OF SHIFT PUT IN XR31                    00649
20702  0000014          LDA XR30               IDENT2 CHAR COUNT                              00650
20703  0100017          ADD XR33               IDENT1 CHAR COUNT                              00651
20704  2504032          ADO                                                                  00652
20705  2101616          CAB TWO                                                              00653
20706  2600711          BRU *+3                                                              00654
20707  2600711          BRU *+2                                                              00655
20710  0201623          SUB THREE                                                            00656
20711  0300014          STA XR30               IDENT2 CHAR COUNT = IDENT2+IDENT1 COUNT MOD 300657
20712  0661621          LDX ONE     3          XR23 = RUNNING COUNTER FOR IDENT1              00658
20713  0046013          LDA IDENT2  2                                                        00659
20714  2504006          MAQ                                                                  00660
20715  0066001 LOOP21   LDA IDENT1  3         Q HAS FIRST CHARACTERS OF WORD, A THE LAST      00661
20716  2512001          SLA 1                  LEFT JUSTIFY A REGISTER                        00662
20717  2504005          XAQ                                                                  00663
20720  2530000          SRA 0       1          RIGHT JUSTIFY A REGISTER                       00664
20721  2532200          SLO 0       1          SHIFT ONE OR TWO CHARACTERS INTO A REGISTER    00665
20722  0346013          STA IDENT2  2          STORE FULL WORD IN IDENT2                      00666
20723  2504002          LDZ                                                                  00667
20724  2511001          SRD 1                  RIGHT JUSTIFY REMAINING CHARACTERS IN Q        00668
20725  0004370          LDA TEST21                                                           00669
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20726  2100017          CAB XR33.                EXIT LOOP IF LAST WORD OR IDENT1 WAS READ  00670
20727  2600741          BRU LAST21                                                          00671
20730  2600741          BRU LAST21                                                          00672
20731  1460001          INX 1        3           INCREMENT INDEX REGISTERS                  00673
20732  1440001          INX 1        2                                                      00674
20733  2600715          BRU LOOP21                                                          00675
                                                                                           00676
20734  0101603  FILL21  ADD 060                                                           00677
20735  2102170          CAB SPBSP                CHECK TO SEE IF LAST WORD IS ALL SPACES    00678
20736  2600750          BRU OUT21+2                                                         00679
20737  2600752          BRU OUT21                                                           00680
20740  2600750          BRU OUT21+2                                                         00681
                                                                                           00682
20741  0517776  LAST21  BXH 2        0                                                     00683
20742  2600752          BRU OUT21                IDENT2 HAS INTEGRAL NUMBER OF WORDS       00684
20743  2504005          XAQ                      LAST WORD TO A                            00685
20744  0517777          BXH 1        0                                                     00686
20745  2600734          BRU FILL21               ADD FILL FOR ONE CHARACTER                00687
20746  2001665          EXT 07777                TRIM TO ONE CHARACTER WORD                00688
20747  0102156          ADD 06060                ADD FILL CHARACTERS                       00689
20750  1440001          INX 1        2                                                     00690
20751  0346013          STA IDENT2   2           STORE LAST WORD OF IDENT2                 00691
20752  0557765  OUT21   BXH 11       2                                                     00692
20753  2611273          BRU ER2                                                            00693
20754  0620004  NOTAL1  LDX RETURN   1                                                     00694
20755  2620002          BRU 2        1                                                     00695
                                                                                           00696
20756  2106003  MAL1    CAB IDENT1+2                                                       00697
20757  2600650          BRU NOTALG               SECOND PART OF WORD DOES NOT MATCH        00698
20760  2600762          BRU *+2                  FIRST SIX CHARACTERS MATCH                00699
20761  2600650          BRU NOTALG                                                         00700
20762  0062656          LDA ALLIST+13                                                      00701
20763  2516001          BPL                                                                00702
20764  2600772          BRU MAL3                 CHECK THIRD PART OF WORD                  00703
20765  0001616          LDA TWO                                                            00704
20766  2100015  MAL2    CAB XR31                 SEE IF IDENT2 AND ALGOL WORD ARE SAME LENGTH 00705
20767  2600650          BRU NOTALG                                                         00706
20770  2601000          BRU FOUND                WORDS ARE SAME LENGTH                     00707
20771  2600650          BRU NOTALG                                                         00708
20772  2106004  MAL3    CAB IDENT1+3                                                       00709
20773  2600650          BRU NOTALG                                                         00710
20774  2600776          BRU *+2                  LAST THREE CHARACTERS MATCH               00711
20775  2600650          BRU NOTALG                                                         00712
20776  0001623          LDA THREE                                                          00713
20777  2600766          BRU MAL2                                                           00714
                                                                                           00715
21000  0062563  FOUND   LDA ALID+1  3                                                     00716
21001  0306317          STA SYMB                 SYMB = INTERNAL IDENTIFIER FOR ALGOL WORD  00717
21002  2506073          SXG 3                                                           3*00718
21003  0457777          BXL 1        2                                                     00719
21004  2601007          BRU FOUND1               IDENT2 = 0 - NO IDENTIFIER TO PROCESS     00720
21005  2506113          SXG 4                                                           4*00721
21006  0761050          SPB IDLOOK   3           LOOK UP IDENT2 AND PROCESS                00722
21007  0002037  FOUND1  LDA MODUN                SET INPUT MODE TO UNDEFINED               00723
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21010  0300013          STA XR23                                          00724
21011  0660004          LDX RETURN  3                                     00725
21012  2660001          BRU 1       3                                     00726
                                                                          00727
                                    CHECK FOR GO TO WITH SPACE AS SPECIAL CASE  00728
                                                                          00729
21013  1724337  GO      STX GO1     1                                     00730
21014  1744340          STX GO2     2                                     00731
21015  1006310          DLD CH2                                           00732
21016  1304306          DST GO3                                           00733
21017  0760276          SPB CHAR    3                                     00734
21020  0202003          SUB T                                             00735
21021  2516002          BNZ                                               00736
21022  2601043          BRU NOTGO                                         00737
21023  0760276          SPB CHAR    3                                     00738
21024  0201766          SUB O                                             00739
21025  2516002          BNZ                                               00740
21026  2601043          BRU NOTGO                                         00741
21027  0760276          SPB CHAR    3                                     00742
21030  2504004          LQA                                               00743
21031  2516002          BNZ                                               00744
21032  2601043          BRU NOTGO                                         00745
21033  0002612          LDA GOID                                          00746
21034  0306317          STA SYMB                                          00747
21035  2504001          LAQ                                               00748
21036  2514002          BZE                                               00749
21037  2601002          BRU FOUND+2                                       00750
21040  0002040          LDA RETDN                                         00751
21041  0300004          STA RETURN                                        00752
21042  2601002          BRU FOUND+2                                       00753
21043  0624337  NOTGO   LDX GO1     1                                     00754
21044  0644340          LDX GO2     2                                     00755
21045  1004306          DLD GO3                                           00756
21046  1306310          DST CH2                                           00757
21047  2600612          BRU AL3                                           00758
                                                                          00759
                                                                          00760
                                    IDLOOK FINDS THE INTERNAL IDENTIFIER  00761
                                FOR THE WORD IN IDENT2, WORDS ARE PUT INTO  00762
                                EQUIVALENCE CLASSES BY *MPY MAGIC*, AND THEN  00763
                                THE PARTICULAR CLASS SEARCHED FOR IDENT2,  00764
                                IDLOOK USES INDEX GROUP 4 FOR WORKING STORAGE  00765
                                CALLED BY FOUND, IDDONE                   00766
                                CALLED IN GROUP 4                         00767
                                                                          00768
21050  1764364  IDLOOK STX TEMP    3      SAVE EXIT IN REGISTER 3         00769
21051  0006014          LDA IDENT2+1      FIRST 3 CHARACTERS OF IDENTIFIER  00770
21052  2504006          MAQ                                               00771
21053  1502165          MPY MAGIC                                         00772
21054  2002204          EXT EQMASK        A = EQUIVALENCE CLASS NUMBER OF IDENT2  00773
21055  0300021          STA XR41                                          00774
21056  0025000          LDA ITABLE  1     A = ITABLE ENTRY FOR FIRST WORD IN CLASS  00775
21057  2514002          BZE                                               00776
21060  2601200          BRU NOENT         NO ENTRY IN EQUIVALENCE CLASS   00777
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21061  0304342  ILOOP  STA ITEMP          SAVE ITABLE ENTRY                                  00778
21062  2002205         EXT ETMASK         A = INDEX OF ALPHANUMERIC IDENT IN ETABLE          00779
21063  0300022         STA XR42                                                              00780
21064  0661621         LDX ONE     3      XR43 = RUNNING COUNTER FOR IDENT2                  00781
21065  0045000  ILOOP1 LDA ETABLE  2                                                        00782
21066  2514001         BMI                                                                  00783
21067  2601106         BRU LASTID         CHECK LAST WORD IN ETABLE IDENTIFIER               00784
21070  2166013         CAB IDENT2  3                                                        00785
21071  2601073         BRU *+2            IDENT2 AND ETABLE IDENTIFIER DO NOT MATCH          00786
21072  2601103         BRU MORID          IDENTIFIERS MATCH SO FAR - CHECK MORE              00787
21073  0004342  ILOOP2 LDA ITEMP          HERE TO PROCESS NEXT WORD IN EQUIV CLASS           00788
21074  2101663         CAB 02000                                                            00789
21075  2601120         BRU NOTIN          NO MORE WORDS IN EQUIVALENCE CLASS                 00790
21076  2601077         BRU *+1                                                              00791
21077  2510012         SRA 10             A = INDEX OF NEXT ITABLE ENTRY IN EQUIV           00792
21100  0300021         STA XR41                                                             00793
21101  0025000         LDA ITABLE  1       A = NEXT ITABLE ENTRY IN EQUIVALENCE CLASS      00794
21102  2601061         BRU ILOOP                                                            00795
                                                                                            00796
21103  1440001  MORID  INX 1       2       INCREMENT REGISTERS TO LOOK AT NEXT WORDS       00797
21104  1460001         INX 1       3           IN IDENT2 AND ETABLE IDENTIFIER             00798
21105  2601065         BRU ILOOP1         CHECK NEXT WORD IN IDENTIFIERS                    00799
                                                                                            00800
21106  2001645  LASTID EXT SIGN           TRIM OFF MINUS SIGN INDICATING LAST WORD          00801
21107  2166013         CAB IDENT2  3                                                        00802
21110  2601073         BRU ILOOP2         NO MATCH                                          00803
21111  2601113         BRU *+2            IDENTIFIERS MATCH                                 00804
21112  2601073         BRU ILOOP2         NO MATCH                                          00805
21113  0000023         LDA XR43           CHECK TO SEE IF IDENTIFIERS ARE THE SAME        00806
21114  2100016         CAB XR32               LENGTH                                        00807
21115  2601073         BRU ILOOP2         LENGTHS NOT THE SAME - NO MATCH                   00808
21116  2601152         BRU IDOUT          IDENTIFIER FOUND                                  00809
21117  2601073         BRU ILOOP2         NO MATCH                                          00810
21120  0004341  NOTIN  LDA IAVAIL         IAVAIL POINTS TO LAST EVEN USED LOC IN ITABLE     00811
21121  0300022         STA XR42                                                             00812
21122  0101616         ADD TWO                                                              00813
21123  0304341         STA IAVAIL         UPDATE IAVAIL                                     00814
21124  0102166         ADD NOTYPE         ADD UNDEFINED TYPE TO FORM ITABLE ENTRY           00815
21125  0201616         SUB TWO                                                              00816
21126  0345001         STA ITABLE+12      STORE INTERNAL IDENTIFIER FOR IDENT2              00817
21127  2512012         SLA 10                                                               00818
21130  0104342         ADD ITEMP                                                            00819
21131  0325000         STA ITABLE  1       SET OVERFLOW POINTER IN PREVIOUS WORD           00820
21132  0660016  NOTIN1 LDX XR32    3                                                        00821
21133  0001645         LDA SIGN                                                             00822
21134  2366013         ORY IDENT2  3       SET SIGN BIT IN LAST WORD OF IDENTIFIER         00823
21135  0000016         LDA XR32           START TO FORM MOV INSTRUCTION                     00824
21136  2504522         NEG                                                                  00825
21137  2504006         MAQ                Q = COMP, OF NO, OF WORDS TO BE MOVED          00826
21140  0004325         LDA EAVAIL         EAVAIL POINTS TO LAST WORD FILLED IN ETABLE      00827
21141  0200016         SUB XR32           A = LOC IN ETABLE TO FILL IDENT2                  00828
21142  2104341         CAB IAVAIL         CHECK TO SEE IF TABLES ARE FULL                   00829
21143  2611275         BRU ER3                                                              00830
21144  2611275         BRU ER3                                                              00831
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21145  0304625          STA EAVAIL          UPDATE EAVAIL                          00832
21146  0345000          STA ITABLE  2       STORE POINTER TO ETABLE IDENTIFIER      00833
21147  0102034          ADD ETABLO                                                 00834
21150  2406014          MOV IDENT2+1        STORE IDENT 2 IN ETABLE                00835
21151  0620022          LDX XR42    1       SET XR41 TO POINT TO ITABLE ENTRY      00836
21152  0664364 IDOUT    LDX TEMP    3       RESTORE EXIT FROM IDLOOK               00837
21153  0025001          LDA ITABLE+11       LOAD IDENTIFIER FOR VARIABLE           00838
                                                                                   00839
                                  NCSTO   STORES A VARIABLE IN THE NUMBER          00840
                                  CELLAR, CHECKS TO SEE IF TWO VARIABLES ARE       00841
                                  ADJACENT IN THE PROGRAM, AND SETS THE PREV       00842
                                  FLAG TO VARIABLE.                                00843
                                  CALLED BY FOUND, IDDONE, CONIN                   00844
                                                                                   00845
21154  0304364 NCSTO    STA TEMP            SAVE WORD TO STORE IN NUMBER CELLAR    00846
21155  2514001          BMI                                                        00847
21156  2606132          BRU NCPSTO                                                 00848
21157  0000001 NCSTO1   LDA XR01                                                  00849
21160  2504032          ADD                                                        00850
21161  2100005          CAB XR11                                                   00851
21162  2601165          BRU *+3                                                    00852
21163  2611277          BRU ER4             NUMBER CELLAR - SYMBOL CELLAR FULL     00853
21164  2611277          BRU ER4             NUMBER CELLAR - SYMBOL CELLAR FULL     00854
21165  0300001          STA XR01            INCREMENT NUMBER CELLAR COUNTER        00855
21166  0300022          STA XR42                                                   00856
21167  0004364          LDA TEMP                                                   00857
21170  0344700          STA NC      2       STORE VARIABLE IN NUMBER CELLAR        00858
21171  0006320 VCHECK   LDA PREV                                                  00859
21172  0304354          STA PREV2                                                  00860
21173  2514001          BMI                                                        00861
21174  2611301          BRU ER5             ADJACENT EXPRESSIONS                   00862
21175  2504102          LMO                                                        00863
21176  0306320          STA PREV            SET PREV VARIABLE                      00864
21177  2660001          BRU 1       3       EXIT FROM NCSTO                        00865
                                                                                   00866
                                  NO ENTRY IN EQUIVALENCE CLASS.                   00867
                                                                                   00868
21200  0000021 NOENT    LDA XR41                                                   00869
21201  0300022          STA XR42            SET REGISTER FOR NOTIN                 00870
21202  0102166          ADD NOTYPE          ADD UNDEFINED T  E TO FORM ITABLE IDENTIFIER 00871
21203  0325001 "        STA ITABLE+11       STORE INTERNAL IDENTIFIER FOR IDENT2   00872
21204  2601132          BRU NOTIN1                                                 00873
                                                                                NAM00874
                                                                                EJT00875
```

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                                        CONST1 IS THE INPUT MODE WHICH PROCESSES          00876
                                        THE MANTISSA OF CONSTANTS.  THE ACCUMULATED       00877
                                        VALUE OF THE CONSTANT IS STORED IN CONST,         00878
                                        BIGC CONTAINS TEN TIMES THE OVERFLOW FROM THE     00879
                                        Q REGISTER OF CONST AND IS USED TO FACILITATE     00880
                                        COMPUTATION.  DINC IS 0 IF NO DECIMAL POINT       00881
                                        HAS BEEN READ, 1 OTHERWISE,  DCTR COUNTS THE      00882
                                        NUMBER OF DIGITS AFTER THE POINT,                 00883
                                                                                          00884
 21205  2101651  CONST1 CAB 010000                                                       00885
 21206  2601237         BRU CON2        CHARACTER NOT A DIGIT                            00886
 21207  2601210         BRU *+1                                                          00887
 21210  2001642         EXT CHMASK      TRIM TO DIGIT                                    00888
 21211  2504005         XAQ                                                              00889
 21212  0006305         LDA CONST+1                                                      00890
 21213  2504005         XAQ             Q = LOW ORDER BITS OF CONST,  A = DIGIT          00891
 21214  1501620         MPY TEN                                                          00892
 21215  0106312         ADD BIGC        ADD HIGH ORDER BITS OF CONSTW * 10               00893
 21216  1306306         DST CONSTX      STORE CURRENT VALUE OF CONSTANT                  00894
 21217  2514002         BZE                                                              00895
 21220  2601231         BRU CON1        CONSTANT LESS THAN 2EXP19                        00896
 21221  2101627         CAB 03777                                                        00897
 21222  2601225         BRU *+3                                                          00898
 21223  2601225         BRU *+2                                                          00899
 21224  2600276         BRU CHAR        TOO MANY DIGITS IN CONSTANT -- IGNORE THEM       00900
 21225  2504006         MAQ                                                              00901
 21226  1501620         MPY TEN         FOR VALUE OF BIGC TO ADD AFTER NEXT DIGIT        00902
 21227  2504005         XAQ                                                              00903
 21230  0306312         STA BIGC                                                         00904
 21231  1006306  CON1   DLD CONSTX                                                      00905
 21232  1306304         DST CONST                                                        00906
 21233  0006313         LDA DCTR                                                         00907
 21234  0106314         ADD DINC                                                         00908
 21235  0306313         STA DCTR        DCTR=DCTR+DINC = NO, OF PLACES AFTER POINT       00909
 21236  2600276         BRU CHAR                                                         00910
 21237  2514002  CON2   BZE                                                            00911
 21240  2600276         BRU CHAR                                                         00912
 21241  2101773         CAB EXPID       CHECK FOR EXPONENT SIGN                          00913
 21242  2601244         BRU *+2                                                          00914
 21243  2601271         BRU CON3                                                         00915
 21244  2101753         CAB DECID       CHECK FOR DECIMAL POINT                          00916
 21245  2601360         BRU OUTCON                                                       00917
 21246  2601250         BRU *+2                                                          00918
 21247  2601360         BRU OUTCON                                                       00919
 21250  0006314         LDA DINC                                                         00920
 21251  2516002         BNZ                                                              00921
 21252  2611305         BRU ER7         TWO DECIMAL POINTS IN CONSTANT                   00922
 21253  2504022         LDO                                                              00923
 21254  0306314         STA DINC        DINC=1                                           00924
 21255  0001636         LDA RBIT                                                         00925
 21256  0306321         STA TYPE        SET TYPE TO REAL                                 00926
 21257  2600276         BRU CHAR                                                         00927
                                                                                          00928
                                        CONEXP  IS CALLED WHEN THE FIRST SYMBOL OF        00929
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                                        THE CONSTANT IS THE EXPONENT SYMBOL                    00930
                                                                                               00931
21260  2506053  CONEXP SXG 2                                                                  2*00932
21261  2504002         LDZ                                                                    00933
21262  0306314         STA DINC                                                               00934
21263  0306313         STA DCTR                                                               00935
21264  0306315         STA EXP                                                                00936
21265  2504022         LDO                                                                    00937
21266  0306316         STA SGNEXP                                                             00938
21267  2504006         MAQ                                                                    00939
21270  1306304         DST CONST                                                              00940
21271  0661653  CON3   LDX MODC2   3        SET INPUT MODE TO CONST2                       00941
21272  0001636         LDA RBIT                                                               00942
21273  0306321         STA TYPE             SET TYPE TO BEAL                               00943
21274  2600275         BRU INPUT                                                              00944
                                                                                               00945
                                                                                               00946
                                        CONST2  CHECKS THE NEXT CHARACTER AFTER THE            00947
                                        EXPONENT CHARACTER *TEN* (TYPED AS $) FOR              00948
                                        THE SIGN OF THE EXPONENT.                              00949
                                                                                               00950
21275  2101651  CONST2 CAB 010000                                                              00951
21276  2601304         BRU CON5             CHARACTER NOT A DIGIT                          00952
21277  2601300         BRU *+1                                                                00953
21300  2001642         EXT CHMASK           TRIM TO DIGIT                                  00954
21301  0306315         STA EXP                                                                00955
21302  0661654  CON4   LDX MODC3   3        SET INPUT MODE TO CONST3                       00956
21303  2600276         BRU CHAR                                                               00957
21304  2514002  CON5   BZE                                                                    00958
21305  2600276         BRU CHAR             CHARACTER = SPACE                              00959
21306  2101740         CAB PLUSID           CHECK FOR SIGN OF EXPONENT                     00960
21307  2601311         BRU *+2                                                                00961
21310  2601302         BRU CON4                                                               00962
21311  2101760         CAB MINID                                                              00963
21312  2611305         BRU ER7              ILLEGAL CONSTANT FORMAT                        00964
21313  2601315         BRU *+2                                                                00965
21314  2611305         BRU ER7              ILLEGAL CONSTANT FORMAT                        00966
21315  2504102         LMO                                                                    00967
21316  0306316         STA SGNEXP           SET SGNEXP = -1                                00968
21317  2601302         BRU CON4                                                               00969
                                                                                               00970
                                                                                               00971
                                        CONST3   IS THE INPUT MODE WHICH BUILDS UP             00972
                                        THE EXPONENT OF THE CONSTANT.                          00973
                                                                                               00974
21320  2101651  CONST3 CAB 010000                                                              00975
21321  2601337         BRU CON6             CHARACTER NOT A DIGIT                          00976
21322  2601323         BRU *+1                                                                00977
21323  2001642         EXT CHMASK           TRIM TO DIGIT                                  00978
21324  2504005         XAQ                                                                    00979
21325  0006315         LDA EXP                                                                00980
21326  2504005         XAQ                                                                    00981
21327  1501620         MPY TEN                                                                00982
21330  2504005         XAQ                                                                    00983
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21331  2101655          CAB D77                                                00984
21332  2601335          BRU *+3                                                00985
21333  2611311          BRU ER9          EXPONENT TOO LARGE                    00986
21334  2611311          BRU ER9          EXPONENT TOO LARGE                    00987
21335  0306315          STA EXP          STORE CURRENT VALUE OF EXPONENT       00988
21336  2600276          BRU CHAR                                               00989
21337  2516002  CON6    BNZ                                                    00990
21340  2601360          BRU OUTCON       CHARACTER NOT A SPACE                 00991
21341  2600276          BRU CHAR                                               00992
                                                                               00993
                                 CONDEC  IS CALLED WHEN THE FIRST CHARACTER    00994
                                 IN THE CONSTANT IS THE DECIMAL POINT          00995
                                                                               00996
21342  2504002  CONDEC  LDZ                                                    00997
21343  2504006          MAQ                                                    00998
21344  1306304          DST CONST                                              00999
21345  0306313          STA DCTR                                               01000
21346  0306315          STA EXP                                                01001
21347  0306312          STA BIGC                                               01002
21350  2504022          LDD                                                    01003
21351  0306316          STA SGNEXP                                             01004
21352  0306314          STA DINC                                               01005
21353  0001652          LDA MODC1                                              01006
21354  0300013          STA XR23                                               01007
21355  0001636          LDA RBIT                                               01008
21356  0306321          STA TYPE                                               01009
21357  2600275          BRU INPUT                                              01010
                                 OUTCON  DECIDES WHAT TO DO WITH THE CONSTANT  01011
                                                                               01012
21360  0306317  OUTCON  STA SYMB          SAVE CHARACTER TERMINATING CONSTANT   01013
21361  2506113          SXG 4                                                  4*01014
21362  0721452          SPB CONVRT  1    BCD-BINARY                            01015
21363  3306304          FST CONST                                              01016
21364  3006304          FLD CONST                                              01017
21365  0640005          LDX XR11    2                                          01018
21366  0044700          LDA SC      2    CHECK TO SEE IF THE CONSTANT IS SIGNED 01019
21367  2102311          CAB UPID         UNARY PLUS IDENTIFIER                 01020
21370  2601372          BRU *+2                                                01021
21371  2601420          BRU CONPL                                              01022
21372  2102310          CAB UMID         UNARY MINUS IDENTIFIER                01023
21373  2601375          BRU *+2                                                01024
21374  2601416          BRU CONMIN                                             01025
21375  3306304  OUTC1   FST CONST        STORE VALUE OF CONSTANT               01026
21376  0004317  CROUTE  LDA CMODE                                              01027
21377  2101610          CAB ZERO                                               01028
21400  2610241          BRU ABCON        CONSTANT IS AN ARRAY BOUND IN DECLARATION 01029
21401  2610071          BRU DACON        CONSTANT IS IN A DATA DECLARATION     01030
                                 NORMAL SOURCE PROGRAM CONSTANTS ARE           01031
                                 TREATED HERE BY LOOKING THEM UP IN THE        01032
                                 CONSTANT CELLAR AND ENTERING THEM IN THE      01033
                                 CELLAR IF NECESSARY                           01034
                                                                               01035
21402  2504002          LDZ                                                    01036
21403  0300021  CLOOP   STA XR41                                              01037
21404  2104315          CAB CAVAIL
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21405  2601407          BRU  *+2                                          01038
21406  2601431          BRU  NEWCON          CONSTANT NOT IN CONSTANT CELLAR  01039
21407  0006304          LDA  CONST                                        01040
21410  2126050          CAB  CCLO    1       MATCH CONSTANT AGAINST ENTRY IN CELLAR  01041
21411  2601413          BRU  *+2                                          01042
21412  2601424          BRU  MOCON           CHECK SECOND HALF OF CONSTANT  01043
21413  0000021  CLOOP1  LDA  XR41                                         01044
21414  0101616          ADD  TWO             INCREMENT COUNTER TO CEHOK NEXT CONSTANT  01045
21415  2601403          BRU  CLOOP                IN CELLAR               01046
21416  3100002  CONMIN  MAQ          A                                    01047
21417  3501614          FMP  FMONE           CHANGE SIGN OF CONSTANT       01048
21420  0000005  CONPL   LDA  XR11           SYMBOL CELLAR COUNTER         01049
21421  2504032          ADD                                               01050
21422  0300005          STA  XR11            ERASE SIGN OF CONSTANT FROM SYMBOL CELLAR  01051
21423  2601375          BRU  OUTC1                                        01052
21424  0006305  MOCON   LDA  CONST+1        SECOND HALF OF CONSTANT       01053
21425  2126051          CAB  CCLO+1  1                                    01054
21426  2601413          BRU  CLOOP1          NO MATCH                      01055
21427  2601441          BRU  CONIN           MATCH                         01056
21430  2601413          BRU  CLOOP1          NO MATCH                      01057
21431  2102172  NEWCON  CAB  CONLF1                                       01058
21432  2601435          BRU  *+3                                          01059
21433  2611313          BRU  ER10            TOO MANY CONSTANTS            01060
21434  2611313          BRU  ER10            TOO MANY CONSTANTS            01061
21435  0101616          ADD  TWO                                          01062
21436  0304315          STA  CAVAIL          INCREMENT POINTER TO NEXT AVAILABLE LOC  01063
21437  1006304          DLD  CONST                                        01064
21440  1326050          DST  CCLO    1       STORE CONSTANT IN CONSTANT CELLAR  01065
21441  0000021  CONIN   LDA  XR41                                         01066
21442  0102173          ADD  CONLO           FORM ADDRESS OF CONSTANT IN CELLAR  01067
21443  0106321          ADD  TYPE                                         01068
21444  0101634          ADD  CBIT            FORM IDENTIFIER FOR CONSTANT  01069
21445  0761154          SPB  NCSTO   3       STORE IDENTIFIER FOR CONSTANT IN NC  01070
21446  2506053  OUTC2   SXG  2                                           2#01071
21447  0662037          LDX  MODUN   3       SET INPUT MODE TO UNDEFINED   01072
21450  0006317          LDA  SYMB                                         01073
21451  2600417          BRU  UNDEF           PROCESS NEXT CHARACTER IN SOURE PROGRAM  01074
                                                                          01075
                        CONVRT   CONVERTS THE INFORMATION BUILT UP        01076
                        BY THE INPUT ROUTINES INTO A FLOATING POINT       01077
                        CONSTANT.                                         01078
                        CALLED BY OUTCON                                  01079
                                                                          01080
21452  0006316  CONVRT  LDA  SGNEXP                                       01081
21453  2516001          BPL                                               01082
21454  2601460          BRU  CVT1                                         01083
21455  0006315          LDA  EXP             CHANGE SIGN OF EXPONENT       01084
21456  2504522          NEG                                               01085
21457  0306315          STA  EXP                                          01086
21460  0006314  CVT1    LDA  DINC            CHECK FOR DECIMAL POINT       01087
21461  2514002          BZE                                               01088
21462  2601466          BRU  CVT2            NO DECIMAL POINT              01089
21463  0006315          LDA  EXP             ADJUST EXPONENT BY NUMBER OF DECIMAL PLACES  01090
21464  0206313          SUB  DCTR                                         01091
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21465  0306315          STA EXP                                                01092
21466  1006304  CVT2    DLD CONST          CHECK FOR MORE THAN 30 BITS IN CONSTANT  01093
21467  2001627          EXT 03777                                              01094
21470  2514002          BZE                                                    01095
21471  2601512          BRU CVT3           LESS THAN 30 BITS                   01096
21472  2513010          NOR 8              NORMALIZE FOR MORE THAN 30 BITS     01097
21473  0000000          LDA 0              NUMBER OF SHIFTS NEEDED             01098
21474  2512013          SLA 11             PUT NUMBER OF SHIFTS INTO EXPONENT POSITION 01099
21475  0304313          STA BINEXP         SET BINARY EXPONENT                 01100
21476  0000000          LDA XR00                                               01101
21477  2504112          SBO                                                    01102
21500  0300023          STA XR43           NUMBER OF SHIFTS LESS ONE           01103
21501  0006304          LDA CONST                                              01104
21502  2571000          SRD 0       3      SHIFT ALL BUT ONE PLACE             01105
21503  1101660          DAD DBLONE                                             01106
21504  2511001          SRD 1              COMPLETES ROUNDING OF OVERSIZE CONSTANT 01107
21505  1306304          DST CONST                                              01108
21506  2001627          EXT 03777          CHECK TO SEE IF MORE SHIFT NEEDED   01109
21507  2516002          BNZ                                                    01110
21510  0001663          LDA D2000          FUDGE FOR SPECIAL CASE OF CONSTANT ALL 1 BITS 01111
21511  0104313          ADD BINEXP         ADD BINARY EXPONENT COMPUTED BY SHIFT 01112
21512  0106304  CVT3    ADD CONST          ADD CONSTANT TO EXPONENT            01113
21513  0101662          ADD D30B8          ADD A BINARY EXPONENT OF 30         01114
21514  0306304          STA CONST                                              01115
21515  0006315          LDA EXP                                                01116
21516  0304326          STA EXPFLG         SAVE SIGNED EXPONENT                01117
21517  2514001          BMI                                                    01118
21520  2504522          NEG                                                    01119
21521  0306315          STA EXP            MAKE EXPONENT POSITIVE              01120
21522  3006304          FLD CONST                                              01121
21523  3101610          FAD FZERO                                              01122
21524  2001664          EXT CMASK          TRIM TO LAST THREE BITS OF EXPONENT 01123
21525  2512001          SLA 1              DOUBLE IT                           01124
21526  0300023          STA XR43                                               01125
21527  0741546          SPB CVTMUL  2                                          01126
21530  0006315          LDA EXP                                                01127
21531  2001572          EXT SEVEN          TRIM OFF LAST THREE BITS            01128
21532  0661656          LDX D14     3      SET XR43 TO LOCATION OF 10EXP7 IN TABLE 01129
21533  2510002          SRA 2              GET TWICE EXPONENT MOD 8            01130
21534  2510001  CVT7    SRA 1                                                  01131
21535  0306315          STA EXP                                                01132
21536  2514002          BZE                                                    01133
21537  2620001          BRU 1       1      CONVERSION IS COMPLETED             01134
21540  1460002          INX 2       3      ADVANCE COUNTER BY ONE POWER OF TEN 01135
21541  2516000          BEV                                                    01136
21542  2601534          BRU CVT7           SKIP THIS POWER OF 10               01137
21543  0741546          SPB CVTMUL  2      ADJUST BY POWER OF 10               01138
21544  0006315          LDA EXP                                                01139
21545  2601534          BRU CVT7                                               01140
21546  0004326  CVTMUL  LDA EXPFLG                                             01141
21547  2514001          BMI                                                    01142
21550  2601554          BRU **4            NEGATIVE EXPONENT                   01143
21551  3100002          MAQ         A                                          01144
21552  3561666          FMP CTABLE  3      OVERFLOW MAY OCCUR HERE             01145
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21553  2640001          BRU 1       2                                  01146
21554  3500005          CQX                                            CQX#01147
21555  3661666          FDV CTABLE  3       UNDERFLOW MAY OCCUR HERE   01148
21556  2640001          BRU 1       2                                  01149
                                                                       01150
21557  2504002  KTRUE   LDZ                                            01151
21560  2601562          BRU *+2                                        01152
21561  2504102  KFALSE  LMO                                            01153
21562  2504006          MAQ                 CLEAR A REGISTER           01154
21563  0306317          STA SYMB            SET SYMB EQUAL TO A SPACE  01155
21564  2504005          XAQ                 LOGICAL VALUE BACK TO A    01156
21565  1306304          DST CONST                                      01157
21566  0002176          LDA BBIT            BOOLEAN TYPE BIT           01158
21567  0306321          STA TYPE                                       01159
21570  2506113          SXG 4                                          4#01160
21571  2601376          BRU CROUTE          PROCESS CONSTANT           01161
                                                                       NAM01162
                                                                       EJT01163
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                                                    ROUTE IS CALLED INTO USE EACH TIME A NEW        01164
                                                SYMBOL IS READ,  IT DECIDES WHETHER THE             01165
                                                CONTEXT OF THE SYMBOL IS LEGAL AND DETERMINES       01166
                                                THE ACTION TO BE TAKEN ACCORDING TO THE             01167
                                                SYMBOL READ AND THE LAST ONE ENTERED IN THE         01168
                                                SYMBOL CELLAR                                       01169
                                                                                                    01170
 21572  2506033  ROUTE  SXG 1                                                                  1*01171
 21573  0006320         LDA PREV                                                                   01172
 21574  0304354         STA PREV2                                                                  01173
 21575  2514001         BMI                                                                        01174
 21576  2601647         BRU PREEXP          SYMBOL IS PRECEEDED BY AN EXPRESSION                   01175
 21577  0006317         LDA SYMB            PREVIOUS WORD WAS AN ALGOL WORD OR SYMBOL              01176
 21600  2002207         EXT PMASK           TRIM TO PREVIOUS TAG                                   01177
 21601  2101663         CAB 02000                                                                  01178
 21602  2601604         BRU PAIROK          SYMBOL JUXTAPOSITION IS LEGITIMATE                     01179
 21603  2601655         BRU PMCHK           SYMB MUST BE A UNARY + OR - TO BE LEGAL                01180
 21604  0006317  PAIROK LDA SYMB                                                                   01181
 21605  0306320         STA PREV            UPDATE PREV                                            01182
 21606  2001630         EXT 017777          TRIM TO GROUP NUMBER                                   01183
 21607  2102163         CAB GR5                                                                    01184
 21610  2601613         BRU RPT             SYMBOL IN GROUPS 1 TO 4                                01185
 21611  2601633         BRU SETGR4          SYMBOL IN GROUP 5 - CHANGE GROUP TO 4                  01186
                                            AND STORE SYMB IN SYMBOL CELLAR                        01187
 21612  2601711         BRU TRSYM           SYMBOL IN GROUP 6 - TRANSFER ON IT                     01188
 21613  0224700  RPT    SUB SC      1       BEGIN TO MATCH GROUP NO WITH LAST ENTRY IN SC  01189
 21614  0101651         ADD 010000          THESE TWO INSTRUCTIONS NULLIFY THE INFLUENCE   01190
 21615  2001630         EXT 017777               OF THE LOW ORDER BITS                     01191
 21616  2101610         CAB ZERO                                                           01192
 21617  2601622         BRU STOSC           SYMB GROUP LESS THAN SCA GROUP - STORE SYMB    01193
 21620  2601674         BRU SUBRTE          SYMB GROUP = SCA GROUP - FIDDLE SOME MORE      01194
 21621  2601640         BRU KMPSC           SYMB GROUP GREATER THAN SCA GROUP - COMPILE     01195
                                                                                           01196
 21622  0000005  STOSC  LDA XR11           SYMBOL CELLAR COUNTER                          01197
 21623  2504112         SBO                                                                01198
 21624  2100001         CAB XR01            NUMBER CELLAR COUNTER                          01199
 21625  2611277         BRU ER4             NUMBER AND SYMBOL CELLARS FULL                 01200
 21626  2611277         BRU ER4             NUMBER AND SYMBOL CELLARS FULL                 01201
 21627  0300005         STA XR11            INCREMENT SYMBOL CELLAR COUNTER                01202
 21630  0006317  READ   LDA SYMB                                                           01203
 21631  0324700         STA SC      1       STORE SYMB IN SYMBOL CELLAR                    01204
 21632  2600275         BRU INPUT                                                          01205
                                                                                           01206
 21633  0006317  SETGR4 LDA SYMB            SETGR4 SETS THE GROUP OF SYMB TO GROUP 4       01207
 21634  2001637         EXT AMASK                                                          01208
 21635  0101635         ADB GR4                                                            01209
 21636  0306317         STA SYMB                                                           01210
 21637  2601622         BRU STOSC                                                          01211
                                                                                           01212
                                                KMPSC  TRANSFERS CONTROL TO THE PARTICULAR      01213
                                                SECTION OF THE COMPILER DESIGNED TO COMPILE     01214
                                                INSTRUCTIONS CORRESPONDING TO THE LAST          01215
                                                ENTRY IN THE SYMBOL CELLAR.                     01216
                                                                                                01217
```

```
21640  0002042  KMPSC  LDA RETRPT          SET RETURN TO REPEAT                    01218
21641  0300004         STA RETURN                                                  01219
21642  0024700         LDA SC      1                                               01220
21643  2001642         EXT CHMASK          TRIM TO SYMBOL NUMBER                   01221
21644  0101634         ADD XTAG            ADD BIT FOR TRANSFER IN UPPER 8K        01222
21645  0300006         STA XR12                                                    01223
21646  2651157         BRU MCOMP+1 2       TRANSFER ON LAST ENTRY IN SYMBOL CELLAR 01224
21647  0006317  PREEXP LDA SYMB                                                    01225
21650  2002207         EXT PMASK           TRIM TO PREVIOUS TAG                    01226
21651  2101663         CAB 02000                                                   01227
21652  2611315         BRU ER11            ILLEGAL SYMBOL FOLLOWING AN EXPRESSION  01228
21653  2601604         BRU PAIROK                                                  01229
21654  2601604         BRU PAIROK                                                  01230
                                                                                   01231
                                   PMCHK  CHECKS TO SEE IF THE SYMBOL IS A         01232
                                   UNARY + OR -                                    01233
                                                                                   01234
21655  0006317  PMCHK  LDA SYMB                                                    01235
21656  2001630         EXT 017777          TRIM TO GROUP AND SUBGROUP NUMBER       01236
21657  2102162         CAB GR1S3           GROUP 1, SUBGROUP 3                     01237
21660  2611317         BRU ER12            ILLEGAL SYMBOL JUXTAPOSITION            01238
21661  2601663         BRU *+2             SYMB IS + OR -,  SEE IF IT IS UNARY     01239
21662  2611317         BRU ER12            ILLEGAL SYMBOL JUXTAPOSITION            01240
21663  0006320         LDA PREV                                                    01241
21664  2002312         EXT UMASK           TRIM TO UNARY TAG                       01242
21665  2514002         BZE                                                         01243
21666  2611317         BRU ER12            ILLEGAL EXPRESSION                      01244
21667  0006317         LDA SYMB                                                    01245
21670  0101616         ADD TWO             CONVERT TO A UNARY + OR - IDENTIFIER    01246
21671  0306317         STA SYMB                                                    01247
21672  0306320         STA PREV            UPDATE PREV                             01248
21673  2601622         BRU STOSC           STORE IDENTIFIER IN SYMBOL CELLAR       01249
                                                                                   01250
                                   SUBRTE  DETERMINES ACTION IF SYMB AND THE       01251
                                   LAST ENTRY IN THE SYMBOL CELLAR ARE IN THE      01252
                                   SAME GROUP AND SUBGROUP                         01253
                                                                                   01254
21674  0006317  SUBRTE LDA SYMB                                                    01255
21675  2001630         EXT 017777          TRIM TO GROUP AND SUBGROUP              01256
21676  2102247         CAB GR3S1           GROUP 3, SUBGROUP 1                     01257
21677  2601704         BRU RTE1                                                    01258
21700  2611321         BRU ER13            ILLEGAL EXPRESSION OF FORM  NOT NOT     01259
21701  2101635         CAB GR4                                                     01260
21702  2601707         BRU RTE2            SYMBOL IN GROUP 3 - COMPILE ONE OPERATION 01261
21703  2601640         BRU KMPSC           SYMB IN GROUP 4 - COMPILE LAST ENTRY IN SC 01262
21704  2101632  RTE1   CAB GR2                                                     01263
21705  2601707         BRU *+2                                                     01264
21706  2611323         BRU ER14            ILLEGAL RELATIONAL EXPRESSION           01265
21707  0002041  RTE2   LDA RETRD           PREPARE TO SET RETURN TO READ           01266
21710  2601641         BRU KMPSC+1         COMPILE LAST ENTRY IN SC AND STORE SYMB IN SC01267
                                                                                   01268
                                   TRSYM TRANSFERS ACCORDING TO SYMB               01269
21711  0006317  TRSYM  LDA SYMB                                                    01270
21712  2001642         EXT CHMASK          TRIM TO SYMBOL NUMBER                   01271
```

```
21713  0101634          ADD XTAG              ADD BIT FOR TRANSFER IN UPPER 8K          01272
21714  0300006          STA XR12                                                        01273
21715  2651175          BRU MSYMB+362                                                   01274
                                                                                       01275
                                          REREAT CAUSES SYMB TO GENERATE ANOTHER        01276
                                          COMPILATION SEQUENCE AFTER ERASING LAST       01277
                                          ENTRY IN THE SYMBOL CELLAR                    01278
21716  1420001  REPEAT INX 1       1      ERASE LAST ENTRY IN SYMBOL CELLAR             01279
21717  0006617          LDA SYMB                                                        01280
21720  2601613          BRU RPT                                                         01281
                                                                                      NAM01282
                                                                                      EJT01283
```

```
                                        LOADGN  IS THE CHIEF SUBROUTINE USED TO                 01284
                                        PICK UP THE ARGUMENTS FROM THE NUMBER CELLAR            01285
                                        FOR COMPILING OPERATIONS,  NORMALLY A LOAD OF           01286
                                        THE LAST ENTRY IN THE NUMBER CELLAR WILL BE             01287
                                        COMPILED AND THE ADDRESS OF THE SECOND                  01288
                                        ARGUMENT COMPUTED.    HOWEVER IF THE SECOND             01289
                                        ARGUMENT IS ALREADY IN THE A OR AX REGISTER,            01290
                                        AND IF  A IS NOT ZERO ON ENTRY TO LOADGN,               01291
                                        THEN THE ORDER OF THE ARGUMENTS WILL BE                 01292
                                        SWITCHED SO AS TO ELIMINATE THE SUPERFLUOUS             01293
                                        STORE-LOAD SEQUENCE.                                    01294
                                          BECAUSE OF THE ORDER IN WHICH THINGS ARE              01295
                                        PUT IN NC, THE SECOND ARGUMENT IS EXAMINED              01296
                                        FIRST.                                                  01297
                                        ENTER IN GROUP 1, EXIT IN GR 0.                         01298
                                                                                                01299
21721  0304363  LOADGN STA SWITCH             SWITCH=1 IF SWITCH PERMISSABLE, 0 OTHERWISE     01300
21722  2506013         SXG 0                                                          0*01301
21723  0742016         SPB FETCH   2           FETCH SECOND ARGUMENT FROM NC           01302
21724  2516002         BNZ                                                             01303
21725  2601733         BRU SETOP               NC ENTRY NOT RIGHT FOR SWITCH           01304
21726  0004363         LDA SWITCH              LAST ENTRY IN NC IS ADDRESS OF TEMP STORE 01305
21727  2514002         BZE                                                             01306
21730  2601733         BRU SETOP               SWITCH NOT PERMITTED                    01307
21731  2504102         LMO                                                             01308
21732  0304363         STA SWITCH              SET FLAG TO SWITCH OPERANDS             01309
21733  0024700  SETOP  LDA NC      1                                                   01310
21734  2001637         EXT AMASK               TRIM TO ADDRESS                         01311
21735  0304347         STA OPA                 OPA = ADDRESS OF SECOND ARGUMENT        01312
21736  0004312         LDA AX                                                          01313
21737  0304350         STA OPAX                OPAX = ARRAY FLAG FOR SECOND ARGUMENT   01314
21740  0024700         LDA NC      1                                                   01315
21741  2001631         EXT 037777              TRIM TO TYPE LESS CONSTANT BIT          01316
21742  0306321         STA TYPE                TYPE = TYPE OF SECOND ARGUMENT          01317
21743  0000001         LDA XR01                NUMBER CELLAR COUNTER                   01318
21744  2504112         SBO                                                             01319
21745  0300001         STA XR01                ERASE 2ND ARGUMENT FROM NUMBER CELLAR   01320
21746  0742016         SPB FETCH   2           FETCH FIRST ARGUMENT FROM NC            01321
                                        IF A=0 THEN THE FIRST ARGUMENT IS ALREADY IN    01322
                                        THE A OR AX REGISTER AT RUN TIME, SO THAT       01323
                                        THE STORE-LOAD SEQUENCE CAN BE ELIMINATED.      01324
                                        IF A IS NOT 0, THEN THE 1ST ARG IS NOT IN       01325
                                        THE REGISTERS, AND A CHECK IS MADE TO SEE IF    01326
                                        SWITCHING THE ORDER OF THE ARGUMENTS IS         01327
                                        CALLED FOR.                                     01328
                                                                                        01329
21747  2514002         BZE                                                             01330
21750  2601763         BRU LOAD1               FIRST ARGUMENT IN RUNTIME AX REGISTER   01331
21751  0004363         LDA SWITCH                                                      01332
21752  2514001         BMI                     SWITCH IS MINUS IF 2ND ARG IS IN AX     01333
21753  2601756         BRU GOSW                SWITCH ORDER OF ARGUMENTS TO ELIMINATE  01334
                                               EXTRA INSTRUCTIONS FROM PROGRAM.        01335
21754  0742102         SPB LOADST  2           STORE LOAD INSTRUCTION FOR FIRST ARGUMENT 01336
21755  2601763         BRU LOAD1                                                       01337
21756  0024700  GOSW   LDA NC      1          SWITCH INFORMATION FOR SECOND ARGUMENT
```

```
21757 2001637          EXT AMASK              TRIM TO ADDRESS                          01338
21760 0304347          STA OPA                ADDRESS OF FIRST ARGUMENT                01339
21761 0004312          LDA AX                                                          01340
21762 0304350          STA OPAX               ARRAY FLAG FOR FIRST ARGUMENT            01341
21763 2504002 LOAD1    LDZ                                                             01342
21764 0304372          STA TST                SET TEMPORARY STORAGE INDICATOR TO 0      01343
21765 0006321          LDA TYPE               START TO ADJUST TYPE OF COMPUTED EXPRESSION 01344
21766 2101636          CAB RBIT                                                        01345
21767 2602005          BRU TARITH             TYPE = INTEGER                           01346
21770 2602005          BRU TARITH             TYPE = REAL                              01347
21771 0024700          LDA NC     1           TYPE = BOOLEAN - CHECK FOR MATCHING TYPE 01348
21772 2002202          EXT BMASK              TRIM TO BOOLEAN TYPE BIT                 01349
21773 2514002          BZE                                                             01350
21774 2611325          BRU ER15               MIXED BOOLEAN AND ARITHMETIC TYPES       01351
21775 0004350 LOAD2    LDA OPAX                                                        01352
21776 2514002          BZE                                                             01353
21777 2602002          BRU *+3                SECOND ARGUMENT NOT AN ARRAY             01354
22000 0740205          SPB WRITE  2           STORE INDEX REGISTER LOAD FOR 2ND ARG    01355
22001 0001634          LDA XTAG               TAG FOR XR1                              01356
22002 0104347          ADD OPA                ADD ADDRESS OF SECOND ARGUMENT           01357
22003 0660006          LDX XR12   3           LOAD EXIT FROM LOADGN                    01358
22004 2660001          BRU 1      3           EXIT FROM LOADGN                         01359
                                                                                       01360
22005 0024700 TARITH   LDA NC     1           CHECK FOR ARITHMETIC TYPE IN NC          01361
22006 2001631          EXT 037777             TRIM TO TYPE LESS EXPRESSION BIT         01362
22007 2101636          CAB RBIT                                                        01363
22010 2601775          BRU LOAD2              TYPE = INTGR, EXPRESSION TYPE # 1ST ARG TYPE 01364
22011 2602013          BRU *+2                TYPE = REAL                              01365
22012 2611325          BRU ER15               TYPE = BOOLEAN - MIXED TYPE ERROR        01366
22013 0001636          LDA RBIT               REAL TYPE BIT                            01367
22014 2306321          ORY TYPE               SET TYPE OF EXPRESSION TO REAL           01368
22015 2601775          BRU LOAD2                                                       01369
                                                                                       01370
                                      FETCH GENERATES THE INFORMATION NECESSARY FOR    01371
                                      A *FLD* OF THE LAST ELEMENT IN THE NUMBER        01372
                                      CELLAR.                                          01373
                                                                                       01374
22016 2504002 FETCH    LDZ                                                             01375
22017 0304312          STA AX                 AX = ARRAY INDICATOR                     01376
22020 0024700          LDA NC     1           LOAD LAST ENTRY IN NUMBER CELLAR         01377
22021 2514001          BMI                                                             01378
22022 2606423          BRU FETCHP             NO-ARGUMENT PROCEDURE                    01379
22023 2101635          CAB LBIT                                                        01380
22024 2602027          BRU *+3                LEGAL VARIABLE TO LOAD IS IN NC          01381
22025 2611327          BRU ER16               ILLEGAL VARIABLE                         01382
22026 2611327          BRU ER16               ILLEGAL VARIABLE                         01383
22027 2101632          CAB ABIT               ARRAY TAG BIT                            01384
22030 2602046          BRU TRIB               TYPE = REAL, INTGR, OR BOOLEAN           01385
22031 2602032          BRU *+1                                                         01386
22032 2102177          CAB SSBITS             SUBSCRIPTED ARRAY BITS                   01387
22033 2611331          BRU ER17               ARRAY NOT SUBSCRIPTED                    01388
22034 2602035          BRU *+1                                                         01389
22035 2001637          EXT AMASK              TRIM TO ADDRESS                          01390
22036 0102247          ADD *LDX1*             ADD *LDX 0,1* TO FORM INDEX LOAD         01391
```

```
22037  0304312          STA AX                                                  01392
22040  2001637          EXT AMASK                                               01393
22041  0762070          SPB UNTEMP  3          RELEASE TEMPORARY VARIABLE FOR USE AGAIN  01394
22042  0000001          LDA XR01                                                01395
22043  2504112          SBO                                                     01396
22044  0300001          STA XR01               DECREMENT NUMBER CELLAR COUNTER FOR ARRAY  01397
22045  0024700          LDA NC      1          LOAD ARRAY LB + ARRAY TYPE FROM NC  01398
22046  2001631  TRIB    EXT 037777             TRIM TO TYPE BITS                 01399
22047  2101636          CAB RBIT                                                01400
22050  2602066          BRU LODRI              GENERATE LOAD FOR INTEGER         01401
22051  2602066          BRU LODRI              GENERATE LOAD FOR REAL            01402
22052  0001610          LDA *LDA*              LDA INSTRUCTION FOR BOOLEAN LOADS 01403
22053  0304344  SETLOD  STA LOAD               LOAD = LOAD INSTRUCTION           01404
22054  0004312          LDA AX                 ARRAY INDICATOR                   01405
22055  2516002          BNZ                                                     01406
22056  2640001          BRU 1       2          LOAD NECESSARY FOR THIS ARGUMENT  01407
22057  0024700          LDA NC      1                                           01408
22060  2001637          EXT AMASK              TRIM TO ADDRESS                   01409
22061  0762134          SPB TEMPCK  3          CHECK TO SEE IF VARIABLE IS A TEMPORARY ONE  01410
22062  0762070          SPB UNTEMP  3          RELEASE TEMPORARY VARIABLE FOR USE AGAIN  01411
22063  0204372          SUB TST                                                 01412
22064  2001637          EXT AMASK              TRIM TO ADDRESS PORTION           01413
22065  2640001          BRU 1       2          EXIT FETCH                        01414
                                                                               01415
22066  0002213  LODRI   LDA *FLD*             FLD INSTRUCTION                   01416
22067  2602053          BRU SETLOD                                              01417
                                                                               01418
                                    UNTEMP MAKES AVAILABLE FOR USE AGAIN A     01419
                                    TEMPORARY VARIABLE WHICH HAS JUST BEEN     01420
                                    RELOADED INTO THE AX                       01421
                                                                               01422
22070  1760000  UNTEMP  STX XR00    3          SAVE EXIT FROM FETCH              01423
22071  0204367          SUB TSLO                                                01424
22072  2510001          SRA 1                  FORM NUMBER OF TEMPORARY VARIABLE  01425
22073  0300003          STA XR03                                                01426
22074  0001635          LDA LBIT               A 1 AT POSITION 1                 01427
22075  2570000          SRA 0       3          SHIFT TO POSITION OF VARIABLE IN TSFLAG  01428
22076  2304371          ORY TSFLAG             SET AVAIABLE BIT IN TSFLAG FOR VARIABLE  01429
22077  0660000          LDX XR00    3          RESTORE EXIT                      01430
22100  0024700          LDA NC      1                                           01431
22101  2660001          BRU 1       3          EXIT FROM UNTEMP                  01432
                                                                               01433
                                    LOADST  STORES A LOAD INSTRUCTION AND      01434
                                    ALSO THE PREVIOUS TEMPORARY FST IF NECESSARY  01435
                                                                               01436
22102  1744364  LOADST  STX TEMP    2                                          01437
22103  0004372          LDA TST                                                 01438
22104  2516002          BNZ                                                     01439
22105  0740205          SPB WRITE   2          STORE TEMPORARY FST INSTRUCTION   01440
22106  0004312          LDA AX                                                  01441
22107  2514002          BZE                                                     01442
22110  2602122          BRU LDST2              LOAD DOES NOT INVOLVE AN ARRAY    01443
22111  0646262          LDX PAVAIL  2          LAST USED LOCATION                01444
22112  0102216          ADD DTYPE              FORM STX                          01445
```

