

KL11/DL11

TELETYPE TESTS
MD-11-DZKLA-E

EP-DZKLA-E-DL-A
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FICHE 1 OF 1

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MADE IN USA

This microfiche card contains 50 frames of teletype test data, arranged in a 10x5 grid. Each frame displays a series of alphanumeric characters and symbols, representing individual test results or data points. The text is small and dense, typical of microfiche storage. The frames are separated by thin white lines, and the overall layout is organized and systematic.

MAIN
DECK

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      .ABS
      .LIST ME
      .NLIST MD,MC
:PRG0- COMBINED INPUT-OUTPUT LOGIC TESTS.
:PRG1- READER TEST.
:PRG2- PRINTER TEST.
:PRG3- PUNCH TEST.
:PRG4- KEYBOARD TEST.
:PRG5- COMBINED TEST.
:PRG6- READER EXERCISER. SPECIAL BINARY COUNT PATTERN.
:PRG7- PRINTER EXERCISER.
:PRG10- SPECIAL BINARY COUNT PATTERN TAPE GENERATOR.
:PRG11- PUNCH CLOCK ADJUSTMENT ROUTINE.
:PRG12- READER CLOCK ADJUSTMENT ROUTINE.
:PRG13- MAINTENANCE MODE SINGLE CHARACTER DATA TEST.
:PRG14- MAINTENANCE MODE SPECIAL BINARY COUNT PATTERN DATA TEST.

```

:STANDARD SR SWITCH OPTIONS (SWITCH SET TO A 1)

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:SR 15 - HALT AT END OF ROUTINE.
:SR 14 - SCOPE.
:SR 11 - INHIBIT ITERATION.
:SR 10 - LOOP PROGRAM
:SR 9 - SELECT ROUTINE.
:SR 8 - DISABLE STALL MODE AND RUN FULL SPEED.
:SR 6 THROUGH SR 0 - NUMBER OF ROUTINE TO BE SELECTED.

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      =0
      +2 ;UNASSIGNED TRAP
MACHER: HALT ;SP OVERFLOW, BUS ERROR TRAP
      +2 ;RESERVED INSTRUCTION TRAP
      HALT ;TRACE TRAP
      +2 ;TRAP TO CALL IOX
      HALT ;POWER FAIL TRAP
      +2 ;EMT TRAP
      EMTINT ;TRAP TRAP. SIMILAR TO EMT
      PRTY7
      DLYX
      PRTY7
;LOC 40 THROUGH 776 ARE FILLED WITH .+2 AND HALT.

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000000 000000
000001 000002
000002 000000
000003 000006
000004 000000
000005 000012
000006 000000
000007 000016
000008 000000
000009 000022
000010 000000
000011 000026
000012 000000
000013 002170
000014 000340
000015 003344
000016 000340

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000046 000046
000047 002062

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      =46
      LOGIC ;SET TO ADDRESS OF ACT 11 HOOKS
;EQUATE STATEMENTS
CC=177776
PSW=177776
SPBOT=1200
NOP=240
OPEN=0
MANUAL=BIT15

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177776
177776
001200
000240
000000
!00000

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57	000000							RU=%0
58	000006							R6=%6
59	000007							PC=%7
60	100000							BIT15=100000
61	040000							BIT14=40000
62	020000							BIT13=20000
63	010000							BIT12=10000
64	004000							BIT11=4000
65	002000							BIT10=2000
66	001000							BIT9=1000
67	000400							BIT8=400
68	000200							BIT7=200
69	000100							BIT6=100
70	000040							BIT5=40
71	000020							BIT4=20
72	000010							BIT3=10
73	000004							BIT2=4
74	000002							BIT1=2
75	000001							BIT0=1
76	005726							POPSP=5726
77	022626							POPSP2=022626
78	000340							PRTY7=340
79	000300							PRTY6=300
80	000240							PRTY5=240
81	000200							PRTY4=200
82	000140							PRTY3=140
83	000100							PRTY2=100
84	000040							PRTY1=40
85	000000							PRTY0=0
86	000000							EMTX=0
87	104400							DELAYX=TRAP+0
88	000007							BELL=007
89	015142							BLOCKA=DEND
90	015144							BLOCK1=BLOCKA+2
91	015254							BLOCKB=BLOCKA+112
92	015265							BLKBB=BLOCKA+123
93	015256							BLOCK2=BLOCKA+114
94	015267							BLK2=BLOCKA+125
95	015366							BLOCKC=BLOCKA+224
96	015377							BLKCC=BLOCKA+235
97	177777							P0TLST=-1
98	177777							P1TLST=-1
99	177777							P2TLST=-1
100	177777							P3TLST=-1
101	177777							P4TLST=-1
102	000174							. =174
103	000174	177570						SRPTR: 177570
104	000176	000000						SOFTSR: 000000
105	000200	000200						. =200
106	000200	012706	001200					MOV #SPBOT,%6
107	000204	016746	177576					MOV 6,-(SP)
108	000210	016746	177570					MOV 4,-(SP)
109	000214	012767	000230	177562				MOV #15,4
110	000222	005777	177746					TST @SRPTR
111								
112	000226	000404						BR 25

```

;POP THE STACK. SAME AS TST (6)+
;POP STACK TWICE. SAME AS CMP (6)+,(6)+
;PRIORITY LEVEL DEFINITIONS

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;SET BOTTOM OF THE STACK
;SAVE CURRENT VECTOR

;SET UP TIME OUT VECTOR
;TRY TO REFERENCE THE
;HARDWARE SWITCH REGISTER
;BRANCH IF NO TIME OUT TRAP OCCURRS

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113 000230 012767 000176 177736 1S:  MOV      #SOFTSR,SRPTR      ;CHANGE THE SWITCH REGISTER POINTER
114                                     ;TO POINT TO A SOFTWARE SWITCH REGISTER
115 000236 022626                                     ;RESTORE THE STACK
116 000240 012667 177540 2S:  CMP      (6)+,(6)+      ;RESTORE TIME OUT VECTOR
117 000244 012667 177536  MOV      (6)+,4
118 000250 000167 001254  MOV      (6)+,6
119 001210 001210  JMP      START          ;GO TO START OF PROGRAM.
120 001210 177560  TKS:    =1210
121 001212 177562  TKB:    177560
122 001214 177564  TPS:    177562
123 001216 177566  TPB:    177564
124 001220 000060  TKVTR:  60
125 001222 000200  TKLVL:  PRTY4
126 001224 000064  TPVTR:  64
127 001226 000200  TPLVL:  PRTY4
128 001230 000000  TTYTYP: OPEN
129 001232 000000  PRGNUM: OPEN
130 001234 000000  KSTART: OPEN
131 001236 000000  CURTST: OPEN
132 001240 000000  RTNNO:  OPEN
133 001242 000000  NXTST:  OPEN
134 001244 000000  ICTR:   OPEN
135 001246 000000  SCOPTR: OPEN
136 001250 000000  PRGID:  OPEN
137 001252 005144  PRGTAB: PRG0
138 001254 007652  PRG1
139 001256 010026  PRG2
140 001260 011462  PRG3
141 001262 012110  PRG4
142 001264 012410  PRG5
143 001266 013370  PRG6
144 001270 013454  PRG7
145 001272 013626  PRG10
146 001274 013662  PRG11
147 001276 013672  PRG12
148 001300 013762  PRG13
149 001302 014034  PRG14
150 001304 001304  EMTTAB:
151 001304 003666  TYP
152 001306 003014  TYP5
153 001310 003146  STAL
154 001312 001466  ERR
155 001314 001446  DTCHK
156 001316 001422  CHLT
157 001320 002414  STLSRV
158 001322 002444  STLSPV
159 001324 001434  EHLT
160 001326 002474  SRSETT
161 001330 001754  CHAINN
162 001332 002210  CHK33
163 001334 002226  CHK35
164 001336 002224  CHK33B
165 001340 004574  TYPL3
166 001342 001456  DTHLT
167 001344 002264  SAVRG
168 001346 002324  RSTRG

; LSR CSR
; LSR BUFFER
; LSP CSR
; LSP BUFFER
; LSR INTERRUPT VECTOR
; LSR PRIORITY LEVEL
; LSP INTERRUPT VECTOR
; LSP PRIORITY LEVEL

; CONTAINS CURRENT PROGRAM#
; CURRENT PROGRAM START ADDRESS.
; CONTAINS ADDR OF CURRENT TEST.
; CONTAINS CURRENT TEST #.
; CONTAINS ADDR OF NEXT TEST.
; CONTAINS CURRENT ITERATION COUNT
; CONTAINS CURRENT SCOPE POINTER.
; CONTAINS PROGRAM INDICATORS
; PRG0 START ADDRESS
; PRG1 START ADDRESS
; PRG2 START ADDRESS
; PRG3 START ADDRESS
; PRG4 START ADDRESS
; PRG5 START ADDRESS
; PRG6 START ADDRESS
; PRG7 START ADDRESS
; PRG10 START ADDRESS
; PRG11 START ADDRESS
; PRG12 START ADDRESS
; PRG13 START ADDRESS
; PRG14 START ADDRESS

; POINTER FOR EMT CALL TYPE
; POINTER FOR EMT CALL TYPES
; POINTER FOR EMT CALL STALL
; POINTER FOR EMT CALL ERROR
; POINTER FOR EMT CALL DATCHK
; POINTER FOR EMT CALL CHALT
; POINTER FOR EMT CALL STRDRV
; POINTER FOR EMT CALL STPCHV
; POINTER FOR EMT CALL EHALT
; POINTER FOR EMT CALL SRESET
; POINTER FOR EMT CALL SCOPE
; POINTER FOR EMT CALL CK33
; POINTER FOR EMT CALL CK35
; POINTER FOR EMT CALL CK37
; POINTER FOR EMT CALL TYPLN3
; POINTER FOR EMT CALL DATHLT
; POINTER FOR EMT CALL SAVREG
; POINTER FOR EMT CALL RSTREG

