

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
101			JOB		FORTRAN COMPILER -- ARITH PHASE FIVE -- PHASE 37								
102			CTL		6611								
103			*										
104			*		IF STATEMENT EXITS AND STRINGS FOR EXPONENTIATION ARE CREATED.								
105			*										
106			X1	EQU	89			0089					
107			X2	EQU	94			0094					
108			X3	EQU	99			0099					
109			*										
110			*		STUFF IN THE RESIDENT AREA								
111			*										
112			PHASID	EQU	110			0110					
113			SERIES	EQU	117			0117					
114			LOGF	EQU	119			0119					
115			EXPF	EQU	120			0120					
116			XFIXF	EQU	124			0124					
117			FLOATF	EQU	125			0125					
118			NEGAR3	EQU	157			0157					
119			ARYSIZ	EQU	160			0160					
120			GLOBER	EQU	184			0184					
121			*										
122					EXT00								MACRO
123			SNAPSH	EQU	333			0333					GEN
124			PHASLD	EQU	381			0381					GEN
125			SNAPEX	EQU	564			0564					GEN
126			LOADNX	EQU	700			0700					GEN
127			CDOVLY	EQU	700			0700					GEN
128			TPREAD	EQU	704			0704					GEN
129			TPERR	EQU	728			0728					GEN
130			*										
131			*		RUNTIME ADDRESSES								
132			*										
133			ARITF	EQU	700			0700					
134			*										
135					EXT03								MACRO
136			BEGIN3	EQU	838			0838					GEN
137			TOP3	EQU	2600			2600					GEN
138			*										
139			110	DCW	@ARITH 5@		7	0110				1	
140			*										
141			PHAS37	LDPH	ARITH FIV,LOADAD,LOADNX,,37.1								MACRO
			*	PHAZ	LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]								GEN
			*	XFR	PHASZ PROHIBITED IN A MACRO								GEN
			*										GEN
			*	LOAD	A BLOCK								GEN
			*										GEN
142			)6J003	EQU	110			0110					GEN
143			)6K003	EQU	700			0700					GEN
144			)6L003	EQU	704			0704					GEN
145			)6M003	EQU	728			0728					GEN

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
146			*	ORG	201				0201	GEN			
147			PHAS37	BSS	)8J003,G	5		0201	B 257 G	GEN	2	257	
148				NOF	TO PATCH IN TRAPS FOR DEBUGGING	1		0206	N	GEN	2		
149			)0J003	EQU	*&1			0207		GEN			
150				LCA	)9J003,)6J003	7		0207	L 281 110	GEN	2	281	110
151				BCE	)1J003,)6K003,1 Q: LOADING FROM CARDS?	8		0214	B 250 700 1	GEN	2	250	700
152				BCE	)1J003,)6L003&4,0 Q: LOADING FROM AUTOCODER TAPE?	8		0222	B 250 708 0	GEN	2	250	708
153				RTW	1,LOADAD READ THE BLOCK	8		0230	L %U1 838 R	GEN	2	%U1	838
154				BER	)6M003 Q: TAPE ERROR?	5		0238	B 728 L	GEN	3	728	
155				CS	LOADNX,)9R003 ENTER THE BLOCK	7		0243	/ 700 287	GEN	3	700	287
156			)1J003	CS	)6K003,)9R003 LOAD CARDS OR AUTOCODER TAPE	7		0250	/ 700 287	GEN	3	700	287
157			)8J003	SW	)9R003	4		0257	, 287	GEN	3	287	
158				MU	%T0,)8K003,W	8		0261	M %T0 273 W	GEN	3	%T0	273
159				H	)0J003	4		0269	. 207	GEN	3	207	
160			)8K003	EQU	*&1			0273		GEN			
161			)9J003	DCW	@ARITH FIVE PHASE ID	9		0281		GEN	4		
162				DCW	#1	1		0282		GEN	4		
163				DC	@37.1@ PHASE NUMBER	4		0286		GEN	4		
164			)9R003	DCW	@}@	1		0287		GEN	4		
165				XFR	PHAS37				B 201		5	201	
166			*										
167				ORG	BEGIN3				0838				
168			LOADAD	EQU	*&1 LOAD ADDRESS			0838					
169	838		BEGN37	BCE	DONE,X2,. DONE?	8		0838	B U99 094 .		6	1499	094
170	846			C	0&X2	4		0846	C 0!0		6	000+2	
171	850			SAR	X2	4		0850	Q 094		6	094	
172	854			SBR	SX2	4		0854	H 070		6	2670	
173	858			C	0&X1	4		0858	C 0 0		6	000+1	
174	862			SAR	X1	4		0862	Q 089		6	089	
175	866		LOOP	MCW	0&X1,SEQNO	7		0866	M 0 0 067		6	000+1	2667
176	873			MCW		1		0873	M		7		
177	874			BCE	ARIF,CODE,E IF STATEMENT	8		0874	B 894 064 E		7	894	2664
178	882			BCE	ARIF,CODE,R ARITHMETIC ASSIGNMENT STATEMENT	8		0882	B 894 064 R		7	894	2664
179	890			B	ALMOST	4		0890	B U78		7	1478	