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22113  2140000          CAB 0      2        CHECK FOR SUPERFLUOUS STORE-LOAD                01446
22114  2602116          BRU *+2                                                             01447
22115  2602130          BRU LDST3                                                           01448
22116  0202216          SUB DTYPE           MUST BE DONE                                    01449
22117  0740205          SPB WRITE  2        STORE INDEX LOAD FOR ARRAY CALL                 01450
22120  0001634  LDST1    LDA XTAG                                                          01451
22121  2304344          ORY LOAD            SET INDEX REGISTER TAG IN LOAD INST             01452
22122  0024700  LDST2    LDA NC     1                                                      01453
22123  2001637          EXT AMASK           TRIM TO ADDRESS                                 01454
22124  0104344          ADD LOAD            FORM LOAD INSTRUCTION                           01455
22125  0740205          SPB WRITE  2        STORE LOAD INSTRUCTION                          01456
22126  0644364          LDX TEMP   2                                                        01457
22127  2640001          BRU 1      2        EXIT FROM LOADST                                01458
22130  0006262  LDST3    LDA PAVAIL                                                        01459
22131  2504112          SBO                                                               01460
22132  0306262          STA PAVAIL                                                        01461
22133  2602120          BRU LDST1                                                         01462
                                                                                          01463
                                    CHECK FOR TEMPORARY VARIABLE-ALSO USED AT             01464
                                    DEFINE.                                               01465
                                                                                          01466
22134  2104367  TEMPCK  CAB TSLO                                                          01467
22135  2660002          BRU 2      3                                                      01468
22136  2660001          BRU 1      3                                                      01469
22137  2104366          CAB TSLF                                                          01470
22140  2660001          BRU 1      3                                                      01471
22141  2660001          BRU 1      3                                                      01472
22142  2660002          BRU 2      3                                                      01473
                                                                                          01474
                                    LOADUN GENERATES A LOAD OF THE LAST ENTRY IN          01475
                                    THE NUMBER CELLAR.                                    01476
                                    ENTER IN GROUP 1,  EXIT IN GROUP 0.                   01477
                                                                                          01478
22143  2506013  LOADUN  SXG 0                                                            0*01479
22144  0742016          SPB FETCH  2        FETCH LAST ENTRY IN NUMBER CELLAR             01480
22145  2516002          BNZ                                                               01481
22146  0742102          SPB LOADST 2        STORE LOAD INSTRUCTION IS NECESSARY           01482
22147  2504002          LDZ                                                               01483
22150  0304372          STA TST             TURN TEMPORARY STORAGE INDICATOR OFF          01484
22151  0024700          LDA NC     1                                                      01485
22152  2001631          EXT 037777                                                        01486
22153  0306321          STA TYPE                                                          01487
22154  0660006          LDX XR12   3        LOAD EXIT FROM LOADUN                         01488
22155  2660001          BRU 1      3        EXIT FROM LOADUN                              01489
                                                                                          01490
                                                                                          01491
                                    TIEUP  ASSIGNS A LOCATION IN TEMPORARY                01492
                                    STORAGE TO THE INTERMEDIATE RESULT JUST               01493
                                    COMPILED, STORES THE NAME OF THIS TEMPORARY           01494
                                    VARIABLE IN THE NUMBER CELLAR, AND SETS THE           01495
                                    TEMPORARY STORE INSTRUCTION BUT DOES NOT              01496
                                    PLACE THIS INSTRUCTION IN MEMORY AT THE               01497
                                    PRESENT TIME.                                         01498
                                         EACH BIT OF TSFLAG CORRESPONDS TO A              01499
```

```
                                        TEMPORARY VARIABLE, A 1 IN THE BIT POSITION          01500
                                        MEANING THAT THAT VARIABLE IS AVAILABLE FOR          01501
                                        USE AND A 0 THAT THE VARIABLE IS BEING USED.         01502
                                        ENTER IN GROUP 0                                     01503
                                        EXIT IN GROUP 1.                                     01504
                                                                                             01505
 22156  0004371  TIEUP  LDA TSFLAG                                                          01506
 22157  2513023         NOR 19          FIND FIRST ONE BIT IN FLAG FOR FREE VARIABLE        01507
 22160  0304371         STA TSFLAG      STORE TEMPORARILY                                   01508
 22161  0000000         LDA XR00        CONTAINS 19 - LENGTH OF SHIFT                       01509
 22162  2514002         BZE                                                                 01510
 22163  2611277         BRU ER4         ALL TEMPORARY VARIABLES ARE BEING USED              01511
 22164  2504522         NEG                                                                 01512
 22165  0102104         ADD D19         FORM NUMBER OF VARIABLE TO USE                      01513
 22166  0300003         STA XR03                                                            01514
 22167  2512001         SLA 1                                                               01515
 22170  0104367         ADD TSLO        FORM IDENTIFIER FOR VARIABLE                        01516
 22171  0304364         STA TEMP                                                            01517
 22172  0106321         ADD TYPE                                                            01518
 22173  0324700         STA NC      1   STORE IDENTIFIER IN NUMBER CELLAR                   01519
 22174  2002202         EXT BMASK       TRIM TO BOOLEAN TYPE BIT                            01520
 22175  2514002         BZE                                                                 01521
 22176  2602211         BRU STORI       GENERATE A FST FOR TEMPORARY VARIABLE               01522
 22177  0002256         LDA *STA*       STA INSTRUCTION FOR BOOLEAN VARIABLE                01523
 22200  0104364  TIE1   ADD TEMP                                                           01524
 22201  0304372         STA TST         TST = TEMPORARY STORE INSTRUCTION                   01525
 22202  0004371         LDA TSFLAG                                                          01526
 22203  2001635         EXT LBIT        ERASE AVAILABLE BIT FOR VARIABLE USED               01527
 22204  2570000         SRA 0       3   SHIFT TSFLAG BACK INTO STANDARD POSITION            01528
 22205  0304371         STA TSFLAG      TSFLAG IS NOW UPDATED                               01529
 22206  2506033         SXG 1                                                              1*01530
 22207  0640004         LDX XR10    2   LOAD  RETURN  INTO XR12                             01531
 22210  2640001         BRU 1       2                                                       01532
                                                                                            01533
 22211  0002245  STORI  LDA *FST*       FST INSTRUCTION FOR REAL OR INTEGER TYPES           01534
 22212  2602200         BRU TIE1                                                            01535
                                                                                           NAM01536
                                                                                           EJT01537
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                                        THE FOLLOWING BRIDGES COMPILE INSTRUCTIONS          01538
                                        FOR OPERATION AND RELATION SYMBOLS USING THE        01539
                                        LOADGN AS A SUBROUTINE AND EXITING TO TIEUP.        01540
 22213  2504022  KPLUS  LDO                    SET FLAG TO ALLOW SWITCHING ARGUMENTS       01541
 22214  0741721        SPB LOADGN  2                                                       01542
 22215  0102241        ADD *FAD*              ADD FAD INSTRUCTION TO ADDRESS OF 2ND ARG    01543
 22216  0740205  KAOP  SPB WRITE   2         STORE INSTRUCTION FOR OPERATION              01544
 22217  0006321        LDA TYPE                                                            01545
 22220  2102176        CAB BBIT                                                            01546
 22221  2602156        BRU TIEUP              TYPE IS ARITHMETIC                           01547
 22222  2611325        BRU ER15               BOOLEAN TYPE IN ARITHMETIC EXPRESSION        01548
 22223  2602156        BRU TIEUP              ARITHMETIC TYPE                              01549
                                                                                          01550
 22224  2504002  KMINUS LDZ                   ORDER OF ARGUMENTS CANNOT BE SWITCHED        01551
 22225  0741721        SPB LOADGN  2                                                       01552
 22226  0102246        ADD *FSU*                                                           01553
 22227  2602216        BRU KAOP                                                            01554
                                                                                          01555
 22230  0742232  KUMIN  SPB *+2     2         SET UP EXIT FROM LOADUN                      01556
 22231  2602252        BRU KUMIN1                                                          01557
 22232  2506013        SXG 0                                                         0*01558
 22233  0742016        SPB FETCH   2                                                       01559
 22234  2514002        BZE                                                                 01560
 22235  2602151        BRU LOADUN+6           ALREADY IN AX                                01561
 22236  0767310        SPB STOTST  3                                                       01562
 22237  0002234        LDA *CAX*                                                     CAX*01563
 22240  0740205        SPB WRITE   2                                                       01564
 22241  0002246        LDA *FSU*                                                           01565
 22242  2304344        ORY LOAD                                                            01566
 22243  0742102        SPB LOADST  2                                                       01567
 22244  2504002        LDZ                                                                 01568
 22245  0304372        STA TST                                                             01569
 22246  0024700        LDA NC      1                                                       01570
 22247  2001631        EXT 037777                                                          01571
 22250  0306321        STA TYPE                                                            01572
 22251  2602217        BRU KAOP+1                                                          01573
 22252  0002252  KUMIN1 LDA *MAQA*                                                       01574
 22253  0740205        SPB WRITE   2                                                       01575
 22254  0002027        LDA AAUCHS             INSTRUCTION TO FMP BY -1                     01576
 22255  2602216        BRU KAOP                                                            01577
                                                                                          01578
 22256  2504022  KMULT  LDO                   PERMISSABLE TO SWITCH ORDER OF ARGUMENTS     01579
 22257  0741721        SPB LOADGN  2                                                       01580
 22260  0304364        STA TEMP                                                            01581
 22261  0002252        LDA *MAQA*                                                          01582
 22262  0740205        SPB WRITE   2                                                       01583
 22263  0004364        LDA TEMP                                                            01584
 22264  0102244        ADD *FMP*                                                           01585
 22265  2602216        BRU KAOP                                                            01586
                                                                                          01587
 22266  2504002  KDIV   LDZ                   CANNOT SWITCH ORDER OF ARGUMENTS             01588
 22267  0741721        SPB LOADGN  2                                                       01589
 22270  0304364        STA TEMP                                                            01590
 22271  0002236        LDA *CQX*                                                     CQX*01591
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22272  0740205          SPB WRITE   2          STORE INSTRUCTIONS TO CLEAR AX          01592
22273  0001636          LDA RBIT                                                       01593
22274  2306321          ORY TYPE               TYPE OF A DIVIDE IS ALWAYS REAL         01594
22275  0004364          LDA TEMP                                                       01595
22276  0102242          ADD *FDV*                                                      01596
22277  2602216          BRU KAOP                                                       01597
                                                                                      01598
22300  1002024  KSIDIV  DLD SIDSPB             SPB INST FOR SPECIAL INTGR DIVIDE + INTGRTYPE01599
22301  1304304          DST OPCALL                                                     01600
22302  2504022          LDO                   CAN SWITCH ORDER OF ARGUMENTS            01601
22303  0741721          SPB LOADGN  2                                                  01602
22304  0304364          STA TEMP                                                       01603
22305  0002252          LDA *MAQA*                                                     01604
22306  0740205          SPB WRITE   2                                                  01605
22307  0004364          LDA TEMP                                                       01606
22310  0102213          ADD *FLD*                                                      01607
22311  0740205          SPB WRITE   2                                                  01608
22312  0004363          LDA SWITCH                                                     01609
22313  2516001          BPL                                                            01610
22314  2602317          BRU *+3               ARGUMENTS IN NORMAL ORDER                01611
22315  0002262          LDA *XAQA*                                                     01612
                                      FOR SUBROUTINE CALLS, THE FIRST ARGUMENT IS     01613
                                      IN QX AND THE SECOND IN AX                      01614
22316  0740205          SPB WRITE   2                                                  01615
22317  0004305          LDA OPCALL+1                                                   01616
22320  0306321          STA TYPE              SET TYPE OF RESULT                       01617
22321  0004304          LDA OPCALL                                                     01618
22322  2602216          BRU KAOP                                                       01619
                                                                                      01620
22323  1002052  KEXP    DLD POWSPB            SPB INS FOR POWER PLUS RBIT              01621
22324  2602301          BRU KSIDIV+1                                                   01622
                                                                                      01623
                                                                                    NAM01624
                                                                                    EJT01625
```

```
                                    COMPILATION OF A RELATIONAL OPERATOR CAUSES          01626
                                    A SUBTRACTION, THEN SOME TESTING,  FOR               01627
                                    A (REL) B8 THE NORMAL ORDER FOR SUBTRACTION          01628
                                    IS                                                   01629
                                            FLD A                                        01630
                                            FSU B                                        01631
                                                                                         01632
                                    THIS IS FOLLOWED BY...                               01633
                                    FOR = IN EITHER ORDER                                01634
                                            LDZ             (TRUE)                       01635
                                            BAR BNZ     7                                01636
                                            LMO             (FALSE)                      01637
                                                                                         01638
                                    FOR /= IN EITHER ORDER                               01639
                                            LDZ                                          01640
                                            BAR BZE     7P                               01641
                                            BAR BZE     7                                01642
                                            LMO                                          01643
                                                                                         01644
                                    FOR LT IN REGULAR ORDER OR GT IN SWITCHED            01645
                                    ORDER                                                01646
                                            LDZ                                          01647
                                            BAR BPL     7                                01648
                                            LMO                                          01649
                                                                                         01650
                                    FOR LT IN SWITCHED ORDER OR GT IN REGULAR            01651
                                    ORDER                                                01652
                                            LDZ                                          01653
                                            BAR BPL     7                                01654
                                            BAR BZE     7                                01655
                                            LMO                                          01656
                                                                                         01657
                                    FOR LTE IN REGULAR ORDER OR GTE IN SWITCHED          01658
                                    ORDER                                                01659
                                            LMO                                          01660
                                            BAR BPL     7                                01661
                                            BAR BZE     7                                01662
                                            LDZ                                          01663
                                                                                         01664
                                    FOR LTE IN SWITCHED ORDER OR GTE IN REGULAR          01665
                                    ORDER                                                01666
                                            LDZ                                          01667
                                            BAR BMI     7                                01668
                                            LMO                                          01669
                                                                                         01670
                                                                                         01671
22325  0002045  KREL   LDA RETREL                                                       01672
22326  0300004        STA RETURN                                                        01673
22327  1744557        STX REXIT   2        SET RETURN BACK TO KREL                      01674
22330  2504022        LDO                  SAVE EXIT FROM KREL                          01675
22331  2602225        BRU KMINUS+1         PERMISSABLE TO SWITCH ORDER OF ARGUMENTS     01676
                                    COMPILE DIFFERENCE OF ARGUMENTS • RELATION           01677
                                    IS LATER COMPILED AS A RELATION BETWEEN 0            01678
                                    AND THIS DIFFERENCE.                                 01679
```

```
22332  2506013  KREL1   SXG 0                    COME BACK TO HERE FROM RETURN          0*01680
22333  0002251          LDA *LDZ*                                                       01681
22334  0740205          SPB WRITE   2                                                   01682
22335  0644357          LDX REXIT   2                                                BAN*01683
22336  2640001          BRU 1       2            EXIT TO COMPILE PARTICULAR RELATION    01684
                                                                                       01685
22337  0742325  KEQUAL  SPB KREL    2            COMPILE FIRST INSTRUCTIONS OF RELATION 01686
22340  0002226          LDA *BBNZ*               BAR BNZ INSTRUCTION                    01687
22341  0740205  KREL2   SPB WRITE   2                                                   01688
22342  0002253          LDA *LMO*                                                       01689
22343  0740205          SPB WRITE   2                                                   01690
22344  0024700          LDA NC      1            CHANGE TYPE OF RESULT FROM ARITHMETIC TO 01691
22345  2001637          EXT AMASK                     BOOLEAN                           01692
22346  0102176          ADD BBIT                                                        01693
22347  0324700          STA NC      1                                                   01694
22350  0004372          LDA TST                                                         01695
22351  2002213          EXT *FLD*                                                       01696
22352  0304372          STA TST                  CHANGE TST TO A BOOLEAN STORE          01697
22353  2506033          SXG 1                                                        1*01698
22354  2601716          BRU REPEAT                                                      01699
                                                                                       01700
22355  0742325  KNEQ    SPB KREL    2            START TO COMPILE NOT EQUAL             01701
22356  0002227          LDA *BBZE*               BAR BZE INSTRUCTION                    01702
22357  2602341          BRU KREL2                                                       01703
                                                                                       01704
22360  2504102  KLT     LMO                      HERE TO COMPILE LESS THAN              01705
22361  2602363          BRU *+2                                                         01706
22362  2504022  KGT     LDO                      HERE TO COMPILE GREATER THAN           01707
22363  0304360          STA RTEMP                INDICATOR FOR SIGN OF TEST             01708
22364  0742325          SPB KREL    2                                                   01709
22365  0004363          LDA SWITCH                                                      01710
22366  2504006          MAQ                                                             01711
22367  1504360          MPY RTEMP                                                       01712
22370  2516001          BPL                                                             01713
22371  2602374          BRU KREL3                COMPILE GREATER THAN IN NORMAL ORDER OR 01714
                                                 LESS THAN IN SWITCHED ORDER           01715
                                                                                       01716
                                              HERE TO COMPILE LESS THAN IN NORMAL ORDER OR 01717
                                                 GREATER THAN IN SWITCHED ORDER        01718
22372  0002224          LDA *BBPL*               BAR BPL INSTRUCTION                    01719
22373  2602341          BRU KREL2                                                       01720
22374  0002224  KREL3   LDA *BBPL*                                                     01721
22375  0740205          SPB WRITE   2                                                   01722
22376  2602356          BRU KNEQ+1                                                      01723
                                                                                       01724
22377  2504102  KLTE    LMO                      HERE TO COMPILE LESS THAN OR EQUAL     01725
22400  2602402          BRU *+2                                                         01726
22401  2504022  KGTE    LDO                      HERE TO COMPILE GREATER THAN OR EQUAL  01727
22402  0304360          STA RTEMP                                                       01728
22403  0742325          SPB KREL    2                                                   01729
22404  0004363          LDA SWITCH                                                      01730
22405  2504006          MAQ                                                             01731
22406  1504360          MPY RTEMP                                                       01732
22407  2514001          BMI                                                             01733
```

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 22410  2602413          BRU KREL4          COMPILE LESS THAN OR EQUAL IN NORMAL ORDER   01734
                                            OR GTE IN SWITCHED ORDER                    01735
                                                                                        01736
                                           HERE TO COMPILE GREATER THAN OR EQUAL IN     01737
                                            NORMAL ORDER OR LTE IN SWITCHED ORDER       01738
 22411  0002225          LDA *BBMI*         BAR BMI INSTRUCTION                         01739
 22412  2602341          BRU KREL2                                                      01740
 22413  0646262  KREL4   LDX PAVAIL  2                                                 01741
 22414  0002253          LDA *LMO*                                                      01742
 22415  0340000          STA 0        2     START WITH LMO                            01743
 22416  0002224          LDA *BBPL*                                                     01744
 22417  0740205          SPB WRITE    2                                                 01745
 22420  0002227          LDA *BRZE*                                                     01746
 22421  0740205          SPB WRITE    2                                                 01747
 22422  0002251          LDA *LDZ*                                                      01748
 22423  2602343          BRU KREL2+2                                                    01749
                                                                                        01750
                                                                                    NAM01751
                                                                                    EJT01752
```

```
                                BRIDGES FOR BOOLEAN OPERATORS,...                01753
                                                                                 01754
NOT             LDA ARG1                                                         01755
                CPL                                                              01756
                                                                                 01757
AND             LDA ARG1                                                         01758
                BZE                                                              01759
                LDA ARG2                                                         01760
                                                                                 01761
OR              LDA ARG1                                                         01762
                BNZ                                                              01763
                LDA ARG2                                                         01764
                                                                                 01765
EQUIV           LDA ARG1                                                         01766
                ADD ARG2                                                         01767
                BEV                                                              01768
                LDZ                                                              01769
                                                                                 01770
IMPLY           LDA ARG1                                                         01771
                CPL                                                              01772
                BNZ                                                              01773
                LDA ARG2                                                         01774
                                                                                 01775
                        -- OR --                                                 01776
                                                                                 01777
                LDA ARG2                                                         01778
                EXT ARG1                                                         01779
                                                                                 01780
                                                                                 01781
                                                                                 01782
22424  0742143  KNOT   SPB LOADUN  2                                            01783
22425  0002235         LDA *CPL*          CPL INSTRUCTION TO FORM LOGICAL NEGATION
22426  0740205  KBOP   SPB WRITE   2                                            01784
22427  0006321         LDA TYPE                                                 01785
22430  2102176         CAB BBIT                                                 01786
22431  2611325         BRU ER15           ARITHMETIC TYPE IN BOOLEAN EXPRESSION 01787
22432  2602156         BRU TIEUP          TYPE OK                               01788
22433  2611325         BRU ER15           ARITHMETIC TYPE IN BOOLEAN EXPRESSION 01789
                                                                                 01790
22434  0002233  KAND   LDA *BZE*          BZE INSTRUCTION                       01791
22435  0304304         STA OPCALL                                               01792
22436  2504022         LDO                CAN SWITCH ORDER OF ARGUMENTS         01793
22437  0741721         SPB LOADGN  2                                            01794
22440  0304364         STA TEMP                                                 01795
22441  0004304         LDA OPCALL                                               01796
22442  0740205  KIMP2  SPB WRITE   2                                            01797
22443  0004364         LDA TEMP                                                 01798
22444  0101610         ADD *LDA*                                                01799
22445  2602426         BRU KBOP                                                 01800
                                                                                 01801
22446  0002543  KOR    LDA *BNZ*                                                01802
22447  2602435         BRU KAND+1                                               01803
                                                                                 01804
22450  2504022  KEQUIV LDO                CAN SWITCH ORDER OF ARGUMENTS         01805
22451  0741721         SPB LOADGN  2                                            01806
```

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22452  0102215          ADD *ADD*                                    01807
22453  0740205          SPB WRITE   2                                01808
22454  0002230          LDA *BEV*                                    01809
22455  0740205          SPB WRITE   2                                01810
22456  0002251          LDA *LDZ*                                    01811
22457  2602426          BRU KBOP                                     01812
22460  2504022  KIMPLY  LDO                  CAN SWITCH ORDER OF ARGUMENTS  01813
22461  0741721          SPB LOADGN  2                                01814
22462  0304364          STA TEMP                                     01815
22463  0004363          LDA SWITCH                                   01816
22464  2514001          BMI                                          01817
22465  2602472          BRU KIMP3           SWITCH ORDER OF ARGUMENTS  01818
22466  0002235          LDA *CPL*                                    01819
22467  0740205          SPB WRITE   2                                01820
22470  0002543          LDA *BNZ*                                    01821
22471  2602442          BRU KIMP2                                    01822
22472  0004364  KIMP3   LDA TEMP                                    01823
22473  0101645          ADD *EXT*                                    01824
22474  2602426          BRU KBOP                                     01825
                                                                     NAM01826
                                                                     EJT01827
```

```
                                        KASSGN   COMPILES THE ASSIGNMENT OF THE                01828
                                        VALUE OF AN EXPRESSION TO A LEFT PART LIST           01829
                                        OF VARIABLES, CHECKING FOR TYPES AND ROUNDING        01830
                                        IF NECESSARY.                                        01831
                                                                                             01832
22475  0762512  KASSGN SPB  ASSIGN  3          GENERATE ONE ASSIGNMENT                      01833
22476  0000001        LDA  XR01                                                             01834
22477  2504112        SBO                                                                   01835
22500  0300001        STA  XR01                 ERASE LEFT PART VARIABLE FROM NUMBER CELLAR 01836
22501  2506033        SXG  1                                                          1*01837
22502  0024701        LDA  SC+1    1            CHECK TO SEE IF THERE ARE MORE VARIABLES IN 01838
22503  2002147        EXT  0100                                                             01839
22504  2102313        CAB  ASSID                     THE LEFT PART LIST                     01840
22505  2601716        BRU  REPEAT               END OF LEFT RART LIST                      01841
22506  2602510        BRU  *+2                  MORE VARIABLES IN LEFT PART LIST           01842
22507  2601716        BRU  REPEAT               END OF LEFT BART LIST                      01843
22510  1420001        INX  1       1            ERASE ASSIGNMENT FROM SYMBOL CELLAR        01844
22511  2602517        BRU  KASS1                COMPILE NEXT ASSIGNMENT                    01845
                                                                                             01846
                                        ASSIGN GENERATES A SINGLE ASSIGNMENT                 01847
                                        CALLED BY KASSGN, KFOR1                              01848
                                        ENTER IN GROUP 1.                                    01849
                                                                                             01850
22512  0742143  ASSIGN SPB  LOADUN  2          GENERATE LOAD OF VALUE OB EXPRESSION         01851
22513  0000001        LDA  XR01                                                             01852
22514  2504112        SBO                                                                   01853
22515  0300001        STA  XR01                 ERASE IDENTIFIER FOR EXPRESSION FRON NC    01854
22516  2506033        SXG  1                                                          1*01855
22517  0024700  KASS1  LDA  SC        1         SYMBOL CAUSING ASSIGNMENT                  01856
22520  2002203        EXT  COMASK               CHECK FOR FORMAL PARAMETER TAG             01857
22521  2514002        BZE                                                                   01858
22522  2602537        BRU  KASS2                NOT FORMAL PARAMETER                       01859
22523  0024701        LDA  SC+1    1            *SPB* TO TRANSFER THUNK                    01860
22524  2516001        BPL                                                                   01861
22525  0740205        SPB  WRITE   2                                                        01862
22526  0024700        LDA  SC      1                                                        01863
22527  2102265        CAB  ASID                 CHECK FOR COLON-EQUALS                     01864
22530  2602532        BRU  *+2                  IT ISNT                                    01865
22531  1420001        INX  1       1            IT IS -- ERASE EXTRA WORB FROM SC          01866
22532  0006321        LDA  TYPE                                                             01867
22533  2101636        CAB  RBIT                                                             01868
22534  2602543        BRU  ASSI                                                             01869
22535  2504002        LDZ                       CHANGE REAL TO INTEGER                     01870
22536  2602543        BRU  ASSI                                                             01871
                                        CHECK TO SEE IF ROUNDING NECCESSARY                  01872
22537  0006321  KASS2  LDA  TYPE                                                           01873
22540  2101636        CAB  RBIT                                                             01874
22541  2602543        BRU  ASSI                 TYPE OF EXPRESSION IS INTEGER              01875
22542  2602567        BRU  ASSR                 TYPE OF EXPRESSION IS REAL                 01876
22543  0304342  ASSI   STA  ITEMP              SAVE TYPE OF EXPRESSION                    01877
22544  0742143        SPB  LOADUN  2            GENERATE DUMNY LOAD OF LEFT PART VARIABLE  01878
22545  0006321        LDA  TYPE                 TYPE OF VARIABLE                           01879
22546  2001636        EXT  RBIT                                                           01880
22547  2104342        CAB  ITEMP                TYPE OF EXPRESSION                         01881
```

```
22550  2611325          BRU ER15                MIXED BOOLEAN AND ARITHMETIC TYPES          01882
22551  2602553          BRU *+2                                                             01883
22552  2611325          BRU ER15                MIXED BOOLEAN AND ARITHMETIC TYPES          01884
22553  0024700          LDA NC      1                                                       01885
22554  2001637          EXT AMASK               TRIM TO ADDRESS                             01886
22555  2102171          CAB CONLF               CHECK TO MAKE SURE LEFT-RART VARIABLE IS NOT 01887
22556  2602601          BRU FPCK                AN EXPRESSION OR A CONSTANT                 01888
22557  2611333          BRU ER18                ILLEGAL LEFT-PART VARIABLE                  01889
22560  0762134          SPB TEMPCK  3                                                       01890
22561  2611333          BRU ER18                ILLEGAL LEFT-PART VARIABLE                  01891
22562  0646262  FUDST   LDX PAVAIL  2                                                       01892
22563  0002167          LDA SFUDGE                                                          01893
22564  2340000          ORY 0       2           FUDGE LOAD TO A STORE                       01894
22565  0640007          LDX XR13    2                                                       01895
22566  2640001          BRU 1       2           EXIT                                        01896
                                                                                          01897
22567  2506013  ASSR    SXG 0                                                           0*01898
22570  0024700          LDA NC      1           CHECK TO SEE IF ROUND IS NECCESSARY      01899
22571  2002210          EXT RMASK                                                       01900
22572  2516002          BNZ                                                             01901
22573  2602576          BRU *+3                 LEFT-PART VARIABLE IS REAL -- DO NOT ROUND 01902
22574  0002057          LDA RNDSPB                                                      01903
22575  0740205          SPB WRITE   2           *SPB* TO ROUND ROUTINE                  01904
22576  2504002          LDZ                                                             01905
22577  2506033          SXG 1                                                           1*01906
22600  2602543          BRU ASSI                                                        01907
                                                                                          01908
22601  2516002  FPCK    BNZ                                                             01909
22602  2611333          BRU ER18                ILLEGAL LEFT-PART VARIABLE              01910
22603  2602562          BRU FUDST                                                       01911
                                                                                       NAM01912
                                                                                       EJT01913
```

```
                                        BARRAY  INITIALIZES THE COMPILATION OF A          01914
                                        SUBSCRIPT EXPRESSION                             01915
                                             SC    (-ID                                  01916
                                             SC+1  LOC OF ARRAY INFO                     01917
                                             SC+2  NUMBER OF SUBSCRIPTS                  01918
                                        N.C. ENTRY FOR AN ARRAY POINTS TO THE DOPE       01919
                                        VECTOR                                           01920
                                        CALLED BY BBRACK                                 01921
                                                                                         01922
                                                                                         01923
22604  0000005  BARRAY LDA XR11                                                         01924
22605  0201616         SUB TWO                                                          01925
22606  2100001         CAB XR01                                                         01926
22607  2611277         BRU ER4          NUMBER CELLAR = SYMBOL CELLAR FULL              01927
22610  2611277         BRU ER4          NUMBER CELLAR = SYMBOL CELLAR FULL              01928
22611  0300005         STA XR11         UPDATE SCC                                      01929
22612  2504002         LDZ                                                              01930
22613  0304324         STA DSTAT        RESET DECLARATION LEGAL FLAG                    01931
22614  0044700         LDA NC      2                                                    01932
22615  2001637         EXT AMASK                                                        01933
22616  0300007         STA XR13         = LOCATION OF ARRAY HEADING                     01934
22617  0101616         ADD TWO                                                          01935
22620  0101645         ADD SIGN         FLAG FOR FIRST SUBSCRIPT                        01936
22621  0324700         STA SC      1                                                    01937
22622  0060000         LDA 0       3    NUMBER OF SUBSCRIPTS                            01938
22623  0324701         STA SC+1    1                                                    01939
22624  2601633         BRU SETGR4       STORE ( IN SC                                   01940
                                                                                         01941
                                        KSUBSC  COMPILES THE CODING FOR THE              01942
                                        EVALUATION OF A SUBSCRIPT EXPRESSION.            01943
                                                                                         01944
                                        CONSTANTS ARE IN FOLLOWING ORDER                 01945
                                           0  NUMBER OF SUBSCRIPTS                       01946
                                           1  ARRAY LO                                   01947
                                           2  UB-LB+1    (COLUMN LENGTH)                 01948
                                           3                                           01949
                                           4  UB+1                                       01950
                                           5                                           01951
                                           .                                           01952
                                           .                                           01953
                                           .                                           01954
                                                                                       01955
                                                                                       01956
                                        TEST CONSISTS OF THE FOLLOWING INSTRUCTIONS     01957
                                             SPB TSTSUB  1                              01958
                                             OCT (SUBSCRIPT BOUNDS)                     01959
                                                                                        01960
22625  0024701  KSUBSC LDA SC+1    1        SUBSCRIPT CONSTANT INFORMATION             01961
22626  0304305         STA OPCALL+1                                                     01962
22627  2001637         EXT AMASK            TRIM TO LOC OF SUBSCRIPTS                   01963
22630  0304304         STA OPCALL                                                       01964
22631  0742143         SPB LOADUN  2        GENERATE LOAD OF SUBSCRIPT VALUE            01965
22632  0006321         LDA TYPE                                                         01966
22633  2101636         CAB RBIT                                                         01967
```

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22634  2602641          BRU SUBINT          SUBSCRIPT IS AN INTEGER                    01968
22635  2602637          BRU *+2             SUBSCRIPT IS REAL                          01969
22636  2611335          BRU ER19            ILLEGAL SUBSCRIPT                          01970
22637  0002057          LDA RNDSPB                                                     01971
22640  0740205          SPB WRITE   2       ROUND INSTRUCTION TO CONVERT SUBSCRIPT      01972
22641  0002067  SUBINT  LDA TSTSPB                                                     01973
22642  0740205          SPB WRITE   2                                                  01974
22643  0004304          LDA OPCALL                                                     01975
22644  0740205          SPB WRITE   2                                                  01976
22645  0004305          LDA OPCALL+1                                                   01977
22646  2514001          BMI                                                            01978
22647  2602672          BRU SUBSC2          SKIP NEXT FOR FIRST SUBSCRIPT              01979
22650  0000001          LDA XR01                                                       01980
22651  2504112          SBO                                                            01981
22652  0300001          STA XR01            ERASE IDENTIFIER FOR SUBSCRIPT FROM NC     01982
22653  0024700          LDA NC      1       IDENTIFIER FOR PARTIAL COMPUTATION OF SS   01983
22654  2101636          CAB RBIT                                                       01984
22655  2602660          BRU *+3                                                        01985
22656  2611337          BRU ER20            NC OUT OF WHACK                            01986
22657  2611337          BRU ER20            NC OUT OF WHACK                            01987
22660  0102241          ADD *FAD*                                                      01988
22661  0740205          SPB WRITE   2       ADD ON PREVIOUS COMPUTATION                01989
22662  0006317  SUBSC1  LDA SYMB                                                       01990
22663  2102270          CAB COMID                                                      01991
22664  2602666          BRU *+2                                                        01992
22665  2602703          BRU MOSUB           MORE SUBSCRIPTS COMING                     01993
22666  2102301          CAB RBID                                                       01994
22667  2611337          BRU ER20            ILLEGAL SUBSCRIPT EXPRESSION               01995
22670  2602725          BRU FISUB           FINAL SUBSCRIPT                            01996
22671  2611337          BRU ER20            ILLEGAL SUBSCRIPT EXPRESSION               01997
22672  2504002  SUBSC2  LDZ                                                            01998
22673  0306321          STA TYPE            SET TYPE OF SUBSCRIPT = INTEGER            01999
22674  0002047          LDA RETSUB                                                     02000
22675  0300004          STA RETURN                                                     02001
22676  2602156          BRU TIEUP           GENERATE TEMPORARY STORAGE FOR SS VALUE    02002
22677  2506013  SUBSC3  SXG 0               RETURN HERE FROM TIEUP                  0*02003
22700  2504002          LDZ                                                            02004
22701  0304372          STA TST             SET TEMPORARY STORAGE INST TO 0            02005
22702  2602662          BRU SUBSC1                                                     02006
22703  0002252  MOSUB   LDA *MAQA*                                                    02007
22704  0740205          SPB WRITE   2       STORE INSTRUCTIONS TO MULTIPLY PARTIAL     02008
22705  0004304          LDA OPCALL              COMPUTATION BY DIMENSION OF NEXT       02009
22706  0102103          ADD FOUR                SUBSCRIPT                              02010
22707  0640005          LDX XR11    2                                                  02011
22710  0344701          STA SC+1    2                                                  02012
22711  0102244          ADD *FMP*                                                      02013
22712  0740205          SPB WRITE   2                                                  02014
22713  0024700          LDA NC      1                                                  02015
22714  0102245          ADD *FST*                                                      02016
22715  0740205          SPB WRITE   2       STORE TEMPORARY COMPUTATION                02017
22716  0640005          LDX XR11    2                                                  02018
22717  0044702          LDA SC+2    2                                                  02019
22720  2504112          SBO                                                            02020
22721  0344702          STA SC+2    2       UPDATE COUNT OF NUMBER OF SUBSCRIPTS       02021
```

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22722  2514002          BZE                                                  02022
22723  2611341          BRU ER21              TOO MANY SUBSCRIPTS            02023
22724  2600275          BRU INPUT                                            02024
22725  2504102 FISUB    LMO                                                  02025
22726  0306320          STA PREV                                             02026
22727  0002051          LDA DNFSPB                                           02027
22730  0740205          SPB WRITE   2         STORE INSTRUCTION TO UNFLOAT SUBSCRIPT 02028
22731  0024677          LDA NC-1    1         IDENTIFIER FOR ARRAY           02029
22732  2001637          EXT AMASK                                            02030
22733  0300003          STA XR03                                             02031
22734  0640005          LDX XR11    2                                        02032
22735  0044702          LDA SC+2    2         GET COUNT OF NUMBER OF SUBSCRIPTS 02033
22736  2504112          SBO                                                  02034
22737  2516002          BNZ                                                  02035
22740  2602756          BRU FPSUB             ERROR OR ARRAY A FORMAL PARAMETER 02036
22741  0024700 FISUB1   LDA NC       1                                       02037
22742  0102256          ADD *STA*             FORM INSTRUCTION TO STORE COMPUTED SUBSCRIPT 02038
22743  0740205          SPB WRITE   2                                        02039
22744  0024677          LDA NC-1    1                                        02040
22745  2001630          EXT 017777            TRIM TO TYPE                   02041
22746  0102161          ADD GR1               ADD BIT FOR SUBSCRIPTED ARRAY  02042
22747  2324700          ORY NC      1         SET IDENTIFIER FOR ARRAY       02043
22750  2002177          EXT SSBITS            TRIM TO TYPE OF ARRAY          02044
22751  0160001          ADD 1       3         ADD ARRAY LO                   02045
22752  0324677          STA NC-1    1         SET SECOND WORD OF IDENTIFIER  02046
22753  2506033          SXG 1                                                1*02047
22754  1420003          INX 3       1         REMOVE ( AND POINTERS FROM SC  02048
22755  2600275          BRU INPUT                                            02049
                                                                            02050
                                  CHECK FOR FORMAL PARAMETER,               02051
                                  FIRST OCCURRENCE A = -(NUMBER+1)          02052
                                  SUBSEQUENTLY     A = +1 AT 5              02053
                                                                            02054
22756  0101634  FPSUB    ADD CBIT              1 AT 6                         02055
22757  2516001          BPL                                                  02056
22760  2602774          BRU FPSUB2            ERROR OR FIRST OCCURRENCE OF FORMAL PARAMETER 02057
22761  0101634          ADD CBIT                                             02058
22762  2516002          BNZ                                                  02059
22763  2611341          BRU ER21              WRONG NUMBER OF SUBSCRIPTS ON FORMAL PARAM 02060
22764  0024677  FPSUB1   LDA NC-1    1                                       02061
22765  2001637          EXT AMASK                                            02062
22766  0102215          ADD *ADD*                                            02063
22767  2504032          ADO                   FORM INST. TO ADD ARRAY LO TO COMPUTED 02064
22770  0740205          SPB WRITE   2           SUBSCRIPT                    02065
22771  2504102          LMO                                                  02066
22772  0304336          STA FPFLAG                                           02067
22773  2602741          BRU FISUB1                                           02068
                                                                            02069
                                  FOR FIRST OCCURRENCE, SET NUMBER          02070
                                  TO [[ITS PROPER VALUE]-[1 AT 5]]          02071
22774  0201634  FPSUB2   SUB CBIT                                           02072
22775  2504502          CPL                   A = NUMBER OF SUBSCRIPTS       02073
22776  2516001          BPL                                                  02074
22777  2514002          BZE                   TEST ON NON-POSITIVE           02075
```

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23000  2611341          BRU ER21                WRONG NUMBER OF SUBSCRIPTS                    02076
23001  .0201636         SUB RBIT                SET TO MINUS TO INDICATE REFERENCED E.P.      02077
23002  0360000          STA 0       3           STORE IN ARRAY HEADING                        02078
23003  2602764          BRU FPSUB1                                                            02079
                                                                                              NAM02080
                                                                                              EJT02081
```

