

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
101				JOB	FORTRAN COMPILER -- ARITHMETIC PACKAGE -- PHASE 63								
102				CTL	6611								
103				*									
104				*	THIS PHASE COMPRISES THE ARITHMETIC ROUTINE WHICH IS								
105				*	LOADED BY GEAX PHASE 2.								
106				*									
107				ORG	87				0087				
108	89	X1		DCW	000	3		0089				1	
109	91			DC	00	2		0091				1	
110	94	X2		DCW	000	3		0094				1	
111	96			DC	00	2		0096				1	
112	99	X3		DCW	000	3		0099				1	
113	100			DC	0	1		0100				1	
114				*									
115				*	ARITHMETIC INTERPRETER								
116				*									
117				*	GENERAL FORM OF INTERPRETED STRING IS								
118				*	OPERAND [OPERATOR OPERAND ...],								
119				*	HOWEVER, IF OPERAND HAS A WORD MARK, IT'S AN OPERATOR,								
120				*	USUALLY A FUNCTION CALL. OPERANDS ARE MACHINE ADDRESSES,								
121				*	WITH A TAG IN THE TENS DIGIT TO INDICATE TYPE: A- OR B-								
122				*	ZONE ALONE INDICATES INTEGER. OPERATORS ARE ONE CHARACTER.								
123				*	SUBSCRIPT CALCULATIONS ARE SURROUNDED BY \$...\$.								
124				*									
125				*	TWO ACCUMULATORS IN THE PRINT AREA ARE USED. THE LOW-ORDER								
126				*	DIGIT OF AN OPERAND IS LOADED INTO ACCUMULATOR 1 AT 250; IT								
127				*	EXTENDS LEFTWARD BY THE LENGTH OF THE OPERAND, AND RIGHTWARD								
128				*	FROM THE LEFT END BY THE MANTISSA WIDTH. ACCUMULATOR 2 HAS ITS								
129				*	HIGH-ORDER DIGIT AT ACCHI&1; IT EXTENDS RIGHTWARD BY THE MANTISSA								
130				*	WIDTH.								
131				*									
132				*	IN THE FORTRAN MANUAL C24-1455, THE HIGH-ORDER DIGIT OF								
133				*	ACCUM 2 IS LABELED ACCHI&1.								
134				*									
135				ACCHI	EQU 279			0279					
136				*									
137				*	MOSTLY, INDEX REGISTER USAGE IS								
138				*	X1 = OPERAND ADDRESS								
139				*	X2 = INTERPRETER'S COUNTER, LOW-ORDER DIGIT OF ACCUM 1								
140				*	X3 = OPERAND WIDTH								
141				*									
142				*	ADDRESS IN PHASE 62								
143				*									
144					EXT62							MACRO	
145				LDRET	EQU 237			0237				GEN	
146				*									
147				ORG	700				0700				
148	*	700	ARITF	SBR	X2	4	0700	H 094			2	094	
149		704		SBR	X1-3	4	0704	H 086			2	086	
150		708		SBR	ERMSI&6	4	0708	H V06			2	1506	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