180	894		ARIF	LCA	0&X1,0&X2 MOVE UP PREFIX	7		0894	L 0 0 0!0		7	000+1	000+2
181	901			SAR	X1	4		0901	Q 089		7	089	
182	905			C	0&X2	4		0905	C 0!0		7	000+2	
183	909			SAR	X2	4		0909	Q 094		8	094	
184	913			LCA	1&X2,2&X2 MOVE UP GMWM?	7		0913	L 0!1 0!2		8	001+2	002+2
185	920			SBR	X2	4		0920	H 094		8	094	
186	924			CW	PARITY	4		0924	) 071		8	2671	
187	928			BCE	IFSTMT,2&X1,E IF STATEMENT	8		0928	B V03 0 2 E		8	1503	002+1
188			*										
189			*	ASSIGNMENT STATEMENT									
190			*										
191	936		ASGSTM	LCA	0&X1,0&X2	7		0936	L 0 0 0!0		8	000+1	000+2
192	943			SAR	X1	4		0943	Q 089		8	089	
193	947			C	0&X2	4		0947	C 0!0		9	000+2	
194	951			SAR	X2	4		0951	Q 094		9	094	



SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
245			*										
246	1	190	SUBS	SBR	X3,12&X3	7		1190	H 099 0A2		16	099	012+3
247	1	197		BCE	INNER,0&X3,\$	8		1197	B  46 0?0 \$		16	1046	000+3
248	1	205		SBR	X3,6&X3	7		1205	H 099 0?6		16	099	006+3
249	1	212		B	INNER	4		1212	B  46		17	1046	
250			*										
251			*		GET DOWN TO ASSIGNMENT OPERATOR								
252			*										
253	1	216	GETASG	BCE	GOTASG,0&X3,#	8		1216	B S32 0?0 #		17	1232	000+3
254	1	224		SBR	X3	4		1224	H 099		17	099	
255	1	228		B	GETASG	4		1228	B S16		17	1216	
256	1	232	GOTASG	MCW	0&X3,W18A	7		1232	M 0?0 099		17	000+3	2699
257	1	239		BCE	SUBLFT,2717,\$	8		1239	B O38 P17 \$		17	2638	2717
258	1	247		MZ	W18A-2,LSTYPE	7		1247	Y 097 P00		18	2697	2700
259	1	254	SBLBAK	BWZ	LFIX,LSTYPE,S	8		1254	V T40 P00 S		18	1340	2700
260	1	262		BWZ	LFIX,LSTYPE,K	8		1262	V T40 P00 K		18	1340	2700
261	1	270		BWZ	LFRF,SAVZON,2	8		1270	V T16 081 2		18	1316	2681
262	1	278		BWZ	LFRF,SAVZON,B	8		1278	V T16 081 B		18	1316	2681
263	1	286		BW	ENDEXP,PARITY	8		1286	V T82 071 1		19	1382	2671
264	1	294	LFRX	MCW	FCODE,0&X2	7		1294	M P01 0!0		19	2701	000+2
265	1	301		SBR	X2	4		1301	H 094		19	094	
266	1	305		CW	1&X2,FLOATF	7		1305	) 0!1 125		19	001+2	125
267	1	312		B	ENDEXP	4		1312	B T82		19	1382	
268	1	316	LFRF	BW	LFRX,PARITY	8		1316	V S94 071 1		19	1294	2671
269	1	324		B	ENDEXP	4		1324	B T82		20	1382	
270	1	328	LXRX	BW	LXRF,PARITY	8		1328	V T64 071 1		20	1364	2671
271	1	336		B	ENDEXP	4		1336	B T82		20	1382	
272	1	340	LFIX	BWZ	LXRX,SAVZON,S	8		1340	V T28 081 S		20	1328	2681
273	1	348		BM	LXRX,SAVZON	8		1348	V T28 081 K		20	1328	2681
274	1	356		BW	ENDEXP,PARITY	8		1356	V T82 071 1		21	1382	2671
275	1	364	LXRF	MCW	XCODE,0&X2	7		1364	M P02 0!0		21	2702	000+2
276	1	371		SBR	X2	4		1371	H 094		21	094	
277	1	375		CW	1&X2,XFIXF	7		1375	) 0!1 124		21	001+2	124
278	1	382	ENDEXP	SBR	X3,0&X1	7		1382	H 099 0 0		21	099	000+1
279	1	389	ENDEX2	BCE	EXPON3,0&X1,.	8		1389	B X89 0 0 .		22	1789	000+1
280	1	397		BCE	DIVOP,0&X1,@	8		1397	B U63 0 0 @		22	1463	000+1
281	1	405		BCE	ENDSTM,0&X1,}	8		1405	B U21 0 0 } GMARK		22	1421	000+1
282	1	413		SBR	X1	4		1413	H 089		22	089	
283	1	417		B	ENDEX2	4		1417	B T89		22	1389	
284			*										
285			*		END OF IF OR ASSIGNMENT STATEMENT								
286			*										
287	1	421	ENDSTM	LCA	0&X3,0&X2	7		1421	L 0?0 0!0		22	000+3	000+2
288	1	428		SAR	X3	4		1428	Q 099		23	099	
289	1	432		C	0&X2	4		1432	C 0!0		23	000+2	
290	1	436		SAR	X2	4		1436	Q 094		23	094	
291	1	440		BCE	FINSTM,1&X3,}	8		1440	B U52 0?1 } GMARK		23	1452	001+3
292	1	448		B	ENDSTM	4		1448	B U21		23	1421	
293	1	452	FINSTM	SBR	X1,0&X3	7		1452	H 089 0?0		23	089	000+3
294	1	459		B	LOOP	4		1459	B 866		23	866	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
295			*										
296			*		DIVIDE OPERATOR -- TURN IT BACK TO SLASH								
297			*										
298	1	463	DIVOP	MCW	SLASH,0&X1	7		1463	M P03 0 0		24	2703	000+1