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                                    BIF  DETERMINES WHETHER AN  IF  BELONGS TO          02082
                                    AN EXPRESSION OR A STATEMENT                        02083
                                                                                        02084
                                    BITS 12 AND 13 ON THE INTERNAL IDENTIFIERS          02085
                                    FOR IF, THEN, ELSE, AND LEFT-PARENTHESES            02086
                                    INDICATE THE TYPE INVOLVED                          02087
                                    BIT 12 AND 13 BOTH OFF        COND. STATEMENT       02088
                                    BIT 12 ON                     UNDETERMINED          02089
                                    BIT 13 ON                     EXPRESSION            02090
                                    BOTH ON                       DESIGNATIONAL         02091
                                                                                        02092
                                    THE IF-ID IN SYMB IS GIVEN A TAG AND STORED         02093
                                    IN THE SYMBOL CELLAR                                02094
                                                                                        02095
23004  0024700  BIF    LDA SC     1                                                    02096
23005  2002153         EXT 0700              TRIM OFF FLAG BITS                        02097
23006  2102266         CAB BEGID             IDENTFIER FOR BEGIN                       02098
23007  2603011         BRU **2                                                         02099
23010  2603062         BRU BIF5              STORE IF FOR CONDITIONAL STATEMENT        02100
23011  2102601         CAB DOID                                                        02101
23012  2603014         BRU **2                                                         02102
23013  2603062         BRU BIF5              STORE IF FOR CONDITIONAL STATEMENT        02103
23014  2102300         CAB PRCID                                                       02104
23015  2603017         BRU **2                                                         02105
23016  2603062         BRU BIF5              STORE IF FOR CONDITIONAL STATEMENT        02106
23017  2102642         CAB THENID                                                      02107
23020  2603022         BRU **2                                                         02108
23021  2611351         BRU ER25              ILLEGAL CONDITIONAL                       02109
23022  0640005         LDX XR11   2                                                    02110
23023  2102602  BIF0   CAB ELSEID                                                     02111
23024  2603026         BRU **2                                                         02112
23025  2603045         BRU BIF1              TYPE OF IF DETERMINED BY TYPE OF ELSE     02113
23026  2102273         CAB GOTOID                                                      02114
23027  2603031         BRU **2                                                         02115
23030  2603054         BRU BIF3              DESIGNATIONAL EXPRESSION                  02116
23031  2102277         CAB PROCID                                                      02117
23032  2603034         BRU **2                                                         02118
23033  2603057         BRU BIF4              EXPRESSION IN PROCEDURE CALL              02119
23034  2102276         CAB PARID                                                       02120
23035  2603037         BRU **2                                                         02121
23036  2603051         BRU BIF2              EXPRESSION ENCLOSED IN PARENTHESES        02122
23037  2102642         CAB THENID                                                      02123
23040  2603042         BRU **2                                                         02124
23041  2603045         BRU BIF1              TYPE OF IF DETERMINED BY TYPE OF THEN     02125
23042  0002200         LDA CTAG              HERE FOR CONDITIONAL EXPRESSION           02126
23043  2306317         ORY SYMB              SET BIT TO INDICATE THIS ON SYMB          02127
23044  2601633         BRU SETGR4                                                      02128
23045  0024700  BIF1   LDA SC     1                                                    02129
23046  2002203         EXT COMASK                                                      02130
23047  2306317         ORY SYMB              SET CTAG ON IF = CTAG ON ELSE             02131
23050  2601633         BRU SETGR4                                                      02132
23051  1440001  BIF2   INX 1      2          DECREMENT TEMPORARY SYMBOL CELLAR COUNTER 02133
23052  0044700         LDA SC     2          LOOK BACK ONE FURTHER TO DETERMINE TYPE OF IF02134
23053  2603023         BRU BIF0                                                        02135
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23054  0002201  BIF3   LDA DCTAG            TAG FOR DESIGNATIONAL CONDITIONAL          02136
23055  2306317         ORY SYMB                                                        02137
23056  2601633         BRU SETGR4                                                      02138
23057  0002151  BIF4   LDA 0200             TAG FOR EXPRESSION OF UNDETERMINED TYPE    02139
23060  2306317         ORY SYMB                                                        02140
23061  2601633         BRU SETGR4                                                      02141
23062  2504002  BIF5   LDZ                                                            02142
23063  0304324         STA DSTAT                                                       02143
23064  0000001         LDA XR01                                                        02144
23065  2516002         BNZ                                                             02145
23066  2611363         BRU ER30                                                        02146
23067  2601633         BRU SETGR4                                                      02147
                                                                                       02148
                       KIF  COMPILES THE TEST OF THE IF CLAUSE                         02149
                       RESULT --                                                       02150
                            SC    THEN-ID                                            02151
                            SC+1  ADDRESS OF BRU TO ELSE-PART                        02152
                                                                                       02153
                       IN CERTAIN CASES, THE GENERATION OF THE                         02154
                       BOOLEAN RESULT CAN BE ELIMINATED, AND A                         02155
                       DIRECT TEST SUBSTITUTED                                         02156
                                                                                       02157
23070  0006317  KIF    LDA SYMB                                                        02158
23071  2102642         CAB THENID                                                      02159
23072  2611343         BRU ER22             THEN  IS MISSING                           02160
23073  2603075         BRU *+2                                                         02161
23074  2611343         BRU ER22                                                        02162
23075  0742143         SPB LOADUN  2        GENERATE LOAD OF BOOLEAN VALUE             02163
23076  0006321         LDA TYPE                                                        02164
23077  2102176         CAB BBIT                                                        02165
23100  2611345         BRU ER23             TYPE NOT BOOLEAN                           02166
23101  2603102         BRU *+1                                                         02167
23102  0646262         LDX PAVAIL  2                                                   02168
23103  0040000         LDA 0       2        PREVIOUS INSTRUCTION                       02169
23104  2102253         CAB *LMU*            IF RELATION OR EQUIV, SQUEEZE A LITTLE CODIN02170
23105  2603107         BRU *+2                                                         02171
23106  2603131         BRU KIF2             YES                                        02172
23107  2102251         CAB *LDZ*                                                       02173
23110  2603112         BRU *+2              NO                                         02174
23111  2603154         BRU KIF3             YES                                        02175
23112  0002544  KIF1   LDA *BMI*                                                       02176
23113  0740205         SPB WRITE   2        STORE TEST FOR FALSE                       02177
23114  0002231         LDA *BRU*                                                       02178
23115  0740205         SPB WRITE   2                                                   02179
23116  0000001         LDA XR01                                                        02180
23117  2504112         SBO                                                             02181
23120  0300001         STA XR01             ERASE BOOLEAN VARIABLE FROM NUMBER CELLAR  02182
23121  2506033         SXG 1                                                          1*02183
23122  0024700         LDA SC      1                                                   02184
23123  2002203         EXT CUMASK                                                      02185
23124  2306317         ORY SYMB             SET PROPER TAG BITS ON SYMB                02186
23125  0006262         LDA PAVAIL                                                      02187
23126  0101637         ADD AMASK                                                       02188
23127  0324700         STA SC      1        SAVE ADDRESS OF LOC TO FILL IN             02189
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23130  2601622          BRU STOSC          STORE THEN IN SYMBOL CELLAR          02190
                                                                                02191
23131  0006262  KIF2    LDA PAVAIL                                              02192
23132  0201623          SUB THREE                                               02193
23133  0300002          STA XR02                                                02194
23134  0002251          LDA *LDZ*          CHECK FOR RELATIONAL BRIDGE          02195
23135  2140001          CAB 1       2                                           02196
23136  2603140          BRU *+2                                                 02197
23137  2603147          BRU *+8                                                 02198
23140  2140000          CAB 0       2                                           02199
23141  2603143          BRU *+2                                                 02200
23142  2603145          BRU *+3                                                 02201
23143  1440002          INX 2       2      NO -- JUST WIPE OUT THE *LMO*        02202
23144  2603152          BRU *+6                                                 02203
23145  0040001          LDA 1       2      YES -- WIPE OUT THE *LDZ* AS WELL    02204
23146  0340000          STA 0       2                                           02205
23147  0040002          LDA 2       2                                           02206
23150  0340001          STA 1       2                                           02207
23151  1440001          INX 1       2                                           02208
23152  1746262          STX PAVAIL  2                                           02209
23153  2603114          BRU KIF1+2                                              02210
                                                                                02211
23154  0006262  KIF3    LDA PAVAIL                                              02212
23155  0201623          SUB THREE                                               02213
23156  0300002          STA XR02                                                02214
23157  0002253          LDA *LMO*                                               02215
23160  2140001          CAB 1       2                                           02216
23161  2603163          BRU *+2                                                 02217
23162  2603172          BRU *+8                                                 02218
23163  2140000          CAB 0       2                                           02219
23164  2603166          BRU *+2                                                 02220
23165  2603170          BRU *+3                                                 02221
23166  1440002          INX 2       2                                           02222
23167  2603175          BRU *+6                                                 02223
23170  0040001          LDA 1       2                                           02224
23171  0340000          STA 0       2                                           02225
23172  0040002          LDA 2       2                                           02226
23173  0340001          STA 1       2                                           02227
23174  1440001          INX 1       2                                           02228
23175  1746262          STX PAVAIL  2                                           02229
23176  0006262          LDA PAVAIL                                              02230
23177  0101623          ADD THREE                                               02231
23200  0102231          ADD *BRU*                                               02232
23201  0740205          SPB WRITE   2                                           02233
23202  2603114          BRU KIF1+2                                              02234
                                                                                02235
23203  0024700  KTHEN   LDA SC      1                                           02236
23204  2002203          EXT COMASK                                              02237
23205  2516002          BNZ                                                     02238
23206  2603246          BRU KTHEN2         COMPILE CODING FOR CONDITIONAL EXPRESSION 02239
23207  0000001          LDA XR01                                                02240
23210  2516002          BNZ                                                     02241
23211  2611363          BRU ER30                                                02242
23212  0006317          LDA SYMB                                                02243
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23213  2102602          CAB ELSEID                                          02244
23214  2603216          BRU *+2                                             02245
23215  2603225          BRU KTHEN1          HAS ELSE-PART                   02246
23216  2102306          CAB SCID                                            02247
23217  2603221          BRU *+2                                             02248
23220  2603305          BRU KELSE1          NO ELSE-PART                    02249
23221  2102604          CAB ENDID                                           02250
23222  2611351          BRU ER25            ILLEGAL CONDITIONAL             02251
23223  2603305          BRU KELSE1          NO ELSE-PART                    02252
23224  2611351          BRU ER25            ILLEGAL CONDITIONAL             02253
                                                                            02254
                  PLACE BRANCH AROUND ELSE-PART,  FILL ADDRESS              02255
                  IN BRANCH TO ELSE-PART,                                   02256
                                                                            02257
                      SC    ELSE-ID                                         02258
                      SC+1  ADDRESS OF BRU                                  02259
                                                                            02260
23225  0001637  KTHEN1 LDA AMASK                                            02261
23226  0306321         STA TYPE                                             02262
23227  0002231         LDA *BRU*                                            02263
23230  0740205         SPB WRITE    2      STORE BRU AROUND ELSE PART       02264
23231  0024701         LDA SC+1     1                                       02265
23232  2001637         EXT AMASK           TRIM TO ADDRESS OF TRANSFER TO FILL IN  02266
23233  0300006         STA XR12                                             02267
23234  0006262         LDA PAVAIL                                           02268
23235  0106321         ADD TYPE                                             02269
23236  0324701         STA SC+1     1      SAVE ADDRESS OF TRANSFER TO FILL IN  02270
23237  2504032         ADO                                                  02271
23240  2740000         STO 0        2      FILL IN TRANSFER TO ELSE PART    02272
23241  0024700         LDA SC       1                                       02273
23242  2002203         EXT COMASK                                           02274
23243  0106317         ADD SYMB                                             02275
23244  0324700         STA SC       1      REPLACE SYMBOL IN SYMBOL CELLAR  02276
23245  2600275         BRU INPUT                                            02277
                  CONDITIONAL EXPRESSION                                    02278
23246  0006317  KTHEN2 LDA SYMB                                             02279
23247  2102602         CAB ELSEID                                           02280
23250  2611351         BRU ER25            ILLEGAL CONDITIONAL EXPRESSION   02281
23251  2603253         BRU *+2                                              02282
23252  2611351         BRU ER25            ILLEGAL CONDITIONAL EXPRESSION   02283
23253  0024700         LDA SC       1                                       02284
23254  2002203         EXT COMASK                                           02285
23255  2102151         CAB 0200                                             02286
23256  2603263         BRU KTHEN3          ARITHMETIC EXPRESSION            02287
23257  2603272         BRU KTHEN5          TYPE OF EXPRESSION UNDETERMINED  02288
23260  0764363  KTHEN4 SPB GOTO     3      DESIGNATIONAL EXPRESSION         02289
23261  2506033         SXG 1                                               1*02290
23262  2603225         BRU KTHEN1                                           02291
                  ARITHMETIC EXPRESSION                                     02292
23263  2506033  KTHEN3 SXG 1                                               1*02293
23264  0742143         SPB LOADUN   2      GENERATE LOAD OF VALUE OF EXPRESSION  02294
23265  0000001         LDA XR01                                             02295
23266  2504112         SBO                                                  02296
23267  0300001         STA XR01                                             02297
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23270  2506033          SXG 1                                          1*02298
23271  2603227          BRU KTHEN1+2                                     02299
                                                                        02300
23272  0763373  KTHEN5  SPB COND3    3      DETERMINE TYPE OF EXPRESSION 02301
23273  2603263          BRU KTHEN3          ARITHMETIC EXPRESSION       02302
23274  2603260          BRU KTHEN4          DESIGNATIONAL EXPRESSION    02303
                                                                        02304
                                                                        02305
23275  0024700  KELSE   LDA SC       1                                  02306
23276  2002203          EXT COMASK                                       02307
23277  2102200          CAB CTAG                                         02308
23300  2603305          BRU KELSE1          CONDITIONAL STATEMENT       02309
23301  2603333          BRU KELSE3          ARITHMETIC EXPRESSION       02310
23302  2102201          CAB DCTAG                                        02311
23303  2603370          BRU KELSE6          TYPE UNDETERMINED           02312
23304  2603323          BRU KELSE2          DESIGNATIONAL EXPRESSION    02313
23305  0024701  KELSE1  LDA SC+1     1                                  02314
23306  2001630          EXT 017777                                       02315
23307  2101637          CAB AMASK                                        02316
23310  2611351          BRU ER25            MIXED EXPRESSION AND STATEMENT 02317
23311  2603313          BRU *+2                                          02318
23312  2611351          BRU ER25                                         02319
23313  0024701          LDA SC+1     1                                   02320
23314  2001637          EXT AMASK                                        02321
23315  0300006          STA XR12                                         02322
23316  0006262          LDA PAVAIL                                       02323
23317  2504032          ADD                                              02324
23320  2740000          STO 0        2      FILL IN TRANSFER TO END OF STATEMENT 02325
23321  1420001          INX 1        1      ERASE ELSE FROM SYMBOL CELLAR 02326
23322  2601716          BRU REPEAT          END OF CONDITIONAL          02327
                                                                        02328
23323  0764363  KELSE2  SPB GOTO     3      GENERATE BRU                02329
23324  0000001          LDA XR01                                         02330
23325  2504032          ADD                                              02331
23326  0300001          STA XR01                                         02332
23327  0002164          LDA DETYPE          TYPE FOR DESIGNATIONAL EXPRESSION 02333
23330  0324700          STA NC       1                                   02334
23331  2506033          SXG 1                                          1*02335
23332  2603305          BRU KELSE1                                       02336
                                                                        02337
23333  2506033  KELSE3  SXG 1                                          1*02338
23334  1420001          INX 1        1      ERASE ELSE FROM SC          02339
23335  0742143          SPB LOADUN   2      GENERATE LOAD OF VALUE OF EXPRESSION 02340
23336  0660005          LDX XR11     3                                  02341
23337  0006321          LDA TYPE                                        02342
23340  2102176          CAB BBIT                                        02343
23341  2603360          BRU KELSE5          ARITHMETIC TYPE             02344
23342  2603343          BRU *+1             ITS BOOLEAN                 02345
23343  0064700          LDA SC       3      TYPE IS BOOLEAN             02346
23344  2002202          EXT BMASK                                       02347
23345  2514002          BZE                                             02348
23346  2611325          BRU ER15            MIXED BOOLEAN AND ARITHMETIC TYPES 02349
23347  0064700  KELSE4  LDA SC       3                                  02350
23350  2001637          EXT AMASK                                       02351
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23351  0300002          STA XR02                                          02352
23352  0006262          LDA PAVAIL                                        02353
23353  2504032          ADD                                               02354
23354  2740000          STO 0       2     FILL IN TRANSFER AROUND ELSE EXPRESSION 02355
23355  0002042          LDA RETRPT                                        02356
23356  0300004          STA RETURN                                        02357
23357  2602156          BRU TIEUP         GENERATE TEMPORARY VARIABLE FOR RESULT 02358
                                                                          02359
23360  0064700  KELSE5  LDA SC      3                                     02360
23361  2001630          EXT O17777        TRIM TO TYPE                    02361
23362  2101636          CAB RBIT                                          02362
23363  2603347          BRU KELSE4        TYPE IS INTEGER                 02363
23364  2603366          BRU *+2           TYPE IS REAL                    02364
23365  2611325          BRU ER15          MIXED BOOLEAN AND ARITHMETIC TYPES 02365
23366  0306321          STA TYPE          SET TYPE EQUAL TO REAL          02366
23367  2603347          BRU KELSE4                                        02367
                                                                          02368
23370  0763373  KELSE6  SPB COND3   3     DETERMINE TYPE OF EXPRESSION    02369
23371  2603333          BRU KELSE3        ARITHMETIC                      02370
23372  2603323          BRU KELSE2        DESIGNATIONAL                   02371
                                                                          02372
23373  0640001  COND3   LDX XR01    2                                     02373
23374  0044700          LDA NC      2                                     02374
23375  2001630          EXT O17777        TRIM TO TYPE                    02375
23376  2102166          CAB NOTYPE                                        02376
23377  2603401          BRU *+2                                           02377
23400  2603414          BRU COND4         DESIGNATIONAL                   02378
23401  2001634          EXT CBIT                                          02379
23402  2101635          CAB LBIT                                          02380
23403  2603405          BRU *+2                                           02381
23404  2603414          BRU COND4         DESIGNATIONAL                   02382
23405  2102164          CAB DETYPE                                        02383
23406  2603410          BRU *+2                                           02384
23407  2603414          BRU COND4         DESIGNATIONAL                   02385
23410  0024700          LDA SC      1     HERE FOR ARITHMETIC             02386
23411  0202200          SUB CTAG          CHANGE FLAG BIT TO BIT FOR ARITHMETIC EXP 02387
23412  0324700          STA SC      1                                     02388
23413  2660001          BRU 1       3                                     02389
23414  0002200  COND4   LDA CTAG                                          02390
23415  2324700          ORY SC      1     CHANGE FLAG TO INDICATE DESIGNATIONAL EXP, 02391
23416  2660002          BRU 2       3                                     02392
                                                                    NAM02393
                                                                    EJT02394
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                                        BFOR  IS CALLED WHEN SYMB=FOR                                    02395
                                          RESERVE                                                      02396
                                            NOP                                                        02397
                                            STX 0       1                                              02398
                                                                                                       02399
 23417  0001647   BFOR   LDA *NOP*                                                                     02400
 23420  0740205          SPB WRITE   2          RESERVE LOCATION IN CASE RUNNING VARIABLE            02401
 23421  0006262          LDA PAVAIL                   IS AN ARRAY                                     02402
 23422  0304334          STA FORAY              = LOC OF TRANSFER AROUND SUBSCRIPT SUBROUTINE       02403
 23423  0002260          LDA *STX1*                                                                    02404
 23424  0740205          SPB WRITE   2          RESERVE ONE MORE LOCATION                           02405
 23425  2504002          LDZ                                                                           02406
 23426  0304335          STA FORNO              = FLAG FOR FIRST ELEMENT IN FOR LIST                02407
 23427  0304324          STA DSTAT              = NON-DECLARATION STATUS                            02408
 23430  0000001          LDA XR01                                                                      02409
 23431  2516002          BNZ                                                                           02410
 23432  2611363          BRU ER30               TROUBLE                                             02411
 23433  0004354          LDA PREV2                                                                     02412
 23434  0743437          SPB *+3     2          CHECK FOR LEGAL OCCURENCE OF FOR                    02413
 23435  2601633          BRU SETGR4             . . . CAN ONLY FOLLOW BEGIN,THEN,ELSE,DO OR         02414
 23436  2611426          BRU ER45               SEMICOLON                                           02415
                                                                                                       02416
 23437  2102567          CAB BEGIN              CHECK FOR LEGAL OCCURRENCE OF -FOR-                 02417
 23440  2603442          BRU *+2                . . . CAN ONLY FOLLOW BEGIN, THEN, ELSE, DO         02418
 23441  2640001          BRU 1       2                                                                02419
 23442  2102642          CAB THENID                                                                    02420
 23443  2603445          BRU *+2                                                                       02421
 23444  2640001          BRU 1       2                                                                02422
 23445  2102602          CAB ELSEID                                                                    02423
 23446  2603450          BRU *+2                                                                       02424
 23447  2640001          BRU 1       2                                                                02425
 23450  2102601          CAB DOID                                                                      02426
 23451  2603453          BRU *+2                                                                       02427
 23452  2640001          BRU 1       2                                                                02428
 23453  2102552          CAB ID1CH              COLON-ID                                            02429
 23454  2603456          BRU *+2                                                                       02430
 23455  2640001          BRU 1       2                                                                02431
 23456  2102306          CAB SCID                                                                      02432
 23457  2603461          BRU *+2                                                                       02433
 23460  2640001          BRU 1       2                                                                02434
 23461  2102266          CAB BEGID                                                                     02435
 23462  2603464          BRU *+2                                                                       02436
 23463  2640001          BRU 1       2                                                                02437
 23464  2102300          CAB PRCID                                                                     02438
 23465  2640002          BRU 2       2          NONE OF THE ABOVE                                   02439
 23466  2640001          BRU 1       2                                                                02440
 23467  2640002          BRU 2       2          NOT ONE OF THE ABOVE                                02441
                                                                                                       02442
                                        FORASS IS CALLED WHEN THE ASSIGNMENT IS READ                   02443
                                        IN THE FOR STATEMENT,  THE ID BOR COLON-                       02444
                                        EQUALS IS NOT PUT IN SC,                                       02445
                                        FORAY, FLAB1, FLAB2 ARE SET UP                                 02446
                                        CALLED BY BASSGN                                               02447
                                                                                                       02448
```

MOORE BUSINESS FORMS, INC.

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23470  2506013  FORASS SXG 0                                                    0*02449
23471  1724333         STX FLAB4   1        INDEX IN NC FOR RUNNING VARIABLE   02450
23472  0024700         LDA NC      1        CHECK RUNNING VARIABLE             02451
23473  2001640         EXT ACMASK           TRIM TO HIGH ORDER TYPE BITS       02452
23474  2102177         CAB SSBITS                                              02453
23475  2603477         BRU *+2                                                 02454
23476  2603510         BRU FOR2             RUNNING VARIABLE IS SUBSCRIPTED    02455
23477  0006262         LDA PAVAIL                                              02456
23500  0201616         SUB TWO                                                 02457
23501  0306262         STA PAVAIL           DELETE LOCATIONS RESERVED - DONT NEED THEM  02458
23502  2504002         LDZ                                                     02459
23503  0304334         STA FORAY            SET TO INDICATE NO ARRAY           02460
23504  0006262  FOR1   LDA PAVAIL                                             02461
23505  2504032         ADD                                                     02462
23506  0304330         STA FLAB1            = FIRST LOC BF COMPUTATION OF FOR LIST EL  02463
23507  2600275         BRU INPUT                                               02464
                                                                               02465
                                  RUNNING VARIABLE IS AN ARRAY . . . CODE THUS 02466
                                                                               02467
                                      BRU AROUND       SKIP $UBSC ROUTINE      02468
                                SUBSC STX AROUND-1 1   SUBSCRIPT ROUTINE       02469
                                      $$$              FOR RUNNING VARIABLE    02470
                                      $$$                                      02471
                                      $$$                                      02472
                                      LDX AROUND-1 1                           02473
                                      BRU 1        1   RETURN FROM ROUTINE     02474
                                      BSS 1            INDEX TEMP              02475
                                AROUND BSS 0           CONTINUE PROGRAM        02476
                                                                               02477
                                  IF THE RUNNING VARIABLE IS A FORMAL PARAMETER 02478
                                  THE ENTRY TO THE TRANSFER ROUTINE IS STORED   02479
                                  WITH THE -FOR- IN THE SYMBOL CELLAR           02480
                                                                               02481
23510  0664334  FOR2   LDX FORAY   3        ADDRESS OF *BRU AROUND*            02482
23511  0006262         LDA PAVAIL                                              02483
23512  0101623         ADD THREE                                               02484
23513  2760001         STO 1       3        FILL IN INDEX SAVE AT HEAD OF SUBROUTINE  02485
23514  0102247         ADD *LDX1*                                              02486
23515  0740205         SPB WRITE   2        STORE INDEX LOAD FOR RETURN FROM SUBROUTINE  02487
23516  0002232         LDA SEXIT            BRU 1,1                            02488
23517  0740205         SPB WRITE   2        STORE RETURN FROM SUBSCRIPT SUBROUTINE  02489
23520  0740205         SPB WRITE   2        SAVE LOCATION IN WHICH TO STORE INDEX  02490
23521  0006262         LDA PAVAIL                                              02491
23522  0102231         ADD *BRU*                                               02492
23523  2504032         ADD                                                     02493
23524  0360000         STA 0       3        PLANT TRANSFER AROUND SUBROUTINE   02494
23525  0024677         LDA NC-1    1        CHECK FOR FORMAL PARAMETER         02495
23526  2001637         EXT AMASK                                               02496
23527  2516002         BNZ                                                     02497
23530  2603504         BRU FOR1             IT ISNT                            02498
23531  0000005         LDA XR11             IT IS                              02499
23532  2504112         SBO                                                     02500
23533  0300005         STA XR11             MAKE ROOM FOR TRANSFER THUNK       02501
23534  0300003         STA XR03                                                02502
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23535  00o4701          LDA SC+1    3                                    02503
23536  0102147          ADD 0100                                         02504
23537  0364700          STA SC      3      TAG THE *FOR*                 02505
23540  0004336          LDA FPFLAG         SPB TO TRANSFER ROUTINE       02506
23541  0364701          STA SC+1    3                                    02507
23542  2603504          BRU FOR1                                         02508
                                                                         02509
                                  KFOR IS CALLED WHEN SYMB = COMMA, DO, STEP,   02510
                                    WHILE                                       02511
                                    IT GENERATES A CALL TO THE SUBSCRIPTING     02512
                                    ROUTINE, IF ONE WAS GENERATED BY FORASS,    02513
                                    AND AN ASSIGNMENT TO THE RUNNING VARIABLE,  02514
                                                                                02515
                                                                                02516
23543  0004334  KFOR     LDA FORAY                                        02517
23544  2514002          BZE                IF RUNNING VARIABLE IS SIMPLE, THERE IS NO  02518
23545  2603553          BRU KFOR1            SUBSCRIPT COMPUTATION,        02519
23546  0767310          SPB STOTST  3                                    02520
23547  0004334          LDA FORAY                                        02521
23550  2504032          ADD                                              02522
23551  0102254          ADD *SPB1*                                       02523
23552  0740205          SPB WRITE   2      STORE CALL OF SUBSCRIPT SUBROUTINE  02524
23553  0762512  KFOR1    SPB ASSIGN  3      GENERATE ASSIGNMENT TO RUNNING VARIABLE  02525
23554  0004334          LDA FORAY                                        02526
23555  2514002          BZE                                              02527
23556  2603573          BRU KFOR2          SKIP FUDGE FOR ARRAYS         02528
23557  1420001          INX 1       1      PUT ARRAY ID BACK IN NC       02529
23560  0024700          LDA NC      1      GET BACK TEMPORARY STORAGE LOC  02530
23561  2001637          EXT AMASK                                        02531
23562  0204367          SUB TSLO                                         02532
23563  2510001          SRA 1                                            02533
23564  0300002          STA XR02                                         02534
23565  0001635          LDA LBIT                                         02535
23566  2550000          SRA 0       2                                    02536
23567  0304364          STA TEMP                                         02537
23570  0004371          LDA TSFLAG                                       02538
23571  2004364          EXT TEMP                                         02539
23572  0304371          STA TSFLAG         FUDGE COMPLETED               02540
23573  0006317  KFOR2    LDA SYMB                                         02541
23574  2102270          CAB COMID                                        02542
23575  2603577          BRU *+2                                          02543
23576  2603611          BRU FOREL1         SIMPLE FOR LIST ELEMENT       02544
23577  2102601          CAB DOID                                         02545
23600  2603602          BRU *+2                                          02546
23601  2603613          BRU FOREL2         LAST FOR LIST ELEMENT         02547
23602  2102634          CAB STEPID                                       02548
23603  2603605          BRU *+2                                          02549
23604  2603621          BRU BSTEP          INITIATE STEP-UNTIL TYPE ELEMENT  02550
23605  2102652          CAB WHILID                                       02551
23606  2611426          BRU ER45           ILLEGAL FOR STATEMENT         02552
23607  2603635          BRU KFOR3          STORE  WHILE  IN SYMBOL CELLAR  02553
23610  2611426          BRU ER45           ILLEGAL FOR STATEMENT         02554
23611  0763637  FOREL1   SPB FORGO   3      STORE SPB TO LOOP OF STATEMENT  02555
23612  2603504          BRU FOR1                                         02556
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 23613  0763637  FOREL2 SPB FORGO   3          STORE SPB TO LOOP                                  02557
 23614  0002231         LDA *BRU*                                                                 02558
 23615  0740205         SPB WRITE   2          SAVE LOCATION FOR EXIT FROM FOR STATEMENT          02559
 23616  0006262         LDA PAVAIL                                                                02560
 23617  0304332         STA FLAB3              = EXIT LOCATION                                    02561
 23620  2604265         BRU DODO                                                                  02562
                                                                                                  02563
 23621  0000005  BSTEP  LDA XR11                                                                 02564
 23622  2504112         SBO                                                                       02565
 23623  0300005         STA XR11                                                                  02566
 23624  0300002         STA XR02                                                                  02567
 23625  0006262         LDA PAVAIL                                                                02568
 23626  0344700         STA SC      2                                                             02569
 23627  0002231         LDA *BRU*                                                                 02570
 23630  0740205         SPB WRITE   2          SAVE LOCATION TO TRANSFER AROUND INCREMENT         02571
 23631  0006262         LDA PAVAIL                 COMPUTATION                                    02572
 23632  0304330         STA FLAB1              = LOC OF TRANSFER AROUND INCREMENT SUBROUTINE      02573
 23633  0002260         LDA *STX1*                                                                02574
 23634  0740205         SPB WRITE   2          SAVE LOCATION FOR INDEX SAVE                       02575
 23635  2506033  KFOR3  SXG 1                                                                    1*02576
 23636  2601633         BRU SETGR4             STORE STEP OR WHILE IN SYMBOL CELLAR               02577
                                                                                                  EJT02578
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                                    FORGO  STORES SPBS TO THE LOOP OF THE FOR          02579
                                    STATEMENT.  SINCE THE ADDRESS OF THE FOR LOOP     02580
                                    IS NOT KNOW AT THE TIME, THE FIRST SPB IS         02581
                                    FUDGED AND ALL LATER SPBS REFER TO IT, I.E.       02582
                                                                                      02583
                                          SPB **2      1                              02584
                                          BRU **2                                     02585
                                    FORNO BRU (LOOP)                                  02586
                                                                                      02587
                                          .                                           02588
                                          .                                           02589
                                          SPB FORNO    1                              02590
                                          .                                           02591
                                          .                                           02592
                                                                                      02593
23637 0004335 FORGO  LDA FORNO                                                        02594
23640 2514002        BZE                                                              02595
23641 2603645        BRU FORGO1          FIRST FOR LIST ELEMENT                       02596
23642 0102254        ADD *SPB1*                                                       02597
23643 0740205        SPB WRITE   2       STORE SPB TO LOOP                            02598
23644 2660001        BRU 1       3                                                    02599
23645 0006262 FORGO1 LDA PAVAIL                                                       02600
23646 0102254        ADD *SPB1*                                                       02601
23647 0101623        ADD THREE                                                        02602
23650 0740205        SPB WRITE   2       STORE  SPB **2                               02603
23651 0006262        LDA PAVAIL                                                       02604
23652 0101623        ADD THREE                                                        02605
23653 0102231        ADD *BRU*                                                        02606
23654 0740205        SPB WRITE   2       STORE  BRU **2                               02607
23655 0002231        LDA *BRU*                                                        02608
23656 0740205        SPB WRITE   2       STORE BRU TO FOR LOOP                        02609
23657 0006262        LDA PAVAIL                                                       02610
23660 0304335        STA FORNO           SET FORNO FOR LATER FOR LIST ELEMENTS        02611
23661 2660001        BRU 1       3                                                    02612
                                                                                      02613
                                    KWHILE  COMPLETES A WHILE-TYPE FOR LIST EL        02614
                                    SYMB IS COMMA OR DO                               02615
                                                                                      02616
                                          $$$                 COMPUTE BOOLEAN         02617
                                          BMI                                         02618
                                    FLAB3 BRU (NEXT ELT)      FALSE -- END            02619
                                          SPB FORNO    1      LOOP                    02620
                                          BRU FLAB1           REPEAT THIS ELEMENT     02621
                                                                                      02622
23662 1420001 KWHILE INX 1       1      ERASE WHILE-ID FROM SYMBOL CELLAR            02623
23663 0742143        SPB LOADUN  2       GENERATE LOAD OF BOOLEAN VALUE               02624
23664 0006321        LDA TYPE                                                         02625
23665 2102176        CAB BBIT                                                         02626
23666 2611325        BRU ER15            WRONG TYPE                                   02627
23667 2603671        BRU **2                                                          02628
23670 2611325        BRU ER15            WRONG TYPE                                   02629
23671 0002544        LDA *BMI*                                                        02630
23672 0740205        SPB WRITE   2       STORE TEST FOR END OF LOOP                   02631
23673 0002231        LDA *BRU*                                                        02632
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23674  0740205          SPB WRITE   2          STORE EXIT FROM LOOP                    02633
23675  0000001          LDA XR01                                                       02634
23676  2504112          SBO                                                            02635
23677  0300001          STA XR01               ERASE NAME OF VARIABLE FROM NC          02636
23700  0006262          LDA PAVAIL                                                     02637
23701  0304332          STA FLAB3              = EXIT FROM LOOP                        02638
23702  0763637          SPB FORGO   3          STORE SPB TO LOOP                       02639
23703  0004330          LDA FLAB1                                                      02640
23704  0102231          ADD *BRU*                                                      02641
23705  0740205          SPB WRITE   2          STORE BRU TO LOOP AGAIN                 02642
23706  0006317          LDA SYMB                                                       02643
23707  2102601          CAB DOID                                                       02644
23710  2603712          BRU **2                                                        02645
23711  2604265          BRU DODO                                                       02646
23712  2102270          CAB COMID                                                      02647
23713  2611426          BRU ER45               ILLEGAL FOR STATEMENT                   02648
23714  2603716          BRU **2                                                        02649
23715  2611426          BRU ER45               ILLEGAL FOR STATEMENT                   02650
23716  0644332  WHILE1  LDX FLAB3   2                                                 02651
23717  0006262          LDA PAVAIL                                                     02652
23720  2504032          ADO                                                            02653
23721  2740000          STO 0       2          STORE TRANSFER TO NEXT FOR LIST ELEMENT 02654
23722  0304330          STA FLAB1                  COMPUTATION                         02655
23723  2600275          BRU INPUT                                                      02656
                                                                                       02657
                KSTEP  COMPILES THE INCREMENT PORTION OF THE                           02658
                STEP-UNTIL TYPE ELEMENT                                                02659
                  FINC BECOMES ITS IDENTIFIER .  IF IT IS AN                           02660
                EXPRESSION, PUNT=0, OTHERWISE PUNT=1.                                  02661
                                                                                       02662
                     BRU RNDSTR                                                        02663
                INCR STX RNDSTR-1 1                                                    02664
                     $$$                                                               02665
                     $$$                COMPUTE INCREMENT                              02666
                     $$$                                                               02667
                     LDX RNDSTR-1 1                                                    02668
                     BRU 1       1                                                     02669
                     BSS 1              INDEX SAVE                                     02670
                RNDSTP BSS 0            CONTINUE COMPUTATION                           02671
                                                                                       02672
23724  0006317  KSTEP  LDA SYMB                                                       02673
23725  2102646         CAB UNTID              UNTIL IDENTIFIER                        02674
23726  2611426         BRU ER45               ILLEGAL FOR STATEMENT                   02675
23727  2603731         BRU **2                                                        02676
23730  2611426         BRU ER45               ILLEGAL FOR STATEMENT                   02677
23731  0660001         LDX XR01    3                                                  02678
23732  0004700         LDA NC      3          SEE IF INCREMENT IS A SIMPLE VARIABLE   02679
23733  2001637         EXT AMASK                                                      02680
23734  2104367         CAB TSLO                                                       02681
23735  2604013         BRU STEP3              IT IS                                   02682
23736  2603743         BRU **5                IT ISNT                                 02683
23737  2104366         CAB TSLF                                                       02684
23740  2603743         BRU **3                IT ISNT                                 02685
23741  2603743         BRU **2                IT ISNT                                 02686
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23742  2604013          BRU STEP3              IT IS                                    02687
23743  2504002          LDZ                                                             02688
23744  0304356          STA PUNT               SET PUNT TO INDICATE INCREMENT IS EXPRESSION 02689
23745  0742143          SPB LOADUN  2          GENERATE LOAD OF INCREMENT               02690
23746  0006321          LDA TYPE                                                        02691
23747  2101636          CAB RBIT                                                        02692
23750  2603753          BRU *+3                                                         02693
23751  2603753          BRU *+2                                                         02694
23752  2611325          BRU ER15               BOOLEAN TYPE IN INCREMENT                02695
23753  0002046          LDA RETSTP             RETURN TO STEP FROM TIEUP                02696
23754  0300004          STA RETURN                                                      02697
23755  2602156          BRU TIEUP              GET TEMPORARY VARIABLE FOR INCREMENT     02698
                                         RETURN HERE FROM TIEUP AND SET UP A          02699
                                         SUBROUTINE TO COMPUTE THE INCREMENT          02700
23756  0660001  STEP1   LDX XR01   3                                                   02701
23757  0064700          LDA NC     3                                                   02702
23760  0304327          STA FINC               = IDENTIFIER FOR INCREMENT               02703
23761  0004372          LDA TST                                                         02704
23762  0740205          SPB WRITE  2           GENERATE STORE OF VALUE OF INCREMENT     02705
23763  0664330          LDX FLAB1  3                                                    02706
23764  0006262          LDA PAVAIL                                                      02707
23765  0101623          ADD THREE                                                       02708
23766  2760001          STO 1      3           FILL IN INDEX SAVE AT HEAD OF SUBROUTINE 02709
23767  0102247          ADD *LDX1*                                                      02710
23770  0740205          SPB WRITE  2           STORE LOAD INDEX INSTRUCTION             02711
23771  0002232          LDA SEXIT                                                       02712
23772  0740205          SPB WRITE  2           STORE EXIT FROM INCREMENT SUBROUTINE     02713
23773  0740205          SPB WRITE  2           SAVE LOCATION IN WHICH TO STORE INDEX    02714
23774  0004330          LDA FLAB1                                                       02715
23775  0102254          ADD *SPB1*                                                      02716
23776  2504032          ADD                    STORE SPB TO COMPUTE INCREMENT ON THE    02717
23777  0740205          SPB WRITE  2                FIRST TIME THROUGH THE LOOP         02718
24000  2504002          LDZ                                                             02719
24001  0304372          STA TST                                                         02720
24002  0006262          LDA PAVAIL                                                      02721
24003  2760000          STO 0      3           STORE ADDRESS AROUND COMPUATION OF INCREMENT 02722
24004  2504032  STEP2   ADD                                                           02723
24005  0304331          STA FLAB2              FLAB2 = FIRST LOCATION OF TEST FOR DONE  02724
24006  0000001          LDA XR01                                                        02725
24007  2504112          SBO                                                             02726
24010  0300001          STA XR01               ERASE INCREMENT FROM NUMBER CELLAR       02727
24011  1420001          INX 1      1                                                    02728
24012  2601630          BRU READ               REPLACE  STEP  BY UNTIL  IN SYMBOL CELLAR 02729
                                                                                       02730
                                       INCREMENT IS SIMPLE,                            02731
                                    PUNT = 1 IF IT IS A VARIABLE                       02732
                                    PUNT = 2 IF IT IS A CONSTANT                       02733
                                                                                       02734
24013  0064700  STEP3   LDA NC     3                                                   02735
24014  0304327          STA FINC               = IDENTIFIER FOR INCREMENT               02736
24015  2001641          EXT DMASK                                                       02737
24016  2514002          BZE                                                             02738
24017  2604022          BRU *+3                INCREMENT IS VARIABLE                    02739
24020  0001616          LDA TWO                INCREMENT IS CONSTANT                    02740
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24021  2604023          BRU *+2                                                    02741
24022  2504022          LDQ                                                        02742
24023  0304356          STA PUNT          SET PUNT TO INDICATE SIMBLE INCREMENT    02743
24024  0024701          LDA SC+1    1     RESET PAVAIL WITH OLD VALUE              02744
24025  0306262          STA PAVAIL        GET RID OF LOC RESERVED FOR LONG COMPUTATION 02745
24026  2604004          BRU STEP2                                                  02746
                                                                                 EJT02747
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                                KUNTIL  COMPLETES THE COMPILATION OF THE          02748
                                STEP-UNTIL  TYPE FOR LIST ELEMENT               02749
                                SYMB IS COMMA OR DO                             02750
                                                                                02751
                                 1   FLD TERMINAL VALUE                         02752
                                 2 [ LDX INDEX    1 ]                          02753
                                 3   FSU RUNNING VARIABLE                       02754
                                 4   MAQ          A                             02755
                                 5   FMP [FINC]                                 02756
                                 6   FST JUNK              **** 225 ONLY        02757
                                 7   BAR BMI      7                             02758
                                 8   BRU [NEXT ELEMENT]                         02759
                                 9   SPB [FORNO]  1                             02760
                                10 [ SPB SUBSC ]                                02761
                                11   FLD FINC          OR        SPB INCR    1  02762
                                12 [ SPB ROUND    1 ]                           02763
                                13 [ LDX INDEX    1 ]                           02764
                                14   FAD RUNNING VARIABLE                       02765
                                15   FST RUNNING VARIABLE                       02766
                                16   BRU [FLAB2]                TEST FOR DONE   02767
                                                                                02768
                                LINES 2, 10, AND 13 CONTAIN OPTIONAL            02769
                                INSTRUCTIONS                                    02770
                                                                                02771
                                IN ADDITION, IF THE STEP IS A CONSTANT,         02772
                                LINES 4 AND 5 ARE DELETED, AND DEPENDING ON     02773
                                THE VALUE OF THE CONSTANT, THE ORDER OF THE     02774
                                FIRST THREE LINES MAY BE CHANGED                02775
                                                                                02776
24027  1420001  KUNTIL INX 1       1        ERASE UNTIL-WD FROM SYMBOL CELLAR    02777
24030  0001621         LDA ONE                                                  02778
24031  2104356         CAB PUNT                                                 02779
24032  2604172         BRU KUNT11          CONSTANT INCREMENT                   02780
24033  2604034         BRU *+1                                                  02781
24034  0764244         SPB TEST    3                                            02782
24035  0002252         LDA *MAQA*          [4]                                  02783
24036  0740205         SPB WRITE   2                                            02784
24037  0004327         LDA FINC            ADDRESS OF INCREMENT                 02785
24040  2001637         EXT AMASK                                                02786
24041  0102244         ADD *FMP*           [5]                                  02787
24042  0740205         SPB WRITE   2       GENERATE MULTIPLY BY SIGN OF INCREMENT 02788
24043  0002225  KUNT2A LDA *BBMI*          [7]                          BAN*02789
24044  0740205         SPB WRITE   2       STORE TEST FOR DONE                  02790
24045  0002231         LDA *BRU*           [8]                                  02791
24046  0740205         SPB WRITE   2       STORE EXIT FROM LOOP                 02792
24047  0006262         LDA PAVAIL                                               02793
24050  0304332         STA FLAB3           =  ADDRESS OF EXIT FROM LOOP         02794
24051  0763637  KUNT2B SPB FORGO   3       [9] GENERATE SPB TO FOR LOOP         02795
24052  0004334         LDA FORAY                                                02796
24053  2514002         BZE                                                      02797
24054  2604061         BRU KUNT3           SKIP NEXT IF RUNNING VARIABLE IS SIMPLE 02798
24055  0004334         LDA FORAY                                                02799
24056  2504032         ADO                                                      02800
24057  0102254         ADD *SPB1*          [10] FOR SUBSCRIPTED VARIABLE ONLY   02801
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24060  0740205          SPB WRITE   2        GENERATE CALL OF SUBSCRIPT SUBROUTINE      02802
24061  0004356  KUNT3    LDA PUNT                                                       02803
24062  2514002           BZE                                                            02804
24063  2604132           BRU KUNT8             INCREMENT IS NOT A SIMPLE VARIABLE       02805
24064  0004327           LDA FINC                                                       02806
24065  2001037           EXT AMASK             TRIM TO ADDRESS OF INCREMENT             02807
24066  0102213           ADD *FLD*             [11]                                     02808
24067  0740205  KUNT4    SPB WRITE   2        GENERATE INSTRUCTION TO GET INCREMENT     02809
24070  0004327           LDA FINC                                                       02810
24071  2002210           EXT RMASK                                                      02811
24072  2516002           BNZ                                                            02812
24073  2604153           BRU KUNT10            CHECK TO SEE IF A ROUND IS NECESSARY     02813
24074  0004334  KUNT5    LDA FORAY                                                      02814
24075  2516002           BNZ                                                            02815
24076  2604136           BRU KUNT9             RUNNING VARIABLE IS AN ARRAY             02816
24077  0024700           LDA NC      1         NAME OF RUNNING VARIABLE                 02817
24100  2001637           EXT AMASK                                                      02818
24101  0102241           ADD *FAD*             [14]                                     02819
24102  0740205           SPB WRITE   2        GENERATE ADD OF RUNNING VARIABLE          02820
24103  0024700           LDA NC      1                                                  02821
24104  2001037           EXT AMASK                                                      02822
24105  0102245  KUNT6    ADD *FST*             GENERATE STORE OF RUNNING VARIABLE       02823
24106  0740205           SPB WRITE   2        [15]                                      02824
24107  0004331           LDA FLAB2                                                      02825
24110  0102231           ADD *BRU*             [16]                                     02826
24111  0740205           SPB WRITE   2        GENERATE BRU BACK TO TEST FOR DONE        02827
24112  0006317           LDA SYMB                                                       02828
24113  2102601           CAB DOID                                                       02829
24114  2604116           BRU **2                                                        02830
24115  2604265           BRU DODO              END OF FOR LIST                          02831
24116  2102270           CAB COMID                                                      02832
24117  2611426           BRU ER45              ILLEGAL FOR STATEMENT                    02833
24120  2603716           BRU WHILE1            MORE FOR LIST ELEMENTS COMING            02834
24121  2611426           BRU ER45              ILLEGAL FOR STATEMENT                    02835
                                     RUNNING VARIABLE IS SUBSCRIPTED                  02836
24122  0024700  KUNT7    LDA NC      1                                                  02837
24123  2001637           EXT AMASK                                                      02838
24124  0102247           ADD *LDX1*           [2] GENERATE AN INDEX LOAD WITH THE VALUE OF 02839
24125  0740205           SPB WRITE   2          THE SUBSCRIPT OF THE RUNNING VARIABLE    02840
24126  0024677           LDA NC-1    1                                                  02841
24127  2001637           EXT AMASK                                                      02842
24130  0101634           ADD XTAG                                                       02843
24131  2604261           BRU KUNT2             GOTO GENERATE LOAD OF RUNNING VARIABLE [3] 02844
                                     INCREMENT IS AN EXPRESSION                       02845
24132  0004330  KUNT8    LDA FLAB1                                                      02846
24133  2504032           ADD                                                            02847
24134  0102254           ADD *SPB1*           [11] FOR SPB TO INCREMENT SUBROUTINE     02848
24135  2604067           BRU KUNT4                                                      02849
                                     RUNNING VARIABLE IS SUBSCRIPTED                  02850
24136  0024700  KUNT9    LDA NC      1                                                  02851
24137  2001637           EXT AMASK                                                      02852
24140  0102247           ADD *LDX1*           [13]                                     02853
24141  0740205           SPB WRITE   2        INSTRUCTION TO LOAD SUBSCRIPT INTO XR     02854
24142  0024677           LDA NC-1    1                                                  02855
```

```
24143  2001637          EXT AMASK                                          02856
24144  0102241          ADD *FAD*          [14]                            02857
24145  0101634          ADD XTAG                                           02858
24146  0740205          SPB WRITE   2      GENRATE FAD OF RUNNING VARIABLE 02859
24147  0024677          LDA NC+1    1                                      02860
24150  2001637          EXT AMASK                                          02861
24151  0101634          ADD XTAG           A = ADDRESS AND TAG FOR RUNNING VARIABLE 02862
24152  2604105          BRU KUNT6          GENERATE STORE OF RUNNING VARIABLE 02863
                                   INCREMENT IS REAL                      02864
24153  0024700  KUNT10  LDA NC      1      IDENTIFIER FOR RUNNING VARIABLE 02865
24154  2002210          EXT RMASK                                          02866
24155  2516002          BNZ                                                02867
24156  2604162          BRU KUNT15         RUNNING VARIABLE IS REAL        02868
24157  0002057          LDA RNDSPB         [12]                            02869
24160  0740205          SPB WRITE   2      GENERATE ROUND INSTRUCTION      02870
24161  2604074          BRU KUNT5          RETURN TO NORMAL SEQUENCE       02871
                                                                           02872
                                   TEST RUNNING VARIABLE FOR BEING FORMAL  02873
                                   PARAMETER                               02874
                                                                           02875
24162  0640005  KUNT15  LDX XR11    2      SCC                             02876
24163  0044701          LDA SC+1    2                                      02877
24164  2002203          EXT COMASK                                         02878
24165  2514002          BZE                                                02879
24166  2604074          BRU KUNT5          NOT TAGGED FOR F,P, CONTROL VARIABLE 02880
24167  0044702          LDA SC+2    2                                      02881
24170  0740205          SPB WRITE   2      WRITE SPB TO TRANSFER ROUTINE   02882
24171  2604074          BRU KUNT5                                          02883
                                   INCREMENT IS A CONSTANT                 02884
24172  0004327  KUNT11  LDA FINC           INCREMENT IDENTIFIER            02885
24173  2001637          EXT AMASK                                          02886
24174  0300006          STA XR12                                           02887
24175  3040000          Z30 0       2      LOAD VALUE OF CONSTANT INCREMENT 02888
24176  2514721          BAR BMI     7                                  BAN*02889
24177  2604207          BRU KUNTM          NEGATIVE                        02890
24200  2516722          BAR BNZ     7                                      02891
24201  2604205          BRU KUNTP          POSITIVE                        02892
24202  2504002          LDZ                                                02893
24203  0304332          STA FLAB3          ELIMINATE TEST FOR DONE         02894
24204  2604051          BRU KUNT2B                                         02895
                                                                           02896
                                   INCREMENT IS POSITIVE                   02897
                                                                           02898
24205  0764244  KUNTP   SPB TEST    3      GENERATE PARTIAL TEST           02899
24206  2604043          BRU KUNT2A                                         02900
                                                                           02901
                                   INCREMENT IS NEGATIVE                   02902
                                                                           02903
24207  0767310  KUNTM   SPB STOTST  3                                      02904
24210  0664333          LDX FLAB4   3      INDEX IN NC FOR RUNNING VARIABLE 02905
24211  0004334          LDA FORAY                                          02906
24212  2516002          BNZ                                                02907
24213  2604234          BRU KUNT13         GET SUBSCRIPT FOR RUNNING VARIABLE 02908
24214  0064700          LDA NC      3                                      02909
```

```
24215  2001637          EXT  AMASK                                          02910
24216  0102213  KUNT12   ADD  *FLD*                                        02911
24217  0740205          SPB  WRITE   2                                     02912
24220  0742143          SPB  LOADUN  2                                     02913
24221  0646262          LDX  PAVAIL  2                                     02914
24222  0002246          LDA  *FSU*                                         02915
24223  2340000          ORY  0       2                                     02916
24224  0001636          LDA  RBIT                                          02917
24225  2106321          CAB  TYPE                                          02918
24226  2611325          BRU  ER15                                          02919
24227  2604230          BRU  **1                                           02920
24230  0000001          LDA  XR01                                          02921
24231  2504112          SBO                                                02922
24232  0300001          STA  XR01                                          02923
24233  2604043          BRU  KUNT2A                                        02924
                                                                           02925
24234  0064700  KUNT13   LDA  NC      3                                   02926
24235  2001637          EXT  AMASK                                         02927
24236  0102247          ADD  *LDX1*                                        02928
24237  0740205          SPB  WRITE   2                                     02929
24240  0064677          LDA  NC-1    3                                     02930
24241  2001637          EXT  AMASK                                         02931
24242  0101634          ADD  XTAG                                          02932
24243  2604216          BRU  KUNT12                                        02933
                                GENERATE SUBTRACT SEQUENCE FOR TEST        02934
24244  0742143  TEST     SPB  LOADUN  2                                     02935
24245  0001636          LDA  RBIT                                          02936
24246  2106321          CAB  TYPE                                          02937
24247  2611325          BRU  ER15            NOT OF ARITHMETIC TYPE        02938
24250  2604251          BRU  **1                                           02939
24251  0000001          LDA  XR01                                          02940
24252  2504112          SBO                                                02941
24253  0300001          STA  XR01            ERASE VARIABLE FROM NUMBER CELLAR 02942
24254  0004334          LDA  FORAY                                         02943
24255  2516002          BNZ                                                02944
24256  2604122          BRU  KUNT7           RUNNING VARIABLE AN ARRAY     02945
24257  0024700          LDA  NC      1                                     02946
24260  2001637          EXT  AMASK           TRIM TO ADDRESS OF RUNNING VARIABLE 02947
24261  0102246  KUNT2    ADD  *FSU*          (3)                           02948
24262  0740205          SPB  WRITE   2       STORE  FSU  OF RUNNING VARIABLE 02949
24263  0660007          LDX  XR13    3                                     02950
24264  2660001          BRU  1       3                                     02951
                                                                    EJT02952
```

```
                                DODO  COMPLETES THE COMPILATION OF THE FOR          02953
                                LIST ELEMENTS AND INITIATES THE COMPILATION       02954
                                OF THE LOOP OF THE FOR STATEMENT.                 02955
                                                                                  02956
                                THE BRANCH AT FORNO IS FILLED WITH THE            02957
                                  ADDRESS OF THE LOOP.  THE LOOP IS BRACKETED     02958
                                  BY THE INSTRUCTIONS                             02959
                                                                                  02960
                                        STX JUNK     1                            02961
                                        LDA JUNK                                  02962
                                        ADO                                       02963
                                        STO LOOPNO                                02964
                                         .                                        02965
                                         .                                        02966
                                         .                                        02967
                                  LOOPND BRU [    ]                               02968
                                                                                  02969
                                SYMBOL CELLAR UPON ENTRY                          02970
                                  SC    FORID                                     02971
                                  SC+1  (MAYBE SPB TO TRANSFER ROUTINE)           02972
                                                                                  02973
                                SYMBOL CELLAR UPON EXIT                           02974
                                  SC    DO-ID                                     02975
                                  SC+1  ADDRESS OF *STO*                          02976
                                  SC+2  ADDRESS OF EXIT FORM FOR-LIST             02977
                                                                                  02978
 24265  0004334  DODO   LDA FORAY                                                 02979
 24266  2514002         BZE                                                      02980
 24267  2604276         BRU DODO1              RUNNING VARIABLE IS SIMPLE        02981
 24270  0024700         LDA NC       1         RELEASE TEMPORARY STORAGE LOCATION USED FOR  02982
 24271  2001637         EXT AMASK              SUBSCRIPT OF A RUNNING VARIABLE WHICH  02983
 24272  0762070         SPB UNTEMP   3         WAS AN ARRAY                      02984
 24273  0000001         LDA XR01                                                 02985
 24274  2504112         SBO                                                      02986
 24275  0300001         STA XR01               ERASE SECOND PART OF ARRAY IDENTIFIER FROM NC02987
 24276  0000001  DODO1  LDA XR01                                                 02988
 24277  2504112         SBO                                                      02989
 24300  0300001         STA XR01               ERASE RUNNING VARIABLE FROM NC    02990
 24301  2506033         SXG 1                                                   1*02991
 24302  0024700         LDA SC       1                                           02992
 24303  2002203         EXT COMASK             CHECK FOR F.P. CONTROL VARIABLE   02993
 24304  2516002         BNZ                                                      02994
 24305  1420001         INX 1        1         ERASE TAGGED FOR-ID               02995
 24306  0004332         LDA FLAB3                                                02996
 24307  0324700         STA SC       1         SAVE ADDRESS OF EXIT FROM LOOP IN SC  02997
 24310  0002101         LDA FORX1              A    STX TEMP,1  INSTRUCTION      02998
 24311  0740205         SPB WRITE    2                                           02999
 24312  0604335         LDX FORNO    3                                           03000
 24313  0006262         LDA PAVAIL                                               03001
 24314  2760000         STO 0        3         STORE TRANSFER TO FOR LOOP        03002
 24315  0002102         LDA FORX2                                                03003
 24316  0740205         SPB WRITE    2         STORE  LDA TEMP  INSTRUCTION      03004
 24317  0002223         LDA *ADO*                                                03005
 24320  0740205         SPB WRITE    2                                           03006
```

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24321  0002257          LDA *STO*                                          03007
24322  0740205          SPB WRITE   2      GENERATE INSTRUCTION TO SET RETURN FROM LOOP 03008
24323  0000005          LDA XR11                                           03009
24324  2504112          SBO                                                03010
24325  0300005          STA XR11           INCREMENT SYMBOL CELLAR COUNTER 03011
24326  0006262          LDA PAVAIL                                         03012
24327  0324700          STA SC      1      SAVE ADDRESS OF *STO* INSTRUCTION 03013
24330  2601622          BRU STOSC          STORE DO IN SYMBOL CELLAR       03014
                                                                           03015
                                KDO  COMPLETES THE COMPILATION OF THE FOR  03016
                                STATEMENT                                  03017
                                                                           03018
24331  0002026   KDO    LDA BRUFOR                                         03019
24332  0740205          SPB WRITE   2                                      03020
24333  0024701          LDA SC+1    1      ADDRESS OF *STO*                03021
24334  0300006          STA XR12                                           03022
24335  0006262          LDA PAVAIL                                         03023
24336  2740000          STO 0       2      FILL IN ADDRESS PART OF *STO*   03024
24337  0024702          LDA SC+2    1                                      03025
24340  0300006          STA XR12                                           03026
24341  0006262          LDA PAVAIL                                         03027
24342  2504032          ADO                                                03028
24343  2740000          STO 0       2      STORE ADDRESS OF EXIT FROM LOOP 03029
24344  1420002          INX 2       1      ERASE LABELS FROM SYMBOL CELLAR 03030
24345  2601716          BRU REPEAT         WELL, WE MADE IT                03031
         02140  FRFRM  EQU 1120                                           03032
                                                                    NAM03033
                                                                    EJT03034
```

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                                                    LABELS AND GOTOS ARE COMPILED USING THE          03035
                                                    SUBROUTINES CHAIN AND DEFINE TO HANDLE           03036
                                                    IDENTIFIERS WHICH ARE CALLED BEFORE THEY         03037
                                                    ARE DEFINED.                                     03038
                                                                                                     03039
24346  0001647  KLABEL LDA  *NOP*                                                                    03040
24347  0740205        SPB  WRITE   2          STORE NOP TO PREVENT UNINTERRUPTABLE LOOPS            03041
24350  0001635        LDA  LBIT                                                                      03042
24351  0747727        SPB  DEFINE  2          DEFINE LAST ENTRY IN NC AS A LABEL                   03043
24352  2504002        LDZ                                                                            03044
24353  0304324        STA  DSTAT              SET DECLARATION ILLEGAL                              03045
24354  2600275        BRU  INPUT                                                                     03046
                                                                                                     03047
24355  2504002  BGOTO LDZ                                                                          03048
24356  0304324        STA  DSTAT                                                                     03049
24357  2601633        BRU  SETGR4                                                                    03050
                                                                                                     03051
24360  0704363  KGOTO SPB  GOTO    3          GENERATE GOTO INSTRUCTION                            03052
24361  2506033        SXG  1                                                                    1*03053
24362  2601716        BRU  REPEAT                                                                    03054
                                                                                                     03055
                                                    GOTO  IS A SUBROUTINE CALLED BY KGOTO AND        03056
                                                    DURING THE COMPILATION OF DESIGNATIONAL          03057
                                                    EXPRESSIONS AND SWITCH DECLARATIONS.  EXIT       03058
                                                    IS TO *+1 IF THE LAST ENTRY IN THE NC IS NOT     03059
                                                    A LABEL, TO *+2 IF A GOTO WAS GENERATED.         03060
                                                                                                     03061
24363  1764364  GOTO   STX  TEMP    3          SAVE EXIT                                            03062
24364  2506013        SXG  0                                                                    0*03063
24365  0024700        LDA  NC      1                                                                 03064
24366  2102164        CAB  DETYPE                                                                    03065
24367  2604371        BRU  *+2                                                                       03066
24370  2604376        BRU  GOTO1              GOTO A DESIGNATIONAL EXPRESSION                      03067
24371  0002255        LDA  *SPB2*             THIS TAKES CARE OF FORMAL PARAMETERS                 03068
24372  0740205        SPB  WRITE   2          STORE *SPB* TO LABEL                                 03069
24373  0001635        LDA  LBIT                                                                      03070
24374  0747631        SPB  CHAIN   2          FILL IN PROPER ADDRESS OR ADD TO CHAIN               03071
24375  2604403        BRU  GOTO2              SPECIAL CHECK FOR GOTO DE--FORMAL PARAM SWITC 03072
24376  0000001  GOTO1  LDA  XR01                                                                    03073
24377  2504112        SBO                                                                            03074
24400  0300001        STA  XR01               ERASE NAME OF LABEL FROM NC                          03075
24401  0604364        LDX  TEMP    3                                                                 03076
24402  2660001        BRU  1       3          EXIT FROM GOTO                                       03077
24403  0001646  GOTO2  LDA  SWTYPE                                                                  03078
24404  0747631        SPB  CHAIN   2                                                                 03079
24405  2611353        BRU  ER26               REALLY WAS BAD                                       03080
24406  2604376        BRU  GOTO1              THATS WHAT IT WAS                                    03081
                                                                                                     03082
                                                                                                     03083
                                                    SWITCHB INITIATES A SWITCH CALL                  03084
                                                                                                     03085
24407  0002307  SWTCHB LDA  SWBID              IDENTIFIER FOR SWITCH BRACKET                        03086
24410  0306317        STA  SYMB                                                                      03087
24411  2601622        BRU  STOSC                                                                     03088
```