151	712		NXTOP	MCW	2&X2,X1 X1 = OPERAND (RESULT) ADDRESS	7	0712	M 0!2	089		2	002+2	089
152	719			SAR	SX2A&6 SAVE X2-1	4	0719	Q 765			2	765	
153	723		NXTOP0	SBR	SX2B&6 TWICE	4	0723	H S27			2	1227	
154	727			BCE	DOSUB,0&X2,\$ SUBSCRIPT?	8	0727	B S06 0!0 \$			2	1206	000+2
155	735			SBR	RES&6,0&X1 SAVE X1 (RESULT ADDRESS)	7	0735	H T75 0!0			3	1375	000+1
156	742			CS	303 CLEAR ACCUMULATORS	4	0742	/ 303			3	303	
157	746			CS		1	0746	/			3		
158	747			CS		1	0747	/			3		
159	748			LCA	KZ1,ACCHI&1 SET HIGH-ORDER ZERO IN ACCUM 2	7	0748	L W85 280			3	1685	280
160	755		NXTOP1	S	X1&2 CLEAR X1	4	0755	S 091			3	091	
161	759		SX2A	SBR	X2,0-0 RECOVER X2 = ADDR(OPERAND) - 1	7	0759	H 094 000			3	094	000
162	766			C	4&X2,ASGOP COMPARE OP TO ASSIGNMENT OP	7	0766	C 0!4 W86			4	004+2	1686
163	773			MCW	4&X2,SAVOP SAVE WHATEVER OPERATOR IT IS	7	0773	M 0!4 924			4	004+2	924
164	780			SW	201	4	0780	, 201			4	201	
165	784			BL	FUNC FUNC IF ASSIGNMENT OP .LT. OPERATOR	5	0784	B T05 T			4	1305	
166			*										
167			*		* ASSIGNMENT OP GREATER OR EQUAL TO OPERATOR, I.E., OPERATOR IS								
168			*		* BLANK, .,) LOZENGE, } GROUP MARK, &, \$, *, -, /, COMMA, %, #								
169			*										
170	789			SBR	NXTOP2&6,4&X2 SAVE ADDR OF OPERATOR	7	0789	H 874 0!4			4	874	004+2
171	796			BCE	DOSUB5,5&X2,\$ SUBSCRIPT?	8	0796	B /99 0!5 \$			4	1199	005+2
172	804			MCW	7&X2,X1 SECOND OPERAND ADDRESS TO X1	7	0804	M 0!7 089			5	007+2	089
173	811			SAR	SX2A&6 SAVE 4&X2	4	0811	Q 765			5	765	
174	815		TSTZON	BWZ	ARITI,X1-1,K OPERAND 2 TAG IS B ZONE (INTEGER)?	8	0815	V V30 088 K			5	1530	088
175	823			BWZ	ARITI,X1-1,S OPERAND 2 TAG IS A ZONE (INTEGER)?	8	0823	V V30 088 S			5	1530	088
176	831	*	SETFP	SBR	X3,0 LOADER PLUGS MANTISSA WIDTH INTO B	7	0831	H 099 000			5	099	000
177	838			CW	IFLAG INDICATE FLOATING POINT	4	0838) W87			5	1687	
178	842			MCW	0&X1,EXP1-1 SAVE EXPONENT 1	7	0842	M 0!0 W82			6	000+1	1682
179	849			SAR	X1 SAVE MANTISSA 1 ADDRESS	4	0849	Q 089			6	089	
180	853			MCW	0&X1,250 MANTISSA 1 TO ACCUMULATOR 1	7	0853	M 0!0 250			6	000+1	250
181			*	FROM	HERE, X2 INDEXES ACCUM 1, FIRST HIGH, THEN LOW DIGIT								
182	860			SBR	X2 SET X2 TO ACCUM 1 ADDRESS - OP WIDTH	4	0860	H 094			6	094	
183	864			LCA	KZ1 APPEND A HIGH-ORDER ZERO TO ACCUM 1	4	0864	L W85			6	1685	
