

	1	*				00 00001
	2	*				00 00002
	3	*	V73 WCS FLOATING POINT FIRMWARE			00 00003
	4	*				00 00004
	5	*				00 00005
0000	6		ALOC	0		00 00006
	7	*				00 00007
0200	8	P	EQU	X'200	PAGE ADDRESS (PAGE 1)	00 00008
	9	*				00 00009
013E	10	SS1M	EQU	X'13E	STANDARD STATE 1	00 00010
	11	*				00 00011
	12	*				00 00012
001E	13		ORG	X'1E	BCS ENTRY POINT	00 00013
001E 00F8000080000000	14	FP	GEN	/*,IM1	WAIT FOR MEMORY DONE	00 00014
001F 0100000080A90006	15		GEN	/*,IM1,FFA,MF1,WR1,BB0,AA6	SAVE 1ST WORD OF OP1	00 00015
	16		GEN	/*,SF1,IM9,RF4,LB1,FFA,MF1,	SAVE 1ST WORD OF OP2/	00 00016
0020 01080404A4A90019	17			CWR1,BB1,AA9	INCREMENT PC	00 00017
0021 0110000080A90017	18		GEN	/*,IM1,FFA,MF1,WR1,BB1,AA7	SAVE 2ND WORD OF OP1	00 00018
0022 0118000024A9001A	19		GEN	/*,RF4,LB1,FFA,MF1,WR1,BB1,AAA	SAVE 2ND WORD OF OP2/	00 00019
	20	*			INCREMENT PC	00 00020
0023 00E8000008F90005	21		GEN	/N(FP1),LA1,FFF,MF1,WR1,AA5	SAVE PC CONTENTS	00 00021
	22	*				00 00022
	23	*	REAL MUST BE ON EVEN BOUNDARY -			00 00023
	24	*	FOLLOWED BY FIX			00 00024
	25	*				00 00025
0024 12500006E0002272	26	REAL	GMSK	/P(FSM+P),IMD,LB3,15(REAL1+P),AK2	DECOMPOSE OP1	00 00026
0025 0130000000A900AD	27	FIX	GEN	/*,FFA,MF1,WR1,BBA,AA0	MOVE OP2 WORD 2 TO	00 00027
	28	*			SUBROUTINE REGISTER	00 00028
	29		GMSK	1(P/512),2(FIXD+3),FS9,IMD,LB3,	SELECT FIXED POINT	00 00029 ← FS(6,5)
0026 101A4006E0002C92	30			C15(FIXE+P),AK2	OPERATION	00 00030
	31	*				00 00031
0027 410A800062A00000	32	REAL1	GMSK	/F(REAL2),2(X'1),FSA,LB3,RF2,	TEST IF MUL/DIV	00 00032 ← FS(6)
	33			CFFA,MK0000	/SET SHIFT K	00 00033
	34	*				00 00034
	35	*	REAL2 MUST BE ON EVEN BOUNDARY -			00 00035
	36	*	FOLLOWED BY REAL3			00 00036
	37	*				00 00037
0028 17E80006E0002292	38	REAL2	GMSK	/P(SHFT+P),IMD,LB3,15(REAL3+P),AK2	SCALE OP1	00 00038
	39	*				00 00039
	40	*				00 00040
0029 0150000000A90006	41	REAL3	GEN	/*,FFA,MF1,WR1,BB0,AA6	SAVE OP1 MANTISSA	00 00041
002A 0158000000A90017	42		GEN	/*,FFA,MF1,WR1,BB1,AA7		00 00042
002B 0160000000A900B8	43		GEN	/*,FFA,MF1,WR1,BBB,AA8	AND EXPONENT	00 00043
002C 0168000000A90090	44		GEN	/*,FFA,MF1,WR1,BB9,AA0	MOVE OP2 TO ACCUMULATOR	00 00044
002D 0170000000A900A1	45		GEN	/*,FFA,MF1,WR1,BBA,AA1		00 00045
002E 12500006E00022F2	46		GMSK	/P(FSM+P),IMD,LB3,15(*+1+P),AK2	DECOMPOSE OP2	00 00046
002F 0180000000A90009	47		GEN	/*,FFA,MF1,WR1,BB0,AA9	SAVE OP2 MANTISSA	00 00047
	48		GEN	/F(FMD),2(X'1),FSA,FFA,MF1,	SELECT MULDIV/ADDSUB	00 00048 ← FS(6)
0030 200A800000A9001A	49			CWR1,BB1,AAA		00 00049
0031 0190000020A90001	50	SHFT2	GEN	/*,LB1,FFA,MF1,WR1,AA1	OPREG TO AR1	00 00050
0032 00000006E0000004	51		GEN	IMD,LB3,AA4	POP/RETURN	00 00051
	52	*				00 00052
	53	*				00 00053
	54	*	SINGLE PRECISION FIXED DIVIDE (DIV)			00 00054
	55	*				00 00055
	56	*	CALLING SEQUENCE			00 00056
	57	*				00 00057
	58	*	AR0/AR1=DIVIDEND			00 00058

	59	*	ARC	=DIVISOR		00 00059
	60	*				00 00060
	61	*	RETURN			00 00061
	62	*				00 00062
	63	*	AR0	=REMAINDER		00 00063
	64	*	AR1	=QUOTIENT		00 00064
	65	*				00 00065
0061	66		ORG	X'61		00 00066
0061 231023C000004000	67	DIV0	GEN	/T(DIV2,DIV1),TF2,GFF,VF1	TEST SIGN	00 00067
0062 0318000000A900FE	68	DIV2	GEN	/*,FFA,MF1,BBF,AAE,WR1		00 00068
0063 33282280002701FF	69		GEN	/T(DIV5,DIV4),TF2,GFA,FF2,CF3,WR1,SH1,BBF,AAF		00 00069
	70	DIV1	GEN	/T(DIV5,DIV4),TF2,GFA,FF2,		00 00070
0064 33282280002701FE	71			CCF3,WR1,SH1,BBF,AAE		00 00071
0065 0338000010010001	72	DIV5	GEN	/N(DIV18),LA2,WR1,AA1		00 00072
0066 0348000003000001	73	DIV4	GEN	/N(DIV7),RF3,AA1	B TO OPREG	00 00073
0067 0340008003260110	74	DIV18	GEN	/*,GF2,RF3,FF2,CF3,SH1,BB1	NOT B TO OPREG	00 00074
0068 034800000023A100	75		GEN	/*,FF2,CF1,WR1,SC1,WF1,SH1	SHIFT OPREG RIGHT	00 00075
	76	DIV7	GEN	/N(DIV7A),GF2,FF9,WR1,SC1,XF2,		00 00076
0069 03580080009190E0	77			CBBE,AA0	ARE + AR0	00 00077