299	1	470		SBR	X1	4		1470	H 089		24	089	
300	1	474		B	1389	4		1474	B T89		24	1389	
301			*										
302			*		ALMOST DONE								
303			*										
304	1	478	ALMOST	SBR	X1,5&X1	7		1478	H 089 0 5		24	089	005+1
305	1	485		MCW	SX2,X3	7		1485	M 070 099		24	2670	099
306	1	492		SBR	X3,2&X3	7		1492	H 099 0?2		24	099	002+3
307			*										
308	1	499	DONE	B	LOADNX	4		1499	B 700		25	700	
309			*										
310			*		IF STATEMENT								
311			*										
312			*		TAPE BLOCK IS TOO BIG FOR CHM TAU EMULATOR								
313			*										
314			END1	DCW	@)@ END OF PART 1	1		1503		GMARK	25		
315				XFR	LOADNX LOAD PART 2				B 700		26	700	
316			*		LOAD PART 2, START IN PART 1								
317			PART2	LDPH	ARITH FIV,PHASE2,BEGN37,,,37.2					MACRO			
			*	PHAZ	LDPH [PHASID],LOADAD,ENTAD[,SKIPFG,SKIP],[NUMBER][,HALT]					GEN			
			*	XFR	PHASZ PROHIBITED IN A MACRO					GEN			
			*							GEN			
			*		LOAD A BLOCK					GEN			
			*							GEN			
318			)6J004	EQU	110 PHASE ID			0110		GEN			
319			)6K004	EQU	700 LOAD NEXT PHASE			0700		GEN			
320			)6L004	EQU	704 TAPE READ INSTRUCTION			0704		GEN			
321			)6M004	EQU	728 TAPE ERROR HANDLER			0728		GEN			
			*							GEN			
322				ORG	201				0201				
323			PART2	BSS	)8J004,G	5		0201	B 257 G	GEN	27	257	
324				NOF	TO PATCH IN TRAPS FOR DEBUGGING	1		0206	N	GEN	27		
325			)0J004	EQU	*&1			0207		GEN			
326				LCA	)9J004,)6J004	7		0207	L 281 110	GEN	27	281	110
327				BCE	)1J004,)6K004,1 Q: LOADING FROM CARDS?	8		0214	B 250 700 1	GEN	27	250	700
328				BCE	)1J004,)6L004&4,0 Q: LOADING FROM AUTOCODER TAPE?	8		0222	B 250 708 0	GEN	27	250	708
329				RTW	1,PHASE2 READ THE BLOCK	8		0230	L %U1 V03 R	GEN	27	%U1	1503
330				BER	)6M004 Q: TAPE ERROR?	5		0238	B 728 L	GEN	28	728	
331				CS	BEGN37,)9R004 ENTER THE BLOCK	7		0243	/ 838 287	GEN	28	838	287
332			)1J004	CS	)6K004,)9R004 LOAD CARDS OR AUTOCODER TAPE	7		0250	/ 700 287	GEN	28	700	287
333			)8J004	SW	)9R004	4		0257	, 287	GEN	28	287	
334				MU	%T0,)8K004,W	8		0261	M %T0 273 W	GEN	28	%T0	273
335				H	)0J004	4		0269	. 207	GEN	28	207	
336			)8K004	EQU	*&1			0273		GEN			
337			)9J004	DCW	@ARITH FIVE PHASE ID	9		0281		GEN	29		
338				DCW	#1	1		0282		GEN	29		

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
339				DC	@37.2@ PHASE NUMBER	4		0286		GEN	29		
340			)9R004	DCW	@}@	1		0287		GEN	29		
341				XFR	PART2				B 201		30	201	
342				ORG	END1				1503				
343				*									
344				PHASE2 EQU	*&1			1503					
345	1	522	IFSTMT	C	0&X1	4		1503	C 0 0		31	000+1	
346	1	526		SAR	X1	4		1507	Q 089		31	089	
347	1	530		MCW	9&X1, LABNEG NEGATIVE BRANCH	7		1511	M 0 9 M89		31	009+1	2489
348	1	537		MCW	6&X1, LABZRO ZERO BRANCH	7		1518	M 0 6 M81		31	006+1	2481
349	1	544		MCW	3&X1, LABPOS POSITIVE BRANCH	7		1525	M 0 3 M73		31	003+1	2473
350	1	551		MZ	X2ZONE, LABNEG-1	7		1532	Y P04 M88		31	2704	2488
351	1	558		MZ	X2ZONE, LABZRO-1	7		1539	Y P04 M80		32	2704	2480
352	1	565		MZ	X2ZONE, LABPOS-1	7		1546	Y P04 M72		32	2704	2472
353	1	572		MCW	LABPOS, UNCOND	7		1553	M M73 M69		32	2473	2469
354	1	579		LCA	KB20, W20	7		1560	L P24 M65		32	2724	2465
355	1	586		SBR	X3, RECMRK	7		1567	H 099 M45		32	099	2445
356	1	593		C	LABPOS, LABZRO	7		1574	C M73 M81		33	2473	2481
357	1	600		BE	POSZRO POSITIVE AND ZERO THE SAME LABEL	5		1581	B X60 S		33	1760	
358	1	605		C	LABZRO, LABNEG	7		1586	C M81 M89		33	2481	2489
359	1	612		BE	ZEQNEG NEGATIVE AND ZERO THE SAME LABEL	5		1593	B W23 S		33	1623	
360	1	617		SBR	X3, 8&X3	7		1598	H 099 0?8		33	099	008+3
361	1	624		MCW	BRZERO	4		1605	M M85		33	2485	
362	1	628		MCW		1		1609	M		33		
363	1	629		LCA		1		1610	L		34		