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169	001350	002240			CKASR			: POINTER FOR EMT CALL CHKASR
170	001352	002512			RSETT2			: POINTER FOR EMT CALL RESET2
171	001354	003046			DLY			: POINTER FOR EMT CALL DELAY
172	001356	003206			RDLY			: POINTER FOR EMT CALL RDELAY
173	001360	003306			RSTAL			: POINTER FOR EMT CALL RSTALL
174	001362	000000			RCNT: OPEN			: CHARACTER COUNT
175	001364	000000			CRBUF: OPEN			: HOLDS ONE CHARACTER FROM READER.
176	001366	000000			CHR1: OPEN			
177	001370	000000			CHR2: OPEN			
178	001372	000000			CHR3: OPEN			
179	001374	000000			CHR1A: OPEN			
180	001376	000000			CHR2A: OPEN			
181	001400	000000			CHR3A: OPEN			
182	001402	000000			ERCTR: OPEN			
183	001404	000000			CTRA: OPEN			
184	001406	000000			CTRB: OPEN			
185	001410	000000			CTRC: OPEN			
186	001412	000000			CTRD: OPEN			
187	001414	000000			BRCTR: OPEN			
188	001416	000000			DVDND: OPEN			
189	001420	000000			DVQUOT: OPEN			
190					: COMMON HALT ROUTINE			
191	001422	011600			CHLT: MOV 2%6,%0			: DEVELOP ADDRESS OF CALLER.
192	001424	162700	000002		SUB #2,%0			
193	001430	000000			HALT			: HALT. ADDRESS OF CALL INSTRUCTION
194	001432	000002			RTI			: IN DATA LIGHTS.
195					: UNCONDITIONAL ERROR HALT ROUTINE.			
196	001434	011600			EHLT: MOV 2%6,%0			: DEVELOP ADDRESS OF CALLER.
197	001436	162700	000002		SUB #2,%0			
198	001442	000000			HALT			: HALT. ADDR OF ERROR CALL
199	001444	000002			RTI			: IN DATA LIGHTS.
200					: DATA CHECK ROUTINE.			
201	001446	126767	177712	177711	DTCHK: CMPB CRBUF,CRBUF+1			: COMPARE EXPECTED AND RECEIVED
202	001454	001403			BEG DTCHKA			: CHARS. BRANCH IF SAME.
203	001456	016700	177702		DTHLT: MOV CRBUF,%0			: MOVE S/B AND WAS CHARS TO RO.
204	001462	000000			HALT			: DATA ERROR HALT. GOOD CHAR IN
205								: DATA LIGHTS LEFT. BAD CHAR IN DATA
206	001464	000002			DTCHKA: RTI			: LIGHTS RIGHT. EXIT.
207					: CONDITIONAL ERROR HALT.			
208	001466	032777	040000	176500	ERR: BIT #BIT14,%SRPTR			: SCOPE SWITCH SET?
209	001474	001004			BNE ERRA			: BR IF YES.
210	001476	011600			MOV 2%6,%0			: DEVELOP CALLER'S ADDRESS.
211	001500	162700	000002		SUB #2,%0			
212	001504	000000			HALT			: ERROR HALT.
213	001506	000002			ERRA: RTI			: EXIT.
214					: ROUTINE END HALT SUBROUTINE.			
215	001510	032777	100000	176456	SHALT: BIT #BIT15,%SRPTR			: HALT AT END OF TEST?
216	001516	001403			BEG SHLTA			: BR IF NOT.
217	001520	116700	177514		MOVB RTNNO,%0			: CURRENT TEST # TO RO.
218	001524	000000			HALT			: ROUTINE END HALT.
219	001526	000207			SHLTA: RTS %7			: EXIT.

220	001530	012706	001200		START:	MOV	#SPBOT,%6	;SET BOTTOM OF SP STACK.
221	001534	005067	176236			CLR	PSW	
222	001540	012767	000006	176236		MOV	#6,MACHER	
223	001546	005067	177466			CLR	RTNNO	
224	001552	005737	000042			TST	#42	;CHAIN OR AUTO-ACCEPTANCE?
225	001556	001404				BEQ	IS	;BR IF NOT.
226	001560	004767	001616			JSR	PC,TIMCAL	;CALIBRATE DELAY ROUTINE.
227	001564	000167	012244			JMP	PRG14	;GO RUN PRG14.
228	001570	017700	176400		IS:	MOV	JSRPTR,%0	;(:JSRPTR) TO RD
229	001574	042700	177760			BIC	#177760,%0	;LIMIT (SR) TO BITS 3-0
230	001600	020027	000014			CMP	%0,#14	;COMPARE (SR) TO PROGRAM LIMIT
231	001604	101402				BLOS	CRTA	;VALID PROGRAM NUMBER?
232	001606	104010			INCPRG:	EHALT		;NO. INCORRECT PRG NUMBER
233	001610	000747				BR	START	;START OVER.
234	001612	005067	177432		CRTA:	CLR	PRGID	
235	001616	010067	177410			MOV	%0,PRGNUM	;SAVE PROGRAM NUMBER AT PRGNUM
236	001622	001404				BEQ	CRTB	;BR IF 0.
237	001624	004767	001552			JSR	PC,TIMCAL	;CALIBRATE DELAY ROUTINE.
238	001630	016700	177376			MOV	PRGNUM,%0	;PRGNUM BACK TO RD.
239	001634	000241			CRTB:	CLC		
240	001636	006100				ROL	%0	;ROX2
241	001640	000170	001252			JMP	PRGTAB(0)	;GO TO SELECTED PROGRAM.
242	001644	104005			SRSET:	CHALT		;SET SR OPTIONS DESIRED
243	001646	016767	177362	177366	GETRDY:	MOV	KSTART,NXTST	;ADDR OF 1ST ROUTINE TO NXTST
244	001654	012767	000006	176122	CLEAN:	MOV	#6,MACHER	;RESET MACHER TRAP.
245	001662	012706	001200			MOV	#SPBOT,%6	;SET UP BOTTOM OF STACK.
246	001666	104400				DELAYX		
247	001670	104011				SRESET		
248	001672	005067	176100			CLR	PSW	
249	001676	004767	000210		GTRDYA:	JSR	%7,FORMD	;ROLL FORWARD TO "NEXT" ROUTINE.
250	001702	032777	001000	176264	GTRDYB:	BIT	#BIT9,JSRPTR	;SELECT ROUTINE SWITCH SET?
251	001710	001002				BNE	GTRDYC	;BRANCH IF YES.
252	001712	000177	177320			JMP	JSRTRST	;RUN CURRENT ROUTINE.
253	001716	017700	176252		GTRDYC:	MOV	JSRPTR,%0	;(:JSRPTR) TO RD
254	001722	042700	177600			BIC	#177600,%0	;MASK UNDESIED BITS
255	001726	126700	177306			CMPB	RTNNO,%0	;COMPARE RTNNO TO (RD)
256	001732	001002				BNE	GTRDYD	;BRANCH IF ROUTINE NOT FOUND YET.
257	001734	000177	177276			JMP	JSRTRST	;GO RUN ROUTINE.
258	001740	022767	177777	177274	GTRDYD:	CMP	#-1,NXTST	;NO. CHECK FOR LAST ROUTINE.
259	001746	001353				BNE	GTRDYA	;LAST ROUTINE?
260	001750	104010			INCRTN:	EHALT		;YES. INCORRECT ROUTINE SELECTED.
261	001752	000735				BR	GETRDY	;START OVER.
262	001754	012706	001200		CHAINN:	MOV	#SPBOT,R6	;RESET STACK.
263	001760	032777	040000	176206		BIT	#BIT14,JSRPTR	;SCOPE?
264	001766	001406				BEQ	CHNA	;BR IF NOT.
265	001770	022767	177777	177250		CMP	#-1,SCOPTR	;YES. SCOPE POINTER = -1?
266	001776	001402				BEQ	CHNA	;BRANCH IF SCOPE ENTRY IS -1.
267	002000	000177	177242			JMP	JSRTRST	;RETURN TO ROUTINE.
268	002004	032777	004000	176162	CHNA:	BIT	#BIT11,JSRPTR	;INHIBIT ITERATION?
269	002012	001005				BNE	CHNAA	;BR IF YES.
270	002014	005367	177224			DEC	ICTR	;NO. ICTR 0?
271	002020	001402				BEQ	CHNAA	;BR IF YES.
272	002022	000177	177220			JMP	JSRTRST	;NO. RETURN TO TEST ROUTINE
273	002026	004767	177456		CHNAA:	JSR	%7,SHALT	;GO HALT IF HALT SWITCH IS SET
274	002032	032777	001000	176134	CHNB:	BIT	#BIT9,JSRPTR	;SELECT ROUTINE?
275	002040	001302				BNE	GETRDY	;BR IF YES.