006A 0308000000A920CF	78	DIV	GEN	/N(DIV0),FFA,MF1,WR1,BBC,AAF,WF1	MOVE DIVISOR/	00 00078
	79	*			SAMPLE SIGN	00 00079
	80	DIV7A	GEN	/T(DIV10,DIV9),TF2,GFD,LB3,RF2,	SET -DIVIDE COUNT	00 00080
006B B360234062A000E0	81			CFFA,BBE		00 00081
	82	DIV10	GEN	/T(DIV19,DIV10),TF2,GFC,MR1,LA2,	SHIFT/ADD/INCREMENT	00 00082
006C 63682320159192F0	83			CFF9,WR1,SC1,XF2,SH2,BBF,RF5	COUNT TILL DONE	00 00083
006D 0370008040A00000	84	DIV19	GEN	/*,GF2,LB2,FFA	(HERE ON ZERO COUNT)	00 00084
006E 8378234000000000	85		GEN	/T(DIV12,DIV13),TF2,GFD	TEST SIGN OF REMAINDER	00 00085
006F 03800000009100F0	86	DIV12	GEN	/*,FF9,WR1,BBF,AA0	ADD DIVISOR TO IT	00 00086
0070 1388228000000000	87	DIV13	GEN	/T(DIV14,DIV15),TF2,GFA	TEST SIGN OF DIVIDEND	00 00087
	88	DIV14	GEN	/T(DIV16,DIV17),TF2,GFF,FF2,CF3,	COMPLEMENT AR0/TEST	00 00088
0071 239823C000270100	89			CWR1,SH1	SIGN OF DIVISOR	00 00089
0072 239833C000000000	90	DIV15	GEN	/T(DIV16,DIV17),TF3,GFF	TEST SIGN OF DIVISOR	00 00090
0073 03A8000020A90001	91	DIV16	GEN	/N(DIV20),LB1,FFA,MF1,WR1,AA1	OPREG TO AR1	00 00091
0074 03A8000020270101	92	DIV17	GEN	/*,LB1,FF2,CF3,WR1,SH1,AA1	NOT OPREG TO AR1	00 00092
0075 00000006E0000004	93	DIV20	GEN	IMD,LB3,AA4	POP/RETURN	00 00093
0076 0360048000000000	94	DIV9	GEN	/N(DIV10),SF1,GF2	SET OVERFLOW	00 00094
	95	*				00 00095
	96	*	NEGATE DOUBLE REGISTER (ICOMP)			00 00096
	97	*				00 00097
	98	*	CALLING SEQUENCE			00 00098
	99	*	AR0/AR1= OPERAND			00 00099
	100	*	AR4 = SIGN FLAG			00 00100
	101	*				00 00101
	102	*	RETURN			00 00102
	103	*	AR0/AR1= NEGATED OPERAND			00 00103
	104	*				00 00104
0077 03C0008000F80001	105	ICOMP	GEN	/*,GF2,FFF,MF1,AA1	SAMPLE IF AR1=0	00 00105
0078 63C8324000000000	106		GEN	/T(ICOMP1,ICOMP2),TF3,GF9		00 00106
0079 03D0000000670111	107	ICOMP1	GEN	/*,FF6,CF3,WR1,SH1,AA1,BB1	2'S COMP AR1	00 00107
007A 03D8000063B80001	108		GMSK	/*,LB3,RF3,FFB,MK8000,AK1	STRIP SIGN BIT	00 00108
007B 03E8000020A90001	109		GEN	/N(ICOMP3),LB1,FFA,MF1,WR1,AA1		00 00109
007C 03E8000000F10000	110	ICOMP2	GEN	/*,FFF,WR1,AA0	DECR AR0 (FOR 2'S COMP)	00 00110
007D 03F0008000090000	111	ICOMP3	GEN	/*,GF2,MF1,WR1,AA0	1'S COMP AR0	00 00111
007E 00000006E0070004	112		GEN	IMD,LB3,CF3,WR1,AA4	INCREMENT SIGN FLAG -	00 00112
	113	*			POP/RETURN	00 00113
	114	*				00 00114
	115	*				00 00115
	116	*	DOUBLE PRECISION FIXED POINT MULTIPLY (IMUL)			00 00116

117	*				00 00117
118	*	CALLING SEQUENCE			00 00118
119	*	AR6/AR7= 1ST OPERAND			00 00119
120	*	AR9/ARA= 2ND OPERAND			00 00120
121	*	AR3 = TEMPORARY STORAGE			00 00121
122	*	AR4 = SIGN FLAG			00 00122
123	*				00 00123
124	*	RETURN			00 00124
125	*	AR0/AR1= RESULT			00 00125
126	*				00 00126
127	*				00 00127
128	*				00 00128
129	*				00 00129
007F	13B80006E0002812	130	IMUL1A	GMSK /P(ICOMP+P),IMD,LB3,15(IMUL1B+P),AK2 NEGATE OP1	00 00130
0080	03F8008000A90071	131	IMUL1	GEN /N(IMUL1A),GF2,FFA,MF1,WR1,BB7,AA1	00 00131
		132	IMUL1B	GEN /T(IMULX,IMUL2),TF2,GF7,FFA,MF1, CWR1,BB0,AA6 CHECK IF MAX NEGATIVE	00 00132
0081	144821C000A90006	133			00 00133
0082	0420000000A90017	134	IMUL2	GEN /N(IMUL3),FFA,MF1,WR1,BB1,AA7	00 00134
0083	04F8008000A90060	135	IMUL	GEN /N(IMUL0),GF2,FFA,MF1,WR1,BB6,AA0 SAMPLE OP1 SIGN	00 00135
0084	0428008000A90090	136	IMUL3	GEN /*,GF2,FFA,MF1,WR1,BB9,AA0 SAMPLE OP2 SIGN	00 00136
0085	345831C000000000	137		GEN /T(IMUL6,IMUL4),TF3,GF7 TEST IF NEGATIVE	00 00137
0086	0438008000A900A1	138	IMUL4	GEN /*,GF2,FFA,MF1,WR1,BBA,AA1	00 00138
0087	13B80006E0002882	139	GMSK	/P(ICOMP+P),IMD,LB3,15(*+1+P),AK2 NEGATE OP2	00 00139
		140	GEN	/T(IMULX,IMUL5),TF2,GF7,FFA,MF1, CWR1,BB0,AA9 CHECK IF MAX NEGATIVE	00 00140
0088	544821C000A90009	141			00 00141
0089	0500008000000000	142	IMULX	GEN /N(IMUL8),GF2 SET OVERFLOW	00 00142
008A	0458000000A9001A	143	IMUL5	GEN /*,FFA,MF1,WR1,BB1,AAA	00 00143