364	1	630		C	LABPOS, LABNEG	7		1611	C M73 M89		34	2473	2489
365	1	637		BE	POSNEG POSITIVE AND NEGATIVE THE SAME LABEL	5		1618	B W43 S		34	1643	
366	1	642	ZEQNEG	SBR	X3, 8&X3	7		1623	H 099 0?8		34	099	008+3
367	1	649		MCW	BRPOS	4		1630	M M77		34	2477	
368	1	653		MCW		1		1634	M		34		
369	1	654		LCA		1		1635	L		34		
370	1	655		MCW	LABNEG, UNCOND	7		1636	M M89 M69		35	2489	2469
371	1	662	POSNEG	MCW	X3, SX1	7		1643	M 099 074		35	099	2674
372	1	669		BWZ	*&5, SEQNO, 2	8		1650	V W62 067 2		35	1662	2667
373	1	677		B	*&9	4		1658	B W70		35	1670	
374	1	681		BWZ	*&15, SEQNO-2, 2	8		1662	V W84 065 2		35	1684	2665
375	1	689		MCW	SEQNO, X3 ADDRESS OF SEQUENCE NUMBER IF ZONES	7		1670	M 067 099		36	2667	099
376	1	696		MCW	0&X3, SEQNO	7		1677	M 0?0 067		36	000+3	2667
377	1	703		A	KP1, SEQNO	7		1684	A P25 067		36	2725	2667
378	1	710		MCW	UNCOND, X3	7		1691	M M69 099		36	2469	099
379	1	717		C	0&X3, SEQNO	7		1698	C 0?0 067		36	000+3	2667
380	1	724		MCW	SX1, X3	7		1705	M 074 099		37	2674	099
381	1	731		BE	MOVEUP	5		1712	B X29 S		37	1729	
382	1	736	POSN2	SBR	X3, 4&X3	7		1717	H 099 0?4		37	099	004+3
383	1	743		MCW	UNCOND	4		1724	M M69		37	2469	
384	1	747		LCA		1		1728	L		37		
385	1	748	MOVEUP	LCA	0&X3, 0&X2 MOVE UP GENERATED CODE	7		1729	L 0?0 0!0		37	000+3	000+2
386	1	755		SAR	X3	4		1736	Q 099		37	099	
387	1	759		C	0&X2	4		1740	C 0!0		38	000+2	
388	1	763		SAR	X2	4		1744	Q 094		38	094	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
389	1	767		BCE	ASGSTM, 0&X3,	8		1748	B 936 0?0		38	936	000+3
390	1	775		B	MOVEUP	4		1756	B X29		38	1729	
391	1	779	POSZRO	C	LABPOS, LABNEG	7		1760	C M73 M89		38	2473	2489
392	1	786		BE	POSN2 ALL THE SAME LABEL	5		1767	B X17 S		38	1717	
393	1	791		SBR	X3, 8&X3	7		1772	H 099 0?8		38	099	008+3
394	1	798		MCW	BRNEG	4		1779	M M93		39	2493	
395	1	802		MCW		1		1783	M		39		
396	1	803		LCA		1		1784	L		39		
397	1	804		B	POSNEG	4		1785	B W43		39	1643	
398				*									
399				*	EXPONENTIATION OPERATOR								
400				*									
401	1	808	EXPON3	SW	1&X1	4		1789	, 0 1		39	001+1	
402	1	812		BCE	ESUBR, 1&X1, \$	8		1793	B M94 0 1 \$		39	2494	001+1
403	1	820		LCA	3&X1, W17A	7		1801	L 0 3 P42		39	003+1	2742
404	1	827		MZ	2&X1, EXPRT	7		1808	Y 0 2 P43		40	002+1	2743
405	1	834		SBR	SX1P3, 3&X1	7		1815	H P46 0 3		40	2746	003+1
406	1	841		C	SX1P3, X3	7		1822	C P46 099		40	2746	099
407	1	848		BE	EXPON5	5		1829	B Y61 S		40	1861	
408	1	853		SW	4&X1	4		1834	, 0 4		40	004+1	
409	1	857	EXPON4	LCA	0&X3, 0&X2	7		1838	L 0?0 0!0		40	000+3	000+2
410	1	864		SAR	X3	4		1845	Q 099		41	099	
411	1	868		C	0&X2	4		1849	C 0!0		41	000+2	
412	1	872		SAR	X2	4		1853	Q 094		41	094	
413	1	876		CW	1&X2	4		1857	) 0!1		41	001+2	
414	1	880	EXPON5	C	0&X1, KB4	7		1861	C 0 0 P50		41	000+1	2750
415	1	887		SAR	X1	4		1868	Q 089		41	089	
416	1	891		BCE	ESUBL, 3&X1, \$	8		1872	B N59 0 3 \$		41	2559	003+1
417	1	899		MZ	2&X1, EXPLT	7		1880	Y 0 2 P51		42	002+1	2751
418	1	906		SW	1&X1	4		1887	, 0 1		42	001+1	
419	1	910	EXPON6	LCA	3&X1, W17B	7		1891	L 0 3 P68		42	003+1	2768
420	1	917		SAR	X1	4		1898	Q 089		42	089	
421	1	921		BWZ	ERX, EXPRT, S	8		1902	V !58 P43 S		42	2058	2743
422	1	929		BWZ	ERX, EXPRT, K	8		1910	V !58 P43 K		42	2058	2743
423	1	937		CW	LOGF, EXPF NEED LOGF AND EXPF	7		1918	) 119 120		43	119	120
424	1	944		CW	SERIES AND SERIES	4		1925	) 117		43	117	
425	1	948		BWZ	ERFLF, EXPLT, 2	8		1929	V !13 P51 2		43	2013	2751
426	1	956		BWZ	ERFLF, EXPLT, B	8		1937	V !13 P51 B		43	2013	2751
427	1	964		BWZ	*&5, SEQNO, 2	8		1945	V Z57 O67 2		43	1957	2667
428	1	972		B	*&9	4		1953	B Z65		43	1965	