276	002042	022767	177777	177172		CMP	#-1,NXTST	;NO. LAST TEST?
277	002050	001301				BNE	CLEAN	;BR IF NOT.
278	002052	013700	000042		CHNC:	MOV	#42,RO	;GET CONTENTS OF 42.
279	002056	001407				BEQ	HERE	;BR IF 0.
280	002060	000005				RESET		
281	002062	004710			LOGIC:	JSR	PC,(0)	;RETURN TO MONITOR.
282	002064	000240	000240	000240		WORD	NOP,NOP,NOP	
283	002072	000167	011736			JMP	PRG14	;RETURN TO PRG14.
284	002076	032777	002000	176070	HERE:	BIT	#BIT10,JSRPTR	;LOOP PROGRAM?
285	002104	001260				BNE	GETRDY	;BR IF YES.
286	002106	000000				HALT		;PROGRAM END HALT.
287	002110	000656				BR	GETRDY	;RESTART.
288	002112	016705	177124		FORWD:	MOV	NXTST,%5	;ADDR OF NEXT ROUTINE TO R5.
289	002116	012567	177116			MOV	(5)+,RTNNO	;GET NEXT ROUTINE NUMBER.
290	002122	012567	177114			MOV	(5)+,NXTST	;GET ADDR OF NEXT "NEXT" ROUTINE.
291	002126	105767	177116			TSTB	PRGID	;CHECK IF PROGRAM SCOPE AND I COUNT
292	002132	100407				BMI	FORWDB	;PARAMETERS. BRANCH IF NOT.
293	002134	012567	177104			MOV	(5)+,ICTR	;GET ITERATION COUNT.
294	002140	012567	177102			MOV	(5)+,SCOPTR	;GET SCOPE LOOP ENTRY POINTER.
295	002144	010567	177066		FORWDA:	MOV	%5,CURTST	;ADDR OF NOW CURRENT TEST TO CURTST.
296	002150	000207				RTS	%7	;EXIT FORWD SUBROUTINE.
297	002152	012767	177777	177066	FORWDB:	MOV	#-1,SCOPTR	;FORCE "NO SCOPE"
298	002160	012767	000001	177056		MOV	#1,ICTR	;FORCE I COUNT OF 1
299	002166	000766				BR	FORWDA	
300							ROUTINE.	
301	002170	010046			EMTINT:	MOV	RO,-(6)	;PUSH RO.
302	002172	016600	000002			MOV	2(6),RO	;GET EMT PC.
303	002176	014000				MOV	-(0),RO	;GET EMT CALL.
304	002200	006300				ASL	RO	;TIMES 2.
305	002202	016000	171304			MOV	EMTTAB-10000(0),RO	;DEVELOP EMT ADDR.
306	002206	000200				RTS	RO	;GO TO EMT RTN. RESTORE RO.
307							ROUTINES TO DETERMINE TTY TYPES.	
308	002210	032767	000001	177012	CHK33:	BIT	#1,TTYTYP	;CHECK FOR 33
309	002216	001002				BNE	CHK33B	;BR IF NOT 33.
310	002220	062716	000002		CHK33A:	ADD	#2,(6)	;SET UP 33 EXIT.
311	002224	000002			CHK33B:	RTI		;EXIT.
312	002226	032767	000001	176774	CHK35:	BIT	#1,TTYTYP	;CHECK FOR 35.
313	002234	001371				BNE	CHK33A	;BR IF 35.
314	002236	000002				RTI		;NOT 35.
315	002240	032767	000010	176762	CKASR:	BIT	#BIT3,TTYTYP	;CHECK FOR ASR TTY.
316	002246	001001				BNE	.+4	;BRANCH IF NOT ASR.
317	002250	000002				RTI		;ASR. EXIT.
318	002252	022626				POPSP2		;POP STACK TWICE.
319	002254	012767	000001	176762		MOV	#1,ICTR	;FORCE I COUNT TO A 1.
320	002262	104012				SCOPE		;SCOPE TO BYPASS ROUTINE.
321							SAVE REGS 0 TO 4 SUBROUTINE.	
322	002264	012667	000030		SAVRG:	MOV	(6)+,SVRPC	;SAVE PC AND PSW.
323	002270	012667	000026			MOV	(6)+,SVRPSW	
324	002274	010446				MOV	%4,-(6)	;SAVE REGS 0 - 4
325	002276	010346				MOV	%3,-(6)	;IN STACK.
326	002300	010246				MOV	%2,-(6)	
327	002302	010146				MOV	%1,-(6)	
328	002304	010046				MOV	%0,-(6)	
329	002306	016746	000010			MOV	SVRPSW,-(6)	;RESTORE PC AND PSW.
330	002312	016746	000002			MOV	SVRPC,-(6)	
331	002316	000002				RTI		;EXIT.

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332 002320 000000 SVRPC: OPEN
333 002322 000000 SVRPSW: OPEN
334 :RESTORE REGS 0 TO 4 SUBROUTINE.
335 002324 012667 000030 RSTRG: MOV (6)+,RSTPC ;SAVE PC AND PSW.
336 002330 012667 000026 MOV (6)+,RSTPSW
337 002334 012600 MOV (6)+,%0 ;RESTORE REGS 0 - 4
338 002336 012601 MOV (6)+,%1 ;FROM STACK.
339 002340 012602 MOV (6)+,%2
340 002342 012603 MOV (6)+,%3
341 002344 012604 MOV (6)+,%4
342 002346 016746 000010 MOV RSTPSW,-(6) ;RESTORE PC AND PSW.
343 002352 016746 000002 MOV RSTPC,-(6)
344 002356 000002 RTI ;EXIT
345 002360 000000 RSTPC: OPEN
346 002362 000000 RSTPSW: OPEN
347 :ROUTINE TO FETCH A CHARACTER
348 002364 012767 000310 177022 AREAD: MOV #200.,BRCTR ;SET UP DELAY COUNT.
349 002372 005277 176612 INC @TKS ;ENABLE READER.
350 002376 104400 DELAYX ;WAIT.
351 002400 105777 176604 TSTB @TKS ;DONE SET?
352 002404 100402 BMI ARDB ;BR IF YES.
353 002406 104010 EHALT ;ERROR. NO RESPONSE FROM READER.
354 002410 000765 BR AREAD ;TRY AGAIN.
355 002412 000207 ARDB: RTS %7 ;EXIT
356 :ROUTINE TO SET LSR INTERRUPT VECTOR AND PRIORITY
357 002414 017667 000000 000012 STLDRV: MOV @ (6),STPRA+2 ;MOVE VECTOR ADDR TO STPRA+2
358 002422 062716 000002 ADD #2,@%6 ;SET UP EXIT
359 002426 016701 176566 MOV TKVTR,%1
360 002432 012721 000000 STPRA: MOV #OPEN,(1)+ ;SET VECTOR ADDRESS
361 002436 016721 176560 MOV TKLVL,(1)+ ;SET PRIORITY
362 002442 000002 RTI ;EXIT
363 :ROUTINE TO SET LSP INTERRUPT VECTOR AND PRIORITY.
364 002444 017667 000000 000012 STLSPV: MOV @ (6),STPPA+2 ;MOVE VECTOR ADDR TO STPPA+2
365 002452 062716 000002 ADD #2,@%6 ;SET UP EXIT
366 002456 016701 176542 MOV TPVTR,%1
367 002462 012721 000000 STPPA: MOV #OPEN,(1)+ ;SET VECTOR ADDRESS.
368 002466 016721 176534 MOV TPLVL,(1)+ ;SET PRIORITY
369 002472 000002 RTI ;EXIT.
370 :ROUTINE TO ISSUE RESET.
371 002474 012700 052525 SRSETT: MOV #52525,%0 ;DATA TO R0.
372 002500 005100 COM %0 ;COMPLEMENT (R0).
373 002502 010067 177770 MOV %0,SRSETT+2 ;(R0) TO SRSETT+2.
374 002506 000005 RESET ;ISSUE RESET. (R0) IS
375 002510 000002 RTI ;DISPLAYED. EXIT.
376 :DOUBLE RESET SUBROUTINE.
377 002512 104011 RSETT2: SRESET
378 002514 104011 SRESET
379 002516 000002 RTI ;EXIT.
380 :RANDOM NUMBER GENERATOR. ROUTINE EXITS WITH NUMBER IN REGISTER 0.
381 002520 016700 000042 RNGEN: MOV RP1,%0
382 002524 006100 ROL %0
383 002526 006100 ROL %0
384 002530 066700 000034 ADD RP2,%0
385 002534 010067 000026 MOV %0,RP1
386 002540 006100 ROL %0
387 002542 006100 ROL %0