008B	0460000063ABFFF0	144	IMUL6	GMSK /*,LB3,RF3,FFA,MKBFFF	00 00144
008C	0468000020A90000	145		GEN /*,LB1,FFA,MF1,WR1,AA0 GET ROUNDOFF BIT IN AR0	00 00145
008D	0470000000A900A1	146		GEN /*,FFA,MF1,WR1,BBA,AA1	00 00146
008E	0478000000A9006C	147		GEN /*,FFA,MF1,WR1,BB6,AAC	00 00147
008F	15100006E0002902	148	GMSK	/P(MUL+P),IMD,LB3,15(*+1+P),AK2 OP1(WORD1)*OP2(WORD2)	00 00148
0090	0488000000A90091	149	GEN	/*,FFA,MF1,WR1,BB9,AA1	00 00149
0091	15100006E0002922	150	GMSK	/P(MUL+P),IMD,LB3,15(*+1+P),AK2 OP1(WORD1)*OP2(WORD1)	00 00150
0092	0498000000A9001D	151	GEN	/*,FFA,MF1,WR1,BB1,AAD SAVE PARTIAL PRODUCT	00 00151
0093	04A0000000A90003	152	GEN	/*,FFA,MF1,WR1,BB0,AA3	00 00152
0094	04A8000000A90071	153	GEN	/*,FFA,MF1,WR1,BB7,AA1	00 00153
0095	04B0000000A9009C	154	GEN	/*,FFA,MF1,WR1,BB9,AAC	00 00154
0096	04B8000063ABFFF0	155	GMSK	/*,LB3,RF3,FFA,MKBFFF	00 00155
0097	04C0000020A90000	156	GEN	/*,LB1,FFA,MF1,WR1,AA0 GET ROUNDOFF BIT IN AR0	00 00156
0098	15100006E0002992	157	GMSK	/P(MUL+P),IMD,LB3,15(*+1+P),AK2 OP1(WORD2)*OP2(WORD1)	00 00157
0099	04D0000000A90001	158	GEN	/*,FFA,MF1,WR1,BB0,AA1	00 00158
009A	04D8000000A9003C	159	GEN	/*,FFA,MF1,WR1,BB3,AAC	00 00159
009B	04E0000000390000	160	GEN	/*,FF3,MF1,WR1,AA0 ZERO AR0	00 00160
009C	10100006E00029D2	161	GMSK	/P(FIXA+P),IMD,LB3,15(*+1+P),AK2 ADD PARTIAL PRODUCTS	00 00161
009D	04F0008000A90044	162	GEN	/*,GF2,FFA,MF1,WR1,BB4,AA4	00 00162
009E	0508224000000000	163	GEN	/T(IMUL7,IMUL8),TF2,GF9 TEST SIGN FLAG FOR ZERO	00 00163
009F	240021C000000000	164	IMUL0	GEN /T(IMUL1,IMUL3),TF2,GF7 TEST IF NEGATIVE	00 00164
00A0	00000006E0000004	165	IMUL8	GEN IMD,LB3,AA4 POP/RETURN	00 00165
00A1	13B80006E0002A02	166	IMUL7	GMSK /P(ICOMP+P),IMD,LB3,15(IMUL8+P),AK2 IF ZERO,NEGATE	00 00166
167	*				00 00167
168	*	SINGLE PRECISION FIXED MULTIPLY (MUL)			00 00168
169	*				00 00169
170	*				00 00170
171	*	CALLING SEQUENCE			00 00171
172	*				00 00172
173	*	AR1 =MULTIPLIER			00 00173
174	*	ARC =MULTIPLICAND			00 00174

	175	*				00 00175	
	176	*	RETURN			00 00176	
	177	*				00 00177	
	178	*	AR0/AR1=PRODUCT			00 00178	
	179	*				00 00179	
00A2	0518000000A900CF	180	MUL	GEN	/*,FFA,MF1,WR1,BBC,AAF	MOVE MULTIPLICAND	00 00180
		181		GMSK	/T(MUL4,MUL1),TF2,GFD,LB3,RF2,FFA,	SET SHIFT COUNTER	00 00181
00A3	2530234062A000E0	182			CMK000E		00 00182
00A4	05280080009000F1	183	MUL1	GEN	/N(MUL2),GF2,FF9,BBF,AA1		00 00183
00A5	4548224013004001	184	MUL2	GEN	/T(MUL3,MUL5),TF2,GF9,LA2,RF3,VF1,AA1		00 00184
00A6	0540000013004001	185	MUL4	GEN	/N(MUL5),LA2,RF3,VF1,AA1		00 00185
00A7	00000006E0000004	186	MUL14	GEN	IMD,LB3,AA4	POP/RETURN	00 00186
00A8	055000000039000E	187	MUL5	GEN	/N(MUL6),FF3,MF1,WR1,AAE	ZERO OUT ARE	00 00187
00A9	05400200009000F1	188	MUL3	GEN	/N(MUL5),GF8,FF9,BBF,AA1	SAMPLE OVERFLOW	00 00188
00AA	055800200000A800	189	MUL6	GEN	/*,MR1,SC1,WF1,XF1		00 00189
00AB	056000200591A800	190		GEN	/*,MR1,RF5,FF9,WR1,SC1,XF1,WF1		00 00190
		191	MUL8	GEN	/T(MUL9,*),TF2,GFC,MR1,LA3,RF5,FF9,		00 00191
00AC	656823201D91A800	192			CWR1,SC1,WF1,XF1		00 00192
00AD	057000001801A800	193	MUL9	GEN	/*,LA3,WR1,SC1,WF1,XF1		00 00193
		194		GEN	/T(MUL12,MUL13),TF2,GFA,LB1,FFA,	TEST PRODUCT SIGN	00 00194
00AE	8578228020A90001	195			CMF1,WR1,AA1		00 00195
00AF	05800000006700F0	196	MUL12	GEN	/N(MUL13),FF6,CF3,WR1,BBF		00 00196
00B0	0538000018010401	197	MUL13	GEN	/N(MUL14),LA3,WR1,SH4,AA1		00 00197
		198	*				00 00198
		199	*				00 00199
		200	*	DOUBLE PRECISION FIXED POINT DIVIDE (IDIV)			00 00200
		201	*				00 00201
		202	*	CALLING SEQUENCE			00 00202
		203	*	AR6/AR7= 1ST OPERAND			00 00203
		204	*	AR9/ARA= 2ND OPERAND			00 00204
		205	*	AR3 = TEMPORARY STORAGE			00 00205
		206	*	AR4 = SIGN FLAG			00 00206
		207	*				00 00207
		208	*	RETURN			00 00208
		209	*	AR0/AR1= RESULT			00 00209
		210	*				00 00210
		211	*				00 00211
