

1 *	THIS IS A COPYRIGHTED PROGRAM. COPYRIGHT 1973 BY VARIAN DATA MACHINES			05 00001
2 *				05 00002
3 *	V.D.M. PART NO.	92L0107-035E		05 00003
4 *				05 00004
5 *	RELEASED 9/13/76			05 00005
6 *				05 00006
7 *	73/620 REAL TIME CLOCK TEST			05 00007
8 *				05 00008
9 *				05 00009
10 *	****	*****	* * *	05 00010
11 *	* * *	* * *	* * *	05 00011
12 *	* * *	* * *	* * *	05 00012
13 *	****	***	* * *	05 00013
14 *	* * *	*****	* * *	05 00014
15 *	* * *	* * *	* * *	05 00015
16 *	* * *	*****	* * *	05 00016
17 *				05 00017
18 *				05 00018
19 *	***	*	*****	05 00019
20 *	* * *	* * *	* * *	05 00020
21 *	* * *	* * *	* * *	05 00021
22 *	* * *	* * *	* * *	05 00022
23 *	* * *	* * *	* * *	05 00023
24 *	* * *	* * *	* * *	05 00024
25 *	***	*****	***	05 00025
26 *				05 00026
27 *				05 00027
28 *	THIS TEST PROGRAM IS PART OF THE MAINTAIN III			05 00028
29 *	TEST PROGRAM SYSTEM			05 00029
30 *				05 00030
31 *				05 00031
32 *				05 00032
33 *				05 00033
34 *	*****			05 00034
35 *				*05 00035
36 *	73/620 REAL TIME CLOCK TEST PROGRAM			*05 00036
37 *				*05 00037
38 *	73 AND 620/F: VARIABLE INTERVAL INTERRUPT, MEMORY OVERFLOW			*05 00038
39 *	INTERRUPT, AND READABLE FREE RUNNING COUNTER			*05 00039
40 *	ARE EXERCISED			*05 00040
41 *	620/I,L AND 622/I: INTERVAL INTERRUPT AND MEMORY OVERFLOW			*05 00041
42 *	INTERRUPT ARE EXERCISED			*05 00042
43 *	NOTE: NO SOFTWARE TIMING CHECKS ARE MADE.			*05 00043
44 *				*05 00044
45 *	*****			05 00045
46 *				05 00046
47 *				05 00047
48 *				05 00048
49 *	*****			05 00049
50 *	* * *			05 00050
51 *	* AREAS RESERVED BY EXECUTIVE *			05 00051
52 *	*****			05 00052
53 *				05 00053
54 *				05 00054
55 *	ORG	0		05 00055
56 *	JMP	EXECUTIVE		05 00056
57 *	ORG	040		05 00057
58 *	JMPM	POWER DOWN ROUTINE		05 00058
59 *	JMP	POWER UP ROUTINE		05 00059
60 *	NOTE:	THE TEST EXECUTIVE ALSO RESERVES LOCATIONS 0400 TO 0477		05 00060
61 *	FOR A POINTER TABLE TO STANDARD ROUTINES, AND AS AN AREA			05 00061
62 *	FOR EXECUTIVE DATA. ALL TEST PROGRAMS WORKING WITH THE			05 00062
63 *	EXECUTIVE MUST PRESERVE THIS BLOCK.			05 00063
64 *	STANDARD ROUTINES WILL BE CALLED INDIRECTLY THRU			05 00064
65 *	THIS TABLE			05 00065
66 *				05 00066
67 *				05 00067
68 *				05 00068
69 *				05 00069
70 *				05 00070
000400	71	ORG	0400	05 00071
000400	72	OUTA	BSS 1	OUTPUT ONE CHAR ROUTINE
000401	73	OUTB	BSS 1	OUTPUT TWO CHAR ROUTINE
000402	74	OUTC	BSS 1	OUTPUT CR/LF ROUTINE
000403	75	OUTD	BSS 1	OUTPUT MESSAGE ROUTINE
000404	76	OUTE	BSS 1	OUTPUT OCTAL WORD ROUTINE
000405	77	OUTF	BSS 1	OUTPUT OCTAL ADDR ROUTINE
000406	78	OUTG	BSS 1	OUTPUT ERROR MSG ROUTINE
000407	79	OUTH	BSS 1	OUTPUT CONTROL CHAR TO TTY ROUTINE
000410	80	INPA	BSS 1	INPUT ONE CHAR ROUTINE
000411	81	INPB	BSS 1	INPUT AND PRINT ONE CHAR ROUTINE
000412	82	INPC	BSS 1	INPUT ONE CHAR EDITED ROUTINE
000413	83	INPD	BSS 1	INPUT ONE ALPHA CHAR ROUTINE
000414	84	INPE	BSS 1	INPUT TWO ALPHA CHAR ROUTINE
000415	85	INPF	BSS 1	INPUT COMMA/PERIOD TERMINATION ROUTINE
000416	86	INPG	BSS 1	INPUT OCTAL NUMBER ROUTINE
000417	87	TUUT	BSS 1	TIME-OUT ROUTINE
000420	88	TDLY	BSS 1	TIME DELAY ROUTINE
000421	89	SSWT	BSS 1	STANDARD SENSE SWITCH ROUTINE
000422	90	\$LWE	BSS 1	LOWEST WORD USED BY EXEC
000423	91	ESZC	BSS 1	MEMORY SIZE DETERMINATION ROUTINE
000424	92	\$MSM	BSS 1	MEMORY SIZE MESSAGE
93 *				05 00093
94 *				05 00094
000440	95	ORG	0440	05 00095
96 *				05 00096

		97 *	EXECUTIVE DATA TABLE			05 00097
		98 *				05 00098
000440		99 \$FLG	BSS	1	LOOP ON ERROR FLAG, 0=DON'T LOOP 1=LOOP	05 00099
000441		100 \$MEM	BSS	1	MEMORY SIZE (HIGHEST AVAIL CORE)	05 00100
000442		101 \$CON	BSS	1	0=CONSOLE MODE 1=TTY MODE	05 00101
000443		102	BSS	22		05 00102
000471		103 \$DCT	BSS	1	DIGIT COUNTER FOR INPG	05 00103
		104 *				05 00104
000500	000047 A	105 RTC	EQU	047		05 00105
000500	001000 A	107	ORG	0500		05 00107
000500	001000 A	108	JMP	**7		05 00108
000501	000507 A					
000502		109 PNTR	BSS	5	INDIRECT POINTERS	05 00109
000507	005101 A	110	INCR	1	BIT SIZE DETERMINER	05 00110
000510	004260 A	111	LRLA	16		05 00111
000511	006130 A	112	ERAI	1		05 00112
000512	000001 A					
000513	001010 A	113	JAZ	**7		05 00113
000514	000522 A					
000515	006010 A	114	LDAI	18		05 00114
000516	000022 A					
000517	051172 A	115	STA	NBIT	18 BITS	05 00115
000520	001000 A	116	JMP	**5		05 00116
000521	000525 A					
000522	006010 A	117	LDAI	16		05 00117
000523	000020 A					
000524	051172 A	118	STA	NBIT	16 BITS	05 00118
000525	002000 A	119	CALL	BCNG	SET AFFECTED INSTRUCTIONS IN ARITH. SUBS.	05 00119
000526	003360 A					
000527	100447 A	121 RTCT	EXC	0400+RTC		05 00121
000530	100747 A	122	EXC	0700+RTC	INHIBIT VII	E 05 00122
000531	005001 A	123	TZA			E 05 00123
000532	051201 A	124	STA	FPLG	RESET V77 FLAG	E 05 00124
000533	006020 A	125	LDBI	2		05 00125
000534	000002 A					
000535	005021 A	126	TBA		EXCEPT LOCATIONS 040 TO 043 (PF/R)	05 00126
000536	006110 A	127	ORAI	0400	INCLUSIVE-OR BIT 8 IN A REG.	05 00127
000537	000400 A					
000540	056000 A	128	STA	0,2		05 00128
000541	005122 A	129	IBR			05 00129
000542	005021 A	130	TBA			05 00130
000543	006140 A	131	SUBI	040	CHECK IF LOC 040 (POWER FAILUE RESTART	05 00131
000544	000040 A					
000545	001010 A	132	JAZ	**9	INTERRUPT ADDRESSES)	05 00132
000546	000556 A					
000547	005021 A	133	TBA			05 00133
000550	006140 A	134	SUBI	0377	CHECK IF ALL INTERRUPT LOCATIONS SETUP	05 00134
000551	000377 A					
000552	001010 A	135	JAZ	RTC1		05 00135
000553	000562 A					
000554	001000 A	136	JMP	RTCT+6		E 05 00136
000555	000535 A					
000556	006020 A	137	LDBI	044	JUMP OVER PF/R INTERRUPT ADDRESSES.	05 00137
000557	000044 A					
000560	001000 A	138	JMP	RTCT+6		E 05 00138
000561	000535 A					
000562	010442 A	139 RTC1	LDA	\$CON	CHECK IF CONSOLE MODE	05 00139
000563	001010 A	140	JAZ	RTCK		05 00140
000564	000573 A					
000565	002000 A	141	CALL*	OUTC	CR/LF	05 00141
000566	100402 A					
000567	006030 A	142	LDXI	MES1	WRITE (REAL TIME CLOCK TEST)	05 00142
000570	003026 A					
000571	002000 A	143	CALL*	OUTD		05 00143
000572	100403 A					
000573	010442 A	144 RTCK	LDA	\$CON	CHECK IF CONSOLE MODE	05 00144
000574	001010 A	145	JAZ	RTCP		05 00145
000575	000652 A					
000576	006030 A	146	LDXI	M815	WRITE (COMPUTER IS AN)	05 00146
000577	003226 A					
000600	002000 A	147	CALL*	OUTD		05 00147
000601	100403 A					
000602	002000 A	148 RTCM	CALL*	INPB		05 00148
000603	100411 A					
000604	001000 A	149	JMP	RYCM		05 00149
000605	000602 A					
000606	005012 A	150	TAB			05 00150
000607	002000 A	151	CALL*	OUTC	CR/LF	05 00151
000610	100402 A					
000611	002000 A	152	CALL*	OUTC	CR/LF	05 00152
000612	100402 A					
000613	005021 A	153	TBA			05 00153
000614	006140 A	154	SUBI	0261	AN 'F' OR V73?	05 00154
000615	000261 A					
000616	001010 A	155	JAZ	RTCN		05 00155
000617	000636 A					
000620	006120 A	156	ADDI	1		05 00156
000621	000001 A					
000622	001010 A	157	JAZ	RTCO		05 00157
000623	000647 A					
000624	006140 A	158	SUBI	2		E 05 00158
000625	000002 A					
000626	001010 A	159	JAZ	RTCF	V77	E 05 00159
000627	000642 A					
000630	006030 A	160	LDXI	M816	WRITE (INVALID)	05 00160