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388	002544	066700	000020		AUD	RP2,%0	
389	002550	006100			ROL	%0	
390	002552	006100			ROL	%0	
391	002554	010067	000010		MOV	%0,RP2	
392	002560	016700	000002		MOV	RP1,%0	
393	002564	000207			RTS	%7	;EXIT. NUMBER IN RC
394	002566	001233		RP1:	1233		
395	002570	007622		RP2:	7622		
396	002572	104006		BREAD:	STRDRV		;SET READER VECTOR
397	002574	002632			BREADB		;TO BREADB
398	002576	052777	000101	176404	BIS	#101,%TKS	;ENABLE LSR AND LSRI.
399	002604	104024			DELAY		;AWAIT INTERRUPT.
400	002606	000310			200.		
401	002610	005077	176374		CLR	%TKS	;CLEAR LSRI ENABLE.
402	002614	104010			EHALT		;NO RESPONSE HALT.
403	002616	000765			BR	BREAD	;TRY AGAIN.
404	002620	022626		BREADA:	POPSP2		
405	002622	117767	176364	176534	MOV	%TKB,CRBUF	;CHAR READ TO CRBUF.
406	002630	000207			RTS	%7	;EXIT SUBROUTINE.
407	002632	005077	176352		BREADB:	CLR	%TKS
408	002636	105777	176346		TSTB	%TKS	;CLEAR LSR INTERRUPT ENABLE.
409	002642	100003			BPL	BREADC	;TEST FOR DONE.
410	002644	012716	002620		MOV	#BREADA,%%6	;BRANCH IF DONE NOT SET.
411	002650	000002			RTI		;MODIFY INTERRUPT EXIT TO BREADA.
412	002652	000000		BREADC:	HALT		;OK. EXIT INTERRUPT.
413	002654	012716	002662		MOV	#BREADD,(6)	;HALT. DONE BIT NOT SET AFTER INTERRUPT.
414	002660	000002			RTI		;POINT TO BREADD.
415	002662	022626		BREADD:	POPSP2		;EXIT INTERRUPT.
416	002664	000742			BR	BREAD	;TRY AGAIN.
417					;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.		
418	002666	011600		TYP:	MOV	%%6,%0	;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS.
419	002670	062716	000002		ADD	#2,%%6	;SET UP EXIT.
420	002674	011000			MOV	%%0,%0	;ADDRESS OF MESSAGE TO RD.
421	002676	112067	000110		TYPA:	MOV	(0)+,TYPDAT
422	002702	122767	000100	000102	CMPB	#100,TYPDAT	;GET CHARACTER
423	002710	001003			BNE	TYPC	;CHECK FOR "a" CHARACTER
424	002712	104024			DELAY		;BRANCH IF NOT "a".
425	002714	000144			100.		;WAIT 100 MSECS.
426	002716	000002			RTI		
427	002720	122767	000045	000064	TYPC:	CMPB	#45,TYPDAT
428	002726	001416			BEQ	TYPF	;TERMINATOR CHAR. DONE. EXIT.
429	002730	122767	000043	000054	CMPB	#43,TYPDAT	;CHECK FOR "x".
430	002736	001417			BEQ	TYPG	;BRANCH IF "x".
431	002740	004767	000002		JSR	%7,TYPD	;NOT "x". CHECK FOR "#".
432	002744	000754			BR	TYPA	;BRANCH IF "#".
433	002746	116777	000040	176242	TYPD:	MOV	TYPDAT,%TPB
434	002754	105777	176234		TSTB	%TPS	;OUTPUT CHARACTER TO PRINTER
435	002760	100375			BPL	-%4	;WAIT FOR DONE FLAG.
436	002762	000207			RTS	%7	
437	002764	112767	000015	000020	TYPF:	MOV	#15,TYPDAT
438	002772	004767	177750		JSR	%7,TYPD	;MOVE CARRIAGE RETURN CODE TO TYPDAT
439	002776	112767	000012	000006	TYPG:	MOV	#12,TYPDAT
440	003004	004767	177736		JSR	%7,TYPD	;GO TYPE CHAR.
441	003010	000732			BR	TYPA	;MOVE LF CODE TO TYPDAT.
442	003012	000000			TYPDAT: OPEN		;GO TYPE CHAR.
443					;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER		

444	003014	011600			TYPS:	MOV	%6,%0		;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
445	003016	062716	000002			ADD	#2,%6		;UPDATE TO NEXT MESSAGE ADDRESS
446	003022	011067	000014			MOV	%0,TYPSB		;ADDRESS OF MESSAGE TO TYPSB
447	003026	022767	177777	000006		CMP	#-1,TYPSB		;CHECK FOR TERMINATOR
448	003034	001001				BNE	TYPSA		;BRANCH IF NOT TERMINATOR.
449	003036	000002				RTI			;TERMINATOR, EXIT
450	003040	104000			TYPSA:	TYPE			;CALL ON TYP SUB TO TYPE MESSAGE
451	003042	000000			TYPSB:	OPEN			;ADDRESS OF MESSAGE GOES HERE
452	003044	000763				BR	TYPS		;GO PROCESS NEXT MESSAGE
453						;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS			
454		003050				DLCNT=.+2			
455	003046	011627	000000		DLY:	MOV	(6),#0		;GET DELAY COUNT ADDRESS.
456	003052	062716	000002			ADD	#2,%6		;SET UP EXIT ADDRESS
457	003056	017767	177766	177764		MOV	%DLCNT,DLCNT		;DELAY COUNT TO STACK
458	003064	005067	174706			CLR	PSW		;SET PRIORITY 0
459		003072				MSEC=.+2			
460	003070	012767	000000	000046	DLYA:	MOV	#0,DLYT		;1 MSEC COUNT TO DLYT
461	003076	016767	000042	000040	DLYB:	MOV	DLYT,DLYT		
462	003104	016767	000034	000032		MOV	DLYT,DLYT		
463	003112	016767	000026	000024		MOV	DLYT,DLYT		
464	003120	016767	000020	000016		MOV	DLYT,DLYT		
465	003126	005367	000012			DEC	DLYT		;DECREMENT DLYT.
466	003132	001361				BNE	DLYB		;BRANCH IF NOT 0.
467	003134	005367	177710			DEC	DLCNT		;DECREMENT COUNT
468	003140	001353				BNE	DLYA		;BR IF NOT DONE DELAYING
469	003142	000002				RTI			;EXIT.
470	003144	000000			DLYT:	OPEN			
471						;SUBROUTINE TO STALL A RANDOM NUMBER OF MILLISECONDS. MAXIMUM STALL			
472						;DETERMINED BY CONTENTS OF LOC STLSK.			
473	003146	032767	040000	176074	STAL:	BIT	#BIT14,PRGID		;TEST FOR STALLS ALLOWED.
474	003154	001001				BNE	STALAA		;ALLOWED.
475	003156	000002				RTI			;NOT ALLOWED.
476	003160	004767	177334		STALAA:	JSR	%7,RNGEN		;GO GET RANDOM NUMBER.
477	003164	046700	000014			BIC	STLSK,%0		;# IN RD. APPLY STALL MASK.
478	003170	001404				BEG	STALB		;BRANCH IF RESULT IS 0.
479	003172	010067	000002			MOV	%0,STALA		
480	003176	104024				DELAY			;DELAY
481	003200	000000			STALA:	OPEN			;DELAY COUNT
482	003202	000002			STALB:	RTI			;DONE. EXIT.
483	003204	000000			STLSK:	OPEN			;STALL MASK.
484					;READER	DELAY ROUTINE.			
485		003210				RDLCNT=.+2			
486	003206	011627	000000		RDLY:	MOV	(6),#0		
487	003212	062716	000002			ADD	#2,(6)		
488	003216	017767	177766	177764		MOV	%RDLCNT,RDLCNT		;GET DELAY COUNT.
489	003224	005067	174546			CLR	PSW		
490	003230	016767	177636	000046	RDLYA:	MOV	MSEC,DLYR		
491	003236	016767	000042	000040	RDLYB:	MOV	DLYR,DLYR		
492	003244	016767	000034	000032		MOV	DLYR,DLYR		
493	003252	016767	000026	000024		MOV	DLYR,DLYR		
494	003260	016767	000020	000016		MOV	DLYR,DLYR		
495	003266	005367	000012			DEC	DLYR		;DECREMENT DLYR.
496	003272	001361				BNE	RDLYB		;BR IF NOT 0.
497	003274	005367	177710			DEC	RDLCNT		;DECREMENT COUNT.
498	003300	001353				BNE	RDLYA		;BR IF NOT 0.
499	003302	000002				RTI			;EXIT.

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500 003304 000000          DLYR:  OPEN
501          :READER  STALL ROUTINE.
502 003306 032767 040000 175734 RSTAL: BIT  #BIT14,PRGID  ;STALL?
503 003314 001001          BNE  RSTLA          ;BR IF YES.
504 003316 000002          RTI                    ;NO. EXIT.
505 003320 004767 177174          RSTLA: JSR  PC,RNGEN  ;GET RANDOM NUMBER.
506 003324 046700 177654          BIC  STLMSK,%0
507 003330 001404          BEQ  RSTLB
508 003332 010067 000002          MOV  %D,RSTLAA
509 003336 104025          RDELAY                    ;DELAY.
510 003340 000000          RSTLAA: OPEN
511 003342 000002          RSTLB: RTI                    ;DONE. EXIT.
512          ;SUB TO
513          DELAY % TIME.
514          DLYRO=DLYX+4
515          DLYR1=DLYXA+4
516 003344 012727 000144 000000 DLYX:  MOV  #100.,#0
517 003352 005067 174420          CLR  PSW
518 003356 012727 001750 000000 DLYXA: MOV  #1000.,#0
519 003364 005367 177772          DLYXB: DEC  DLYR1
520 003372 005367 177752          DLYXB: BNE  DLYXB
521 003376 001367          DEC  DLYRO
522 003400 000002          BNE  DLYXA
523          RTI
524 003402 004767 000050          ;DELAY ROUTINE CALIBRATE ROUTINE.
525 003406 004767 000044          TIMCAL: JSR  PC,TSPCH
526 003412 104400          JSR  PC,TSPCH
527 003414 104011          DELAYX
528 003416 005067 175776          SRESET
529 003422 016767 175766 175766 CLR  DVQUOT
530 003430 162767 000144 175760 TIMCLA: MOV  BRCTR,DVDND
531 003436 103403          SUB  #100.,DVDND
532 003440 005267 175754          BLO  TIMCLB
533 003444 000771          INC  DVQUOT
534 003446 016767 175746 177416 TIMCLB: BR  TIMCLA
535 003454 000207          MOV  DVQUOT,MSEC
536 003456 104007          RTS  PC
537 003460 003542          TSPCH: STPCHV
538 003462 005067 175726          TSPCHA
539 003466 005077 175524          CLR  BRCTR
540 003472 052777 000100 175514 CLR  JTPB
541 003500 016767 175710 175706 TSPCHC: BIS  #BIT6,JTPS
542 003506 016767 175702 175700          MOV  BRCTR,BRCTR
543 003514 016767 175674 175672          MOV  BRCTR,BRCTR
544 003522 016767 175666 175664          MOV  BRCTR,BRCTR
545 003530 005267 175660          INC  BRCTR
546 003534 001361          BNE  TSPCHC
547 003536 001434          EHLT
548 003540 000777          BR
549 003542 012716 003550          TSPCHA: MOV  #TSPCHB,(6)
550 003546 000002          RTI
551 003550 000207          TSPCHB: RTS  PC
552          ;SUBROUTINE TO GENERATE RANDOM CHARACTER COUNT
553 003552 004767 176742          GRCNT: JSR  %7,RNGEN
554 003556 046700 000010          BIC  RCMSK,%0
555 003562 001773          BEQ  GRCNT
;TRY AGAIN IF RESULT 0

