

CLEAR STORAGE 1	,008015,022026,030037,044,049,053053N0000000N00001026	1
CLEAR STORAGE 2	L068116,105106,110117B101/I9I#071029C029056B026/B001/0991,001/001117I0?	2
BOOTSTRAP	,008015,022029,036040,047054,061068,072/061039,0010011040	3

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SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
101	1	01	013	JOB	1401 FORTRAN ARITH AND RELOCATABLE ROUTINES						
102	1	02		CTL	644 11						
103	1	03	*								
104	1	04		SFX	B	B					
105	1	05	*								
106	1	06		XINIT	XL1, XL2, XL3, , , , XXXX	B				MACRO	
107			XXX	EQU	0	B		0000		GEN	
108			XL1	EQU	089	B		0089		GEN	
109			089	DCW	000	B	3	0089		GEN	4
110			091	DC	00	B	2	0091		GEN	4
111			XL2	EQU	094	B		0094		GEN	
112			094	DCW	000	B	3	0094		GEN	4
113			096	DC	00	B	2	0096		GEN	4
114			XL3	EQU	099	B		0099		GEN	
115			099	DCW	000	B	3	0099		GEN	4
116			100	DC	0	B	1	0100		GEN	4
117	1	07	*								
118	1	08		XNMBR		B				MACRO	
119			X1	EQU	089	B		0089		GEN	
120			X2	EQU	094	B		0094		GEN	
121			X3	EQU	099	B		0099		GEN	
122	1	09	*								
123	1	10	WKZON	EQU	200	B		0200			
124	1	11	TOP	EQU	WKZON&1	B		0201			
125	1	12	SPOT	EQU	WKZON&50	B		0250			
126	1	13	ACCHI	EQU	WKZON&79	B		0279			
127	1	14	*								
128	1	15		ORG	700	B			0700		
129	1	16	*								
130	1	17	*								
131	1	18	*		ARITHMETIC ROUTINE MONITOR						
132	1	19	ARITF	SBR	X2	B	4	0700	H 094		5
133	1	20		SBR	086	B	4	0704	H 086		5
134	1	21		SBR	STMNM&6	B	4	0708	H V06		5
135	1	22	ARITH	MCW	2&X2, X1	B	7	0712	M 0!2 089		5
136	1	23		SAR	ALGRT&6	B	4	0719	Q 765		5
137	1	24	SBBR1	SBR	BRWHR&6	B	4	0723	H S27		5
138	1	25		BCE	STSUB, 0&X2, \$	B	8	0727	B S06 0!0 \$		5
139	1	26		SBR	OUT2&6, 0&X1	B	7	0735	H T75 0!0		6
140	1	27		CS	WKZON&103	B	4	0742	/ 303		6
141	1	28		CS		B	1	0746	/		6
142	1	29		CS		B	1	0747	/		6
143	1	30		LCA	@0@, ACCHI&1	B	7	0748	L W85 280		6
144	1	31	CLRXL	S	X1&2	B	4	0755	S 091		6
145	1	32	ALGRT	SBR	XL2, XXX	B	7	0759	H 094 000		6
146	1	33		C	4&X2, @#&	B	7	0766	C 0!4 W86		7
147	1	34		MCW	4&X2, SIGNF	B	7	0773	M 0!4 924		7

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
148	1	35		SW	TOP	B	4	0780	, 201		7
149	1	36	EXIT	BL	QFUNCT	B	5	0784	B T05 T		7
150	1	37		SBR	NGBMP&6,4&X2	B	7	0789	H 874 014		7
151	1	38		BCE	OPDSC,5&X2,\$	B	8	0796	B /99 015 \$		7
152	1	39		MCW	7&X2, XL1	B	7	0804	M 017 089		8
153	1	40		SAR	ALGRT&6	B	4	0811	Q 765		8
154	1	41	SBBR2	BWZ	XSIZE,X1-1,K	B	8	0815	V V30 088 K		8
155	1	42		BWZ	XSIZE,X1-1,S	B	8	0823	V V30 088 S		8
156	1	43	*								
157	1	44	*								
158	1	45	*		FLOAT ARITHMETIC						
159	1	46	Fsize	SBR	X3,XXX	B	7	0831	H 099 000		8
160	1	47		CW	FIXSW#1	B	4	0838) W87		8
161	1	48		MCW	0&X1,EXPB	B	7	0842	M 010 W82		9
162	1	49		SAR	XL1	B	4	0849	Q 089		9
163	1	50		MCW	0&X1,SPOT	B	7	0853	M 010 250		9
164	1	51		SBR	XL2	B	4	0860	H 094		9
165	1	52		LCA	@0@	B	4	0864	L W85		9
166	1	53	NGBMP	BW	*&8,0	B	8	0868	V 883 000 1		9
167	1	54		MZ	SPOT, NSIGN	B	7	0876	Y 250 187		10
168	1	55		S	@0@,SPOT&2&X3	B	7	0883	S W85 2E2		10
169	1	56		C	1&X2, @0@	B	7	0890	C 011 W85		10
170	1	57		A	XL3, XL2	B	7	0897	A 099 094		10
171	1	58		BCE	FDIV, CODE, /	B	8	0904	B S33 924 /		10
172	1	59		BCE	FMPY, CODE, *	B	8	0912	B S62 924 *		11
173	1	60	*								
174	1	61	*								
175	1	62	*		FLOATING ADD / SUBTRACT						
176	1	63		S	SIGNF	B	4	0920	S 924		11
177	1	64	SIGNF	ZA	NSIGN	B	4	0924	? 187		11
178	1	65		BCE	NUVAL,ACCHI&1,0	B	8	0928	B 117 280 0		11
179	1	66		BE	CLRWK	B	5	0936	B /34 S		11
180	1	67		S	EXPB,EXP	B	7	0941	S W82 W79		11
181	1	68		ZA	EXP&1,XL1&1	B	7	0948	? W80 090		12
182	1	69		C	XL3,XL1	B	7	0955	C 099 089		12
183	1	70		BM	RTN1,EXP	B	8	0962	V /65 W79 K		12
184	1	71		BH	CHGEX	B	5	0970	B /88 U		12
185	1	72		A	EXP,EXPB	B	7	0975	A W79 W82		12
186	1	73		ZA	SPOT,SPOT&X1	B	7	0982	? 250 2V0		13
187	1	74		ZA	XL3&1,XL1&1	B	7	0989	? 100 090		13
188	1	75	ASCOM	MZ	NSIGN,0&X2	B	7	0996	Y 187 010		13
189	1	76		A	ACCHI&X1,0&X2	B	7	1003	A 2X9 010		13
190	1	77	MVZON	MZ	0&X2,NSIGN	B	7	1010	Y 010 187		13
191	1	78	NUVAL	ZA	EXPB,EXP	B	7	1017	? W82 W79		14
192	1	79	*								
193	1	80	*								
194	1	81	*		NORMALIZE						
195	1	82	NMLZ1	MCW	RCDMK,1&X2	B	7	1024	M W75 011		14
196	1	83		MZ		B	1	1031	Y		14
197	1	84		MZ		B	1	1032	Y		14

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
198	1	85		A		B	1	1033	A		14
199	1	86		MN		B	1	1034	D		14
200	1	87		SBR	XL1	B	4	1035	H 089		14
201	1	88		S	ACCHI&2&X3	B	4	1039	S 2H1		15
202	1	89	NLOOP	BCE	STRZE,2&X1,	B	8	1043	B /42 0 2		15
203	1	90		SBR	XL1	B	4	1051	H 089		15
204	1	91		BCE	NLOOP, 1&X1, 0	B	8	1055	B 43 0 1 0		15
205	1	92		MCM	1&X1, ACCHI&1	B	7	1063	P 0 1 280		15
206	1	93		S	XL3, XL2	B	7	1070	S 099 094		15
207	1	94		CW		B	1	1077)		15
208	1	95		CW		B	1	1078)		16
209	1	96		S		B	1	1079	S		16
210	1	97		S	XL1,EXP	B	7	1080	S 089 W79		16
211	1	98	NSIGN	ZA	ACCHI&X3 MOVE PROPER SIGN TO WORK ACCUMULATOR	B	4	1087	? 2G9		16
212	1	99		SW		B	1	1091	,		16
213	2	00		BCE	CLRWK,EXP-2,0	B	8	1092	B /34 W77 0		16
214	2	01		BM	STRZE,EXP BRANCH ON EXPONENT UNDERFLOW	B	8	1100	V /42 W79 K		16
215	2	02	*								
216	2	03	*		EXPONENT OVERFLOW DUE TO NORMALIZATION						
217	2	04	*								
218	2	05		B	ERMSG	B	4	1108	B U71		17
219	2	06		DCW	@NOF@	B	3	1114			17
220	2	07	*								
221	2	08	*	STORE	NINES IN WORK ACCUMULATOR AND EXP ON EXPONENT OVFL						
222	2	09	*								
223	2	10	STR99	ZA	&99,EXP	B	7	1115	? W89 W79		17
224	2	11		MN	&99,ACCHI&X3	B	7	1122	D W89 2G9		17
225	2	12		MCW		B	1	1129	M		17
226	2	13		MCW	ACCHI-1&X3	B	4	1130	M 2G8		17
227	2	14	CLRWK	CS	ACCHI-1	B	4	1134	/ 278		17
228	2	15		B	CLRXL	B	4	1138	B 755		18
229	2	16	*								
230	2	17	*		STORE ZERO IN WORK ACCUMULATOR						
231	2	18	*								
232	2	19	STRZE	S	EXP	B	4	1142	S W79		18
233	2	20		S	ACCHI&X3	B	4	1146	S 2G9		18
234	2	21		B	CLRWK	B	4	1150	B /34		18
235	2	22	*								
236	2	23	*		DIVISION BY ZERO ATTEMPTED						
237	2	24	*								
238	2	25	DVERR	B	ERMSG	B	4	1154	B U71		18
239	2	26		DCW	@DZE@	B	3	1160			18
240	2	27		B	STR99	B	4	1161	B /15		18
241	2	28	*								
242	2	29	RTN1	BH	NUVAL BRANCH TO STORE NEW VALUE IN WK ACC	B	5	1165	B 17 U		19
243	2	30		S	XL3&1,XL1&1 INITIALIZE INDEX REGISTERS	B	7	1170	S 100 090		19
244	2	31		MZ	ACCHI&X3,ACCHI&X1 INITIALIZE WORK ACCUMULATOR	B	7	1177	Y 2G9 2X9		19
245	2	32		B	ASCOM	B	4	1184	B 996		19
246	2	33	*								
247	2	34	CHGEX	A	EXPB,EXP	B	7	1188	A W82 W79		19