184	868		NXTOP2	BW	NOSIGN,0-0 WM UNDER OPERATOR?	8	0868	V 883 000 1			6	883	000
185	876			MZ	250,ZAS SIGN OF OPERAND 1 DETERMINES ZA OR ZS	7	0876	Y 250 87			7	250	1087
186	883		NOSIGN	S	KZ1,252&X3 ADD ZEROS BELOW MANTISSA	7	0883	S W85 2E2			7	1685	252+3
187	890			C	1&X2,KZ1 COMPARE OPERAND HIGH-ORDER DIGIT TO 0	7	0890	C 0!1 W85			7	001+2	1685
188	897			A	X3,X2 X2 NOW AT LOW-ORDER DIGIT OF ACCUM 1	7	0897	A 099 094			7	099	094
189	904			BCE	FDIV,SAVOP,/ DIVIDE?	8	0904	B S33 924 /			7	1233	924
190	912			BCE	FMPY,SAVOP,* MULTIPLY?	8	0912	B S62 924 *			8	1262	924
191	920			S	SAVOP TURN IT BACK TO ZA	4	0920	S 924			8	924	
192	924		SAVOP	ZA	ZAS COPY THIS OP CODE	4	0924	? 87			8	1087	
193	928			BCE	NMLZ1,ACCHI&1,0 HIGH-ORDER DIGIT OF ACCUM 2 ZERO?	8	0928	B 17 280 0			8	1017	280
194	936			BE	CLRWK ACCUM 1 HIGH-ORDER DIGIT IS ZERO	5	0936	B /34 S			8	1134	
195	941			S	EXP1-1,EXP2-1 EXP2 IS NOW EXP2 - EXP1	7	0941	S W82 W79			8	1682	1679
196	948			ZA	EXP2,X1&1 MOVE ABS(EXP2-EXP1) TO X1	7	0948	? W80 090			9	1680	090
197	955			C	X3,X1 COMPARE MANTISSA WIDTH AND ABS(EXP2-EXP1)	7	0955	C 099 089			9	099	089
198	962			BM	E1GTE2,EXP2-1 EXP1 .GT. EXP2	8	0962	V /65 W79 K			9	1165	1679
199	970			BH	EXDGMW ABS(EXP2-EXP1) .GT. MANTISSA WIDTH	5	0970	B /88 U			9	1188	
200	975			A	EXP2-1,EXP1-1 ADD EXP2-EXP1 TO EXP1	7	0975	A W79 W82			9	1679	1682

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
201		982		ZA	250,250&X1			7	0982	? 250 2V0	10	250	250+1
202		989		ZA	X3&1,X1&1			7	0989	? 100 090	10	100	090
203		996	ADDSUB	MZ	ZAS,0&X2			7	0996	Y 87 0!0	10	1087	000+2
204	1	003		A	ACCHI&X1,0&X2			7	1003	A 2X9 0!0	10	279+1	000+2
205				*									
206				*	RELOCATABLE FUNCTIONS RETURN HERE TOO								
207				*									
208	1	010	FRET	MZ	0&X2,ZAS			7	1010	Y 0!0 87	10	000+2	1087
209				*									
210				*	NORMALIZE FLOATING-POINT RESULT OF A SINGLE ARITHMETIC								
211				*	OPERATION; PLACE THE NORMALIZED RESULT IN THE WORKING								
212				*	ACCUMULATOR. IF EXPONENT OVERFLOW IS DETECTED, GO TO ERMSG TO								
213				*	PRINT MESSAGE (NOF); THEN GO TO STR99. IF EXPONENT UNDERFLOW								
214				*	IS DETECTED, GO TO STRZE. HERE, THE LOW-ORDER DIGIT OF THE								
215				*	RESULT IS INDEXED BY X2.								
216				*									
217				*	THE NORMALIZED RESULT IS LEFT IN ACCUM 2.								