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                                                                                03089
                                    KSWTCH  COMPILES THE SWITCH CALL            03090
                                                                                03091
 24412  0006317  KSWTCH LDA SYMB                                                03092
 24413  2102301         CAB RBID                                                03093
 24414  2611317         BRU ER12          ILLEGAL SUBSCRIPT EXPRESSION          03094
 24415  2604417         BRU *+2                                                 03095
 24416  2611317         BRU ER12                                                03096
 24417  0742143         SPB LOADUN  2      GENERATE LOAD OF VALUE OF SUBSCRIPT  03097
 24420  0000001         LDA XR01                                                03098
 24421  2504112         SBU                                                     03099
 24422  0300001         STA XR01          ERASE IDENTIFIER OF SUBSCRIPT FROM NC 03100
 24423  0006321         LDA TYPE                                                03101
 24424  2101636         CAB RBIT                                                03102
 24425  2604432         BRU *+5           SUBSCRIPT IS INTEGRAL                 03103
 24426  2604430         BRU *+2           SUBSCRIPT IS REAL - ROUND IT          03104
 24427  2611335         BRU ER19          ERROR -- BOOLEAN SUBSCRIPT            03105
 24430  0002057         LDA RNDSPB                                              03106
 24431  0740205         SPB WRITE   2     SPB TO ROUND ROUTINE                  03107
 24432  0004321         LDA DECLO                                               03108
 24433  2516002         BNZ                                                     03109
 24434  2604456         BRU SWTCH2        SWITCH CALLED WITHIN A DECLARATION    03110
 24435  0024700         LDA NC      1     MAKE SURE THE THING IS A SWITCH       03111
 24436  2001640         EXT ACMASK                                              03112
 24437  0201646         SUB SWTYPE                                              03113
 24440  2516002         BNZ ER19          ANOTHER SUBSCRIPTED LABEL             03114
 24441  2611335
 24442  0002255         LDA *SPB2*                                              03115
 24443  0740205  SWTCH1 SPB WRITE   2     STORE TRANSFER TO SWITCH HEADING      03116
 24444  0001646         LDA SWTYPE                                              03117
 24445  0747631         SPB CHAIN   2     FILL IN ADDRESS OF TRANSFER OR ADD TO CHAIN 03118
 24446  2611363         BRU ER30          NUMBER CELLAB OUT OF STER             03119
 24447  2504102         LMO                                                     03120
 24450  0306320         STA PREV          SET PREV TO INDICATE A VARIABLE       03121
 24451  0002164         LDA DETYPE        DESIGNATIONAL EXPRESSION TYPE         03122
 24452  0324700         STA NC      1                                           03123
 24453  2506033         SXG 1                                                 1*03124
 24454  1420001         INX 1       1     ERASE BRACKET FROM SC                 03125
 24455  2600275         BRU INPUT                                               03126
 24456  0002022  SWTCH2 LDA SWLDX                                               03127
 24457  0740205         SPB WRITE   2                                           03128
 24460  0002231         LDA *BRU*                                               03129
 24461  2604443         BRU SWTCH1                                              03130
                                                                              NAN03131
                                                                              EJT03132
```

```
WHAMI KEEPS TRACK OF CERTAIN SYNTACTIC                          03133
ELEMENTS TO FACILITATE COMPILING PROCEDURE                      03134
DECLARATIONS.                                                   03135
                                                                03136
20000 STATEMENTS (BODY)                                         03137
20001 DECLARATION                                               03138
20002 SPECIFICATION                                             03139
20003 FORMAL PARAMETER LIST                                     03140
                                                                03141
WHAMI IS INTERROGATED BY --                                     03142
BPROC1, DPROC, BPAREN, NCPSTO, KPARAM,                          03143
DOWN, DREAL, DECLAR, KDATA, DA2, KARRAY,                        03144
DSWTCH, DBEGIN, BSWTCH                                          03145
                                                                03146
IT IS SET BY --                                                 03147
BPROC2              TO FORMAL PARAMETER                         03148
DPROC               TO SPECIFICATION                            03149
DPROC2, SPEC2, START1, WHOSI, BSWTCH, DOWN,                     03150
                      TO BODY                                   03151
DREAL1              TO DECLARATION                              03152
*****************************************                       03153
THE APPEARANCE OF THE WORD PROCEDURE CAUSES                     03154
PROCID TO BE PUT IN THE SYMBOL CELLAR,  ITS                     03155
ACTUAL MEANING THERE IS DETERMINED BY WHAMI.                    03156
                                                                03157
1 IF WHAMI=BODY, AND SYMB=PROCEDURE, A                          03158
PROCEDURE DECLARATION IS BEGINNING, AND                         03159
BPROC2 SETS WHAMI=F,P, LIST AND PUTS PROCID IN                  03160
THE SYMBOLS CELLAR.                                             03161
                                                                03162
2 IF WHAMI=F,P, LIST AND SYMB=SEMICOLON,                        03163
WHAMI IS SET TO SPECIFICATION OR BODY DEPEND-                   03164
ING ON WHETHER OR NOT THERE ARE ANY FORMAL                      03165
PARAMETERS.                                                     03166
                                                                03167
3 IF WHAMI=SPECIFICATION, IT WILL BE SET TO                     03168
BODY WHEN THE CORRECT NUMBER OF FORMAL PARA-                    03169
METERS HAVE BEEN SPECIFIED %COUNT IS HELD IN                    03170
NOEL .                                                          03171
                                                                03172
4 IF WHAMI=BODY AND THE PROCID IN THE SYMBOLS                   03173
CELLAR (PUT THERE IN STEP 1) IS BEING COM-                      03174
PILED BY A SEMI-COLON, THE PROCEDURE DECLARA-                   03175
TION IS NOW OVER.                                               03176
                                                              EJT03177
```

```
STRINGS ARE SPECIFIED AT DSTRNG.  THE ITABLE          03178
ENTRY IS LEFT AS FORMAL PARAMETER, AND ITS            03179
ADDRESS POINTS TO THE THUNK LINK WHERE THE            03180
TYPE -STRING- (1600000) IS STORED.                    03181
                                                      03182
ON AN APPEARANCE OF A STRING PARAMETER IN THE         03183
BODY OF A PROCEDURE, NCPSTO IS CALLED, BUT            03184
THE TEST AT NCP4 LEAVES THE FORMAL PARAMETER          03185
TYPE IN THE NUMBERS CELLAR.                           03186
                                                      03187
AT PPARAM, THE EXISTENCE OF A FORMAL PARAM            03188
APPEARING AS AN ACTUAL PARAMETER IS DETECTED,         03189
AND THE THUNK IS JUST A *BRU* TO THE                  03190
APPROPRIATE THUNK LINK.                               03191
                                                      03192
BQUOTE USES -TYPE- AS A FLAG TO INDICATE              03193
WHETHER A STRING IS APPEARING IN A CALL TO            03194
*PRINT- OR TO A USER-DECLARED PROCEDURE.              03195
IN THE LATTER CASE, THE THUNK CONSISTS OF AN          03196
*SPB* TO THE STRING ROUTINE AND A RETURN TO           03197
THE CALLING PROCEDURE.                                03198
                                                      03199
KPRINT DETECTS A STRING FORMAL PARAMETER AND          03200
COMPILES AN *SPB* TO THE THUNK LINK.  THE             03201
STRING IS THEN OUTPUT BY THE CODING SET UP            03202
IN THE THUNK BY BQUOTE.                               03203
                                                      03204
**************************************************    03205
                                                      03206
DATA FORMAL PARAMETERS ARE TREATED IN THE             03207
SAME GENERAL WAY AS STRINGS ONCE THEY ARE             03208
SPECIFIED.  THEIR TREATMENT IS IDENTICAL AT           03209
PPARAM AND NCP4.  BECAUSE OF THIS SIMILARITY          03210
TESTS HAVE BEEN PLACED AT PREP AND KINP2 TO           03211
ENSURE THAT THE COMPILER WILL NOT CONFUSE             03212
STRINGS AND DATA                                      03213
                                                      03214
                                                    NAN03215
                                                    EJT03216
```

```
                                        BPROC INITIALIZES A PROCEDURE DECLARATION          03217
                                            OR SPECIFICATION.                              03218
                                        CALLED WHEN SYMB=PROCEDURE                         03219
                                        OCTAL 46                                           03220
 24462  0024700  BPROC  LDA SC      1                                                      03221
 24463  2102302         CAB REALID                                                        03222
 24464  2604471         BRU *+5                                                           03223
 24465  2604502         BRU BPROCR          REAL PROCEDURE                                03224
 24466  2102267         CAB BOOLID                                                        03225
 24467  2604476         BRU BPROC1          INTEGER PROCEDURE                             03226
 24470  2604500         BRU BPROCB          BOOLEAN PROCEDURE                             03227
 24471  2102266         CAB BEGID                                                         03228
 24472  2604474         BRU *+2                                                           03229
 24473  0770675         SPB BLOCK   3                                                     03230
 24474  0002213         LDA WMASK           NON-FUNCTION TYPE PROCEDURE                   03231
 24475  2604506         BRU BPROC1                                                        03232
 24476  2504002  BPROC1 LDZ                                                             03233
 24477  2604503         BRU BPROCR+1                                                      03234
 24500  0002176  BPROCB LDA BBIT                                                        03235
 24501  2604503         BRU BPROCR+1                                                      03236
 24502  0001636  BPROCR LDA RBIT                                                        03237
 24503  0102213         ADD WMASK                                                         03238
 24504  0102161         ADD GR1             FORM TYPE FOR FUNCTION                        03239
 24505  1420001         INX 1       1       ERASE SPECIFIER FROM SC                       03240
 24506  0304311  BPROC1 STA ATYPE           SET TYPE                                      03241
 24507  0644373         LDX WHAMI   2                                                     03242
 24510  2644511         BRU *+1     2                                                     03243
 24511  2604515         BRU BPROC2          PROCEDURE DECLARATION                         03244
 24512  2604515         BRU BPROC2          FUNCTION-TYPE PROCEDURE DECLARATION           03245
 24513  2601633         BRU SETGR4          SPECIFICATION                                 03246
 24514  2611371         BRU ER33            ILLEGAL DECLARATION                           03247
                                                                                          03248
                                        INITIATE A PROCEDURE DECLARATION                  03249
                                        SYMBOL CELLAR CONTENTS ON EXIT...                 03250
                                            SC    PROCEDURE-ID                            03251
                                            SC+1  PAVAIL                                  03252
                                            SC+2  TSLO                                    03253
                                                                                          03254
 24515  2504102  BPROC2 LMO                                                             03255
 24516  0304321         STA DECLO           INHIBIT STORING LINE NUMBERS IN THUNK LINKS   03256
 24517  0004324         LDA DSTAT                                                         03257
 24520  2514002         BZE                                                               03258
 24521  2611367         BRU ER32            DECLARATION ILLEGAL HERE                      03259
 24522  0006262         LDA PAVAIL                                                        03260
 24523  2516000         BEV                                                               03261
 24524  2604527         BRU *+3                                                           03262
 24525  0001647         LDA *NOP*                                                         03263
 24526  0740205         SPB WRITE   2       MAKE SURE PAVAIL IS EVEN                      03264
 24527  0002231         LDA *BRU*                                                         03265
 24530  0740205         SPB WRITE   2       STORE BRU AROUND PROCEDURE BODY               03266
 24531  0004311         LDA ATYPE                                                         03267
 24532  2002213         EXT WMASK                                                         03268
 24533  2510010         SRA 8                                                             03269
 24534  2306317         ORY SYMB            ADD TYPE AS FLAG ON PROCEDURE                 03270
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```
24535  2102152          CAB 0400                                                03271
24536  2604543          BRU *+5          NON-FUNCTION                           03272
24537  2604540          BRU *+1          FUNCTION TYPE                          03273
24540  0006262          LDA PAVAIL                                              03274
24541  0101616          ADD TWO                                                 03275
24542  0306262          STA PAVAIL       RESERVE LOCATION FOR VALUE OF FUNCTION 03276
24543  0000005          LDA XR11                                                03277
24544  0201616          SUB TWO                                                 03278
24545  0300005          STA XR11                                                03279
24546  0004367          LDA TSLO         SAVE LO OF TEMPORARY STORAGE           03280
24547  0324701          STA SC+1    1                                           03281
24550  0006262          LDA PAVAIL                                              03282
24551  0324700          STA SC      1    SAVE ADD. OF FIRST LOCATION OF PROCEDURE 03283
24552  2504032          ADO                                                     03284
24553  0304367          STA TSLO         SET NEW TEMPORARY STORAGE              03285
24554  0102107          ADD D37                                                 03286
24555  0304366          STA TSLF                                                03287
24556  0306262          STA PAVAIL                                              03288
24557  2104353          CAB PLF                                                 03289
24560  2604563          BRU *+3                                                 03290
24561  2604562          BRU *+1                                                 03291
24562  0740226          SPB ADJUST  2    CHECK FOR STORAGE AVAILIABLE           03292
24563  2504002          LDZ                                                     03293
24564  0304345          STA NOEL         = COUNT OF NUMBER OF FORMAL PARAMETERS 03294
24565  0001623          LDA THREE                                               03295
24566  0101634          ADD XTAG                                                03296
24567  0304373          STA WHAMI        SET WHAMI TO FORMAL PARAMETER LIST     03297
24570  0002054          LDA PROSPB                                              03298
24571  0740205          SPB WRITE   2    GENERATE SPB TO RUN-TIME LINKAGE       03299
24572  0740205          SPB WRITE   2    SAVE LOC, FOR ADDRESS OF EXIT          03300
24573  2601633          BRU SETGR4                                              03301
                                                                         EJT03302
```

```
                                        DPROC IS EXECUTED WHEN A PROCEDURE-ID IN          03303
                                           THE SYMBOL CELLAR IS BEING COMPILED            03304
                                        THIS HAPPENS IN A SPECIFICATION, AT THE END       03305
                                        OF A FORMAL PARAMETER LIST, AND WHEN SYMB =       03306
                                        SEMICOLON FOLLOWING THE BODY OF A DECLARATION     03307
                                                                                          03308
24574  0644573  DPROC  LDX WHAMI  2                                                       03309
24575  2644576         BRU *+1    2                                                       03310
24576  2604630         BRU DPROC3          END OF PROCEDURE DECLARATION                  03311
24577  2611371         BRU ER33            ILLEGAL PROCEDURE DECLARATION                 03312
24600  2605773         BRU SPECP           SPECIFY A PROCEDURE                           03313
24601  0006317         LDA SYMB            END OF FORMAL PARAMETER LIST                  03314
24602  2102306         CAB SCID                                                          03315
24603  2611371         BRU ER33            ILLEGAL DECLARATION                           03316
24604  2604606         BRU *+2                                                           03317
24605  2611371         BRU ER33            ILLEGAL DECLARATION                           03318
24606  0004321         LDA DECLO                                                         03319
24607  2504032         ADD                                                               03320
24610  2516002         BNZ                                                               03321
24611  2611371         BRU ER33            SOMETHING ROTTEN IN DENMARK                   03322
24612  0304321         STA DECLO                                                         03323
24613  0004345         LDA NOEL                                                          03324
24614  2514002         BZE                                                               03325
24615  2604624         BRU DPROC2          NO PARAMETERS                                 03326
24616  0001634         LDA XTAG                                                          03327
24617  0101616         ADD TWO                                                           03328
24620  0304373         STA WHAMI           SET WHAMI TO SPECIFICATION                    03329
24621  2504002 DPROC1  LDZ                                                              03330
24622  0740205         SPB WRITE  2        MARKER FOR END OF THUNK LINKAGE               03331
24623  2600275         BRU INPUT                                                         03332
24624  0001634 DPROC2  LDA XTAG                                                          03333
24625  0304373         STA WHAMI           SET WHAMI TO BODY                             03334
24626  0764715         SPB DECPRO 3        DECLARE PROCEDURE AND ENTER BLOCK             03335
24627  2604621         BRU DPROC1                                                        03336
                                                                                          03337
                                                                                          03338
                                        END OF PROCEDURE DECLARATION . . .                03339
                                        EXIT BLOCK, TERMINATING DECLARATION               03340
                                                                                          03341
                                                                                          03342
24630  1420001 DPROC3  INX 1      1        ERASE PROCEDURE-ID FROM SC                    03343
24631  0000001         LDA XR01                                                          03344
24632  2516002         BNZ                 CHECK FOR EXTRA JUNK IN SC.                   03345
24633  2611363         BRU ER30                                                          03346
24634  0770753         SPB UNBLOK 3        EXIT BLOCK CREATED FOR PROCEDURE BODY         03347
24635  0002152         LDA. 0400           FUNCTION TAG                                  03348
24636  0304324         STA DSTAT                                                         03349
24637  2024676         EXT SC-2   1                                                      03350
24640  2514002         BZE                                                               03351
24641  2604661         BRU DPROC5          FUNCTION-TYPE PROCEDURE                       03352
24642  0024700         LDA SC     1        LOCATION OF *BRU* AROUND DECLARATION          03353
24643  0300007         STA XR13                                                          03354
24644  0006262         LDA PAVAIL                                                        03355
24645  0101616         ADD TWO                                                           03356
```

```
24646  2760000          STO 0       3     SET BRU AROUND PROCEDURE BODY          03357
24647  2504112 DPROC4   SBO                                                      03358
24650  0360050          STA 40      3     SET LOC. INDICATING EXIT               03359
24651  0024701          LDA SC+1    1                                            03360
24652  0304367          STA TSLO            RESET TEMPORARY STORAGE BLOCK        03361
24653  0102107          ADD D37                                                  03362
24654  0304366          STA TSLP                                                 03363
24655  1420001          INX 1       1     ERASE POINTERS FROM SC                 03364
24656  0002231          LDA *BRU*                                                03365
24657  0740205          SPB WRITE   2     STORE EXIT FROM PROCEDURE              03366
24660  2601716          BRU REPEAT                                               03367
24661  0024700 DPROC5   LDA SC      1                                            03368
24662  0201616          SUB TWO                                                  03369
24663  0300007          STA XR13                                                 03370
24664  0002151          LDA 0200                                                 03371
24665  2024676          EXT SC+2    1                                            03372
24666  2516002          BNZ                 REAL OR INTEGER PROCEDURE          03373
24667  0002213          LDA *FLD*                                                03374
24670  0100007          ADD XR13            FORM LOAD OF VALUE OF PROCEDURE    03375
24671  2504032          ADO                                                      03376
24672  0740205          SPB WRITE   2                                            03377
24673  0006262          LDA PAVAIL                                               03378
24674  0101616          ADD TWO                                                  03379
24675  2760000          STO 0       3     STORE BRU AROUND PROCEDURE BODY        03380
24676  1460002          INX 2       3     GET INDEX IN STEP                      03381
24677  2604647          BRU DPROC4                                               03382
                                                                         EJT03383
```

```
                                        BPAREN  DETERMINES WHETHER A LEFT PARENTHESIS      03384
                                        BELONGS TO A PROCEDURE OR NOT, AND IF SO,        03385
                                        WHAT KIND OF PROCEDURE IT IS,                    03386
                                                                                         03387
 24700  0644376  BPAREN LDX WHAMI   2                                                    03388
 24701  2644702        BRU *+1     2                                                     03389
 24702  2604711        BRU BPAR1           CHECK FOR ADJACENT EXPRESSIONS IN BODY       03390
 24703  2611371        BRU ER33            ILLEGAL DECLARATION                          03391
 24704  2611303        BRU ER6             ILLEGAL SPECIFICATION                        03392
 24705  0764715        SPB DECPRO  3       DECLARE PROCEDURE AND SET UP BLOCK           03393
 24706  0002277        LDA PROCID                                                       03394
 24707  0306317        STA SYMB            SET SYMB = PROCEDURE LEFT PAREN              03395
 24710  2601622        BRU STOSC                                                        03396
 24711  0004354  BPAR1  LDA PREV2                                                      03397
 24712  2514001        BMI                                                            03398
 24713  2611301        BRU ER5             ADJACENT EXPRESSIONS                         03399
 24714  2601633        BRU SETGR4                                                       03400
                                                                                      EJT03401
```

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                                        DECPRO IS CALLED AT THE END OF THE FORMAL          03402
                                          PARAMETER LIST ( EVEN IF EMPTY )                 03403
                                          RESULT . . .                                     03404
                                             SC     PROCEDURE-ID                           03405
                                             SC+1   BSC                                    03406
                                             SC+2   PAVAIL                                 03407
                                             SC+3   TSLO                                   03408
                                                                                           03409
 24715  1764364  DECPRO STX TEMP    3                                                     03410
 24716  0770632         SPB BLIST   3        LIST PROCEDURE NAME IF NECESSARY             03411
 24717  0660021         LDX XR41    3                                                     03412
 24720  0004311         LDA ATYPE                                                         03413
 24721  0106262         ADD PAVAIL                                                        03414
 24722  2504112         SBO                                                               03415
 24723  0365001         STA ITABLE+13        DEFINE PROCEDURE IDENTIFIER                  03416
 24724  2506033         SXG 1                                                         1*03417
 24725  0000001         LDA XR01                                                          03418
 24726  2504112         SBO                                                               03419
 24727  0300001         STA XR01             ERASE IDENTIFIER FROM NC                     03420
 24730  2516002         BNZ                                                               03421
 24731  2611363         BRU ER30                                                          03422
 24732  0770675         SPB BLOCK   3        CREATE A BLOCK FOR BODY OF PROCEDURE         03423
 24733  0024700         LDA SC      1                                                     03424
 24734  0202200         SUB CTAG                                                          03425
 24735  0324700         STA SC      1        UNDO DAMAGE DONE BY BLOCK                    03426
 24736  0644314         LDX BSC     2                                                     03427
 24737  2504102         LMO                  SET FLAG SO VAVAIL IS NOT RESET ON EXIT      03428
 24740  0344441         STA BS+1    2              FROM PROCEDURE                         03429
 24741  0002161         LDA GR1                                                           03430
 24742  2004311         EXT ATYPE                                                         03431
 24743  2516002         BNZ                                                               03432
 24744  2604764         BRU DECP1            NOT A FUNCTION TYPE PROCEDURE                03433
 24745  0660021         LDX XR41    3        CREATE INTERNAL VARIABLE FOR FUNCTION        03434
 24746  0557542         BXH BSLF    2                                                     03435
 24747  2611275         BRU ER3              BS FULL                                      03436
 24750  1440002         INX 2       2                                                     03437
 24751  1744314         STX BSC     2                                                     03438
 24752  0065001         LDA ITABLE+13                                                     03439
 24753  0344441         STA BS+1    2        SAVE EXTERNAL SIGNIFICANCE                   03440
 24754  0000021         LDA XR41                                                          03441
 24755  0344440         STA BS      2        SET POINTER TO ITABLE                        03442
 24756  0004311         LDA ATYPE                                                         03443
 24757  2002213         EXT WMASK                                                         03444
 24760  2002161 *       EXT GR1              TRIM TO TYPE OF PROCEDURE                    03445
 24761  0106262         ADD PAVAIL                                                        03446
 24762  0202106         SUB D41                                                           03447
 24763  0365001         STA ITABLE+13        CREATE DUMMY VARIABLE                        03448
 24764  0664364  DECP1  LDX TEMP    3                                                     03449
 24765  2660001         BRU 1       3        EXIT                                         03450
                                                                                      NAM03451
                                                                                      EJT03452
```

```
                                                                                    03453
                                    KINPUT COMPILES INPUT PROCEDURE CALLS           03454
                                                                                    03455
24766 0004345  KINPUT LDA NOEL                                                      03456
24767 2514001         BMI                                                           03457
24770 2605056         BRU KINP2+2               CALL FOR RESTORE                    03458
24771 2504032         ADO                                                           03459
24772 0304345         STA NOEL                                                      03460
24773 2101616         CAB TWO                                                       03461
24774 2605054         BRU KINP2                 GET NAME OF DATA BLOCK TO INITIATE CALL 03462
24775 2604776         BRU *+1                                                       03463
24776 0004400         LDA DSKFLG                CHECK FOR DISK OPERATION            03464
24777 2516002         BNZ RWFIL                                                     03465
25000 2605201
25001 0002061         LDA RD2SPB                SUBROUTINE REENTRY                  03466
25002 0740205         SPB WRITE   2                                                 03467
25003 0742143         SPB LOADUN  2             DUMMY LOAD VARIABLE TO GET PIECE OF DATA 03468
25004 0646262         LDX PAVAIL  2             LOAD INDEX OR LOCATION TO FUDGE     03469
25005 0040000         LDA 0       2             GET DUMMIED LOAD INSTRUCTION        03470
25006 2002213         EXT WMASK                 TRIM OFF LOAD INSTRUCTION           03471
25007 0102240         ADD *DST*                 FORM STORE INSTRUCTION              03472
25010 0340000         STA 0       2             PUT BACK IN PROGRAM                 03473
25011 0004345  KINP1  LDA NOEL                                                      03474
25012 2514001         BMI                                                           03475
25013 2605125         BRU RESTR                 CALL FOR RESTORE                    03476
25014 0000001         LDA XR01                                                      03477
25015 2504112         SBO                                                           03478
25016 0300001         STA XR01                  ERASE NAME OR VARIABLE FROM NC      03479
25017 0006317         LDA SYMB                                                      03480
25020 2102270         CAB COMID                                                     03481
25021 2605023         BRU *+2                                                       03482
25022 2600275         BRU INPUT                 MORE PARAMETERS TO COME             03483
25023 2102305         CAB RPID                                                      03484
25024 2611355         BRU ER27                                                      03485
25025 2605027         BRU *+2                                                       03486
25026 2611355         BRU ER27                                                      03487
25027 2506053  KINP11 SXG 2                                                     2*03488
25030 2504102         LMO                                                           03489
25031 0304365         STA TERM                  COMMENT LOOP SYMBOL-ONLY FLAG       03490
25032 0006322         LDA TEMP*                 CHECK FOR RUN TIME INPUT CALL       03491
25033 2514002         BZE *+6                    NO                                 03492
25034 2605041
25035 0004345         LDA NOEL                   YES                                03493
25036 2504112         SBO                                                           03494
25037 0666322         LDX TEMP*   3                                                 03495
25040 0360000         STA 0       3             SET VARIABLE COUNT                  03496
25041 2504002         LDZ                                                           03497
25042 0306322         STA TEMP*                 REMOVE RUN TIME INPUT INDICATION    03498
25043 0304400         STA DSKFLG                 CLEAR FLAG FOR DISK OPERATION      03499
25044 0767331         SPB KMNTLP  3                                                 03500
25045 0306320         STA PREV                                                      03501
25046 0306317         STA SYMB                                                      03502
25047 2504002         LDZ                                                           03503
25050 0304365         STA TERM                  RESET SYMBOL-ONLY FLAG              03504
```

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25051  0662037          LDX MODUN   3                                    03505
25052  2506033          SXG 1                                        1*03506
25053  2601716          BRU REPEAT                                       03507
                                                                        03508
                                  HERE TO TREAT DATA BLOCK NAME         03509
                                                                        03510
25054  2504022  KINP2   LDO                                              03511
25055  0304345          STA NOEL          SET FLAG TO INDICATE FIRST PARAMETER IS READ 03512
25056  0640001          LDX XR01    2                                    03513
25057  0044700          LDA NC      2     IDENTIFIER FOR FIRST ARGUMENT  03514
25060  2001637          EXT AMASK         CALL FOR RUNTIME INPUT         03515
25061  0201630          SUB O17777                                       03516
25062  2514002          BZE CALLIN         YES                           03517
25063  2605206
25064  0044700          LDA NC      2     NO                             03518
25065  2001630          EXT O17777        TRIM TO TYPE                   03519
25066  2516001          BPL                                              03520
25067  2605112          BRU KINP3         NOT PROCEDURE OR FORMAL PARAMETER 03521
25070  2504040          CHS                                              03522
25071  0201632          SUB ABIT                                         03523
25072  2516002          BNZ                                              03524
25073  2611357          BRU ER28          NOT SPECIFIED OR NOT FORMAL PARAMETER 03525
25074  0044700          LDA NC      2                                    03526
25075  2001637          EXT AMASK                                        03527
25076  0300007          STA XR13          AVOID CONFUSION WITH STRINGS   03528
25077  0060000          LDA 0       3                                    03529
25100  2001630          EXT O17777                                       03530
25101  2102216          CAB DTYPE                                        03531
25102  2611365          BRU ER31                                         03532
25103  2605105          BRU *+2                                          03533
25104  2611365          BRU ER31                                         03534
25105  0000007          LDA XR13                                         03535
25106  2504032          ADD                                              03536
25107  0102255          ADD *SPB2*                                       03537
25110  0740205          SPB WRITE   2                                    03538
25111  2605011          BRU KINP1                                        03539
25112  2102221  KINP3   CAB FILTYP                                       03540
25113  2605115          BRU *+2                                          03541
25114  2605160          BRU FILOP         DATA BLOCK NAME IS A FILE      03542
25115  0002060          LDA RDASPB                                       03543
25116  0740205          SPB WRITE   2                                    03544
25117  2504002          LDZ                                              03545
25120  0740205          SPB WRITE   2     RESERVE LOCATION FOR NAME OF DATA BLOCK 03546
25121  0002216          LDA DTYPE                                        03547
25122  0747631          SPB CHAIN   2     FILL IN NAME OF BLOCK OR ADD TO CHAIN 03548
25123  2611357          BRU ER28          ILLEGAL DATA NAME              03549
25124  2605011          BRU KINP1                                        03550
                                                                        03551
                                  RESTR COMPILES CALLS FOR THE RESTORE FUNCTION 03552
25125  2506013  RESTR   SXG 0                   GET THIS THING STRAIGHTENED OUT 0*03553
25126  0024700          LDA NC      1                                    03554
25127  2514001          BMI RSTFP                                        03555
25130  2605143
25131  2001630          EXT O17777        CHECK FOR RESTORE OF DATA FILE 03556
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25132  0202221          SUB FILTYP                                    03557
25133  2514002          BZE RESFIL                                    03558
25134  2605155
25135  0006262          LDA PAVAIL                                    03559
25136  2504112          SBO                                           03560
25137  0300002          STA XR02                                      03561
25140  0002075          LDA RSTSPB                                    03562
25141  0340000          STA 0       2                                 03563
25142  2605014          BRU KINP1+3                                   03564
25143  0002077  RSTFP   LDA LDADBL          RESTORE A FORMAL PARAMETER 03565
25144  0740205          SPB WRITE   2                                 03566
25145  0006262          LDA PAVAIL                                    03567
25146  0101623          ADD THREE                                     03568
25147  0102256          ADD *STA*                                     03569
25150  0740205          SPB WRITE   2                                 03570
25151  0002075          LDA RSTSPB                                    03571
25152  0740205          SPB WRITE   2                                 03572
25153  0740205          SPB WRITE   2  RESERVE LOCATION FOR BLOCK NAME 03573
25154  2605014          BRU KINP1+3                                   03574
                                                                      03575
25155  0002062  RESFIL  LDA RSFSPB                                    03576
25156  0740205          SPB WRITE   2                                 03577
25157  2605014          BRU KINP1+3                                   03578
                                                                      03579
25160  2504022  FILOP   LDO                 SET DISK USE FLAG FOR RUNTIME 03580
25161  0304401          STA DKFLG2                                    03581
25162  0004400          LDA DSKFLG                                    03582
25163  2514001          BMI *+4                                       03583
25164  2605167
25165  2504022          LDO                                           03584
25166  0304400          STA DSKFLG                                    03585
25167  0002063          LDA RDDSPB                                    03586
25170  0740205          SPB WRITE   2                                 03587
25171  0740205          SPB WRITE   2                                 03588
25172  2605011          BRU KINP1                                     03589
25173  0646262  WRTOP   LDX PAVAIL  2                                 03590
25174  0002213          LDA WMASK                                     03591
25175  2340000          ORY 0       2  FUDGE TO FLD FOR BOOLEAN DATA 03592
25176  0002065          LDA WT2SPB      DISK WRITE                    03593
25177  0740205          SPB WRITE   2                                 03594
25200  2605011          BRU KINP1                                     03595
                                                                      03596
25201  2514001  RWFIL   BMI             CHECK FOR WRITE               03597
25202  2605226          BRU KPRNT6+1    FUDGE SOME THINGS             03598
25203  0002064          LDA RDBSPB      READ                          03599
25204  0740205          SPB WRITE   2   WRITE THE NIDE THING          03600
25205  2605003          BRU KINP1+6                                   03601
                                                                      03602
                                CALLIN COMPILES RUN-TIME INPUT CALLS  03603
                                                                      03604
25206  0002055  CALLIN  LDA RDTSPB                                    03605
25207  0740205          SPB WRITE   2                                 03606
25210  0740205          SPB WRITE   2  RESERVE SPACE FOR VARIABLE COUNT 03607
25211  0006262          LDA PAVAIL                                    03608
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25212  0306322          STA TEMP*          SAVE POINTER TO WORD COUNT LOCATION      03609
25213  2605011          BRU KINP1                                                   03610
                                     KPRINT  COMPILES OUTPUT PROCEDURE CALLS       03611
                                                                                   03612
25214  0004372  KPRINT  LDA TST                                                    03613
25215  2001630          EXT 017777                                                 03614
25216  0202256          SUB *STA*                                                  03615
25217  2514002          BZE                                                        03616
25220  0767310          SPB STOTST  3                                              03617
25221  0004355          LDA PRFLAG                                                 03618
25222  2516002          BNZ                                                        03619
25223  2605267          BRU KPRNT5         GENERATE PACKED OUTPUT                  03620
25224  0002071          LDA TABSPB         SPB TO TAB ROUTINE                      03621
25225  0740205  KPRNT6  SPB WRITE   2                                             03622
25226  0640001          LDX XR01    2                                             03623
25227  0044700          LDA NC      2                                             03624
25230  2516001          BPL *+5                                                    03625
25231  2605235
25232  0101635          ADD LBIT                                                   03626
25233  2514001          BMI PRFP                                                   03627
25234  2605273
25235  0742143          SPB LOADUN  2      GENERATE LOAD OF VARIABLE TO PRINT      03628
25236  0004400          LDA DSKFLG         CHECK FOR DISK WRITE                    03629
25237  2514001          BMI WRTOP                                                  03630
25240  2605173
25241  0006321          LDA TYPE                                                   03631
25242  2102176          CAB BBIT                                                   03632
25243  2605271          BRU RIPRT          PRINT A REAL OR INTEGER NUMBER          03633
25244  0002050          LDA BPRSPB         SPB TO BOOLEAN PRINT ROUTINE            03634
25245  0740205  KPRNT1  SPB WRITE   2                                             03635
25246  0000001          LDA XR01                                                   03636
25247  2504112          SBO                                                        03637
25250  0300001          STA XR01           ERASE NAME OF VARIABLE FROM NC          03638
25251  0006317          LDA SYMB                                                   03639
25252  2102270          CAB COMID                                                  03640
25253  2605255          BRU *+2                                                    03641
25254  2605264          BRU KPRNT3         MORE PARAMETERS TO COME                 03642
25255  2102305          CAB RPID                                                   03643
25256  2611355          BRU ER27                                                   03644
25257  2605261          BRU *+2                                                    03645
25260  2611355          BRU ER27                                                   03646
25261  0002072  KPRNT2  LDA CRTSPB                                                 03647
25262  0740205          SPB WRITE   2      STORE CARRIAGE RETURN CALL              03648
25263  2605027          BRU KINP11                                                 03649
25264  2504002  KPRNT3  LDZ                                                        03650
25265  0304355          STA PRFLAG         RESET PRFLAG FOR A TAB                  03651
25266  2600275          BRU INPUT                                                  03652
25267  0002070  KPRNT5  LDA SHOSPB         SPB TO PACKED OUTPUT ROUTINE            03653
25270  2605225          BRU KPRNT6                                                 03654
25271  0002056  RIPRT   LDA PRTSPB                                                 03655
25272  2605245          BRU KPRNT1                                                 03656
25273  2001637  PRFP    EXT AMASK                                                  03657
25274  0300006          STA XR12                                                   03658
25275  0040000          LDA 0       2                                              03659
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25276  2001630          EXT 017777                                          03660
25277  2102217          CAB STTYPE                                          03661
25300  2611327          BRU ER16              NOT STRING TYPE               03662
25301  2605303          BRU *+2                                             03663
25302  2611327          BRU ER16              NOT STRING TYPE               03664
25303  0002255          LDA *SPB2*                                          03665
25304  0100006          ADD XR12                                            03666
25305  2504032          ADD                   FORM ADDRESS OF THUNK LINK    03667
25306  2605245          BRU KPRNT1            WRITE SPB TO OUTPUT STRING    03668
                                                                           03669
                                  BQUOTE COMPILES AN OUTPUT STRING         03670
                                  INTO AN SPB TO THE STRING ROUTINE,       03671
                                  A WORD CONTAINING THE STRING LENGTH,     03672
                                  AND THE STRING END-FILLED WITH SPACES    03673
                                                                           03674
                                                                           03675
25307  0004321  BQUOTE LDA DECLO                                           03676
25310  2516002          BNZ ER43              NESTED IN SOMETHING STRANGE   03677
25311  2611422
25312  0306321          STA TYPE              CLEAR TYPE, WHICH IS A FLAG HERE 03678
25313  0001626          LDA DM2                                             03679
25314  0304321          STA DECLO                                           03680
25315  0024700          LDA SC     1                                        03681
25316  2102275          CAB OUTPID            LEFT-PAREN ID FOR OUTPUT CALL 03682
25317  2605321          BRU *+2                                             03683
25320  2605336          BRU BOUT                                            03684*
25321  2504006          MAQ                   SAVE LEFT PAREN ID WHILE      03685*
25322  0004403          LDA LNKFLG            WE CHECK IF WE ARE            03686*
25323  2516002          BNZ STRACC+1          COMPILING A CHAIN CALL        03687*
25324  2605354
25325  2504001          LAQ                   WE ARE NOT--CONTINUE ON       03688*
25326  2002157          EXT 07700                                           03689
25327  2102277          CAB PROCID            PARAMETER-LIST LEFT-PAREN FOR USER PROCEDURE 03690
25330  2611422          BRU ER43              SPURIOUS QUOTE                03691
25331  2605333          BRU *+2               LET PROCEDURE DO THE TABBING  03692
25332  2611422          BRU ER43              SPURIOUS QUOTE                03693
25333  0002217          LDA STTYPE            STRING TYPE                   03694
25334  0306321          STA TYPE                                            03695
25335  2605346          BRU *+9                                             03696
25336  0004355  BOUT    LDA PRFLAG                                          03697*
25337  2516002          BNZ                                                 03698
25340  2605343          BRU *+3                                             03699
25341  0002071          LDA TABSPB            SPB TO TAB ROUTINE            03700
25342  2605344          BRU *+2                                             03701
25343  0002070          LDA SHOSPB            SPB TO PACKED OUTPUT ROUTINE  03702
25344  0740205          SPB WRITE  2                                        03703
25345  2504002          LDZ                                                 03704
25346  0304355          STA PRFLAG                                          03705
25347  0002073          LDA $TRSPB                                          03706
25350  0740205          SPB WRITE  2          WRITE SPB TO STRING OUTPUT ROUTINE 03707
25351  0002225          LDA *BRPL*+1                                        03708
25352  0740205          SPB WRITE  2          WRITE DUMMY ERROR BRANCH      03709
25353  0606262          LDX PAVAIL 3          SAVE LOCATION OF DUMMY BRANCH 03710
25354  0601610          LDX ZERO   0          WORD COUNTER                  03711
```

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25355  0641610  STRACC LDX ZERO    2        CHARACTER COUNTER                03712
25356  1746000         STX JUNK    2        CHARACTER ACCUMULATOR            03713
25357  2506053         SXG 2                                                2*03714
25360  0765513         SPB STR2    3                                        03715
25361  2102142         CAB 034              IS IT A QUOTE                   03716
25362  2605364         BRU *+2                                              03717
25363  2605402         BRU ENDSTR           YES     END OF STRING            03718
         25364  LNKRET BSS 0                                                03719
25364  0106000         ADD JUNK                                             03720
25365  0306000         STA JUNK                                             03721
25366  2506033         SXG 1                                                1*03722
25367  1440001         INX 1       2        CHARACHTER COUNTER               03723
25370  0557775         BXH 3       2                                        03724
25371  2605376         BRU GOTWRD           WORD IS FULL                    03725
25372  0006000         LDA JUNK                                             03726
25373  2512006         SLA 6                                                03727
25374  0306000         STA JUNK                                             03728
25375  2605512         BRU STR1                                             03729
25376  0006000  GOTWRD LDA JUNK                                             03730
25377  0740205         SPB WRITE   2        WRITE ACCUMULATED WORD          03731
25400  1440001         INX 1       0        INCREMENT WORD COUNTER          03732
25401  2605355         BRU STRACC                                           03733
25402  2506033  ENDSTR SXG 1                                                1*03734
25403  0457777         BXL 1       2        NO CHARACTERS IN CURRENT WORD   03735
25404  2605472         BRU EMPTST                                           03736
25405  0006000         LDA JUNK             FILL WORD WITH SPACES           03737
25406  0101003  SPFILL ADD 060              FILL OUT STRINGS                03738*
25407  1440001         INX 1       2                                        03739
25410  0557775         BXH 3       2                                        03740
25411  2605414         BRU FULL                                             03741
25412  2512006         SLA 6                                                03742
25413  2605406         BRU SPFILL                                           03743
25414  0740205  FULL   SPB WRITE   2        WRITE LAST WORD                 03744
25415  1400001         INX 1       0        INCREASE WORD COUNT             03745
25416  0004403         LDA LNKFLG                                           03746
25417  2516002         BNZ                                                  03747
25420  2605547         BRU KLINK2                                           03748
25421  0000004         LDA XR10             LOAD WORD COUNT                 03749
25422  0360000         STA 0       3        OVER-WRITE DUMMY BRANCH         03750
25423  2506053         SXG 2                                                2*03751
25424  0765513         SPB STR2    3                                        03752
25425  2102145         CAB 073              COMMA                           03753
25426  2605506         BRU STRBL                                            03754
25427  2605452         BRU STRCOM           YES                             03755
25430  2101625         CAB 074              RIGHT PAREN                     03756
25431  2611422         BRU ER43                                             03757
25432  2605434         BRU *+2              YES                             03758
25433  2611422         BRU ER43                                             03759
25434  0662037         LDX MODUN   3        SET INPUT MODE TO UNDEFINED     03760
25435  2504002         LDZ                                                  03761
25436  0304321         STA DECLO            RESET STRING POINTER            03762
25437  0006321         LDA TYPE                                             03763
25440  2102217         CAB STTYPE                                           03764
25441  2605443         BRU *+2                                              03765
```