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
248	2	35		B	CLRWK	B	4	1195	B /34		19
249	2	36	*								
250	2	37	*		SUBSCRIBED				VARIABLES		
251	2	38	*								
252	2	39	OPDSC	SBR	X2,5&X2	B	7	1199	H 094 0!5		20
253	2	40	STSUB	B	XXX	B	4	1206	B 000		20
254	2	41		MN	0&X2	B	4	1210	D 0!0		20
255	2	42		MN		B	1	1214	D		20
256	2	43		MN		B	1	1215	D		20
257	2	44		MN		B	1	1216	D		20
258	2	45		SAR	ALGRT&6	B	4	1217	Q 765		20
259	2	46	BRWHR	BCE	SBBR1,XXX,\$	B	8	1221	B 723 000 \$		21
260	2	47		B	SBBR2	B	4	1229	B 815		21
261	2	48	*								
262	2	49	*		FLOATING DIVIDE						
263	2	50	*								
264	2	51	FDIV	BE	DVERR	B	5	1233	B /54 S		21
265	2	52		MN	ACCHI&X3, 1&X2	B	7	1238	D 2G9 0!1		21
266	2	53		MCW		B	1	1245	M		21
267	2	54		MN		B	1	1246	D		21
268	2	55		D	0&X1, SPOT&1	B	7	1247	% 0!0 251		21
269	2	56		ZS	EXPB	B	4	1254	! W82		22
270	2	57		B	NDMDV	B	4	1258	B S83		22
271	2	58	*								
272	2	59	*		FLOATING MULTIPLY						
273	2	60	*								
274	2	61	FMPY	M	ACCHI&X3, SPOT&1&X3	B	7	1262	@ 2G9 2E1		22
275	2	62		SBR	X2,3&X2	B	7	1269	H 094 0!3		22
276	2	63		S	&2,EXP	B	7	1276	S W90 W79		22
277	2	64	NDMDV	A	EXPB, EXP	B	7	1283	A W82 W79		22
278	2	65		MZ	ACCHI&X3, *&1	B	7	1290	Y 2G9 S97		23
279	2	66		ZA	NSIGN	B	4	1297	? 87		23
280	2	67		B	NMLZ1	B	4	1301	B 24		23
281	2	68	*								
282	2	69	*		EXIT ROUTINE						
283	2	70	*								
284	2	71	QFUNCT	BCE	OUT1,4&X2,	B	8	1305	B T31 0!4		23
285	2	72		SBR	ALGRT&6,1&X2	B	7	1313	H 765 0!1		23
286	2	73		C	ACCHI&1,@0@	B	7	1320	C 280 W85		23
287	2	74		B	XXX	B	4	1327	B 000		24
288	2	75	OUT1	BCE	OUT2,ACCHI&1,0	B	8	1331	B T69 280 0		24
289	2	76		BW	OUT2,FIXSW	B	8	1339	V T69 W87 1		24
290	2	77		BW	FINST,4&X2	B	8	1347	V T92 0!4 1		24
291	2	78		SBR	X3,2&X3	B	7	1355	H 099 0?2		24
292	2	79	MVEXP	MCM	EXP-1,ACCHI-1&X3	B	7	1362	P W78 2G8		25
293	2	80	OUT2	LCA	ACCHI&X3,XXX	B	7	1369	L 2G9 000		25
294	2	81		BW	5&X2,4&X2	B	8	1376	V 0!5 0!4 1		25
295	2	82		SAR	XL2	B	4	1384	Q 094		25

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
298	2	85	*		ROUNDING FOR FINAL STORAGE						
299	2	86	*								
300	2	87	FINST	A	&5,ACCHI-1&X3	B	7	1392	A W91 2G8		25
301	2	88		BWZ	RDOVF,ACCHI&1,S	B	8	1399	V U18 280 S		26
302	2	89	ZONMV	MZ	ACCHI&X3,ACCHI-2&X3	B	7	1407	Y 2G9 2G7		26
303	2	90		B	MVEXP	B	4	1414	B T62		26
304	2	91	RDOVF	A	&1,EXP	B	7	1418	A W92 W79		26
305	2	92		BCE	NORND,EXP-2,1	B	8	1425	B U48 W77 1		26
306	2	93		S	ACCHI&X3	B	4	1433	S 2G9		26
307	2	94		LCA	@1@,ACCHI&1	B	7	1437	L W93 280		27
308	2	95		B	ZONMV	B	4	1444	B U07		27
309	2	96	*								
310	2	97	*		NO ROUNDING IF EXPONENT OVERFLOW WOULD OCCUR						
311	2	98	*								
312	2	99	NORND	MN	&99,ACCHI&X3	B	7	1448	D W89 2G9		27
313	3	00		MCW		B	1	1455	M		27
314	3	01		MCW	ACCHI-1&X3	B	4	1456	M 2G8		27
315	3	02		S	&1,EXP	B	7	1460	S W92 W79		27
316	3	03		B	ZONMV	B	4	1467	B U07		27
317	3	04	*								
318	3	05	*		PRINT ERROR MESSAGE						
319	3	06	*								
320	3	07	ERMSG	SBR	STRX2&6	B	4	1471	H U92		28
321	3	08		CS	TOP&1&X3	B	4	1475	/ 2?2		28
322	3	09		SBR	RINX2&6,0&X3	B	7	1479	H V25 0?0		28
323	3	10	STRX2	SBR	X3,XXX	B	7	1486	H 099 000		28
324	3	11		MCW	2&X3,TOP&11	B	7	1493	M 0?2 212		28
325	3	12	STMNM	SBR	TOP&16,XXX	B	7	1500	H 217 000		28
326	3	13		W		B	1	1507	2		28
327	3	14		SW	TOP	B	4	1508	, 201		29
328	3	15		SBR	ERMXT&3,3&X3	B	7	1512	H V29 0?3		29
329	3	16	RINX2	SBR	X3,XXX	B	7	1519	H 099 000		29
330	3	17	ERMXT	B	XXX	B	4	1526	B 000		29
331	3	18	*								
332	3	19	*		FIXED POINT ENTRY						
333	3	20	*								
334	3	21	XSIZE	SBR	X3,XXX STORE FIX-SIZE	B	7	1530	H 099 000		29
335	3	22		SW	FIXSW	B	4	1537	, W87		29
336	3	23	*								
337	3	24	FIXPT	MCS	0&X1, SPOT	B	7	1541	Z 0 0 250		30
338	3	25		BCE	XDIV, CODE, /	B	8	1548	B W23 924 /		30
339	3	26		BCE	XMPY, CODE, *	B	8	1556	B V98 924 *		30
340	3	27	*								
341	3	28	*		FIXED ADD / SUBTRACT						
342	3	29	*								
343	3	30		BWZ	SUBTR, CODE, K Q. SUBTRACT	B	8	1564	V V87 924 K		30
344	3	31		A	0&X1, ACCHI&X3	B	7	1572	A 0 0 2G9		30
345	3	32	ADDRT	ZA	ACCHI&X3	B	4	1579	? 2G9		31
346	3	33		B	CLRWK	B	4	1583	B /34		31
347	3	34	*								

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
348	3	35	SUBTR	S	0&X1, ACCHI&X3	B	7	1587	S 0 0 2G9		31
349	3	36		B	ADDRT	B	4	1594	B V79		31
350	3	37	*								
351	3	38	*		FIXED MULTIPLY						
352	3	39	*								
353	3	40	XMPY	LCA	0&X1, SPOT	B	7	1598	L 0 0 250		31
354	3	41		M	ACCHI&X3, SPOT&1&X3	B	7	1605	@ 2G9 2E1		31
355	3	42		MCW	SPOT&1&X3, ACCHI&X3	B	7	1612	M 2E1 2G9		32
356	3	43		B	CLRWK	B	4	1619	B /34		32
357	3	44	*								
358	3	45	*		FIXED DIVIDE						
359	3	46	*								
360	3	47	XDIV	BCE	DVERR, SPOT,	B	8	1623	B /54 250		32
361	3	48		MCW	0&X1, SPOT&X3	B	7	1631	M 0 0 2E0		32
362	3	49		MN		B	1	1638	D		32
363	3	50		SBR	MVQUT&3	B	4	1639	H W64		32
364	3	51		LCA	ACCHI&X3	B	4	1643	L 2G9		32
365	3	52		ZA	ACCHI&X3, SPOT&X3	B	7	1647	? 2G9 2E0		33
366	3	53		D	0&X1, SPOT&1	B	7	1654	% 0 0 251		33
367	3	54	MVQUT	MCW	SPOT-1, ACCHI&X3	B	7	1661	M 249 2G9		33
368	3	55		B	CLRWK	B	4	1668	B /34		33
369	3	56	*								
370	3	57		DCW	000	B	3	1674			33
371	3	58	RCDMK	DCW	@ @	B	1	1675			33
372	3	59		DCW	0	B	1	1676			33
373	3	60	EXP	DCW	000	B	3	1679			34
374	3	61		DC	@ @	B	1	1680			34
375	3	62	EXPB	DCW	00	B	2	1682			34
376	3	63		DC	0	B	1	1683			34
377	3	64	CODE	EQU	SIGNF	B		0924			
378	3	65	ZROSW	EQU	*&1	B		1684			
379	3	66	BASEZ	EQU	*&1	B		1684			
380	3	67	XPNUM	DCW	@8@	B	1	1684			34
381	3	68		LTORG		B			1685		
				DCW	@0@	B	1	1685		LIT	34
				DCW	@#@	B	1	1686		LIT	34
			FIXSWB	DCW	#01	B	1	1687		AREA	34
				DCW	&99	B	2	1689		LIT	34
				DCW	&2	B	1	1690		LIT	35
				DCW	&5	B	1	1691		LIT	35
				DCW	&1	B	1	1692		LIT	35
				DCW	@1@	B	1	1693		LIT	35
382	3	69		DS	1	B		1694			
383	3	70		DCW	@0@	B	1	1695			36
384	3	71		DC	@}@	B	1	1696		GMARK	36
					SYSTEM GROUP MARK						