000631	003353	A							
000632	002000	A	161	CALL*	OUTD				05 00161
000633	100403	A							
000634	001000	A	162	JMP	RTCK				05 00162
000635	000573	A							
			163 *						
000636	005111	A	164	RTCN	IAR				05 00163
000637	051173	A	165	STA	COMP	SET COMPUTER FLAG FOR 'F'			05 00164
000640	001000	A	166	JMP	RTCL				05 00165
000641	000654	A							05 00166
000642	051173	A	167	RTCF	STA	COMP		E	05 00167
000643	005311	A	168		DAR			E	05 00168
000644	051201	A	169	STA	FPLG	SET V77 FLAG		E	05 00169
000645	001000	A	170	JMP	RT10	CONTINUE		E	05 00170
000646	001234	A							
			171 *						
000647	051173	A	172	RTCO	STA	COMP	SET COMPUTER FLAG FOR 'I'		05 00171
000650	001000	A	173	JMP	RTCL				05 00172
000651	000654	A							05 00173
			174 *						
000652	000000	A	175	RTCP	HLT	SET A=0 FOR I, OR A=1 FOR F			05 00174
000653	051173	A	176	STA	COMP	SET COMPUTER FLAG FROM REGISTER ENTRY			05 00175
000654	010442	A	177	RTCL	LDA	\$CON	CHECK IF CONSOLE MODE		05 00176
000655	001010	A	178		JAZ	RTC2			05 00177
000656	000663	A							05 00178
000657	006030	A	179	LDXI	MES2	WRITE (I/O INST. AND INT. TEST)			05 00179
000660	003042	A							
000661	002000	A	180	CALL*	OUTD				05 00180
000662	100403	A							
			182 *			FOLLOWING THREE TESTS PERFORM THE '(VARIABLE) INTERVAL			05 00182
			183 *			INTERRUPT CHECK'			05 00183
			184 *						05 00184
000663	006010	A	185	RTC2	LDAI	1	SET ERROR COUNT TO ONE	** 1 **	05 00185
000664	000001	A							
000665	051174	A	186	STA	ERRC				05 00186
000666	006010	A	187	LDAI	02000	SET UP JUMP AND MARK IN INTERRUPT ADDRESSES			05 00187
000667	002000	A							
000670	050044	A	188	STA	044				05 00188
000671	050046	A	189	STA	046				05 00189
000672	006010	A	190	LDAI	ERRS	STORE LOC. OF ERROR SUBROUTINE AS JUMP ADDR			05 00190
000673	001202	A							
000674	050047	A	191	STA	047				05 00191
000675	006010	A	192	LDAI	RTC3	LOCATION TO RETURN UPON INTERRUPT			05 00192
000676	000713	A							
000677	050045	A	193	STA	045				05 00193
000700	006010	A	194	LDAI	*				05 00194
000701	000700	A							
000702	051171	A	195	STA	LOOP	SET LOOP ADDRESS			05 00195
000703	100447	A	196	EXC	0400+RTC	INITIALIZE RTC			05 00196
000704	100147	A	197	EXC	0100+RTC	ENABLE RTC			05 00197
000705	006030	A	198	LDXI	16	4 SEC. WAIT			05 00198
000706	000020	A							
000707	002000	A	199	CALL	TDSC				05 00199
000710	002760	A							
000711	002000	A	200	CALL	ERRS	NO INTERRUPT ERROR			05 00200
000712	001202	A							
			202 *			ENTRANCE FROM RECEIVING INTERRUPT			05 00202
			203 *						*05 00203
000713	000000	A	204	RTC3	ENTR				05 00204
000714	006010	A	205	LDAI	*				05 00205
000715	000714	A							
000716	051171	A	206	STA	LOOP	SET LOOP ADDR			05 00206
000717	100747	A	207	EXC	0700+RTC	INHIBIT VII			05 00207
000720	006010	A	208	LDAI	2	SET ERROR COUNT			05 00208
000721	000002	A							
000722	051174	A	209	STA	ERRC				05 00209
000723	006010	A	210	LDAI	ERRS	IF INTERRUPT - GO TO ERRC			05 00210
000724	001202	A							
000725	050045	A	211	STA	045				05 00211
000726	006030	A	212	LDXI	8	2 SEC. WAIT			05 00212
000727	000010	A							
000730	002000	A	213	CALL	TDSC				05 00213
000731	002760	A							
000732	041174	A	214	INR	ERRC	ERROR COUNT	** 3 **		05 00214
000733	006010	A	215	LDAI	RTC4	LOC. TO RETURN UPON INTERRUPT			05 00215
000734	000751	A							
000735	050045	A	216	STA	045				05 00216
000736	006010	A	217	LDAI	*				05 00217
000737	000736	A							
000740	051171	A	218	STA	LOOP	SET LOOP ADDR			05 00218
000741	100647	A	219	EXC	0600+RTC	INITIALIZE VARIABLE INTERVAL INTERRUPT			05 00219
000742	100347	A	220	EXC	0300+RTC	ENABLE VII AND INHIBIT MOI			05 00220
000743	006030	A	221	LDXI	16				05 00221
000744	000020	A							
000745	002000	A	222	CALL	TDSC				05 00222
000746	002760	A							
000747	002000	A	223	CALL	ERRS				05 00223
000750	001202	A							
			225 *			ENTRANCE FROM RECEIVING INTERRUPT			05 00225
			226 *						05 00226
000751	000000	A	227	RTC4	ENTR				05 00227
000752	100447	A	228	EXC	0400+RTC	INITIALIZE RTC			05 00228
000753	006010	A	229	LDAI	ERRS				05 00229
000754	001202	A							
000755	050045	A	230	STA	045				05 00230

000756	010442	A	231	LDA	SCON	CHECK IF CONSOLE MODE	05	00231
000757	001010	A	232	JAZ	**13		05	00232
000760	000774	A						
000761	011173	A	233	LDA	COMP		05	00233
000762	001010	A	234	JAZ	**6		05	00234
000763	000770	A						
000764	006030	A	235	LDXI	MES4	WRITE (VARIABLE)	05	00235
000765	003074	A						
000766	002000	A	236	CALL*	OUTD		05	00236
000767	100403	A						
000770	006030	A	237	LDXI	MESA	TYPE (INTERVAL INTERRUPT)	05	00237
000771	003101	A						
000772	002000	A	238	CALL*	OUTD		05	00238
000773	100403	A						
			240 *			FOLLOWING TEST PERFORM 'MEMORY OVERFLOW INTERRUPT CHECK'	05	00240
			241 *				05	00241
			242 *			TEST FOR ERROR CODE 4	05	00242
000774	041174	A	243	INR	ERRC	INCR. ERROR COUNT ** 4 **	05	00243
000775	006010	A	244	LDAI	040045	INCR. AND REPLACE INSTR. STORE IN LOC. 044	05	00244
000776	040045	A						
000777	050044	A	245	STA	044		05	00245
001000	006010	A	246	LDAI	RTC5	LOC TO RETURN UPON INTERRUPT	05	00246
001001	001027	A						
001002	050047	A	247	STA	047		05	00247
001003	006010	A	248	LDAI	*		05	00248
001004	001003	A						
001005	051171	A	249	STA	LOOP	SET LOOP ADDR	05	00249
001006	006010	A	250	LDAI	4		05	00250
001007	000004	A						
001010	051174	A	251	STA	ERRC	SET ERROR COUNT	05	00251
001011	006010	A	252	LDAI	1	SET UP NO. OF TRIES FOR TEST 4	05	00252
001012	000001	A						
001013	051177	A	253	STA	CNTL		05	00253
001014	006010	A	254	LDAI	037775	SET UP OVERFLOW COUNT	05	00254
001015	037775	A						
001016	050045	A	255	STA	045		05	00255
001017	100447	A	256	EXC	0400+RTC	INITIALIZE RTC	05	00256
001020	100147	A	257	EXC	0100+RTC	ENABLE RTC	05	00257
001021	006030	A	258	LDXI	16	4 SEC. WAIT	05	00258
001022	000020	A						
001023	002000	A	259	CALL	TDSC		05	00259
001024	002760	A						
001025	002000	A	260	CALL	ERRS	NO INTERRUPT - ERROR 4	05	00260
001026	001202	A						
001027	000000	A	262	RTCS	ENTR		05	00262
001030	100147	A	263	EXC	0100+RTC	ENABLE RTC	05	00263
001031	100247	A	264	EXC	0200+RTC	INHIBIT MOI	05	00264
001032	041174	A	265	INR	ERRC	ERROR COUNT ** 5 **	05	00265
001033	010045	A	266	LDA	045		05	00266
001034	006140	A	267	SUBI	040001		05	00267
001035	040001	A						
001036	001010	A	268	JAZ	**5		05	00268
001037	001043	A						
001040	100447	A	269	RTCS	EXC	0400+RTC	05	00269
001041	002000	A	270	CALL	ERRS	ERROR INITIALIZE RTC	05	00270
001042	001202	A						
001043	011177	A	271	LDA	CNTL	CHECK IF TEST TRIED 50 TIMES	05	00271
001044	041177	A	272	INR	CNTL		05	00272
001045	006140	A	273	SUBI	50		05	00273
001046	000062	A						
001047	001002	A	274	JAP	RTIC		05	00274
001050	001056	A						
001051	006010	A	275	LDAI	04	RE-SETUP ERROR COUNT.	05	00275
001052	000004	A						
001053	051174	A	276	STA	ERRC		05	00276
001054	001000	A	277	JMP	RTT4		05	00277
001055	001014	A						
001056	041174	A	279	RTIC	INR	ERROR COUNT ** 6 **	05	00279
001057	006010	A	280	LDAI	ERRS	SET INTERRUPT ADDRESS TO ERROR SUBR.	05	00280
001060	001202	A						
001061	050047	A	281	STA	047		05	00281
001062	006030	A	282	LDXI	2	1/2 SECOND DELAY	05	00282
001063	000002	A						
001064	002000	A	283	CALL	TDSC		05	00283
001065	002760	A						
001066	041174	A	284	INR	ERRC	ERROR COUNT ** 7 **	05	00284
001067	010045	A	285	LDA	045	LOCATION 45 MUST BE GREATER THAN 40001	05	00285
001070	006140	A	286	SUBI	040001		05	00286
001071	040001	A						
001072	001010	A	287	JAZ	RTC6		05	00287
001073	001040	A						
001074	041174	A	288	INR	ERRC	ERROR 8 CHECK - INHIBIT MOI ** 10 **	05	00288
001075	006010	A	289	LDAI	*		05	00289
001076	001075	A						
001077	051171	A	290	STA	LOOP	SET LOOP ADDR	05	00290
001100	100447	A	291	EXC	0400+RTC	INITIALIZE RTC	05	00291
001101	006010	A	292	LDAI	037775		05	00292
001102	037775	A						
001103	050045	A	293	STA	045		05	00293
001104	006010	A	294	LDAI	ERRS	IF INTERRUPT GO TO ERROR ROUTINE	05	00294
001105	001202	A						
001106	050047	A	295	STA	047		05	00295
001107	100347	A	296	EXC	0300+RTC		05	00296
001110	006030	A	297	LDXI	4	1 SECOND DELAY	05	00297
001111	000004	A						