218				*									
219	1	017	NMLZ1	ZA	EXP1-1,EXP2-1			7	1017	? W82 W79	11	1682	1679
220	1	024	NMLZ2	MCW	RM,1&X2			7	1024	M W75 0!1	11	1675	001+2
221	1	031		MZ	CHAIN			1	1031	Y	11		
222	1	032		MZ	TWO ZEROS			1	1032	Y	11		
223	1	033		A	AND ADD ANOTHER ONE			1	1033	A	11		
224	1	034		MN	DECR A AND B (COPIES JUNK TO UNUSED)			1	1034	D	11		
225	1	035		SBR	X1			4	1035	H 089	11	089	
226	1	039		S	ACCHI&2&X3			4	1039	S 2H1	12	281+3	
227	1	043	NMLZL	BCE	STRZE,2&X1,			8	1043	B /42 0 2	12	1142	002+1
228	1	051		SBR	X1			4	1051	H 089	12	089	
229	1	055		BCE	NMLZL,1&X1,0			8	1055	B 43 0 1 0	12	1043	001+1
230	1	063		MCM	1&X1,ACCHI&1			7	1063	P 0 1 280	12	001+1	280
231	1	070		S	X3,X2			7	1070	S 099 094	12	099	094
232	1	077		CW				1	1077)	12		
233	1	078		CW				1	1078)	13		
234	1	079		S	X2,X1			1	1079	S	13		
235	1	080		S	X1,EXP2-1			7	1080	S 089 W79	13	089	1679
236	1	087	ZAS	ZA	ACCHI&X3			4	1087	? 2G9	13	279+3	
237	1	091		SW				1	1091	,	13		
238	1	092		BCE	CLRWK,EXP2-3,0			8	1092	B /34 W77 0	13	1134	1677
239	1	100		BM	STRZE,EXP2-1			8	1100	V /42 W79 K	13	1142	1679
240	1	108		B	ERMSG			4	1108	B U71	14	1471	
241	1	114		DCW	@NOF@			3	1114		14		
242				*									
243				*	EXPONENT OVERFLOW; SET RESULT MAGNITUDE EQUAL TO LARGEST								
244				*	VALUE POSSIBLE IN FLOATING-POINT NOTATION; SET RESULT SIGN								
245				*	AS APPROPRIATE.								
246				*									
247	1	115	STR99	ZA	KP99,EXP2-1			7	1115	? W89 W79	14	1689	1679
248	1	122		MN	KP99,ACCHI&X3			7	1122	D W89 2G9	14	1689	279+3
249	1	129		MCW				1	1129	M	14		
250	1	130		MCW	ACCHI-1&X3			4	1130	M 2G8	14	278+3	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
251					*								
252					* CLEAR ACCUM 1 AFTER AN INDIVIDUAL ARITHMETIC OPERATION								
253					*								
254	1	134	CLRWK	CS	ACCHI-1	4		1134	/ 278		14	278	
255	1	138		B	NXTOP1	4		1138	B 755		15	755	
256					*								
257					* EXPONENT UNDERFLOW, OR RESULT IS ZERO. SET FLOATING-POINT								
258					* RESULT TO ZERO								
259					*								
260	1	142	STRZE	S	EXP2-1 EXP2 = 0	4		1142	S W79		15	1679	
261	1	146		S	ACCHI&X3 ACCUM 2 MANTISSA = 0	4		1146	S 2G9		15	279+3	
262	1	150		B	CLRWK	4		1150	B /34		15	1134	
263					*								
264					* DIVISION BY ZERO								
265					*								
266	1	154	DVERR	B	ERMSG	4		1154	B U71		15	1471	
267	1	160		DCW	@DZE@ DIVIDE BY ZERO MESSAGE	3		1160			15		
268	1	161		B	STR99 INSERT OVERFLOW EXPONENT	4		1161	B /15		15	1115	
269					*								
270					* EXP1 IS GREATER THAN EXP2								
271					*								
272	1	165	E1GTE2	BH	NMLZ1 ABS(EXP2-EXP1) .GT. MANTISSA WIDTH	5		1165	B 17 U		16	1017	
273	1	170		S	X3&1,X1&1 SUBTR MAN. WIDTH FROM ABS(EXP2-EXP1)	7		1170	S 100 090		16	100	090
274	1	177		MZ	ACCHI&X3,ACCHI&X1 MOVE ZONE OVER TO NEW WIDTH	7		1177	Y 2G9 2X9		16	279+3	279+1
275	1	184		B	ADDSUB GO ADD (OR SUBTRACT) MANTISSAS	4		1184	B 996		16	996	
276					*								
277					* ABS(EXP2-EXP1) .GT. MANTISSA WIDTH								
278					*								
279	1	188	EXDGMW	A	EXP1-1,EXP2-1 RESTORE EXP2	7		1188	A W82 W79		16	1682	1679
280	1	195		B	CLRWK	4		1195	B /34		16	1134	
281					*								
282					* CALCULATE SUBSCRIPTED ADDRESS USING A RELOCATABLE ROUTINE THAT								
283					* IS ONLY LOADED IF NEEDED.								