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
385	3	72		JOB	1401 FORTRAN RELOCATABLE PACKAGE	B					
386	3	73	DIVID	EQU	14000	B		14000			
387	3	74	CALC	EQU	DIVID&47	B		14047			
388	3	75	CALC1	EQU	DIVID&58	B		14058			
389	3	76	LOGM1	EQU	DIVID&149	B		14149			
390	3	77	LOGM2	EQU	DIVID&171	B		14171			
391	3	78	CALXT	EQU	DIVID&187	B		14187			
392	3	79	STR1	EQU	DIVID&191	B		14191			
393	3	80	LN10	EQU	DIVID&226	B		14226			
394	3	81	UPBY	EQU	DIVID&250	B		14250			
395	3	82	NCON	EQU	DIVID&253	B		14253			
396	3	83	NCTR	EQU	DIVID&256	B		14256			
397	3	84	DEC	EQU	DIVID&259	B		14259			
398	3	85	TWTCH	EQU	DIVID&260	B		14260			
399	3	86	DELTA	EQU	ACCHI-200	B		0079			
400	3	87		PARAM		B				MACRO	
401			PARAM	EQU	686	B		0686		GEN	
402			XBEGIN	EQU	838	B		0838		GEN	
403			MONTOR	EQU	769	B		0769		GEN	
404			MONTER	EQU	700	B		0700		GEN	
405			TCLEAR	EQU	710	B		0710		GEN	
406			INITAP	EQU	780	B		0780		GEN	
407			INITXT	EQU	793	B		0793		GEN	
408			BCLEAR	EQU	833	B		0833		GEN	
409			FAILSW	EQU	184	B		0184		GEN	
410	3	88	XLINKS	EQU	840	B		0840			
411	3	89	ATANFN	EQU	894	B		0894			
412	3	90		RELOC		B				MACRO	
413				ORG	841	B			0841		
414			YUSR12	DS	3	B		0843		GEN	
415			YUSR11	DS	3	B		0846		GEN	
416			YUSR10	DS	3	B		0849		GEN	
417			YUSER9	DS	3	B		0852		GEN	
418			YUSER8	DS	3	B		0855		GEN	
419			YUSER7	DS	3	B		0858		GEN	
420			YUSER6	DS	3	B		0861		GEN	
421			YUSER5	DS	3	B		0864		GEN	
422			YUSER4	DS	3	B		0867		GEN	
423			YUSER3	DS	3	B		0870		GEN	
424			YUSER2	DS	3	B		0873		GEN	
425			YUSER1	DS	3	B		0876		GEN	
426			SQRTFN	DS	3	B		0879		GEN	
427			FLTFUN	DS	3	B		0882		GEN	
428			FIXFUN	DS	3	B		0885		GEN	
429			NEGTFN	DS	3	B		0888		GEN	
430			ABSVAL	DS	3	B		0891		GEN	
431			INVTFN	DS	3	B		0894		GEN	
432			XPNETL	DS	3	B		0897		GEN	
433			LOGFUN	DS	3	B		0900		GEN	
434			SINFUN	DS	3	B		0903		GEN	

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
435			COMFN1	DS	3	B		0906		GEN	
436			DOSBSC	DS	3	B		0909		GEN	
437			OBLIST	DS	3	B		0912		GEN	
438			DOINIT	DS	3	B		0915		GEN	
439			DOADR3	DS	3	B		0918		GEN	
440			DOADR2	DS	3	B		0921		GEN	
441			DOADR1	DS	3	B		0924		GEN	

1401 FORTRAN OBJECT TIME DO						0533	PAGE	9	
SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX CT	LOCN	INSTRUCTION TYPE	CARD
442	3	91		JOB	1401 FORTRAN OBJECT TIME DO	B			
443	3	92		SFX	A	A			
444	3	93	X1	EQU	089	A	0089		
445	3	94	X2	EQU	94	A	0094		
446	3	95	X3	EQU	099	A	0099		
447	3	96		ORG	2000	A		2000	
448	3	97	DO1	SBR	EXITL	A	4 2000	H J41	37
449	3	98		SBR	X2	A	4 2004	H 094	37
450	3	99		SBR	X2,4&X2	A	7 2008	H 094 0!4	37
451	4	00		B	INITL&4	A	4 2015	B !96	37
452	4	01	INITL	EQU	*&74	A	2092		
453	4	02	EXITL	EQU	*&123	A	2141		
454	4	03		XFR	0	A		B 000	38
455	4	04		ORG	2000	A		2000	
456	4	05	DO2	SBR	X2	A	4 2000	H 094	41
457	4	06		MCW	11&X2,DO3&6	A	7 2004	M 0J1 !46	41
458	4	07		MCW		A	1 2011	M	41
459	4	08		MCW	5&X2,LIMT&3	A	7 2012	M 0!5 !50	41
460	4	09		MCW	11&X2,SBIX&3	A	7 2019	M 0J1 !57	41
461	4	10		MCW	14&X2,TESTL&3	A	7 2026	M 0J4 !64	41
462	4	11		SBR	EXDO3&3,15&X2	A	7 2033	H !72 0J5	42
463	4	12	DO3	EQU	*&1	A	2040		
464	4	13	LIMT	EQU	*&8	A	2047		
465	4	14	SBIX	EQU	*&15	A	2054		
466	4	15	TESTL	EQU	*&22	A	2061		
467	4	16	EXDO3	EQU	*&30	A	2069		
468	4	17		XFR	0	A		B 000	43
469	4	18		ORG	2000	A		2000	
470	4	19		A	0,0	A	7 2000	A 000 000	46
471	4	20		BFIXW	ZA,000,FIXWORD	A			MACRO
472				ZA		A	1 2007	?	GEN
473				DC	000	A	3 2010		GEN
474				DC	@_0@	A	2 2012		GEN
475				DC	0	A	1 2013		GEN
476	4	21		BFIXW	S,000,FIXWORD	A			MACRO
477				S		A	1 2014	S	GEN
478				DC	000	A	3 2017		GEN
479				DC	@_0@	A	2 2019		GEN
480				DC	0	A	1 2020		GEN
481	4	22		BFIXW	BWZ,000,FIXWORD,,K	A			MACRO
482				BWZ		A	1 2021	V	GEN
483				DC	000	A	3 2024		GEN
484				DC	@_0@	A	2 2026		GEN
485				DC	0	A	1 2027		GEN
486				DC	@K@	A	1 2028		GEN
487	4	23		B	0	A	4 2029	B 000	46
488	4	24		XFR	0	A		B 000	47

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
489	4	25		JOB	1401 FORTRAN INITIALIZATION OF DO LOOPS FOR DO,LIST	A					
490	4	26		ORG	2000	A			2000		
491	4	27	INITIL	SBR	EXITEL&3	A	4	2000	H !49		50
492	4	28		MCW	2&X2,*&4	A	7	2004	M 0!2 !14		50
493	4	29	* NOTE - ADDRESS OF FIXWORD INITIALIZED BY LATER PASS								
494	4	30		BFIXW	ZA,000,FIXWORD	A				MACRO	
495				ZA		A	1	2011	?	GEN	50
496				DC	000	A	3	2014		GEN	50
497				DC	@_0@ 11-7-8,0	A	2	2016		GEN	50
498				DC	0	A	1	2017		GEN	50
499	4	31		MCW	8&X2,*&4	A	7	2018	M 0!8 !28		50
500	4	32		BFIXW	S,000,FIXWORD	A				MACRO	
501				S		A	1	2025	S	GEN	50
502				DC	000	A	3	2028		GEN	50
503				DC	@_0@ 11-7-8,0	A	2	2030		GEN	50
504				DC	0	A	1	2031		GEN	50
505	4	33		MCW	11&X2,*&7	A	7	2032	M 0J1 !45		50
506	4	34		AFIXW	LCA,FIXWORD,,000	A				MACRO	
507				LCA		A	1	2039	L	GEN	51
508				DC	@_0@ 11-7-8,0	A	2	2041		GEN	51
509				DC	0	A	1	2042		GEN	51
510				DC	000	A	3	2045		GEN	51
511	4	35	EXITEL	B	000	A	4	2046	B 000		51
512	4	36		LTORG	*	A			2050		
513	4	37		XFR	0	A			B 000		52

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
514	4	38		JOB	1401 FORTRAN OBJECT TIME LIST	A					
515	4	39		ORG	2000	A			2000		
516	4	40	OBJLST	SBR	X2	A	4	2000	H 094		55
517	4	41		SBR	BSTAN&6,2&X2	A	7	2004	H !93 0!2		55
518	4	42		SBR	XTLST&3,3&X2	A	7	2011	H !97 0!3		55
519	4	43		MCW	2&X2,ADLST#3	A	7	2018	M 0!2 L94		55
520	4	44	XYZ	MCW	ADLST,X2	A	7	2025	M L94 094		55
521	4	45		BW	SMPLE,0&X2	A	8	2032	V J04 0!0 1		56
522	4	46		BCE	ARRAY,0&X2,,	A	8	2040	B J22 0!0 ,		56
523	4	47		BCE	SUBSCR,0&X2,\$	A	8	2048	B K53 0!0 \$		56
524	4	48		BCE	INDX1,0&X2,%	A	8	2056	B K75 0!0 %		56
525	4	49		BCE	INDX4,0&X2,)	A	8	2064	B L34 0!0)		57
526	4	50		BCE	INDX2,0&X2,#	A	8	2072	B K98 0!0 #		57
527	4	51		MCW	BLANK#3,X1	A	7	2080	M L97 089		57
528	4	52	BSTAN	MCW	ADLST,0	A	7	2087	M L94 000		57
529	4	53	XTLST	B	0	A	4	2094	B 000		57
530	4	54	RAY	DCW	@XXXXXX@	A	6	2103			58
531	4	55	SMPLE	MCW	2&X2,X1	A	7	2104	M 0!2 089		58
532	4	56		SBR	ADLST,3&X2	A	7	2111	H L94 0!3		58
533	4	57		B	BSTAN	A	4	2118	B !87		58
534	4	58	ARRAY	MZ	2136,*&8 FMTZON CHANGE ON REASM OF OBJ FORMAT	A	7	2122	Y J36 J36		58
535	4	59		BCE	NOSWT,@2S@,2	A	8	2129	B K28 L99 2		58
536	4	60		BCE		A	1	2137	B		59
537	4	61		BWZ	INRAY,RAY-4,2	A	8	2138	V J84 !99 2		59
538	4	62		MCW	6&X2,RAY	A	7	2146	M 0!6 J03		59
539	4	63		MN	PARAMA&4,SBRLT&6	A	7	2153	D 690 J97		59
540	4	64		MN		A	1	2160	D		59
541	4	65		BWZ	*&9,RAY-4,K	A	8	2161	V J77 !99 K		59
542	4	66		MN	PARAMA&6,SBRLT&6	A	7	2169	D 692 J97		59
543	4	67		MN		A	1	2176	D		60
544	4	68		MZ	*-4,RAY-4	A	7	2177	Y J79 !99		60
545	4	69	INRAY	MCW	RAY-3,X1	A	7	2184	M J00 089		60
546	4	70	SBRLT	SBR	X1,0&X1	A	7	2191	H 089 0!0		60
547	4	71		MCW	X1,RAY-3	A	7	2198	M 089 J00		60
548	4	72		C	RAY,RAY-3	A	7	2205	C J03 J00		60
549	4	73		BU	BSTAN	A	5	2212	B !87 /		61
550	4	74		MZ	*-6,RAY-4	A	7	2217	Y K17 !99		61
551	4	75		B	DUN1	A	4	2224	B K42		61
552	4	76	NOSWT	MCW	6&X2,RAY	A	7	2228	M 0!6 J03		61
553	4	77		MCW	@. @,X1	A	7	2235	M M00 089		61
554	4	78	DUN1	SBR	ADLST,7&X2	A	7	2242	H L94 0!7		61
555	4	79		B	BSTAN	A	4	2249	B !87		62
556	4	80	SUBSCR	T	DOSBSC	A	4	2253	T 909		62
557	4	81		MZ	*-4,X1-1	A	7	2257	Y K59 088		62
558	4	82		MCW	X2,ADLST	A	7	2264	M 094 L94		62
559	4	83		B	BSTAN	A	4	2271	B !87		62
560	4	84	INDX1	SBR	X2,1&X2	A	7	2275	H 094 0!1		62
561	4	85		T	DOINIT	A	4	2282	T 915		62
562	4	86		MN	0&X2	A	4	2286	D 0!0		63
563	4	87		SBR	X2	A	4	2290	H 094		63