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556	003564	010067	000004		MOV	%0,RNCNT	;COUNT TO RNCNT
557	003570	000207			RTS	%7	;EXIT.
558	003572	000000			RCMSK:	OPEN	;RANDOM CHARACTER MASK.
559	003574	000000			RNCNT:	OPEN	;RANDOM CHARACTER COUNT.
560					:SUB TO	COMPARE READER DATA AGAINST EXPECTED DATA AND REPORT ERRORS.	
561	003576	004767	000262		BCHECK:	JSR	%7,GTBIN
562	003602	110067	175557			MOVB	%0,CRBUF+1
563	003606	126767	175552	175551		CMPB	CRBUF,CRBUF+1
564	003614	001001				BNE	.+4
565	003616	000207				RTS	%7
566	003620	104017				DATHLT	
567	003622	005367	175554			DEC	ERCTR
568	003626	001002				BNE	.+6
569	003630	004767	000002			JSR	%7,BSYNC
570	003634	000207				RTS	%7
571					:SUBROUTINE TO SYNC THE LSR TO A	SPECIAL BINARY COUNT PATTERN TEST TAPE.	
572	003636	004767	000164		BSYNC:	JSR	%7,INBIN
573	003642	004767	176724			JSR	%7,BREAD
574	003646	116767	175512	175512		MOVB	CRBUF,CHR1
575	003654	004767	176712			JSR	%7,BREAD
576	003660	116767	175500	175502		MOVB	CRBUF,CHR2
577	003666	004767	176700			JSR	%7,BREAD
578	003672	116767	175466	175472		MOVB	CRBUF,CHR3
579	003700	004767	000012			JSR	%7,SYNCA
580	003704	000754				BR	BSYNC
581	003706	012767	000003	175466		MOV	#3,ERCTR
582	003714	000207				RTS	%7
583	003716	012767	001000	000100	SYNCA:	MOV	#512,SYCTRA
584	003724	004767	000134		SYNCB:	JSR	%7,GTBIN
585	003730	010067	175440			MOV	%0,CHR1A
586	003734	004767	000124			JSR	%7,GTBIN
587	003740	010067	175432			MOV	%0,CHR2A
588	003744	004767	000114			JSR	%7,GTBIN
589	003750	010067	175424			MOV	%0,CHR3A
590	003754	026767	175406	175412		CMP	CHR1,CHR1A
591	003762	001013				BNE	SYNCC
592	003764	026767	175400	175404		CMP	CHR2,CHR2A
593	003772	001007				BNE	SYNCC
594	003774	026767	175372	175376		CMP	CHR3,CHR3A
595	004002	001003				BNE	SYNCC
596	004004	062716	000002			ADD	#2,(6)
597	004010	000207				RTS	%7
598	004012	005367	000006		SYNCC:	DEC	SYCTRA
599	004016	001342				BNE	SYNCB
600	004020	104010				EHALT	
601	004022	000207				RTS	%7
602	004024	000000			SYCTRA:	OPEN	
603					:SUBROUTINE TO INITIALIZE BINARY	COUNT PATTERNS.	
604	004026	012767	177777	000014	INBIN:	MOV	#-1,RIND
605	004034	004567	000300			JSR	%5,BMOVE
606	004040	004050				RIND	
607	004042	004051				RIND+1	
608	004044	000013				11	
609	004046	000207				RTS	%7
610	004050	000000			RIND:	OPEN	;EXIT
611	004052	000000			PTO:	OPEN	

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612	004054	000000			PT1:	OPEN		
613	004056	000000			PIND:	OPEN		
614	004060	000000			PTOP:	OPEN		
615	004062	000000			PTIP:	OPEN		
616					:SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN RO			
617	004064	016767	177762	177762	GTBIN:	MOV	PTO,PT1	;PREVIOUS BIN CHAR TO PT1
618	004072	005167	177756			COM	PT1	
619	004076	005167	177746			COM	RIND	
620	004102	001002				BNE	.+6	
621	004104	005267	177744			INC	PT1	
622	004110	042767	177400	177736		BIC	#177400,PT1	;MASK TO 8 BITS
623	004116	016767	177732	177726		MOV	PT1,PTO	;SAVE BIN CHAR IN PTO
624	004124	016700	177724			MOV	PT1,%0	;BIN CHAR TO RO.
625	004130	000207				RTS	%7	;EXIT.
626	004132	016767	177722	177722	GTBINP:	MOV	PTOP,PTIP	;PREVIOUS BIN CHAR TO PTIP
627	004140	005167	177716			COM	PTIP	
628	004144	005167	177706			COM	PIND	
629	004150	001002				BNE	.+6	
630	004152	005267	177704			INC	PTIP	
631	004156	042767	177400	177676		BIC	#177400,PTIP	;MASK TO 8 BITS.
632	004164	016767	177672	177666		MOV	PTIP,PTOP	;SAVE BIN CHAR IN PTO.
633	004172	016701	177664			MOV	PTIP,%1	;BIN CHAR TO R1.
634	004176	000207				RTS	%7	;EXIT.
635					:OCTAL TO ASCII CONVERT ROUTINES			
636	004200	012500			ACNV6:	MOV	(5)+,%0	;CONVERT TO 6 ASCII. GET OCTAL ADDRESS
637	004202	012567	000012			MOV	(5)+,ACNVB	;GET ASCII ADDRESS
638	004206	004767	000052			JSR	%7,ACNV	;CONVERT TO ASCII
639	004212	004567	000122			JSR	%5,BMOVE	;MOVE 6 CHARS TO ASCII ADDRESS
640	004216	004254				AIST		
641	004220	000000			ACNVB:	OPEN		
642	004222	000006				6		
643	004224	000205				RTS	%5	;EXIT
644	004226	012500			ACNV4:	MOV	(5)+,%0	;CONVERT TO 4 ASCII. GET OCTAL ADDRESS
645	004230	012567	000012			MOV	(5)+,ACNVC	;GET ASCII ADDRESS
646	004234	004767	000024			JSR	%7,ACNV	;CONVERT TO ASCII
647	004240	004567	000074			JSR	%5,BMOVE	;MOVE 4 CHARS TO ASCII ADDRESS.
648	004244	004256				AIST+2		
649	004246	000000			ACNVC:	OPEN		
650	004250	000004				4		
651	004252	000205				RTS	%5	;EXIT
652	004254	000000			AIST:	OPEN		
653	004256	000000				OPEN		
654	004260	000000				OPEN		
655	004262	000000			ACNVX:	OPEN		
656	004264	012701	004262		ACNV:	MOV	#AIST+6,%1	;ADDR TO STORE ASCII TO R1
657	004270	012702	000006			MOV	#6,%2	;6 TO R2
658	004274	011067	177762			MOV	%0,ACNVX	;OCTAL WORD TO ACNVX
659	004300	016703	177756		ACNVM:	MOV	ACNVX,%3	
660	004304	042703	177770			BIC	#177770,%3	;ISOLATE LEAST SIGNIFICANT OCTAL #
661	004310	062703	000060			ADD	#60,%3	;ADD 60 TO CONVERT TO ASCII
662	004314	110341				MOV8	%3,-(1)	;STORE ASCII BYTE
663	004316	006067	177740			ROR	ACNVX	;MOVE NEXT OCTAL DIGIT TO LEAST
664	004322	006067	177734			ROR	ACNVX	;SIGNIFICANT POSITION
665	004326	006067	177730			ROR	ACNVX	
666	004332	005302				DEC	%2	;DONE 6 TIMES?
667	004334	001361				BNE	ACNVM	;NO. REPEAT.