		212	*				00 00212
		213	IDIV0	GEN	/T(IDIV1,IDIV5),TF3,GF5,FFA,	ACCUMULATOR/TEST	00 00213
00B1	5598314000A900A1	214			CMF1,WR1,BBA,AA1	IF DIVISOR = 0	00 00214
00B2	05C8000060AFDE70	215	IDIV	GMSK	/N(IDIV0A),LB3,FFA,MKFDE7	PUT 'JIF' IN IB	00 00215
00B3	25A831C000000000	216	IDIV1	GEN	/T(IDIV3,IDIV2),TF3,GF7	OR NEGATIVE	00 00216
00B4	13B80006E0002B52	217	IDIV2	GMSK	/P(ICOMP+P),IMD,LB3,15(++1+P),AK2	NEGATE OP2	00 00217
00B5	0580000013F80001	218	IDIV3	GEN	/*,LA2,RF3,FFF,MF1,AA1	AR1 (SHIFTED) TO OPREG	00 00218
00B6	0588000000F90000	219		GEN	/*,FFF,MF1,WR1,AA0	SAMPLE ARO	00 00219
00B7	55C0338004000000	220	IDIV4	GEN	/T(IDIV4A,IDIV5),TF3,GFE,RF4	INCREMENT SHIFT COUNT/	00 00220
		221	*			TEST IF NORMALIZED	00 00221
		222	IDIV4A	GEN	/N(IDIV4),LA2,RF5,WR1,SC1,XF1,	NORMALIZING SHIFT	00 00222
00B8	05B8000015018A00	223			CSH2,AA0		00 00223
00B9	0608004001380000	224	IDIV0A	GEN	/N(IDIV0B),GF1,RF1,FF3,MF1	MOVE IB TO IR/ZERO PC	00 00224
00BA	05D8000000A9A009	225	IDIV5	GEN	/*,FFA,MF1,WR1,SC1,WF1,BB0,AA9	SAVE NORMALIZED	00 00225
00BB	05E0000020A9000A	226		GEN	/*,LB1,FFA,MF1,WR1,AAA	DIVISOR	00 00226
00BC	05E800000A090003	227		GEN	/*,LA1,RF2,MF1,WR1,AA3	-SHIFT COUNT IN PC TO	00 00227
		228	*			SHIFT COUNTER AND AR3	00 00228
00BD	05F0008000A90060	229		GEN	/*,GF2,FFA,MF1,WR1,BB6,AA0	MOVE DIVIDEND (OP1) TO	00 00229
00BE	05F8000005A90071	230		GEN	/*,RF5,FFA,MF1,WR1,BB7,AA1	ACCUMULATOR	00 00230
		231	*			(STEP SHIFT COUNTER)	00 00231
00BF	061031C005000000	232		GEN	/T(IDIV7,IDIV6),TF3,GF7,RF5	TEST IF -DIVIDEND/	00 00232

	233	*			(STEP SHIFT COUNTER)	00 00233
00C0 13B80006E0002C22	234	IDIV6	GMSK	/P(ICOMP+P),IMD,LB3,15(IDIV7+P),AK2	NEGATE OP1	00 00234
00C1 0638000000C90004	235	IDIV0B	GEN	/N(IDIV0C),FFC,MF1,WR1,AA4	INITIALIZE SIGN FLAG	00 00235
00C2 0618008000F90033	236	IDIV7	GEN	/*,GF2,FFF,MF1,WR1,BB3,AA3	SAMPLE AR3	00 00236
	237		GEN	/T(IDIVA+2,++1),TF3,GF6,FFA,	TEST IF DIVDND SCALED	00 00237
00C3 2670318000A90006	238			CMF1,WR1,BB0,AA6		00 00238
00C4 0628008000A90000	239		GEN	/*,GF2,FFA,MF1,WR1,BB0,AA0	SAMPLE ARO	00 00239
00C5 0630000000A080000	240		GEN	/*,LA1,RF2,MF1	-SHIFT COUNT IN PC TO	00 00240
	241	*			SHIFT COUNTER	00 00241
00C6 4660238000000000	242		GEN	/T(IDIVA,IDIV7A),TF2,GFE	TEST IF DIVIDEND NORM	00 00242
00C7 0588008000A90090	243	IDIV0C	GEN	/N(IDIV0),GF2,FFA,MF1,WR1,BB9,AA0	MOVE DIVISOR (OP2) TO	00 00243
00C8 0650000013F80001	244	IDIV7A	GEN	/N(IDIV8),LA2,RF3,FFF,MF1,AA1	AR1 (SHIFTED) TO OPREG	00 00244
00C9 0230000000A90042	245	FIXE	GEN	/N(EXIT),FFA,MF1,WR1,BB4,AA2	MOVE SIGN FLAG	00 00245
	246	IDIV8	GEN	/T(IDIV9,IDIVX),TF3,GFD,LA2,WR1,	NORMALIZING SHIFT	00 00246
00CA C658334010018A00	247			CSC1,XF1,SH2,AA0	TEST IF NEGATIVE(ERROR)	00 00247
00CB 5660230005000000	248	IDIV9	GEN	/T(IDIVA,IDIV8),TF2,GFC,RF5	INCREMENT SHIFT K/	00 00248
	249	*			TEST IF SCALED	00 00249
00CC 0668000000A9A006	250	IDIVA	GEN	/*,FFA,MF1,WR1,SC1,WF1,BB0,AA6	SAVE SCALED DIVIDEND	00 00250
00CD 0670000020A90007	251		GEN	/*,LB1,FFA,MF1,WR1,AA7		00 00251
00CE 0678000000390003	252		GEN	/*,FF3,MF1,WR1,AA3	ZERO AR3	00 00252
00CF 0680000000A9009C	253		GEN	/*,FFA,MF1,WR1,BB9,AAC		00 00253
00D0 13500006E0002D12	254		GMSK	/P(DIV+P),IMD,LB3,15(++1+P),AK2	COMPUTE (Q1)	00 00254
	255		GEN	/T(IDIVB,IDIVX),TF3,GF0,FFA,		00 00255
00D1 4690300000A90007	256			CMF1,WR1,BB0,AA7	SAVE R1	00 00256
00D2 0698000000A90016	257	IDIVB	GEN	/*,FFA,MF1,WR1,BB1,AA6	AND Q1	00 00257
00D3 06A0000000390000	258		GEN	/*,FF3,MF1,WR1,AA0	ZERO ARO	00 00258
00D4 06A8000000A900AC	259		GEN	/*,FFA,MF1,WR1,BBA,AAC		00 00259
00D5 15100006E0002D62	260		GMSK	/P(MUL+P),IMD,LB3,15(++1+P),AK2	COMPUTE (Q1*Y2)	00 00260
00D6 06B8008000670090	261		GEN	/*,GF2,FF6,CF3,WR1,BB9,AA0	(Q1*Y2)-Y1	00 00261
00D7 56C821C000000000	262		GEN	/T(IDIVG,IDIVC),TF2,GF7	TEST IF NEGATIVE (OVFL)	00 00262