001112	002000	A	298	CALL	TDSC			05	00298
001113	002760	A							
001114	100447	A	299	EXC	0400+RTC	INITIALIZE RTC		05	00299
001115	010442	A	300	LDA	\$CON			05	00300
001116	001010	A	301	JAZ	**6			05	00301
001117	001124	A							
001120	006030	A	302	LDXI	MES5	WRITE MESSAGE MOI		05	00302
001121	003120	A							
001122	002000	A	303	CALL*	OUTD			05	00303
001123	100403	A							
001124	011173	A	304	LDA	COMP			05	00304
001125	001010	A	305	JAZ	RT10	SKIP FREE RUNNING COUNTER CHECK FOR I'S		05	00305
001126	001234	A							
			307 *			CHECK FREE RUNNING		05	00307
			308 *			CHECK CLEAR OPTION OF FREE RUNNING COUNTER		05	00308
			309 *			CHECK IF FRC INCREMENTING		05	00309
001127	041174	A	310	INR	ERRC	ERROR COUNT = 11	** 11 **	05	00310
001130	006010	A	311	LDAI	*			05	00311
001131	001130	A							
001132	051171	A	312	STA	LOOP	SET LOOP ADDR		05	00312
001133	100047	A	313	EXC	RTC	CLEAR FREE RUNNING COUNTER		05	00313
001134	102547	A	314	CIA	RTC	INPUT FREE RUNNING COUNTER TO A		05	00314
001135	051175	A	315	STA	RTSA			05	00315
001136	006030	A	316	LDXI	2	DELAY 1/2 SEC.		05	00316
001137	000002	A							
001140	002000	A	317	CALL	TDSC			05	00317
001141	002760	A							
001142	102547	A	318	CIA	RTC	INPUT FRC TO A		05	00318
001143	141175	A	319	SUB	RTSA	IF COUNTER ZERO FRC NOT		05	00319
001144	002010	A	320	JAZM	ERRS	INCREMENTING CORRECTLY.		05	00320
001145	001202	A							
001146	041174	A	321	INR	ERRC	ERROR COUNT	** 12 **	05	00321
001147	006010	A	322	LDAI	*			05	00322
001150	001147	A							
001151	051171	A	323	STA	LOOP	SET LOOP ADDR		05	00323
001152	100047	A	324	EXC	RTC	CLEAR FRC		05	00324
001153	102547	A	325	CIA	RTC	INPUT FRC		05	00325
001154	001010	A	326	JAZ	**4			05	00326
001155	001160	A							
001156	002000	A	327	CALL	ERRS			05	00327
001157	001202	A							
001160	010442	A	328	RTC9	LDA	\$CON	TEST IF CONTINUE MODE.	05	00328
001161	001010	A	329	JAZ	RT10			05	00329
001162	001234	A							
001163	006030	A	330	LDXI	MES6	OUTPUT FRC (TEST COMPLETE)		05	00330
001164	003142	A							
001165	002000	A	331	CALL*	OUTD			05	00331
001166	100403	A							
001167	001000	A	332	JMP	RT10			05	00332
001170	001234	A							
			334	*****				05	00334
			335 *	FLAGS, POINTER AND MESSAGE BUFFERS				05	00335
			336	*****				05	00336
001171	000000	A	337	LOOP	DATA	0	ADDRESS FOR LOOPING ON ERRORS	05	00337
001172	000000	A	338	NBIT	DATA	0		05	00338
001173	000000	A	339	COMP	DATA	0		05	00339
001174	000000	A	340	ERRC	DATA	0		05	00340
001175	000000	A	341	RTSA	DATA	0		05	00341
001176	000000	A	342	TMSV	DATA	0	TEMP. STORAGE	05	00342
001177	000000	A	343	CNTL	DATA	0		05	00343
001200	000000	A	344	PINT	DATA	0		05	00344
001201	000000	A	345	FPLG	DATA	0	E	05	00345
			347	*****				05	00347
			348 *					*05	00348
			349 *	ERROR SUBROUTINE ENTRANCE				*05	00349
			350 *					*05	00350
			351	*****				05	00351
001202	000000	A	352	ENRS	ENTR			05	00352
001203	100447	A	353	EXC	0400+RTC	INITIALIZE RTC		05	00353
			354 *	SET UP ERROR VOLATILE REGISTERS.				05	00354
				B = LOCATION INTERRUPTED FROM.				05	00355
001204	021202	A	355	LDB	ERRS			05	00356
001205	005004	A	356	TZX				05	00357
001206	011174	A	357	LDA	ERRC	A = ERROR CODE NUMBER		05	00357
001207	051212	A	358	STA	**3			05	00358
001210	002000	A	359	CALL*	SSWT,00,(ERRP)*,RTCT,(LOOP)*			05	00359
001211	100421	A							
001212	000000	A							
001213	101220	A							
001214	000527	A							
001215	101171	A							
001216	001000	A	360	JMP	RTCL			05	00360
001217	000654	A							
001220	000000	A	361	ERRP	ENTR			05	00361
001221	006030	A	362	LDXI	MES3	WRITE ERROR MESSAGE		05	00362
001222	003065	A							
001223	002000	A	363	CALL*	OUTD			05	00363
001224	100403	A							
001225	011174	A	364	LDA	ERRC			05	00364
001226	002000	A	365	CALL*	OUTE			05	00365
001227	100404	A							
001230	002000	A	366	CALL*	OUTC	CR/LF		05	00366
001231	100402	A							
001232	001000	A	367	JMP*	ERRP			05	00367
001233	101220	A							
			369	*****				05	00369

		370 *							*05 00370
		371 *			THE OPERATOR IS REQUESTED TO INPUT HARDWARE SETUP				*05 00371
		372 *							*05 00372
		373 *							*05 00373
001234	005001	A	374	RT10	TZA		CLEAR PRINT FLAG		05 00374
001235	051200	A	375		STA	PINT			05 00375
001236	010442	A	376		LDA	\$CON	CHECK IF CONSOLE MODE.		05 00376
001237	001010	A	377		JAZ	RT13			05 00377
001240	001302	A							
001241	002000	A	378		CALL*	OUTC	CR/LF		05 00378
001242	100402	A							
001243	011173	A	379		LDA	COMP			05 00379
001244	001010	A	380		JAZ	**15			05 00380
001245	001263	A							
001246	006030	A	381		LDXI	MES7	WRITE (INPUT FRC INCREMENTS PER SEC)		05 00381
001247	003161	A							
001250	002000	A	382		CALL*	OUTD			05 00382
001251	100403	A							
001252	002000	A	383		CALL	IPDC	INPUT DECIMAL NUMBER (DOUBLE PRECISION)		05 00383
001253	002376	A							
001254	052345	A	384		STA	FRCM			05 00384
001255	062346	A	385		STB	FRCM+1			05 00385
			386 *				COMPUTE INTERRUPTS PER MIN		05 00386
			387 *				THESE WILL BE USED LATER IN COMPUTING ELAPSED TIME		05 00387
001256	002000	A	388		CALL	XDIM,D60			05 00388
001257	003441	A							
001260	002373	A							
001261	052363	A	389		STA	IFM			05 00389
001262	062364	A	390		STB	IFM+1			05 00390
001263	006030	A	391		LDXI	MES8	WRITE (INPUT BASIC INTERRUPTS PER SEC)		05 00391
001264	003203	A							
001265	002000	A	392		CALL*	OUTD			05 00392
001266	100403	A							
001267	002000	A	393		CALL	IPDC			05 00393
001270	002376	A							
001271	052347	A	394		STA	VIIF	INPUT DECIMAL NUMBEN. (DOUBLE PRECISION)		05 00394
001272	062350	A	395		STB	VIIF+1			05 00395
001273	002000	A	396		CALL	XDIM,D60			05 00396
001274	003441	A							
001275	002373	A							
001276	052365	A	397		STA	IVM			05 00397
001277	062366	A	398		STB	IVM+1			05 00398
001300	001000	A	399		JMP	ITT	BGN INTERRUPT TIMING TEST		05 00399
001301	001335	A							
001302	011173	A	400	RT13	LDA	COMP	CONSOLE MODE		05 00400
001303	001010	A	401		JAZ	**13			05 00401
001304	001320	A							
001305	005001	A	402		TZA				05 00402
001306	005002	A	403		TZB				05 00403
001307	005004	A	404		TZX				05 00404
001310	000020	A	405		HLT	020			05 00405
001311	052345	A	406		STA	FRCM	INPUT IN A AND B REG. FRC INCR IN MICROSEC.		05 00406
001312	062346	A	407		STB	FRCM+1	(DOUBLE-PRECISION) (OCTAL)		05 00407
001313	002000	A	408		CALL	XDIM,D60	COMPUTE INTERRUPTS PER MIN		05 00408
001314	003441	A							
001315	002373	A							
001316	052363	A	409		STA	IFM			05 00409
001317	062364	A	410		STB	IFM+1			05 00410
001320	005004	A	411		TZX				05 00411
001321	005001	A	412		TZA				05 00412
001322	005002	A	413		TZB				05 00413
001323	000021	A	414		HLT	021			05 00414
001324	052347	A	415		STA	VIIF	INPUT IN A AND B REG. VII SOURCE FREQ.		05 00415
001325	062350	A	416		STB	VIIF+1	IN HZ. IN DOUBLE PRECISION (OCTAL)		05 00416
001326	002000	A	417		CALL	XDIM,D60	COMPUTE INTERRUPTS PER MIN		05 00417
001327	003441	A							
001330	002373	A							
001331	052365	A	418		STA	IVM			05 00418
001332	062366	A	419		STB	IVM+1			05 00419
001333	001000	A	420		JMP	ITT	BGN INTERRUPT TIMING TEST		05 00420
001334	001335	A							
			422 *						*05 00422
			423 *						*05 00423
			424 *				INTERUPT TIMING TEST		05 00424
			425 *						*05 00425
			426 *						*05 00426
001335	010442	A	427	ITT	LDA	\$CON	CONSOLE MODE?		05 00427
001336	001010	A	428		JAZ	I1	IF SU, BRANCH		05 00428
001337	001506	A							
001340	002000	A	429		CALL*	OUTC	CR/LF		05 00429
001341	100402	A							
001342	006030	A	430		LDXI	IM1			05 00430
001343	003234	A							
001344	002000	A	431		CALL*	OUTD	IDENTIFY TEST		05 00431
001345	100403	A							
001346	012000	A	432		LDA	I151	INIT TTY DEV ADDRESS		05 00432
001347	006150	A	433		ANAI	0177700			05 00433
001350	177700	A							
001351	117000	I	434		ORA*	\$TTY			05 00434
001352	052000	A	435		STA	I151			05 00435
001353	006010	A	436		LDAI	1			05 00436
001354	000001	A							
001355	052362	A	437		STA	INTT	INITIALIZE FOR I1 INRTRVL TIMER		05 00437
001356	011173	A	438		LDA	COMP	SEE IF THERE IS A CHOICE		05 00438
001357	001010	A	439		JAZ	I2	IF NOT, SKIP THE QUESTIONS		05 00439