NO1

668	004336	000207				RTS	%7		; YES. EXIT.
669						: SUBROUTINE TO			: MOVE A VARIABLE NUMBER OF BYTES.
670	004340	104020				BMOVE: SAVREG			: SAVE REGS.
671	004342	012501				MOV	(5)+,%1		: GET "FROM" ADDRESS
672	004344	012502				MOV	(5)+,%2		: GET "TO" ADDRESS
673	004346	012503				MOV	(5)+,%3		: GET COUNT
674	004350	112122				BMOVA: MOV	(1)+,(2)+		: MOVE BYTE
675	004352	005303				DEC	%3		: DECREMENT COUNT
676	004354	001375				BNE	BMOVA		: BRANCH IF NOT DONE.
677	004356	104021				RSTREG			: RESTORE REGS.
678	004360	000205				RTS	%5		: DONE EXIT
679						: SUBROUTINE TO			: CHECK FOR PUNCH READY.
680	004362	105777	174626			CPRDY: TSTB	ATPS		: TEST FOR READY BIT.
681	004366	100001				BPL	CPRDYA		: BRANCH IF READY NOT SET.
682	004370	000207				RTS	%7		: OK. EXIT.
683	004372	104010				CPRDYA: EHALT			: NOT READY. HALT.
684	004374	000772				BR	CPRDY		
685						: SUBROUTINE TO			: PUNCH ON LSP CHARACTER IN REG 0.
686	004376	004767	177760			LSPCH: JSR	%7,CPRDY		: GO CHECK FOR PUNCH READY.
687	004402	010077	174610			MOV	%0,ATPB		: LOAD PUNCH BUFFER.
688	004406	105777	174602			TSTB	ATPS		: WAIT FOR DONE.
689	004412	100375				BPL	-4		
690	004414	005000				CLF	%0		
691	004416	000207				RTS	%7		: DONE. EXIT.
692						: BINARY TO DECIMAL			: ASCII CONVERT SUBROUTINE.
693	004420	012700	015135			BDCNV: MOV	#DECVAL,%0		: SET UP ADDR TO STORE DECIMAL ASCII IN R0
694	004424	013501				MOV	AT(5)+,%1		: BINARY VALUE TO R1.
695	004426	012702	004526			MOV	#ADTENP,%2		: ADDR OF TEN POWER STRING TO R2.
696	004432	012767	000005	000060		MOV	#5,CNVCTR		: SET UP FOR 5 POWER CONVERSIONS.
697	004440	012267	000060			BDCNVA: MOV	(2)+,TENPWR		: MOVE POWER OF TEN VALUE TO TENPWR.
698	004444	004767	000010			JSR	%7,SUBTEN		: PERFORM CONVERSION
699	004450	005367	000044			DEC	CNVCTR		: DONE 5 CONVERSIONS?
700	004454	001371				BNE	BDCNVA		: BRANCH IF NOT YET 5.
701	004456	000205				RTS	%5		: YES. EXIT.
702	004460	005067	000036			SUBTEN: CLR	DIGIT		: CLEAR DIGIT
703	004464	166701	000034			SUBTNA: SUB	TENPWR,%1		: SUBTRACT TEN POWER FROM BINARY VALUE.
704	004470	103403				BCS	SUBTNB		: BRANCH IF UNSUCCESSFUL SUBTRACTION.
705	004472	005267	000024			INC	DIGIT		
706	004476	000772				BR	SUBTNA		
707	004500	066701	000020			SUBTNB: ADD	TENPWR,%1		: RESTORE SUBTRACTED VALUE.
708	004504	062767	000060	000010		ADD	#60,DIGIT		: CONVERT (DIGIT) TO ASCII
709	004512	116720	000004			MOVB	DIGIT,(0)+		: MOVE ASCII CHAR TO DECVAL FIELD.
710	004516	000207				RTS	%7		: EXIT.
711	004520	000000				CNVCTR: OPEN			
712	004522	000000				DIGIT: OPEN			
713	004524	000000				TENPWR: OPEN			
714	004526	023420				ADTENP: 10000.			
715	004530	001750					1000.		
716	004532	000144					100.		
717	004534	000012					10.		
718	004536	000001					1		
719						: SUBROUTINE TO			: TYPE A LINE OF CHARACTERS
720	004540	012767	000114	000024		TYPLN: MOV	#76,TCTR		: 76 TO CHAR COUNT
721	004546	012704	015142			TYPLA: MOV	#BLOCKA,%4		: SET LINE ADDRESS IN R4.
722	004552	104002				TYPLB: STALL			: STALL IF ALLOWED.
723	004554	112400				MOVB	(4)+,%0		: GET CHARACTER

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724 004556 004767 177614 JSR %7,LSPCH ;GO OUTPUT CHARACTER.
725 004562 005367 000004 DEC TCTR ;DONE?
726 004566 001371 BNE TYPLB ;BRANCH IF NOT DONE.
727 004570 000207 RTS %7 ;DONE. EXIT
728 004572 000000
729 TCTR: OPEN
;SUBROUTINE TO TYPE LINE OF 3 CHARACTERS
730 004574 011667 000016 TYPL3: MOV @%6,TPL3A ;DEVELOP AND SET ADDRESS OF
731 004600 017767 000012 000010 MOV @TPL3A,TPL3A ;DATA IN TPL3A.
732 004606 062716 000002 ADD #2,@%6 ;SET UP EXIT.
733 004612 004567 000064 JSR %5,FBF3 ;FILL BUFFER WITH 3 CHARACTERS
734 004616 000000 TPL3A: OPEN
735 004620 042767 040000 174422 BIC #BIT14,PRGID ;DISABLE STALLS.
736 004626 004767 177706 JSR %7,TYPLN ;GO TYPE LINE OF CHARACTERS.
737 004632 000002 RTI ;EXIT.
738 004634 112767 000015 010300 STBF: MOVB #15,BLOCKA ;SUB TO SET UP BUFFER AREA.
739 004642 112767 000012 010273 MOVB #12,BLOCKA+1
740 004650 112767 000015 010376 STBFA: MOVB #15,BLOCKB
741 004656 112767 000012 010371 MOVB #12,BLOCKB+1
742 004664 112767 000015 010474 MOVB #15,BLOCKC
743 004672 112767 000012 010467 MOVB #12,BLOCKC+1
744 004700 000207 RTS %7 ;EXIT
745 ;SUBROUTINE TO FILL CHARACTER BUFFER WITH 3 CHARACTERS.
746 004702 012567 000004 FBF3: MOV (5)+,FBF3A
747 004706 004567 177422 JSR %5,BMOVE ;MOVE 3 CHARS TO BUFFER.
748 004712 000000 FBF3A: OPEN
749 004714 015144 BLOCK1
750 004716 000003 3
751 004720 004567 177414 FBF3B: JSR %5,BMOVE ;FILL 72 CHARACTERS BUFFER
752 004724 015144 BLOCK1 ;WITH 3 CHARACTERS
753 004726 015147 BLOCK1+3
754 004730 000105 69.
755 004732 004567 177402 JSR %5,BMOVE
756 004736 015144 BLOCK1
757 004740 015256 BLOCK2
758 004742 000110 72.
759 004744 000205 RTS %5 ;EXIT
760 ;SUBROUTINE TO FILL BUFFER WITH ALL CHARACTERS
761 004746 004567 177366 FBALL: JSR %5,BMOVE ;FILL 72 CHAR BUFFER WITH
762 004752 014176 A ;ALL CHARACTERS.
763 004754 015144 BLOCK1
764 004756 000077 63.
765 004760 004567 177354 JSR %5,BMOVE
766 004764 014176 A
767 004766 015243 BLOCK1+63.
768 004770 000011 9.
769 004772 004567 177342 JSR %5,BMOVE
770 004776 015144 BLOCK1
771 005000 015256 BLOCK2
772 005002 000110 72.
773 005004 000207 RTS %7 ;EXIT.
774 ;SUB TO FILL BUFFER WITH 33 WORST CASE PATTERN.
775 005006 004567 177326 FW336: JSR %5,BMOVE ;6 CHARACTER PATTERN TO BUFFER
776 005012 014162 A33WP6
777 005014 015144 BLOCK1
778 005016 000006 6
779 005020 004567 177314 JSR %5,BMOVE ;FILL BUFFER WITH PATTERN.

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780	005024	015144		BLOCK1		
781	005026	015152		BLOCK1+6		
782	005030	000102		66.		
783	005032	004567	177302	JSR	%5,BMOVE	
784	005036	015144		BLOCK1		
785	005040	015256		BLOCK2		
786	005042	000110		72.		
787	005044	000207		RTS	%7	:EXIT
788				:SUB TO FILL BUFFER WITH 35 WORST CASE PATTERN.		
789	005046	004567	177266	FW356: JSR	%5,BMOVE	:6 CHARACTER PATTERN TO BUFFER
790	005052	014170		A35WP6		
791	005054	015144		BLOCK1		
792	005056	000006		6		
793	005060	004567	177254	JSR	%5,BMOVE	:FILL BUFFER WITH PATTERN.
794	005064	015144		BLOCK1		
795	005066	015152		BLOCK1+6		
796	005070	000102		66.		
797	005072	004567	177242	JSR	%5,BMOVE	
798	005076	015144		BLOCK1		
799	005100	015256		BLOCK2		
800	005102	000110		72.		
801	005104	000207		RTS	%7	:EXIT.
802				:ROUTINE TO GET CHARACTER FROM KEYBOARD.		
803	005106	005777	174100	GKBCR: TST	@TKB	:CLEAR DONE.
804	005112	105777	174072	TSTB	@TKS	:WAIT FOR DONE FLAG.
805	005116	100375		BPL	-4	
806	005120	117767	174066	MOVB	@TKB,CRBUF	:CHARACTER TO CRBUF.
807	005126	116723	174232	MOVB	CRBUF,(3)+	:CHARACTER TO LINE BUFFER.
808	005132	116700	174226	MOVB	CRBUF,%0	
809	005136	004767	177234	JSR	%7,LSPCH	:ECHO CHARACTER.
810	005142	000207		RTS	%7	