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
564	4	88		B	SETUP	A	4	2294	B L05		63
565	4	89	INDX2	MCW	3&X2,X2	A	7	2298	M 0!3 094		63
566	4	90	SETUP	MCW	12&X2,INDX3&6	A	7	2305	M 0J2 L47		63
567	4	91		MCW		A	1	2312	M		63
568	4	92		MCW	6&X2,LIMIT&3	A	7	2313	M 0!6 L51		63
569	4	93		MCW	12&X2,SUBIX&3	A	7	2320	M 0J2 L58		64
570	4	94		SBR	LPARN#3,0&X2	A	7	2327	H M03 0!0		64
571	4	95	INDX4	MCW	LPARN,X2	A	7	2334	M M03 094		64
572	4	96	INDX3	A	0,0	A	7	2341	A 000 000		64
573	4	97	* NOTE - ADDRESS OF FIXWORD INITIALIZED BY LATER PHASE OF COMPILER								
574	4	98	LIMIT	BFIXW	ZA,000,FIXWORD	A				MACRO	
575			LIMIT	ZA		A	1	2348	?	GEN	64
576				DC	000	A	3	2351		GEN	64
577				DC	@_0@	A	2	2353		GEN	64
578				DC	0	A	1	2354		GEN	64
579	4	99	SUBIX	BFIXW	S,000,FIXWORD	A				MACRO	
580			SUBIX	S		A	1	2355	S	GEN	64
581				DC	000	A	3	2358		GEN	64
582				DC	@_0@	A	2	2360		GEN	65
583				DC	0	A	1	2361		GEN	65
584	5	00	* IMPORTANT NOTE - THE OPERAND -SATFY- IN THE FOLLOWING MACRO								
585	5	01	* WILL NOT BE CODED AS RELOCATABLE BY THE RELOCATABLE								
586	5	02	* CONDENSING ROUTINE. THIS IS DUE TO THE FACT THAT THE								
587	5	03	* CONDENSER DOES NOT RECOGNIZE DC OR DCW STATEMENTS AS HAVING								
588	5	04	* RELOCATABLE OPERANDS. IT IS NECESSARY TO MANUALLY ZONE THE								
589	5	05	* SET WORD MARK INSTRUCTION WITH AND 11-PUNCH TO CAUSE								
590	5	06	* RELOCATION.								
591	5	07		BFIXW	BWZ,SATFY,FIXWORD,,K	A				MACRO	
592				BWZ		A	1	2362	V	GEN	65
593				DC	SATFY	A	3	2365	L81	GEN	65
594				DC	@_0@	A	2	2367		GEN	65
595				DC	0	A	1	2368		GEN	65
596				DC	@K@	A	1	2369		GEN	65
597	5	08		SBR	ADLST,16&X2	A	7	2370	H L94 0J6		65
598	5	09		B	XYZ	A	4	2377	B !25		65
599	5	10	SATFY	MCW	15&X2,ADLST	A	7	2381	M 0J5 L94		65
600	5	11		B	XYZ	A	4	2388	B !25		66
601	5	12		LTORG	*	A			2392		
			ADLSTA	DCW	#03	A	3	2394		AREA	66
			BLANKA	DCW	#03	A	3	2397		AREA	66
				DCW	@2S@	A	2	2399		LIT	66
				DCW	@.@	A	1	2400		LIT	66
			LPARNA	DCW	#03	A	3	2403		AREA	66
602	5	13		XFR	0	A			B 000		67

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
603	5	14		JOB	1401 FORTRAN OBJECT TIME SUBSCRIPTS	A					
604	5	15		ORG	2000	A			2000		
605	5	16	OTSUB	SBR	EXITS&3	A	4	2000	H J78		70
606	5	17		MCW	3&X2,AAA#3	A	7	2004	M 0!3 J94		70
607	5	18		S	PROD#5	A	4	2011	S J99		70
608	5	19		BAV	*&1	A	5	2015	B !20 Z		70
609	5	20	SBR1	MCW	9&X2,LCA&3	A	7	2020	M 0!9 !44		70
610	5	21		MCW	6&X2,ZA&3	A	7	2027	M 0!6 !37		70
611	5	22	ZA	ZA	000,WORK#5	A	7	2034	? 000 K04		71
612	5	23	LCA	LCA	000,BFEEL-6	A	7	2041	L 000 K09		71
613	5	24		M	WORK,BFEEL#11	A	7	2048	@ K04 K15		71
614	5	25		A	BFEEL,PROD	A	7	2055	A K15 J99		71
615	5	26		C	PROD-3,@15@	A	7	2062	C J96 K17		71
616	5	27		BL	OHALT	A	5	2069	B J79 T		72
617	5	28		BCE	PACK,10&X2,\$	A	8	2074	B !93 0J0 \$		72
618	5	29		SBR	X2,6&X2	A	7	2082	H 094 0!6		72
619	5	30		B	SBR1	A	4	2089	B !20		72
620	5	31	PACK	A	&96,PROD-3	A	7	2093	A K19 J96		72
621	5	32		BAV	PACK	A	5	2100	B !93 Z		72
622	5	33		MZ	PROD-4,PROD	A	7	2105	Y J95 J99		73
623	5	34		ZA	PROD-2,X1&1	A	7	2112	? J97 090		73
624	5	35		MZ	ZONES-99&X1,PROD-2	A	7	2119	Y !Z2 J97		73
625	5	36		MCW	PROD,X1	A	7	2126	M J99 089		73
626	5	37		MCW	X1,SBR&6	A	7	2133	M 089 J60		73
627	5	38		MZ	ZONES-2,SBR&5	A	7	2140	Y J89 J59		74
628	5	39		MCW	AAA,X1	A	7	2147	M J94 089		74
629	5	40	SBR	SBR	X1,0&X1	A	7	2154	H 089 0!0		74
630	5	41		MZ	AAA-1,X1-1	A	7	2161	Y J93 088		74
631	5	42		SBR	X2,11&X2	A	7	2168	H 094 0J1		74
632	5	43	EXITS	B	000	A	4	2175	B 000		74
633	5	44	OHALT	NOP	2002	A	4	2179	N !02		75
634	5	45		H		A	1	2183	.		75
635	5	46		B	OHALT	A	4	2184	B J79		75
636	5	47	ZONES	DCW	@2SKB@	A	4	2191			75
637	5	48		LTORG	*	A			2192		
			AAA	A DCW	#03	A	3	2194		AREA	75
			PROD	A DCW	#05	A	5	2199		AREA	75
			WORK	A DCW	#05	A	5	2204		AREA	75
			BFEELA	DCW	#11	A	11	2215		AREA	76
				DCW	@15@	A	2	2217		LIT	76
				DCW	&96	A	2	2219		LIT	76
638	5	49		XFR	0	A			B 000		77

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
639	5	50		JOB	1401 FLOATING POINT SINE - COSINE SUBROUTINE	A					
640	5	51		SFX	B	B					
641	5	52	*		INSERT FUNCTION COMMON DECK HERE						
642	5	53		ORG	2000	B			2000		
643	5	54	*								
644	5	55	TRIGF	BCE	COSF, CODE, C	B	8	2000	B !24 924 C		80
645	5	56	SINF	BE	STRZE SINE 0 # 0	B	5	2008	B /42 S		80
646	5	57		MZ	ACCHI&X3, ZA1 SINE -X # -SINE X	B	7	2013	Y 2G9 K23		80
647	5	58		B	SNCS	B	4	2020	B !36		80
648	5	59	COSF	BE	STR1 COSINE 0 # 1	B	5	2024	B J9A S		80
649	5	60		MZ	&1, ZA1 COS -X # COS X	B	7	2029	Y M28 K23		80
650	5	61	SNCS	MCW	@ @, BOX	B	7	2036	M M29 M33		81
651	5	62		ZA	EXP, EXPB	B	7	2043	? W79 W82		81
652	5	63		S	&1, EXP	B	7	2050	S M28 W79		81
653	5	64		BM	SMALL, EXP	B	8	2057	V L05 W79 K		81
654	5	65		A	&2, EXP	B	7	2065	A M30 W79		81
655	5	66		S	X3, EXP	B	7	2072	S 099 W79		82
656	5	67		BWZ	ARGLG, EXP, B	B	8	2079	V L90 W79 B		82
657	5	68		ZA	EXPB, EXP	B	7	2087	? W82 W79		82
658	5	69		SBR	X1, PIOV2&X3 REDUCE ARGUMENT	B	7	2094	H 089 M?5		82
659	5	70		ZA	EXP&1, X2&1	B	7	2101	? W80 095		82
660	5	71		B	DIVID DIVIDE ARGUMENT BY PI/2	B	4	2108	B !0?		83
661	5	72		ZA	1&X1, X2&1	B	7	2112	? 0!1 095		83
662	5	73	SUB4	S	&40, X2&1 DETERMINE QUADRANT IN WHICH	B	7	2119	S M32 095		83
663	5	74		BWZ	SUB4, X2&1, B ANGLE IS LOCATED AND WHETHER	B	8	2126	V J19 095 B		83
664	5	75		BCE	*&8, CODE, C SINE OR COSINE FUNCTION IS TO	B	8	2134	B J49 924 C		83
665	5	76		SBR	X2, 1&X2	B	7	2142	H 094 0!1		84
666	5	77		MZ	ZONZ&X2, NSIGN	B	7	2149	Y M!0 87		84
667	5	78		MN	ZONZ&X2, BOX#1	B	7	2156	D M!0 M33		84
668	5	79		S	DEC DEC # 0	B	4	2163	S K5I		84
669	5	80		S	EXP	B	4	2167	S W79		84
670	5	81		BCE	COS, BOX, 2	B	8	2171	B K38 M33 2		84
671	5	82	*								
672	5	83	*		SINE INITIALIZATION						
673	5	84	*								
674	5	85	SINE	ZA	ACCHI&X3, TOP&1&X3	B	7	2179	? 2G9 2?2		85
675	5	86		B	SQRX	B	4	2186	B K64		85
676	5	87		ZA	TOP&1&X3, SPOT-1 FIRST TERM # X	B	7	2190	? 2?2 249		85
677	5	88		ZA	SPOT&1	B	4	2197	? 251		85
678	5	89		ZS	&2, NCON NCON # -2	B	7	2201	! M30 K5C		85
679	5	90	*								
680	5	91	*		GENERAL INITIALIZATION FOR SERIES EVALUATION						
681	5	92	*								
682	5	93	SCGEN	ZA	&8, UPBY UPBY # &8	B	7	2208	? M34 K5?		85
683	5	94		S	NCTR NCTR # 8	B	4	2215	S K5F		86
684	5	95		B	CALC	B	4	2219	B !4G		86
685	5	96	*								
686	5	97	*		PREPARE FIELDS FOR NORMALIZATION						
687	5	98	*								
688	5	99	ZA1	ZA	NSIGN	B	4	2223	? 87		86