00D8 0730008000000000	263	IDIVX	GEN	/N(IDIVF),GF2	SET OVERFLOW	00 00263
00D9 06D8000000910090	264	IDIVG	GEN	/N(IDIVD),FF9,WR1,BB9,AA0	RESTORE ARO	00 00264
00DA 06D8000000070003	265	IDIVC	GEN	/N(IDIVD),CF3,WR1,AA3	IF NOT, INCR MSW	00 00265
00DB 06E0000000A9009C	266	IDIVD	GEN	/*,FFA,MF1,WR1,BB9,AAC		00 00266
00DC 13500006E0002DD2	267		GMSK	/P(DIV+P),IMD,LB3,15(++1+P),AK2	COMPUTE (Q1*Y2/Y1)	00 00267
00DD 06F0000000A9001D	268		GEN	/*,FFA,MF1,WR1,BB1,AAD		00 00268
00DE 06F8000000A90070	269		GEN	/*,FFA,MF1,WR1,BB7,AA0		00 00269
00DF 13500006E0002E02	270		GMSK	/P(DIV+P),IMD,LB3,15(++1+P),AK2	COMPUTE (R1*2**R/Y1)	00 00270
00E0 0708000000A9003C	271		GEN	/*,FFA,MF1,WR1,BB3,AAC		00 00271
00E1 0710000000A90060	272		GEN	/*,FFA,MF1,WR1,BB6,AA0	GET 1ST WORD	00 00272
	273	*			OF QUOTIENT	00 00273
00E2 10180006E0002E32	274		GMSK	/P(FIXS+P),IMD,LB3,15(++1+P),AK2	COMPUTE Q1*2**R -	00 00274
	275	*			Q1*Y2/Y1 + R1*2**R/Y1	00 00275
00E3 0720008000A90044	276		GEN	/*,GF2,FFA,MF1,WR1,BB4,AA4		00 00276
00E4 3728224000000000	277		GEN	/T(IDIVE,IDIVF),TF2,GF9	TEST SIGN FLAG FOR ZERO	00 00277
00E5 13B80006E0002E62	278	IDIVE	GMSK	/P(ICOMP+P),IMD,LB3,15(++1+P),AK2	IF ZERO,NEGATE RESULT	00 00278
00E6 00000006E0000004	279	IDIVF	GEN	IMD,LB3,AA4	POP/RETURN	00 00279
	280	*				00 00280
	281	*		DOUBLE PRECISION FIXED POINT ADD (IADD)		00 00281
	282	*				00 00282
	283	*		CALLING SEQUENCE		00 00283
	284	*		ARO/AR1= 1ST OPERAND		00 00284
	285	*		ARC/ARD= 2ND OPERAND		00 00285
	286	*				00 00286
	287	*		RETURN		00 00287
	288	*		ARO/AR1= RESULT		00 00288
	289	*				00 00289
00E7 07400080109100D1	290	IADD	GEN	/*,GF2,LA2,FF9,WR1,BBD,AA1	ADD LSWS/SAMPLE CARRY	00 00290

00E8 0748000018010401	291	GEN	/*,LA3,WR1,SH4,AA1	SHIFT RESULT RIGHT 1/	00 00291
	292 *			STRIP SIGN	00 00292
00E9 07500280009300C0	293	GEN	/*,GFA,FF9,CF1,WR1,BBC,AA0	ADD MSWS/SAMPLE OVFL	00 00293
00EA 00000006E0000004	294	GEN	IMD,LB3,AA4	POP/RETURN	00 00294
	295 *				00 00295
	296 *		DOUBLE PRECISION FIXED POINT SUBTRACT (ISUB)		00 00296
	297 *				00 00297
	298 *		CALLING SEQUENCE		00 00298
	299 *		AR0/AR1= 1ST OPERAND		00 00299
	300 *		ARC/ARD= 2ND OPERAND		00 00300
	301 *				00 00301
	302 *		RETURN		00 00302
	303 *		AR0/AR1= RESULT		00 00303
	304 *				00 00304
00EB 07600080106700D1	305	ISUB GEN	/*,GF2,LA2,FF6,CF3,WR1,BBD,AA1	SUB LSWS/SAMPLE CARRY	00 00305
00EC 0768000018010401	306	GEN	/*,LA3,WR1,SH4,AA1	SHIFT RESULT RIGHT 1/	00 00306
	307 *			STRIP SIGN	00 00307
00ED 07700280006300C0	308	GEN	/*,GFA,FF6,CF1,WR1,BBC,AA0	SUB MSWS/SAMPLE OVFL	00 00308
00EE 00000006E0000004	309	GEN	IMD,LB3,AA4	POP/RETURN	00 00309
	310 *				00 00310
0000	311	ORG	X'0		00 00311
	312 *				00 00312
	313 *		SELECT FIXED POINT OPERATIONS		00 00313
	314 *				00 00314
	315 *				00 00315
	316 *		FIXD THROUGH FIXS MUST BE IN CONTIGUOUS		00 00316
	317 *		BLOCK AND ORIGINATE AT A MODULO 4 ADDRESS		00 00317
	318 *				00 00318
	319 *				00 00319
0000 0590000260AFDE70	320	FIXD GMSK	/N(IDIV),IM4,LB3,FFA,MKFDE7	FIXED DIVIDE	00 00320
0001 0418000000C90004	321	FIXM GEN	/N(IMUL),FFC,MF1,WR1,AA4	FIXED MULTIPLY	00 00321
0002 073800801001000D	322	FIXA GEN	/N(IADD),GF2,LA2,WR1,SH0,AA0	FIXED ADD	00 00322
0003 075800801001000D	323	FIXS GEN	/N(ISUB),GF2,LA2,WR1,SH0,AA0	FIXED SUBTRACT	00 00323
	324 *				00 00324
	325 *		FMD MUST BE ON EVEN BOUNDARY -		00 00325
	326 *		FOLLOWED BY FAS		00 00326
	327 *				00 00327
0004 01E8000063ADFFF0	328	FMD GMSK	/N(FMD1),LB3,RF3,FFA,MKDFFF	GENERATE EXPONENT BIAS	00 00328
0005 0030000000A900BC	329	FAS GEN	/*,FFA,MF1,WR1,BBB,AA0	SAVE OP2 EXPONENT	00 00329
0006 003800800067008B	330	GEN	/*,GF2,FF6,CF3,WR1,BB8,AAB	SUBTRACT OP2-OP1	00 00330
	331	GMSK	/T(FAS0,FAS9),TF3,GF9,LB3,RF2,	TEST FOR ZERO/	00 00331
0007 8048324062A00050	332		CFFA,MK0005	SET SHIFT COUNTER	00 00332