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25442  2605450          BRU *+6                                          03766
25443  2506033          SXG 1                                          1*03767
25444  0004355          LDA PRFLAG                                       03768
25445  2516002          BNZ KINP11                                       03769
25446  2605027
25447  2605261          BRU KPRNT2                                       03770
25450  0002305          LDA RPID                                         03771
25451  2605463          BRU STPARM                                       03772
                                  STRING FOLLOWED BY COMMA              03773
25452  2504002  STRCOM  LDZ                                              03774
25453  0304321          STA DECLO                                        03775
25454  0662037          LDX MODUN   3                                    03776
25455  0006321          LDA TYPE                                         03777
25456  2102217          CAB STTYPE                                       03778
25457  2600275          BRU INPUT                                        03779
25460  2605462          BRU *+2                                          03780
25461  2600275          BRU INPUT                                        03781
25462  0002270          LDA COMID                                        03782
25463  0306317  STPARM  STA SYMB                                         03783
25464  2506033          SXG 1                                          1*03784
25465  0024701          LDA SC+1    1                                    03785
25466  0300003          STA XR03                                         03786
25467  2506013          SXG 0                                          0*03787
25470  1420001          INX 1       1        AVOID CONFUSING PCALL1      03788
25471  2606613          BRU PCALL1                                       03789
25472  0517777  EMPTST  BXH 1       0                                    03790
25473  2605416          BRU FULL+2                                       03791
25474  0024700          LDA SC      1        CHECK FOR NON-PRINT PROCEDURE 03792
25475  2102277          CAB PROCID                                       03793
25476  2605500          BRU *+2                                          03794
25477  2611422          BRU ER43                 WAS-*WHAT ELSE SHOULD I DO 03795
25500  2504022          LDO                                              03796
25501  0304355          STA PRFLAG               SET FLAG TO SUPPRESS TAB 03797
25502  0006262          LDA PAVAIL                                       03798
25503  0201623          SUB THREE                                        03799
25504  0306262          STA PAVAIL               ERASE JUNK GENERATED BY 0 LENGTH STRING 03800
25505  2605416          BRU FULL+2                                       03801
25506  2101603  STRBL   CAB 060                                         03802
25507  2611422          BRU ER43                                         03803
25510  2605513          BRU STR2                                         03804
25511  2611422          BRU ER43                                         03805
                                  STR1 IMITATES CHAR TO READ IN A CHARACTER 03806
                                       AS PART OF A STRING              03807
25512  2506053  STR1    SXG 2                                          2*03808
25513  0557776  STR2    BXH 2       2        ENTER HERE                  03809
25514  2605533          BRU STR5                 FIRST CHARACTER OF WORD  03810
25515  0046310          LDA CH2     2                                    03811
25516  1440001          INX 1       2                                    03812
25517  2001642  STR3    EXT CHMASK                                       03813
25520  2102143          CAB 037                                          03814
25521  2660001          BRU 1       3                                    03815
25522  2605527          BRU STR4                 CHARACTER = OR          03816
25523  2102146          CAB 077                                          03817
25524  2660001          BRU 1       3                                    03818
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25525  2605513          BRU STR2                    IGNORE FILL CHARACTER          03819
25526  2660001          BRU 1       3                                              03820
25527  1764337  STR4    STX GO1     3                                              03821
25530  0760325          SPB EDIT    3                                              03822
25531  0664337          LDX GO1     3                                              03823
25532  2605513          BRU STR2                                                   03824
25533  1420001  STR5    INX 1       1                                              03825
25534  0020000          LDA 0       1                                              03826
25535  0306311          STA CH3                                                    03827
25536  2510006          SRA 6                                                      03828
25537  0306310          STA CH2                                                    03829
25540  2510006          SRA 6                                                      03830
25541  0641610          LDX ZERO    2                                              03831
25542  2605517          BRU STR3                                                   03832
                                                                                   03833
                                    COMPILES LINKS                                 03834
                                                                                   03835
25543  0304403  KLINK   STA LNKFLG                                                03836
25544  0002076          LDA LNKSPB                                                 03837
25545  0740205          SPB WRITE   2                                              03838
25546  2605564          BRU KLINK1                  GO LOOK FOR QUOTE TO START NAME 03839*
25547  2504002  KLINK2  LDZ                                                        03840
25550  0304403          STA LNKFLG                                                 03841
25551  2506053          SXG 2                                                      03842*
25552  0765513          SPB STR2    3               A RIGHT PAREN MUST             03843*
25553  2101625          CAB 074                     FOLLOW THE NAME                03844*
25554  2611355          BRUER27                                                    03845*
25555  2605557          BRU *+2                                                    03846*
25556  2611355          BRU ER27                                                   03847*
25557  2506033          SXG 1                       PUT IN A WORD OF FILLS         03848*
25560  0001657          LDA FILLS                   TO TURN OFF THE R/T SCAN       03849*
25561  0740205          SPB WRITE   2                                              03850*
25562  2504002          LDZ                         RESET DECLARATION FLAG         03851*
25563  0304321          STA DECLO                                                  03852*
25564  2506053  KLINK1  SXG 2                                                      03853*
25565  0662037          LDX MODUN   3                                              03854
25566  2600275          BRU INPUT                                                  03855
                                                                                   03856
                                    KFCT   COMPILES CALLS OF THE STANDARD          03857
                                    PROCEDURES                                     03858
                                                                                   03859
25567  0742143  KFCT    SPB LOADUN  2               LOAD ARGUMENT OF PROCEDURE     03860
25570  2506033          SXG 1                                                      1*03861
25571  0024701          LDA SC+1    1               HOPEFULLY NAME OF PROCEDURE    03862
25572  2001630          EXT 017777                                                 03863
25573  2102242          CAB FTYPE                                                  03864
25574  2611361          BRU ER29                                                   03865
25575  2605577          BRU *+2                     IT WAS                         03866
25576  2611361          BRU ER29                                                   03867
25577  0024701          LDA SC+1    1                                              03868
25600  2001637          EXT AMASK                                                  03869
25601  0304364          STA TEMP                                                   03870
25602  0102254          ADD *SPB1*                                                 03871
25603  0740205          SPB WRITE   2               STORE SPB TO PROCEDURE         03872
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25604  0004364        LDA TEMP                                                03873
25605  2102312        CAB ABSID          CHECK FOR TYPE OF RESULT - PROCEDURES SIGN  03874
25606  2605626        BRU FCT1             AND ENTIER MUST OCCUR PHYSICALLY FIRST    03875
25607  2605612        BRU FCT2              IN MACHINE, THEN ABS,                    03876
25610  0001636        LDA RBIT           OTHER PROCEDURES HAVE TYPE REAL             03877
25611  0306321  FCT1  STA TYPE           SET TYPE OF RESULT                          03878
25612  0006317  FCT2  LDA SYMB                                                     03879
25613  2102305        CAB RPID                                                     03880
25614  2611355        BRU ER27                                                     03881
25615  2605617        BRU *+2                                                      03882
25616  2611355        BRU ER27                                                     03883
25617  2504102        LMO                                                          03884
25620  0306320        STA PREV           SET PREV TO INDICATE A VARIABLE           03885
25621  0002043        LDA RETINP                                                   03886
25622  0300004        STA RETURN         SET RETURN TO GO TO INPUT                 03887
25623  1420002        INX 2       1      ERASE PROCEDURE INFO FROM SC              03888
25624  2506013        SXG 0                                                    0*03889
25625  2602156        BRU TIEUP          GENERATE TEMPORARY VARIABLE FOR RESULT    03890
25626  2504002  FCT1  LDZ                INTEGER TYPE FOR SIGN AND ENTIER          03891
25627  2605611        BRU FCT1                                                     03892
                                                                             NAM03893
                                                                             EJT03894
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                                        SPEC MAKES SURE THAT THE VARIABLE BEING          03895
                                    SPECIFIED IS A FORMAL PARAMETER AND SETS UP          03896
                                    THE NECESSARY INDEX REGISTERS,                       03897
                                        XR43  ITABLE LOCATION                            03898
                                        XR42  THUNK LINK                                 03899
                                        TEMP  ITABLE LOCATION + F.P. TYPE                03900
                                    A COUNT OF FORMAL PARAMETERS IS KEPT IN NOEL,        03901
                                    IT IS REDUCED BY ONE FOR EACH ONE THAT IS            03902
                                    SPECIFIED.  WHEN IT GOES TO ZERO, WHAMI IS           03903
                                    SET TO BODY, THUS REQUIRING THAT EVERY FORMAL        03904
                                    PARAMETER BE SPECIFIED                               03905
                                    CALLED BY SPECV, SPECS, SPECP, SPECA, SPECD          03906
                                                                                         03907
25630  2506113  SPEC   SXG 4                                                            4*03908
25631  0620001         LDX XR01    1                                                    03909
25632  0024700         LDA NC      1       VARAIBLE BEING SPECIFIED                     03910
25633  0304364         STA TEMP                                                         03911
25634  2001630         EXT 017777          TRIM TO TYPE                                 03912
25635  2002161         EXT GR1             TRIM OFF VALUE BIT                           03913
25636  2101645         CAB SIGN                                                         03914
25637  2611303         BRU ER6             VARIABLE NOT FORM, PARAM, (OR DOUBLE SPEC)   03915
25640  2605642         BRU *+2                                                          03916
25641  2611303         BRU ER6             VARIABLE NOT FORM, PARAM, (OR DOUBLE SPEC)   03917
25642  0024700         LDA NC      1                                                    03918
25643  2001637         EXT AMASK                                                        03919
25644  0300022         STA XR42            = LOC. OF THUNK LINK FOR VARIABLE            03920
25645  0040000         LDA 0       2                                                    03921
25646  2001637         EXT AMASK                                                        03922
25647  0300023         STA XR43            = LOC. OF ITABLE ENTRY FOR VARIABLE          03923
25650  0620007         LDX XR13    1                                                    03924
25651  0002161         LDA GR1                                                          03925
25652  2004364         EXT TEMP                                                         03926
25653  2514002         BZE                                                              03927
25654  2620001         BRU 1       1       CALL BY VALUE                                03928
25655  2620002         BRU 2       1       CALL BY NAME                                 03929
                                                                                         03930
                                                                                        EJT03931
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                                        SPECIFICATIONS OF REAL AND INTEGER VARIABLES      03932
                                        ARE TREATED IDENTICALLY--THEY BOTH CAUSE THE      03933
                                        PARAMETER TO BE TREATED AS BEING OF TYPE REAL     03934
                                        HOWEVER, AN ADDITIONAL THUNK LINK (TO A           03935
                                        *TRANSFER ROUTINE* THUNK COMPILED IN THE          03936
                                        ACTUAL PARAMETER LIST) IS PROVIDED SO THAT        03937
                                        AN APPEARANCE ON THE LEFT OF A COLON-EQUALS       03938
                                        CAUSES THIS TRANSFER ROUTINE TO BE EXECUTED,      03939
                                        IF THE ACTUAL PARAMETER IS AN EXPRESSION OR       03940
                                        A CONSTANT, THE TRANSFER ROUTINE ENTERS AN        03941
                                        ERROR MESSAGE ROUTINE,  IF THE ACUTAL             03942
                                        PARAMETER IS A VARIABLE OF TYPE INTEGER, ITS      03943
                                        TRANSFER ROUTINE CAUSES THE CONTENTS OF THE       03944
                                        AX TO BE ROUNDED,  THE INVOCATION ROU-            03945
                                        TINES ARE SET UP AT NCP4 AND COMPILED AT          03946
                                        ASSIGN.                                           03947
                                                                                          03948
25656  0765630  SPECV  SPB SPEC    3          SET UP SPECIFICATION OF VARIABLE          03949
25657  2605716         BRU VSPEC              CALLED BY VALUE                           03950
25660  0004311         LDA ATYPE              TYPE OF VARIABLE                          03951
25661  2002202         EXT BMASK                                                        03952
25662  2514002         BZE                    FORM CORRECT TYPE                         03953
25663  0001636         LDA RBIT                                                         03954
25664  0106262         ADD PAVAIL                                                       03955
25665  2504032         ADO                    CONSTRUCT ADDRESS OF TRANSFER THUNK + 1   03956
25666  0304311         STA ATYPE              IGNORE SPECIFIED TYPE.                    03957
25667  0006262         LDA PAVAIL                                                       03958
25670  0101623         ADD THREE                                                        03959
25671  0102231         ADD *BRU*                                                        03960
25672  1740021         STX XR41    2                                                    03961
25673  0740205         SPB WRITE   2          WRITE BRU AROUND TRANSFER FUNCTION        03962
25674  0740205         SPB WRITE   2          WRITE THUNK LINK                          03963
25675  0640021         LDX XR41    2                                                    03964
25676  0001632  SPEC1  LDA ABIT                                                         03965
25677  2365001         ORY ITABLE+13          ADD SPECIFIED BIT TO F,P,-ID IN ITABLE    03966
25700  0004311  SPEC2  LDA ATYPE                                                       03967
25701  2504032         ADO                    MAKE SURE THAT TYPE WORD IS NOT ZERO      03968
25702  0340000         STA 0       2          SET TYPE OF VARIABLE IN THUNK             03969
25703  0004345         LDA NOEL                                                         03970
25704  2504112         SBO                                                              03971
25705  0304345         STA NOEL               NUMBER OF UNSPECIFIED OBJECTS             03972
25706  0746113         SPB SPCSYM  2          CHECK FOR END OF SPECIFICATION            03973
25707  0004345         LDA NOEL                                                         03974
25710  2516002         BNZ                                                              03975
25711  2600275         BRU INPUT              MORE SPECIFICATIONS TO COME               03976
25712  0304324         STA DSTAT              DECLARATIONS NOW ILLEGAL                  03977
25713  0001634         LDA XTAG                                                         03978
25714  0304373         STA WHAMI              SET WHAMI TO BODY                         03979
25715  2600275         BRU INPUT                                                        03980
                                                                                       03981
                                        VARIABLE CALLED BY VALUE.                      03982
                                                                                       03983
25716  2504002  VSPEC  LDZ                                                            03984
25717  2704311         STO ATYPE                                                        03985
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25720  0006263          LDA VAVAIL                                          03986
25721  0201616          SUB TWO                                             03987
25722  0306263          STA VAVAIL          CREATE LOCAL VARIABLE FOR CALL BY VALUE  03988
25723  2104353          CAB PLF                                             03989
25724  0304353          STA PLF             PLF = MINIMUM OF PLF, VAVAIL    03990
25725  2605726          BRU *+1                                             03991
25726  0000022          LDA XR42                                            03992
25727  2504032          ADD                                                 03993
25730  0102255          ADD *SPB2*                                          03994
25731  0740205          SPB WRITE   2       STORE SPB TO THUNK              03995
25732  0004311          LDA ATYPE                                           03996
25733  2002211          EXT TMASK                                           03997
25734  2516002          BNZ                                                 03998
25735  2605746          BRU RBOOL           SPECIFIED TYPE NOT INTEGER      03999
25736  0001636          LDA RBIT                                            04000
25737  0304311          STA ATYPE                                           04001
25740  0002243          LDA *FLD1*          TRANSFER AND ROUND AN INTEGER   04002
25741  0740205          SPB WRITE   2                                       04003
25742  0002057          LDA RNDSPB                                          04004
25743  0740205          SPB WRITE   2                                       04005
25744  0002245          LDA *FST*                                           04006
25745  2605751          BRU RBOOL+3                                         04007
25746  0002237  RBOOL   LDA *DLD1*                                         04008
25747  0740205          SPB WRITE   2       STORE DLD OF VALUE              04009
25750  0002240          LDA *DST*                                           04010
25751  0106263          ADD VAVAIL                                          04011
25752  0740205          SPB WRITE   2       STORE DST OR FST OF VALUE       04012
25753  0644364          LDX TEMP    2       RESTORE INDEX                   04013
25754  0006263          LDA VAVAIL                                          04014
25755  0104311          ADD ATYPE                                           04015
25756  0365001          STA ITABLE+13       DECLARE LOCAL VARIABLE IN ITABLE  04016
25757  0004311          LDA ATYPE                                           04017
25760  2605702          BRU SPEC2+2                                         04018
                                                                            04019
25761  0001635  DLABEL LDA LBIT            SPECIFY A LABEL                 04020
25762  0101634          ADD CBIT                                            04021
25763  0304311          STA ATYPE                                           04022
25764  0765630  SPECS   SPB SPEC    3       SPECIFY A SWITCH                04023
25765  2611430          BRU ER52            ILLEGAL CALL BY VALUE           04024
25766  0000022  SPEC3   LDA XR42            LOC. OF THUNK LINK              04025
25767  2504032          ADD                                                 04026
25770  0104311          ADD ATYPE                                           04027
25771  0365001          STA ITABLE+13       DECLARE IDENTIFIER AS IF ITS ACTUAL  04028
25772  2605700          BRU SPEC2                 OCCURRENCE WERE AT THUNK LINK  04029
                                                                            04030
                                    SPECIFY A PROCEDURE                     04031
                                    CALLED BY DPROC                         04032
                                                                            04033
25773  0765630  SPECP   SPB SPEC    3       SET UP SPECIFICATION OF A PROCEDURE  04034
25774  2605776          BRU *+2                                             04035
25775  2605766          BRU SPEC3           NOT CALLED BY VALUE             04036
25776  0004311          LDA ATYPE                                           04037
25777  2001640          EXT ACMASK          TRIM TO HIGH ORDER BITS         04038
26000  2102246          CAB *FSU*           TYPE FOR FUNCTION               04039
```

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26001 2611430          BRU ER52              ILLEGAL CALL BY VALUE                    04040
26002 2606004          BRU *+2                                                        04041
26003 2611430          BRU ER52                                                       04042
26004 0006263          LDA VAVAIL            CREATE LOCAL VARIABLE FOR VALUE          04043
26005 0201616          SUB TWO                                                        04044
26006 0306263          STA VAVAIL                                                     04045
26007 2104353          CAB PLF                                                        04046
26010 0304353          STA PLF                                                        04047
26011 2606012          BRU *+1                                                        04048
26012 0104311          ADD ATYPE                                                      04049
26013 2002246          EXT *FSU*             TRIM TYPE TO REAL, INTGR, OR BOOL        04050
26014 0305001          STA ITABLE+13         DECLARE INTERNAL VARIABLE                04051
26015 1744364          STX TEMP    2                                                  04052
26016 0000006          LDA XR12              = LOC. OF THUNK LINK                     04053
26017 2504032          ADD                                                            04054
26020 0102255          ADD *SPB2*                                                     04055
26021 0740205          SPB WRITE   2         STORE SPB TO THUNK LINK                  04056
26022 2504002          LDZ                                                            04057
26023 0740205          SPB WRITE   2         STORE MARKER FOR END OF PARAMETER LIST   04058
26024 0002176          LDA BBIT                                                       04059
26025 2004311          EXT ATYPE                                                      04060
26026 2516002          BNZ                                                            04061
26027 0002213          LDA *FLD*             REAL OR INTEGER PROCEDURE                04062
26030 0102256          ADD *STA*                                                      04063
26031 0106263          ADD VAVAIL                                                     04064
26032 0740205          SPB WRITE   2         GENERATE STORE OF VALUE OF PROCEDURE     04065
26033 0644364 SPEC4    LDX TEMP    2                                                  04066
26034 2605700          BRU SPEC2                                                      04067
                                                                                      04068
                                     ARRAY SPECIFICATION  CALLED BY KARRAY            04069
                                       INDEC WAS CALLED AT KARRAY,  THE FIRST TWO     04070
                                     WORDS OF THE DOPE-VECTOR ARE WRITTEN AND         04071
                                     SPACE FOR 5 SUBSCRIPTS IS RESERVED, SUBSCRIPT    04072
                                     COUNT IS SET TO -1 AS A FLAG TO THE ROUTINES     04073
                                     WHICH COMPILE ARRAY CALLS,  THE ADDRESS IN       04074
                                     THE THUNK LINK POINTS TO THE DOPE VECTOR,        04075
                                                                                      04076
                                                                                      04077
26035 0765630 SPECA    SPB SPEC    3         SET UP SPECIFICATION OF ARRAY            04078
26036 2611430          BRU ER52              **** ARRAY CALLED BY VALUE               04079
26037 1744364          STX TEMP    2         SAVE THUNK POINTER                       04080
26040 2504102          LMO                                                            04081
26041 0740205          SPB WRITE   2         NUMBER OF SUBSRIPTS = -1                 04082
26042 0006262          LDA PAVAIL                                                     04083
26043 0644364          LDX TEMP    2                                                  04084
26044 2740001          STO 1       2         STORE FORMAL ARRAY LO                    04085
26045 0104311          ADD ATYPE                                                      04086
26046 0305001          STA ITABLE+13         DECLARE IDENTIFIER AS AN ARRAY           04087
26047 2504002          LDZ                                                            04088
26050 0740205          SPB WRITE   2         ARRAY LO = 0                             04089
26051 0006262          LDA PAVAIL                                                     04090
26052 0102105          ADD D20                                                        04091
26053 0306262          STA PAVAIL            RESERVE ROOM FOR FIVE SUBSCRIPTS         04092
26054 2104353          CAB PLF                                                        04093
```

```
26055  2606060          BRU *+3                                                  04094
26056  2606057          BRU *+1                                                  04095
26057  0740226          SPB ADJUST  2                                            04096
26060  0006317          LDA SYMB                                                 04097
26061  2102306          CAB SCID                                                 04098
26062  2606033          BRU SPEC4          END OF ARRAY SPECIFICATION            04099
26063  2606065          BRU *+2                                                  04100
26064  2606033          BRU SPEC4          END OF ARRAY SPECIFICATION            04101
26065  0006262          LDA PAVAIL         END OF SPECIFICATION                  04102
26066  0644321          LDX DECLO   2                                            04103
26067  2504032          ADO                                                      04104
26070  2740000          STO 0       2      FILL BRU AROUND SUBSCRIPT INFO        04105
26071  2504002          LDZ                                                      04106
26072  0304321          STA DECLO                                                04107
26073  0644364          LDX TEMP    2      RESTORE INDEX                         04108
26074  2605700          BRU SPEC2                                                04109
                                                                                 04110
26075  0765630  SPECD    SPB SPEC    3      SET UP SPECIFICATION OF DATA NAME     04111
26076  2611430          BRU ER52           ILLEGAL CALL BY VALUE                 04112
26077  2605676          BRU SPEC1                                                04113
                                                                                 04114
26100  0640021  VALUE    LDX XR41    2      POINTS TO ITABLE                      04115
26101  0045001          LDA ITABLE+12                                            04116
26102  2001630          EXT 017777         TRIM TO TYPE                          04117
26103  2101645          CAB SIGN                                                 04118
26104  2611430          BRU ER52           NOT A FORMAL PARAMETER                04119
26105  2606107          BRU *+2                                                  04120
26106  2611430          BRU ER52                                                 04121
26107  0002161          LDA GR1                                                  04122
26110  2345001          ORY ITABLE+12      SET VALUE BIT                         04123
26111  0746113          SPB SPCSYM  2                                            04124
26112  2600275          BRU INPUT                                                04125
                                                                                 04126
26113  0000001  SPCSYM   LDA XR01                                               04127
26114  2504112          SBO                                                      04128
26115  0300001          STA XR01                                                 04129
26116  0006317          LDA SYMB                                                 04130
26117  2102270          CAB COMID                                                04131
26120  2606122          BRU *+2                                                  04132
26121  2600275          BRU INPUT                                                04133
26122  2102306          CAB SCID                                                 04134
26123  2611371          BRU ER33           ILLEGAL DECLARATION                   04135
26124  2606126          BRU *+2                                                  04136
26125  2611371          BRU ER33           ILLEGAL DECLARATION                   04137
26126  0000005          LDA XR11                                                 04138
26127  2504032          ADO                                                      04139
26130  0300005          STA XR11                                                 04140
26131  2640001          BRU 1       2                                            04141
                                                                                 NAM04142
                                                                                 EJT04143
```

```
                                    NCPSTO IS CALLED BY NCSTO WHEN THE ENTRY                04144
                                      IN THE ITABLE IS NEGATIVE (PROCEDURE OR               04145
                                      FORMAL PARAMETER),                                    04146
                                                                                            04147
                                    BIT 1 ON              PROCEDURE                         04148
                                      BIT 2 ON              LIBRARY PROCEDURE               04149
                                        BIT 3 ON              FUNCTION-TYPE                 04150
                                          BITS 4-5              TYPE (R-I-B)                04151
                                        BIT 3 OFF             I/O PROCEDURE                 04152
                                          BIT 4 ON              INPUT                       04153
                                          BIT 4 OFF             OUTPUT                      04154
                                      BIT 2 OFF             USER-DECLARED                   04155
                                        BIT 3 ON              FUNCTION-TYPE                 04156
                                          BITS 4-5              TYPE (R-I-B)                04157
                                        BIT 3 OFF             NON-FUNCTION                  04158
                                    BIT 1 OFF             FORMAL PARAMETER                  04159
                                      BIT 2 ON              SPECIFIED                       04160
                                      BIT 3 ON              CALL BY VALUE                   04161
                                                                                            04162
26132  0644373  NCPSTO LDX WHAMI   2                                                       04163
26133  2646134         BRU **+1    2                                                       04164
26134  2606140         BRU **+4                  BODY                                      04165
26135  2601157         BRU NCSTO1                DECLARATION - STORE IN NC                 04166
26136  2601157         BRU NCSTO1                SPECIFICATION - STORE IN NC               04167
26137  2601157         BRU NCSTO1                F.P. LIST - STORE IN NC                   04168
                                    IDENTIFIER IS A FORMAL PARAMETER OR THE NAME            04169
                                    OF A PROCEDURE                                          04170
26140  2504002         LDZ                                                                 04171
26141  0304324         STA DSTAT                 DECLARATIONS NOW ILLEGAL                  04172
26142  0004364         LDA TEMP                                                            04173
26143  0101635         ADD LBIT                                                            04174
26144  2514001         BMI                                                                 04175
26145  2606346         BRU NCP4                  IDENTIFIER A FORMAL PARAMETER             04176
26146  0006317         LDA SYMB                                                            04177
26147  2001645         EXT SIGN                                                            04178
26150  2102270         CAB COMID                                                           04179
26151  2606153         BRU **+2                                                            04180
26152  2606213         BRU NCP1                  VARIABLE IN PROCEDURE CALL - STORE IN NC  04181
26153  2102305         CAB RPID                                                            04182
26154  2606156         BRU **+2                                                            04183
26155  2606213         BRU NCP1                  DITTO                                     04184
26156  0201632         SUB GR2                                                             04185
26157  2102276         CAB PARID                                                           04186
26160  2606162         BRU **+2                                                            04187
26161  2606224         BRU NCP2                  PROCEDURE HAS PARAMETERS                  04188
26162  0004364         LDA TEMP                                                            04189
26163  0101632         ADD ABIT                                                            04190
26164  2516001         BPL                                                                 04191
26165  2611361         BRU ER29                  LIBRARY ROUTINE WITHOUT PARAMETERS        04192
26166  0002161         LDA GR1                   HERE FOR NO ARGUMENT PROCEDURE            04193
26167  2004364         EXT TEMP                                                            04194
26170  2516002         BNZ                                                                 04195
26171  2606215         BRU NCP6                  NOT A FUNCTION-TYPE PROCEDURE             04196
26172  0006320         LDA PREV                  START CHECK FOR NON-FUNCTION CALL OF FUNCTION04197
```

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26173  2002200          EXT CTAG              =TYPE PROCEDURE                    04198
26174  0743437          SPB BFOR+16 2                                            04199
26175  2606177          BRU *+2                                                  04200
26176  2606213          BRU NCP1              SHOULD BE FUNCTION-TYPE CALL       04201
26177  0006317          LDA SYMB                                                 04202
26200  2001645          EXT SIGN                                                 04203
26201  2102306          CAB SCID                                                 04204
26202  2606204          BRU *+2                                                  04205
26203  2606215          BRU NCP6                                                 04206
26204  2102604          CAB ENDID                                                04207
26205  2606207          BRU *+2                                                  04208
26206  2606215          BRU NCP6                                                 04209
26207  2102602          CAB ELSEID                                               04210
26210  2611361          BRU ER29              ERROR IN PROCEDURE CALL            04211
26211  2606215          BRU NCP6                                                 04212
26212  2611361          BRU ER29              ERROR IN PROCEDURE CALL            04213
26213  0004364  NCP1    LDA TEMP              NO ARG, FCT., ACUAL PARAMETER, OR IDENTIFIER 04214
26214  2601157          BRU NCSTO1                                               04215
                                                                                 04216
26215  0004364  NCP6    LDA TEMP              HERE FOR NO-ARGUMENT NON-FUNCTION  04217
26216  2001637          EXT AMASK                                                04218
26217  0102255          ADD *SPB2*                                               04219
26220  0740205          SPB WRITE   2         STORE SPB TO PROCEDURE             04220
26221  2504002          LDZ                                                      04221
26222  0740205          SPB WRITE   2         MARKER FOR NO PARAMETERS           04222
26223  2601171          BRU VCHECK                                               04223
                                                                                 04224
                                  INITIATE A PROCEDURE CALL , , ,                04225
                                      SC    PROCEDURE-ID [WITH TYPE]             04226
                                      SC+1  LOCATION OF THUNK                    04227
                                  GENERATES                                      04228
                                          SPB ,,,     2                          04229
                                    [SC+1] DEC 0                                 04230
                                          DEC 0                                  04231
                                          STX *-1     2                          04232
                                                                                 04233
                                  THE ACTUAL THUNK IS COMPILED AT KPARAM         04234
26224  0002037  NCP2    LDA MODUN                                                04235
26225  0300013          STA XR23              SET INPUT MODE TO UNDEFINED        04236
26226  0006320          LDA PREV                                                 04237
26227  0304354          STA PREV2                                                04238
26230  2514001          BMI                                                      04239
26231  2611301          BRU ER5               ADJACENT EXPRESSIONS               04240
26232  0006317          LDA SYMB                                                 04241
26233  2101734          CAB PAREN                                                04242
26234  2611317          BRU ER12              ILLEGAL SYMBOL SEQUENCE            04243
26235  2606237          BRU *+2                                                  04244
26236  2611317          BRU ER12              ILLEGAL SYMBOL SEQUENCE            04245
26237  2504040          CHS                                                      04246
26240  0306320          STA PREV                                                 04247
26241  0004364          LDA TEMP                                                 04248
26242  0101632          ADD ABIT                                                 04249
26243  2516001          BPL                                                      04250
26244  2606275          BRU NCP3              LIBRARY PROCEDURE                  04251
```

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26245  0101632          ADD ABIT                                                  04252
26246  2001630          EXT 017777                                                04253
26247  2510010          SRA 8                                                     04254
26250  0102277          ADD PROCID                                                04255
26251  0306317          STA SYMB          PROCEDURE PARENTHESIS WITH TYPE         04256
26252  2506033          SXG 1                                                  1*04257
26253  0000005          LDA XR11          MAKE SPACE IN SC FOR THUNK LOCATION     04258
26254  2504112          SBO                                                       04259
26255  0300005          STA XR11                                                  04260
26256  0767310          SPB STOTST  3                                             04261
26257  0006262          LDA PAVAIL                                                04262
26260  0101616          ADD TWO                                                   04263
26261  0324700          STA SC      1     SAVE LOCATION OF FIRST THUNK            04264
26262  0004364          LDA TEMP                                                  04265
26263  2001637          EXT AMASK                                                 04266
26264  0102255          ADD *SPB2*                                                04267
26265  0740205          SPB WRITE   2     STORE SPB TO PROCEDURE                  04268
26266  2504002          LDZ                                                       04269
26267  0740205          SPB WRITE   2     SAVE LOCATION FOR THUNK TYPE            04270
26270  0740205          SPB WRITE   2     SAVE LOCATION FOR THUNK STORAGE         04271
26271  0006262          LDA PAVAIL                                                04272
26272  0101650          ADD *STX2*                                                04273
26273  0740205          SPB WRITE   2     STORE INDEX SAVE INSTRUCTION IN THUNK   04274
26274  2601633          BRU SETGR4                                                04275
                                                                                  04276
                                  LIBRARY PROCEDURE CALL                          04277
                                                                                  04278
26275  0202161  NCP3    SUB GR1                                                   04279
26276  2514001          BMI                                                       04280
26277  2606311          BRU BIOPRO        INPUT-OUTPUT PROCEDURE                  04281
26300  0002272          LDA FCTID                                                 04282
26301  0306317          STA SYMB          ID FOR LIBRABY FUNCTION LEFT PAREN      04283
26302  2506033          SXG 1                                                  1*04284
26303  0000005          LDA XR11                                                  04285
26304  2504112          SBO                                                       04286
26305  0300005          STA XR11                                                  04287
26306  0004364          LDA TEMP                                                  04288
26307  0324700          STA SC      1     STORE NAME OF STANDARD PROCEDURE IN SC  04289
26310  2601622          BRU STOSC                                                 04290
                                                                                  04291
26311  0102176  BIOPRO  ADD BBIT                                                  04292
26312  2514001          BMI                                                       04293
26313  2606331          BRU BOPRO         OUTPUT PROCEDURE                        04294
26314  2506033          SXG 1                                                  1*04295
26315  0300006          STA XR12                                                  04296
26316  2646317          BRU *+1     2                                             04297
26317  2606323          BRU *+4           READATA                                 04298
26320  2606336          BRU RSTR                                                  04299
26321  2606343          BRU WRTFIL                                                04300
26322  2605543          BRU KLINK         CHAIN                                   04301
26323  2504002          LDZ                                                       04302
26324  0304345          STA NOEL          NUMBER OF PARAMETERS READ = 0           04303
26325  0002274          LDA INPID         1000040                                 04304
26326  0306317          STA SYMB          INPUT PROCEDURE ID                      04305
```

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26327  2506033  BIO1   SXG 1                                          1*04306
26330  2601622         BRU STOSC                                        04307
                                                                        04308
26331  0002275  BOPRO  LDA OUTPID          OUTPUT PROCEDURE ID         04309
26332  0306317         STA SYMB                                        04310
26333  2504002         LDZ                                             04311
26334  0304355         STA PRFLAG          INITIALIZE TAB SUPRESSION FLAG 04312
26335  2606327         BRU BIO1                                        04313
                                                                        04314
26336  0002274  RSTR   LDA INPID                                       04315
26337  0306317         STA SYMB                                        04316
26340  2504102         LMO                                             04317
26341  0304345         STA NOEL                                        04318
26342  2606327         BRU BIO1                                        04319
                                                                        04320
26343  2504102  WRTFIL LMO                 FLAG FOR DISK WRITE         04321
26344  0304400         STA DSKFLG                                      04322
26345  2606323         BRU BIO1+4                                      04323
                                  FORMAL PARAM                          04324
                                                                        04325
26346  2001637  NCP4   EXT AMASK                                       04326
26347  0300022         STA XR42            SET INDEX TO POINT TO THUNK LINK 04327
26350  0040000         LDA 0       2       FROM THUNK LINK             04328
26351  2001630         EXT 017777          TRIM TO TYPE OF PARAMETER   04329
26352  2102216         CAB DTYPE                                       04330
26353  2606355         BRU *+2                                         04331
26354  2606213         BRU NCP1            DATA FORMAL PARAMETER       04332
26355  2102217         CAB STTYPE          CHECK FOR STRING TYPE       04333
26356  2606360         BRU *+2                                         04334
26357  2606213         BRU NCP1                                        04335
26360  1760007         STX XR13    3       SET UP EXIT                 04336
26361  0660001         LDX XR01    3                                   04337
26362  0364701         STA NC+1    3       PUT TYPE IN NC              04338
26363  0102177         ADD SSBITS                                      04339
26364  0306321         STA TYPE                                        04340
26365  0040000         LDA 0       2                                   04341
26366  2001637         EXT AMASK                                       04342
26367  0102255         ADD *SPB2*                                      04343
26370  0304336         STA FPFLAG                                      04344
26371  0767310         SPB STOTST  3                                   04345
26372  0004364         LDA TEMP                                        04346
26373  2504032         ADD                                             04347
26374  2001637         EXT AMASK                                       04348
26375  0102255         ADD *SPB2*                                      04349
26376  0740205         SPB WRITE   2       STORE SPB TO THUNK          04350
26377  2506013         SXG 0                                          0*04351
26400  1420002         INX 2       1       INCREMENT NCC FOR TWO-WORD ID 04352
26401  0000001         LDA XR01                                        04353
26402  2100005         CAB XR11                                        04354
26403  2606406         BRU *+3                                         04355
26404  2611277         BRU ER4             NUMBER CELLAR = SYMBOL CELLAR FULL 04356
26405  2611277         BRU ER4             NUMBER CELLAR = SYMBOL CELLAR FULL 04357
26406  0000004         LDA RETURN                                      04358
26407  0306000         STA JUNK                                        04359
```

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26410  0002044          LDA RETNCP                                          04360
26411  0300004          STA RETURN                                          04361
26412  2602156          BRU TIEUP          GENERATE TEMPORARY VARIABLE FOR INDEX 04362
                     RETURN FROM TIEUP                                     04363
26413  0004372  NCP5    LDA TST                                             04364
26414  2001637          EXT AMASK                                           04365
26415  0102260          ADD *STX1*                                          04366
26416  0740205          SPB WRITE   2      STORE INDEX-SAVE INSTRUCTION FOR ADD OF F,P, 04367
26417  0606000          LDX JUNK    0                                       04368
26420  2504002          LDZ                                                 04369
26421  0304372          STA TST                                             04370
26422  2601171          BRU VCHECK                                          04371
                                                                           04372
                     FETCHP  IS CALLED BY FETCH WHEN TRYING TO             04373
                     GENERATE A LOAD OF A NO-ARGUMENT PROCEDURE            04374
26423  1744344  FETCHP  STX LOAD    2      SAVE EXIT FROM FETCH             04375
26424  0101632          ADD ABIT                                            04376
26425  2516001          BPL                                                 04377
26426  2611327          BRU ER16           LIBRARY PROCEDURE                04378
26427  0102161          ADD GR1                                             04379
26430  2514001          BMI                                                 04380
26431  2611327          BRU ER16           NOT A FUNCTION-TYPE PROCEDURE    04381
26432  0767310          SPB STOTST  3      CLEAR RUN-TIME ACCUMULATOR       04382
26433  0024700          LDA NC      1                                       04383
26434  2001637          EXT AMASK                                           04384
26435  0300002          STA XR02                                            04385
26436  0456375          BXL SIDSUB  2      CHECK FOR AAU ERROR TESTS        04386
26437  0304402          STA TRPFLG         IF SO--SUPRESS TRAP              04387
26440  0102255          ADD *SPB2*                                          04388
26441  0740205          SPB WRITE   2      STORE SPB TO PROCEDURE           04389
26442  2504002          LDZ                                                 04390
26443  0740205          SPB WRITE   2      MARKER FOR NO PARAMETERS         04391
26444  0024700          LDA NC      1                                       04392
26445  2001630          EXT 017777         TRIM TO TYPE                     04393
26446  2002242          EXT *FDV*          GET TYPE OF FUNCTION             04394
26447  0102030          ADD CRUDLO                                          04395
26450  0324700          STA NC      1      IDENTIFIER FOR ONE-SHOT TEMPORARY LOCATION 04396
26451  0002176          LDA BBIT                                            04397
26452  2024700          EXT NC      1                                       04398
26453  2516002          BNZ                                                 04399
26454  0002213          LDA *FLD*                                           04400
26455  0102256          ADD *STA*                                           04401
26456  0102030          ADD CRUDLO                                          04402
26457  0304372          STA TST            SET TST TO A STORE IN CRUD       04403
26460  0004363          LDA SWITCH                                          04404
26461  2514001          BMI                                                 04405
26462  2504022          LDO                                                 04406
26463  0304363          STA SWITCH         DO NOT SWITCH ORDER              04407
26464  0644344          LDX LOAD    2                                       04408
26465  2602046          BRU TRIB                                            04409
                                                                    NAM04410
                                                                    EJT04411
```

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                                        KPARAM PROCESSES A PARAMETER LIST                    04412
                                        CALLED WHEN A PROCEDURE PARENTHESIS IS BEING         04413
                                        COMPILED (PROCID)                                    04414
                                                                                             04415
26466  0644373  KPARAM LDX WHAMI   2                                                        04416
26467  2646470        BRU *+1     2                                                        04417
26470  2606527        BRU PARAM1          BODY OF PROCEDURE                                04418
26471  2611371        BRU ER33            ILLEGAL DECLARATION                              04419
26472  2611371        BRU ER33            ILLEGAL DECLARATION                              04420
26473  0770632        SPB BLIST   3       LIST FORMAL PARAMETER                            04421
26474  0024700        LDA NC      1                                                        04422
26475  2001637        EXT AMASK                                                            04423
26476  0300003        STA XR03            POINTS TO ITABLE ENTRY                           04424
26477  2504040        CHS                                                                  04425
26500  0740205        SPB WRITE   2       STORE POINTER + F,P, TYPE                        04426
26501  0006262        LDA PAVAIL                                                           04427
26502  0101645        ADD SIGN                                                             04428
26503  0305001        STA ITABLE+13       DEFINE VARABLE TO BE A FORMAL PARAMETER          04429
26504  0002231        LDA *BRU*                                                            04430
26505  0740205        SPB WRITE   2       STORE LINK TO THUNK                              04431
26506  0004345        LDA NOEL                                                             04432
26507  2504032        ADD                                                                  04433
26510  0304345        STA NOEL            INCREASE COUNT OF NUMBER OF F,P, S               04434
26511  0000001        LDA XR01                                                             04435
26512  2504112        SBO                                                                  04436
26513  0300001        STA XR01            ERASE VARIABLE FROM NC                           04437
26514  0006317        LDA SYMB                                                             04438
26515  2102270        CAB COMID                                                            04439
26516  2606520        BRU *+2                                                              04440
26517  2600275        BRU INPUT                                                            04441
26520  2102305        CAB RPID                                                             04442
26521  2611371        BRU ER33            ILLEGAL DECLARATION                              04443
26522  2606524        BRU *+2                                                              04444
26523  2611371        BRU ER33            ILLEGAL DECLARATION                              1*04445
26524  2506033        SXG 1                                                                04446
26525  1420001        INX 1       1                                                        04447
26526  2600275        BRU INPUT           SCAN FOR SEMI-COLON                              04448
                                                                                         04449
                                        ACTUAL PARAMETER LIST                            04450
                                        SC AS SET UP BY NCR2,                            04451
                                                                                         04452
                                            SC    PROCID                                 04453
                                            SC+1  FIRST LOCATION OF THUNK                04454
                                                                                         04455
26527  0024701  PARAM1 LDA SC+1    1                                                     04456
26530  0300003        STA XR03            POINTS TO FIRST LOCATION OF THUNK            0*04457
26531  2506013        SXG 0                                                            04458
26532  0024700        LDA NC      1                                                    04459
26533  2001630        EXT 017777                                                       04460
26534  0306321        STA TYPE            TYPE OF THUNK                                04461
26535  2514001        BMI                                                              04462
26536  2607117        BRU PPARAM          PROCEDURE OR F,P, AS AN ACTUAL PARAMETER     04463
26537  0201635        SUB LBIT                                                         04464
26540  2516001        BPL                                                              04465
26541  2607057        BRU LPARAM          LABEL, SWITCH, DATA PARAMETER
```

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26542  0101632          ADD ABIT                                                  04466
26543  2516001          BPL                                                       04467
26544  2606741          BRU APARAM          ARRAY PARAMETER                       04468
26545  0004372          LDA TST             HERE FOR ARITHMETIC OR BBOLEAN PARAMETER  04469
26546  2516002          BNZ                                                       04470
26547  2606705          BRU EPARAM          EXPRESSION IN THUNK                   04471
                                                                                  04472
                                    HERE FOR SIMPLE VARIABLE AS ACTUAL PARA-      04473
                                    METER                                         04474
                                      [SC+1] OCT              TYPE AND LINK       04475
                                             DEC              ADDRESS OF VARIABLE 04476
                                             LDX *-1      1   LOAD ADDRESS        04477
                                             BRU 1        2   EXIT                04478
                                                                                  04479
                                    FOR VARIABLES AND CONSTANTS OF ARITHMETIC     04480
                                    TYPE, A TRANSFER THUNK IS ALSO SET UP,  SEE   04481
                                    COMMENT AT SPECV.                             04482
26550  0024700          LDA NC      1                                            04483
26551  2001637          EXT AMASK                                                 04484
26552  0360001          STA 1       3       SECOND WORD OF THUNK = LOC. OF VARIABLE  04485
26553  0000003          LDA XR03                                                  04486
26554  0102247          ADD *LDX1*                                                04487
26555  2504032          ADO                                                       04488
26556  0360002          STA 2       3       STORE LOAD OR ADD, OF VARIABLE        04489
26557  0002263  ACALL1  LDA THRET                                                04490
26560  0740205          SPB WRITE   2       TERMINATE THUNK                       04491
26561  0740205          SPB WRITE   2       RESERVE LOCATION FOR TYPE             04492
26562  0006321          LDA TYPE                                                  04493
26563  2002202          EXT BMASK                                                 04494
26564  2514002          BZE                                                       04495
26565  0001636          LDA RBIT            CHANGE INTEGER TO REAL                04496
26566  0106262          ADD PAVAIL                                                04497
26567  0360000          STA 0       3       PUT CORRECT TYPE ON THUNK             04498
26570  0666262          LDX PAVAIL  3       UPDATE POINTER                        04499
26571  0740205          SPB WRITE   2       RESERVE LOCATION FOR INDEX            04500
26572  0006321          LDA TYPE                                                  04501
26573  2001641          EXT ARMASK          CHECK FOR CONSTANT BIT                04502
26574  2516002          BNZ                                                       04503
26575  2606734          BRU APCON           CONSTANT AS ACTUAL PARAMETER          04504
26576  0006321  ACALL2  LDA TYPE                                                  04505
26577  2504005          XAQ                                                       04506
26600  0002177          LDA SSBITS                                                04507
26601  0306321          STA TYPE                                                  04508
26602  2504005          XAQ                                                       04509
26603  2002211          EXT TMASK                                                 04510
26604  2516002          BNZ                                                       04511
26605  2606617          BRU PCALL2          ACTUAL PARAMETER IS REAL,  WRITE THRET,  04512
26606  0001650          LDA *STX2*          ACTUAL PARAMETER IS INTEGER,  ROUND VALUE  04513
26607  0106262          ADD PAVAIL                                                04514
26610  0740205          SPB WRITE   2                                             04515
26611  0002057          LDA RNDSPB                                                04516
26612  0740205          SPB WRITE   2       INTEGER CAUSES ROUNDING               04517
26613  0000003  PCALL1  LDA XR03                                                  04518
26614  0102250          ADD *LDX2*                                                04519
```

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26615  2504032          ADO                                              04520
26616  0740205          SPB WRITE   2        GENERATE INDEX RESTORE      04521
26617  0002263  PCALL2  LDA THRET                                        04522
26620  0740205          SPB WRITE   2        STORE RETURN FROM THUNK     04523
26621  2504002  PCALL4  LDZ                                              04524
26622  0740205          SPB WRITE   2        MARKER FOR END OF CALL OR FOR NEXT THUNK  04525
26623  0006262          LDA PAVAIL                                       04526
26624  0106321          ADD TYPE                                         04527
26625  0360000          STA 0       3        STORE TYPE OF THUNK + LOC, OF NEXT THUNK  04528
26626  0006317          LDA SYMB                                         04529
26627  2102305          CAB RPID                                         04530
26630  2606632          BRU *+2                                          04531
26631  2606651          BRU PCALL5           END OF PROCEDURE CALL       04532
26632  2102270          CAB COMID                                        04533
26633  2611361          BRU ER29             ERROR IN PROCEDURE CALL     04534
26634  2606636          BRU *+2              MORE PARAMETERS TO COME     04535
26635  2611361          BRU ER29             ERROR IN PROCEDURE CALL     04536
                                                                         04537
                                 SET-UP FOR NEXT PARAMETER               04538
                                   [SC+1] OCT 0          FOR TYPE AND LINK  04539
                                          OCT 0          THUNK STORAGE      04540
                                          STX *+1     2                     04541
                                                                         04542
26636  0000001          LDA XR01                                         04543
26637  2504112          SBO                                              04544
26640  0300001          STA XR01             ERASE PARAMETER FROM NC     04545
26641  0640005          LDX XR11    2                                    04546
26642  0006262          LDA PAVAIL                                       04547
26643  0344701          STA SC+1    2        SAVE ADDRESS OF FIRST LOCATION OF NEXT THUNK  04548
26644  0740205          SPB WRITE   2        RESERVE LOCATION            04549
26645  0006262          LDA PAVAIL                                       04550
26646  0101650          ADD *STX2*                                       04551
26647  0740205          SPB WRITE   2        STORE INDEX-SAVE INSTRUCTION  04552
26650  2600275          BRU INPUT                                        04553
                                                                         04554
                                 END OF PROCEDURE CALL, CHECKING AND     04555
                                 PUTTING COUNTERS IN STEP                04556
                                                                         04557
26651  0640005  PCALL5  LDX XR11    2                                    04558
26652  2504102          LMO                                              04559
26653  0306320          STA PREV                                         04560
26654  0002152          LDA 0400                                         04561
26655  2044700          EXT SC      2                                    04562
26656  2514002          BZE                                              04563
26657  2606667          BRU PCALL6           FUNCTION-TYPE PROCEDURE     04564
26660  0640005  PCALL3  LDX XR11    2                                    04565
26661  0000001          LDA XR01                                         04566
26662  2504112          SBO                                              04567
26663  0300001          STA XR01             ERASE PARAMETER FROM NC     04568
26664  1440001          INX 1       2                                    04569
26665  1740005          STX XR11    2        ERASE PROCEDURE INFO FROM SC  04570
26666  2605027          BRU KINP11                                       04571
                                                                         04572
                                 LIKEWISE FOR FUNCTION-TYPE PROCEDURE    04573
```

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                                                                                                    04574
26667  0044702  PCALL6 LDA SC+2    2                                                               04575
26670  2002200         EXT CTAG                                                                    04576
26671  0743437         SPB BFOR+16 2          CHECK AGAINST BEGIN ELSE THEN DO SC ETC              04577
26672  2606660         BRU PCALL3                                                                  04578
26673  0640005         LDX XR11    2                                                               04579
26674  0044700         LDA SC      2                                                               04580
26675  2002203         EXT COMASK                                                                  04581
26676  2512010         SLA 8                                                                       04582
26677  0306321         STA TYPE               = TYPE OF FUNCTION                                   04583
26700  1440002         INX 2       2                                                               04584
26701  1740005         STX XR11    2                                                               04585
26702  0002043         LDA RETINP                                                                  04586
26703  0300004         STA RETURN                                                                  04587
26704  2602156         BRU TIEUP              GENERATE TEMP, VARIABLE FOR VALUE OF PROC,           04588
                                                                                                    04589
                                      EXPRESSIONS OF REAL OR INTEGER TYPE AS WELL                   04590
                                      AS CONSTANTS GENERATE AN ERROR MESSAGE IN THE                 04591
                                      TRANSFER THUNK,  SEE COMMENT AT SPEOV,                        04592
                                                                                                    04593
26705  0740205  EPARAM SPB WRITE   2          GENERATE STORE OF COMPUTED VALUE                     04594
26706  0006262         LDA PAVAIL                                                                  04595
26707  0102247         ADD *LDX1*                                                                  04596
26710  0740205         SPB WRITE   2          GENERATE INDEX LOAD OF ADDRESS OF RESULT             04597
26711  0004372         LDA TST                                                                     04598
26712  2001637         EXT AMASK                                                                   04599
26713  2504002         LDZ                                                                         04600
26714  0304372         STA TST                                                                     04601
26715  0000003         LDA XR03                                                                    04602
26716  0102250         ADD *LDX2*                                                                  04603
26717  2504032         ADD                                                                         04604
26720  0740205         SPB WRITE   2          RESTORE INDEX 2                                      04605
26721  0002363         LDA THRET                                                                   04606
26722  0740205         SPB WRITE   2          RETURN                                               04607
26723  0740205         SPB WRITE   2          SAVE LOCATION                                        04608
26724  0006321         LDA TYPE                                                                    04609
26725  2002302         EXT BMASK                                                                   04610
26726  2514002         BZE                                                                         04611
26727  0001636         LDA RBIT                                                                    04612
26730  0106262         ADD PAVAIL                                                                  04613
26731  0360000         STA 0       3          SET LINK ON COMPLETED THUNK                          04614
26732  0666262         LDX PAVAIL  3          UPDATE POINTER                                       04615
26733  0740205         SPB WRITE   2          SAVE LOCATION                                        04616
26734  0002066  APCON  LDA STRERR             BRU TO ASSIGNMENT ERROR                              04617
26735  0740205         SPB WRITE   2                                                               04618
26736  0002177         LDA SSBITS                                                                  04619
26737  0306321         STA TYPE                                                                    04620
26740  2606621         BRU PCALL4                                                                  04621
                                      SUBSCRIPTED VARIABLE, FORMAL PARAMETER, OR                    04622
                                        ARRAY NAME AS ACTUAL PARAMETER                              04623
                                                                                                    04624
26741  0202161  APARAM SUB GR1                                                                     04625
26742  2514001         BMI                                                                         04626
26743  2607051         BRU PCALL7             ARRAY NOT SUBSCRIPTED                                04627
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26744  1766000          STX JUNK    3                                          04628
26745  0666262          LDX PAVAIL  3                                          04629
26746  0024677          LDA NC-1    1                                          04630
26747  2001630          EXT 017777                                             04631
26750  0306321          STA TYPE                TYPE OF ARRAY                  04632
26751  0024677          LDA NC-1    1                                          04633
26752  2001637          EXT AMASK               TRIM TO ARRAY LO               04634
26753  2514002          BZE                                                    04635
26754  2607003          BRU APAR2               FORMAL PARAMETER,  ADDRESS ALREADY IN XR01  04636
26755  0740205          SPB WRITE   2           STORE ARRAY LO                 04637
26756  0006262          LDA PAVAIL                                             04638
26757  0102215          ADD *ADD*                                              04639
26760  0740205          SPB WRITE   2           GENERATE *ADD* OF ARRAY LO     04640
26761  0006262          LDA PAVAIL                                             04641
26762  0102231          ADD *BRU*                                              04642
26763  0360000          STA 0       3           STORE BRU AROUND ARRAY LO      04643
26764  0002256          LDA *STA*                                              04644
26765  2504032          ADO                     FORM STA 1 TO PUT ADDRESS IN XR01  04645
26766  0740205          SPB WRITE   2                                          04646
26767  0024700          LDA NC      1                                          04647
26770  2001637          EXT AMASK                                              04648
26771  0762070          SPB UNTEMP  3           RELEASE LOC, USED BY INDEX     04649
26772  0666000          LDX JUNK    3                                          04650
26773  0000001          LDA XR01                                               04651
26774  2504112          SBO                                                    04652
26775  0300001          STA XR01                ERASE SUBSCRIPT INFO           04653
26776  0000003          LDA XR03                                               04654
26777  0102250          ADD *LDX2*                                             04655
27000  2504032          ADO                                                    04656
27001  0740205          SPB WRITE   2                                          04657
27002  2606557          BRU ACALL1                                             04658
                                                                               04659
27003  0006262  APAR2   LDA PAVAIL                                            04660
27004  2504112          SBO                                                    04661
27005  0306262          STA PAVAIL              ERASE STX                      04662
27006  0024700          LDA NC      1           ADDRESS OF INDEX               04663
27007  2001637          EXT AMASK                                              04664
27010  0762070          SPB UNTEMP  3           RESTORE TEMPORARY LOCATION TO AVAILABLE  04665
27011  0666000          LDX JUNK    3                                          04666
27012  0000001          LDA XR01                                               04667
27013  2504112          SBO                                                    04668
27014  0300001          STA XR01                ERASE PARAMETER FROM NC        04669
27015  0004336          LDA FPFLAG                                             04670
27016  2516001          BPL                                                    04671
27017  2607023          BRU *+4                                                04672
27020  2504022          LDO                                                    04673
27021  0102256          ADD *STA*                                              04674
27022  0740205          SPB WRITE   2                                          04675
27023  0000003          LDA XR03                                               04676
27024  0102250          ADD *LDX2*                                             04677
27025  2504032          ADO                                                    04678
27026  0740205          SPB WRITE   2           INDEX RESTORE                  04679
27027  0002263          LDA THRET                                              04680
27030  0740205          SPB WRITE   2                                          04681
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27031  0740205          SPB WRITE   2                                    04682
27032  0006321          LDA TYPE                                         04683
27033  2002202          EXT BMASK                                        04684
27034  2514002          BZE                                              04685
27035  0001636          LDA RBIT                                         04686
27036  0106262          ADD PAVAIL                                       04687
27037  0360000          STA 0       3                                    04688
27040  0666262          LDX PAVAIL  3       UPDATE THUNK POINTER         04689
27041  0740205          SPB WRITE   2                                    04690
27042  0004336          LDA FPFLAG                                       04691
27043  2514001          BMI                 CHECK FOR ARRAY FORMAL PARAMETER 04692
27044  2606576          BRU ACALL2                                       04693
27045  2001637          EXT AMASK                                        04694
27046  0102231          ADD *BRU*                                        04695
27047  0740205          SPB WRITE   2       WRITE BRANCH TO TRANSFER THUNK 04696
27050  2606621          BRU PCALL4                                       04697
                                                                         04698
                                    ARRAY AS ACTUAL PARAMETER            04699
                                                                         04700
27051  0024700  PCALL7  LDA NC      1       ARRAY IDENTIFIER             04701
27052  0360001          STA 1       3       STORE IN FIRST WORD OF THUNK 04702
27053  0000003          LDA XR03                                         04703
27054  2504032          ADD                                              04704
27055  0306262          STA PAVAIL                                       04705
27056  2606621          BRU PCALL4                                       04706
                                                                         04707
                                    LABEL, DATA, SWITCH OR DESIGNATIONAL 04708
                                    EXPRESSION AS AN ACTUAL PARAMETER    04709
                                                                         04710
27057  0006321  LPARAM  LDA TYPE                                         04711
27060  2001634          EXT XTAG            REMOVE DEFINED BIT           04712
27061  2102216          CAB DTYPE                                        04713
27062  2607064          BRU *+2                                          04714
27063  2607104          BRU DPARAM          DATA PARAMETER               04715
27064  2102164          CAB DETYPE                                       04716
27065  2607067          BRU *+2                                          04717
27066  2607077          BRU LPAR1                                        04718
27067  1766000          STX JUNK    3                                    04719
27070  0764363          SPB GOTO    3       FORM BRU TO LABEL            04720
27071  1420001          INX 1       1       GET NUMBER CELLAR COUNTER BACK IN STEP 04721
27072  0666000          LDX JUNK    3                                    04722
27073  0006321          LDA TYPE                                         04723
27074  0202222          SUB SWTYP2                                       04724
27075  2514002          BZE LPAR2                                        04725
27076  2607102
27077  0001635  LPAR1   LDA LBIT                                        04726
27100  0306321          STA TYPE                                         04727
27101  2606613          BRU PCALL1                                       04728
27102  0001646  LPAR2   LDA SWTYPE                                      04729
27103  2607100          BRU LPAR1+1                                      04730
                                                                         04731
                                    THUNK FOR DATA ONLY SETS UP THE BLOCK NAME 04732
                                                                         04733
27104  0002060  DPARAM  LDA RDASPB                                       04734
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27105  0360002          STA 2       3                                    04735
27106  0000003          LDA XR03                                         04736
27107  0101616          ADD TWO                                          04737
27110  2706262          STO PAVAIL          WIPE OUT ANY LINE-NUMBERS STORED 04738
27111  2504002          LDZ                                              04739
27112  0740205          SPB WRITE   2                                    04740
27113  0002216          LDA DTYPE                                        04741
27114  0747631          SPB CHAIN   2       FILL IN NAME OF DATA BLOCK   04742
27115  2504012          NOP                                              04743
27116  2606617          BRU PCALL2                                       04744
                                                                         04745
                                    PROCEDURE NAME AS ACTUAL PARAMETER,  04746
                                    UNLESS IT IS A LIBRARY FUNCTION, THUNK IS 04747
                                    A BRANCH TO THE PROCEDURE            04748
27117  2504005  PPARAM XAQ                                              04749
27120  0006262          LDA PAVAIL                                       04750
27121  2504112          SBO                                              04751
27122  0306262          STA PAVAIL          ERASE INDEX-SAVE FROM THUNK  04752
27123  2504005          XAQ                                              04753
27124  0101635          ADD LBIT            TEST FOR BIT 1 ON            04754
27125  2514001          BMI *+6             NO - FORMAL PARAMETER        04755
27126  2607133
27127  0201632          SUB ABIT            TEST FOR BIT 2 ON            04756
27130  2516001          BPL PCALL8          YES - LIBRARY PROCEDURE      04757
27131  2607153
27132  2607146          BRU PPARM1          NO - DECLARED PROCEDURE      04758
                                                                         04759
27133  0024700          LDA NC      1                                    04760
27134  2001637          EXT AMASK                                        04761
27135  0300000          STA 0                                            04762
27136  2504032          ADO                                              04763
27137  0102231          ADD *BRU*                                        04764
27140  0740205          SPB WRITE   2                                    04765
27141  0640000          LDX 0       2                                    04766
27142  0040000          LDA 0       2                                    04767
27143  2001630          EXT O17777                                       04768
27144  0306321          STA TYPE                                         04769
27145  2606621          BRU PCALL4                                       04770
                                                                         04771
27146  0024700  PPARM1  LDA NC      1                                    04772
27147  2001637          EXT AMASK                                        04773
27150  0102231          ADD *BRU*                                        04774
27151  0740205          SPB WRITE   2                                    04775
27152  2606621          BRU PCALL4                                       04776
                                                                         04777
                                    LIBRARY FUNCTION AS ACTUAL PARAMETER 04778
                                    THE COMPILER FUDGES A PROCEDURE DECLARATION 04779
                                      TO MATCH CALL IN USERS PROCEDURE   04780
                                                                         04781
                                        RPR *+11        TYPE+ADDRESS OF NEXT 04782
                                        DEC 0           NOT USED         04783
                                        SPB LINKER  1   LINK WITH OALL   04784
                                        DEC *+7         ADDRESS OF EXIT  04785
                                            NOTYPE      ARGUMENT REAL OR INTEGER 04786
```