429	1	976		BWZ	MSG30, SEQNO-2, 2 SEQUENCE NUMBER IF NO ZONES	8		1957	V Z79 O65 2		44	1979	2665
430	1	984		MCW	SEQNO, X3 ADDRESS OF SEQUENCE NUMBER	7		1965	M O67 099		44	2667	099
431	1	991		MCW	0&X3, SEQNO	7		1972	M 0?0 O67		44	000+3	2667
432	1	998	MSG30	CS	332	4		1979	/ 332		44	332	
433	2	002		CS		1		1983	/		44		
434	2	003		SW	GLOBER	4		1984	, 184		44	184	
435	2	007		MN	SEQNO, 244	7		1988	D O67 244		44	2667	244
436	2	014		MN		1		1995	D		45		
437	2	015		MN		1		1996	D		45		
438	2	016		MCW	ERR30	4		1997	M Q09		45	2809	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
439	2	020		W				1	2001	2		45	
440	2	021		BCV	*&5			5	2002	B !11 @		45 2011	
441	2	026		B	*&3			4	2007	B !13		45 2013	
442	2	030		CC	1			2	2011	F 1		45	
443	2	032	ERFLF	LCA	ECODE,0&X2	BOTH OPERANDS	FLOAT	7	2013	L Q10 0!0		46 2810	000+2
444	2	039		LCA	W17A			4	2020	L P42		46 2742	
445	2	043		LCA	KGSTAR G*			4	2024	L Q12		46 2812	
446	2	047		SBR	X2			4	2028	H 094		46 094	
447	2	051		CW	3&X2,1&X1			7	2032	) 0!3 0 1		46 003+2	001+1
448	2	058		LCA	W17B,0&X2			7	2039	L P68 0!0		46 2768	000+2
449	2	065		SBR	X2			4	2046	H 094		46 094	
450	2	069		CW	1&X2			4	2050	) 0!1		47 001+2	
451	2	073		B	ENDEXP			4	2054	B T82		47 1382	
452				*									
453				*	RIGHT OPERAND OF EXPONENTIATION IS FIXED POINT								
454				*									
455	2	077	ERX	BWZ	GETFUN,EXPRT,K			8	2058	V K35 P43 K		47 2235	2743
456	2	085		BCE	GETFUN,W17A-2,<			8	2066	B K35 P40 <		47 2235	2740
457	2	093		MCW	W17A,X3			7	2074	M P42 099		47 2742	099
458	2	100		MA	ARYSIZ,X3			7	2081	# 160 099		47 160	099
459	2	107		C	K3,0&X3			7	2088	C Q13 0?0		48 2813	000+3
460	2	114		BH	GETFUN			5	2095	B K35 U		48 2235	
461	2	119		LCA	W17B,0&X2			7	2100	L P68 0!0		48 2768	000+2
462	2	126		LCA	KSTAR			4	2107	L Q14		48 2814	
463	2	130		SBR	X2			4	2111	H 094		48 094	
464	2	134		SBR	SX2B			4	2115	H Q17		48 2817	
465	2	138		CW	1&X2,2&X2			7	2119	) 0!1 0!2		48 001+2	002+2
466	2	145		LCA	W17B,0&X2			7	2126	L P68 0!0		49 2768	000+2
467	2	152		SBR	X2			4	2133	H 094		49 094	
468	2	156		CW	1&X2			4	2137	) 0!1		49 001+2	
469	2	160		BCE	ERX2,0&X3,0			8	2141	B J99 0?0 0		49 2199	000+3
470	2	168		BCE	ERX3,0&X3,1			8	2149	B K17 0?0 1		49 2217	000+3
471	2	176		BCE	ENDEXP,0&X3,2			8	2157	B T82 0?0 2		49 1382	000+3
472	2	184		LCA	KSTAR,0&X2			7	2165	L Q14 0!0		50 2814	000+2
473	2	191		SBR	X2			4	2172	H 094		50 094	
474	2	195		CW	1&X2			4	2176	) 0!1		50 001+2	
475	2	199		LCA	W17B,0&X2			7	2180	L P68 0!0		50 2768	000+2
476	2	206		SBR	X2			4	2187	H 094		50 094	
477	2	210		CW	1&X2			4	2191	) 0!1		50 001+2	
478	2	214		B	ENDEXP			4	2195	B T82		50 1382	
479				*									
480	2	218	ERX2	MCW	SX2B,X3			7	2199	M Q17 099		51 2817	099
481	2	225		MCW	SLASH,1&X3			7	2206	M P03 0?1		51 2703	001+3
482	2	232		B	ENDEXP			4	2213	B T82		51 1382	
483				*									
484	2	236	ERX3	MCW	SX2B,X2			7	2217	M Q17 094		51 2817	094
485	2	243		SBR	X2,1&X2			7	2224	H 094 0!1		51 094	001+2
486	2	250		B	ENDEXP			4	2231	B T82		51 1382	
487				*									
488	2	254	GETFUN	CW	LOGF,EXPF	NEED LOGF AND EXPF		7	2235	) 119 120		52 119	120



SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
489	2	261		CW	SERIES,FLOATF	7		2242	) 117 125		52	117	125
490	2	268		BWZ	GETFF1,EXPLT,2 LEFT IS FLOAT	8		2249	V L02 P51 2		52	2302	2751
491	2	276		BWZ	GETFF1,EXPLT,B LEFT IS FLOAT	8		2257	V L02 P51 B		52	2302	2751
492	2	284		LCA	XCODE,0&X2 XFIXF CODE	7		2265	L P02 0!0		52	2702	000+2
493	2	291		SBR	X2	4		2272	H 094		53	094	
494	2	295		CW	0&X2,XFIXF	7		2276	) 0!0 124		53	000+2	124
495	2	302		LCA	NEGAR3,0&X2	7		2283	L 157 0!0		53	157	000+2
496	2	309		LCA	KPLUS	4		2290	L Q18		53	2818	