	333	FAS1 GEN	/T(FAS2,FAS3),TF2,GF7,FF3,MF1,	TEST IF RESULT NEGATIVE	00 00333
0008 605021C000390003	334		CWR1,AA3	/RESET OP1EX .GT. OP2EX	00 00334
	335	FAS0 GEN	/T(*,FAS1),TF3,GFC,LA3,RF5,	RIGHT JUSTIFY	00 00335
0009 404833001D01020B	336		CWR1,SH2,AAB	EXPONENT DIFFERENCE	00 00336
000A 00580000006701BB	337	FAS2 GEN	/*,FF6,CF3,WR1,SH1,AAB,BBB	NEGATE EXPONENT	00 00337
000B 0060000000070003	338	GEN	/*,CF3,WR1,AA3	SET OP1EX .GT. OP2EX	00 00338
000C 0068000063AFFE80	339	FAS3 GMSK	/*,LB3,RF3,FFA,MKFFE8		00 00339
000D 0070000020A90000	340	GEN	/*,LB1,FFA,MF1,WR1,AA0	GET MAX EXPONENT IN AR00	00 00340
000E 00780080006600B0	341	GEN	/*,GF2,FF6,CF3,BBB,AA0	EXP DIFF - MAX DIFF	00 00341
	342	GEN	/T(FAS5,FAS6),TF3,GF7,RF2,	IS EXPONENT DIFFERENCE	00 00342
000F 108831C002080000	343		CMF1,AA0	.GT. MAX (SET K TO MAX)	00 00343
0010 0198000000A90060	344	FAS9 GEN	/N(FAS10),FFA,MF1,WR1,BB6,AA0	MOVE OPERANDS TO --	00 00344
0011 009000000208000B	345	FAS5 GEN	/*,RF2,MF1,AAB	ELSE SET TO DIFFERENCE	00 00345
0012 0098008005F80003	346	FAS6 GEN	/*,GF2,RF5,FF6,MF1,AA3	SELECT MANTISSA FOR	00 00346
	347 *			ALIGNMENT/STEP SHIFT K	00 00347
0013 40A8324000000000	348	GEN	/T(FAS7,FAS8),TF3,GF9	TEST SIGN FLAG	00 00348

	349	*				00 00349
	350	*	SHIFT MANTISSA ASSOCIATED WITH			00 00350
	351	*	SMALLER EXPONENT			00 00351
	352	*				00 00352
	353	FAS7B	GEN	/T(*,FAS7A),TF3,GFC,LA3,RF5,	SHIFT OP2 RIGHT TO	00 00353
0014	30A033001D01AA09	354		CWR1,SC1,WF1,XF1,SH2,AA9	EQUATE EXPONENTS	00 00354
0015	00A000001300400A	355	FAS7	GEN	/N(FAS7B),LA2,RF3,VF1,AAA	00 00355
0016	00B8000000000B800	356	FAS7A	GEN	/*,SC1,WF1,XF3	00 00356
0017	00B80000020A9000A	357		GEN	/N(FAS9),LB1,FFA,MF1,WR1,AAA	00 00357
0018	00C8000013004007	358	FAS8	GEN	/*,LA2,RF3,VF1,AA7	00 00358
		359		GEN	/T(*,FAS8A),TF3,GFC,LA3,RF5,	00 00359
0019	50C833001D01AA06	360		CWR1,SC1,WF1,XF1,SH2,AA6	SHIFT OP1 RIGHT TO	00 00360
001A	00D8000000000B800	361	FAS8A	GEN	/*,SC1,WF1,XF3	00 00361
001B	00E0000020A90007	362		GEN	/*,LB1,FFA,MF1,WR1,AA7	00 00362
001C	00B80000000A900C8	363		GEN	/N(FAS9),FFA,MF1,WR1,BBC,AA8	00 00363
		364	FP1	GEN	/F(REAL),2(X'1),FSB,FFA,MF1,	00 00364 ← FSD(7)
001D	210AC00000A9009C	365		CWR1,BB9,AAC	MOVE LARGER EXPONENT	00 00365
		366	*		SELECT REAL/FIXED	00 00366
		367	*		MOVE OP2 WORD1 TO	00 00367
		368	*		SUBROUTINE REGISTER	00 00368
0033		369	ORG	X'33		00 00369
		370	*			00 00370
0033	01A0000000A90071	371	FAS10	GEN	/*,FFA,MF1,WR1,BB7,AA1	00 00371
0034	01A8000000A900AD	372		GEN	/*,FFA,MF1,WR1,BBA,AAD	00 00372
0035	318A400000A9009C	373		GEN	/F(FASA),2(X'1),FS9,FFA,MF1,WR1,BB9,AAC	00 00373 ← FSD(5)
		374	*		SELECT ADD/SUB	00 00374
		375	*	FASA MUST BE ON EVEN WORD BOUNDARY -		00 00375
		376	*	FOLLOWED BY FASS		00 00376
		377	*			00 00377
0036	10100006E0002382	378	FASA	GMSK	/P(FIXA+P),IMD,LB3,15(FASA0+P),AK2	00 00378
0037	10180006E00023E2	379	FASS	GMSK	/P(FIXS+P),IMD,LB3,15(FASC+P),AK2	00 00379
		380	*		ADD	00 00380
		381	*		SUBTRACT	00 00381
		382	*	IF RESULT NEGATIVE (OVERFLOW), SHIFT IT RIGHT ONE		00 00382
		383	*	AND ADD EXPONENT INCREMENT		00 00383
		384	*			00 00384
		385	FASA0	GEN	/T(FASA1,FASC),TF2,GF7,LB3,RF2,	00 00385
0038	71D021C062A00000	386		CFFA,MK0000	TEST IF NEGATIVE/ SET SHIFT COUNTER	00 00386
0039	01D8000020A90003	387	FASA2	GEN	/N(FASB),LB1,FFA,MF1,WR1,AA3	00 00387
003A	01C8000063AFFBF0	388	FASA1	GMSK	/N(FASA2),LB3,RF3,FFA,MKFFBF	00 00388
003B	01E0000000910038	389	FASB	GEN	/*,FF9,WR1,BB3,AA8	00 00389
003C	17E80006E00023E2	390		GMSK	/P(SHFT+P),IMD,LB3,15(FASC+P),AK2	00 00390
		391	FMD1	GEN	/F(FDIV),2(X'1),FS9,LB1,FFA,MF1,	00 00391 ← FSD(5)
003D	020A400020A90003	392		CWR1,AA3	SELECT FDIV/FMUL	00 00392
003E	12900006E00023F2	393	FASC	GMSK	/P(FNML+P),IMD,LB3,15(*+1+P),AK2	00 00393
003F	0230000000A90082	394		GEN	/N(EXIT),FFA,MF1,WR1,BB8,AA2	00 00394
		395	*		NORMALIZE RESULT	00 00395