284					*								
285	1	199	DOSUB5	SBR	X2,5&X2 BUMP X2 TO BEGINNING OF SUBSCRIPT INFO	7		1199	H 094 0!5		17	094	005+2
286	*1	206	DOSUB	B	0-0 LOADER PLUGS SUBSCRIPT ROUTINE ADDRESS HERE	4		1206	B 000		17	000	
287					*								
288	1	210		MN	0&X2 SUBTRACT 4 FROM X2	4		1210	D 0!0		17	000+2	
289	1	214		MN		1		1214	D		17		
290	1	215		MN		1		1215	D		17		
291	1	216		MN		1		1216	D		17		
292	1	217		SAR	SX2A&6	4		1217	Q 765		17	765	
293	1	221	SX2B	BCE	NXTOP0,0-0,\$	8		1221	B 723 000 \$		18	723	000
294	1	229		B	TSTZON	4		1229	B 815		18	815	
295					*								
296					* FLOATING-POINT DIVIDE								
297					*								
298	1	233	FDIV	BE	DVERR DIVIDE BY ZERO (COMPARE WAS AT NOSIGN)	5		1233	B /54 S		18	1154	
299	1	238		MN	ACCHI&X3,1&X2	7		1238	D 2G9 0!1		18	279+3	001+2
300	1	245		MCW		1		1245	M		18		

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
301	1	246		MN		1		1246	D		18		
302	1	247		D	0&X1,251 DIVIDE MANTISSAS.	7		1247	% 0 0 251		18	000+1	251
303	1	254		ZS	EXP1-1 NEGATE EXPONENT	4		1254	! W82		19	1682	
304	1	258		B	EXPS GO ADD EXPONENTS, NORMALIZE, ETC.	4		1258	B S83		19	1283	
305				*									
306				*	FLOATING-POINT MULTIPLY								
307				*									
308	1	262	FMPY	M	ACCHI&X3,251&X3 MULTIPLY MANTISSAS	7		1262	@ 2G9 2E1		19	279+3	251+3
309	1	269		SBR	X2,3&X2	7		1269	H 094 0!3		19	094	003+2
310	1	276		S	KP2,EXP2-1	7		1276	S W90 W79		19	1690	1679
311	1	283	EXPS	A	EXP1-1,EXP2-1 ADD EXPONENTS	7		1283	A W82 W79		19	1682	1679
312	1	290		MZ	ACCHI&X3,*&1 PREPARE TO	7		1290	Y 2G9 S97		20	279+3	1297
313	1	297		ZA	ZAS SET SIGN OF RESULT	4		1297	? 87		20	1087	
314	1	301		B	NMLZ2 NORMALIZE	4		1301	B 24		20	1024	
315				*									
316				*	ASSIGNMENT OPERATOR IS LESS THAN CURRENT OPERATOR, I.E.,								
317				*	CURRENT OPERATOR IS ONE OF @, ?, A-I, !, J-R, , S-Z, 0-9.								
318				*	IF NOT RECORD MARK, IT'S THE FIRST CHARACTER OF WHAT WOULD								
319				*	OTHERWISE BE AN OPERAND, SO BUMP THE OPERAND ADDRESS.								