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
689	6	00		SBR	X2, TOP&X3	B	7	2227	H 094 2?1		86
690	6	01		B	NMLZ1	B	4	2234	B 24		86
691	6	02	*								
692	6	03	*								
693	6	04	*								
694	6	05	COS	B	SQRX	B	4	2238	B K64		86
695	6	06		MN	&1, 0&X1	B	7	2242	D M28 0 0		86
696	6	07		ZS	&6, NCON	B	7	2249	! M35 K5C		87
697	6	08		S	EXP	B	4	2256	S W79		87
698	6	09		B	SCGEN	B	4	2260	B K08		87
699	6	10	*								
700	6	11	*								
701	6	12	*								
702	6	13	SQRX	SBR	SQRXT&3	B	4	2264	H L04		87
703	6	14		MCW	ACCHI&X3, SPOT	B	7	2268	M 2G9 250		87
704	6	15		SBR	X1	B	4	2275	H 089		87
705	6	16		LCA	@0@	B	4	2279	L M36		87
706	6	17		M	ACCHI&X3, SPOT&1&X3	B	7	2283	@ 2G9 2E1		88
707	6	18		ZS	SPOT&2, ACCHI&X3	B	7	2290	! 252 2G9		88
708	6	19		S	SPOT&1	B	4	2297	S 251		88
709	6	20	SQRXT	B	XXX	B	4	2301	B 000		88
710	6	21	*								
711	6	22	*								
712	6	23	*								
713	6	24	SMALL	A	X3, EXP	B	7	2305	A 099 W79		88
714	6	25		BM	TSTFC, EXP	B	8	2312	V L71 W79 K		88
715	6	26		ZA	EXPB, EXP	B	7	2320	? W82 W79		89
716	6	27		MZ	ACCHI&X3, ACCHI-1&X3	B	7	2327	Y 2G9 2G8		89
717	6	28		ZA	ACCHI-1&X3, ACCHI&X3	B	7	2334	? 2G8 2G9		89
718	6	29		A	EXPB	B	4	2341	A W82		89
719	6	30		ZS	EXPB&1, DEC	B	7	2345	! W83 K5I		89
720	6	31		MZ	&1, NSIGN	B	7	2352	Y M28 87		89
721	6	32		BCE	COS, CODE, C	B	8	2359	B K38 924 C		90
722	6	33		B	SINE	B	4	2367	B J79		90
723	6	34	TSTFC	BCE	STR1, CODE, C	B	8	2371	B J9A 924 C		90
724	6	35		ZA	EXPB, EXP	B	7	2379	? W82 W79		90
725	6	36		B	CLRWK	B	4	2386	B /34		90
726	6	37	ARGLG	B	ERMSG	B	4	2390	B U71		90
727	6	38		DCW	@SCL@	B	3	2396			90
728	6	39		B	STRZE	B	4	2397	B /42		91
729	6	40	*								
730	6	41	ZONZ	EQU	*	B		2400			
731	6	42		DCW	@AKJBA@	B	5	2405			91
732	6	43	*								
733	6	44	PIOV2	EQU	*	B		2405			
734	6	45		DCW	1570796326794896619231	B	22	2427			91
				DCW	&1	B	1	2428		LIT	91
				DCW	@ @	B	1	2429		LIT	91
				DCW	&2	B	1	2430		LIT	91
				DCW	&40	B	2	2432		LIT	91

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
			BOX	B	DCW #01	B	1	2433		AREA	92
					DCW &8	B	1	2434		LIT	92
					DCW &6	B	1	2435		LIT	92
					DCW @0@	B	1	2436		LIT	92
735	6	46		EX	TRIGF	B			B !00		93

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
736	6	47		JOB	1401 FLOATING POINT NATURAL LOGARITHM	B					
737	6	48	*								
738	6	49		ORG	2000	B			2000		
739	6	50	*								
740	6	51	LOGF	MZ	ACCHI&X3,BASEZ	B	7	2000	Y 2G9 W84		96
741	6	52	LOGF2	BE	LOG99	B	5	2007	B K50 S		96
742	6	53		BM	LOGGER, ACCHI&X3 Q. NEGATIVE ARGUMENT	B	8	2012	V K24 2G9 K		96
743	6	54	LOGF1	C	SPOT-2,ACCHI&X3	B	7	2020	C 248 2G9		96
744	6	55		SAR	X1	B	4	2027	Q 089		96
745	6	56		SW	0&X1	B	4	2031	, 0 0		96
746	6	57		MN	&1, 2&X1 SET UP CONSTANT ONE	B	7	2035	D L15 0 2		97
747	6	58	* FOR	FASTEST	RATE OF CONVERGENCE, PLACE ARG BETWEEN .32 AND 3.2						
748	6	59		C	ACCHI&2,@31@	B	7	2042	C 281 L17		97
749	6	60		BH	NOSHF	B	5	2049	B !68 U		97
750	6	61		ZA	ACCHI-1&X3,ACCHI&X3	B	7	2054	? 2G8 2G9		97
751	6	62		A	&1, EXP SHIFT DEC POINT 1 TO LEFT	B	7	2061	A L15 W79		97
752	6	63	*								
753	6	64	NOSHF	S	ACCHI&X3, SPOT-1 COMPUTE 1-X	B	7	2068	S 2G9 249		98
754	6	65		ZS	SPOT-1,LZONE CORRECT SIGN	B	7	2075	! 249 L14		98
755	6	66		S	&1, EXP SHIFT DEC POINT 1 TO RIGHT	B	7	2082	S L15 W79		98
756	6	67		A	&1, ACCHI&1 COMPUTE X&1	B	7	2089	A L15 280		98
757	6	68		S	&0, SPOT&X3 CREATE QUOTIENT FIELD	B	7	2096	S L18 2E0		98
758	6	69		D	ACCHI&X3, SPOT-1 COMPUTE U # X-1 / X&1	B	7	2103	% 2G9 249		99
759	6	70		LCA	SPOT-1, HOLD	B	7	2110	L 249 L13		99
760	6	71		M	HOLD, SPOT&1&X3 COMPUTE U **2	B	7	2117	@ L13 2E1		99
761	6	72		ZA	SPOT-1, ACCHI&X3	B	7	2124	? 249 2G9		99
762	6	73		ZA	HOLD, SPOT&1	B	7	2131	? L13 251		99
763	6	74		ZA	LINIT,DEC DEC SET TO 0	B	7	2138	? K87 K5I		100
764	6	75		ZA	NCTR SET TO 1	B	1	2145	?		100
765	6	76		ZA	NCON SET TO 2	B	1	2146	?		100
766	6	77		ZA	UPBY SET TO 0	B	1	2147	?		100
767	6	78		SW	LOGM1,LOGM2	B	7	2148	, J4I J7A		100
768	6	79		SBR	LOGM1-4,HOLD	B	7	2155	H J4E L13		100
769	6	80		SBR	LOGM2-1	B	4	2162	H J7?		100
770	6	81		SBR	CALXT&3,LOGRT	B	7	2166	H J9? J77		101
771	6	82		B	CALC1	B	4	2173	B !5H		101
772	6	83	LOGRT	A	TOP&1&X3 DOUBLE RESULT	B	4	2177	A 2?2		101
773	6	84		MZ	LZONE, TOP&X3 GET PROPER SIGN	B	7	2181	Y L14 2?1		101
774	6	85		ZA	LN10&1&X3,SPOT-2	B	7	2188	? KBG 248		101
775	6	86		M	EXP, SPOT&2 COMPUTE N * LOG10	B	7	2195	@ W79 252		101
776	6	87		A	TOP&X3, SPOT&2 ADD N * LOG10 TO RESULT	B	7	2202	A 2?1 252		102
777	6	88		SBR	X2, SPOT&2	B	7	2209	H 094 252		102
778	6	89		S	EXPB	B	4	2216	S W82		102
779	6	90		B	MVZON	B	4	2220	B 10		102
780	6	91	*								
781	6	92	LOGGER	BW	*&8,4&X2	B	8	2224	V K39 0!4 1		102
782	6	93		B	ERMSG	B	4	2232	B U71		102
783	6	94		DCW	@LNN@	B	3	2238			102
784	6	95		MZ	LINIT,ACCHI&X3 MAKE SIGN PLUS AND FIND	B	7	2239	Y K87 2G9		103
785	6	96		B	LOGF1 LOG OF ABSOLUTE VALUE	B	4	2246	B !20		103

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
786	6	97	LOG99	BW	POWER,4&X2	B	8	2250	V K76 0!4 1		103
787	6	98		B	ERMSG	B	4	2258	B U71		103
788	6	99		DCW	@LNZ@	B	3	2264			103
789	7	00		MZ	-0,ACCHI&X3	B	7	2265	Y L19 2G9		103
790	7	01		B	STR99	B	4	2272	B /15		103
791	7	02	POWER	CW	ZROSW	B	4	2276) W84		104
792	7	03		B	STR1	B	4	2280	B J9A		104
793	7	04	*								
794	7	05		DCW	&0	B	1	2284			104
795	7	06		DCW	&2	B	1	2285			104
796	7	07		DCW	&1	B	1	2286			104
797	7	08	LINIT	DCW	&0	B	1	2287			104
798	7	09	HOLD	DCW	#26	B	26	2313			104
799	7	10	LZONE	DCW	#1	B	1	2314			105
				DCW	&1	B	1	2315		LIT	105
				DCW	@31@	B	2	2317		LIT	105
				DCW	&0	B	1	2318		LIT	105
				DCW	-0	B	1	2319		LIT	105
800	7	11		EX	LOGF	B			B !00		106