		396	*		MOVE EXPONENT	00 00396
		397	*	FDIV MUST BE ON EVEN WORD BOUNDARY -		00 00397
		398	*	FOLLOWED BY FMUL		00 00398
		399	*			00 00399
		400	*	OP1 HAS BEEN SHIFTED RIGHT ONE FOR FDIV AND FMUL		00 00400
		401	*			00 00401
0040	02100000006700B8	402	FDIV	GEN	/N(FDIV1),FF6,CF3,WR1,BB8,AA8	00 00402
0041	0220000000670038	403	FMUL	GEN	/N(FMUL1),FF6,CF3,WR1,BB3,AA8	00 00403
0042	0218000000910038	404	FDIV1	GEN	/*,FF9,WR1,BB3,AA8	00 00404
0043	10000006E00023E2	405		GMSK	/P(FIXD+P),IMD,LB3,15(FASC+P),AK2	00 00405
0044	02280000009100B8	406	FMUL1	GEN	/*,FF9,WR1,BB8,AA8	00 00406

0045	10080006E00023E2	407		GMSK	/P(FIXM+P),IMD,LB3,15(FASC+P),AK2	MULTIPLY OP1*OP2	00	00407
0046	0238000001F80005	408	EXIT	GEN	/*,RF1,FFF,MF1,AA5	RELOAD PC	00	00408
0047	0240000000390003	409		GEN	/*,FF3,MF1,WR1,AA3	RESTORE AR3/AR5 - JUMP	00	00409
0048	09F0090000C90005	410		GEN	/P(SS1M),SF2,GF4,FFC,MF1,WR1,AA5	TO STANDARD STATE 1	00	00410
		411	*				00	00411
		412	*				00	00412
		413	*				00	00413
		414	*		SEPERATE MANTISSA (FSM)		00	00414
		415	*				00	00415
		416	*		CALLING SEQUENCE		00	00416
		417	*		AR0/AR1= REAL OPERAND		00	00417
		418	*				00	00418
		419	*		RETURN		00	00419
		420	*		AR0/AR1= NORMALIZED MANTISSA		00	00420
		421	*		ARB = EXPONENT		00	00421
		422	*				00	00422
0049	00000006E0000004	423	FSM2	GEN	IMD,LB3,AA4	POP/RETURN	00	00423
004A	0258000063B807F0	424	FSM	GMSK	/*,LB3,RF3,FFB,MK807F	SAVE EXPONENT	00	00424
004B	026000000000A000	425		GEN	/*,SC1,WF1	(SHIFTED RIGHT ONE)	00	00425
004C	0268000020A9000B	426		GEN	/*,LB1,FFA,MF1,WR1,AAB	IN ARB	00	00426
004D	0270000062A00070	427		GMSK	/*,LB3,RF2,FFA,MK0007	SET SHIFT COUNTER	00	00427
004E	0278000013004001	428		GEN	/*,LA2,RF3,VF1,AA1		00	00428
		429		GEN	/T(*,FSM1),TF3,GFC,LA2,RF5,WR1,	SHIFT MANTISSA LEFT	00	00429
004F	8278330015019E00	430			CSC1,XF3,SH6		00	00430
0050	028800000000B800	431	FSM1	GEN	/*,WF1,XF3,SC1		00	00431
0051	0248000020A90001	432		GEN	/N(FSM2),LB1,FFA,MF1,WR1,AA1		00	00432
		433	*				00	00433
		434	*				00	00434
		435	*		NORMALIZE FLOATING POINT (FNML)		00	00435
		436	*				00	00436
		437	*		CALLING SEQUENCE		00	00437
		438	*		AR0/AR1=UNNORMALIZED MANTISSA		00	00438
		439	*		AR8 =RESULT EXPONENT		00	00439
		440	*		AR4 =TEMPORARY STORAGE		00	00440
		441	*				00	00441
		442	*		RETURN		00	00442
		443	*		AR0/AR1=NORMALIZED FLOATING POINT NUMBER		00	00443
		444	*		(NEGATIVE NORMALIZING COUNT		00	00444
		445	*		IN SIGN AND EXPONENT FIELDS)		00	00445
		446	*		AR8 =SIGN FLAG (EXPONENT)		00	00446
		447	*				00	00447
	0052	448	FNML	EQU	*		00	00448
0052	0298000260AFDE70	449		GMSK	/*,IM4,LB3,FFA,MKFDE7	PUT 'JIF' IN IB	00	00449
0053	02A0000060AFDE70	450		GMSK	/*,LB3,FFA,MKFDE7		00	00450
0054	02A8004001380000	451		GEN	/*,GF1,RF1,FF3,MF1	MOVE IB TO IR/ZERO PC	00	00451
		452		GMSK	/T(NML1,NML2),TF3,GF5,RF2,LB3,	LOAD SHIFT COUNTER/	00	00452
0055	42B0314062A00170	453			CFFA,MK0017	TEST IF AR0=AR1=0	00	00453
0056	02B8008000F90000	454	NML1	GEN	/*,GF2,FFF,MF1,WR1,AA0	SAMPLE SIGN OF AR0	00	00454
0057	62C8234000F80000	455		GEN	/T(NML3,NML5),TF2,GFD,FFF,MF1	TEST IF AR0=NEGATIVE	00	00455
0058	00000006E0000004	456	NML2	GEN	IMD,LB3,AA4	IF AB=0,POP/RETURN	00	00456
0059	13B80006E00025B2	457	NML3	GMSK	/P(ICOMP+P),IMD,LB3,15(NML4+P),AK2	IF AR0 NEGATIVE,NEGATE	00	00457
005A	02F8000000590044	458	NML12A	GEN	/N(NML13),FF5,MF1,WR1,BB4,AA4	COMPLEMENT COUNT	00	00458
005B	02E0000000900008	459	NML4	GEN	/*,MF1,WR1,AA8	COMPLEMENT EXPONENT	00	00459
005C	02E8000013F80001	460	NML5	GEN	/*,LA2,RF3,FFF,MF1,AA1	AR1 (SHIFTED) TO OPREG	00	00460
005D	0300000000F90000	461		GEN	/N(NML5A),FFF,MF1,WR1,AA0	SAMPLE AR0	00	00461
005E	02C0000000110040	462	NML14	GEN	/N(NML2),FF1,WR1,BB4,AA0	-EXP .OR. MANTISSA/	00	00462
		463	NML13	GEN	/T(*,NML14),TF3,SF3,GFC,LA2,RF5,	SHIFT NORMALIZE COUNT	00	00463