001360	001417	A							
001361	006030	A	440	LDXI	IM3			05	00440
001362	003251	A							
001363	002000	A	441	CALL*	OUTD	FRC OR VII FOR INTERVAL TIMER		05	00441
001364	100403	A							
001365	002000	A	442	CALL	IPDC			05	00442
001366	002376	A							
001367	062362	A	443	STB	INTT			05	00443
001370	006030	A	444	ISCR	LDXI	IM4		05	00444
001371	003262	A							
001372	002000	A	445	CALL*	OUTD	REQUEST VII SELECT COUNT		05	00445
001373	100403	A							
001374	002000	A	446	CALL	IPDC			05	00446
001375	002376	A							
			447 *			IF ZERO, SET TO HARDWARE DEFAULT OF 10 AND SIGNAL THIS WAS		05	00447
			448 *			DONE BY SETTING HDEF TO ZERO		05	00448
001376	062375	A	449	STB	HDEF	SET FLAG APPROPRIATELY		05	00449
001377	001020	A	450	JBZ	**4	DEFAULT		05	00450
001400	001403	A							
001401	001000	A	451	JMP	**4	NO DEFAULT		05	00451
001402	001405	A							
001403	006020	A	452	LDBI	10	SET DEFAULT		05	00452
001404	000012	A							
001405	062352	A	453	STB	SELC+1			05	00453
001406	001010	A	454	JAZ	**4			05	00454
001407	001412	A							
001410	001000	A	455	JMP	ISCP	TOO LARGE		05	00455
001411	001467	A							
001412	005021	A	456	TBA				05	00456
001413	006140	A	457	SUBI	4096			05	00457
001414	010000	A							
001415	001002	A	458	JAP	ISCP	TOO LARGE		05	00458
001416	001467	A							
001417	006030	A	459	I2	LDXI	IM5	REQUEST INTERVAL LENGTH	05	00459
001420	003274	A							
001421	002000	A	460	CALL*	OUTD			05	00460
001422	100403	A							
001423	002000	A	461	CALL	IPDC			05	00461
001424	002376	A							
001425	005311	A	462	DAR				05	00462
001426	001002	A	463	JAP	I3	IF INTERVAL TOO LARGE, TRY AGAIN		05	00463
001427	001475	A							
001430	062360	A	464	STB	ILNG			05	00464
			465 *			FOLLOWING COMPUTES THE NUMBER OF INTERRUPTS PER INTERVAL		05	00465
001431	012362	A	466	I4	LDA	INTY	CJHOOSE CORRECT INTERRUPTS PER SEC VALUE	05	00466
001432	001010	A	467	JAZ	I5			05	00467
001433	001440	A							
001434	012347	A	468	LDA	VIIF			05	00468
001435	022350	A	469	LDB	VIIF+1			05	00469
001436	001000	A	470	JMP	I6			05	00470
001437	001442	A							
001440	012345	A	471	I5	LDA	FRCM		05	00471
001441	022346	A	472	LDB	FRCM+1			05	00472
001442	002000	A	473	I6	CALL	XDIM,ILNG	GET INTERRUPTS PER INTERVAL	05	00473
001443	003441	A							
001444	002360	A							
			474 *			CHECK TO SEE IF VII SELECT COUNTY NEED BE CONSIDERED		05	00474
001445	031173	A	475	LDX	COMP	IS THERE A VII		05	00475
001446	001040	A	476	JXZ	I7	IF NOT, INTERRUPTS/INTERVAL VALUE IS OK		05	00476
001447	001527	A							
001450	032362	A	477	LDX	INTT			05	00477
001451	001040	A	478	JXZ	I7	IF FRC IS THE INTERVAL TIMER, NO MOD NEEDED		05	00478
001452	001527	A							
001453	005004	A	479	TZX		OTHERWISE, DIVIDE INTERRUPTS PER INTERVAL BY		05	00479
001454	002000	A	480	I8	CALL	XDSU,SELC		05	00480
001455	003541	A							
001456	002351	A							
001457	001004	A	481	JAN	I71			05	00481
001460	001526	A							
001461	007400	A	482	ROF				05	00482
001462	005144	A	483	IXR				05	00483
001463	001001	A	484	JOF	I3	CUT OUT IF DIVISION COMPLETE		05	00484
001464	001475	A							
001465	001000	A	485	JMP	I8			05	00485
001466	001454	A							
			487 *			FOLLOWING HANDLES ILLEGAL INPUTS FOR INTERVAL SELECT COUNT		05	00487
001467	006030	A	488	ISCP	LDXI	IM6		05	00488
001470	003315	A							
001471	002000	A	489	CALL*	OUTD			05	00489
001472	100403	A							
001473	001000	A	490	JMP	ISCR			05	00490
001474	001370	A							
			491 *					05	00491
			492 *			ROUTINE TO HANDLE INTERVALS WHICH ARE TO LARGE		05	00492
			493 *					05	00493
001475	010442	A	494	I3	LDA	SCON		05	00494
001476	001010	A	495	JAZ	I1			05	00495
001477	001506	A							
001500	006030	A	496	LDXI	IM6			05	00496
001501	003315	A							
001502	002000	A	497	CALL*	OUTD	GIVE ERROR MESSAGE		05	00497
001503	100403	A							
001504	001000	A	498	JMP	I2	GIVE ANOTHER CHANCE		05	00498
001505	001417	A							
			499 *					05	00499

			500 *	FOLLOWING HANDLES INITIALIZATION WHEN IN CONSOLE MODE			05 00500
			501 *				05 00501
001506	005001	A	502	I1	TZA		05 00502
001507	005002	A	503		TZB		05 00503
001510	005004	A	504		TZX		05 00504
001511	000022	A	505		HLT	022	05 00505
001512	052362	A	506		STA	INTT	05 00506
001513	062375	A	507		STB	HDEF	05 00507
001514	001020	A	508		JBZ	**4	05 00508
001515	001520	A					
001516	001000	A	509		JMP	**4	05 00509
001517	001522	A					
001520	006020	A	510		LDBI	10	05 00510
001521	000012	A					
001522	062352	A	511		STB	SELC+1	05 00511
001523	072360	A	512		STX	ILNG	05 00512
001524	001000	A	513		JMP	I4	05 00513
001525	001431	A					
			515 *				05 00515
001526	005042	A	516	I71	TXB		05 00516
001527	062361	A	517	I7	STB	IINT	05 00517
001530	005311	A	518		DAR		05 00518
001531	001002	A	519		JAP	I3	05 00519
001532	001475	A					
001533	005021	A	520		TBA		05 00520
001534	006140	A	521		SUBI	037774	05 00521
001535	037774	A					
001536	001002	A	522		JAP	I3	05 00522
001537	001475	A					
001540	012361	A	523		LDA	IINT	05 00523
001541	001010	A	524		JAZ	I3	05 00524
001542	001475	A					
			525 *	SETUP MOI INTERRUPT TO UPDATAE THE (V)II ELAPSED TIME COUNTER			05 00525
001543	006010	A	526	I9	LDAI	040045	05 00526
001544	040045	A					
001545	050044	A	527		STA	044	05 00527
001546	006010	A	528		LDAI	02000	05 00528
001547	002000	A					
001550	050046	A	529		STA	046	05 00529
001551	006010	A	530		LDAI	I10	05 00530
001552	001677	A					
001553	050047	A	531		STA	047	05 00531
001554	010442	A	532		LDA	\$CON	05 00532
001555	001010	A	533		JAZ	I70	05 00533
001556	001563	A					
001557	006030	A	534		LDXI	IM7	05 00534
001560	003325	A					
001561	002000	A	535		CALL*	OUTD	05 00535
001562	100403	A					
			536 *	INITIALIZE AND START CLOCKS			05 00536
001563	100447	A	537	I70	EXC	0400+RTC	05 00537
001564	005001	A	538		TZA		05 00538
001565	050045	A	539		STA	045	05 00539
001566	052355	A	540		STA	UFRC	05 00540
001567	052353	A	541		STA	UVII	05 00541
001570	052354	A	542		STA	LVII	05 00542
001571	052356	A	543		STA	LFRC	05 00543
001572	012361	A	544		LDA	IINT	05 00544
001573	052357	A	545		STA	INXT	05 00545
001574	011173	A	546	IX11	LDA	COMP	05 00546
001575	001010	A	547		JAZ	IX12	05 00547
001576	001606	A					
001577	012375	A	548		LDA	HDEF	05 00548
001600	001010	A	549		JAZ	**4	05 00549
001601	001604	A					
001602	012352	A	550		LDA	SELC+1	05 00550
001603	103147	A	551		OAR	RTC	05 00551
001604	100647	A	552		EXC	0600+RTC	05 00552
001605	100047	A	553		EXC	RTC	05 00553
001606	100147	A	554	IX12	EXC	0100+RTC	05 00554
			556 *	LOOP TILL ABORT BY S83			05 00556
001607	001400	A	557	I11	JSS3	RTCT	05 00557
001610	000527	A					
001611	002000	A	558		JMPM	IUFR	05 00558
001612	001742	A					
			559 *	CHECK FOR END OF INTERVAL			05 00559
001613	022362	A	560		LDB	INTT	05 00560
001614	001020	A	561		JBZ	I141	05 00561
001615	001634	A					
001616	010045	A	562		LDA	045	05 00562
001617	021201	A	563		LDB	FFL6	E 05 00563
001620	001020	A	564		JBZ	I14	E 05 00564
001621	001644	A					
001622	006150	A	565		ANAI	040000	E 05 00565
001623	040000	A					
001624	005012	A	566		TAB		E 05 00566
001625	010045	A	567		LDA	045	E 05 00567
001626	001020	A	568		JBZ	I14	E 05 00568
001627	001644	A					
001630	002000	A	569		JMPM	I10	E 05 00569
001631	001677	A					
001632	001000	A	570		JMP	I14	05 00570
001633	001644	A					
001634	012356	A	571	I141	LDA	LFRC	05 00571
001635	006150	A	572		ANAI	037777	05 00572

001636	037777	A							
001637	052367	A	573	STA	EMFR	STORE IN TEMP LOC		05	00573
001640	102547	A	574	CIA	RTC			05	00574
001641	122367	A	575	ADD	EMFR	DO ADD, NO OVERFLOW POSSIBLE		05	00575
001642	006150	A	576	ANAI	037777			05	00576
001643	037777	A							
001644	142357	A	577	I14	SUB	INXT	SUBTRACT TARGET NUMBER OF INTERRUPTS	05	00577
001645	001004	A	578	JAN	I15		IF TOO LOW, INTERVAL NOT UP	05	00578
001646	001775	A							
001647	006140	A	579	SUBI	04		IF CLOSE ENOUGH TO TARGET, TIME UP	05	00579
001650	000004	A							
001651	001002	A	580	JAP	I15			05	00580
001652	001775	A							
				581 * SIGNAL INTERVAL UP				05	00581
				582 * BLINK COSOLE LIGHTS				05	00582
001653	102577	A	583	I162	CIA	077		05	00583
001654	005211	A	584		CPA			05	00584
001655	103177	A	585		OAR	077		05	00585
				586 * BLINK THE OVERFLOW LIGHT				05	00586
001656	001001	A	587	I161	JOF	I17		05	00587
001657	001661	A							
001660	007401	A	588		SOF			05	00588
				589 * COMPUTE NEW TARGET COUNT				05	00589
001661	012357	A	590	I17	LDA	INXT	GET OLD TARGET CNT	05	00590
001662	122361	A	591		ADD	IINT	COMPUTE NEW ONE	05	00591
001663	006150	A	592		ANAI	037777	MOD COUNTER SIZE	05	00592
001664	037777	A							
001665	052357	A	593		STA	INXT		05	00593
001666	011201	A	594		LDA	FFLG		E	05 00594
001667	001010	A	595		JAZ	I15	NOT A V77	E	05 00595
001670	001775	A							
001671	006010	A	596		LDAI	0207	BELL	E	05 00596
001672	000207	A							
001673	002000	A	597		CALL*	OUTA		E	05 00597
001674	100400	A							
001675	001000	A	598		JMP	I15		05	00598
001676	001775	A							
				600 * FOLLOWING IS EXECUTED ON MOI INTERRUPT				05	00600
				601 * IT UPDATES THE DOUBLE PRECISION II COUNT				05	00601
001677	000000	A	602	I10	DATA	0		05	00602
001700	100247	A	603		EXC	0200+RTC	INHIBIT MOI	05	00603
001701	051736	A	604		STA	I10T		05	00604
001702	061737	A	605		STB	I10T+1		05	00605
001703	071740	A	606		STX	I10T+2		05	00606
001704	005004	A	607		TZX			05	00607
001705	005544	A	608		AOFX		SAVE ORIGNAL OVERFLOW CONDITION	05	00608
001706	010045	A	609		LDA	045		05	00609
001707	006150	A	610		ANAI	037777		05	00610
001710	037777	A							
001711	050045	A	611		STA	045		05	00611
001712	012354	A	612		LDA	LVII		05	00612
001713	007400	A	613		ROF			05	00613
001714	006120	A	614		ADDI	040000		05	00614
001715	040000	A							
001716	006150	A	615	XDAX	ANAI	077777		05	00615
001717	077777	A							
001720	052354	A	616		STA	LVII		05	00616
001721	012353	A	617		LDA	UVII		05	00617
001722	005511	A	618		AOFA			05	00618
001723	052353	A	619		STA	UVII		05	00619
001724	007400	A	620		ROF			05	00620
001725	001040	A	621		JXZ	I101		05	00621
001726	001730	A							
001727	007401	A	622		SOF		RESTORE OVERFLOW, IF NEC.	05	00622
001730	011736	A	623	I101	LDA	I10T		05	00623
001731	021737	A	624		LDB	I10T+1		05	00624
001732	031740	A	625		LDX	I10T+2		05	00625
001733	100147	A	626		EXC	0100+RTC	ENABLE RTC	05	00626
001734	001000	A	627		JMP*	I10		05	00627
001735	101677	A							
001736	000000	A	628	I10T	DATA	0,0,0,0		05	00628
001737	000000	A							
001740	000000	A							
001741	000000	A							
				630 * FOLLOWING IS MANUAL UPDATE OF FRC ELAPSED TIME COUNTER				05	00630
001742	000000	A	631	IUFR	DATA	0		05	00631
001743	011173	A	632		LDA	COMP		05	00632
001744	001010	A	633		JAZ*	IUFR	IF NO FRC, CUT OUT	05	00633
001745	101742	A							
001746	102547	A	634		CIA	RTC		05	00634
001747	006150	A	635		ANAI	040000		05	00635
001750	040000	A							
001751	001010	A	636		JAZ*	IUFR	IF BIT 14 IS ON, TIME TO UPDATE LFRC	05	00636
001752	101742	A							
001753	005004	A	637		TZX			05	00637
001754	005544	A	638		AOFX		SAVE OVERFLOW	05	00638
				639 * MOVE DYNAMIC COUNT INTO DBL PREC TOTAL				05	00639
001755	007400	A	640		ROF			05	00640
001756	102547	A	641		CIA	RTC	GET THE DYNAMIC COUNT	05	00641
001757	100047	A	642		EXC	RTC	CLEAR THE FRC	05	00642
001760	122356	A	643		ADD	LFRC		05	00643
001761	006150	A	644		ANAI	077777	CUT OFF THE SIGN BIT	05	00644
001762	077777	A							
001763	052356	A	645		STA	LFRC		05	00645
001764	012355	A	646		LDA	UFRC		05	00646