320				*									
321	1	305	FUNC	BCE	DONE,4&X2, DONE (RECORD MARK)?	8		1305	B T31 0!4		20	1331	004+2
322	1	313		SBR	SX2A&6,1&X2 BUMP OPERAND ADDR	7		1313	H 765 0!1		20	765	001+2
323	1	320		C	ACCHI&1,KZ1 HIGH-ORDER ACCUM 2 MANTISSA DIGIT	7		1320	C 280 W85		20	280	1685
324				*	THE LOADER PLUGS THE RELOCATABLE FUNCTION SELECTOR ADDRESS HERE								
325	*1	327	QFUNCT	B	0 GO TO FUNCTION SELECTOR	4		1327	B 000		21	000	
326	1	331	DONE	BCE	RES,ACCHI&1,0 FLOATING-POINT RESULT ZERO?	8		1331	B T69 280 0		21	1369	280
327	1	339		BW	RES,IFLAG INTEGER RESULT?	8		1339	V T69 W87 1		21	1369	1687
328	1	347		BW	FPRES,4&X2 WM UNDER OPERATOR?	8		1347	V T92 0!4 1		21	1392	004+2
329	1	355		SBR	X3,2&X3	7		1355	H 099 0?2		21	099	002+3
330	1	362	SEXP2	MCM	EXP2-2,ACCHI-1&X3 MOVE EXP2 TO ACCUM 2	7		1362	P W78 2G8		22	1678	278+3
331	1	369	RES	LCA	ACCHI&X3,0 STORE ACCUMULATOR TO SAVED B	7		1369	L 2G9 000		22	279+3	000
332	1	376		BW	5&X2,4&X2 RETURN IF DONE (WORD MARK)	8		1376	V 0!5 0!4 1		22	005+2	004+2
333	1	384		SAR	X2 BUMP X2 TO NEXT OPERAND	4		1384	Q 094		22	094	
334	1	388		B	NXTOP	4		1388	B 712		22	712	
335				*									
336				*	ROUND NONZERO FLOATING-POINT RESULT								
337				*									
338	1	392	FPRES	A	KP5,ACCHI-1&X3 ROUND MANTISSA	7		1392	A W91 2G8		22	1691	278+3
339	1	399		BWZ	CARRY,ACCHI&1,S CARRY IN ACC2 SHOWN BY A-ZONE?	8		1399	V U18 280 S		23	1418	280
340	1	407	CPZONE	MZ	ACCHI&X3,ACCHI-2&X3 MOVE ZONE FROM EXP TO MAN	7		1407	Y 2G9 2G7		23	279+3	277+3
341	1	414		B	SEXP2	4		1414	B T62		23	1362	
342	1	418	CARRY	A	KP1,EXP2-1 BUMP EXPONENT	7		1418	A W92 W79		23	1692	1679
343	1	425		BCE	FOVFL,EXP2-3,1 OVERFLOW?	8		1425	B U48 W77 1		23	1448	1677
344	1	433		S	ACCHI&X3 CLEAR MANTISSA	4		1433	S 2G9		23	279+3	
345	1	437		LCA	K1B-1,ACCHI&1 AND PUT 1 IN ITS HIGH-ORDER DIGIT	7		1437	L W93 280		24	1693	280
346	1	444		B	CPZONE	4		1444	B U07		24	1407	
347				*									
348				*	FLOATING-POINT OVERFLOW -- HIGH-ORDER DIGIT OF EXP2 IS 1								
349				*									
350	1	448	FOVFL	MN	KP99,ACCHI&X3 99 TO	7		1448	D W89 2G9		24	1689	279+3

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
351	1	455		MCW	EXPONENT	1		1455	M		24		
352	1	456		MCW	ACCHI-1&X3 ALL 9S TO MANTIISA	4		1456	M 2G8		24	278+3	
353	1	460		S	KP1,EXP2-1	7		1460	S W92 W79		24	1692	1679
354	1	467		B	CPZONE	4		1467	B U07		24	1407	
355				*									
356				*	PRINT APPROPRIATE ERROR MESSAGES, WHICH INCLUDES A MNEMONIC								
357				*	THREE-CHARACTER CODE AND THE DISPLAY ADDRESS IN THE GENERATED								
358				*	PROCEDURE OF THE SOURCE PROGRAM STATEMENT BEING EXECUTED. THIS								
359				*	SUBROUTINE IS USED TO RECORD CIRCUMSTANCES, OCCURRING DURING								
360				*	ARITHMETIC OPERATIONS, WHICH MAY AFFECT THE CALCULATION								
361				*	ADVERSELY.								