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
801	7	12		JOB	1401 FORTRAN FLOATING POINT EXPONENTIAL	B					
802	7	13	*								
803	7	14		ORG	2000	B			2000		
804	7	15	*								
805	7	16	EXPF	MZ	ONE,NSIGN	B	7	2000	Y K90 87		109
806	7	17		MN	XPNUM,*&8	B	7	2007	D W84 !21		109
807	7	18		BCE	OUTM1,@02468@,0	B	8	2014	B !40 K99 0		109
808	7	19		CHAIN	4	B				MACRO	
809				BCE		B	1	2022	B	GEN	109
810				BCE		B	1	2023	B	GEN	109
811				BCE		B	1	2024	B	GEN	109
812				BCE		B	1	2025	B	GEN	109
813	7	20		MZ	BASEZ,NSIGN	B	7	2026	Y W84 87		110
814	7	21		MN	@8@,XPNUM	B	7	2033	D L00 W84		110
815	7	22	OUTM1	BW	RUNML,ZROSW	B	8	2040	V !79 W84 1		110
816	7	23		SW	ZROSW	B	4	2048	, W84		110
817	7	24		ZS	ACCHI&X3	B	4	2052	! 2G9		110
818	7	25		BU	QSIGN	B	5	2056	B J21 /		110
819	7	26		B	ERMSG	B	4	2061	B U71		110
820	7	27		DCW	@ZTZ@	B	3	2067			111
821	7	28	PETTY	MZ	NSIGN,TWTC	B	7	2068	Y 87 K6?		111
822	7	29		B	STR1	B	4	2075	B J9A		111
823	7	30	RUNML	BE	PETTY	B	5	2079	B !68 S		111
824	7	31	NRML	ZA	EXP,EXPB	B	7	2084	? W79 W82		111
825	7	32		S	ONE,EXPB	B	7	2091	S K90 W82		111
826	7	33		BM	SML,EXPB	B	8	2098	V K45 W82 K		112
827	7	34		S	THREE,EXPB	B	7	2106	S K94 W82		112
828	7	35		BM	REDUC,EXPB	B	8	2113	V J40 W82 K		112
829	7	36	*		AND LESS THAN FOUR						
830	7	37	*								
831	7	38	*		DETERMINE WHETHER EXPONENT OVERFLOW OR UNDERFLOW						
832	7	39	*								
833	7	40	QSIGN	BM	STRZE,ACCHI&X3	B	8	2121	V /42 2G9 K		112
834	7	41		B	ERMSG	B	4	2129	B U71		112
835	7	42		DCW	@EOF@	B	3	2135			112
836	7	43		B	STR99	B	4	2136	B /15		113
837	7	44	*								
838	7	45	*		EXPONENT # &1, &2, OR &3						
839	7	46	*								
840	7	47	REDUC	SBR	X1,LN10&X3	B	7	2140	H 089 KBF		113
841	7	48		ZA	EXP&1,X2&1	B	7	2147	? W80 095		113
842	7	49		B	DIVID	B	4	2154	B !0?		113
843	7	50		C	0&X1,THC99	B	7	2158	C 0 0 K93		113
844	7	51		BL	QSIGN	B	5	2165	B J21 T		113
845	7	52		ZA	0&X1,EXP	B	7	2170	? 0 0 W79		114
846	7	53		MZ	ACCHI&X3,EXP	B	7	2177	Y 2G9 W79		114
847	7	54	*								
848	7	55	*		PREPARE FIELDS FOR SERIES CALCULATION						
849	7	56	*								
850	7	57		S	DEC	B	4	2184	S K5I		114

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
851	7	58	FTERM	C	SPOT,ACCHI&X3	B	7	2188	C 250 2G9		114
852	7	59		SAR	X1	B	4	2195	Q 089		114
853	7	60		SW	0&X1	B	4	2199	, 0 0		114
854	7	61		S	SPOT&1	B	4	2203	S 251		114
855	7	62		MN	ONE,0&X1	B	7	2207	D K90 0 0		115
856	7	63		ZA	THC99-2,NCTR	B	7	2214	? K91 K5F		115
857	7	64		ZA		B	1	2221	?		115
858	7	65		ZA		B	1	2222	?		115
859	7	66		B	CALC	B	4	2223	B !4G		115
860	7	67	*								
861	7	68	*		PREPARE FIELDS FOR NORMALIZING						
862	7	69	*								
863	7	70		MZ	TOP&1&X3, TOP&X3	B	7	2227	Y 2?2 2?1		115
864	7	71		SBR	X2, TOP&X3	B	7	2234	H 094 2?1		115
865	7	72		B	NMLZ1	B	4	2241	B 24		116
866	7	73	*								
867	7	74	*		EXPONENTS LESS OR # TO ZERO						
868	7	75	*								
869	7	76	SML	A	X3, EXPB	B	7	2245	A 099 W82		116
870	7	77		BM	PETTY, EXPB	B	8	2252	V !68 W82 K		116
871	7	78		ZS	EXP&1, DEC	B	7	2260	! W80 K5I		116
872	7	79		S	EXP	B	4	2267	S W79		116
873	7	80		MZ	ACCHI&X3, ACCHI-1&X3	B	7	2271	Y 2G9 2G8		116
874	7	81		ZA	ACCHI-1&X3, ACCHI&X3	B	7	2278	? 2G8 2G9		117
875	7	82		B	FTERM	B	4	2285	B J88		117
876	7	83		DCW	0	B	1	2289			117
877	7	84	ONE	DCW	&1	B	1	2290			117
878	7	85	THC99	DCW	&099	B	3	2293			117
879	7	86	THREE	DCW	&3	B	1	2294			117
				DCW	@02468@	B	5	2299		LIT	117
				DCW	@8@	B	1	2300		LIT	118
880	7	87		EX	EXPF	B			B !00		119

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
881	7	88		JOB	1401 FLOATING POINT ARCTANGENT	B					
882	7	89	*								
883	7	90		ORG	2000	B			2000		
884	7	91	*								
885	7	92	CASE1	BE	STRZE	B	5	2000	B /42 S		122
886	7	93		MZ	&1,INITL	B	7	2005	Y M61 L62		122
887	7	94		ZA	ACCHI-1&X3,ACCHI&X3	B	7	2012	? 2G8 2G9		122
888	7	95		S	DEC	B	4	2019	S K5I		122
889	7	96		S	TOP&1&X3	B	4	2023	S 2?2		122
890	7	97		C	SPOT-2,ACCHI&X3	B	7	2027	C 248 2G9		122
891	7	98		SAR	X1	B	4	2034	Q 089		122
892	7	99		SW	0&X1	B	4	2038	, 0 0		123
893	8	00		ZA	@0?@,SPOT&X3	B	7	2042	? M63 2E0		123
894	8	01		MCW	@0?@,EXPB	B	7	2049	M M63 W82		123
895	8	02		MN	EXP,EXPB	B	7	2056	D W79 W82		123
896	8	03		MN		B	1	2063	D		123
897	8	04		C	EXPB,@0?@	B	7	2064	C W82 M63		123
898	8	05		BE	ZEREX	B	5	2071	B K83 S		123
899	8	06		S	X3,EXPB	B	7	2076	S 099 W82		124
900	8	07		BM	TEST,EXPB	B	8	2083	V J50 W82 K		124
901	8	08		BM	CASE2,EXP	B	8	2091	V J03 W79 K		124
902	8	09		B	CASE7	B	4	2099	B J21		124
903	8	10	CASE2	MCW	ACCHI&X3, TOP&X3	B	7	2103	M 2G9 2?1		124
904	8	11		A	&1,EXP	B	7	2110	A M61 W79		125
905	8	12		B	SIGN	B	4	2117	B J39		125
906	8	13	CASE7	S	EXP	B	4	2121	S W79		125
907	8	14	ADDPI2	A	PIOV4&1&X3, TOP&1&X3	B	7	2125	A MA4 2?2		125
908	8	15	ADDPI4	A	PIOV4&1&X3, TOP&1&X3	B	7	2132	A MA4 2?2		125
909	8	16	SIGN	SBR	X2, TOP&X3	B	7	2139	H 094 2?1		125
910	8	17		B	NMLZ1	B	4	2146	B 24		126
911	8	18	TEST	BM	CASE3,EXP	B	8	2150	V K47 W79 K		126
912	8	19		MN	&1, 2&X1	B	7	2158	D M61 0 2		126
913	8	20	SHIFT	ZA	SPOT-1&X3, SPOT&X3	B	7	2165	? 2D9 2E0		126
914	8	21		S	&1,EXP	B	7	2172	S M61 W79		126
915	8	22		C	EXP,@0?@	B	7	2179	C W79 M63		127
916	8	23		BL	SHIFT	B	5	2186	B J65 T		127
917	8	24		D	ACCHI&X3, SPOT-1	B	7	2191	% 2G9 249		127
918	8	25		C	2&X1,@042@	B	7	2198	C 0 2 M66		127
919	8	26		BH	CASE6	B	5	2205	B K32 U		127
920	8	27		ZS	INITL	B	4	2210	! L62		127
921	8	28		MCW	SPOT-3,ACCHI&X3	B	7	2214	M 247 2G9		128
922	8	29		ZA	@0?@,SPOT&X3	B	7	2221	? M63 2E0		128
923	8	30		B	CASE4	B	4	2228	B K95		128
924	8	31	CASE6	SBR	CALXT&3,ADDPI2	B	7	2232	H J9? J25		128
925	8	32		ZS	INITL	B	4	2239	! L62		128
926	8	33		B	MLTPLY	B	4	2243	B L41		128
927	8	34	CASE3	SBR	CALXT&3,SIGN	B	7	2247	H J9? J39		129
928	8	35		ZA	EXP,EXPB	B	7	2254	? W79 W82		129
929	8	36		A	EXPB	B	4	2261	A W82		129
930	8	37		ZS	EXPB&1,DEC	B	7	2265	! W83 K5I		129

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
931	8	38		MCW	ACCHI&X3,SPOT-3	B	7	2272	M 2G9 247		129
932	8	39		B	MLTPLY	B	4	2279	B L41		129
933	8	40	ZEREX	C	ACCHI&3,@042@	B	7	2283	C 282 M66		130
934	8	41		BH	CASE3	B	5	2290	B K47 U		130
935	8	42	CASE4	SBR	CALXT&3,ADDPI4	B	7	2295	H J9? J32		130
936	8	43		ZS	INITL	B	4	2302	! L62		130
937	8	44		MN	&1,2&X1	B	7	2306	D M61 0 2		130
938	8	45		S	ACCHI&X3,SPOT-1	B	7	2313	S 2G9 249		130
939	8	46		A	&1,ACCHI&1	B	7	2320	A M61 280		131
940	8	47		A	@0?@,SPOT&X3	B	7	2327	A M63 2E0		131
941	8	48		D	ACCHI&X3,SPOT-1	B	7	2334	% 2G9 249		131
942	8	49	MLTPLY	LCA	SPOT-1,HOLDD	B	7	2341	L 249 M60		131
943	8	50		M	HOLDD,SPOT&2&X3	B	7	2348	@ M60 2E2		131
944	8	51		ZS	SPOT-1,ACCHI&X3	B	7	2355	! 249 2G9		132
945	8	52	INITL	ZA	HOLDD	B	4	2362	? M60		132
946	8	53		ZA	HOLDD,SPOT&1	B	7	2366	? M60 251		132
947	8	54		ZA	&2,NCON	B	7	2373	? M67 K5C		132
948	8	55		S	UPBY	B	4	2380	S K5?		132
949	8	56		ZA	&1,NCTR	B	7	2384	? M61 K5F		132
950	8	57		SW	LOGM1,LOGM2	B	7	2391	, J4I J7A		133
951	8	58		SBR	LOGM1-4,HOLDD	B	7	2398	H J4E M60		133
952	8	59		SBR	LOGM2-1	B	4	2405	H J7?		133
953	8	60		B	CALC1	B	4	2409	B !5H		133
954	8	61	PIOV4	EQU	*&1	B		2413			
955	8	62		DCW	@078539816339744830961566@	B	24	2436			134
956	8	63	HOLDD	DCW	#24	B	24	2460			135
				DCW	&1	B	1	2461		LIT	135
				DCW	@0?@	B	2	2463		LIT	135
				DCW	@042@	B	3	2466		LIT	135
				DCW	&2	B	1	2467		LIT	135
957	8	64		EX	CASE1	B			B !00		136