PAGF	10	MAINTAIN	III	RTCTEST		
001765	005511	A	647	ADFA		ADD IM ANY OVERFLOW
001766	052355	A	648	STA	UFRC	
001767	007400	A	649	KOF		
001770	001040	A	650	JXZ*	IUFR	
001771	101742	A				
001772	007401	A	651	SOF		RESTORE OVERFLOW
001773	001000	A	652	JMP*	IUFR	
001774	101742	A				
			654 *	FOLLOWING CHECKS FOR ELAPSED TIME READOUT REQUESTS		
001775	010442	A	655	I15	LDA	\$CON
001776	001010	A	656	JAZ	I30	IF NO TTY, MAKE SPEC CHECK
001777	002207	A				
002000	101201	A	657	I151	SEN	0201,**+4
002001	002004	A				SEE IF A CHARACTER AWAITS
002002	001000	A	658	JMP	I11	IF NOT, LOOP BACK TO REPEAT PREV CHECKS
002003	001607	A				
002004	002000	A	659	CALL*	INPB	OTHERWISE, GET THE CHARACTER
002005	100411	A				
002006	001000	A	660	JMP	I11	IF S93 ON, RETURN TO BEGINING OF TEST
002007	001607	A				
002010	005012	A	661	TAB		
002011	006140	A	662	SUBI	' '	
002012	000240	A				
002013	001010	A	663	JAZ	I50	ELAPSED TIME WANTED
002014	002033	A				
002015	002000	A	664	CALL*	OUTC	CR/LF
002016	100402	A				
002017	005021	A	665	TBA		
002020	006140	A	666	SUBI	'R'	
002021	000322	A				
002022	001010	A	667	JAZ	I70	RESET ELAPSED TIME COUNTERS
002023	001563	A				
002024	005021	A	668	TBA		
002025	006140	A	669	SUBI	'K'	
002026	000313	A				
002027	001010	A	670	JAZ	ITT	RESTART
002030	001335	A				
002031	001000	A	671	JMP	I11	IF NONE OF THESE, IGNORE IT
002032	001607	A				
			673 *	FOLLOWING COMPUTES ELAPSED TIME AND OUTPUTS IT		
			674 *	DURING THIS TIME, FREQUENT CALLS ARE MADE TO ROUTINE IUFR.		
			675 *	THIS IS NECESSARY SINCE A DELAY OF MORE THAN 1-6 SECONDS		
			676 *	BETWEEN CALLS COULD RESULT IN BIT 15 OF THE FRC COUNT BECOMING		
			677 *	A ONE. SUCH A SITUATION WOULD CAUSE ERRORS IN FRC ELAPSED		
			678 *	TIME COUNT		
			679 *			
002033	002000	A	680	I50	JMPM	ICOM
002034	002235	A				COMPUE ELAPSED TIMES
002035	002000	A	681	CALL*	OUTC	CR/LF
002036	100402	A				
002037	011173	A	682	LDA	COMP	
002040	001010	A	683	JAZ	I51	IF NO FRC, SKIP NEXYT
002041	002114	A				
002042	002000	A	684	JMPM	IUFR	UPDATE FRC ELAP. TIME CNTR IF NEC.
002043	001742	A				
002044	006030	A	685	LDXI	IM9	
002045	003334	A				
002046	002000	A	686	CALL*	OUTD	TYPE 'FRC: '
002047	100403	A				
002050	002000	A	687	CALL	IUFR	CHECK FRC COUNT
002051	001742	A				
002052	005001	A	688	TZA		
002053	022367	A	689	LDB	EMFR	GET ELAPSED MIN FOR FRC
002054	006030	A	690	LDXI	BUFO	
002055	002653	A				
002056	002000	A	691	CALL	CONV	
002057	002472	A				
002060	006030	A	692	LDXI	BUFO+3	LAST FOUR CHARACTERS
002061	002656	A				
002062	002000	A	693	CALL*	OUTD	OUT ELAPSED MIN
002063	100403	A				
002064	002000	A	694	CALL	IUFR	CHECK FRC COUNT
002065	001742	A				
002066	006030	A	695	LDXI	IM10	
002067	003340	A				
002070	002000	A	696	CALL*	OUTD	OUT 'MIN '
002071	100403	A				
002072	002000	A	697	CALL	IUFR	CHECK FRC COUNT
002073	001742	A				
002074	005001	A	698	TZA		
002075	022370	A	699	LDB	E8FR	GET ELAPSED SEC FOR FRC
002076	006030	A	700	LDXI	BUFO	
002077	002653	A				
002100	002000	A	701	CALL	CONV	
002101	002472	A				
002102	006030	A	702	LDXI	BUFO+3	LAST FOUR CHARACTERS
002103	002656	A				
002104	002000	A	703	CALL*	OUTD	
002105	100403	A				
002106	002000	A	704	CALL	IUFR	CHECK FRC COUNT
002107	001742	A				
002110	006030	A	705	LDXI	IM11	
002111	003343	A				
002112	002000	A	706	CALL*	OUTD	OUT 'SEC' AND CR/LF
002113	100403	A				

002250	002000	A	771	CALL	XDIM,SELC+1	IF VII, ADJUST FOR SELECT COUNT	05 00771
002251	003441	A					
002252	002352	A					
002253	005004	A	772	TXZ			05 00772
002254	002000	A	773	IC1	CALL	XDSU,IVM SUB INCR PER MIN	05 00773
002255	003541	A					
002256	002365	A					
002257	001004	A	774	JAN	IC2		05 00774
002260	002264	A					
002261	005144	A	775	IXR			05 00775
002262	001000	A	776	JMP	IC1		05 00776
002263	002254	A					
002264	002000	A	777	IC2	CALL	XDAD,IVM	05 00777
002265	003473	A					
002266	002365	A					
002267	072371	A	778	STX	EMVI	SAVE ELAPSED MIN	05 00778
002270	005004	A	779	TXZ			05 00779
002271	002000	A	780	IC3	CALL	XDSU,VIIF	05 00780
002272	003541	A					
002273	002347	A					
002274	001004	A	781	JAN	IC4		05 00781
002275	002301	A					
002276	005144	A	782	IXR			05 00782
002277	001000	A	783	JMP	IC3		05 00783
002300	002271	A					
002301	072372	A	784	IC4	STX	ESVI STORE ELAPSED SEC	05 00784
002302	011173	A	785	LDA	COMP	AN FRC?	05 00785
002303	001010	A	786	JAZ*	ICOM	IF NOT, DONE	05 00786
002304	102235	A					
002305	002000	A	787	CALL	IUFR	UPDATE FRC ELAP. TIME CNTR. IF NEC	05 00787
002306	001742	A					
002307	005001	A	788	TZA			05 00788
002310	022370	A	789	LDB	ESFR	GET CURRENT FRC COUNT FROM ITS TEMP STORAGE	05 00789
002311	002000	A	790	CALL	XDAD,UFR	GET DBL PREC TOTAL	05 00790
002312	003473	A					
002313	002355	A					
002314	005004	A	791	TXZ			05 00791
002315	002000	A	792	IC5	CALL	XDSU,IFM SUB INCR PER MIN	05 00792
002316	003541	A					
002317	002363	A					
002320	001004	A	793	JAN	IC6		05 00793
002321	002325	A					
002322	005144	A	794	IXR			05 00794
002323	001000	A	795	JMP	IC5		05 00795
002324	002315	A					
002325	002000	A	796	IC6	CALL	XDAD,IFM	05 00796
002326	003473	A					
002327	002363	A					
002330	072367	A	797	STX	EMFR	STORE ELAP MIN	05 00797
002331	005004	A	798	TXZ			05 00798
002332	002000	A	799	IC7	CALL	XDSU,FRM	05 00799
002333	003541	A					
002334	002345	A					
002335	001004	A	800	JAN	IC8		05 00800
002336	002342	A					
002337	005144	A	801	IXR			05 00801
002340	001000	A	802	JMP	IC7		05 00802
002341	002332	A					
002342	072370	A	803	IC8	STX	ESFR SAVE ELAPSED SEC	05 00803
002343	001000	A	804	JMP*	ICOM		05 00804
002344	102235	A					
002345	000000	A	806	FRM	DATA	0,0 FRC INCR. PER SEC (DOUBLE PREC.)	05 00806
002346	000000	A					
002347	000000	A	807	VIIF	DATA	0,0 VII INTERRUPTS PER SEC (DOUBLE PREC.)	05 00807
002350	000000	A					
002351	000000	A	808	SELC	DATA	0,0	05 00808
002352	000000	A					
002353	000000	A	809	UVII	DATA	0 UPPER HALF, VII ELAP TIME CNTR	05 00809
002354	000000	A	810	LVII	DATA	0 LOWER HALF	05 00810
002355	000000	A	811	UFR	DATA	0 UPPER HALF, FRC ELAP TIME CNTR	05 00811
002356	000000	A	812	LFRC	DATA	0 LOWER HALF DBL PREC FRC ELAP TIME CNTR	05 00812
002357	000000	A	813	INXT	DATA	0 COUNT AT END OF NEXT INTERVAL	05 00813
002360	000000	A	814	ILNG	DATA	0 INTERVAL LENGTH	05 00814
002361	000000	A	815	IINT	DATA	0 NUMBER OF INTERRUPTS PER INTERVAL	05 00815
002362	000000	A	816	INTT	DATA	0 INTERVAL TIMER, /=FRC, 1=VII	05 00816
002363	000000	A	817	IFM	DATA	0,0 DBL PREC INCR PER MIN FRC	05 00817
002364	000000	A					
002365	000000	A	818	IVM	DATA	0,0 DBL PREC VII INCR PER MIN	05 00818
002366	000000	A					
002367	000000	A	819	EMFR	DATA	0 TEMP LOC FOR ELAP TIME COMP	05 00819
002370	000000	A	820	ESFR	DATA	0	05 00820
002371	000000	A	821	EMVI	DATA	0	05 00821
002372	000000	A	822	ESVI	DATA	0	05 00822
002373	000074	A	823	D60	DATA	60	05 00823
002374	007370	A	824	STTY	DATA	07370 POINTER TO TTY DEV ADDRESS	05 00824
002375	000000	A	825	HDEF	DATA	0 FLAG: IF ZERO, HRDWR DEFAULT FOR SELC CNT	05 00825
827	*****						05 00827
828	*					*05 00828	
829	*				INPUT DECIMAL NUMBER SUBROUTINE (DOUBLE PRECISION)	*05 00829	
830	*				RETURN NUMBER IN A (HIGH ORDER) AND B (LOW ORDER)	*05 00830	
831	*					*05 00831	
832	*****						05 00832
002376	000000	A	833	IPDC	ENTR	0	05 00833
002377	005001	A	834	TZA		ZERO OUT DOUBLE PRECISION SUM.	05 00834
002400	052465	A	835	STA	DPSM		05 00835