362				*									
363	1	471	ERMSG	SBR	ERSVX&6 SAVE RETURN ADDRESS	4		1471	H U92		25	1492	
364	1	475		CS	202&X3	4		1475	/ ?22		25	202+3	
365	1	479		SBR	ERSX3&6,0&X3 SAVE X3	7		1479	H V25 0?0		25	1525	000+3
366	1	486	ERSVX	SBR	X3,0 RETURN ADDRESS TO X3	7		1486	H 099 000		25	099	000
367	1	493		MCW	2&X3,212 MNEMONIC TO PRINT AREA	7		1493	M 0?2 212		25	002+3	212
368	1	500	ERMSI	SBR	217,0 INTERPRETER ADDRESS TO PRINT AREA	7		1500	H 217 000		25	217	000
369	1	507		W		1		1507	2		25		
370	1	508		SW	201	4		1508	, 201		26	201	
371	1	512		SBR	ERMSGX&3,3&X3 RETURN ADDRESS TO EXIT	7		1512	H V29 0?3		26	1529	003+3
372	1	519	ERSX3	SBR	X3,0 RESTORE X3	7		1519	H 099 000		26	099	000
373	1	526	ERMSGX	B	0	4		1526	B 000		26	000	
374				*									
375				*	OPERAND TENS DIGIT HAS A OR B BUT NOT AB ZONE (INTEGER ARITH.)								
376				*									
377	*1	530	ARITI	SBR	X3,0 LOADER PUTS INTEGER SIZE IN B	7		1530	H 099 000		26	099	000
378	1	537		SW	IFLAG INDICATE INTEGER	4		1537	, W87		26	1687	
379	1	541		MCS	0&X1,250 OPERAND TO ACCUMULATOR 1	7		1541	Z 0 0 250		27	000+1	250
380	1	548		BCE	XDIV,SAVOP,/ DIVIDE?	8		1548	B W23 924 /		27	1623	924
381	1	556		BCE	XMPY,SAVOP,* MULTIPLY?	8		1556	B V98 924 *		27	1598	924
382	1	564		BM	XSUB,SAVOP SUBTRACT?	8		1564	V V87 924 K		27	1587	924
383	1	572		A	0&X1,ACCHI&X3 ADD OPERAND TO ACCUMULATOR 2	7		1572	A 0 0 2G9		27	000+1	279+3
384	1	579	XSIGN	ZA	ACCHI&X3 PUT A SIGN ON THE ACCUMULATOR	4		1579	? 2G9		28	279+3	
385	1	583		B	CLRWK	4		1583	B /34		28	1134	
386	1	587	XSUB	S	0&X1,ACCHI&X3 SUBTRACT OPERAND FROM ACCUMULATOR 2	7		1587	S 0 0 2G9		28	000+1	279+3
387	1	594		B	XSIGN	4		1594	B V79		28	1579	
388	1	598	XMPY	LCA	0&X1,250 MOVE OPERAND TO ACCUMULATOR 1	7		1598	L 0 0 250		28	000+1	250
389	1	605		M	ACCHI&X3,251&X3	7		1605	@ 2G9 2E1		28	279+3	251+3
390	1	612		MCW	251&X3,ACCHI&X3	7		1612	M 2E1 2G9		29	251+3	279+3
391	1	619		B	CLRWK	4		1619	B /34		29	1134	
392	1	623	XDIV	BCE	DVERR,250, DIVIDE BY ZERO?	8		1623	B /54 250		29	1154	250
393	1	631		MCW	0&X1,250&X3	7		1631	M 0 0 2E0		29	000+1	250+3
394	1	638		MN		1		1638	D		29		
395	1	639		SBR	MOVEQ&3 STORE ADDR TO MOVE TO ACCUM 2	4		1639	H W64		29	1664	
396	1	643		LCA	ACCHI&X3	4		1643	L 2G9		29	279+3	