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
958	8	65		JOB	1401 ABSOLUTE VALUE - NEGATE SUBROUTINE	B					
959	8	66	*								
960	8	67		ORG	2000	B			2000		
961	8	68	ABSVL	MZ	*&1,ACCHI&X3	B	7	2000	Y !07 2G9		139
962	8	69		EX	ABSVL	B			B !00		140
963	8	70	*								
964	8	71		ORG	2000	B			2000		
965	8	72	NEGF	ZS	ACCHI&X3	B	4	2000	! 2G9		143
966	8	73		B	CLRWK	B	4	2004	B /34		143
967	8	74		EX	NEGF	B			B !00		144

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
968	8	75		JOB	FLOAT TO FIX CONVERSION	B					
969	8	76	*								
970	8	77		ORG	2000	B			2000		
971	8	78	*								
972	8	79	FIXF	SW	FIXSW	B	4	2000	, W87		147
973	8	80		SBR	X1,0&X3	B	7	2004	H 089 0?0		147
974	8	81		MCW	PARAM&4,*&7	B	7	2011	M 690 !24		147
975	8	82		SBR	X3,000	B	7	2018	H 099 000		147
976	8	83		S	&1,EXP	B	7	2025	S J32 W79		147
977	8	84		BM	STRZE,EXP STORE ZERO IF CHAR OF ARG LESS THAN 1	B	8	2032	V /42 W79 K		148
978	8	85		ZA	EXP&1,X2&1	B	7	2040	? W80 095		148
979	8	86		C	X1,X2	B	7	2047	C 089 094		148
980	8	87		BL	EXPLS	B	5	2054	B J07 T		148
981	8	88		S	X1&1,X2&1	B	7	2059	S 090 095		148
982	8	89		C	X3,X2	B	7	2066	C 099 094		149
983	8	90		BH	STRZE	B	5	2073	B /42 U		149
984	8	91		S	SPOT&1&X2	B	4	2078	S 2N1		149
985	8	92		ZA	ACCHI&X1,SPOT	B	7	2082	? 2X9 250		149
986	8	93		MZ	SPOT,SPOT&1&X2	B	7	2089	Y 250 2N1		149
987	8	94		ZA	SPOT&1&X2,ACCHI&X3 STORE FIXPT NUMBERS MODULO K	B	7	2096	? 2N1 2G9		149
988	8	95		B	CLRWK	B	4	2103	B /34		150
989	8	96	EXPLS	MZ	ACCHI&X1,ACCHI&1&X2 ADD ONLY INTEGER PLACES	B	7	2107	Y 2X9 2Q0		150
990	8	97		LCA	ACCHI&1&X2,SPOT	B	7	2114	L 2Q0 250		150
991	8	98		ZA	SPOT,ACCHI&X3	B	7	2121	? 250 2G9		150
992	8	99		B	CLRWK	B	4	2128	B /34		150
				DCW	&1	B	1	2132		LIT	150
993	9	00		EX	FIXF	B			B !00		151

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
994	9	01		JOB	FIX TO FLOAT CONVERSION	B					
995	9	02	*								
996	9	03		ORG	2000	B			2000		
997	9	04	*								
998	9	05	FLOT	CW	FIXSW	B	4	2000) W87		154
999	9	06		BW	*&5,4&X2	B	8	2004	V !16 0!4 1		154
1000	9	07		B	*&8	B	4	2012	B !23		154
1001	9	08		MN	ACCHI&X3,XPNUM	B	7	2016	D 2G9 W84		154
1002	9	09		SBR	X2,SPOT	B	7	2023	H 094 250		154
1003	9	10		LCA	ACCHI&X3	B	4	2030	L 2G9		154
1004	9	11		MCW	PARAM&6,*&7	B	7	2034	M 692 !47		155
1005	9	12		SBR	X3,000	B	7	2041	H 099 000		155
1006	9	13		ZA	X3,EXPB	B	7	2048	? 099 W82		155
1007	9	14		B	MVZON	B	4	2055	B 10		155
1008	9	15		EX	FLOT	B			B !00		156

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
1009	9	16		JOB	1401 FLOATING POINT SQUARE ROOT	B					
1010	9	17	*								
1011	9	18		ORG	2000	B			2000		
1012	9	19	*								
1013	9	20	SQRTF	BM	QERR,ACCHI&X3	B	8	2000	V J87 2G9 K		159
1014	9	21		MN	ACCHI&X3,TOP&21&X3	B	7	2008	D 2G9 2B2		159
1015	9	22		MCW		B	1	2015	M		159
1016	9	23		SW		B	1	2016	,		159
1017	9	24		SBR	X1	B	4	2017	H 089		159
1018	9	25		LCA	&1,TOP	B	7	2021	L K09 201		159
1019	9	26		SBR	X2	B	4	2028	H 094		159
1020	9	27		ZA	EXP&1,ACCHI&4	B	7	2032	? W80 283		160
1021	9	28		A	&1, ACCHI&3	B	7	2039	A K09 282		160
1022	9	29		M	&50,ACCHI&6	B	7	2046	@ K11 285		160
1023	9	30		MN	ACCHI&4, EXP	B	7	2053	D 283 W79		160
1024	9	31		MN		B	1	2060	D		160
1025	9	32		BCE	CKSGN,ACCHI&5,0	B	8	2061	B !80 284 0		160
1026	9	33		SBR	X1,1&X1	B	7	2069	H 089 0 1		161
1027	9	34		B	QSTRT	B	4	2076	B !95		161
1028	9	35	CKSGN	BWZ	QSTRT,EXP,B	B	8	2080	V !95 W79 B		161
1029	9	36		A	&1,EXP	B	7	2088	A K09 W79		161
1030	9	37	QSTRT	S	ACCHI&X3	B	4	2095	S 2G9		161
1031	9	38	QRTN	S	&11,2&X2	B	7	2099	S K13 0!2		161
1032	9	39		SW	21&X2	B	4	2106	, 0K1		162
1033	9	40		CW		B	1	2110)		162
1034	9	41		SBR	X2, 1&X2	B	7	2111	H 094 0!1		162
1035	9	42		ZS	&1, CNTR#1	B	7	2118	! K09 K14		162
1036	9	43	QLOOP	A	&1,CNTR	B	7	2125	A K09 K14		162
1037	9	44		A	&2,1&X2	B	7	2132	A K15 0!1		162
1038	9	45		S	1&X2,2&X1	B	7	2139	S 0!1 0!2		163
1039	9	46		BWZ	QLOOP, 2&X1, B	B	8	2146	V J25 0!2 B		163
1040	9	47		A	1&X2, 2&X1	B	7	2154	A 0!1 0!2		163
1041	9	48		MN	CNTR, DELTA&X2	B	7	2161	D K14 0P9		163
1042	9	49		SBR	X1, 2&X1	B	7	2168	H 089 0!2		163
1043	9	50		BWZ	QRTN, DELTA&X2, 2	B	8	2175	V !99 0P9 2		164
1044	9	51		B	CLRWK	B	4	2183	B /34		164
1045	9	52	QERR	B	ERMSG	B	4	2187	B U71		164
1046	9	53		DCW	@SQN@	B	3	2193			164
1047	9	54		MZ	&1,ACCHI&X3	B	7	2194	Y K09 2G9		164
1048	9	55		CS	ACCHI-1	B	4	2201	/ 278		164
1049	9	56		B	SQRTF&8	B	4	2205	B !08		164
				DCW	&1	B	1	2209		LIT	165
				DCW	&50	B	2	2211		LIT	165
				DCW	&11	B	2	2213		LIT	165
			CNTR B	DCW	#01	B	1	2214		AREA	165
				DCW	&2	B	1	2215		LIT	165
1050	9	57		EX	SQRTF	B			B !00		166

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
1051	9	58		JOB	1401 FORTRAN USER FUNCTIONS	B					
1052	9	59		SFX	A	A					
1053	9	60		ORG	2000	A			2000		
1054	9	61		DCW	@USER FUNCTION 1 GOES HERE@	A	26	2025			169
1055	9	62		XFR	0	A			B 000		170
1056	9	63		ORG	2000	A			2000		
1057	9	64		DCW	@USER FUNCTION 2 GOES HERE@	A	26	2025			173
1058	9	65		XFR	0	A			B 000		174
1059	9	66		ORG	2000	A			2000		
1060	9	67		DCW	@USER FUNCTION 3 GOES HERE@	A	26	2025			177
1061	9	68		XFR	0	A			B 000		178
1062	9	69		ORG	2000	A			2000		
1063	9	70		DCW	@USER FUNCTION 4 GOES HERE@	A	26	2025			181
1064	9	71		XFR	0	A			B 000		182
1065	9	72		ORG	2000	A			2000		
1066	9	73		DCW	@USER FUNCTION 5 GOES HERE@	A	26	2025			185
1067	9	74		XFR	0	A			B 000		186
1068	9	75		ORG	2000	A			2000		
1069	9	76		DCW	@USER FUNCTION 6 GOES HERE@	A	26	2025			189
1070	9	77		XFR	0	A			B 000		190
1071	9	78		ORG	2000	A			2000		
1072	9	79		DCW	@USER FUNCTION 7 GOES HERE@	A	26	2025			193
1073	9	80		XFR	0	A			B 000		194
1074	9	81		ORG	2000	A			2000		
1075	9	82		DCW	@USER FUNCTION 8 GOES HERE@	A	26	2025			197
1076	9	83		XFR	0	A			B 000		198
1077	9	84		ORG	2000	A			2000		
1078	9	85		DCW	@USER FUNCTION 9 GOES HERE@	A	26	2025			201
1079	9	86		XFR	0	A			B 000		202
1080	9	87		ORG	2000	A			2000		
1081	9	88		DCW	@USER FUNCTION 10 GOES HERE@	A	26	2025			205
1082	9	89		XFR	0	A			B 000		206
1083	9	90		ORG	2000	A			2000		
1084	9	91		DCW	@USER FUNCTION 11 GOES HERE@	A	26	2025			209
1085	9	92		XFR	0	A			B 000		210
1086	9	93		ORG	2000	A			2000		
1087	9	94		DCW	@USER FUNCTION 12 GOES HERE@	A	26	2025			213
1088	9	95		XFR	0	A			B 000		214