002401	052466	A	836	STA	DPSM+1			05	00836	
002402	002000	A	837	IPD1	CALL*	INPB	GET 1 CHAR. IN A REG.	05	00837	
002403	100411	A								
002404	001000	A	638	JMP	RTCT		TERMINATION EXIT IF SS3 SET	05	00838	
002405	000527	A								
002406	005012	A	839	TAB				05	00839	
002407	006140	A	840	SUBI	0256		CHECK IF PERIOD	05	00840	
002410	000256	A								
002411	001010	A	841	JAZ	IPD4			05	00841	
002412	002452	A								
002413	005021	A	842	TBA				05	00842	
002414	006140	A	843	SUBI	0254		CHECK IF COMMA.	05	00843	
002415	000254	A								
002416	001010	A	844	JAZ	IPD5			05	00844	
002417	002457	A								
002420	005021	A	845	TBA			CHECK IF LEGAL CHAR.	05	00845	
002421	006140	A	846	SUBI	0260			05	00846	
002422	000260	A								
002423	001004	A	847	JAN	IPD3			05	00847	
002424	002446	A								
002425	052470	A	848	STA	VALU			05	00848	
002426	006140	A	849	SUBI	012			05	00849	
002427	000012	A								
002430	001002	A	850	JAP	IPD3			05	00850	
002431	002446	A								
002432	012465	A	851	LDA	DPSM			05	00851	
002433	022466	A	852	LDB	DPSM+1			05	00852	
002434	002000	A	853	CALL	XDIM,TEN		MULTI DP SUM BY TEN	05	00853	
002435	003441	A								
002436	002471	A								
002437	002000	A	854	CALL	XDAD,VALU-1		ADD CHAR JUST READ	05	00854	
002440	003473	A								
002441	002467	A								
002442	052465	A	855	STA	DPSM			05	00855	
002443	062466	A	856	STB	DPSM+1			05	00856	
002444	001000	A	857	JMP	IPD1		GET NEXT CHAR.	05	00857	
002445	002402	A								
002446	002000	A	858	IPD3	CALL*	OUTG	ILLEGAL CHAR. MESSAGE	05	00858	
002447	100406	A								
002450	001000	A	859	JMP	IPDC+1			05	00859	
002451	002377	A								
002452	002000	A	860	IPD4	CALL*	OUTC	OUTPUT CR/LF	05	00860	
002453	100402	A								
002454	005004	A	861	TZX			PERIOD CHAR.	05	00861	
002455	001000	A	862	JMP	**4			05	00862	
002456	002461	A								
002457	006030	A	863	IPD5	LDCI	1	COMMA CHAR.	05	00863	
002460	000001	A								
002461	012465	A	864	LDA	DPSM			05	00864	
002462	022466	A	865	LDB	DPSM+1			05	00865	
002463	001000	A	866	JMP*	IPDC			05	00866	
002464	102376	A								
002465	000000	A	867	DPSM	DATA	0,0,0		05	00867	
002466	000000	A								
002467	000000	A								
002470	000000	A	868	VALU	DATA	0		05	00868	
002471	000012	A	869	TEN	DATA	10		05	00869	
			871	*****					05	00871
			872	*****					05	00872
			873	*****					05	00873
			874	*****					05	00874
002472	000000	A	875	CONV	ENTR			05	00875	
002473	072757	A	876	STX	ADDR+1		ADDRESS OF BUFFER	05	00876	
002474	052675	A	877	STA	SAVN		TEMP STORAGE	05	00877	
002475	062676	A	878	STB	SAVN+1			05	00878	
002476	006030	A	879	LDCI	BUFC		LOC OF 9 WORD TABLE	05	00879	
002477	002663	A								
002500	072756	A	880	STX	ADDR			05	00880	
002501	006030	A	881	LDCI	TBDC		LOC OF TABLE	05	00881	
002502	002627	A								
002503	072511	A	882	STX	CON1+2			05	00882	
002504	072517	A	883	STX	CON3+2			05	00883	
002505	072526	A	884	STX	CON4+2			05	00884	
002506	005004	A	885	TZX			INTEGER COUNTER	05	00885	
002507	002000	A	886	CON1	CALL	XDSU,0	SUB. VALUE FROM TABLE	05	00886	
002510	003541	A								
002511	000000	A								
002512	001004	A	887	JAN	CONS		CHECK IF VALUE LESS THAN TABLE	05	00887	
002513	002531	A								
002514	005144	A	888	CON2	IXR		INCR. INTEGER COUNT	05	00888	
002515	002000	A	889	CON3	CALL	XDSU,0	SUB. VALUE FROM TABLE	05	00889	
002516	003541	A								
002517	000000	A								
002520	001004	A	890	JAN	**4		CHECK IF VALUE NEG.	05	00890	
002521	002524	A								
002522	001000	A	891	JMP	CON2		NO	05	00891	
002523	002514	A								
002524	002000	A	892	CON4	CALL	XDAD,0	ADD TABLE VALUE BACK	05	00892	
002525	003473	A								
002526	000000	A								
002527	052675	A	893	STA	SAVN		SAVE VALUE	05	00893	
002530	062676	A	894	STB	SAVN+1			05	00894	
002531	077000	I	895	CON5	STX*	ADDR	STORE INTEGER IN TABLE	05	00895	
002532	042756	A	896	INR	ADDR			05	00896	
002533	032511	A	897	LDCI	CON1+2		UP-DATE BUFFER POINTER BY TWO.	05	00897	

002534	005144	A	898	IXR					05	00898
002535	005144	A	899	IXR					05	00899
002536	072511	A	900	STX	CON1+2				05	00900
002537	072517	A	901	STX	CON3+2				05	00901
002540	072526	A	902	STX	CON4+2				05	00902
002541	035001	A	903	LDX	1,1			CHECK IF NEXT TABLE VALUE ZERO	05	00903
002542	001040	A	904	JXZ	CON9				05	00904
002543	002551	A								
002544	005004	A	905	TZX				ZERO INTEGER COUNTER	05	00905
002545	012675	A	906	LDA	SAVN			RETURN VALUE	05	00906
002546	022676	A	907	LDB	SAVN+1				05	00907
002547	001000	A	908	JMP	CON1				05	00908
002550	002507	A								
002551	006030	A	909	CON9	LDXI	(BUFC)		ADD ASCII NOTATION TO BINARY NUMBER	05	00909
002552	002663	A								
002553	005002	A	910	TZB				BLANK OUT HIGH ORDER DIGITS.	05	00910
002554	015000	A	911	CON1	LDA	0,1		GET BINARY NUMBER	05	00911
002555	001010	A	912	JAZ	CON7				05	00912
002556	002573	A								
002557	005322	A	913	DBR					05	00913
002560	006120	A	914	CUN6	ADDI	0260		ADD ASCII CHARACTER ZERO.	05	00914
002561	000260	A								
002562	055000	A	915	STA	0,1				05	00915
002563	005144	A	916	IXR					05	00916
002564	005041	A	917	TXA					05	00917
002565	006140	A	918	SUBI	(BUFC+9)			CHECK IF 9 CHARACTERS CHECKED.	05	00918
002566	002674	A								
002567	001010	A	919	JAZ	CON8				05	00919
002570	002603	A								
002571	001000	A	920	JMP	CONL				05	00920
002572	002554	A								
002573	001020	A	921	CON7	JBZ	**4			05	00921
002574	002577	A								
002575	001000	A	922	JMP	CON6				05	00922
002576	002560	A								
002577	006120	A	923	ADDI	0240			BLANK OUT HIGH ORDER CHARACTER	05	00923
002600	000240	A								
002601	001000	A	924	JMP	CON6+2				05	00924
002602	002562	A								
002603	006030	A	925	CUN8	LDXI	(BUFC-1)		PACK ASCII CHARACTERS	05	00925
002604	002662	A								
002605	015000	A	926	CUN1	LDA	0,1		GET HIGH ORDER CHAR	05	00926
002606	005144	A	927	IXR					05	00927
002607	004250	A	928	LRLA	8				05	00928
002610	125000	A	929	ADD	0,1			GET LOW ORDER CHAR.	05	00929
002611	005144	A	930	IXR					05	00930
002612	057000	I	931	STA*	ADDR+1			STORE CHAR. IN BUFFER	05	00931
002613	042757	A	932	INR	ADDR+1				05	00932
002614	005041	A	933	TXA					05	00933
002615	006140	A	934	SUBI	(BUFC+9)			CHECK IF BUFFER BACKED	05	00934
002616	002674	A								
002617	001010	A	935	JAZ	**4				05	00935
002620	002623	A								
002621	001000	A	936	JMP	CON1			GET NEXT CHARACTERS.	05	00936
002622	002605	A								
002623	002000	A	937	CALL	IUFR			UPDATE FRC ELAP. TIME CNTR. IF NEC	05	00937
002624	001742	A								
002625	001000	A	938	JMP*	CONV				05	00938
002626	102472	A								
002627	005753	A	939	TBDC	DATA	05753,060400	100000000		05	00939
002630	060400	A								
002631	000461	A	940	DATA	0461,013200		100000000		05	00940
002632	013200	A								
002633	000036	A	941	DATA	036,041100		10000000		05	00941
002634	041100	A								
002635	000003	A	942	DATA	03,03240		100000		05	00942
002636	003240	A								
002637	000000	A	943	DATA	0,023420		10000		05	00943
002640	023420	A								
002641	000000	A	944	DATA	0,01750		1000		05	00944
002642	001750	A								
002643	000000	A	945	DATA	0,0144		100		05	00945
002644	000144	A								
002645	000000	A	946	DATA	0,012		10		05	00946
002646	000012	A								
002647	000000	A	947	DATA	0,01		1		05	00947
002650	000001	A								
002651	000000	A	948	DATA	0,0		0		05	00948
002652	000000	A								
002653		A	949	BUFO	BSS	5			05	00949
002660	120240	A	950	DATA	' ,0				05	00950
002661	000000	A								
002662	000240	A	951	DATA	0240				05	00951
002663		A	952	BUFC	BSS	9			05	00952
002674	000000	A	953	FLGC	DATA	0			05	00953
002675	000000	A	954	SAVN	DATA	0,0			05	00954
002676	000000	A								
002677	000000	A	955	TIME	DATA	0		TEMP. FR TIME	05	00955
002700	000000	A	956	CONT	DATA	0		TIME COUNTER	05	00956
002701		A	957	TABT	BSS	34		TIME BUFFER FOR 20 TIME PERIOD COUNTS	05	00957
002743	000000	A	958	SUMH	DATA	0,0		DOUBLE PRECISION ADD	05	00958
002744	000000	A								
002745	000000	A	959	TWNT	DATA	0,20			05	00959
002746	000024	A								
002747	000006	A	960	SIXM	DATA	6			05	00960