397	1	647		ZA	ACCHI&X3,250&X3	7		1647	? 2G9 2E0		30	279+3	250+3
398	1	654		D	0&X1,251	7		1654	% 0 0 251		30	000+1	251
399	1	661	MOVEQ	MCW	249,ACCHI&X3	7		1661	M 249 2G9		30	249	279+3
400	1	668		B	CLRWK	4		1668	B /34		30	1134	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
401			*										
402			* DATA										
403			*										
404	1	674		DCW	000 CHAINED TO RM	3		1674				30	
405	1	675	RM	DCW	@ @	1		1675				30	
406	1	676		DCW	0	1		1676				30	
407	1	680	EXP2	DCW	@000 @ EXPONENT OF ACCUM 2, AND ZERO AND RM	4		1680				31	
408	1	683	EXP1	DCW	000 EXPONENT OF ACCUM 1, AND ZERO	3		1683				31	
409	1	684	K8	DCW	8	1		1684				31	
410	1	685	KZ1	DCW	0	1		1685				31	
411	1	686	ASGOP	DCW	@#@ ASSIGNMENT OPERATOR	1		1686				31	
412	1	687	IFLAG	DCW	#1 WORD MARK INDICATES INTEGER	1		1687				31	
413	1	689	KP99	DCW	&99 USED FOR OVERFLOW	2		1689				31	
414	1	690	KP2	DCW	&2	1		1690				32	
415	1	691	KP5	DCW	&5	1		1691				32	
416	1	692	KP1	DCW	&1	1		1692				32	
417	1	694	K1B	DCW	@1 @	2		1694				32	
418	1	695		DCW	0	1		1695				32	
419	*1	696	AGMWM	DCW	@}@	1		1696		GMARK		32	
420				XFR	LDRET				B 237			33	237
421				END					/ 237 080				237

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
ACCHI	0279: 0	ADDSUB	0996: 0	AGMWM	1696: 0	ARITF	0700: 0	ARITI	1530: 0	ASGOP	1686: 0
CARRY	1418: 0	CLRWK	1134: 0	CPZONE	1407: 0	DONE	1331: 0	DOSUB	1206: 0	DOSUB5	1199: 0
DVERR	1154: 0	ELGTE2	1165: 0	ERMSG	1471: 0	ERMSGX	1526: 0	ERMSI	1500: 0	ERSVX	1486: 0
ERSX3	1519: 0	EXDGMW	1188: 0	EXP1	1683: 0	EXP2	1680: 0	EXPS	1283: 0	FDIV	1233: 0
FMPY	1262: 0	FOVFL	1448: 0	FPRES	1392: 0	FRET	1010: 0	FUNC	1305: 0	IFLAG	1687: 0
K1B	1694: 0	K8	1684: 0	KP1	1692: 0	KP2	1690: 0	KP5	1691: 0	KP99	1689: 0
KZ1	1685: 0	LDRET	0237: 0	MOVEQ	1661: 0	NMLZ1	1017: 0	NMLZ2	1024: 0	NMLZL	1043: 0
NOSIGN	0883: 0	NXTOP	0712: 0	NXTOP0	0723: 0	NXTOP1	0755: 0	NXTOP2	0868: 0	QFUNCT	1327: 0
RES	1369: 0	RM	1675: 0	SAVOP	0924: 0	SETFP	0831: 0	SEXP2	1362: 0	STR99	1115: 0
STRZE	1142: 0	SX2A	0759: 0	SX2B	1221: 0	TSTZON	0815: 0	X1	0089: 0	X2	0094: 0
X3	0099: 0	XDIV	1623: 0	XMPY	1598: 0	XSIGN	1579: 0	XSUB	1587: 0	ZAS	1087: 0

UNREFERENCED SYMBOLS

AGMWM ARITF FRET K8 QFUNCT SETFP