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                                        BRU 0          ADDRESS SUPPLIED BY LINKE      04787
                                        DEC 0          END FORMAL PARAMS              04788
                                        SPB *+2     2  GOTO THUNK                     04789
                                        FLD 0       1  LOAD ARGUMENT                 04790
                                        SPB LIBFCN  1  EXECUTE LIBRARY FUNCTION       04791
                                        BRU 0          EXIT SUPPLIED BY LINKER        04792
                                                                                      04793
27153  0002054  PCALL8 LDA PROSPB                    GENERATE DUMMY PROCEDURE       04794
27154  0740205         SPB WRITE   2                 SPB TO LINKAGE                 04795
27155  0006262         LDA PAVAIL                                                   04796
27156  0101617         ADD EIGHT                                                    04797
27157  0740205         SPB WRITE   2                 STORE ADD OF EXIT FROM PROCEDURE 04798
27160  0001636         LDA RBIT                                                     04799
27161  0106262         ADD PAVAIL                                                   04800
27162  0101572         ADD SEVEN                                                    04801
27163  0740205         SPB WRITE   2                 TYPE OF ARGUMENT IS AMBIGUOUS  04802
27164  0002231         LDA *BRU*                                                    04803
27165  0740205         SPB WRITE   2                 THUNK LINK                     04804
27166  2504002         LDZ                                                          04805
27167  0740205         SPB WRITE   2                 MARKER FOR END OF LINKS        04806
27170  0006262         LDA PAVAIL                                                   04807
27171  2504112         SBO                                                          04808
27172  0102255         ADD *SPB2*                                                   04809
27173  0740205         SPB WRITE   2                 SPB TO THUNK TO GET ARGUMENT   04810
27174  0002213         LDA *FLD*                                                    04811
27175  0101634         ADD XTAG                                                     04812
27176  0740205         SPB WRITE   2                 STOREFLD OF ARGUMENT           04813
27177  0024700         LDA NC      1                 NAME OF PROCEDURE              04814
27200  2001637         EXT AMASK                                                    04815
27201  0102254         ADD *SPB1*                                                   04816
27202  0740205         SPB WRITE   2                 STORE SPB TO LIBRARY PROCEDURE 04817
27203  0002231         LDA *BRU*                                                    04818
27204  0740205         SPB WRITE   2                 STORE EXIT FROM DUMMY PROCEDURE 04819
27205  0024700         LDA NC      1                                                04820
27206  2001637         EXT AMASK                                                    04821
27207  2102312         CAB ABSID                                                    04822
27210  2607215         BRU PCALL9                    RESULT IS INTEGER              04823
27211  2607215         BRU PCALL9                    RESULT IS INTEGER              04824
27212  0002220         LDA RPROC                     REAL PROCEDURE  (DEFINED)      04825
27213  0306321         STA TYPE                                                     04826
27214  2606621         BRU PCALL4                                                   04827
27215  0002246  PCALL9 LDA *FSU*                                                    04828
27216  0306321         STA TYPE                                                     04829
27217  2606621         BRU PCALL4                                                   04830
                                                                                  NAM04831
                                                                                  EJT04832
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27220  0006317  KPAREN LDA SYMB                                          04833
27221  2102305        CAB RPID          RIGHT PARENTHESIS IDENTIFIER     04834
27222  2611355        BRU ER27          SUSPECT MISSING CLOSE PAREN      04835
27223  2607225        BRU *+2                                            04836
27224  2611355        BRU ER27          SUSPECT MISSING CLOSE PAREN      04837
27225  2504102        LMO                                                04838
27226  0306320        STA PREV          SET PREV TO VARIABLE             04839
27227  1420001        INX 1       1     ERASE LEFT PARENTHESIS FROM SYMBOL CELLAR  04840
27230  2600275        BRU INPUT                                          04841
                                                                         04842
                                  BASSGN  CHECKS TO SEE IF THE ASSIGNMENT  04843
                                  BELONGS TO A SWITCH OR DATA DECLARATION,  04844
                                  AND IF SO, INITIATES THESE DECLARATIONS.  04845
27231  0024700  BASSGN LDA SC       1                                     04846
27232  0101632        ADD GR2                                            04847
27233  2102611        CAB FORID                                          04848
27234  2607236        BRU *+2                                            04849
27235  2603470        BRU FORASS        ASSIGNMENT IN FOR STATEMENT      04850
27236  2102640        CAB SWID          SWITCH IDENTIFIER                04851
27237  2607241        BRU *+2                                            04852
27240  2610426        BRU BSWITCH       START SWITCH DECLARATION         04853
27241  2102577        CAB DATAID        DATA IDENTIFIER                  04854
27242  2607264        BRU BASS2         STORE ASSIGNMENT IN SYMBOL CELLAR  04855
27243  2607245        BRU *+2           ASSIGNMENT IN DATA DECLARATION   04856
27244  2607264        BRU BASS2         STORE ASSIGNMENT IN SYMBOL CELLAR  04857
27245  0006262        LDA PAVAIL                                         04858
27246  2516000        BEV                                                04859
27247  2607252        BRU *+3                                            04860
27250  0001647        LDA *NOP*         ADJUST PAVAIL SO THAT DATA STORAGE WILL BE  04861
27251  0740205        SPB WRITE   2           IN REQUIRED EVEN-ODD LOCATIONS  04862
27252  0707472        SPB INDEC   3     GENERATE BRANCH AROUND DECLARATION  04863
27253  2504002        LDZ                                                04864
27254  0304345        STA NOEL          NOEL IS NUMBER OF ELEMENTS IN DECLARATION  04865
27255  0304320        STA CREAD         RESET READ FLAG                  04866
27256  0304317        STA CMODE         SET CONSTANT MODE TO DATA        04867
27257  0740205        SPB WRITE   2     RESERVE TWO PLACES FOR DECLARATION POINTER  04868
27260  0002216        LDA DTYPE                                          04869
27261  0747727        SPB DEFINE  2     DEFINE DATA BLOCK                04870
27262  0740205        SPB WRITE   2     SAVE LOC FOR NUMBER OF CONSTANTS IN BLOCK  04871
27263  2600275        BRU INPUT                                          04872
                                  TEST AT THIS POINT TO SEE IF THE VARIABLE  04873
                                  ON THE LEFT OF THE COLON-EQUALS IS A FORMAL  04874
                                  PARAMETER, IF SO, STICK ON A FLAG FOR ASSIGN,  04875
27264  2504002  BASS2  LDZ                                                04876
27265  0304324        STA DSTAT         SET NON-DECLARATION STATUS       04877
27266  0640001        LDX XR01    2                                      04878
27267  0001632        LDA ABIT                                           04879
27270  2044700        EXT NC      2     LAST ENTRY IN N.C.               04880
27271  2516002        BNZ                                                04881
27272  2601633        BRU SETGR4        NOT ARRAY                        04882
27273  0044677        LDA NC=1    2                                      04883
27274  2001637        EXT AMASK                                          04884
27275  2516002        BNZ                                                04885
27276  2601633        BRU SETGR4        NOT FORMAL PARAMETER             04886
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27277  0006317          LDA SYMB                                          04887
27300  0102147          ADD 0100                                          04888
27301  0306317          STA SYMB                                          04889
27302  0004336          LDA FPFLAG                                        04890
27303  0324677          STA SC*1    1                                     04891
27304  0000005          LDA XR11                                          04892
27305  2504112          SBO                                               04893
27306  0300005          STA XR11                                          04894
27307  2601633          BRU SETGR4                                        04895
                                                                          04896
                                 STOTST GENERATES A STORE OF A PARTIAL    04897
                                 COMPUTATION.                             04898
                                 CALLED BY KUMIN, KEOR, KUNTM, KPRINT, NCP2,  04899
                                   NCP4, FETCHP                           04900
27310  0004372  STOTST LDA TST                                           04901
27311  2514002          BZE                                               04902
27312  2600001          BRU 1       3                                     04903
27313  0740205          SPB WRITE   2                                     04904
27314  2504002          LDZ                                               04905
27315  0304372          STA TST                                           04906
27316  2600001          BRU 1       3                                     04907
                                                                          04908
27317  2101735  KMNT0   CAB CLIST+13          CODE FOR SEMICOLON         04909
27320  2607322          BRU *+2                                           04910
27321  2607364          BRU KMNT1             GOT SEMICOLON               04911
27322  2516002          BNZ                                               04912
27323  2607407          BRU KMNT3             CHECK FOR SPECIAL CALL      04913
27324  2516001  KMNT5   BPL                   CHECK FOR NON-POSITIVE      04914
27325  2514002          BZE                                               04915
27326  2607332          BRU KMNTLP+1          CHECK FOR END OR ELSE AFTER SPACE, SYMBOL  04916
27327  0760276          SPB CHAR    3                                     04917
27330  2607317          BRU KMNT0                                         04918
                                                                          04919
                                 COMMENT LOOP    SEARCH FOR SEMICOLON, END,  04920
                                   AND ELSE                               04921
                                                                          04922
27331  1706000  KMNTLP  STX JUNK    3         SAVE EXIT FROM LOOP         04923
27332  0760276          SPB CHAR    3                                     04924
27333  2101745          CAB E                 CHECK FOR E                 04925
27334  2607317          BRU KMNT0                                         04926
27335  2607337          BRU *+2                                           04927
27336  2607317          BRU KMNT0                                         04928
27337  0760276          SPB CHAR    3         IT IS                       04929
27340  2101763          CAB L                 CHECK FOR L                 04930
27341  2607317          BRU KMNT0                                         04931
27342  2607366          BRU KMNT2             CONTINUE TO CHECK FOR ELSE  04932
27343  2101765          CAB N                 NOT L -- COULD BE N         04933
27344  2607317          BRU KMNT0                                         04934
27345  2607347          BRU *+2                                           04935
27346  2607317          BRU KMNT0                                         04936
27347  0760276          SPB CHAR    3         IT IS                       04937
27350  2101744          CAB D                 CHECK FOR D                 04938
27351  2607317          BRU KMNT0                                         04939
27352  2607354          BRU *+2                                           04940
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27353  2607317          BRU KMNT0                                          04941
27354  0767415          SPB KPEEK   3          PEEK AHEAD ONE CHARACHTER    04942
27355  2514001          BMI                                                04943
27356  2607361          BRU *+3                SPECIAL CHARACTER , . . WE GOT END  04944
27357  2516002          BNZ                                                04945
27360  2607317          BRU KMNT0              NOT SPACE -- DO NOT RECOGNIZE  04946
27361  0002604          LDA ENDID                                          04947
27362  0666000  KMNTEX  LDX JUNK    3          RESTORE EXIT                 04948
27363  2600001          BRU 1      3                                       04949
                                                                           04950
27364  0002306  KMNT1   LDA SCID                                          04951
27365  2607362          BRU KMNTEX                                         04952
27366  0760276  KMNT2   SPB CHAR    3                                      04953
27367  2102002          CAB S                  CHECK FOR S                 04954
27370  2607317          BRU KMNT0                                          04955
27371  2607373          BRU *+2                IT IS                       04956
27372  2607317          BRU KMNT0                                          04957
27373  0760276          SPB CHAR    3                                      04958
27374  2101745          CAB E                  CHECK FOR E                 04959
27375  2607317          BRU KMNT0                                          04960
27376  2607400          BRU *+2                IT IS                       04961
27377  2607317          BRU KMNT0                                          04962
27400  0767415          SPB KPEEK   3          PEEK AHEAD ONE CHARACHTER    04963
27401  2514001          BMI                    SPACE                       04964
27402  2607405          BRU *+3                  OR                        04965
27403  2516002          BNZ                      SPECIAL                   04966
27404  2607317          BRU KMNT0                CHARACTER                 04967
27405  0002602          LDA ELSEID               INDICATES                 04968
27406  2607362          BRU KMNTEX               -ELSE-                    04969
                                                                           04970
                          KMNT3 IS CALLED WHEN A NON-BLANK CHARACTER       04971
                       IS NOT PART OF AN END OR ELSE, AND IS NOT A         04972
                       SEMICOLON.  IF TERM =/ 1 THIS IS AN ERROR           04973
                       CONDITION.                                          04974
27407  0304364  KMNT3   STA TEMP                                          04975
27410  0004365          LDA TERM               NO-COMMENT FLAG             04976
27411  2516002          BNZ                                                04977
27412  2611347          BRU ER24               SYMBOLS ONLY, PLEASE...     04978
27413  0004364          LDA TEMP                                           04979
27414  2607324          BRU KMNT5                                          04980
                          KPEEK GETS THE INTERNAL CODE FOR THE             04981
                       VERY NEXT SOURCE CHARACTER                          04982
                                                                           04983
27415  1764364  KPEEK   STX TEMP    3          SAVE EXIT                   04984
27416  0557776          BXH 2      2                                       04985
27417  2607426          BRU NEXTCH                                         04986
27420  0046310          LDA CH2    2                                       04987
27421  2001642          EXT CHMASK                                         04988
27422  0300013  KMNT4   STA XR23                                          04989
27423  0061720          LDA CLIST  3                                       04990
27424  0664364          LDX TEMP   3                                       04991
27425  2600001          BRU 1      3                                       04992
                                                                           04993
27426  0020001  NEXTCH  LDA 1      1                                       04994
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27427  2510014          SRA 12                                                  04995
27430  2607422          BRU KMNT4                                               04996
                                    SYMB = COMMENT                             04997
27431  0004354  KCMNT   LDA PREV2          CHECK FOR LEGAL OCCURRENCE OF COMMENT 04998
27432  2102306          CAB SCID                                                04999
27433  2607435          BRU *+2                                                 05000
27434  2607441          BRU *+5                                                 05001
27435  2102567          CAB BEGIN                                               05002
27436  2611347          BRU ER24           SUSPECT MISSING SEMICOLON            05003
27437  2607441          BRU *+2                                                 05004
27440  2611347          BRU ER24           SUSPECT MISSING SEMICOLON            05005
27441  2506053          SXG 2                                                  2*05006
27442  0767331          SPB KMNTLP  3      GET TERMINATING SYMBOL               05007
27443  2102306          CAB SCID           CHECK FOR SEMICOLON                  05008
27444  2607442          BRU *-2                                                 05009
27445  2607447          BRU *+2            IT IS  --  EXIT                      05010
27446  2607442          BRU *-4                                                 05011
27447  0306320          STA PREV                                                05012
27450  0662037          LDX MODUN   3                                           05013
27451  2600276          BRU CHAR                                                05014
                                                                              NAN05015
                                                                              EJT05016
```

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                                        WHOSYM  CHECKS FOR COMMAS, SEMICOLONS, AND          05017
                                        ENDS.  CONTROL IS RETURNED TO INPUT FOR COMMA       05018
 27452  0006317  WHOSYM LDA SYMB                                                            05019
 27453  2102270         CAB CUMID                                                           05020
 27454  2607456         BRU *+2                                                             05021
 27455  2600275         BRU INPUT                                                           05022
 27456  2102306         CAB SCID                                                            05023
 27457  2607461         BRU *+2                                                             05024
 27460  2607465         BRU WHOSI                                                           05025
 27461  2102004         CAB ENDID                                                           05026
 27462  2611371         BRU ER33            ILLEGAL DECLARATION                             05027
 27463  2607465         BRU *+2                                                             05028
 27464  2611371         BRU ER33            ILLEGAL DECLARATION                             05029
 27465  0001634  WHOSI  LDA XTAG                                                           05030
 27466  0304373         STA WHAMI           SET WHAMI TO BODY                               05031
 27467  2504002         LDZ                                                                 05032
 27470  0304351         STA OWN             RESET OWN-FLAG                                  05033
 27471  2640001         BRU 1       2                                                       05034
                                                                                            05035
                                        INDEC  GENERATES A TRANSFER AROUND A SWITCH,        05036
                                        DATA, OR ARRAY DECLARATION,                         05037
                                        CALLED BY DA2, BSWTCH, DOWN, BASSGN                 05038
                                                                                            05039
 27472  0002231  INDEC  LDA *BRU*                                                          05040
 27473  0740205         SPB WRITE   2       STORE BRU                                       05041
 27474  0004321         LDA DECLO                                                           05042
 27475  2516002         BNZ                                                                 05043
 27476  2611371         BRU ER33            NESTED DECLARATIONS                             05044
 27477  0006262         LDA PAVAIL                                                          05045
 27500  0304321         STA DECLO           SAVE ADDRESS OF LOC TO FILL IN LATER            05046
 27501  2660001         BRU 1       3       EXIT FROM INDEC                                 05047
                                                                                            05048
 27502  0004351  DOWN   LDA OWN                                                           05049
 27503  2516002         BNZ                                                                 05050
 27504  2611414         BRU ER39                                                            05051
 27505  0004373         LDA WHAMI                                                           05052
 27506  0304351         STA OWN             SET OWN-FLAG NON-ZERO                           05053
 27507  2101634         CAB XTAG                                                            05054
 27510  2611414         BRU ER39            NESTED SOMETHING                                05055
 27511  2607513         BRU *+2                                                             05056
 27512  2611414         BRU ER39            NESTED SOMETHING                                05057
 27513  0767472         SPB INDEC   3       SET BRANCH AROUND OWN VARIABLES                 05058
 27514  2516000         BEV                                                                 05059
 27515  0740205         SPB WRITE   2                                                       05060
 27516  2607542         BRU DREAL1                                                          05061
                                                                                            05062
 27517  2504002  DINTGR LDZ                                                                05063
 27520  2607532         BRU DREAL+1                                                         05064
 27521  0002176  DBOOL  LDA BBIT                                                           05065
 27522  2607532         BRU DREAL+1                                                         05066
 27523  0004351  ISWTCH LDA OWN                                                           05067
 27524  2516002         BNZ                                                                 05068
 27525  2611371         BRU ER33            CANNOT BE OWN                                   05069
 27526  0001646         LDA SWTYPE                                                          05070
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27527  0101634          ADD CBIT                                                05071
27530  2607532          BRU DREAL+1                                             05072
27531  0001636  DREAL   LDA RBIT                                                05073
27532  0304311          STA ATYPE                                               05074
27533  0644373          LDX WHAMI   2                                           05075
27534  2647535          BRU *+1     2                                           05076
27535  2607542          BRU DREAL1            WHAMI = BODY                      05077
27536  2607624          BRU OWNCHK            ILLEGAL DECLARATION               05078
27537  2601633          BRU SETGR4            SPECIFICATION                     05079
27540  2611371          BRU ER33              DECLARATOR IN FORMAL PARAMETER LIST 05080
                                                                                05081
27541  1420001          INX 1       1                                           05082
27542  0004324  DREAL1  LDA DSTAT             DECLARATION-LEGAL FALG            05083
27543  2514002          BZE                                                     05084
27544  2611367          BRU ER32              DECLARATION IN MIDDLE OF BLOCK    05085
27545  0002304          LDA DECLID                                              05086
27546  0304373          STA WHAMI             SET WHAMI TO DECLARATION          05087
27547  0024700          LDA SC      1                                           05088
27550  2102266          CAB BEGID             CHECK FOR BLOCK ENTRY             05089
27551  2601633          BRU SETGR4                                              05090
27552  0770675          SPB BLOCK   3         ENTER BLOCK                       05091
27553  2601633          BRU SETGR4                                              05092
                                                                                05093
                                                                                05094
                                  DECLAR DEFINES THE LAST ENTRY IN THE NC       05095
                                                                                05096
27554  0004373  DECLAR  LDA WHAMI                                               05097
27555  2102303          CAB SPECID                                              05098
27556  2607560          BRU *+2               DECLARE VARIABLE                  05099
27557  2605656          BRU SPECV             SPECIFY VARIABLE                  05100
27560  0770632          SPB BLIST   3         LIST IDENTIFIER IN BS LIST IF NECCESSARY 05101
27561  0004351          LDA OWN                                                 05102
27562  2516002          BNZ                                                     05103
27563  2607617          BRU OWNDEC            OWN-DECLARATION                   05104
27564  0006263          LDA VAVAIL                                              05105
27565  0201616          SUB TWO                                                 05106
27566  2106262          CAB PAVAIL                                              05107
27567  2611271          BRU ER1               STORAGE EXHAUSTED                 05108
27570  2611271          BRU ER1               STORAGE EXHAUSTED                 05109
27571  2104353          CAB PLF                                                 05110
27572  0304353          STA PLF               VAVAIL IS UPPER BOUND FOR PROGRAM STORAGE 05111
27573  2607574          BRU *+1                                                 05112
27574  0306263          STA VAVAIL                                              05113
27575  0104311  DEC2    ADD ATYPE                                               05114
27576  0640021          LDX XR41    2         POINTER TO ITABLE ENTRY FOR IDENTIFIER 05115
27577  0345001          STA ITABLE+12         SET ITABLE ID                     05116
27600  0000001          LDA XR01                                                05117
27601  2504112          SBO                                                     05118
27602  0300001          STA XR01              ERASE IDENTIFIER FROM NC          05119
27603  0747452          SPB WHOSYM  2         CHECK FOR END OF DECLARATION      05120
27604  2506033          SXG 1                                                 1*05121
27605  0004321          LDA DECLO                                               05122
27606  2514002          BZE                                                     05123
27607  2601716          BRU REPEAT                                              05124
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27610  0300006          STA XR12                                        05125
27611  0006262          LDA PAVAIL                                      05126
27612  2504032          ADD                                             05127
27613  2740000          STO 0       2                                   05128
27614  2504002          LDZ                                             05129
27615  0304321          STA DECLO                                       05130
27616  2601716          BRU REPEAT                                      05131
                                                                        05132
27617  0006262  OWNDEC   LDA PAVAIL                                     05133
27620  0740205          SPB WRITE   2                                   05134
27621  0740205          SPB WRITE   2                                   05135
27622  2504032          ADD                                             05136
27623  2607575          BRU DEC2                                        05137
                                                                        05138
27624  0004354  OWNCHK   LDA PREV2                                      05139
27625  2102626          CAB OWNID                                       05140
27626  2611371          BRU ER33          NESTED DECLARATIONS           05141
27627  2607541          BRU DREAL1+1                                    05142
27630  2611371          BRU ER33          NESTED DECLARATIONS           05143
                                                                  EJT05144
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                                                                                05145
                                                                                05146
                                    CHAIN IS A SUBROUTINE USED IN THE DEFINITION  05147
                                    OF LABELS, SWITCHES, AND DATA BLOCKS.  IF     05148
                                    ONE OF THESE IDENTIFIERS IS REFERENCED BEFORE 05149
                                    IT IS DEFINED, THE ADDRESS OF THE INSTRUCTION 05150
                                    WHICH WOULD NORMALLY BE GENERATED BECOMES     05151
                                    A POINTER TO THE LAST INSTRUCTION REFERENCING 05152
                                    THE IDENTIFIER,  THE FIRST INSTRUCTION        05153
                                    REFERRING TO THE IDENTIFIER POINTS TO THE     05154
                                    ITABLE IDENTIFIER, WHILE THE ITABLE ID POINTS 05155
                                    TO THE LAST ELEMENT IN THE CHAIN.             05156
                                      ENTER ON XR2 IN ANY GROUP,  EXIT GROUP 0,   05157
                                                                                05158
27631  0101634  CHAIN  ADD CBIT                                                  05159
27632  0304311         STA ATYPE          = DEFINED TYPE OF IDENTIFIER           05160
27633  1744342         STX ITEMP   2      SAVE EXIT                              05161
27634  2506013         SXG 0                                                  0*05162
27635  0024700         LDA NC      1      IDENTIFIER TO BE EXAMINED              05163
27636  2001630         EXT 017777                                                05164
27637  2104311         CAB ATYPE                                                 05165
27640  2607642         BRU *+2                                                   05166
27641  2607720         BRU CHAIN1         IDENTIFIER ALREADY DEFINED             05167
27642  2102106         CAB NOTYPE                                                05168
27643  2607645         BRU *+2                                                   05169
27644  2607662         BRU CHAIN3         FIRST OCCURRENCE OF IDENTIFIER         05170
27645  0101634         ADD CBIT                                                  05171
27646  2104311         CAB ATYPE                                                 05172
27647  2607651         BRU *+2                                                   05173
27650  2607702         BRU CHAIN0         IDENTIFIER REFERENCED, BUT NOT DEFINED 05174
27651  0004322         LDA DEPTH          IDENTIFIER APPARENTLY THE WRONG TYPE   05175
27652  2514002         BZE                                                       05176
27653  2607725         BRU CHAIN4         ERROR EXIT FROM CHAIN                  05177
27654  2506033         SXG 1                                                  1*05178
27655  0770632         SPB BLIST   3      ENTER IDENTIFIER IN BLIST              05179
27656  0044441         LDA BS+1    2      MOVE IDENTIFIER FROM OUTER BLOCK UP TO MAKE 05180
27657  0344443         STA BS+3    2           ROOM FOR POINTER TO LABEL         05181
27660  0001645         LDA SIGN                                                  05182
27661  2344440         ORY BS      2      SET MINUS SIGN TO INDICATE A LABEL IN LIST 05183
27662  0644314  CHAIN3 LDX BSC     2      NOW ADD WORD FOR LABEL TO LIST         05184
27663  0557542         BXH BSLF    2                                             05185
27664  2611275         BRU ER3            TOO MANY SYMBOLS DEFINED AT ONCE       05186
27665  1440002         INX 2       2                                             05187
27666  1744314         STX BSC     2      UPDATE BSC                             05188
27667  2001644         EXT SMASK          TRIM WORD TO SIGN                      05189
27670  2504040         CHS                COMPLETE FUDGE TO GET PROPER SIGN      05190
27671  0100021         ADD XR41           POINTER TO ITABLE ENTRY                05191
27672  0344440         STA BS      2      STORE WORD FOR LABEL IN LIST           05192
27673  0004346         LDA NUOB                                                  05193
27674  2504032         ADO                                                       05194
27675  0304346         STA NUOB           INCREASE COUNT OF NUMBER OF UNDEFINED OBJECTS$05195
27676  0024700         LDA NC      1                                             05196
27677  2001637         EXT AMASK                                                 05197
27700  0300003         STA XR03                                                  05198
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27701  2607714          BRU CHAIN2                                                  05199
27702  0024700  CHAIN0  LDA NC      1      SCAN BACK THROUGH CHAIN TO FIND ITABLE ENTRY 05200
27703  2001637          EXT AMASK                                                  05201
27704  0300003          STA XR03                                                   05202
27705  0000000  CHLOOP  LDA 0       3      LOAD PREVIOUS ENTRY IN CHAIN            05203
27706  2001637          EXT AMASK                                                  05204
27707  2700003          STO XR03           SAVE POINTER TO ENTRY BEFORE THAT       05205
27710  2101663          CAB 02000                                                  05206
27711  2607714          BRU *+3                                                    05207
27712  2607705          BRU CHLOOP         LOOK BACK STILL FURTHER                 05208
27713  2607705          BRU CHLOOP         LOOK BACK STILL FURTHER                 05209
27714  0006262  CHAIN2  LDA PAVAIL         ADDRESS OF ITABLE ID IS IN XR03 NOW     05210
27715  0104311          ADD ATYPE                                                  05211
27716  2001634          EXT CBIT           SET TYPE TO UNDEFINED                   05212
27717  0365001          STA ITABLE+13      UPDATE POINTER IN ITABLE IDENTIFIER     05213
27720  0024700  CHAIN1  LDA NC      1                                             05214
27721  0646262          LDX PAVAIL  2                                              05215
27722  2740000          STO 0       2      FILL IN ADDRESS OF INSTRUCTION          05216
27723  0644342          LDX ITEMP   2                                              05217
27724  2640002          BRU 2       2      NORMAL EXIT                             05218
                                                                                   05219
27725  0644342  CHAIN4  LDX ITEMP   2                                             05220
27726  2640001          BRU 1       2                                             05221
                                                                                   05222
                                   DEFINE  DEFINES AN IDENTIFIER OF THE TYPE      05223
                                   PUT INTO A CHAIN BY THE PRECEEDING SUBROUTINE  05224
                                   AND AT THE SAME TIME FILLS IN ALL ADDRESSES    05225
                                   IN THE CHAIN.                                  05226
                                                                                  05227
27727  0304311  DEFINE  STA ATYPE          = TYPE OF IDENTIFIER BEING DEFINED      05228
27730  1744342          STX ITEMP   2                                              05229
27731  2506013          SXG 0                                                  0*05230
27732  0024700          LDA NC      1      IDENTIFIER BEING DEFINED                05231
27733  2001637          EXT AMASK                                                  05232
27734  0762134          SPB TEMPCK  3                                              05233
27735  2611317          BRU ER12                                                   05234
27736  0300003          STA XR03           INDEX IN I-TABLE, OR CHAIN              05235
27737  0476030          BXL 1000    3                                              05236
27740  2607743          BRU *+3                                                    05237
27741  0471454          BXL PROG    3                                              05238
27742  2611317          BRU ER12                                                   05239
27743  0024700          LDA NC      1                                              05240
27744  2001630          EXT 017777         TRIM TO TYPE                            05241
27745  2102166          CAB NOTYPE                                                 05242
27746  2607750          BRU *+2                                                    05243
27747  2607772          BRU DEFNEW         IDENTIFIER NEVER REFERENCED - LIFE IS EASY 05244
27750  2104311          CAB ATYPE          ATYPE BIT 6 =0, I.E. UNDEFINED          05245
27751  2607753          BRU *+2                                                    05246
27752  2610005          BRU DEFREF         IDENTIFIER ALREADY REFERENCED IN BLOCK  05247
27753  2001634          EXT CBIT           FORM UNDEFINED TYPE                     05248
27754  2104311          CAB ATYPE                                                  05249
27755  2607757          BRU *+2                                                    05250
27756  2611375          BRU ER34           IDENTIFIER DEFINED TWICE                05251
27757  0004322          LDA DEPTH                                                  05252
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27760  2514002          BZE                                                  05253
27761  2611375          BRU ER34              IDENTIFIER DEFINED TWICE       05254
27762  2506033          SXG 1                                             1*05255
27763  0770632          SPB BLIST   3         GET OLD IDENTIFIER OUT OF ITABLE AND INTO BS 05256
27764  0044441          LDA BS+1    2                                        05257
27765  0344443          STA BS+3    2         PUT IDENTIFIER IN PROPER PLACE IN BS 05258
27766  0001645          LDA SIGN                                             05259
27767  2344440          ORY BS      2         SET SIGN BIT FOR LABEL ENTRY IN BS 05260
27770  0044440          LDA BS      2                                        05261
27771  0300003          STA XR03              RESET POINTER TO ITABLE ELEMENT 05262
27772  0644314  DEFNEW  LDX BSC     2                                        05263
27773  0557542          BXH BSLF    2                                        05264
27774  2611275          BRU ER3               BS FULL                        05265
27775  1440002          INX 2       2                                        05266
27776  1744314          STX BSC     2                                        05267
27777  2001644          EXT SMASK             FUDGE TO GET PROPER SIGN       05268
30000  2504040          CHS                                                  05269
30001  0100021          ADD XR41              POINTER TO ITABLE ENTRY        05270
30002  0344440          STA BS      2         STORE IN BS                    05271
30003  0006262          LDA PAVAIL                                           05272
30004  2610020          BRU DEOUT                                            05273
30005  0004346  DEFREF  LDA NUOB                                            05274
30006  2504112          SBO                                                  05275
30007  0304346          STA NUOB              DECREASE COUNT OF NUMBER OF UNDEFINED OBJECTS 05276
30010  0060000  DELOOP  LDA 0       3         LOAD LAST ELEMENT IN CHAIN     05277
30011  2001637          EXT AMASK                                            05278
30012  0304364          STA TEMP                                             05279
30013  0006262          LDA PAVAIL                                           05280
30014  2760000          STO 0       3         FILL IN ADDRESS IN CHAIN       05281
30015  0664364          LDX TEMP    3                                        05282
30016  0576030          BXH 1000    3                                        05283
30017  2610010          BRU DELOOP            MORE LEFT IN CHAIN             05284
30020  0104311  DEOUT   ADD ATYPE                                            05285
30021  0101634          ADD CBIT              BIT TO INDICATE IDENTIFIER IS DEFINED 05286
30022  0365001          STA ITABLE+13         SET ITABLE IDENTIFIER          05287
30023  0644342          LDX ITEMP   2                                        05288
30024  0000001          LDA XR01                                             05289
30025  2504112          SBO                                                  05290
30026  0300001          STA XR01              ERASE NAME OF IDENTIFIER FROM NC 05291
30027  2640001          BRU 1       2         EXIT FROM DEBINE               05292
                                                                         EJT05293
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30030  0002216  DDATA  LDA DTYPE                                          05294
30031  0304311         STA ATYPE                                          05295
30032  2601633         BRU SETGR4                                         05296
                                KDATA COMPILES DATA DECLARATIONS          05297
30033  0004373  KDATA  LDA WHAMI                                         05298
30034  2102303         CAB SPECID                                         05299
30035  2610037         BRU *+2                                            05300
30036  2606075         BRU SPECD          SPECIFY DATA NAME               05301
30037  0004345         LDA NOEL                                           05302
30040  2504032         ADD                                                05303
30041  0304345         STA NOEL           INCREMENT NUMBER OF ELEMENTS IN LIST 05304
30042  0006304         LDA CONST                                          05305
30043  0740205         SPB WRITE   2      STORE FIRST HALF OF CONSTANT    05306
30044  0006305         LDA CONST+1                                        05307
30045  0740205         SPB WRITE   2      STORE SECOND HALF               05308
30046  0747452         SPB WHOSYM  2      CHECK FOR END OF DECLARATION    05309
30047  0004320         LDA CREAD                                          05310
30050  2514002         BZE                                                05311
30051  2611365         BRU ER31           NO DATA IN DATA DECLARATION     05312
30052  2504022         LDD                                                05313
30053  0304317         STA CMODE          SET CONSTANT MODE BACK TO NORMAL 05314
30054  0644321         LDX DECLO   2                                      05315
30055  0457777         BXL 1       2                                      05316
30056  2611371         BRU ER33           DECLARATION IS ALL FOULED UP    05317
30057  0006262         LDA PAVAIL                                         05318
30060  2504032         ADD                                                05319
30061  2740000         STO 0       2      PLANT ADDRESS OF TRANSFER AROUND BLOCK 05320
30062  0004345         LDA NOEL                                           05321
30063  2512001         SLA 1              DOUBLE FOR DOUBLE WORD CONSTANTS 05322
30064  0340002         STA 2       2      2ND WORD OF POINTER = NO. OF WORDS IN BLOCK 05323
30065  2504002         LDZ                                                05324
30066  0304321         STA DECLO          RESET DECLO                     05325
30067  0304320         STA CREAD                                          05326
30070  2601716         BRU REPEAT                                         05327
30071  0761171  DACON  SPB VCHECK  3      CHECK SYNTAX                    05328
30072  2504022         LDD                                                05329
30073  0304320         STA CREAD          INDICATE A CONSTANT HAS BEEN READ 05330
30074  2601446         BRU OUTC2                                          05331
                                                                          EJT05332
```

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                                        DARRAY  INTIALIZES AN ARRAY DECLARATION          05333
                                        OR SPECIFICATION                                05334
                                        SYMB = ARRAY                                    05335
                                                                                        05336
 30075  0024700  DARRAY LDA SC      1                                                   05337
 30076  2102266         CAB BEGID                 CHECK FOR BLOCK ENTRY                 05338
 30077  2610101         BRU *+2                                                         05339
 30100  2610150         BRU ABLOCK                                                      05340
 30101  2102302         CAB REALID                                                      05341
 30102  2610107         BRU DA1                   NO TYPE SPECIFIED FOR ARRAY           05342
 30103  2610140         BRU DAR                   REAL ARRAY                            05343
 30104  2102267         CAB BOOLID                                                      05344
 30105  2610142         BRU DAI                   INTEGER ARRAY                         05345
 30106  2610145         BRU DAB                   BOOLEAN ARRAY                         05346
 30107  0001636  DA1    LDA RBIT                                                        05347
 30110  0101632  DA2    ADD ABIT                                                        05348
 30111  0304311         STA ATYPE                 SET ARRAY TYPE                        05349
 30112  0000001         LDA XR01                                                        05350
 30113  0304310         STA ASTART                ASTART = NC LOC OF FIRST ARRAY IN LIST 05351
 30114  0004351         LDA OWN                                                         05352
 30115  2514002         BZE                                                             05353
 30116  0767472         SPB INDEC   3             STORE BRU AROUND DECLARATION          05354
 30117  0006262         LDA PAVAIL                                                      05355
 30120  2516000         BEV                                                             05356
 30121  0740205         SPB WRITE   2             ADJUST PAVAIL TO EVEN LOCATION FOR CONSTANTS 05357
 30122  0644375         LDX WHAMI   2                                                   05358
 30123  2650124         BRU *+1     2                                                   05359
 30124  2610130         BRU *+4                   BODY                                  05360
 30125  2610132         BRU *+5                   DECLARATION                           05361
 30126  2601633         BRU SETGR4                DO NOT ZERO NOEL IF SPECIFICATION     05362
 30127  2611414         BRU ER39                  ILLEGAL OCCURRENCE OF DECLARATOR      05363
 30130  0002304         LDA DECLID                                                      05364
 30131  0304373         STA WHAMI                 SET WHAMI TO DECLARATION              05365
 30132  2504002         LDZ                                                             05366
 30133  0304345         STA NOEL                                                        05367
 30134  0004324         LDA DSTAT                                                       05368
 30135  2514002         BZE                                                             05369
 30136  2611367         BRU ER32                  DECLARATION IN MIDDLE OF BLOCK        05370
 30137  2601633         BRU SETGR4                STORE ARRAY IDENTIFIER IN SC          05371
                                                                                        05372
 30140  1420001  DAR    INX 1       1             ERASE REAL FROM SC                    05373
 30141  2610107         BRU DA1                                                         05374
 30142  1420001  DAI    INX 1       1             ERASE INTEGER FROM SC                 05375
 30143  2504002         LDZ                                                             05376
 30144  2610110         BRU DA2                                                         05377
 30145  0002176  DAB    LDA BBIT                                                        05378
 30146  1420001         INX 1       1             ERASE BOOLEAN FROM SC                 05379
 30147  2610110         BRU DA2                                                         05380
 30150  0770675  ABLOCK SPB BLOCK   3             ENTER BLOCK                           05381
 30151  2610107         BRU DA1                                                         05382
                                                                                        05383
                                        KARRAY CHECKS FOR THE END OF AN ARRAY           05384
                                        DECLARATION OR SPECIFICATION,                   05385
                                        CALLED FROM MCOMP WHEN SCA = ABRAY              05386
```

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30152  0004373  KARRAY LDA  WHAMI                                          05387
30153  2102303        CAB  SPECID                                         05388
30154  2610156        BRU  *+2                                            05389
30155  2606035        BRU  SPECA          SPECIFY AN ARRAY                05390
30156  0004345        LDA  NOEL                                           05391
30157  2516002        BNZ                                                 05392
30160  2610163        BRU  KARR1          NOT IN LIST OF ARRAY IDENTIFIERS 05393
30161  0770632        SPB  BLIST   3      ENTER IDENTIFIER IN BS IF NECESSARY 05394
30162  2506033        SXG  1                                           1*05395
30163  2504002  KARR1 LDZ                                                 05396
30164  0304345        STA  NOEL                                           05397
30165  0747452        SPB  WHOSYM  2      CHECK FOR END OF DECLARATION    05398
30166  0644321        LDX  DECLO   2                                      05399
30167  0457777        BXL  1       2                                      05400
30170  2611371        BRU  ER33           ILLEGAL DECLARATION             05401
30171  0006262        LDA  PAVAIL                                         05402
30172  2504032        ADO                                                 05403
30173  2740000        STO  0       2      STORE ADDRESS OF TRANSFER       05404
30174  2504002        LDZ                                                 05405
30175  0304321        STA  DECLO                                          05406
30176  0304351        STA  OWN                                            05407
30177  2601716        BRU  REPEAT                                         05408
                                                                          05409
                      BBRACK  DETERMINES WHETHER A LEFT BRACKET           05410
                      BELONGS TO AN ARRAY DECLARATION, OR TO AN           05411
                      ARRAY OR SWITCH CALL.  IF IT IS IN AN ARRAY         05412
                      DECLARATION, COMPUTATION OF THE SUBSCRIPT           05413
                      BOUNDS IS INITIALIZED.                              05414
30200  0644373  BBRACK LDX  WHAMI   2                                     05415
30201  2650202        BRU  *+1     2                                      05416
30202  2610206        BRU  *+4                                            05417
30203  2610214        BRU  *+9            DECLARATION-=CANNOT BE ARRAY CALL 05418
30204  2611303        BRU  ER6            ILLEGAL SPECIFICATION           05419
30205  2611434        BRU  ER56           ILLEGAL PROCEDURE DECLARATION   05420
30206  0640001        LDX  XR01    2                                      05421
30207  0044700        LDA  NC      2                                      05422
30210  2001640        EXT  ACMASK         TRIM TO HIGH ORDER TYPE BITS    05423
30211  2101632        CAB  ABIT                                           05424
30212  2610214        BRU  *+2                                            05425
30213  2602604        BRU  BARRAY         BEGIN COMPILING AN ARRAY CALL   05426
30214  0024700        LDA  SC      1                                      05427
30215  2102264        CAB  ARRID          IDENTIFIER FOR ARRAY            05428
30216  2604407        BRU  SWTCHB         INITIATE A SWITCH CALL          05429
30217  2610221        BRU  *+2            [ OCCURS IN ARRAY DECLARATION   05430
30220  2604407        BRU  SWTCHB                                         05431
30221  2504002        LDZ                                                 05432
30222  0304316        STA  CFLAG          SET COLON FLAG                  05433
30223  2504102        LMO                                                 05434
30224  0304317        STA  CMODE          SET CONSTANT MODE TO ARRAY BOUND 05435
30225  0304323        STA  DINAM          CONSTANT-ONLY FLAG              05436
30226  3001612        FLD  FONE                                           05437
30227  3304300        FST  ASIZE          SET SIZE OF ARRAY = 1           05438
30230  0740205        SPB  WRITE   2      SAVE LOCATION FOR NUMBER OF SUBSCRIPTS 05439
30231  0006262        LDA  PAVAIL                                         05440
```

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30232  0304362          STA SSLO                SSLO = LOCATION OF FIRST SUBSCRIPT          05441
30233  0740205          SPB WRITE   2           SAVE LOCATION FOR ARRAY LO                  05442
30234  0002271          LDA DBID                IDENTIFIER FOR DECLARATION BRACKET          05443
30235  0306317          STA SYMB                                                            05444
30236  0770632          SPB BLIST   3           ENTER IDENTIFIER IN BS IF NECESSARY         05445
30237  2506033          SXG 1                                                              1*05446
30240  2601622          BRU STOSC                                                           05447
                                                                                            05448
                                        ABCON  PROCESSES AN ARRAY BOUND                     05449
30241  0006321  ABCON   LDA TYPE                                                          05450
30242  2514002          BZE                                                                05451
30243  2610071          BRU DACON               TYPE IS INTEGER                            05452
30244  0751471          SPB ROUND   2           ROUND A REAL BOUND                         05453
30245  3306304          FST CONST                                                          05454
30246  2610071          BRU DACON                                                          05455
                                                                                            05456
                                        BCOLON  CHECKS TO SEE IF A COLON IS PART OF        05457
                                        AN ARRAY DECLARATION OR PART OF A LABEL.           05458
                                                                                            05459
30247  0004321  BCOLON  LDA DECLO                                                         05460
30250  2514002          BZE                                                                05461
30251  2604346          BRU KLABEL              COMPILE A LABEL                            05462
30252  0004316          LDA CFLAG                                                          05463
30253  2516002          BNZ                                                                05464
30254  2611406          BRU ER36                TOO MANY COLONS IN BOUND PAIR              05465
30255  2504022          LDO                                                                05466
30256  0304316          STA CFLAG                                                          05467
30257  1006304          DLD CONST                                                          05468
30260  1304302          DST LB                  SET LOWER BOUND OF BOUND PAIR              05469
30261  2600275          BRU INPUT                                                          05470
                                                                                            05471
                                        KAB   GENERATES THE SUBSCRIPT CONSTANTS            05472
                                        FOR AN ARRAY DECLARATION,                          05473
                                        CALLED WHEN AN ARRAY DECLARATION LEFT-             05474
                                        BRACKET IS COMPILED                                05475
                                                                                            05476
30262  0004316  KAB     LDA CFLAG                                                         05477
30263  2514002          BZE                                                                05478
30264  2611410          BRU ER37                ARRAY BOUND PAIR NOT PROPERLY INPUTTED     05479
30265  2504002          LDZ                                                                05480
30266  0304316          STA CFLAG                                                          05481
30267  3204302          FSU LB                  UPPER BOUND IS IN AX - FORM DIFFERENCE     05482
30270  3304302          FST LB                                                             05483
30271  2514721          BAR BMI     7                                                      05484
30272  2611412          BRU ER38                UPPER BOUND LESS THAT LOWER BOUND          05485
30273  3101612          FAD FONE                                                           05486
30274  3306000          FST JUNK                JUNK = RANGE OF CURRENT SUBSCRIPT          05487
30275  3100002          MAQ         A                                                      05488
30276  3504300          FMP ASIZE                                                          05489
30277  3304300          FST ASIZE               UPDATE SIZE OF ARRAY                       05490
30300  0006000          LDA JUNK                FIRST CONSTANT = UB - LB + 1               05491
30301  0740205          SPB WRITE   2                                                      05492
30302  0006001          LDA JUNK+1                                                         05493
30303  0740205          SPB WRITE   2                                                      05494
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30304  3006304          FLD CONST                                          05495
30305  3101612          FAD FONE          FORM UPPER BOUND PLUS ONE        05496
30306  3306000          FST JUNK                                           05497
30307  0006000          LDA JUNK                                           05498
30310  0740205          SPB WRITE   2                                      05499
30311  0006001          LDA JUNK+1                                         05500
30312  0740205          SPB WRITE   2                                      05501
30313  0004345          LDA NOEL                                           05502
30314  2504032          ADD                                                05503
30315  0304345          STA NOEL          INCREASE NUMBER OF SUBSCRIPTS BY ONE 05504
30316  0006317          LDA SYMB                                           05505
30317  2102270          CAB COMID                                          05506
30320  2610322          BRU *+2                                            05507
30321  2600275          BRU INPUT         ANOTHER BOUND PAIR IS COMING     05508
30322  2102301          CAB RBID          RIGHT BRACKET IDENTIFIER         05509
30323  2611371          BRU ER33          ILLEGAL DECLARATION              05510
30324  2610326          BRU *+2           END OF SUBSCRIPT LIST            05511
30325  2611371          BRU ER33          ILLEGAL DECLARATION              05512
30326  2506013          SXG 0                                              0*05513
30327  3004300          FLD ASIZE                                          05514
30330  0751501          SPB UNFLOT  2     CONVERT TO AN INTEGER IN A REGISTER 05515
30331  2512001          SLA 1             DOUBLE TO FORM SIZE OF ARRAY     05516
30332  0304300          STA ASIZE                                          05517
30333  0024700  ABLOOP   LDA NC      1                                     05518
30334  2001637          EXT AMASK         TRIM TO ADDRESS OF ARRAY ID IN ITABLE 05519
30335  0300002          STA XR02                                           05520
30336  0004362          LDA SSLO                                           05521
30337  0300003          STA XR03                                           05522
30340  0104311          ADD ATYPE                                          05523
30341  0345001          STA ITABLE+12     SET ITABLE IDENTIFIER TO POINT TO CONSTANTS 05524
30342  0004351          LDA OWN                                            05525
30343  2516002          BNZ                                                05526
30344  2610412          BRU OWNARY        OWN ARRAY DECLARATION            05527
30345  0006263          LDA VAVAIL                                         05528
30346  0204300          SUB ASIZE                                          05529
30347  2106262          CAB PAVAIL                                         05530
30350  2611271          BRU ER1           STORAGE EXHAUSTED                05531
30351  2611271          BRU ER1           STORAGE EXHAUSTED                05532
30352  2104353          CAB PLF                                            05533
30353  0304353          STA PLF           VAVAIL IS UPPER BOUND FOR PROGRAM STORAGE 05534
30354  2610355          BRU *+1                                            05535
30355  0306263          STA VAVAIL        DECREASE VAVAIL BY SIZE OF ARRAY 05536
30356  0360001  ABLP2   STA 1       3     STORE ARRAY ID IN ARRAY HEADING  05537
30357  0004345          LDA NOEL                                           05538
30360  0360000          STA 0       3     STORE NUMBER OF SUBSCRIPTS IN ARRAY HEADING 05539
30361  0000001          LDA XR01                                           05540
30362  2504112          SBO                                                05541
30363  0300001          STA XR01          ERASE NAME OF ARRAY FROM NUMBER CELLAR 05542
30364  2104310          CAB ASTART                                         05543
30365  2611371          BRU ER33          NC IS REALLY FOULED UP           05544
30366  2610401          BRU ABOUT         LIST OF ARRAYS IS EXHAUSTED      05545
30367  0006262          LDA PAVAIL        DUPLICATE ARRAY HEADING FOR NEXT ARRAY 05546
30370  2504032          ADD                                                05547
30371  0304362          STA SSLO                                           05548
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30372  0060000  ABMOVE LDA 0       3                                    05549
30373  0740205         SPB WRITE   2       MOVE ONE WORD OF HEADING     05550
30374  1460001         INX 1       3                                    05551
30375  0000003         LDA XR03                                         05552
30376  2104362         CAB SSLO                                         05553
30377  2610372         BRU ABMOVE          MORE WORDS LEFT TO MOVE      05554
30400  2610333         BRU ABLOOP          MOVING COMPLETED             05555
30401  2504102  ABOUT  LMO                                              05556
30402  0306320         STA PREV            SET PREV TO INDICATE A VARIABLE 05557
30403  2504022         LDO                                              05558
30404  0304317         STA CMODE           SET CONSTANT MODE TO NORMAL  05559
30405  2506033         SXG 1                                         1*05560
30406  1420001         INX 1       1       ERASE BRACKET FROM SC        05561
30407  2504002         LDZ                                              05562
30410  0304323         STA DINAM                                        05563
30411  2600275         BRU INPUT                                        05564
                                                                        05565
30412  0006262  OWNARY LDA PAVAIL                                       05566
30413  2504032         ADO                                              05567
30414  0304351         STA OWN                                          05568
30415  2504112         SBO                                              05569
30416  0104300         ADD ASIZE                                        05570
30417  0306262         STA PAVAIL                                       05571
30420  2104353         CAB PLF                                          05572
30421  2610424         BRU *+3                                          05573
30422  2610423         BRU *+1                                          05574
30423  0740226         SPB ADJUST  2                                    05575
30424  0004351         LDA OWN                                          05576
30425  2610356         BRU ABLP2                                        05577
                                                                    EJT05578
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                                                                                05579
                                A SWITCH DECLARATION GENERATES THE FOLLOWING    05580
                                HEADING FOR THE SWITCH --                       05581
                                     STX SWEXIT   2                             05582
                                     SPB UNFSUB   2      CONVERT SUBSCRIPT      05583
                                     STA XR02                                   05584
                                     BNZ                                        05585
                                     BMI                                        05586
                                     BRU SWERR           SUBSCRIPT TOO SMALL    05587
                                     SUB *+4                                    05588
                                     BPL                 SUBSCRIPT TOO LARGE    05589
                                     BRU SWERR                                  05590
                                     BRU LIST-1   2                             05591
                                     ( LENGTH + 1 )                             05592
                                     $$$$$               COMPUTATION OF DESIG-  05593
                                     $$$$$               NATIONAL EXPRESSIONS   05594
                                     $$$$$               OCCURRING IN SWITCH    05595
                                     $$$$$               GO HERE                05596
                                LIST BRU XXXXX           TRANSFER TABLE         05597
                                     BRU XXXXX                                  05598
                                        ETC.                                    05599
                                A SWITCH CALL WILL SPB TO THE FIRST             05600
                                INSTRUCTION IN THE HEADING,  IF THE SUBSCRIPT   05601
                                IS IN BOUNDS, THE DESIRED TRANSFER WILL OCCUR   05602
                                IF IT IS NOT, THEN THE SWITCH ACTS AS A NOP     05603
                                WITH SWERR RETURNING CONTROL TO THE LOCATION    05604
                                FOLLOWING THE SWITCH CALL.  TO INSURE THE       05605
                                PROPER ERROR EXIT, SWITCH CALLS OCCURRING IN    05606
                                OTHER SWITCH DECLARATIONS DO NOT SPB TO THE     05607
                                SWITCH CALLED, BUT RELOAD XR01 WITH THE         05608
                                PROPER EXIT AND BRU TO THE SWITCH CALLED.       05609
                                                                                05610
                                                                                05611
                                BSWTCH  INITIALIZES THE DECLARATION OF A        05612
                                SWITCH,                                         05613
                                CALLED BY BASSGN                                05614
                                                                                05615
30426  0767472  BSWTCH SPB INDEC   3        STORE BRU AROUND DECLARATION       05616
30427  0004373         LDA WHAMI                                                05617
30430  2102304         CAB DECLID                                               05618
30431  2611371         BRU ER33             ILLEGAL DECLARATION                 05619
30432  2610434         BRU *+2                                                  05620
30433  2611371         BRU ER33             ILLEGAL DECLARATION                 05621
30434  2504112         SBO                                                      05622
30435  0304373         STA WHAMI            SET WHAMI TO BODY                   05623
30436  0002261         LDA SWSTX            STX SWEXIT,1 TO SAVE LOC OF SPB TO SWITCH  05624
30437  0740205         SPB WRITE   2        STORE AS FIRST WORD OF SWITCH HEADING  05625
30440  0001646         LDA SWTYPE                                               05626
30441  0747727         SPB DEFINE  2        DEFINE LAST ENTRY IN NC AS A SWITCH 05627
30442  0006262         LDA PAVAIL                                               05628
30443  0300003         STA XR03                                                 05629
30444  0101620         ADD TEN                                                  05630
30445  0306262         STA PAVAIL                                               05631
30446  2104353         CAB PLF                                                  05632
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30447  2610452          BRU  *+3                ENOUGH ROOM LEFT FOR HEADING                05633
30450  2610451          BRU  *+1                                                           05634
30451  0740226          SPB  ADJUST  2          SEE IF THERE IS MORE ROOM                   05635
30452  0001622          LDA  DM9                                                           05636
30453  2504004          LQA                                                                05637
30454  0106262          ADD  PAVAIL                                                        05638
30455  2402541          MOV  SWHEAD             STORE SWITCH HEADING IN PROGRAM            05639
30456  0006262          LDA  PAVAIL                                                        05640
30457  2760006          STO  6       3          FILL IN REFERENCE TO LENGTH OF SWITCH       05641
30460  2504032          ADO                                                                05642
30461  0304361          STA  SLOC               SAVE ADDRESS OF NEXT AVAILABLE LOCATION    05643
30462  0000001          LDA  XR01                                                          05644
30463  0304310          STA  ASTART             MARK BEGINNING OF LIST OF LABELS IN NC     05645
30464  2600275          BRU  INPUT                                                         05646
                                                                                          05647
                                DSWTCH  PROCESSES EACH LABEL AS IT IS ADDED               05648
                                TO THE SWITCH LIST, AND GENERATES THE                     05649
                                TRANSFER TABLE AT THE END                                 05650
                                                                                          05651
30465  0004373  DSWTCH LDA  WHAMI                                                         05652
30466  2102303         CAB  SPECID                                                        05653
30467  2610471         BRU  *+2                                                           05654
30470  2605764         BRU  SPECS              SPECIFY A SWITCH                           05655
30471  2506013         SXG  0                                                             0*05656
30472  0024700         LDA  NC      1          LAST LABEL READ IN                         05657
30473  2001630         EXT  017777                                                        05658
30474  2102164         CAB  DETYPE                                                        05659
30475  2610477         BRU  *+2                                                           05660
30476  2610546         BRU  DSW4               DESIGNATIONAL EXPRESSION IN SWITCH         05661
30477  0000021         LDA  XR41               POINTER TO ITABLE ENTRY                    05662
30500  0324700         STA  NC      1                                                     05663
30501  0747452  DSW1   SPB  WHOSYM  2          CHECK FOR END OF DECLARATION               05664
30502  0644321         LDX  DECLO   2                                                     05665
30503  0457777         BXL  1       2                                                     05666
30504  2611371         BRU  ER33               NESTED DECLARATIONS                        05667
30505  0004361         LDA  SLOC                                                          05668
30506  2504112         SBO                                                                05669
30507  2740012         STO  10      2          STORE REFERENCE TO TRANSFER LIST           05670
30510  0000001         LDA  XR01                                                          05671
30511  0304361         STA  SLOC               SET SLOC = POINTER TO LAST ENTRY IN NC     05672
30512  0204310         SUB  ASTART             FORM NUMBER OF ENTRIES IN LIST             05673
30513  2504032         ADO                                                                05674
30514  0340013         STA  11      2          STORE LENGTH OF SWITCH +1                  05675
30515  0106262         ADD  PAVAIL                                                        05676
30516  2740000         STO  0       2          FILL IN TRANSFER AROUND DECLARATIONS       05677
30517  0004310         LDA  ASTART                                                        05678
30520  2504032         ADO                                                                05679
30521  2104361  DSW2   CAB  SLOC                                                         05680
30522  2610531         BRU  DSW3               MORE ELEMENTS LEFT IN SWITCH LIST          05681
30523  2610531         BRU  DSW3               MORE ELEMENTS LEFT IN SWITCH LIST          05682
30524  0624310         LDX  ASTART  1          RESET NUMBER CELLAR COUNTER                05683
30525  2504002         LDZ                                                                05684
30526  0304321         STA  DECLO              RESET DECLO                                05685
30527  2506033         SXG  1                                                             1*05686
```

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30530  2601716          BRU REPEAT                                          05687
30531  0300001  DSW3    STA XR01                                            05688
30532  0024700          LDA NC      1                                       05689
30533  0300021          STA XR41                SET POINTER TO ITABLE ENTRY 05690
30534  0201665          SUB 02000                                           05691
30535  2516001          BPL                                                 05692
30536  2610542          BRU *+4                                             05693
30537  0640021          LDX XR41    2           RESTORE IDENTIFIER OF LABEL TO NC 05694
30540  0045001          LDA ITABLE+12                                       05695
30541  0324700          STA NC      1                                       05696
30542  0764363          SPB GOTO    3           GENERATE BRU IN TRANSFER LIST 05697
30543  0000001          LDA XR01                                            05698
30544  0101616          ADD TWO                 INCREMENT NUMBER CELLAR COUNTER FOR NEXT EL 05699
30545  2610521          BRU DSW2                                            05700
30546  0004361  DSW4    LDA SLOC                                            05701
30547  0101635          ADD LBIT                                            05702
30550  0101634          ADD CBIT                SET TYPE EQUAL TO DEFINED LABEL 05703
30551  0324700          STA NC      1           GENERATE LABEL FOR ADDRESS OF COMPUATION 05704
30552  0006262          LDA PAVAIL                  OF DESIGNATIONAL EXPRESSION 05705
30553  2504032          ADD                                                 05706
30554  0304361          STA SLOC                RESET SLOC TO NEXT AVAILABLE LOCATION 05707
30555  2610501          BRU DSW1                                            05708
                                                                            NAM05709
                                                                            05710
                                SPECIFY A STRING                            05711
30556  0705630  DSTRNG  SPB SPEC    3                                       05712
30557  2611430          BRU ER52                ILLEGAL CALL BY VALUE       05713
30560  0001632          LDA ABIT                                            05714
30561  2365001          ORY ITABLE+13           ADD SPECIFIED BIT TO F,P,-ID IN ITABLE 05715
30562  0002217          LDA STTYPE                                          05716
30563  2605702          BRU SPEC2+2             PUT TYPE IN THUNK LINK AND CONTINUE 05717
                                                                            EJT05718
```