497	2	313		SBR	X2	4		2294	H 094		53	094	
498	2	317		CW	2&X2	4		2298	) 0!2		53	002+2	
499	2	321	GETFF1	LCA	ECODE,0&X2	7		2302	L Q10 0!0		53	2810	000+2
500	2	328		LCA	KFLESS F*<4?	4		2309	L Q23		54	2823	
501	2	332		LCA	W17A	4		2313	L P42		54	2742	
502	2	336		SBR	X2	4		2317	H 094		54	094	
503	2	340		CW	1&X2	4		2321	) 0!1		54	001+2	
504	2	344		C	0&X1,KB4	7		2325	C 0!0 P50		54	000+1	2750
505	2	351		SAR	X3	4		2332	Q 099		54	099	
506	2	355		BCE	SUBFUN,3&X3,\$	8		2336	B 004 0?3 \$		54	2604	003+3
507	2	363	SUBFUB	SW	1&X3	4		2344	, 0?1		55	001+3	
508	2	367		LCA	0&X1,0&X2	7		2348	L 0!0 0!0		55	000+1	000+2
509	2	374		SAR	X1	4		2355	Q 089		55	089	
510	2	378		C	0&X2	4		2359	C 0!0		55	000+2	
511	2	382		SAR	X2	4		2363	Q 094		55	094	
512	2	386		CW	1&X2	4		2367	) 0!1		55	001+2	
513	2	390		LCA	KGRM G	4		2371	L Q25		55	2825	
514	2	394		SBR	X2	4		2375	H 094		56	094	
515	2	398		BWZ	GETFF2,EXPLT,2 LEFT IS FLOAT	8		2379	V M06 P51 2		56	2406	2751
516	2	406		BWZ	GETFF2,EXPLT,B LEFT IS FLOAT	8		2387	V M06 P51 B		56	2406	2751
517	2	414		LCA	FCODE,0&X2	7		2395	L P01 0!0		56	2701	000+2
518	2	421		SBR	X2	4		2402	H 094		56	094	
519	2	425	GETFF2	LCA	W17B,0&X2	7		2406	L P68 0!0		56	2768	000+2
520	2	432		LCA	KL4 <4?#	4		2413	L Q29		57	2829	
521	2	436		SBR	X2	4		2417	H 094		57	094	
522	2	440		CW	5&X2	4		2421	) 0!5		57	005+2	
523	2	444		C	0&X1,BARITF&3	7		2425	C 0!0 Q33		57	000+1	2833
524	2	451		BE	ENDEXP	5		2432	B T82 S		57	1382	
525	2	456		CW	1&X2	4		2437	) 0!1		57	001+2	
526	2	460		B	ENDEXP	4		2441	B T82		57	1382	
527			*										
528	2	464	RECMRK	DCW	@ @	1		2445			58		
529	2	484	W20	DCW	#20	20		2465			58		
530	2	485		B		1		2466	B		58		
531	2	488	UNCOND	DCW	#3	3		2469			58		
532	2	489		BWZ		1		2470	V		58		
533	2	492	LABPOS	DCW	#3 POSITIVE BRANCH FROM ARITHMETIC IF	3		2473			58		
534	2	495		DSA	277&X3	3		2476	2G7		58	277	
535	2	496	BRPOS	DC	@B@	1		2477			58		
536	2	497		B		1		2478	B		59		
537	2	500	LABZRO	DCW	#3 ZERO BRANCH FROM ARITHMETIC IF	3		2481			59		
538	2	503		DSA	280	3		2484	280		59	280	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
539	2	504	BRZERO	DC	0	1		2485			59		
540	2	505		BWZ		1		2486	V		59		
541	2	508	LABNEG	DCW	#3 NEGATIVE BRANCH FROM ARITHMETIC IF	3		2489			59		
542	2	511		DSA	277&X3	3		2492	2G7		59	277	
543	2	512	BRNEG	DC	@K@	1		2493			59		
544				*									
545				*	RIGHT OPERAND OF EXPONENTIATION OPERATOR IS SUBSCRIPTED								
546				*									
547	2	513	ESUBR	MZ	3&X1,EXPRT	7		2494	Y 0 3 P43		59	003+1	2743
548	2	520		SBR	X1,11&X1	7		2501	H 089 0/1		60	089	011+1
549	2	527		BCE	*&8,0&X1,\$	8		2508	B N23 0 0 \$		60	2523	000+1
550	2	535		SBR	X1,6&X1	7		2516	H 089 0 6		60	089	006+1
551	2	542		C	X1,X3	7		2523	C 089 099		60	089	099
552	2	549		BE	*&5	5		2530	B N39 S		60	2539	
553	2	554		SW	1&X1	4		2535	, 0 1		60	001+1	
554	2	558		LCA	0&X1,W17A	7		2539	L 0 0 P42		61	000+1	2742
555	2	565		SAR	X1	4		2546	Q 089		61	089	
556	2	569		BE	EXPON5	5		2550	B Y61 S		61	1861	
557	2	574		B	EXPON4	4		2555	B Y38		61	1838	
558				*									
559				*	LEFT OPERAND OF EXPONENTIATION OPERATOR IS SUBSCRIPTED								
560				*									
561	2	578	ESUBL	C	0&X1,W8	7		2559	C 0 0 Q41		61	000+1	2841
562	2	585		SAR	X3	4		2566	Q 099		61	099	
563	2	589		BCE	*&12,1&X3,\$	8		2570	B N89 0?1 \$		61	2589	001+3
564	2	597		C	0&X3,W6	7		2578	C 0?0 Q47		62	000+3	2847
565	2	604		SAR	X3	4		2585	Q 099		62	099	
566	2	608		MZ	3&X3,EXPLT	7		2589	Y 0?3 P51		62	003+3	2751
567	2	615		SW	1&X3	4		2596	, 0?1		62	001+3	
568	2	619		B	EXPON6	4		2600	B Y91		62	1891	
569				*									
570				*	SUBSCRIPT AFTER ???								