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      .SBTTL PRGO - INPUT-OUTPUT LOGIC TESTS
      Z=0
      X=-1
011      000000
012      177777
013      005144 012767 005156 174062 PRGO:  MOV    #POTO,KSTART ;ADDRESS OF 1ST ROUTINE TO KSTART.
014      005152 000167 174466          JMP    SRSET      ;GO GET STARTED.
015      *****
016      POTO:  0 ;PRGO TEST ROUTINE 0 *
017      005156 000000          POT1 ;ADDRESS OF NEXT ROUTINE *
018      005160 005206          1000. ;TEST ITERATION COUNT *
019      005162 001750          POAA ;SCOPE ENTRY POINT *
020      005164 005174          *****
021      ;TEST ABILITY TO REFERENCE THE KEYBOARD/READER STATUS WORD (TKS)
022      *****
023      005166 012767 005202 172610 POAA:  MOV    #POAE,MACHER ;SET UP MACHINE ERROR TRAP.
024      005174 005777 174010          TST    #TKS      ;REFERENCE CODER STATUS WORD.
025      005200 104012          SCOPE ;SCOPE
026      005202 104003          POAE:  ERROR ;ERROR. TRAPPED WHEN REFERENCING READER.
027      005204 104012          SCOPE ;STATUS WORD (TKS).
028      *****
029      POT1:  1 ;PRGO TEST ROUTINE 1 *
030      005210 005236          POT2 ;ADDRESS OF NEXT ROUTINE *
031      005212 001750          1000. ;TEST ITERATION COUNT *
032      005214 005224          POBA ;SCOPE ENTRY POINT *
033      *****
034      ;TEST ABILITY TO REFERENCE THE KEYBOARD/READER BUFFER (TKB).
035      *****
036      005216 012767 005232 172560 POBA:  MOV    #POBE,MACHER ;SET UP MACHINE ERROR TRAP
037      005224 005777 173762          TST    #TKB      ;REFERENCE READER BUFFER.
038      005230 104012          SCOPE ;SCOPE
039      005232 104003          POBE:  ERROR ;ERROR. TRAPPED WHEN REFERENCING
040      005234 104012          SCOPE ;READER BUFFER. (TKB).
041      *****
042      POT2:  2 ;PRGO TEST ROUTINE 2 *
043      005236 000002          POT3 ;ADDRESS OF NEXT ROUTINE *
044      005240 005266          1000. ;TEST ITERATION COUNT *
045      005242 001750          POCA ;SCOPE ENTRY POINT *
046      005244 005254          *****
047      ;TEST ABILITY TO REFERENCE PUNCH/PRINTER STATUS WORD (TPS).
048      *****
049      005246 012767 005262 172530 POCA:  MOV    #PDCE,MACHER ;SETUP MACHINE ERROR TRAP.
050      005254 005777 173734          TST    #TPS      ;REFERENCE PUNCH/PRINTER STATUS WORD.
051      005260 104012          SCOPE ;SCOPE
052      005262 104003          PDCE:  ERROR ;ERROR. TRAPPED WHEN REFERENCING
053      005264 104012          SCOPE ;PUNCH/PRINTER STATUS WORD (TPS).
054      *****
055      POT3:  3 ;PRGO TEST ROUTINE 3 *
056      005266 000003          POT4 ;ADDRESS OF NEXT ROUTINE *
057      005270 005316          1000. ;TEST ITERATION COUNT *
058      005272 001750          PODA ;SCOPE ENTRY POINT *
059      005274 005304          *****
060      ;TEST ABILITY TO REFERENCE PUNCH/PRINTER BUFFER (TPB).
061      *****
062      005276 012767 005312 172500 PODA:  MOV    #PODE,MACHER ;SETUP MACHINE ERROR TRAP.
063      005304 005777 173706          TST    #TPB      ;REFERENCE PUNCH/PRINTER BUFFER.
064      005310 104012          SCOPE ;SCOPE
065      005312 104003          PODE:  ERROR ;ERROR. TRAPPED WHEN REFERENCING
066      005314 104012          SCOPE ;PUNCH/PRINTER BUFFER. (TPS).
067      *****
068      POT4:  4 ;PRGO TEST ROUTINE 4 *
069      005316 000004          POT5 ;ADDRESS OF NEXT ROUTINE *
070      005320 005400
  
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867 005322 001750          1000.          ;TEST ITERATION COUNT          *
868 005324 005334          POEA          ;SCOPE ENTRY POINT            *
869                                     ;*****
870                                     ;TEST ABILITY TO SET AND CLEAR READER/KYBD IE BIT.
871 005326 012767 000340 172442          MOV      #PRTY7,PSW          ;SET PRIORITY 7.
872 005334 052777 000100 173646          POEA:  BIS      #BIT6,@TKS          ;SET ID BIT IN TKS.
873 005342 032777 000100 173640          BIT      #BIT6,@TKS          ;CHECK ID BIT IN TKS
874 005350 001002          BNE      POEB          ;BRANCH IF ID BIT IS SET.
875 005352 104003          ERROR          ;ERROR 1 ID BIT NOT SET.
876 005354 104012          SCOPE
877 005356 042777 000100 173624          POEB:  BIC      #BIT6,@TKS          ;CLEAR ID BIT IN TKS
878 005364 032777 000100 173616          BIT      #BIT6,@TKS          ;CHECK ID BIT IN TKS.
879 005372 001401          BEQ      POEC          ;BRANCH IF ID BIT IS CLEARED.
880 005374 104003          ERROR          ;ERROR. ID BIT FAILED TO CLEAR.
881 005376 104012          POEC:  SCOPE          ;SCOPE
882                                     ;*****
883 005400 000005          POT5:  5          ; PRGO TEST ROUTINE 5          *
884 005402 005442          POT6          ;ADDRESS OF NEXT ROUTINE      *
885 005404 000144          100.          ;TEST ITERATION COUNT        *
886 005406 005416          POFA          ;SCOPE ENTRY POINT          *
887                                     ;*****
888                                     ;TEST ABILITY TO CLEAR ID BIT WITH RESET INSTRUCTION.
889 005410 012767 000340 172360          MOV      #PRTY7,PSW          ;SET PRIORITY 7.
890 005416 052777 000100 173564          POFA:  BIS      #BIT6,@TKS          ;SET ID BIT IN TKS
891 005424 104011          SRESET          ;RESET
892 005426 032777 000100 173554          BIT      #BIT6,@TKS          ;TEST ID BIT.
893 005434 001401          BEQ      .+4          ;BRANCH IF ID BIT IS CLEAR.
894 005436 104003          ERROR          ;ERROR. RESET FAILED TO CLEAR ID BIT.
895 005440 104012          SCOPE          ;SCOPE
896                                     ;*****
897 005442 000006          POT6:  6          ; PRGO TEST ROUTINE 6          *
898 005444 005476          POT7          ;ADDRESS OF NEXT ROUTINE      *
899 005446 000024          20.          ;TEST ITERATION COUNT        *
900 005450 005454          POGA          ;SCOPE ENTRY POINT          *
901                                     ;*****
902                                     ;TEST THAT READER DONE BIT SETS SOMETIME AFTER RDR ENABLE.
903 005452 104022          CHKASR
904 005454 104023          POGA:  RESET2
905 005456 005277 173526          INC      @TKS          ;ENABLE READER.
906 005462 104400          DELAYX          ;WAIT.
907 005464 105777 173520          TSTB    @TKS          ;CHECK FOR DONE
908 005470 100401          BMI     .+4          ;BRANCH IF DONE BIT SET.
909 005472 104003          ERROR          ;DONE NOT SET SOMETIME AFTER RDR ENB.
910 005474 104012          SCOPE          ;SCOPE
911                                     ;*****
912 005476 000007          POT7:  7          ; PRGO TEST ROUTINE 7          *
913 005500 005530          POT10         ;ADDRESS OF NEXT ROUTINE      *
914 005502 001750          1000.         ;TEST ITERATION COUNT        *
915 005504 005516          POHA          ;SCOPE ENTRY POINT          *
916                                     ;*****
917                                     ;TEST THAT DONE BIT READS RELIABLY.
918 005506 104022          CHKASR
919 005510 104023          RESET2
920 005512 004767 174646          JSR     %7,AREAD          ;ENABLE READER. COME BACK WHEN DONE SET.
921 005516 105777 173466          POHA:  TSTB    @TKS          ;TEST FOR DONE
922 005522 100401          BMI     .+4          ;BRANCH IF DONE FOUND SET.

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F02

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DZKLAE PRGO - INPUT-OUTPUT LOGIC TESTS

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923 005524 104003          ERROR          ;ERROR. DONE BIT NOT FOUND SET.
924 005526 104012          SCOPE          ;SCOPE
925 *****
926 005530 000010 POT10: 10          ; PRGO TEST ROUTINE 10 *
927 005532 005564          POT11          ; ADDRESS OF NEXT ROUTINE *
928 005534 000024          20.          ; TEST ITERATION COUNT *
929 005536 005544          POIA          ; SCOPE ENTRY POINT *
930 *****
931 ;TEST THAT RESET CLEARS DONE BIT
932 005540 104022          CHKASR
933 005542 104023          RESET2
934 005544 004767 174614 POIA: JSR      %7,AREAD ;ENABLE READER. COME BACK WHEN DONE SET.
935 005550 104011          SRESET          ;ISSUE RESET.
936 005552 105777 173432 TSTB      %TKS    ;TEST FOR DONE BIT
937 005556 100001          BPL      .+4     ;BRANCH IF DONE BIT RESET.
938 005560 104003          ERROR          ;ERROR. RESET FAILED TO CLEAR DONE.
939 005562 104012          SCOPE          ;SCOPE
940 *****
941 005564 000011 POT11: 11          ; PRGO TEST ROUTINE 11 *
942 005566 005622          POT12          ; ADDRESS OF NEXT ROUTINE *
943 005570 000024          20.          ; TEST ITERATION COUNT *
944 005572 005600          POJA          ; SCOPE ENTRY POINT *
945 *****
946 ;TEST THAT REFERENCING READER DATA BUFFER CLEARS DONE
947 005574 104022          CHKASR
948 005576 104023          RESET2
949 005600 004767 174560 POJA: JSR      %7,AREAD ;ENABLE READER. RETURN WHEN DONE SET.
950 005604 105777 173402 TSTB      %TKB    ;REFERENCE READ BUFFER.
951 005610 105777 173374 TSTB      %TKS    ;TEST FOR DONE BIT
952 005614 100001          BPL      .+4     ;BRANCH IF DONE NOT SET.
953 005616 104003          ERROR          ;REFERENCE TO BUFFER DID NOT RESET DONE.
954 005620 104012          SCOPE          ;SCOPE
955 *****
956 005622 000012 POT12: 12          ; PRGO TEST ROUTINE 12 *
957 005624 005664          POT13          ; ADDRESS OF NEXT ROUTINE *
958 005626 000024          20.          ; TEST ITERATION COUNT *
959 005630 005634          POKA          ; SCOPE ENTRY POINT *
960 *****
961 ;CHECK THAT BUSY SETS SOMETIME BEFORE DONE SETS.
962 005632 104022          CHKASR
963 005634 104023          RESET2
964 005636 005277 173346 POKA: INC      %TKS ;ENABLE READER.