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                                                                                05719
                                    A BEGIN MUST FOLLOW A SEMI-COLON, DO, THEN,     05720
                                      ELSE, OR BEGIN                            05721
                                                                                05722
                                    INFORMATION IN THE SYMBOL CELLAR FOR A      05723
                                      COMPOUND STATEMENT . . .                  05724
                                         SC    BEGIN-ID                         05725
                                                                                05726
                                    FOR BLOCK                                   05727
                                         SC    BEGIN-ID (TAGGED)                05728
                                         SC+1  BSC                              05729
                                                                                05730
 30564  2504022  DBEGIN LDO                                                     05731
 30565  0304324         STA DSTAT              SET DECLARATION STATUS TO -LEGAL- 05732
 30566  0000001         LDA XR01                                                05733
 30567  2516002         BNZ                                                     05734
 30570  2611404         BRU ER35               ILLEGAL OCCURRENCE OF -BEGIN-    05735
 30571  0644373         LDX WHAMI   2                                           05736
 30572  2650573         BRU *+1     2                                           05737
 30573  2601633         BRU SETGR4                                              05738
 30574  2611404         BRU ER35                                                05739
 30575  2611303         BRU ER6                                                 05740
 30576  2611371         BRU ER33                                                05741
 30577  2601633         BRU SETGR4                                              05742
                                                                                05743
 30600  0001644  KBEGIN LDA SMASK                                               05744
 30601  0304371         STA TSFLAG             FUDGE TEMP POINTER--FOR FUDGE AT EPARAM 05745
 30602  0000001         LDA XR01                                                05746
 30603  2516002         BNZ                                                     05747
 30604  2611363         BRU ER30               TROUBLE                          05748
 30605  0006317         LDA SYMB                                                05749
 30606  2102306         CAB SCID                                                05750
 30607  2610611         BRU *+2                                                 05751
 30610  2600275         BRU INPUT              SYMB IS A SEMICOLON              05752
 30611  2102604         CAB ENDID                                               05753
 30612  2611363         BRU ER30               TROUBLE                          05754
 30613  2610615         BRU *+2                                                 05755
 30614  2611363         BRU ER30               TROUBLE                          05756
 30615  1420001         INX 1       1          ERASE BEGIN-ID FROM SYMBOL CELLAR 05757
 30616  0024677         LDA SC-1    1          CHECK FOR BLOCK BEGIN            05758
 30617  2002203         EXT COMASK                                              05759
 30620  2514002         BZE                                                     05760
 30621  2610623         BRU BEGIN1             NOT BLOCK                        05761
 30622  0770753         SPB UNBLOK  3                                           05762
 30623  0537701  BEGIN1 BXH 63      1                                           05763
 30624  2600240         BRU WRAPUP             EXITING OUTERMOST BLOCK          05764
 30625  2506053         SXG 2                                                2*05765
 30626  0767331         SPB KMNTLP  3          SCAN FOR END OF COMMENT FOLLOWING  END 05766
 30627  0306317         STA SYMB               SYMBOL TERMINATING COMMENT       05767
 30630  0662037         LDX MODUN   3          SET INPUT MODE TO UNDEFINED      05768
 30631  2601572         BRU ROUTE                                               05769
                                                                               EJT05770
```

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                                                                                05771
                        REASSIGNMENT OF IDENTIFIERS WITHIN BLOCKS IS            05772
                        KEPT TRACK OF IN THE BLOCK SYMBOL LIST - BS.            05773
                        THE BEGINNING OF EACH BLOCK IS MARKED BY A              05774
                        0 IN THE BS AND A POINTER IN THE SC TO THIS             05775
                        0, ALONG WITH THE LOCATION TO RESET VARIABLE            05776
                        STORAGE TO.  ALL IDENTIFIERS WHICH ARE RE-              05777
                        ASSIGNED WITHIN THE BLOCK HAVE THEIR OLD                05778
                        ITABLE IDENTIFIERS PUT IN THE BS TOGETHER               05779
                        WITH THE POINTER TO THE ITABLE LOCATION.                05780
                        EACH LABEL ENCOUNTERED WITHIN THE BLOCK IS              05781
                        ALSO PUT IN THE BS WITH A - SIGN.  UPON                 05782
                        ENTRY TO A NEW BLOCK, ALL THESE LABELS ARE              05783
                        TEMPORARILY UNDEFINED BY STORING THEIR IDS              05784
                        IN THE BS AND CHANGING THE ITABLE TYPE TO               05785
                        NOTYPE.  UPON EXIT FROM A BLOCK, ALL LABELS             05786
                        LOCAL TO THAT BLOCK ARE UNDEFINED AND ALL               05787
                        IDENTIFIERS IN THE OUTER BLOCK REGAIN THEIR             05788
                        ORIGINAL SIGNIFICANCE.                                  05789
                                                                                05790
                        BLIST  PUTS THE OLD VALUES OF IDENTIFIERS               05791
                        WHICH ARE HAVING THEIR TYPES CHANGED INTO               05792
                        THE BS.                                                 05793
                                                                                05794
30632  2506013  BLIST  SXG 0                                                   0*05795
30633  0004322         LDA DEPTH                                               05796
30634  2516002         BNZ                                                     05797
30635  2610644         BRU BLIST1              IDENTIFIER IS NOT IN OUTERMOST BLOCK  05798
30636  0024700         LDA NC      1                                           05799
30637  2001630         EXT 017777                                              05800
30640  2102166         CAB NOTYPE                                              05801
30641  2611375         BRU ER34                IDENTIFIER IS DEFINED TWICE IN OUTER BLOCK  05802
30642  2610673         BRU BLIST2                                              05803
30643  2611375         BRU ER34                IDENTIFIER IS DEFINED TWIDE IN OUTER BLOCK  05804
30644  0644314  BLIST1 LDX BSC     2           GET SET TO ENTER IDENTIFIER IN BS  05805
30645  0557542         BXH BSLF    2                                           05806
30646  2611275         BRU ER3                 BS FULL                         05807
30647  1440002         INX 2       2                                           05808
30650  1744314         STX BSC     2                                           05809
30651  0024700         LDA NC      1           OLD IDENTIFIER                  05810
30652  0344441         STA BS+1    2           STORE IN BS                     05811
30653  0000021         LDA XR41                POINTER TO ITABLE ENTRY         05812
30654  0344440         STA BS      2           STORE POINTER IN BS             05813
30655  0102166         ADD NOTYPE                                              05814
30656  0324700         STA NC      1           SET TYPE OF NEW IDENTIFIER TO NOTYPE  05815
30657  0660002         LDX XR02    3                                           05816
30660  0000003         LDA XR03                                                05817
30661  0201616         SUB TWO                                                 05818
30662  0300003         STA XR03                                                05819
30663  0064440         LDA BS      3                                           05820
30664  2101610         CAB ZERO                                                05821
30665  2610660         BRU *-5                                                 05822
30666  2610673         BRU BLIST2                                              05823
30667  2100021         CAB XR41                                                05824
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30670  2610660          BRU *-8                                    05825
30671  2611375          BRU ER34          DOUBLY DEFINED IN THIS BLOCK  05826
30672  2610660          BRU *-10                                   05827
30673  0660007  BLIST2  LDX XR13    3                             05828
30674  2660001          BRU 1       3     EXIT FROM BLIST         05829
                                                                  EJT05830
```

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                                                                                05831
                        BLOCK  IS CALLED UPON ENTRY INTO A NEW BLOCK            05832
                        IT UNDEFINES ALL LABELS IN THE OUTER BLOCK              05833
                        AND SETS THE MARKERS FOR THE NEW BLOCK.                 05834
                                                                                05835
30675 0000005 BLOCK  LDA XR11                                                   05836
30676 1760020        STX XR40    3                                              05837
30677 2504112        SBO                                                        05838
30700 0300005        STA XR11                                                   05839
30701 2100001        CAB XR01                                                   05840
30702 2611277        BRU ER4            NUMBER CELLAR - SYMBOL CELLAR FULL      05841
30703 2611277        BRU ER4            NUMBER CELLAR - SYMBOL CELLAR FULL      05842
30704 0024701        LDA SC+1    1                                              05843
30705 0102200        ADD CTAG                                                   05844
30706 0324700        STA SC      1      STORE SYMBOL FOR BEGINNING OF BLOCK     05845
30707 0644314        LDX BSC     2                                              05846
30710 0557542        BXH BSLF    2                                              05847
30711 2611275        BRU ER3            NO MORE ROOM LEFT IN BS                 05848
30712 2504002        LDZ                                                        05849
30713 0344444        STA BS+4    2      PUT MARKER IN BS                        05850
30714 0006263        LDA VAVAIL                                                 05851
30715 0344443        STA BS+3    2      SAVE VAVAIL IN BS                       05852
30716 0344445        STA BS+5    2                                              05853
30717 0004352        LDA PBLOK                                                  05854
30720 0344442        STA BS+2    2                                              05855
30721 0004314        LDA BSC                                                    05856
30722 0102103        ADD FOUR                                                   05857
30723 0304314        STA BSC            UPDATE BSC                              05858
30724 0324701        STA SC+1    1      STORE POINTER TO LO OF LIST IN BS       05859
30725 0304352        STA PBLOK                                                  05860
30726 0044440 BLOCK1 LDA BS      2      PICK UP IDENTIFIER IN OUTER BLOCK       05861
30727 2101610        CAB ZERO                                                   05862
30730 2610736        BRU BLOCK3         POINTER BELONGS TO A LABEL              05863
30731 2610746        BRU BLOCK4         END OF SCAN TO FIX UP LABELS            05864
30732 0000006 BLOCK2 LDA XR12                                                   05865
30733 0201616        SUB TWO                                                    05866
30734 0300006        STA XR12           DECREMENT INDEX TO LOOK AT NEXT ELEMENT 05867
30735 2610726        BRU BLOCK1                                                 05868
30736 0300007 BLOCK3 STA XR13           = POINTER TO ITABLE ENTRY               05869
30737 0065001        LDA ITABLE+13                                              05870
30740 0344441        STA BS+1    2      SAVE ITABLE ENTRY                       05871
30741 0002166        LDA NOTYPE                                                 05872
30742 0144440        ADD BS      2                                              05873
30743 2504040        CHS                                                        05874
30744 0365001        STA ITABLE+13      SET ITABLE IDENTIFIER TO NOTYPE         05875
30745 2610732        BRU BLOCK2                                                 05876
30746 0004322 BLOCK4 LDA DEPTH                                                  05877
30747 2504032        ADD                                                        05878
30750 0304322        STA DEPTH          INCREASE COUNT OF DEPTH OF NESTING      05879
30751 0660020        LDX XR40    3                                              05880
30752 2660001        BRU 1       3                                              05881
                                                                        EJT05882
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                                        UNBLOK  PLUGS AWAY UNTIL THE STATUS QUO HAS          05883
                                        BEEN RESTORED ON EXIT FROM A BLOCK                   05884
 30753  2506113  UNBLOK SXG  4                                                             4*05885
 30754  0620005        LDX  XR11   1                                                        05886
 30755  0024700        LDA  SC     1        POINTER TO L0 IN BS FOR BLOCK                05887
 30756  0300022        STA  XR42            TEMPORARY BSC                                05888
 30757  0202103        SUB  FOUR                                                         05889
 30760  0304364        STA  TEMP                                                         05890
 30761  0300021        STA  XR41            KEEP REGISTER FOR RESETTING BSC              05891
 30762  0044436        LDA  BS-2   2        POINTER TO L0 OF LIST FOR OUTER BLOCK         05892
 30763  0300023        STA  XR43                                                         05893
 30764  0304352        STA  PBLOK                                                        05894
 30765  0006263        LDA  VAVAIL          GET LOWEST VALUE VAVAIL HAS HAD IN THIS BLOCK05895
 30766  2144437        CAB  BS-1   2                                                     05896
 30767  2610772        BRU  *+3             PRESENT VAVAIL IS IT                         05897
 30770  2610771        BRU  *+1             PREVIOUS LOWEST IS IT                        05898
 30771  0044437        LDA  BS-1   2        PREVIOUS LOWEST IS IT                        05899
 30772  2164437        CAB  BS-1   3        GOT IT.  IF LOWER THAN SIMILAR VALUE FOR     05900
 30773  0364437        STA  BS-1   3          OUTER BLOCK, UPDATE.                       05901
 30774  2610775        BRU  *+1                                                          05902
 30775  2504006        MAQ                  Q = MINIMUM FOR THIS BLOCK                   05903
 30776  0044441        LDA  BS+1   2        VAVAIL UPON ENTRY TO THIS BLOCK              05904
 30777  2514001        BMI                  -1 INDICATES PROCEDURE DECLARATION           05905
 31000  2504001        LAQ                  IF TAGGED, RESET TO MINIMUM INSTEAD          05906
 31001  0306263        STA  VAVAIL                                                       05907
                                                                                         05908
 31002  1440002  UNB1  INX  2        2      LOOP TO UNDEFINE VARIABLES LOCAL TO BLOCK    05909
 31003  0004314        LDA  BSC                                                          05910
 31004  2100022        CAB  XR42                                                         05911
 31005  2611134        BRU  UNB10           END OF LOOP                                  05912
 31006  2611007        BRU  *+1                                                          05913
 31007  0044440        LDA  BS     2                                                     05914
 31010  0300023        STA  XR43            POINTER TO ITABLE ENTRY FOR IDENTIFIER       05915
 31011  2514001        BMI                                                               05916
 31012  2611016        BRU  UNB2            ENTRY IS FOR A LABEL                         05917
 31013  0044441        LDA  BS+1   2                                                     05918
 31014  0365001        STA  ITABLE+13       RESET ITABLE IDENTIFIER FOR NON-LABEL        05919
 31015  2611002        BRU  UNB1                                                         05920
                                                                                         05921
                                        ENTRY IS LABEL                                   05922
                                                                                         05923
 31016  0065001  UNB2  LDA  ITABLE+13      CHECK TO SEE IF LABEL IS DEFINED IN BLOCK    05924
 31017  2001641        EXT  DMASK                                                        05925
 31020  2514002        BZE                                                               05926
 31021  2611027        BRU  UNB3            HORRORS, IT WASNT                            05927
 31022  0002166        LDA  NOTYPE                                                       05928
 31023  0100023        ADD  XR43                                                         05929
 31024  2504040        CHS                                                               05930
 31025  0365001        STA  ITABLE+13       DESTROY LABEL                                05931
 31026  2611002        BRU  UNB1                                                         05932
                                        ENTRY WAS NOT DEFINED - MUST BE DEFINED IN       05933
                                        OUTER BLOCK                                      05934
 31027  0044440  UNB3  LDA  BS       2                                                   05935
 31030  2504040        CHS                                                               05936
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31031  2144442          CAB BS+2    2                                          05937
31032  2611034          BRU **+2                                               05938
31033  2611373          BRU ER34A          ID HAS NON-LABEL SIGNIFICANCE OUTSIDE BLOCK  05939
31034  0065001          LDA ITABLE+13      START SCAN BACK THROUGH OUTER BLOCK TO SEE  05940
31035  0304342          STA ITEMP               IF LABEL APPEARED THERE         05941
31036  2001630          EXT 017777                                             05942
31037  0306321          STA TYPE           TYPE CAN BE LABEL, SWITCH, OR DATA  05943
31040  0664364          LDX TEMP    3      SET POINTER TO LAST ELEMENT IN OUTER BLOCK  05944
31041  0064440  UNB4    LDA BS      3                                          05945
31042  2101610          CAB ZERO                                               05946
31043  2611056          BRU UNB5           ENTRY IN OUTER BLOCK IS A LABEL     05947
31044  2611052          BRU UNB4,5         END OF OUTER BLOCK - LABEL NOT IN IT  05948
31045  2504040          CHS                NOT A LABEL - DO SOME ERROR CHECKING  05949
31046  2144440          CAB BS      2                                          05950
31047  2611061          BRU UNB5,5         OK SO FAR                           05951
31050  2611375          BRU ER34           ID DEFINED TWICE IN OUTER BLOCK     05952
31051  2611061          BRU UNB5,5                                             05953
31052  0044440  UNB4,5  LDA BS      2      ADD LABEL TO LIST FOR OUTER BLOCK   05954
31053  1420002          INX 2       1                                          05955
31054  0324440          STA BS      1                                          05956
31055  2611002          BRU UNB1                                               05957
31056  2144440  UNB5    CAB BS      2      CHECK TO SEE IF LABELS MATCH        05958
31057  2611061          BRU **+2                                               05959
31060  2611065          BRU UNB6           THEY DO                             05960
31061  0000023  UNB5,5  LDA XR43                                              05961
31062  0201616          SUB TWO                                                05962
31063  0300023          STA XR43                                               05963
31064  2611041          BRU UNB4           CONTINUE SCAN THROUGH OUTER BLOCK   05964
31065  0064441  UNB6    LDA BS+1    3      IDENTIFIER IN OUTER BLOCK           05965
31066  2001631          EXT 037777                                             05966
31067  2106321          CAB TYPE                                               05967
31070  2611375          BRU ER34           ID DEFINED TWICE IN OUTER BLOCK     05968
31071  2611073          BRU **+2                                               05969
31072  2611375          BRU ER34           ID DEFINED TWICE IN OUTER BLOCK     05970
31073  0064441          LDA BS+1    3                                          05971
31074  2001637          EXT AMASK                                              05972
31075  0306000          STA JUNK           SAVE DEFINING ADDRESS OF LABEL IN OUTER BLOCK  05973
31076  0004346          LDA NUOB                                               05974
31077  2504112          SBO                                                    05975
31100  0304346          STA NUOB           DECREASE COUNT OF UNDEFINED OBJECTS  05976
31101  0064441          LDA BS+1    3                                          05977
31102  2001641          EXT DMASK                                              05978
31103  2514002          BZE                                                    05979
31104  2611121          BRU UNB8           LABEL REFERENCED BUT UNDEFINED IN OUTER BLOCK  05980
31105  0004342          LDA ITEMP          LABEL DEFINED IN OUTER BLOCK        05981
31106  2001637          EXT.AMASK                                              05982
31107  0300023          STA XR43           POINTER TO LAST EL IN CHAIN IN INNER BLOCK  05983
31110  0060000  UNB7    LDA 0       3      PICK UP ELEMENT IN CHAIN            05984
31111  2001637          EXT AMASK                                              05985
31112  0304342          STA ITEMP          SAVE POINTER TO NEXT ELEMENT IN CHAIN  05986
31113  0006000          LDA JUNK                                               05987
31114  2760000          STO 0       3      FILL IN ADDRESS                     05988
31115  0664342          LDX ITEMP   3                                          05989
31116  0574060          BXH 2000    3                                          05990
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31117  2611110          BRU  UNB7                MORE IN CHAIN                                  05991
31120  2611002          BRU  UNB1                ALL REFERENCES TO LABEL ARE FILLED IN          05992
31121  0666000  UNB8    LDX  JUNK     3          POINTER TO LAST EL IN CHAIN IN OUTER BLOCK     05993
31122  0000000          LDA  0        3          SCAN TO FIND ITABLE ENTRY                      05994
31123  2001637          EXT  AMASK                                                            05995
31124  2101663          CAB  02000                                                            05996
31125  2611131          BRU  UNB9                FOUND POINTER TO ITABLE                      05997
31126  2611127          BRU  *+1                                                              05998
31127  0300023          STA  XR43                                                             05999
31130  2611122          BRU  UNB8+1                                                           06000
31131  0004342  UNB9    LDA  ITEMP                                                            06001
31132  2760000          STO  0        3          TACK TWO CHAINS TOGETHER                     06002
31133  2611002          BRU  UNB1                                                             06003
                                                                                             06004
31134  1724314  UNB10   STX  BSC      1          RESET BSC AT END OF FIRST LOOP               06005
31135  0644364          LDX  TEMP     2          LOOP TO RESTORE LABELS IN OUTER BLOCK        06006
31136  0044440  UNB11   LDA  BS       2                                                       06007
31137  2101610          CAB  ZERO                                                             06008
31140  2611146          BRU  UNB13               RESTORE A LABEL                              06009
31141  2611152          BRU  UNB14               END OF LOOP                                  06010
31142  0000022  UNB12   LDA  XR42               LOOP TO LOOK AT NEXT ELEMENT                 06011
31143  0201616          SUB  TWO                                                              06012
31144  0300022          STA  XR42                                                             06013
31145  2611136          BRU  UNB11                                                            06014
31146  0300023  UNB13   STA  XR43               POINTER TO ITABLE IDENTIFIER                 06015
31147  0044441          LDA  BS+1     2                                                       06016
31150  0305001          STA  ITABLE+13           RESTORE ITABLE IDENTIFIER                    06017
31151  2611142          BRU  UNB12                                                            06018
31152  0004322  UNB14   LDA  DEPTH                                                          06019
31153  2504112          SBO                                                                   06020
31154  0304322          STA  DEPTH               DECREASE DEPTH COUNT                         06021
31155  2506033          SXG  1                                                              1*06022
31156  1420001          INX  1        1          ERASE BSC                                    06023
31157  2660001          BRU  1        3                                                       06024
                                                                                          NAM06025
                                                                                          EJT06026
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31160  2602323  MCOMP  BRU KEXP      COMPILE EXPONENTIATION                        06027
31161  2602256         BRU KMULT     COMPILE MULTIPLICATION                        06028
31162  2602266         BRU KDIV      COMPILE DIVISION                              06029
31163  2602300         BRU KSIDIV    COMPILE SPECIAL INTEGER DIVIDE                06030
31164  2602213         BRU KPLUS     COMPILE ADDITION                              06031
31165  2602224         BRU KMINUS    COMPILE SUBTRACTION                           06032
31166  2600004         BRU RETURN    IGNORE UNARY +                                06033
31167  2602230         BRU KUMIN     COMPILE UNARY MINUS                           06034
31170  2602360         BRU KLT       COMPILE LESS THAN                             06035
31171  2602377         BRU KLTE      COMPILE LESS THAN OR EQUAL                    06036
                                                                                   06037
31172  2602337         BRU KEQUAL    COMPILE EQUAL                                 06038
31173  2602355         BRU KNEQ      COMPILE NOT EQUAL                             06039
31174  2602401         BRU KGTE      COMPILE GREATER THAN OR EQUAL                 06040
31175  2602362         BRU KGT       COMPILE GREATER THAN                          06041
31176  2602424         BRU KNOT      COMPILE NOT                                   06042
31177  2602434         BRU KAND      COMPILE AND                                   06043
31200  2602446         BRU KOR       COMPILE OR                                    06044
31201  2602460         BRU KIMPLY    COMPILE IMPLY                                 06045
31202  2602450         BRU KEQUIV    COMPILE EQUIV                                 06046
31203  2603203         BRU KTHEN     COMPILE THEN                                  06047
                                                                                   06048
31204  2603275         BRU KELSE     COMPILE ELSE                                  06049
31205  2603724         BRU KSTEP     COMPILE STEP                                  06050
31206  2604027         BRU KUNTIL    COMPILE UNTIL                                 06051
31207  2603662         BRU KWHILE    COMPILE WHILE                                 06052
31210  2604331         BRU KDO       COMPILE DO                                    06053
31211  2606100         BRU VALUE     VALUE SPECIFICATION                           06054
31212  2600021         BRU YOICKS    *****  GOTO DEBUGGING ROUTINE                 06055
31213  2610262         BRU KAB       COMPILE ARRAY BOUND                           06056
31214  2604412         BRU KSWTCH    COMPILE A SWITCH CALL                         06057
31215  2606466         BRU KPARAM    COMPILE PROCEDURE PARAMETER                   06058
                                                                                   06059
31216  2605214         BRU KPRINT    COMPILE OUTPUT PROCEDURE                      06060
31217  2604766         BRU KINPUT    COMPILE INPUT PROCEDURE                       06061
31220  2605567         BRU KFCT      COMPILE STANDARD PROCEDURE CALL               06062
31221  2605761         BRU DLABEL    SPECIFY A LABEL                               06063
31222  2610556         BRU DSTRNG    SPECIFY A STRING                              06064
31223  2604360         BRU KGOTO     COMPILE GOTO                                  06065
31224  2610600         BRU KBEGIN    COMPILE BEGIN                                 06066
31225  2604574         BRU DPROC     DECLARE A PROCEDURE                           06067
31226  2603070         BRU KIF       COMPILE IF                                    06068
31227  2603543         BRU KFOR      COMPILE A FOR LIST ELEMENT                    06069
                                                                                   06070
31230  2602475         BRU KASSGN    COMPILE ASSIGNMENT                            06071
31231  2607220         BRU KPAREN    COMPILE LEFT PARENTHESIS                      06072
31232  2602625         BRU KSUBSC    COMPILE SUBSCRIPT                             06073
31233  2607554         BRU DECLAR    DECLARE A REAL VARIABLE                       06074
31234  2607554         BRU DECLAR    DECLARE AN INTEGER VARIABLE                   06075
31235  2607554         BRU DECLAR    DECLARE A BOOLEAN VARIABLE                    06076
31236  2610152         BRU KARRAY    ADJUST LIST OF ARRAYS BEING DECLARED          06077
31237  2610465         BRU DSWTCH    ADJUST SWITCH DECLARATION                     06078
31240  2610033         BRU KDATA     COMPILE DATA DECLARATION                      06079
                                                                                   06080
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31241  2604355  MSYMB  BRU BGOTO    RESET DECLARATION STATUS                          06081
31242  2610564         BRU BBEGIN   INITIATE COMPOUND STATEMENT ( OR BLOCK )          06082
31243  2604462         BRU BPROC    INITIATE PROCEDURE DECLARATION                    06083
31244  2603004         BRU BIF      INITIATE A CONDITIONAL                            06084
                                                                                      06085
31245  2603417         BRU BFOR     INITIATE A FOR STATEMENT                          06086
31246  2607231         BRU BASSGN   BRANCH ON ASSIGNMENT                             06087
31247  2604700         BRU BPAREN   BRANCH ON LEFT PARENTHESIS                        06088
31250  2610200         BRU BBRACK   BRANCH ON LEFT BRACKET                           06089
31251  2607531         BRU DREAL    INITIATE REAL DECLARATION                         06090
31252  2607517         BRU DINTGR   INITIATE INTEGER DECLARATION                     06091
31253  2607521         BRU DBOOL    INITIATE BOOLEAN DECLARATION                      06092
31254  2610075         BRU DARRAY   INITIATE ARRAY DECLARATION                       06093
31255  2607523         BRU ISWTCH   INITIATE SWITCH DECLARATION                       06094
31256  2610030         BRU DDATA    INITIATE A DATA DECLARATION                       06095
                                                                                      06096
31257  2607502         BRU DOWN     DECLARE OWN VARIABLE                              06097
31260  2607431         BRU KCMNT    COMPILE COMMENT                                   06098
31261  2611270         BRU BAPOS    BRANCH ON APOSTROPHE                              06099
31262  2605307         BRU BQUOTE   BRANCH ON QUOTE                                   06100
31263  2610247         BRU BCOLON   BRANCH ON COLON                                   06101
31264  2601260         BRU CONEXP   ENTER CONSTANT ROUTINE - SYMB = $                 06102
31265  2601342         BRU CONDEC   ENTER CONSTANT ROUTINE - SYMB = .                 06103
31266  2601557         BRU KTRUE    GENERATE BOOLEAN CONSTANT TRUE                    06104
31267  2601561         BRU KFALSE   GENERATE BOOLEAN CONSTANT FALSE                   06105
                                                                                      06106
31270  2611420  BAPOS  BRU ER41     ****  NOT IN COMPILER YET **********************06107
                                                                                    NAN06108
                                                                                    EJT06109
```

```
                                        THESE ROUTINES LOAD A WITH AN IDENTIFYING       06110
                                        CODE AND THEN BRANCH TO ERROR, WHICH STORES T   06111
                                        THE CODE AND LINE-NUMBER IN THE OBJECT          06112
                                        PROGRAM AREA FOR PROCESSING AT RUN-TIME         06113
31271  2504022  ER1    LDQ                  STORAGE EXHAUSTED                          06114
31272  2611436         BRU ERROR                                                       06115
31273  0001616  ER2    LDA TWO              IDENTIFIER TOO LONG                        06116
31274  2611436         BRU ERROR                                                       06117
31275  0001623  ER3    LDA THREE            TOO MANY SYMBOLS                           06118
31276  2611436         BRU ERROR                                                       06119
31277  0002110  ER4    LDA D4               EXPRESSION TOO COMPLICATED                 06120
31300  2611436         BRU ERROR                                                       06121
31301  0001570  ER5    LDA D5               ADJACENT EXPRESSIONS                       06122
31302  2611436         BRU  ERROR                                                      06123
31303  0001571  ER6    LDA D6               ILLEGAL SPECIFICATION                      06124
31304  2611436         BRU ERROR                                                       06125
31305  0001572  ER7    LDA D7               TWO DECIMAL POINTS IN CONSTANT             06126
31306  2611436         BRU ERROR                                                       06127
31307  0001617  ER8    LDA D8               CONSTANTS ONLY                             06128
31310  2611436         BRU ERROR                                                       06129
31311  0002111  ER9    LDA D9               EXPONENT OF CONSTANT TOO LARGE             06130
31312  2611436         BRU ERROR                                                       06131
31313  0001620  ER10   LDA D10              TOO MANY CONSTANTS                         06132
31314  2611436         BRU ERROR                                                       06133
31315  0002112  ER11   LDA D11              ILLEGAL SYMBOL AFTER EXPRESSION            06134
31316  2611436         BRU ERROR                                                       06135
31317  0002113  ER12   LDA D12              ILLEGAL SYMBOL SEQUENCE                    06136
31320  2611436         BRU ERROR                                                       06137
31321  0002114  ER13   LDA D13              TWO NOTS                                   06138
31322  2611436         BRU ERROR                                                       06139
31323  0001656  ER14   LDA D14              TWO RELATIONS TOGETHER                     06140
31324  2611436         BRU ERROR                                                       06141
31325  0002115  ER15   LDA D15              MIXED BOOLEAN AND ARITHMETIC TYPES         06142
31326  2611436         BRU ERROR                                                       06143
31327  0002116  ER16   LDA D16              ILLEGAL VARIABLE                           06144
31330  2611436         BRU ERROR                                                       06145
31331  0002117  ER17   LDA D17              ARRAY NOT SUBSCRIPTED                      06146
31332  2611436         BRU ERROR                                                       06147
31333  0002120  ER18   LDA D18              ILLEGAL LEFT PART VARIABLE                 06148
31334  2611436         BRU ERROR                                                       06149
31335  0002104  ER19   LDA D19              ILLEGAL SUBSCRIPT                          06150
31336  2611436         BRU ERROR                                                       06151
31337  0002105  ER20   LDA D20              ERROR--SUSPECT MISSING CLOSE BRACKET       06152
31340  2611436         BRU ERROR                                                       06153
31341  0002121  ER21   LDA D21              NUMBER OF SUBSCRIPTS WRONG                 06154
31342  2611436         BRU ERROR                                                       06155
31343  0001573  ER22   LDA D22              ERROR--SUSPECT MISSING --THEN--            06156
31344  2611436         BRU ERROR                                                       06157
31345  0002122  ER23   LDA D23              NON-BOOLEAN EXPRESSION FOLLOWING --IF--    06158
31346  2611436         BRU ERROR                                                       06159
31347  0001574  ER24   LDA D24              ERROR--SUSPECT MISSING SEMICOLON           06160
31350  2611436         BRU ERROR                                                       06161
31351  0002123  ER25   LDA D25              MESSY CONDITIONAL                          06162
31352  2611436         BRU ERROR                                                       06163
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31353  0002141  ER26   LDA D26          ILLEGAL LABEL                          06164
31354  2611436         BRU ERROR                                              06165
31355  0001575  ER27   LDA D27          ERROR--SUSPECT MISSING CLOSE PAREN     06166
31356  2611436         BRU ERROR                                              06167
31357  0002142  ER28   LDA D28          DATA BLOCK NAME MISSING                06168
31360  2611436         BRU ERROR                                              06169
31361  0002124  ER29   LDA D29          ERROR IN PROCEDURE CALL                06170
31362  2611436         BRU ERROR                                              06171
31363  0001624  ER30   LDA D30          TROUBLE                                06172
31364  2611436         BRU ERROR                                              06173
31365  0002143  ER31   LDA D31          MISSING DATA                           06174
31366  2611436         BRU ERROR                                              06175
31367  0001576  ER32   LDA D32          DECLARATION SHOULD FOLLOW BEGIN        06176
31370  2611436         BRU ERROR                                              06177
31371  0002125  ER33   LDA D33          ILLEGAL DECLARATION                    06178
31372  2611436         BRU ERROR                                              06179
31373  0044440  ER34A  LDA BS     2                                           06180
31374  0300021         STA XR41         FUDGE                                  06181
31375  0006252  ER34   LDA ERX1                                                06182
31376  2516002         BNZ WRAPUP                                             06183
31377  2600240
31400  0000021         LDA XR41                                               06184
31401  0306252         STA ERX1         SAVE ITABLE POINTER OF PREDEFINED SYMBOL 06185
31402  0002126         LDA D34           SYMBOL ALREADY DEFINED                06186
31403  2611436         BRU ERROR                                              06187
31404  0002127  ER35   LDA D35          ILLEGAL OCCURENCE OF BEGIN             06188
31405  2611436         BRU ERROR                                              06189
31406  0002130  ER36   LDA D36          BOUND PAIR ERROR                       06190
31407  2611436         BRU ERROR                                              06191
31410  0002107  ER37   LDA D37          NO COLON IN BOUND PAIR                 06192
31411  2611436         BRU ERROR                                              06193
31412  0002131  ER38   LDA D38          UB LESS THAN LB                        06194
31413  2611436         BRU ERROR                                              06195
31414  0002132  ER39   LDA D39          ILLEGAL OCCURENCE OF DECLARATION       06196
31415  2611436         BRU ERROR                                              06197
31416  0002133  ER40   LDA D40          ILLEGAL ASSIGNMENT TO FORMAL PARAMETER 06198
31417  2611436         BRU ERROR                                              06199
31420  0002106  ER41   LDA D41          NOT IN                                 06200
31421  2611436         BRU ERROR                                              06201
31422  0001577  ER43   LDA D43          SPURIOUS QUOTE                         06202
31423  2611436         BRU ERROR                                              06203
31424  0002134  ER44   LDA D44          PROGRAM INCOMPLETE                     06204
31425  2611436         BRU ERROR                                              06205
31426  0002135  ER45   LDA D45          ERRORO IN FOR STATEMENT                06206
31427  2611436         BRU ERROR                                              06207
31430  0002136  ER52   LDA D52          ILLEGAL CALL BY VALUE                  06208
31431  2611436         BRU ERROR                                              06209
31432  0002137  ER55   LDA D55          ILLEGAL ENTRY TO FOR STATEMENT         06210
31433  2611436         BRU ERROR                                              06211
31434  0002140  ER56   LDA D56          ILLEGAL PROCEDURE DECLARATION          06212
31435  2611436         BRU ERROR                                              06213
                                                                              06214
31436  0304364  ERROR  STA TEMP         ERROR FLAG STORE ROUTINE               06215
31437  0004376         LDA ERFLAG                                             06216
```

```
31440  2514002          BZE                    CHECK FOR FIRST ERROR                    06217
31441  2611461          BRU FERROR             IS FIRST, SET SOME FLAGS                 06218
31442  0004364          LDA TEMP               NOT FIRST, BROTHER IS THIS GUY POOR      06219
31443  0740257          SPB ERWRIT  2          WRITE ERROR CODE                         06220
31444  2102134          CAB D44                CHECK FOR PROGRAM INCOMPLETE             06221
31445  2611447          BRU *+2                                                         06222
31446  2600240          BRU WRAPUP             IS,  BETTER LEAVE                        06223
31447  2101623          CAB THREE              CHECK FOR SYMBOL TABLE OVERFLOW, BETTER LEAVE06224
31450  2611456          BRU *+6                                                         06225
31451  2611453          BRU *+2                                                         06226
31452  2611456          BRU *+4                                                         06227
31453  0004343          LDA LINENO                                                      06228
31454  0740257          SPB ERWRIT  2          WRITE LINE NO ANYWAY                     06229
31455  2600255          BRU WRAPP1             THEN LEAVE                               06230
31456  0004343          LDA LINENO                                                      06231
31457  0740257          SPB ERWRIT  2          WRITE LINE NUMBER                        06232
31460  2600255          BRU WRAPP1                                                      06233
                                                                                       06234
31461  2504102  FERROR  LMO                    FIRST ERROR, STOP COMPILATION, ETC       06235
31462  0304376          STA ERFLAG             AND SET ERFLAG,ERAVAL                    06236
31463  0002031          LDA ERLO                                                        06237
31464  0304377          STA ERAVAL                                                      06238
31465  0002175          LDA VARLO                                                       06239
31466  0201656          SUB D14                                                         06240
31467  0306262          STA PAVAIL                                                      06241
31470  2611442          BRU ERROR+4                                                     06242
                                               ROUND CONVERTS A FLOATING POINT NUMBER INTO 06243
                                               INTO A FLOATING POINT INTEGER           06244
                                               CALLED BY ASSIGNMENT STATEMENTS, SUBSCRIPTS 06245
31471  3101604  ROUND   FAD ,5                                                        06246
31472  3200010          SET UFLPOINT                                                    06247
31473  3101606          FAD BIGZER                                                      06248
31474  3500005          CQX                                                          CQX*06249
31475  3100005          NOX                                                          NOX*06250
31476  3100010          SET NFLPOINT                                                    06251
31477  2640001          BRU 1       2                                                   06252
                                                                                       06253
                                               UNFLOT CONVERTS A POSITIVE INTEGER IN FP FORM 06254
                                               INTO AN INTEGER IN THE A REGISTER       06255
                                               CALLED BY KAB                           06256
31500  3100005          NOX                                                             06257
31501  3101604  UNFLOT  FAD ,5                                                        06258
31502  3200010          SET UFLPOINT                                                    06259
31503  3101606          FAD BIGZER                                                      06260
31504  3306000          FST JUNK                                                        06261
31505  0006000          LDA JUNK                                                        06262
31506  2101606          CAB BIGZER                                                      06263
31507  2611406          BRU ER36                                                        06264
31510  2611512          BRU *+2                                                         06265
31511  2611406          BRU ER36                                                        06266
31512  0006001          LDA JUNK+1                                                      06267
31513  3100010          SET NFLPOINT                                                    06268
31514  2640001          BRU 1       2                                                   06269
                                                                                    NAM06270
```

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                                                                                EJT06271
          33750          LOC 33750                                              06272
33750   1726323          STX PROG-1  1                                          06273
33751   2504002          LDZ                                                    06274
33752   2500011          RCS                                                    06275
33753   2514001          BM1                                                    06276
33754   2613776          BRU *+18                                               06277
33755   0306324          STA PROG                                               06278
33756   0626324          LDX PROG    1                                          06279
33757   0020000          LDA 0       1                                          06280
33760   2504012          NOP                                                    06281
33761   2504012          NOP                                                    06282
33762   2504012          NOP                                                    06283
33763   2504012          NOP                                                    06284
33764   2504012          NOP                                                    06285
33765   2504012          NOP                                                    06286
33766   2504012          NOP                                                    06287
33767   2504012          NOP                                                    06288
33770   2504012          NOP                                                    06289
33771   2504012          NOP                                                    06290
33772   2504012          NOP                                                    06291
33773   2504012          NOP                                                    06292
33774   2504012          NOP                                                    06293
33775   2613751          BRU *-20                                               06294
33776   0626323          LDX PROG-1  1                                          06295
33777   2613777          BRU *                                                  06296
                                                                                06297
T05000                   TCD DISK1          TRANSFER CARD TO READ PROGRAM ONTO DISK 06298
                                                                                NAN06299
                                                                                EJT06300
```

```
                                        ROUTINE TO POSITION OVERLAY FOR READING ONTO      06301
                                        DISK.                                             06302
                                                                                          06303
            05000           LOC 5000                                                      06304
05000   2504002   DISK2   LDZ                                                           06305
05001   2500011           RCS                                                           06306
05002   2514000           BOD                                                           06307
05003   2605025           BRU MOVE                                                      06308
05004   2500007           TON                                                           06309
05005   0621610           LDX ZERO    1                                                 06310
05006   0601610   TYPA    LDX ZERO    0                                                 06311
05007   0025040           LDA MSSG    1                                                 06312
05010   2516005   TYP     BNN                                                           06313
05011   2605010           BRU *-1                                                       06314
05012   2510406           SAN 6                                                         06315
05013   2500006           TYP                                                           06316
05014   1400001           INX 1       0                                                 06317
05015   0417775           BXL 3       0                                                 06318
05016   2605010           BRU TYP                                                       06319
05017   1420001           INX 1       1                                                 06320
05020   0437772           BXL 6       1                                                 06321
05021   2605006           BRU TYPA                                                      06322
05022   2516005           BNN                                                           06323
05023   2605022           BRU *-1                                                       06324
05024   2605000           BRU DISK2                                                     06325
05025   2504010   MOVE    WAI                                                           06326
05026   2605031           BRU *+3                                                       06327
05027   2605027           BRU *                                                         06328
05030   2500013           KON                                                           06329
05031   1005036           DLD DISKC                                                     06330
05032   2401400           MOV OVER                                                      06331
05033   0005037           LDA DISKC+1                                                   06332
05034   2504522           NEG                                                           06333
05035   2640001           BRU 1       2                                                 06334
05036   0020000   DISKC   OCT 20000                                                     06335
05037   3775400           OCT 3775400                                                   06336
05040   0666237   MSSG    OCT 666237                                                    06337
05041   0236331           ALF CTI                                                       06338
05042   0016030           ALF 1 H                                                       06339
05043   0246011           ALF D 9                                                       06340
05044   0456646           ALF NWO                                                       06341
05045   0606033           ALF  ,                                                        06342
                                                                                          06343
                                                                                    EJT06344
```

```
                                                                                06345
                                OVERLAY LINKAGE WITH EXECUTIVE                  06346
                                                                                06347
          01400                 LOC 1400                                        06348
          01400    OVER         BSS 4                                           06349
01404     0214327                ALF ALG                                         06350
01405     0000001                OCT 1          NUMBER OF THE OVERLAY            06351
01406     0000000                OCT 0          NEXT THREE WORDS ARE MOVE CONSTANTS 06352
01407     3777777                DEC -1                                          06353
01410     0000000                OCT 0                                           06354
                                                MAIN SYSTEM                     06355
                                                                              NAM06356
          01570                 LOC 1570                                        06357
01570     0000005    FIVE        DEC 5                                           06358
01571     0000006    SIX         DEC 6                                           06359
01572     0000007    SEVEN       DEC 7                                           06360
01573     0000026    D22         DEC 22                                          06361
01574     0000030    D24         DEC 24                                          06362
01575     0000033    O33         OCT 33                                          06363
01576     0000040    O40         OCT 40                                          06364
01577     0000053    O53         OCT 53                                          06365
01600     0014000    EXP3        OCT 0014000                                     06366
01601     0004100    OBLO        OCT 4100                                        06367
01602     2400000    *MOV*       MOV 0                                           06368
                                                                              EJT06369
```

```
                                                                                                                    06370
                                                                                                                    06371
                                                                                                                    06372
                                                                                                                    06373
                                                                                                                    06374
                                                                                                                    06375
01603  0000060  060     OCT 60                                                                                      06376
01604  0002000  .5      FDC .5                                                                                      06377
01605  0000000
01606  0170000  BIGZER  FDC 0B30                                                                                   06378
01607  0000000
         02151  SYNTAX  EQU 1129                                                                                   06379
01610  0000000  FZERO   FDC 0                                                                                      06380
01611  0000000
01612  0006000  FONE    FDC 1B1                                                                                     06381
01613  0000000
01614  0006000  FMONE   FDC -1                                                                                     06382
01615  2000000
         01610  ZERO    EQU FZERO                                                                                  06383
01616  0000002  TWO     OCT 2                                                                                       06384
01617  0000010  EIGHT   DEC 8                                                                                       06385
01620  0000012  TEN     DEC 10                                                                                      06386
01621  0000001  ONE     DEC 1                                                                                       06387
01622  3777767  DM9     DEC -9                                                                                      06388
01623  0000003  THREE   DEC 3                                                                                       06389
01624  0000036  D30     DEC 30                                                                                      06390
01625  0000074  D60     DEC 60                                                                                      06391
01626  3777776  DM2     DEC -2                                                                                      06392
01627  0003777  U3777   OCT 3777                                                                                    06393
01630  0017777  U17777  OCT 17777                                                                                   06394
01631  0037777  U37777  OCT 37777                                                                                   06395
01632  0400000  ABIT    OCT 400000                                                                                * 06396
01633  0000000          OCT 0                                                                                       06397
         01632  GR2     EQU ABIT                                                                                   06398
01634  0020000  CBIT    OCT 20000                                                                                   06399
01635  1000000  LBIT    OCT 1000000                                                                                 06400
01636  0040000  RBIT    OCT 0040000                                                                                 06401
01637  3760000  AMASK   OCT 3760000     LEAVE ADDRESS ONLY                                                       * 06402
01640  0177777  ACMASK  OCT 177777      LEAVES HIGH-ORDER TAGS ONLY                                              * 06403
01641  3757777  ARMASK  OCT 3757777                                                                                06404
01642  3777700  CHMASK  OCT 3777700     LEAVE 6-BIT CHARACTER ONLY                                                 06405
01643  3774000  EPMASK  OCT 3774000     REMOVE EXPONENT                                                            06406
01644  1777777  SMASK   OCT 1777777     LEAVE SIGN BIT                                                             06407
01645  2000000  SIGN    OCT -0                                                                                     06408
01646  1400000  SWTYPE  OCT 1400000     SWITCH TYPE                                                                06409
01647  2504012  *NOP*   NOP                                                                                        06410
01650  1740000  *STX2*  STX 0       2                                                                              06411
01651  0010000  U10000  OCT 10000                                                                                  06412
01652  2621204  MODC1   BRU CONST1+11                                                                              06413
01653  2621274  MODC2   BRU CONST2+11                                                                              06414
01654  2621317  MODC3   BRU CONST3+11                                                                              06415
01655  0000115  D77     DEC 77                                                                                     06416
01656  0000016  D14     DEC 14                                                                                     06417
01657  0777777  FILLS   OCT 777777                                                                                06418*
```