571				*									
572	2	623	SUBFUN	C	0&X3,W8	7		2604	C 0?0 Q41		62	000+3	2841
573	2	630		SAR	X3	4		2611	Q 099		62	099	
574	2	634		BCE	SUBFUB,1&X3,\$	8		2615	B L44 0?1 \$		63	2344	001+3
575	2	642		C	0&X3,W6	7		2623	C 0?0 Q47		63	000+3	2847
576	2	649		SAR	X3	4		2630	Q 099		63	099	
577	2	653		B	SUBFUB	4		2634	B L44		63	2344	
578				*									
579				*	SUBSCRIPT ON LEFT OF EQUAL SIGN								
580				*									
581	2	657	SUBLFT	MZ	W18A-9,LSTYPE TYPE TAG FOR LHS	7		2638	Y 090 P00		63	2690	2700
582	2	664		BCE	SBLBAK,W18A-11,\$	8		2645	B S54 088 \$		63	1254	2688
583	2	672		MZ	W18A-15,LSTYPE TYPE TAG FOR LHS	7		2653	Y 084 P00		64	2684	2700
584	2	679		B	SBLBAK	4		2660	B S54		64	1254	
585				*									
586				*	DATA								
587				*									
588	2	683	CODE	DCW	#1 STATEMENT CODE	1		2664			64		

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR
589	2	686	SEQNO	DCW	#3 SEQUENCE NUMBER OR	3		2667			64		
590	2	689	SX2	DCW	#3	3		2670			64		
591	2	690	PARITY	DCW	#1 OF LOOP IN ASSIGNMENT STATEMENT PROCESSING	1		2671			64		
592	2	693	SX1	DCW	#3	3		2674			64		
593	2	699	OPS	DCW	@&-@*.*#@	6		2680			65		
594	2	700	SAVZON	DCW	#1	1		2681			65		
595	2	718	W18A	DCW	#18	18		2699			65		
596	2	719	LSTYPE	DCW	#1 TYPE ZONE FOR LHS	1		2700			65		
597	2	720	FCODE	DCW	@F@ FIX-TO-FLOAT (FLOATF) CODE	1		2701			65		
598	2	721	XCODE	DCW	@X@ FLOAT-TO-FIX (XFIXF) CODE	1		2702			65		
599	2	722	SLASH	DCW	@/@	1		2703			65		
600	2	729	X2ZONE	DCW	@K@	1		2704			66		
601	2	749	KB20	DCW	#20	20		2724			66		
602	2	750	KP1	DCW	&1	1		2725			66		
603	2	767	W17A	DCW	#17	17		2742			66		
604	2	768	EXPRT	DCW	#1 TYPE TAG OF RIGHT OPERAND OF EXPONENTIATION	1		2743			67		
605	2	771	SX1P3	DCW	#3	3		2746			67		
606	2	775	KB4	DCW	#4 USED IN COMPARE TO DECREMENT INDEX	4		2750			67		
607	2	776	EXPLT	DCW	#1 TYPE TAG OF LEFT OPERAND OF EXPONENTIATION	1		2751			67		
608	2	793	W17B	DCW	#17	17		2768			67		
609	2	834	ERR30	DCW	@ERROR 30 - FIX TO FLOAT POWER, STATEMENT @	41		2809			69		
610	2	835	ECODE	DCW	@E@ CODE FOR EXPONENTIAL	1		2810			69		
611	2	837	KGSTAR	DCW	@G*@ CODE FOR LOGARITHM	2		2812			69		
612	2	838	K3	DCW	3	1		2813			69		
613	2	839	KSTAR	DCW	@*@	1		2814			69		
614	2	842	SX2B	DCW	#3	3		2817			70		
615	2	843	KPLUS	DCW	@&@	1		2818			70		
616	2	848	KFLESS	DCW	@F*<4?@	5		2823			70		
617	2	850	KGRM	DCW	@G @	2		2825			70		
618	2	854	KL4	DCW	@<4?#@	4		2829			70		
619	2	855	BARITF	B	ARITF	4		2830	B 700		70	700	
620	2	866	W8	DCW	#8 USED IN COMPARE TO DECREMENT INDEX	8		2841			70		
621	2	872	W6	DCW	#6 USED IN COMPARE TO DECREMENT INDEX	6		2847			71		
622	2	873	GMWM	DCW	@)@	1		2848		GMARK	71		
623			XFR		BEGN37				B 838		72	838	
624			CLRME	CLRA	BEGN37,GMWM,C					MACRO			
			*	CLRA	CLRBOT,CLRTOP[,SS,HERE,GWMAD]					GEN			
			*							GEN			
			*	CLEAR CORE	AFTER A PHASE USING THE CLRTOP ADDRESS					GEN			
			*							GEN			
625			ORG		201				0201				
			*							GEN			
			*	CLEAR DOWN	TO CLRBOT & X00 THE EASY WAY					GEN			
			*							GEN			
626			CLRME	EQU	*&1			0201		GEN			
627			BSS		SNAPSH,C	5		0201	B 333 C	GEN	73	333	
628			)0J005	CS	GMWM CLEAR FROM CLRTOP	4		0206	/ Q48	GEN	73	2848	
629			SBR		)0J005&3	4		0210	H 209	GEN	73	209	
630			SBR		)0L005&6	4		0214	H 255	GEN	73	255	