002750	000000	A	961 VAR	DATA	0,0				05 00961	
002751	000000	A								
002752	000000	A	962 HVAL	DATA	0,0	TOLERANCE HIGH			05 00962	
002753	000000	A								
002754	000000	A	963 LVAL	DATA	0,0	TOLERANCE LOW			05 00963	
002755	000000	A								
002756			964 ADDR	BSS	2	STORAGE LOCATIONS			05 00964	
			966	*****						05 00966
			967 *	TIME DELAY OF 1/4 SECOND					*05 00967	
			968 *	X = NO OF 1/4 SECONDS TO DELAY					*05 00968	
			969 *	CALLING SEQ.					*05 00969	
			970 *	LDXI NUMBER					*05 00970	
			971 *	CALL TOSC					*05 00971	
			972 *						*05 00972	
			973	*****						05 00973
002760	000000	A	974 TOSC	ENTR					05 00974	
002761	053001	A	975	STA	TOSA	*SAVE REGISTERS			05 00975	
002762	063002	A	976	STB	TOSA+1				05 00976	
002763	073003	A	977	STX	TOSA+2				05 00977	
002764	002000	A	978 TDS1	CALL	HLFS				05 00978	
002765	003004	A								
002766	033003	A	979	LDX	TOSA+2				05 00979	
002767	005344	A	980	DXR		X = NO. OF 1/4 SEC. TIME OUTS.			05 00980	
002770	073003	A	981	STX	TOSA+2				05 00981	
002771	001040	A	982	JXZ	TDS2				05 00982	
002772	002775	A								
002773	001000	A	983	JMP	TDS1				05 00983	
002774	002764	A								
002775	013001	A	984 TDS2	LDA	TOSA	RESTORE REGISTERS			05 00984	
002776	023002	A	985	LDB	TOSA+1				05 00985	
002777	001000	A	986	JMP*	TOSC				05 00986	
003000	102760	A								
003001	000000	A	987 TOSA	DATA	0,0,0				05 00987	
003002	000000	A								
003003	000000	A								
003004	000000	A	988 HLFS	ENTR					05 00988	
003005	011173	A	989	LDA	COMP				05 00989	
003006	001010	A	990	JAZ	**4				05 00990	
003007	003012	A								
003010	006010	A	991	LDAI	15632				05 00991	
003011	036420	A								
003012	006120	A	992	ADDI	10684				05 00992	
003013	024674	A								
003014	005014	A	993	TAX		1/4 SECOND TIME-OUT			05 00993	
003015	001040	A	994 HLF1	JXZ*	HLFS				05 00994	
003016	103004	A								
003017	013021	A	995	LDA	**2				05 00995	
003020	013022	A	996	LDA	**2				05 00996	
003021	013023	A	997	LDA	**2				05 00997	
003022	013024	A	998	LDA	**2				05 00998	
003023	005344	A	999	DXR					05 00999	
003024	001000	A	1000	JMP	HLF1				05 01000	
003025	003015	A								
003026	151305	A	1002 MES1	DATA	'REAL TIME CLOCK TEST',0106612,0				05 01002	
003027	140714	A								
003030	120324	A								
003031	144715	A								
003032	142640	A								
003033	141714	A								
003034	147703	A								
003035	145640	A								
003036	152305	A								
003037	151724	A								
003040	106612	A								
003041	000000	A								
003042	144657	A	1003 MES2	DATA	'I/O INSTRUCTION AND INTERRUPT TEST',0106612,0				05 01003	
003043	147640	A								
003044	144716	A								
003045	151724	A								
003046	151325	A								
003047	141724	A								
003050	144717	A								
003051	147240	A								
003052	140716	A								
003053	142240	A								
003054	144716	A								
003055	152305	A								
003056	151322	A								
003057	152720	A								
003060	152240	A								
003061	152305	A								
003062	151724	A								
003063	106612	A								
003064	000000	A								
003065	142722	A	1004 MES3	DATA	'ERROR NO. = ',0				05 01004	
003066	151317	A								
003067	151240	A								
003070	147317	A								
003071	127240	A								
003072	136640	A								
003073	000000	A								
003074	153301	A	1005 MES4	DATA	'VARIABLE',0				05 01005	
003075	151311	A								
003076	140702	A								
003077	146305	A								

003100	000000	A							
003101	120311	A	1006	MESA	DATA	' INTERVAL INTERRUPT CHECK',0106612,0		05	01006
003102	147324	A							
003103	142722	A							
003104	153301	A							
003105	146240	A							
003106	144716	A							
003107	152305	A							
003110	151322	A							
003111	152720	A							
003112	152240	A							
003113	141710	A							
003114	142703	A							
003115	145640	A							
003116	106612	A							
003117	000000	A							
003120	146705	A	1007	MES5	DATA	'MEMORY OVERFLOW INTERRUPT CHECK ',0106612,0		05	01007
003121	146717	A							
003122	151331	A							
003123	120317	A							
003124	153305	A							
003125	151306	A							
003126	146317	A							
003127	153640	A							
003130	144716	A							
003131	152305	A							
003132	151322	A							
003133	152720	A							
003134	152240	A							
003135	141710	A							
003136	142703	A							
003137	145640	A							
003140	106612	A							
003141	000000	A							
003142	143322	A	1008	MES6	DATA	'FREE RUNNING COUNTER CHECK',0106612,0		05	01008
003143	142705	A							
003144	120322	A							
003145	152716	A							
003146	147311	A							
003147	147307	A							
003150	120303	A							
003151	147725	A							
003152	147324	A							
003153	142722	A							
003154	120303	A							
003155	144305	A							
003156	141713	A							
003157	106612	A							
003160	000000	A							
003161	144716	A	1009	MES7	DATA	'INPUT FRC INCREMENTS PER SECOND ',0106612,0		05	01009
003162	150325	A							
003163	152240	A							
003164	143322	A							
003165	141640	A							
003166	144716	A							
003167	141722	A							
003170	142715	A							
003171	142716	A							
003172	152323	A							
003173	120320	A							
003174	142722	A							
003175	120323	A							
003176	142703	A							
003177	147716	A							
003200	142240	A							
003201	106612	A							
003202	000000	A							
003203	144716	A	1010	MES8	DATA	'INPUT BASIC INTERRUPTS PER SECOND ',0106612,0		05	01010
003204	150325	A							
003205	152240	A							
003206	141301	A							
003207	151711	A							
003210	141640	A							
003211	144716	A							
003212	152305	A							
003213	151322	A							
003214	152720	A							
003215	152323	A							
003216	120320	A							
003217	142722	A							
003220	120323	A							
003221	142703	A							
003222	147716	A							
003223	142240	A							
003224	106612	A							
003225	000000	A							
003226	151324	A	1011	MS15	DATA	'RTC TYPE =',0		05	01011
003227	141640	A							
003230	152331	A							
003231	150305	A							
003232	120275	A							
003233	000000	A							
003234	144716	A	1012	IM1	DATA	'INTERRUPT TIMING TEST ',0106612,0		05	01012
003235	152305	A							
003236	151322	A							

003237	152720	A							
003240	152240	A							
003241	152311	A							
003242	146711	A							
003243	147307	A							
003244	120324	A							
003245	142723	A							
003246	152240	A							
003247	106612	A							
003250	000000	A							
003251	144716	A	1013	IM3	DATA	'INTERVAL TIMER= ',0		05	01013
003252	152305	A							
003253	151326	A							
003254	140714	A							
003255	120324	A							
003256	144715	A							
003257	142722	A							
003260	136640	A							
003261	000000	A							
003262	153311	A	1014	IM4	DATA	'VII SELECT COUNT= ',0		05	01014
003263	144640	A							
003264	151705	A							
003265	146305	A							
003266	141724	A							
003267	120303	A							
003270	147725	A							
003271	147324	A							
003272	136640	A							
003273	000000	A							
003274	144716	A	1015	IM5	DATA	'INTERVAL DISPLAY PERIOD IN SEC.=',0		05	01015
003275	152305	A							
003276	151326	A							
003277	140714	A							
003300	120304	A							
003301	144723	A							
003302	150314	A							
003303	140731	A							
003304	120320	A							
003305	142722	A							
003306	144717	A							
003307	142240	A							
003310	144716	A							
003311	120323	A							
003312	142703	A							
003313	127275	A							
003314	000000	A							
003315	152716	A	1016	IM6	DATA	'UNACCEPTABLE',0106612,0		05	01016
003316	140703	A							
003317	141705	A							
003320	150324	A							
003321	140702	A							
003322	146305	A							
003323	106612	A							
003324	000000	A							
003325	141305	A	1017	IM7	DATA	'BEGIN TEST',0106612,0		05	01017
003326	143711	A							
003327	147240	A							
003330	152305	A							
003331	151724	A							
003332	106612	A							
003333	000000	A							
003334	143322	A	1018	IM9	DATA	'FRC: ',0		05	01018
003335	141672	A							
003336	120240	A							
003337	000000	A							
003340	146711	A	1019	IM10	DATA	'MIN',',0		05	01019
003341	147254	A							
003342	000000	A							
003343	151705	A	1020	IM11	DATA	'SEC ',0106612,0		05	01020
003344	141640	A							
003345	106612	A							
003346	000000	A							
003347	124326	A	1021	IM12	DATA	'(V)II:',0		05	01021
003350	124711	A							
003351	144672	A							
003352	000000	A							
003353	144716	A	1022	MS16	DATA	'INVALID',0		05	01022
003354	153301	A							
003355	146311	A							
003356	142240	A							
003357	000000	A							
003360	000000	A	1024 *	BCNG	ENTR	0	ADJUST INSTRS. TO BIT SIZE	05	01024
003361	005002	A	1026		TZB			05	01026
003362	005101	A	1027		INCR	1		05	01027
003363	004541	A	1028		LLSR	1		05	01028
003364	063514	A	1029		STB	XDSB		05	01029
003365	063524	A	1030		STB	XDS4+1		05	01030
003366	005311	A	1031		DAR			05	01031
003367	004341	A	1032		LSRA	1		05	01032
003370	053461	A	1033		STA	XDA2+1	SET ANAI INST	05	01033
003371	053527	A	1034		STA	XDS2+1		05	01034
003372	051717	A	1035		STA	XDAX+1		05	01035
003373	011172	A	1036		LDA	NBIT		05	01036
003374	005311	A	1037		DAR			05	01037