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

```
01660  0000000  DBLONE DDC 1                                          06419
01661  0000001
01662  0170000  D30B8  DEC 30B8                                       06420
01663  0002000  D2000  OCT 2000                                       06421
01664  3777770  CMASK  OCT 3777770                                    06422
01665  0007777  07777  OCT 7777                                       06423
                                CONSTANTS FOR CONSTANT CONVERSION     06424
01666  0006000  CTABLE FDC 1B1                                        06425
01667  0000000
01670  0022400        FDC 10B4                                        06426
01671  0000000
01672  0037100        FDC 1E2B7                                       06427
01673  0000000
01674  0053720        FDC 1E3B10                                      06428
01675  0000000
01676  0072342        FDC 1E4B14                                      06429
01677  0000000
01700  0107032        FDC 1E5B17                                      06430
01701  1000000
01702  0123641        FDC 1E6B20                                      06431
01703  0200000
01704  0142304        FDC 1E7B24                                      06432
01705  1320000
01706  0156765        FDC 1E8B27                                      06433
01707  1604000
01710  0332160        FDC 1E16B54                                     06434
01711  1571157
01712  0656356        FDC 1E32B107                                    06435
01713  0265552
01714  1527023        FDC 1E64B213                                    06436
01715  1403722
01716  1777777        OCT 1777777                                     06437
01717  1777777        OCT 1777777                                     06438
                                                                      06439
                                                                     EJT06440
```

```
                                        PROVIDES INTERNAL IDENTIFIERS FOR ALGOL                 06441
                                        SYMBOLS, SPECIAL CODES FOR CONTROL CHARACTERS           06442
                                        AND, FOR LETTERS, THE INITIAL INDEX FOR THE             06443
                                        ALLIST LOOKUP, FOR ALGOL SYMBOL, THE TAG                06444
                                        BITS GIVE THE FOLLOWING INFORMATION                     06445
                                                                                                06446
                                        CHARACTER  GROUP SUBGROUP  PREV     U  NUMBER            06447
 01720  0010000  CLIST  OCT 10000       0                                                       06448
 01721  0010001         OCT 10001       1                                                       06449
 01722  0010002         OCT 10002       2                                                       06450
 01723  0010003         OCT 10003       3                                                       06451
 01724  0010004         OCT 10004       4                                                       06452
 01725  0010005         OCT 10005       5                                                       06453
 01726  0010006         OCT 10006       6                                                       06454
 01727  0010007         OCT 10007       7                                                       06455
 01730  0010010         OCT 10010       8                                                       06456
 01731  0010011         OCT 10011       9                                                       06457
 01732  3405064         OCT 3405064     APOSTROPHE  6              2     1      52             06458
 01733  3600016         OCT 3600016     COLON       7        0     LOOK FOR =                  06459
 01734  3405052  PAREN  OCT 3405052     OPEN PAREN  6              2     1      42             06460
 01735  3004075         OCT 3004075     SEMICOLON   4              2           61             06461
 01736  3600161         OCT 3600161     =           7        1     LOOK FOR /                  06462
 01737  2242004         OCT 2242004     BACK SLASH  1        2     1            4              06463
 01740  2262005  PLUSID OCT 2262005     +           1        3     1            5              06464
 01741  0000121         OCT 0121        A                                                       06465
 01742  0000422         OCT 0422        B                                                       06466
 01743  0001123         OCT 1123        C                                                       06467
 01744  0001424  D      OCT 1424        D                                                       06468
 01745  0001725  E      OCT 1725        E                                                       06469
 01746  0002426         OCT 2426        F                                                       06470
 01747  0002727         OCT 2727        G                                                       06471
 01750  0000030         OCT 0030        H                                                       06472
 01751  0003131         OCT 3131        I                                                       06473
 01752  2000001  BELLID OCT 2000001     BELL (NON-INPUTTABLE)                                   06474
 01753  3400070  DECID  OCT 3400070     .           6              0           56             06475
 01754  3405065         OCT 3405065     QUOTE       6              2     1     53             06476
 01755  3405064         OCT 3405064     QUESTION MARK (STRINGS ONLY)                            06477
 01756  3600216         OCT 3600216     LESS THAN   7        2     LOOK FOR =                  06478
 01757  2000003         OCT 2000003     CR                                                      06479
 01760  2262006  MINID  OCT 2262006     -           1        3     1            6              06480
 01761  0000041         OCT 0041        J                                                       06481
 01762  0000042         OCT 0042        K                                                       06482
 01763  0003743  L      OCT 3743        L                                                       06483
 01764  0000044         OCT 0044        M                                                       06484
 01765  0004145  N      OCT 4145        N                                                       06485
 01766  0004246  O      OCT 4246        O                                                       06486
 01767  0004447         OCT 4447        P                                                       06487
 01770  0000050         OCT 0050        Q                                                       06488
 01771  0004751         OCT 4751        R                                                       06489
 01772  0000000         OCT 0           TAB                                                     06490
 01773  3400067  EXPID  OCT 3400067     )           6              0           55             06491
 01774  2242002         OCT 2242002     *           1        2     1            2              06492
 01775  2000002  EOMCH  OCT 2000002     EOM                                                     06493
 01776  3600316         OCT 3600316     GREATER     7        3     LOOK FOR =                  06494
```

```
01777  2222001          OCT 2222001          ARROW          1     1     1           1 06495
02000  0000000          OCT 0                SPACE                                  06496
02001  3600416          OCT 3600416          /              7     4     LOOK FOR =   06497
02002  0005162  S       OCT 5162             S                                      06498
02003  0005763  T       OCT 5763             T                                      06499
02004  0006364          OCT 6364             U                                      06500
02005  0006565          OCT 6565             V                                      06501
02006  0006766          OCT 6766             W                                      06502
02007  0000067          OCT 0067             X                                      06503
02010  0007170          OCT 7170             Y      *****                           06504
02011  0000071          OCT 0071             Z                                      06505
02012  2000000          OCT 2000000          LINE FEED                              06506
02013  3003076          OCT 3003076          ,              4           1     1    62 06507
02014  3002074          OCT 3002074          CLOSE PAREN    4           1          60 06508
02015  3403053          OCT 3403053          [              6           1     1    43 06509
02016  3002073          OCT 3002073          ]              4           1          59 06510
02017  2000004  SPCH    OCT 2000004          FILL                                   06511
02020  0000122  EXOEND  OCT 122              COMPILE-TIME END OF OUTPUT BUFFER      06512
02021  0000000  PFLAG   DEC 0                COMPILE-TIME FLAG                      06513
02022  0645707  SWLDX   LDX SWEXIT  2                                               06514
02024  0721403  SIDSPB  SPB SIDSUB  1                                               06515
02025  0000000          OCT 0                RESULT IS OF INTEGER TYPE              06516
02026  2601405  BRUFOR  BRU FORERR                                                  06517
02027  3501614  AAUCHS  FMP FMONE                                                   06518
02030  0017776  CRUDLO  LDA CRUD                                                    06519
02031  0006323  ERLO    DEC PROG-1                                                  06520
02032  2600107  NOVER   BRU START1                                                  06521
02033  2600074  YOVER   BRU START                                                   06522
02034  0005000  ETABLO  LDA ETABLE                                                  06523
02035  0006013  LOCID2  LDA IDENT2                                                  06524
02036  2620520  MODIDN  BRU IDENT-1  1                                              06525
02037  2620416  MODUN   BRU UNDEF-1  1                                             06526
02040  2620551  RETDN   BRU IDDONE   1                                             06527
02041  2621627  RETRD   BRU READ-1   1                                             06528
02042  2621715  RETRPT  BRU REPEAT-11                                              06529
02043  2620274  RETINP  BRU INPUT-1  1                                             06530
02044  2626412  RETNCP  BRU NCP5-1   1                                             06531
02045  2622331  RETREL  BRU KREL1-1  1                                             06532
02046  2623755  RETSTP  BRU STEP1-1  1                                             06533
02047  2622676  RETSUB  BRU SUBSC3-11                                              06534
02050  0721407  BPRSPB  SPB BPRSUB   1                                             06535
02051  0741410  DNFSPB  SPB DUNFLT   2                                             06536
02052  0721411  POWSPB  SPB POWSUB   1                                             06537
02053  0040000          OCT 40000            RESULT IS OF TYPE REAL                 06538
02054  0721412  PROSPB  SPB PLINK    1                                             06539
02055  0721413  RDTSPB  SPB RDTSUB   1                                             06540
02056  0721415  PRTSPB  SPB PRTSUB   1                                             06541
02057  0741417  RNDSPB  SPB RNDSUB   2                                             06542
02060  0721421  RDASPB  SPB RDASUB   1                                             06543
02061  0721422  RD2SPB  SPB RD2SUB   1                                             06544
02062  0721462  RSFSPB  SPB RESTFL   1                                             06545
02063  0721463  RDDSPB  SPB SETFIL   1                                             06546
         02063  WRSSPB  EQU RDDSPB                                                 06547
02064  0721464  RDBSPB  SPB RDBSUB   1                                             06548
```

```
02065  0721465  WT2SPB SPB WRTSUB  1                                  06549
02066  2601423  STRERR BRU ASER                                       06550
02067  0721425  TSTSPB SPB TSTSUB  1                                  06551
02070  0721426  SHOSPB SPB SHOSUB  1                                  06552
02071  0721430  TABSPB SPB TAB     1                                  06553
02072  0721432  CRTSPB SPB CRT     1                                  06554
02073  0721434  STRSPB SPB STRSUB  1                                  06555
02074  0760003  EOSPB  SPB 3       3                                  06556
02075  0721436  RSTSPB SPB RESTOR  1          RESTORE                 06557
02076  0741470  LNKSPB SPB LINK    2                                  06558
02077  0005706  LDADBL LDA DBLOCK                                     06559
02100  2601440  BRUEND BRU GETOUT                                     06560
02101  1726000  FORX1  STX JUNK    1                                  06561
02102  0006000  FORX2  LDA JUNK                                       06562
02103  0000004  FOUR   OCT 4                                         06563
02104  0000023  D19    DEC 19                                        06564
02105  0000024  D20    DEC 20                                        06565
02106  0000051  D41    DEC 41                                        06566
02107  0000045  D37    DEC 37                                        06567
02110  0000004  D4     DEC 4                                         06568
         01570  D5     EQU FIVE                                      06569
         01571  D6     EQU SIX                                       06570
         01572  D7     EQU SEVEN                                     06571
         01617  D8     EQU EIGHT                                     06572
02111  0000011  D9     DEC 9                                         06573
         01620  D10    EQU TEN                                       06574
02112  0000013  D11    DEC 11                                        06575
02113  0000014  D12    DEC 12                                        06576
02114  0000015  D13    DEC 13                                        06577
02115  0000017  D15    DEC 15                                        06578
02116  0000020  D16    DEC 16                                        06579
02117  0000021  D17    DEC 17                                        06580
02120  0000022  D18    DEC 18                                        06581
02121  0000025  D21    DEC 21                                        06582
02122  0000027  D23    DEC 23                                        06583
02123  0000031  D25    DEC 25                                        06584
         01575  D27    EQU 033                                       06585
02124  0000035  D29    DEC 29                                        06586
         01576  D32    EQU 040                                       06587
02125  0000041  D33    DEC 33                                        06588
02126  0000042  D34    DEC 34                                        06589
02127  0000043  D35    DEC 35                                        06590
02130  0000044  D36    DEC 36                                        06591
02131  0000046  D38    DEC 38                                        06592
02132  0000047  D39    DEC 39                                        06593
02133  0000050  D40    DEC 40                                        06594
         01577  D43    EQU 053                                       06595
02134  0000054  D44    DEC 44                                        06596
02135  0000055  D45    DEC 45                                        06597
02136  0000064  D52    DEC 52                                        06598
02137  0000067  D55    DEC 55                                        06599
02140  0000070  D56    DEC 56                                        06600
02141  0000032  O32    OCT 32                                        06601
02142  0000034  O34    OCT 34                                        06602
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 02143  0000037  U37     OCT 37                                                  06603
 02144  0000072  U72     OCT 72                                                  06604
 02145  0000073  U73     OCT 73                                                  06605
          01625  U74     EQU D60                                                 06606
 02146  0000077  U77     OCT 77                                                  06607
 02147  0000100  U100    OCT 100                                                 06608
 02150  0000124  U124    OCT 124                                                 06609
 02151  0000200  U200    OCT 200                                                 06610
 02152  0000400  U400    OCT 400                                                 06611
 02153  0000700  U700    OCT 700                                                 06612
 02154  0000707  U711    OCT 707                                                 06613
 02155  0006002  U6002   OCT 6002                                                06614
 02156  0006060  U6060   OCT 6060                                                06615
 02157  0007700  U7700   OCT 7700                                                06616
 02160  0013677  U13677  OCT 13677                                               06617
          02141  D26     EQU 032                                                 06618
          02142  D28     EQU 034                                                 06619
          02143  D31     EQU 037                                                 06620
 02161  0200000  GR1     OCT 0200000                                             06621
 02162  0260000  GR1S3   OCT 0260000                                             06622
 02163  1200000  GR5     OCT 1200000                                             06623
 02164  1600000  GR7     OCT 1600000                                             06624
 02165  1234567  MAGIC   OCT 1234567                                             06625
 02166  1760000  NOTYPE  OCT 1760000                                             06626
 02167  0300000  SFUDGE  OCT 300000                                              06627
 02170  0600060  SPBSP   OCT 600060                                              06628
 02171  0006251  CONLF   OCT 6251                                                06629
 02172  0000201  CONLF1  OCT 201                                                 06630
 02173  0006050  CONLO   OCT 6050                                                06631
 02174  0006324  OBJLO   DEC PROG                                              C 06632
 02175  0017774  VARLO   OCT 17774                                               06633
 02176  0100000  BBIT    OCT 100000                                              06634
          01635  GR4     EQU LBIT                                                06635
 02177  0600000  SSBITS  OCT 600000                                              06636
 02200  0000100  CTAG    OCT 100                                                 06637
 02201  0000300  DCTAG   OCT 300                                                 06638
          01634  XTAG    EQU CBIT        UPPER MEMORY BIT                        06639
 02202  3677777  BMASK   OCT 3677777     LEAVE BOULEAN BIT ONLY                  06640
 02203  3777477  COMASK  OCT 3777477     CONDITIONAL TAGS                        06641
          01641  DMASK   EQU ARMASK      DEFINED TAG                             06642
 02204  3777701  EQMASK  OCT 3777701     EQUIVALENCE CLASS OF IDENTIFIER         06643
 02205  3776000  ETMASK  OCT 3776000     ETABLE RELATIVE ADDRESS                 06644
 02206  3700000  IAMASK  OCT 3700000     LEAVES 15-BIT ADDRESS                   06645
 02207  3771777  PMASK   OCT 3771777     LEAVE PREVIOUS TAG                      06646
 02210  3737777  RMASK   OCT 3737777     LEAVE REAL BIT                          06647
 02211  3637777  TMASK   OCT 3637777     R-I-B MASK                              06648
 02212  3776777  UMASK   OCT 3776777     LEAVE UNARY TAG                         06649
 02213  3000000  WMASK   OCT 3000000                                             06650
 02214  3400000  YMASK   OCT 3400000                                             06651
 02215  0100000  *ADD*   ADD 0                                                   06652
 02216  1100000  DTYPE   OCT 1100000     DATA TYPE                               06653
          02164  DETYPE  EQU GR7         DESIGNATIONAL EXPRESSION TYPE           06654
 02217  1600000  STTYPE  OCT 1600000                                             06655
 02220  3240000  RPROC   OCT 3240000     REAL PROCEDURE TYPE                     06656
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02221  1220000  FILTYP  OCT  1220000          DISK FILE TYPE                    06657
02222  1420000  SWTYP2  OCT  1420000          DEFINED SWITCH                    06658
02223  2504032  *ADO*   ADO                                                    06659
02224  2516721  *BBPL*  BAR  BPL      7                                         06660
02225  2514721  *BBMI*  BAR  BMI      7                                         06661
02226  2516722  *BBNZ*  BAR  BNZ      7                                         06662
02227  2514722  *BBZE*  BAR  BZE      7                                         06663
02230  2516000  *BEV*   BEV                                                    06664
         01645  *EXT*   EQU  SIGN                                             06665
02231  2600000  *BRU*   BRU  0                                                 06666
02232  2620001  SEXIT   BRU  1        1                                       06667
02233  2514002  *BZE*   BZE                                                    06668
02234  3200005  *CAX*   CAX                                                    06669
02235  2504502  *CPL*   CPL                                                    06670
02236  3500005  *CQX*   CQX                                                    06671
02237  1020000  *DLD1*  DLD  0        1                                       06672
02240  1300000  *DST*   DST  0                                                 06673
02241  3100000  *FAD*   Z31  0                                                 06674
02242  3600000  *FDV*   OCT  3600000                                          06675
         02242  FTYPE   EQU  *FDV*                                            06676
         02213  *FLD*   EQU  WMASK                                           06677
02243  3020000  *FLD1*  Z30  0        1                                       06678
02244  3500000  *FMP*   OCT  3500000                                          06679
02245  3300000  *FST*   OCT  3300000                                          06680
02246  3200000  *FSU*   Z32  0                                                 06681
02247  0620000  *LDX1*  LDX  0        1                                       06682
         02247  GR3S1   EQU  *LDX1*                                           06683
         14643  PRQA    EQU  6563                                             06684
         01610  *LDA*   EQU  ZERO                                            06685
02250  0640000  *LDX2*  LDX  0        2                                       06686
02251  2504002  *LDZ*   LDZ                                                    06687
02252  3100002  *MAQA*  MAQ          A                                         06688
02253  2504102  *LMO*   LMO                                                    06689
02254  0720000  *SPB1*  SPB  0        1                                       06690
02255  0740000  *SPB2*  SPB  0        2                                       06691
02256  0300000  *STA*   STA  0                                                 06692
02257  2700000  *STO*   STO  0                                                 06693
02260  1720000  *STX1*  STX  0        1                                       06694
02261  1745707  SWSTX   STX  SWEXIT   2                                       06695
02262  3500002  *XAQA*  XAQ          A                                         06696
02263  2640001  THRET   BRU  1        2       THUNK RETURN                    06697
02264  1000057  ARRID   OCT  1000057          ARRAY                           06698
02265  1003151  ASID    OCT  1003151                                           06699
02266  1000045  BEGID   OCT  1000045          BEGIN                           06700
02267  1000056  BOOLID  OCT  1000056          BOOLEAN                         06701
02270  1003076  COMID   OCT  1003076          COMMA                           06702
02271  1002034  DBID    OCT  1002034          DECLARATION BEFT BRACKET        06703
02272  1000041  FCTID   OCT  1000041          STANDARD FUNDTION LEFT-PARENTHESIS 06704
02273  1000044  GOTOID  OCT  1000044          GOTO                            06705
02274  1000040  INPID   OCT  1000040          READATA LEFT-PAREN              06706
02275  1000037  OUTPID  OCT  1000037          PRINT LEFT-PAREN                06707
02276  1005052  PARID   OCT  1005052          LEFT PARENTHESIS                06708
02277  1000036  PROCID  OCT  1000036          PARAMETER LIST LEFT-PARENTHESIS 06709
02300  1000046  PRCID   OCT  1000046                                          06710
```

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02301  1002073  RBID   OCT 1002073          RIGHT BRACKET                    06711
02302  1000054  REALID OCT 1000054          REAL                             06712
02303  0020002  SPECID OCT 20002            WHAMI IN SPECIFICATION PART      06713
02304  0020001  DECLID OCT 20001            WHAMI IN DECLARATION             06714
02305  1002074  RPID   OCT 1002074          RIGHT PARENTHESIS                06715
02306  1004075  SCID   OCT 1004075          SEMICOLON                        06716
02307  1000035  SWBID  OCT 1000035          SWITCH LEFT BRACKET              06717
02310  0262010  UMID   OCT 0262010          UNARY MINUS                      06718
02311  0262007  UPID   OCT 0262007                                           06719
02312  0001442  ABSID  LDA ABSSUB                                           06720
02313  1003051  ASSID  OCT 1003051          COLON-EQUALS                     06721
02314  0274660  AGO    ALF GO                                               06722
                                                                            06723
                                ITABLE-ETABLE INITIALIZATION CONSTANTS      06724
02316  0005000  ITICON LDA ITABLE                                           06725
02317  3777654        DEC -84                                              06726
02320  0005707  ETICON OCT 5707                                            06727
02321  3777704        DEC -60                                              06728
02322  0220771  ITINIT OCT 220771          0     EXP   * OVERFLOW TO WRITEFILE 06729
02323  3601443        Z36 EXPSUB          1                                06730
02324  0000000        OCT 0               2                                06731
02325  0000000        OCT 0               3                                06732
02326  0224756        OCT 224756          4     PRINT   * OVERFLOW TO ENDFILE 06733
02327  3400000        Z34 0               5                                06734
02330  0000754        OCT 754             6     RANDOM                     06735
02331  3241450        Z32 RDMSUB  2       7                                06736
02332  0000000        OCT 0               10                               06737
02333  0000000        OCT 0               11                               06738
02334  0000000        OCT 0               12                               06739
02335  0000000        OCT 0               13                               06740
02336  0000000        OCT 0               14                               06741
02337  0000000        OCT 0               15                               06742
02340  0000000        OCT 0               16                               06743
02341  0000000        OCT 0               17                               06744
02342  0000752        OCT 752             20                               06745
02343  3241444        Z32 ELAPS   2       21    TIME                       06746
02344  0000000        OCT 0               22                               06747
02345  0000000        OCT 0               23                               06748
02346  0000765        OCT 765             24    SQRT                       06749
02347  3601452        Z36 SQRSUB          25                               06750
02350  0210775        OCT 210775          26     SIGN  *  OVERFLOW TO CLOCK 06751
02351  3601453        Z36 SGNSUB          27                               06752
02352  0000763        OCT 763             30    ENTIER                     06753
02353  3601445        Z36 ENTSUB          31                               06754
02354  0000000        OCT 0               32                               06755
02355  0000000        OCT 0               33                               06756
02356  0234773        OCT 234773          34      COS   *   OVERFLOW TO COT 06757
02357  3601437        Z36 COSSUB          35                               06758
02360  0200774        OCT 0200774         36    SIN   * OVERFLOW TO ARCTAN  06759
02361  3601454        Z36 SINSUB          37                               06760
02362  0204772        OCT 0204772         40    LN   * OVERFLOW TO READATA  06761
02363  3601451        Z36 LNSUB           41                               06762
02364  0000000        OCT 0               42                               06763*
02365  0000000        OCT 0               43                               06764*
```

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02366  0000000          OCT 0                          44                                  06765
02367  0000000          OCT 0                          45                                  06766
02370  0000730          OCT 730                        46     SCRATCH                      06767
02371  1220000          Z12 0        1                 47      SCRATCH                     06768
02372  0000746          OCT 746                        50     TELETYPE                     06769
02373  1137777          Z11 8191     1                 51                                  06770
02374  0000000          OCT 0                          52                                  06771
02375  0000000          OCT 0                          53                                  06772
02376  0000000          OCT 0                          54                                  06773
02377  0000000          OCT 0                          55                                  06774
02400  0000715          OCT 715                        56      UNDERFLOW                   06775
02401  3301401          Z33 UFTST                      57                                  06776
02402  0000000          OCT 0                          60                                  06777
02403  0000000          OCT 0                          61                                  06778
02404  0244777          OCT 244777                     62      ABS+OVERFLOW TO DIVIED CHECK 06779
02405  3601442          Z36 ABSSUB                     63                                  06780
02406  0000000          OCT 0                          64                                  06781
02407  0000000          OCT 0                          65                                  06782
02410  0000743          OCT 743                        66     RESTORE                      06783
02411  3520001          Z35 1        1                 67                                  06784
02412  0000000          OCT 0                          70                                  06785
02413  0000000          OCT 0                          71                                  06786
02414  0000000          OCT 0                          72                                  06787
02415  0000000          OCT 0                          73                                  06788
02416  0000707          OCT 707                        74      CHAIN                       06789*
02417  3520003          Z35 3        1                 75                                  06790*
02420  0000000          OCT 0                          76                                  06791
02421  0000000          OCT 0                          77                                  06792
02422  0000767          OCT 767                        100     ARCTAN                      06793
02423  3601447          Z36 ATNSUB                     101                                 06794
02424  0214760          OCT 214760                     102     READATA  +  OVERFLOW TO READFILE 06795
02425  3520000          Z35 0        1                 103                                 06796
02426  0000741          OCT 741                        104    CLOCK                        06797
02427  3221461          Z32 CLOCK    1                 105                                 06798
02430  0000736          OCT 736                        106    READFILE                     06799
02431  3520000          Z35 0        1                 107                                 06800
02432  0000733          OCT 733                        110     WRITEFILE                   06801
02433  3520002          Z35 2        1                 111                                 06802
02434  0230725          OCT 230725                     112     ENDFILE+OVERFLOW TO TAN     06803
02435  0137774          Z01 8188     1                 113                                 06804
02436  0240724          OCT 240724                     114     TAN+OVERFLOW TO OVERFLOW    06805
02437  3601466          Z36 TAN                        115                                 06806
02440  0000723          OCT 723                        116     COT                         06807
02441  3601467          Z36 COT                        117                                 06808
02442  0000720          OCT 720                        120     OVERFLOW                    06809
02443  3301400          Z33 OVTST                      121                                 06810
02444  0000711          OCT 711                        122     DIVIDE CHECK                06811
02445  3301402          Z33 DVTST                      123                                 06812
                                                                                           06813
                                                                                           06814
02446  0233021  ETINIT  ALF CHA                                                           06815*
02447  2314560          OCT 2314560                                                       06816*
02450  0243165          ALF DIV                        DIVIDE CHECK                       06817
02451  0312425          ALF IDE                                                           06818
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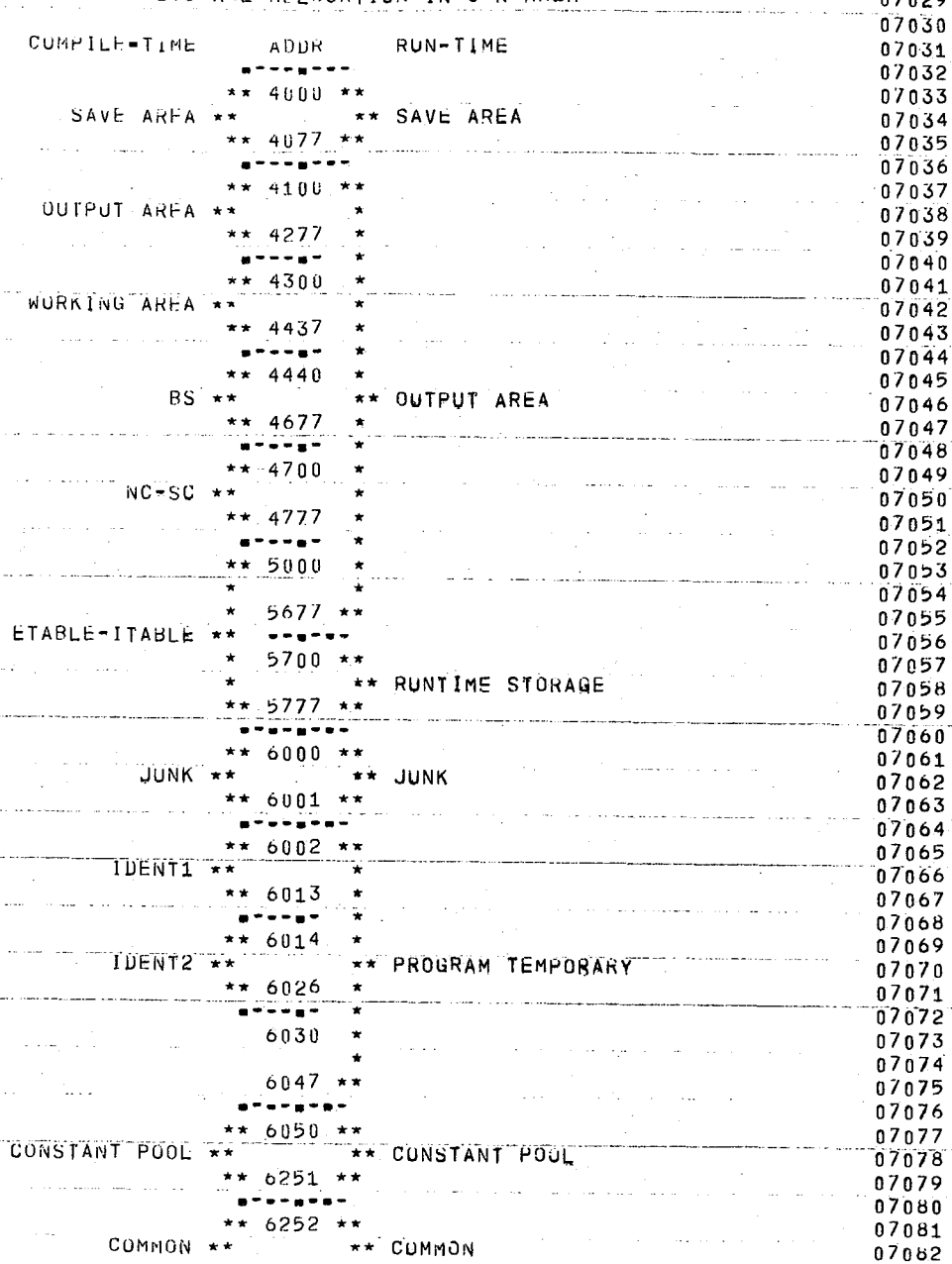
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02452  0203025          ALF CHE                                  06819
02453  2234260          OCT 2234200                              06820
02454  0644524          ALF UND          UNDERFLOW               06821
02455  0255126          ALF ERF                                  06822
02456  2434666          OCT 2434666                              06823
02457  0466525          ALF OVE          OVERFLOW                06824
02460  0512643          ALF RFL                                  06825
02461  2466660          OCT 2466660                              06826
02462  2234663          OCT 2234663      COT                     06827
02463  2632145          OCT 2632145      TAN                     06828
02464  0254524          ALF END          ENDFILE                 06829
02465  0203143          ALF FIL                                  06830
02466  2256060          OCT 2256060                              06831
02467  0622351          ALF SCR          SCRATCH                 06832
02470  0216323          ALF ATC                                  06833
02471  2306060          OCT 2306060                              06834
02472  0665131          ALF WRI          WRITEFILE               06835
02473  0632520          ALF TEF                                  06836
02474  2314325          OCT 2314325                              06837
02475  0512521          ALF REA          READFILE                06838
02476  0242631          ALF DFI                                  06839
02477  2432560          OCT 2432560                              06840
02500  0234346          ALF CLO          CLOCK                   06841
02501  2234260          OCT 2234260                              06842
02502  0512562          ALF RES                                  06843
02503  0634651          ALF TOR                                  06844
02504  2256060          OCT 2256060                              06845
02505  0632543          ALF TEL                                  06846
02506  0256370          ALF ETY                                  06847
02507  2472560          OCT 2472560                              06848
02510  2636370          OCT 2636370      TTY                     06849
02511  0633144          ALF TIM          TIME                    06850
02512  2256060          OCT 2256060                              06851
02513  0512145          ALF RAN          RANDOM                  06852
02514  2244644          OCT 2244644                              06853
02515  0475131          ALF PRI          PRINT                   06854
02516  2456360          OCT 2456360                              06855
02517  0512521          ALF REA          READATA                 06856
02520  0242163          ALF DAT                                  06857
02521  2216060          OCT 2216060                              06858
02522  0254563          ALF ENT          ENTIER                  06859
02523  2312551          OCT 2312551                              06860
02524  0625051          ALF SQR          SQRT                    06861
02525  2636060          OCT 2636060                              06862
02526  0215123          ALF ARC          ARCTAN                  06863
02527  2632145          OCT 2632145                              06864
02530  2256747          OCT 2256747      EXP                     06865
02531  2434560          OCT 2434560      LN                      06866
02532  2234662          OCT 2234662      COS                     06867
02533  2623145          OCT 2623145      SIN                     06868
02534  0623127          ALF SIG          SIGN                    06869
02535  2456060          OCT 2456060                              06870
02536  2212262          OCT 2212262      ABS                     06871
02537  0004020  XMOVE   OCT 4020                                 06872
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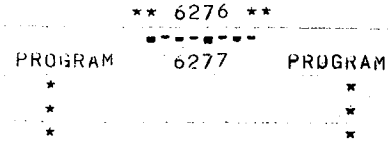
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02540  3777754          DEC -20                                                    06873
                                                                                   06874
                                  FOLLOWING CONSTANTS MUST BE IN GIVEN ORDER       06875
02541  0741455  SWHEAD  SPB UNFSUB  2                                             06876
02542  0300002          STA XR02                                                   06877
02543  2516002  *BNZ*   BNZ                                                        06878
02544  2514001  *BMI*   BMI                                                        06879
02545  2601457          BRU SWERR                                                  06880
02546  0200000          SUB 0                                                      06881
02547  2516001          BPL                                                        06882
02550  2601457          BRU SWERR                                                  06883
02551  2640000          BRU 0       2                                              06884
                                                                                   06885
                                                                                   06886
                                  ID1CH GIVES THE IDENTIFIERS FOR ONE CHARACTER    06887
                                  ALGOL SYMBOLS, ID2CH FOR TWO CHARACTER           06888
                                  SYMBOLS.                                         06889
                                  SYMBOL      GROUP SUBGROUP  PREV     U  NUMBER   06890
02552  1403066  ID1CH   OCT 1403066        COLON       6                1     1   54 06891
02553  0403013          OCT 0403013        =           2                1     1   11 06892
02554  0403011          OCT 0403011        LESS THAN   2                1     1    9 06893
02555  0403016          OCT 0403016        GREATER     2                1     1   14 06894
02556  0242003          OCT 0242003        /           1        2       1          3 06895
02557  1403051  ID2CH   OCT 1403051        ASSIGN      6                1     1   41 06896
02560  0403014          OCT 0403014        =/          2                1     1   12 06897
02561  0403012          OCT 0403012        LTE         2                1     1   10 06898
02562  0403015          OCT 0403015        GTE         2                1     1   13 06899
02563  0403014          OCT 0403014        /=          2                1     1   12 06900
                                                                                   06901
                                                                                   06902
                                  ALID IS THE LIST OF IDENTIFIERS FOR              06903
                                  ALGOL WORDS FOUND IN THE ALLIST                  06904
                                  SYMBOL      GROUP  SUBGROUP PREV   U     NUMBER  06905
02564  0643020  ALID    OCT 0643020        AND         3        2       1     1   16 06906
02565  1400057          OCT 1400057        ARRAY       6                0         47 06907
02566  0000000          OCT 0                                                     06908
02567  1400045  BEGIN   OCT 1400045        BEGIN       6                0         37 06909
02570  0000000          OCT 0                                                     06910
02571  1400056          OCT 1400056        BOOLEAN     6                0         46 06911
02572  0000000          OCT 0                                                     06912
02573  0000000          OCT 0                                                     06913
02574  1400063          OCT 1400063        COMMENT     6                0         51 06914
02575  0000000          OCT 0                                                     06915
02576  0000000          OCT 0                                                     06916
02577  1400061  DATAID  OCT 1400061        DATA        6                0         49 06917
02600  0000000          OCT 0                                                     06918
02601  1002031  DOID    OCT 1002031        DO          4                1         25 06919
02602  1005025  ELSEID  OCT 1005025        ELSE        4                2     1   21 06920
02603  0000000          OCT 0                                                     06921
02604  1004077  ENDID   OCT 1004077        END         4                2         63 06922
02605  0723023          OCT 0723023        EQUIV       3        5       1     1   19 06923
02606  0000000          OCT 0                                                     06924
02607  1400072          OCT 1400072        FALSE       6                0         58 06925
02610  0000000          OCT 0                                                     06926
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02611  1400050  FORID   OCT 1400050          FOR        6              0          40 06927
02612  1400044  GOID    OCT 1400044          GOTO       6              0          36 06928
02613  0000000          OCT 0                                                     06929
02614  1401047          OCT 1401047          IF         6              0     1    39 06930
02615  0703022          OCT 0703022          IMPLY      3     4        1     1    18 06931
02616  0000000          OCT 0                                                     06932
02617  1400055          OCT 1400055          INTEGER    6              0          45 06933
02620  0000000          OCT 0                                                     06934
02621  0000000          OCT 0                                                     06935
02622  1200042          OCT 1200042          LABEL      5              0          34 06936
02623  0000000          OCT 0                                                     06937
02624  0621017          OCT 0621017          NOT        3     1        0     1    15 06938
02625  0663021          OCT 0663021          OR         3     3        1          17 06939
02626  1400062  OWNID   OCT 1400062          OWN        6              0          50 06940
02627  1400046          OCT 1400046          PROCEDURE  6              0          38 06941
02630  0000000          OCT 0                                                     06942
02631  0000000          OCT 0                                                     06943
02632  1400054          OCT 1400054          REAL       6              0          44 06944
02633  0000000          OCT 0                                                     06945
02634  1003026  STEPID  OCT 1003026          STEP       4              1     1    22 06946
02635  0000000          OCT 0                                                     06947
02636  1200043          OCT 1200043          STRING     5              0          35 06948
02637  0000000          OCT 0                                                     06949
02640  1400060  SWID    OCT 1400060          SWITCH     6              0          48 06950
02641  0000000          OCT 0                                                     06951
02642  1003024  THENID  OCT 1003024          THEN       4              1     1    20 06952
02643  0000000          OCT 0                                                     06953
02644  1400071          OCT 1400071          TRUE       6              0          57 06954
02645  0000000          OCT 0                                                     06955
02646  1003027  UNTID   OCT 1003027          UNTIL      4              1     1    23 06956
02647  0000000          OCT 0                                                     06957
02650  1200032          OCT 1200032          VALUE      5              0          26 06958
02651  0000000          OCT 0                                                     06959
02652  1003030  WHILID  OCT 1003030          WHILE      4              1     1    24 06960
02653  0000000          OCT 0                                                     06961
02654  1200033          OCT 1200033          YOICKS     5              0          27 06962
                                                                                  06963
                                                                                  06964
                        ALLIST CONTAINS ALPHABETIC    ALGOL                       06965
                        SYMBOLS.  THE FIRST WORD OF EACH SYMBOL                   06966
                        IS FLAGGED BY A - SIGN.                                   06967
02655  2214524  ALLIST  OCT 2214524          AND                                 06968
02656  2215151          OCT 2215151          ARRAY                               06969
02657  0217060          ALF AY                                                   06970
02660  2222527          OCT 2222527          BEGIN                               06971
02661  0314560          ALF IN                                                   06972
02662  2224646          OCT 2224646          BOOLEAN                             06973
02663  0432521          ALF LEA                                                  06974
02664  0456060          ALF N                                                    06975
02665  2234644          OCT 2234644          COMMENT                             06976
02666  0442545          ALF MEN                                                  06977
02667  0636060          ALF T                                                    06978
02670  2242163          OCT 2242163          DATA                                06979
02671  0216060          ALF A                                                    06980
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 02672  2244660          OCT 2244660          DO                      06981
 02673  2254362          OCT 2254362          ELSE                    06982
 02674  0256060          ALF E                                        06983
 02675  2254524          OCT 2254524          END                     06984
 02676  2255064          OCT 2255064          EQUIV                   06985
 02677  0316560          ALF IV                                       06986
 02700  2262143          OCT 2262143          FALSE                   06987
 02701  0622560          ALF SE                                       06988
 02702  2264651          OCT 2264651          FOR                     06989
 02703  2274663          OCT 2274663          GOTO                    06990
 02704  0466060          ALF O                                        06991
 02705  2312660          OCT 2312660          IF                      06992
 02706  2314447          OCT 2314447          IMPLY                   06993
 02707  0437060          ALF LY                                       06994
 02710  2314563          OCT 2314563          INTEGER                 06995
 02711  0252725          ALF EGE                                      06996
 02712  0516060          ALF R                                        06997
 02713  2432122          OCT 2432122          LABEL                   06998
 02714  0254360          ALF EL                                       06999
 02715  2454663          OCT 2454663          NOT                     07000
 02716  2465160          OCT 2465160          OR                      07001
 02717  2466645          OCT 2466645          OWN                     07002
 02720  2475146          OCT 2475146          PROCEDURE               07003
 02721  0232524          ALF CED                                      07004
 02722  0645125          ALF URE                                      07005
 02723  2512521          OCT 2512521          REAL                    07006
 02724  0436060          ALF L                                        07007
 02725  2626325          OCT 2626325          STEP                    07008
 02726  0476060          ALF P                                        07009
 02727  2626351          OCT 2626351          STRING                  07010
 02730  0314527          ALF ING                                      07011
 02731  2626631          OCT 2626631          SWITCH                  07012
 02732  0632330          ALF TCH                                      07013
 02733  2633025          OCT 2633025          THEN                    07014
 02734  0456060          ALF N                                        07015
 02735  2635164          OCT 2635164          TRUE                    07016
 02736  0256060          ALF E                                        07017
 02737  2644563          OCT 2644563          UNTIL                   07018
 02740  0314360          ALF IL                                       07019
 02741  2652143          OCT 2652143          VALUE                   07020
 02742  0642560          ALF UE                                       07021
 02743  2663031          OCT 2663031          WHILE                   07022
 02744  0432560          ALF LE                                       07023
 02745  2703147          OCT 2703147          YIPES                   07024
 02746  0256262          ALF ESS                                      07025
 02747  2777777          OCT 2777777                                  07026
                                                                     NAM07027
                                                                     EJT07028
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STORAGE ALLOCATION IN 6-K AREA






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07083
07084
07085
07086
07087
07088
07089
07090
07091
EJT07092
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04300           LOC 4300                                                07093
04300  ASIZE    BSS 2       FOATING ARRAY SIZE                          07094
04302  LB       BSS 2       BOUND PAIR -- LOWER BOUND                   07095
04304  OPCALL   BSS 2       OPERAND INFO [ARRAYS, DATA]                 07096
04306  GO3      BSS 2       BACKUP INFO IF -TO - NOT AFTER -GO -        07097
04310  ASTART   BSS 1       NCC LO FOR ARRAY IDENTIFIER LIST            07098
04311  ATYPE    BSS 1       TYPE [ PROCEDURES, FORMAL PARAMETERS ]      07099
04312  AX       BSS 1       SUBSCRIPT INDICATOR FOR LOADGN              07100
04313  BINEXP   BSS 1                                                   07101
04314  BSC      BSS 1       BLOCK SYMBOL CELLAR COUNTER                 07102
04315  CAVAIL   BSS 1       CONSTANT TABLE POINTER                      07103
04316  CFLAG    BSS 1       COLON-FLAG FOR BOUND PAIRS IN ARRAY DECL    07104
04317  CMODE    BSS 1       SWITCH FOR CONSTANT MODE                    07105
04320  CREAD    BSS 1       CONSTANT HAS BEEN READ FLAG                 07106
04321  DECLO    BSS 1       LOCATION OF *BRU* AROUND DECLARATION        07107
04322  DEPTH    BSS 1       BLOCKING DEPTH COUNTER                      07108
04323  DINAM    BSS 1       CONSTANTS-ONLY FLAG                         07109
04324  DSTAT    BSS 1       DECLARATION LEGAL FLAG                      07110
04325  EAVAIL   BSS 1       ETABLE POINTER                              07111
04326  EXPFLG   BSS 1                                                   07112
04327  FINC     BSS 1       IDENTIFIER FOR INCREMENT                    07113
04330  FLAB1    BSS 1       LO OF FOR LIST ELEMENT COMPUTATION          07114
04331  FLAB2    BSS 1       LO OF TEST FOR DONE                         07115
04332  FLAB3    BSS 1       EXIT FROM LOOP                              07116
04333  FLAB4    BSS 1       INDEX IN NC FOR RUNNING VARIABLE            07117
04334  FORAY    BSS 1       FUNNING VARIABLE SUBSCRIRTED FLAG           07118
04335  FORNO    BSS 1       FIRST ELEMENT IN FOR LIST FLAG              07119
04336  FPFLAG   BSS 1       FOR FORMAL PARAMETER ASSIGNMENTS            07120
04337  GO1      BSS 1       BACKUP XR SAVE                              07121
04340  GO2      BSS 1       BACKUP XR SAVE                              07122
04341  IAVAIL   BSS 1       ITABLE POINTER                              07123
04342  ITEMP    BSS 1       VERY TEMPORARY REGISTER SAVE                07124
04343  LINENO   BSS 1       COMPILE-TIME LINE NUMBER                    07125
04344  LOAD     BSS 1       *LDA* OR *FLD*  --  LOADGN                  07126
04345  NOEL     BSS 1       NUMBER OF ELEMENTS -- VARIOUS SOURCE LISTS  07127
04346  NUOB     BSS 1       NUMBER OF UNDEFINED OBJECTS                 07128
04347  OPA      BSS 1       OPERAND ADDRESS                             07129
04350  OPAX     BSS 1       OPERAND SUBSCRIPT ADDRES$                   07130
04351  OWN      BSS 1       NON-ZERO IN OWN DECLARATIONS                07131
04352  PBLOK    BSS 1       PREVIOUS LO IN BS                           07132
04353  PLF      BSS 1       LAST LOCATION AVAILIABLE TO OBJECT          07133
04354  PREV2    BSS 1       PREVIOUS PREV,  [ROUTE PUTS SYMB IN PREV]   07134
04355  PRFLAG   BSS 1       TAB SUPPRESSION FLAG                        07135
04356  PUNT     BSS 1       SIMPLE INCREMENT FLAG                       07136
04357  REXIT    BSS 1                                                   07137
04360  RTEMP    BSS 1                                                   07138
04361  SLOC     BSS 1                                                   07139
04362  SSLO     BSS 1                                                   07140
04363  SWITCH   BSS 1       COMMUTATIVE OPERATION FLAG                  07141
04364  TEMP     BSS 1       VARIOUS TEMPORARY USES                      07142
04365  TERM     BSS 1       COMMENT LOOP SYMBOL-ONLY FLAG               07143
04366  TSLF     BSS 1       END OF CURRENT TEMPORARY STORAGE AREA       07144
04367  TSLO     BSS 1       BEGINNING OF CURRENT TEMBORARY STORAGE AREA 07145
04370  TEST21   BSS 1       XR SAVE FOR NOTALG                          07146
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04371   TSFLAG  BSS 1           TEMPORARY STORAGE AVAILIABILITY FLAG      07147
04372   TST     BSS 1           TEMPORARY STORE INSTRUCTION               07148
04373   WHAMI   BSS 1           WHERE-AM-I FLAG                           07149
04374   WRITEX  BSS 1           USED BY -WRITE-                           07150
04375   WTEMP   BSS 1           USED BY -WRITE-                           07151
                                                                          07152
04376   ERFLAG  BSS 1                                                     07153
04377   ERAVAL  BSS 1                                                     07154
04400   DSKFLG  BSS 1           DISK OPERATION FLAG                       07155
04401   DKFLG2  BSS 1                                                     07156
04402   TRPFLG  BSS 1           NO TRAP FLAG                              07157
04403   LNKFLG  BSS 1           CHAIN FLAG TO STRING                      07158
00000   XR00    EQU 0           VERY TEMPORARY                            07159
00001   XR01    EQU 1           NUMBER CELLAR COUNTER (NOC)               07160
00002   XR02    EQU 2           MISCELLANEOUS EXITS                       07161
00003   XR03    EQU 3           MISCELLANEOUS EXITS                       07162
                                                                          07163
00004   XR10    EQU 4           RETURN AFTER TIEUP                        07164
00005   XR11    EQU 5           SYMBOL CELLAR COUNTER (SOC)               07165
00006   XR12    EQU 6           MISCELLANEOUS EXITS                       07166
00007   XR13    EQU 7           EXIT FROM LOADGN AND A FEW OTHERS         07167
                                                                          07168
00010   XR20    EQU 8           WORKING STORAGE FOR EDIT                  07169
00011   XR21    EQU 9           WORD INDEX IN SOURCE                      07170
00012   XR22    EQU 10          CHARACTER INDEX IN WORD                   07171
00013   XR23    EQU 11          MODE OF INPUT (I.E. EXIT FROM CHAR)       07172
                                                                          07173
00014   XR30    EQU 12          IDENT2 CHARACTER COUNT                    07174
00015   XR31    EQU 13          IDENT1 WORD COUNT                         07175
00016   XR32    EQU 14          IDENT2 WORD COUNT                         07176
00017   XR33    EQU 15          IDENT1 CHARACTER COUNT                    07177
                                                                          07178
00020   XR40    EQU 16                                                    07179
00021   XR41    EQU 17          INDEX IN ITABLE OF LAST-READ IDENTIFIER   07180
00022   XR42    EQU 18                                                    07181
00023   XR43    EQU 19                                                    07182
                                                                          07183
00212   TXR2    EQU 212                                                   07184
                                                                          07185
00004   RETURN  EQU XR10        RETURN AFTER COMPILING A BRIDGE           07186
04700   NC      EQU 4700        NUMBER CELLAR                             07187
04700   SC      EQU 4700        SYMBOL CELLAR                             07188
04440   BS      EQU 4440        BLOCK SYMBOL CELLAR                       07189
00236   BSLF    EQU 236                                                   07190
06001   IDENT1  EQU 6001        IDENTIFIER ACCUMULATOR                    07191
06013   IDENT2  EQU 6013        IDENTIFIER ACCUMULATOR                    07192
05000   ETABLE  EQU 5000        EXTERNAL IDENTIFIER TABLE                 07193
05000   ITABLE  EQU 5000        INTERNAL IDENTIFIER TABLE                 07194
14446   CMPFLG  EQU 6438                                                  07195
06000   JUNK    EQU 6000                                                  07196
06050   CCLO    EQU 6050                                                  07197
04100   OUTBUF  EQU 4100        OUTPUT BUFFER                             07198
                                                                  NAN07199
                                                                  EJT07200
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05700           LOC 5700                                                    07201
05700   TRPSV   BSS 1                                                       07202
00000   SIDXR   EQU XR00                                                    07203
17776   CROD    EQU 17776                                                   07204
17776   ICHK1   EQU CROD                                                    07205
17776   POWT    EQU CROD                                                    07206
13750   DNAD    EQU 6120                                                    07207
05701   RANDM2  BSS 2                                                       07208
05703   ICHKXR  BSS 1                                                       07209
05704   POWXR   BSS 1                                                       07210
05705   RND     BSS 1                                                       07211
05706   DBLOCK  BSS 1                                                       07212
05707   SWEXIT  BSS 1                                                       07213
05710   APTYPE  BSS 1           ACTUAL PARAMETER TYPE FOR LINKAGE CHECK     07214
05711   FARG    BSS 0           INSURES ATEMP STARTS IN EVEN LOCATION       07215
05711   ATEMP   BSS 15                                                      07216
                        FOR SQRT                                            07217
05713   /2108   EQU ATEMP+2                                                 07218
05715   /2110   EQU ATEMP+4                                                 07219
                        FOR SIN-COS                                         07220
05713   /2202   EQU ATEMP+2                                                 07221
05715   /2230   EQU ATEMP+4                                                 07222
05721   /2210   EQU ATEMP+8                                                 07223
05722   /2211   EQU ATEMP+9                                                 07224
                        FOR ARCTAN                                          07225
05713   /2310   EQU ATEMP+2                                                 07226
05715   /2316   EQU ATEMP+4                                                 07227
05717   /2306   EQU ATEMP+6                                                 07228
05720   /2307   EQU ATEMP+7                                                 07229
05721   /2303   EQU ATEMP+8                                                 07230
05722   /2308   EQU ATEMP+9                                                 07231
                        FOR EXPONENTIAL                                     07232
05713   /6134   EQU ATEMP+2                                                 07233
05715   /6109   EQU ATEMP+4                                                 07234
05717   /6128   EQU ATEMP+6                                                 07235
05723   /6119   EQU ATEMP+10                                                07236
                        FOR LOGARTITHM                                      07237
05713   /5112   EQU ATEMP+2                                                 07238
05715   /5114   EQU ATEMP+4                                                 07239
05717   /5107   EQU ATEMP+6                                                 07240
05721   /5152   EQU ATEMP+8                                                 07241
05723   /5143   EQU ATEMP+10                                                07242
                        FOR OUTPUT ROUTINES                                 07243
05723   BDCARG  EQU ATEMP+10                                                07244
06330   ONEOUT  EQU 3288                                                    07245
                        STORAGE FOR SERVICE ROUTINES COMMON TO BOTH         07246
                        RUN- AND COMPILE-TIME                               07247
06252           LOC 6252                                                    07248
06252   ERX1    BSS 1           COMPILE TIME ERROR XR SAVE                  07249
06253   ERX2    BSS 1           COMPILE TIME ERROR XR SAVE                  07250
06254   ERX3    BSS 1           COMPILE TIME ERROR XR SAVE                  07251
06255   PRX1    BSS 1                                                       07252
06256   PRX3    BSS 1                                                       07253
06257   $IND    BSS 1                                                       07254
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06260   PRXT    BSS 1                                                   07255
06261   CRUMP   BSS 1                                                   07256
06262   PAVAIL  BSS 1           OBJECT PROGRAM POINTER                  07257
06263   VAVAIL  BSS 1           VARIABLE STORAGE POINTER                07258
06264   POUT    BSS 15                                                  07259
06304   CONST   BSS 2           HOLDS CONVERTED CONSTANT                07260
06306   CONSTX  BSS 2           PROVISIONAL VALUE OF CONSTANT MANTISSA  07261
06310   CH2     BSS 1           CHARACTER ACCUMULATOR                   07262
06311   CH3     BSS 1           CHARACTER ACCUMULATOR                   07263
06312   BIGC    BSS 1           HIGH ORDER BITS OF CONST*10             07264
06313   DCTR    BSS 1           DECIMAL POINT FLAG                      07265
06314   DINC    BSS 1                                                   07266
06315   EXP     BSS 1           ABSOLUTE EXPONENT OF CONSTANT           07267
06316   SGNEXP  BSS 1           SIGN OF EXPONENT OF CONSTANT            07268
06317   SYMB    BSS 1           HOLDS LAST SYMBOL READ                  07269
06320   PREV    BSS 1           PREVIOUS SYMBOL                         07270
06321   TYPE    BSS 1           TYPE IN EXPRESSIONS                     07271
06322   TEMP*   BSS 1           XR SAVE                                 07272
06323   SAVE*   BSS 1           XR SAVE                                 07273
06324   PROG    BSS 0                                                   07274
                                                                NAM07275
                                                                EJT07276
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01400           LOC 1400                                        07277
01400   GVTST   BSS 1                                           07278
01401   GFTST   BSS 1                                           07279
01402   DVTST   BSS 1                                           07280
01403   SIDSUB  BSS 2                                           07281
01405   FORERR  BSS 2                                           07282
01407   SPRSUB  BSS 1                                           07283
01410   DUNFLT  BSS 1                                           07284
01411   POWSUB  BSS 1                                           07285
01412   PLINK   BSS 1                                           07286
01413   RDTSUB  BSS 2                                           07287
01415   PRTSUB  BSS 2                                           07288
01417   RNDSUB  BSS 2                                           07289
01421   RDASUB  BSS 1                                           07290
01422   RD2SUB  BSS 1                                           07291
01423   ASER    BSS 2                                           07292
01425   TSTSUB  BSS 1                                           07293
01426   SHUSUB  BSS 2                                           07294
01430   TAB     BSS 2                                           07295
01432   CRT     BSS 2                                           07296
01434   STRSUB  BSS 2                                           07297
01436   RESTOR  BSS 1                                           07298
01437   COSSUB  BSS 1                                           07299
01440   GETOUT  BSS 2                                           07300
01442   ABSSUB  BSS 1                                           07301
01443   EXPSUB  BSS 1                                           07302
01444   ELAPS   BSS 1                                           07303
01445   ENTSUB  BSS 2                                           07304
01447   ATNSUB  BSS 1                                           07305
01450   RDMSUB  BSS 1                                           07306
01451   LNSUB   BSS 1                                           07307
01452   SQRSUB  BSS 1                                           07308
01453   SGNSUB  BSS 1                                           07309
01454   SINSUB  BSS 1                                           07310
01455   UNFSUB  BSS 2                                           07311
01457   SWERR   BSS 2                                           07312
01461   CLOCK   BSS 1                                           07313
01462   RESTFL  BSS 1                                           07314
01463   SETFIL  BSS 1                                           07315
01464   RDBSUB  BSS 1                                           07316
01465   WRTSUB  BSS 1                                           07317
01466   TAN     BSS 1                                           07318
01467   COT     BSS 1                                           07319
01470   LINK    BSS 2                                           07320
                                                                07321
TC5000          END DISK2                                       07322
```

NO ERRORS IN ABOVE ASSEMBLY