005F	72F83F0015010404	464			CWR1,SH4,AA4	LEFT 7	00	00464

0060 8778338004000000	465	NML5A	GEN	/T(NML6,NML8),TF3,GFE,RF4	INCREMENT SHIFT COUNT/	00 00465
	466	*			TEST IF NORMALIZED	00 00466
	467	*			GO TO POP RETURN	00 00467
00EF	468		ORG	X'EF		00 00468
	469	*				00 00469
	470	*				00 00470
	471	NML6	GEN	/N(NML5A),LA2,RF5,WR1,SC1,XF1,	NORMALIZING SHIFT	00 00471
00EF 0300000015018A00	472			CSH2,AA0		00 00472
00F0 0788050008F10004	473	NML8	GEN	/*,SF1,GF4,LA1,FFF,WR1,AA4	SAVE COUNTER/RESET OVFL	00 00473
00F1 0790000020A90001	474		GEN	/*,LB1,FFA,MF1,WR1,AA1	OPREG TO AR1	00 00474
00F2 0798000063AFEFF0	475		GMSK	/*,LB3,RF3,FFA,MKFEFF	GENERATE ROUNDOFF BIT	00 00475
00F3 07A0008020A90003	476		GEN	/*,GF2,LB1,FFA,MF1,WR1,AA3		00 00476
00F4 07A8008000930031	477		GEN	/*,GF2,FF9,CF1,WR1,BB3,AA1	ADD ROUNDOFF BIT	00 00477
00F5 37C8320000F10004	478		GEN	/T(NML10,NML8A),TF3,GF8,FFF,WR1,AA4	TEST CARRY/DECR K	00 00478
00F6 07B8028000970100	479	NML8A	GEN	/*,GFA,FF9,CF3,WR1,SH1	INCREMENT ARO	00 00479
	480		GMSK	/T(NML10,NML9),TF3,LB3,RF2,FFA,		00 00480
00F7 47C8300062A00080	481			CMK0008	SET SHIFT K = 9	00 00481
00F8 07D8050000F10004	482	NML9	GEN	/N(NML11),SF1,GF4,FFF,WR1,AA4	DECR NORMALIZE COUNT/	00 00482
	483	*			RESET OVERFLOW	00 00483
00F9 07D0000062A00070	484	NML10	GMSK	/*,LB3,RF2,FFA,MK0007	SET SHIFT K=8	00 00484
00FA 07D8000018F90401	485		GEN	/*,LA3,FFF,MF1,WR1,SH4,AA1	SHIFT AR1 RIGHT	00 00485
00FB 17E80006E0002FC2	486	NML11	GMSK	/P(SHFT+P),IMD,LB3,15(*+1+P),AK2	SHIFT ARO/AR1 RIGHT	00 00486
00FC 02D0000062A00060	487	NML12	GMSK	/N(NML12A),LB3,RF2,FFA,MK0006	SET SHIFT K = 7	00 00487
	488	*				00 00488
	489	*				00 00489
	490	*		LONG ARITHMETIC SHIFT RIGHT		00 00490
	491	*				00 00491
	492	*		CALLING SEQUENCE		00 00492
	493	*		SHIFT K= SHIFT COUNT		00 00493
	494	*		ARO/AR1= OPERAND		00 00494
	495	*				00 00495
	496	*		RETURN		00 00496
	497	*		ARO/AR1= OPERAND (SHIFTED)		00 00497
	498	*		(ARO SIGN NOT PROPAGATED)		00 00498
	499	*				00 00499
00FD 07F0000013004001	500	SHFT	GEN	/*,LA2,RF3,VF1,AA1	AR1 TO OPREG	00 00500
	501		GEN	/T(SHFT1,*),TF2,GFC,LA3,RF5,WR1,	SHIFT ARO/AR1 RIGHT	00 00501
00FE 77F823001D01AC00	502			CSC1,WF1,XF1,SH4		00 00502
00FF 018800000000B800	503	SHFT1	GEN	/N(SHFT2),SC1,WF1,XF3		00 00503
	504		END			00 00504

SYMBOLS

006A DIV	0061 DIV0	0064 DIV1	006C DIV10	006F DIV12
0070 DIV13	0071 DIV14	0072 DIV15	0073 DIV16	0074 DIV17
0067 DIV18	006D DIV19	0062 DIV2	0075 DIV20	0066 DIV4
0065 DIV5	0069 DIV7	0068 DIV7A	0076 DIV9	0046 EXIT
0005 FAS	0009 FAS0	0008 FAS1	0033 FAS10	000A FAS2
000C FAS3	0011 FAS5	0012 FAS6	0015 FAS7	0016 FAS7A
0014 FAS7B	0018 FAS8	001A FAS8A	0010 FAS9	0036 FASA
0038 FASA0	003A FASA1	0039 FASA2	003B FASB	003E FASC
0037 FASS	0040 FDIV	0042 FDIV1	0025 FIX	0002 FIXA
0000 FIXD	00C9 FIXE	0001 FIXM	0003 FIXS	0004 FMD
003D FMD1	0041 FMUL	0044 FMUL1	0052 FNML	001E FP
001D FP1	004A FSM	0050 FSM1	0049 FSM2	00E7 IADD
0077 ICOMP	0079 ICOMP1	007C ICOMP2	007D ICOMP3	00B2 IDIV
00B1 IDIV0	00B9 IDIV0A	00C1 IDIV0B	00C7 IDIV0C	00B3 IDIV1
00B4 IDIV2	00B5 IDIV3	00B7 IDIV4	00B8 IDIV4A	00BA IDIV5
00C0 IDIV6	00C2 IDIV7	00C8 IDIV7A	00CA IDIV8	00CB IDIV9
00CC IDIVA	00D2 IDIVB	00DA IDIVC	00DB IDIVD	00E5 IDIVE

00E6 IDIVF	00D9 IDIVG	00D8 IDIVX	0083 IMUL	009F IMUL0
0080 IMUL1	007F IMUL1A	0081 IMUL1B	0082 IMUL2	0084 IMUL3
0086 IMUL4	008A IMUL5	008B IMUL6	00A1 IMUL7	00A0 IMUL8
0089 IMULX	00EB ISUB	00A2 MUL	00A4 MUL1	00AF MUL12
00B0 MUL13	00A7 MUL14	00A5 MUL2	00A9 MUL3	00A6 MUL4
00A8 MUL5	00AA MUL6	00AC MUL8	00AD MUL9	0056 NML1
00F9 NML10	00FB NML11	00FC NML12	005A NML12A	005F NML13
005E NML14	0058 NML2	0059 NML3	005B NML4	005C NML5
0060 NML5A	00EF NML6	00F0 NML8	00F6 NML8A	00F8 NML9
0200 P	0024 REAL	0027 REAL1	0028 REAL2	0029 REAL3
00FD SHFT	00FF SHFT1	0031 SHFT2	013E SS1M	

0 ERRORS ASSEMBLY COMPLETE