631			C		)0J005&3,)0M005 DOWN TO CLRBOT & X00?	7		0218	C 209 266	GEN	73	209	266

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD	A-ADDR	B-ADDR	
632				BU	)0J005	5		0225	B 206 /	GEN	73	206		
			*							GEN				
			*	NOW CLEAR DOWN TO CLRBOT THE HARD WAY							GEN			
			*							GEN				
633			)0K005	C	)0L005&6,)0N005	7		0230	C 255 269	GEN	73	255	269	
634				BU	)0L005	5		0237	B 249 /	GEN	74	249		
635				CS	LOADNX,)0Q005	7		0242	/ 700 276	GEN	74	700	276	
636			)0L005	LCA	)0P005,0-0	7		0249	L 270 000	GEN	74	270	000	
637				SBR	)0L005&6	4		0256	H 255	GEN	74	255		
638				B	)0K005	4		0260	B 230	GEN	74	230		
639			)0M005	DSA	)0R005	3		0266	899	GEN	74	899		
640			)0N005	DSA	BEGN37	3		0269	838	GEN	74	838		
641			)0P005	DCW	#1	1		0270		GEN	75			
642				DC	@CLRA @	5		0275		GEN	75			
643			)0Q005	DCW	@}@	1		0276		GEN	75			
644				ORG	BEGN37&X00				0900					
645			)0R005	EQU	*			0899		GEN				
646				XFR	CLRME				B 201		76	201		

SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS
)0J003	0207: 0	)0J004	0207: 0	)0J005	0206: 0	)0K005	0230: 0	)0L005	0249: 0	)0M005	0266: 0
)0N005	0269: 0	)0P005	0270: 0	)0Q005	0276: 0	)0R005	0899: 0	)1J003	0250: 0	)1J004	0250: 0
)6J003	0110: 0	)6J004	0110: 0	)6K003	0700: 0	)6K004	0700: 0	)6L003	0704: 0	)6L004	0704: 0
)6M003	0728: 0	)6M004	0728: 0	)8J003	0257: 0	)8J004	0257: 0	)8K003	0273: 0	)8K004	0273: 0
)9J003	0281: 0	)9J004	0281: 0	)9R003	0287: 0	)9R004	0287: 0	ALMOST	1478: 0	ARIF	0894: 0
ARITF	0700: 0	ARYSIZ	0160: 0	ASGSTM	0936: 0	BARITF	2830: 0	BEGIN3	0838: 0	BEGN37	0838: 0
BRNEG	2493: 0	BRPOS	2477: 0	BRZERO	2485: 0	CDOVLY	0700: 0	CLRME	0201: 0	CODE	2664: 0
DIVOP	1463: 0	DONE	1499: 0	ECODE	2810: 0	END1	1503: 0	ENDEX2	1389: 0	ENDEXP	1382: 0
ENDSTM	1421: 0	ERFLF	2013: 0	ERR30	2809: 0	ERX	2058: 0	ERX2	2199: 0	ERX3	2217: 0
ESUBL	2559: 0	ESUBR	2494: 0	EVEN	1101: 0	EXPF	0120: 0	EXPLT	2751: 0	EXPON	1109: 0
EXPON2	1154: 0	EXPON3	1789: 0	EXPON4	1838: 0	EXPON5	1861: 0	EXPON6	1891: 0	EXPONL	1128: 0
EXPRT	2743: 0	FCODE	2701: 0	FINSTM	1452: 0	FLOATF	0125: 0	GETASG	1216: 0	GETFF1	2302: 0
GETFF2	2406: 0	GETFUN	2235: 0	GETOP	0974: 0	GLOBER	0184: 0	GMWM	2848: 0	GOTASG	1232: 0
GOTOP	1009: 0	IFSTMT	1503: 0	INNER	1046: 0	K3	2813: 0	KB20	2724: 0	KB4	2750: 0
KFLESS	2823: 0	KGRM	2825: 0	KGSTAR	2812: 0	KL4	2829: 0	KP1	2725: 0	KPLUS	2818: 0
KSTAR	2814: 0	LABNEG	2489: 0	LABPOS	2473: 0	LABZRO	2481: 0	LFIX	1340: 0	LFRF	1316: 0
LFRX	1294: 0	LOADAD	0838: 0	LOADNX	0700: 0	LOGF	0119: 0	LOOKOP	0992: 0	LOOP	0866: 0
LSTYPE	2700: 0	LXRF	1364: 0	LXRX	1328: 0	MOVEUP	1729: 0	MSG30	1979: 0	NEGAR3	0157: 0
OPS	2680: 0	OUTER	1039: 0	PARITY	2671: 0	PART2	0201: 0	PHAS37	0201: 0	PHASE2	1503: 0
PHASID	0110: 0	PHASLD	0381: 0	POSN2	1717: 0	POSNEG	1643: 0	POSZRO	1760: 0	RECMRK	2445: 0
SAVZON	2681: 0	SBLBAK	1254: 0	SEQNO	2667: 0	SERIES	0117: 0	SLASH	2703: 0	SNAPEX	0564: 0
SNAPSH	0333: 0	SUBFUB	2344: 0	SUBFUN	2604: 0	SUBLFT	2638: 0	SUBS	1190: 0	SX1	2674: 0
SX1P3	2746: 0	SX2	2670: 0	SX2B	2817: 0	SX3	1135: 0	TOP3	2600: 0	TPERR	0728: 0
TPREAD	0704: 0	UNCOND	2469: 0	W17A	2742: 0	W17B	2768: 0	W18A	2699: 0	W20	2465: 0
W6	2847: 0	W8	2841: 0	X1	0089: 0	X2	0094: 0	X2ZONE	2704: 0	X3	0099: 0
XCODE	2702: 0	XFIXF	0124: 0	ZEQNEG	1623: 0						

## UNREFERENCED SYMBOLS

CDOVLY PHASID PHASLD SNAPEX TOP3 TPERR TPREAD