003375	005311	A	1038	DAR					05	01038
003376	053513	A	1039	STA	XDLC	SET LOOP COUNT FOR DIVIDE			05	01039
003377	001000	A	1040	JMP*	6CNG				05	01040
003400	103360	A								
	1042	*							05	01042
	1043	*							*05	01043
	1044	*				DOUBLE PRECISION INTEGER MULTIPLY BY ADDITION			*05	01044
	1045	*				CALL XDIM,MULT WHERE MULTIPLIER MUST BE A SINGLE WORD +			*05	01045
003401	073450	A	1046	XTI1	STX	XDIS+4	SAVE VALUES		05	01046
003402	053444	A	1047	STA	XDIS				05	01047
003403	053446	A	1048	STA	XDIS+2				05	01048
003404	063445	A	1049	STB	XDIS+1				05	01049
003405	063447	A	1050	STB	XDIS+3				05	01050
003406	023441	A	1051	LDB	XDIM				05	01051
003407	036000	A	1052	LDX	0,2	SET NO. OF TIMES TO ADD.			05	01052
003410	035000	A	1053	LDX	0,1				05	01053
003411	043441	A	1054	INR	XDIM				05	01054
003412	001040	A	1055	JXZ	XDI3	CHECK IF MULTIPLIER ZERO. ANS. ZERO			05	01055
003413	003430	A								
003414	005344	A	1056	XDI2	DXR				05	01056
003415	001040	A	1057	JXZ	XDI4				05	01057
003416	003435	A								
003417	013444	A	1058	LDA	XDIS				05	01058
003420	023445	A	1059	LDB	XDIS+1				05	01059
003421	002000	A	1060	CALL	XDAD,XDIS+2				05	01060
003422	003473	A								
003423	003446	A								
003424	053444	A	1061	STA	XDIS				05	01061
003425	063445	A	1062	STB	XDIS+1				05	01062
003426	001000	A	1063	JMP	XDI2				05	01063
003427	003414	A								
003430	005001	A	1064	XDI3	TZA				05	01064
003431	005002	A	1065	TZB					05	01065
003432	033450	A	1066	LDX	XDIS+4				05	01066
003433	001000	A	1067	JMP*	XDIM				05	01067
003434	103441	A								
003435	013444	A	1068	XDI4	LDA	XDIS			05	01068
003436	023445	A	1069	LDB	XDIS+1				05	01069
003437	033450	A	1070	LDX	XDIS+4				05	01070
003440	001000	A	1071	JMP	0				05	01071
003441	000000	A								
003441		A	1072	XDIM	BES	0			05	01072
003442	001000	A	1073	JMP	XDI1				05	01073
003443	003401	A								
003444	000000	A	1074	XDIS	DATA	0,0,0,0,0			05	01074
003445	000000	A								
003446	000000	A								
003447	000000	A								
003450	000000	A								
	1076	*							05	01076
	1077	*		XDAD		FIXED POINT DOUBLE PRECISION ADD/SUBTRACT			05	01077
	1078	*							05	01078
003451	073476	A	1079	STX	XDAD+3	SAVE XR			05	01079
003452	007400	A	1080	ROF		RESET OF			05	01080
003453	033473	A	1081	LDX	XDAD				05	01081
003454	035000	A	1082	LDX	0,1	XR>ADDR OF HI B			05	01082
003455	053477	A	1083	STA	XDAD+4	SAVE HI A			05	01083
003456	005021	A	1084	TBA		GET LO A			05	01084
003457	125001	A	1085	ADD	1,1	ADD LO B			05	01085
003460	006150	A	1086	XDA2	ANAI	077777	SIGN BIT		05	01086
003461	077777	A								
003462	005012	A	1087	TAB		SAVE RESULT			05	01087
003463	005001	A	1088	TZA					05	01088
003464	005511	A	1089	AOFA		GET CARRY			05	01089
003465	007400	A	1090	ROF		RESET OF			05	01090
003466	123477	A	1091	ADD	XDAD+4	ADD HI A			05	01091
003467	125000	A	1092	ADD	0,1	ADD HI B			05	01092
003470	043473	A	1093	INR	XDAD	SET RETURN			05	01093
003471	033476	A	1094	LDX	XDAD+3	RESTORE XR			05	01094
003472	001000	A	1095	JMP	0	RETURN			05	01095
003473	000000	A								
003474	003473	A	1096	XDAD	EGU	*-1	ENTRY		05	01096
003474	001000	A	1097	JMP	*-19				05	01097
003475	003451	A								
003476	000000	A	1098	DATA	0,0	TEMP STORAGE			05	01098
003477	000000	A								
	1100	*							05	01100
	1101	*							05	01101
	1102	*		XDCO		FIXED POINT DOUBLE PRECISION COMPLEMENT			05	01102
	1103	*							05	01103
003500	000000	A	1104	XDCO	ENTR				05	01104
003501	005211	A	1105	CPA					05	01105
003502	001020	A	1106	JBZ	**8				05	01106
003503	003512	A								
003504	005222	A	1107	CPB					05	01107
003505	005122	A	1108	IBR					05	01108
003506	004041	A	1109	LRLB	1				05	01109
003507	004141	A	1110	LSRB	1				05	01110
003510	001000	A	1111	JMP*	XDCO				05	01111
003511	103500	A								
003512	005111	A	1112	IAR					05	01112
003513	000016	A	1113	XDLC	DATA	14	DIVIDE LOOP COUNT (ALTERED)		05	01113
003514	100000	A	1114	XDSB	DATA	0100000	SIGN (ALTERED)		05	01114
	1115	*							05	01115
	1116	*		XDSU		FIXED POINT DOUBLE PRECISION SUBTRACT			05	01116

003515	073544	A 1118	STX	XDSU+3	SAVE XH	05 01117
003516	007400	A 1119	ROF		RESET OF	05 01118
003517	033541	A 1120	LDX	XDSU		05 01119
003520	035000	A 1121	LDX	0,1	XR-ADDR OF HI B	05 01120
003521	053545	A 1122	STA	XDSU+4	SAVE HI A	05 01121
003522	005021	A 1123	TBA			05 01122
003523	006110	A 1124	XDS4	ORAI	0100000	SET SIGN FOR CARRY
003524	100000	A				
003525	145001	A 1125	SUB	1,1	SUB LO B	05 01125
003526	006150	A 1126	XDS2	ANAI	077777	MASK SIGN
003527	077777	A				
003530	005012	A 1127	TAB		SAVE RESULT	05 01127
003531	005001	A 1128	TZA			05 01128
003532	005711	A 1129	SOFA		GET CARRY	05 01129
003533	007400	A 1130	ROF		RESET OF	05 01130
003534	123545	A 1131	ADD	XDSU+4	ADD HI A	05 01131
003535	145000	A 1132	SUB	0,1	SUB HI B	05 01132
003536	043541	A 1133	INR	XDSU	SET RETURN	05 01133
003537	033544	A 1134	LDX	XDSU+3	RESTORE XH	05 01134
003540	001000	A 1135	JMP	0	RETURN	05 01135
003541	000000	A				
003541	1136		ORG	*-1		05 01136
003541	000000	A 1137	XDSU	ENTR	ENTRY	05 01137
003542	001000	A 1138	JMP	*-21		05 01138
003543	003515	A				
003544	000000	A 1139	DATA	0,0	TEMP STORAGE	05 01139
003545	000000	A				
003546	010422	A 1141	M23	LDA	\$LWE	IS IT FROM M2 OR M3
003547	006150	A 1142	ANAI	010000		D 05 01141
003550	010000	A				D 05 01142
003551	001010	A 1143	JAZ	0500	FROM M2	D 05 01143
003552	000500	A				
003553	006010	A 1144	LDAI	0473		D 05 01144
003554	000473	A				
003555	052374	A 1145	STA	\$TTY		D 05 01145
003556	001000	A 1146	JMP	0500	FROM M3	D 05 01146
003557	000500	A				
003546	A 1147	END	M23			D 05 01147

ENTRY NAMES

EXTERNAL NAMES

SYMBOLS

000442	A SCON	000471	A SDCY	000440	A SFLG	000422	A \$LWE
000441	A \$MEM	000424	A \$MSM	002374	A \$TTY	002756	A ADDR
003360	A BCNG	002663	A BUFC	002653	A BUFO	001177	A CNTL
002605	A CO11	001173	A COMP	002507	A CON1	002514	A CON2
002515	A CON3	002524	A CON4	002531	A CON5	002560	A CON6
002573	A CON7	002603	A CON8	002551	A CON9	002554	A CONL
002700	A CONT	002472	A CONV	002373	A D60	002465	A DP5M
002367	A EMFR	002371	A EMVI	001174	A ERRC	001220	A ERRP
001202	A ERRS	002370	A ESFR	002372	A ESVI	000423	A ESZC
001201	A FFLG	002674	A FLGC	002345	A FRCM	002375	A HDEF
003015	A HLF1	003004	A HLF8	002752	A HVAL	001506	A I1
001677	A I10	001730	A I101	001736	A I10T	001607	A I11
001644	A I14	001634	A I141	001775	A I15	002000	A I151
001656	A I161	001653	A I162	001661	A I17	001417	A I2
001475	A I3	002207	A I30	002227	A I301	001431	A I4
001440	A I5	002033	A I50	002114	A I51	002200	A I52
001442	A I6	001527	A I7	001563	A I70	001526	A I71
001454	A I8	001543	A I9	002254	A IC1	002264	A IC2
002271	A IC3	002301	A IC4	002315	A IC5	002325	A IC6
002332	A IC7	002342	A IC8	002235	A ICOM	002363	A IFM
002361	A INT	002360	A ILNG	003234	A IM1	003340	A IM10
003343	A IM11	003347	A IM12	003251	A IM3	003262	A IM4
003274	A IM5	003315	A IM6	003325	A IM7	003334	A IM9
000410	A INPA	000411	A INPB	000412	A INPC	000413	A INPD
000414	A INPE	000415	A INPF	000416	A INPG	002362	A INTT
002357	A INXT	002402	A IPD1	002446	A IPD3	002452	A IPD4
002457	A IPD5	002376	A IPDC	001467	A ISCP	001370	A ISCR
001335	A ITT	001742	A IUFR	002365	A IVM	001574	A IX11
001606	A IX12	002356	A LFRC	001171	A LOOP	002754	A LVAL
002354	A LVII	003546	A M23	003026	A MES1	003042	A MES2
003065	A MES3	003074	A MES4	003120	A MES5	003142	A MES6
003161	A MES7	003203	A MES8	003101	A MESA	003226	A MS15
003353	A MS16	001172	A NBIT	000400	A OUTA	000401	A OUTB
000402	A OUTC	000403	A OUTD	000404	A OUTE	000405	A OUTF
000406	A OUTG	000407	A OUTH	001200	A PINT	000502	A PNTR
001234	A RT10	001302	A RT13	000047	A RTC	000562	A RTC1
000663	A RTC2	000713	A RTC3	000751	A RTC4	001027	A RTC5
001040	A RTC6	001160	A RTC9	000642	A RTCF	000573	A RTCK
000654	A RTCL	000602	A RTCM	000636	A RTCN	000647	A RTCO
000652	A RTCP	000527	A RTCT	001175	A RTSA	001014	A RTT4
001056	A RTTC	002675	A SAVN	002351	A SELC	002747	A SIXM
000421	A SSWT	002743	A SUMH	002701	A TABT	002627	A TBDC
000420	A TDLY	002764	A TDS1	002775	A TDS2	003001	A TDSA
002760	A TDSC	002471	A TEN	002677	A TIME	001176	A TMSV
000417	A TOUT	002745	A TWNT	002355	A UFRC	002353	A UVII
002470	A VALU	002750	A VAR	002347	A VIIF	003460	A XDA2
003473	A XDAD	001716	A XDAX	003500	A XDCC	003401	A XDI1
003414	A XD12	003430	A XD13	003435	A XD14	003441	A XD1M
003444	A XD1S	003513	A XDLC	003526	A XDS2	003523	A XDS4
003514	A XD5B	003541	A XDSU				

0 ERRORS ASSEMBLY COMPLETE

LITERALS

POINTERS