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
1089	9	96		JOB	1401 FORTRAN RELOCATABLE XLINKF	A					
1090	9	97		ORG	2000	A			2000		
1091	9	98	START	MCW	CLRCON,359	A	7	2000	M !13	359	217
1092	9	99		B	337	A	4	2007	B	337	217
1093	10	00	CLRCON	DCW	#3	A	3	2013			217
1094	10	01		EX	START	A			B !00		218

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
1095	10	02		JOB	1401 FORTRAN FUNCTION BRANCH ROUTINE	A					
1096	10	03		ORG	2000	A			2000		
1097	10	04		T	SINFUN,4&X2,S	A	8	2000	T 903 0!4 S		221
1098	10	05		XFR	0	A			B 000		222
1099	10	06		ORG	2000	A			2000		
1100	10	07		T	SINFUN,4&X2,C	A	8	2000	T 903 0!4 C		225
1101	10	08		XFR	0	A			B 000		226
1102	10	09		ORG	2000	A			2000		
1103	10	10		T	LOGFUN,4&X2,G	A	8	2000	T 900 0!4 G		229
1104	10	11		XFR	0	A			B 000		230
1105	10	12		ORG	2000	A			2000		
1106	10	13		T	XPNETL,4&X2,E	A	8	2000	T 897 0!4 E		233
1107	10	14		XFR	0	A			B 000		234
1108	10	15		ORG	2000	A			2000		
1109	10	16		T	ATANFN,4&X2,T	A	8	2000	T 894 0!4 T		237
1110	10	17		XFR	0	A			B 000		238
1111	10	18		ORG	2000	A			2000		
1112	10	19		T	ABSVAL,4&X2,A	A	8	2000	T 891 0!4 A		241
1113	10	20		XFR	0	A			B 000		242
1114	10	21		ORG	2000	A			2000		
1115	10	22		T	NEGTFN,4&X2,N	A	8	2000	T 888 0!4 N		245
1116	10	23		XFR	0	A			B 000		246
1117	10	24		ORG	2000	A			2000		
1118	10	25		T	FIXFUN,4&X2,X	A	8	2000	T 885 0!4 X		249
1119	10	26		XFR	0	A			B 000		250
1120	10	27		ORG	2000	A			2000		
1121	10	28		T	FLTFUN,4&X2,F	A	8	2000	T 882 0!4 F		253
1122	10	29		XFR	0	A			B 000		254
1123	10	30		ORG	2000	A			2000		
1124	10	31		T	SQRTFN,4&X2,Q	A	8	2000	T 879 0!4 Q		257
1125	10	32		XFR	0	A			B 000		258
1126	10	33		ORG	2000	A			2000		
1127	10	34		T	YUSER1,4&X2,R	A	8	2000	T 876 0!4 R		261
1128	10	35		XFR	0	A			B 000		262
1129	10	36		ORG	2000	A			2000		
1130	10	37		T	YUSER2,4&X2,U	A	8	2000	T 873 0!4 U		265
1131	10	38		XFR	0	A			B 000		266
1132	10	39		ORG	2000	A			2000		
1133	10	40		T	YUSER3,4&X2,P	A	8	2000	T 870 0!4 P		269
1134	10	41		XFR	0	A			B 000		270
1135	10	42		ORG	2000	A			2000		
1136	10	43		T	YUSER4,4&X2,W	A	8	2000	T 867 0!4 W		273
1137	10	44		XFR	0	A			B 000		274
1138	10	45		ORG	2000	A			2000		
1139	10	46		T	YUSER5,4&X2,Y	A	8	2000	T 864 0!4 Y		277
1140	10	47		XFR	0	A			B 000		278
1141	10	48		ORG	2000	A			2000		
1142	10	49		T	YUSER6,4&X2,Z	A	8	2000	T 861 0!4 Z		281
1143	10	50		XFR	0	A			B 000		282
1144	10	51		ORG	2000	A			2000		

SEQ	PG	LIN	LABEL	OP	OPERANDS	SFX	CT	LOCN	INSTRUCTION	TYPE	CARD
1145	10	52		T	YUSER7,4&X2,J	A	8	2000	T 858 0!4 J		285
1146	10	53		XFR	0	A			B 000		286
1147	10	54		ORG	2000	A			2000		
1148	10	55		T	YUSER8,4&X2,K	A	8	2000	T 855 0!4 K		289
1149	10	56		XFR	0	A			B 000		290
1150	10	57		ORG	2000	A			2000		
1151	10	58		T	YUSER9,4&X2,L	A	8	2000	T 852 0!4 L		293
1152	10	59		XFR	0	A			B 000		294
1153	10	60		ORG	2000	A			2000		
1154	10	61		T	YUSR10,4&X2,M	A	8	2000	T 849 0!4 M		297
1155	10	62		XFR	0	A			B 000		298
1156	10	63		ORG	2000	A			2000		
1157	10	64		T	YUSR11,4&X2,D	A	8	2000	T 846 0!4 D		301
1158	10	65		XFR	0	A			B 000		302
1159	10	66		ORG	2000	A			2000		
1160	10	67		T	YUSR12,4&X2,H	A	8	2000	T 843 0!4 H		305
1161	10	68		XFR	0	A			B 000		306
1162	10	69		ORG	2000	A			2000		
1163	10	70		T	XLINKS,4&X2,I	A	8	2000	T 840 0!4 I		309
1164	10	71		XFR	0	A			B 000		310
1165	10	72		END		A			/ 000 080		

		SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS	SYMBOL	ADDRESS						
AAA	A	2194	ABSVAL	891	ABSVLB	2000	ACCHIB	279	ADDPI2	2125	ADDPI4	2132	ADDRTB	1579					
ADLSTA		2394	ALGRTB	759	ARGLGB	2390	ARITFB	700	ARITHB	712	ARRAYA	2122	ASCOMB	996					
ATANFN		894	BASEZB	1684	BCLEAR	833	BFEELA	2215	BLANKA	2397	BOX	B	2433	BRWHRB	1221				
BSTANA		2087	CALC	B	14047	CALC1B	14058	CALXTB	14187	CASE1B	2000	CASE2B	2103	CASE3B	2247				
CASE4B		2295	CASE6B	2232	CASE7B	2121	CHGEXB	1188	CKSGNB	2080	CLRCON	2013	CLRWBK	1134					
CLRX	B	755	CNTR	B	2214	CODE	B	924	COMFN1	906	COS	B	2238	COSF	B	2024	DEC	B	14259
DELTAB		79	DIVIDB	14000	DO1	A	2000	DO2	A	2000	DO3	A	2040	DOADR1	924	DOADR2	921		
DOADR3		918	DOINIT	915	DOSBSC	909	DUN1	A	2242	DVERRB	1154	ERMSG	B	1471	ERMXTB	1526			
EXDO3A		2069	EXIT	B	784	EXITEL	2046	EXITLA	2141	EXITS	2175	EXP	B	1679	EXPB	B	1682		
EXPF	B	2000	EXPLSB	2107	FAILSW	184	FDIV	B	1233	FINSTB	1392	FIXF	B	2000	FIXFUN	885			
FIXPTB		1541	FIXSWB	1687	FLOT	B	2000	FLTFUN	882	FMPY	B	1262	FSIZEB	831	FTERMB	2188			
HOLD	B	2313	HOLddb	2460	INDX1A	2275	INDX2A	2298	INDX3A	2341	INDX4A	2334	INITAP	780					
INITIL		2000	INITLA	2092	INITLB	2362	INITXT	793	INRAYA	2184	INVTFN	894	LCA	A	2041				
LIMITA		2348	LIMT	A	2047	LINITB	2287	LN10	B	14226	LOG99B	2250	LOGERB	2224	LOGF	B	2000		
LOGF1B		2020	LOGF2B	2007	LOGFUN	900	LOGM1B	14149	LOGM2B	14171	LOGRTB	2177	LPARNA	2403					
LZONEB		2314	MLTPLY	2341	MONTER	700	MONTOR	769	MVEXPB	1362	MVQUTB	1661	MVZONB	1010					
NCON	B	14253	NCTR	B	14256	NDMDVB	1283	NEGF	B	2000	NEGTFN	888	NGBMPB	868	NLOOPB	1043			
NMLZ1B		1024	NORNDB	1448	NOSHFB	2068	NOSWTA	2228	NRML	B	2084	NSIGNB	1087	NUVALB	1017				
OBJLST		2000	OBLIST	912	OHALTA	2179	ONE	B	2290	OPDSCB	1199	OTSUBA	2000	OUT1	B	1331			
OUT2	B	1369	OUTM1B	2040	PACK	A	2093	PARAMA	686	PETTYB	2068	PIOV2B	2405	PIOV4B	2413				
POWERB		2276	PROD	A	2199	QERR	B	2187	QFUNCT	1305	QLOOPB	2125	QRTN	B	2099	QSIGNB	2121		
QSTRTB		2095	RAY	A	2103	RCDMKB	1675	RDOVFB	1418	REDUCB	2140	RINX2B	1519	RTN1	B	1165			
RUNMLB		2079	SATFYA	2381	SBBR1B	723	SBBR2B	815	SBIX	A	2054	SBR	A	2154	SBR1	A	2020		
SBRLTA		2191	SCGENB	2208	SETUPA	2305	SHIFTB	2165	SIGN	B	2139	SIGNFB	924	SINE	B	2179			
SINF	B	2008	SINFUN	903	SMALLB	2305	SML	B	2245	SMPLEA	2104	SNCS	B	2036	SPOT	B	250		
SQRTFB		2000	SQRTFN	879	SQRX	B	2264	SQRXTB	2301	STARTA	2000	STMNMB	1500	STR1	B	14191			
STR99B		1115	STRX2B	1486	STRZEB	1142	STSUBB	1206	SUB4	B	2119	SUBIXA	2355	SUBSCR	2253				
SUBTRB		1587	TCLEAR	710	TEST	B	2150	TESTLA	2061	THC99B	2293	THREEB	2294	TOP	B	201			
TRIGFB		2000	TSTFCB	2371	TWTCHB	14260	UPBY	B	14250	WKZONB	200	WORK	A	2204	X1	A	89		
X1	B	89	X2	A	94	X2	B	94	X3	A	99	X3	B	99	XBEGIN	838	XDIV	B	1623
XL1	B	89	XL2	B	94	XL3	B	99	XLINKS	840	XMPY	B	1598	XPNETL	897	XPNUMB	1684		
XSIZEB		1530	XTLSTA	2094	XXX	B	0	XYZ	A	2025	YUSER1	876	YUSER2	873	YUSER3	870			
YUSER4		867	YUSER5	864	YUSER6	861	YUSER7	858	YUSER8	855	YUSER9	852	YUSR10	849					
YUSR11		846	YUSR12	843	ZA	A	2034	ZA1	B	2223	ZEREXB	2283	ZONESA	2191	ZONMVB	1407			
ZONZ	B	2400	ZROSWB	1684															