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965 005642 032777 004000 173340 POKB: BIT #BIT11,@TKS ;BUSY SET?
966 005650 001004 BNE POKC ;BR IF YES.
967 005652 105777 173332 TSTB @TKS ;NO.DONE SET?
968 005656 100371 BPL POKB ;BR IF NOT.
969 005660 104003 ERROR ;BUSY BIT FAILED TO SET BEFORE DONE SET.
970 005662 104012 POKC: SCOPE
971 *****
972 005664 000013 POT13: 13 ; PRGO TEST ROUTINE 13 *
973 005666 005732 POT14 ; ADDRESS OF NEXT ROUTINE *
974 005670 000024 20. ; TEST ITERATION COUNT *
975 005672 005676 POLA ; SCOPE ENTRY POINT *
976 *****
977 ;TEST THAT DONE IS RESET BY START BIT (WHEN BUSY BECOMES SET).
978 005674 104022 CHKASR
979 005676 104023 POLA: RESET2
980 005700 004767 174460 JSR %7,AREAD ;ENABLE READER. RETURN WHEN DONE SET.
981 005704 005277 173300 INC @TKS ;ENABLE READER.
982 005710 032777 004000 173272 BIT #BIT11,@TKS ;WAIT FOR BUSY TO SET.
983 005716 001774 BEQ -6
984 005720 105777 173264 TSTB @TKS ;TEST FOR DONE BIT.
985 005724 100001 BPL .+4 ;BRANCH IF DONE NOT SET.
986 005726 104003 ERROR ;ERROR. START BIT FAILED TO RESET DONE.
987 005730 104012 SCOPE ;SCOPE
988 *****
989 005732 000014 POT14: 14 ; PRGO TEST ROUTINE 14 *
990 005734 006006 POT15 ; ADDRESS OF NEXT ROUTINE *
991 005736 001750 1000. ; TEST ITERATION COUNT *
992 005740 005760 POMA ; SCOPE ENTRY POINT *
993 *****
994 ;TEST THAT READ BUFFER CAN BE READ RELIABLY.
995 005742 104022 CHKASR
996 005744 104023 RESET2
997 005746 004767 174412 JSR %7,AREAD ;ENABLE READER. RETURN WHEN DONE SET.
998 005752 117767 173234 173405 MOVB @TKB,CRBUF+1 ;BUFFER CONTENTS TO CRBUF+1
999 005760 117767 173226 173376 POMA: MOVB @TKB,CRBUF ;BUFFER CONTENTS TO CRBUF
1000 005766 126767 173372 173371 CMPB CRBUF,CRBUF+1 ;COMPARE CONTENTS OF CRBUF AND CRBUF+1
1001 005774 001403 BEQ POMB ;BRANCH IF SAME.
1002 005776 016700 173362 MOV CRBUF,%0 ;NOT SAME. ERROR. HALT WITH 1ST READ CHAR
1003 006002 000000 HALT ;IN DATA BYTES LEFT. SUBSEQUENT READ IN DATA BYTES RIGHT
1004 006004 104012 POMB: SCOPE
1005 *****
1006 006006 000015 POT15: 15 ; PRGO TEST ROUTINE 15 *
1007 006010 006056 POT16 ; ADDRESS OF NEXT ROUTINE *
1008 006012 001750 1000. ; TEST ITERATION COUNT *
1009 006014 006032 POMA ; SCOPE ENTRY POINT *
1010 *****
1011 ;TEST THAT READER DONE BIT IS ABLE TO CAUSE INTERRUPT. IF THE INTERRUPT IS
1012 ;SERVICED, IT WILL HAVE OCCURRED AT CORRECT VECTOR.
1013 006016 104022 CHKASR
1014 006020 104006 STRDRV ;SET UP READER VECTOR TO PONC
1015 006022 006054 PONC
1016 006024 104023 RESET2
1017 006026 004767 174332 JSR PC,AREAD ;ENABLE READER. RETURN WHEN DONE SET.
1018 006032 005077 173152 PONA: CLR @TKS ;DISABLE READER INTERRUPTS
1019 006036 005067 171734 CLR PSW ;ENABLE READER. RETURN WHEN DONE SET.
1020 006042 052777 000100 173140 BIS #BIT6,@TKS ;ENABLE READER INTERRUPT,

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1021 006050 000240
1022 006052 104003
1023 006054 104012
1024
1025 006056 000016
1026 006060 006136
1027 006062 001750
1028 006064 006102
1029
1030
1031
1032 006066 104022
1033 006070 104006
1034 006072 006132
1035 006074 104023
1036 006076 004767 174262
1037 006102 005077 173102
1038 006106 016767 173110 171662
1039 006114 052777 000100 173066
1040 006122 000240
1041 006124 005077 173060
1042 006130 104012
1043 006132 104003

AT20E: NOP
P0NC: ERROR ;ERROR. READER FAILED TO INTERRUPT.
SCOPE ;HERE IF INTERRUPT OCCURS.
*****
P0T16: 16 ; PRGO TEST ROUTINE 16 *
P0T17 ;ADDRESS OF NEXT ROUTINE *
1000. ;TEST ITERATION COUNT *
P00A ;SCOPE ENTRY POINT *
*****
;TEST THAT DONE DOES NOT CAUSE INTERRUPT WITH PROCESSOR AT SAME
;PRIORITY LEVEL AS THE READERS INTERRUPT REQUEST LEVEL.

CHKASR
STRDRV ;SET READER VECTOR TO P00E.
P00E
RESET2
JSR %7,AREAD ;ENABLE READER. RETURN WHEN DONE SET.
P00A: CLR @TKS ;DISABLE READER INTERRUPTS.
MOV TKLVL,PSW ;SET PROCESSOR TO SAME PRIORITY AS READER'S.
BIS #BIT6,@TKS ;ENABLE READER INTERRUPTS.
NOP ;NO OP.
CLR @TKS ;OK IF NO INTERRUPT OCCURS.
SCOPE ;SCOPE
P00E: ERROR ;ERROR. READER ERRONEOUSLY INTERRUPTED

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1044                                     ;WITH PROCESSOR AT SAME PRIORITY
1045                                     ;LEVEL AS THE READER, OR THE READER
1046 006134 104012                       ;IS AT HIGHER PRIORITY THAN SPECIFIED AT TKLVL.
1047                                     ;*****
1048 006136 000017                       ; PRGO TEST ROUTINE 17 *
1049 006140 006222                       ; ADDRESS OF NEXT ROUTINE *
1050 006142 001750                       ; TEST ITERATION COUNT *
1051 006144 006162                       ; SCOPE ENTRY POINT *
1052                                     ;*****
1053                                     ;TEST THAT DONE CAUSES INTERRUPT WITH PROCESSOR AT PRIORITY ONE LEVEL LOWER
1054                                     ;THAN THE READER'S INTERRUPT PRIORITY LEVEL.
1055 006146 104022                       ;
1056 006150 104006                       ;SET READER INTERRUPT SERVICE TO
1057 006152 006214                       ;POPB.
1058 006154 104023                       ;
1059 006156 004767 174202                ;
1060 006162 005077 173022                ;
1061 006166 016767 173030 171602        ;
1062 006174 162767 000040 171574        ;
1063 006202 052777 000100 173000        ;
1064 006210 000240                       ;
1065 006212 104003                       ;
1066                                     ;FAILED TO INTERRUPT WITH PC AT PRIORITY ONE LEVEL LOWER
1067 006214 005077 172770                ;HERE IF INTERRUPT OCCURS. OK. POP STACK TWICE
1068 006220 104012                       ;DISABLE READER INTERRUPTS
1069                                     ;SCOPE
1070 006222 000020                       ;*****
1071 006224 006326                       ; PRGO TEST ROUTINE 20 *
1072 006226 001750                       ; ADDRESS OF NEXT ROUTINE *
1073 006230 006242                       ; TEST ITERATION COUNT *
1074                                     ; SCOPE ENTRY POINT *
1075                                     ;*****
1076                                     ;TEST THAT DONE DOES NOT REINTERRUPT AFTER RTI WHEN DONE IS NOT CLEARED.
1077 006232 104022                       ;
1078 006234 104023                       ;
1079 006236 004767 174122                ;
1080 006242 104006                       ;
1081 006244 006276                       ;
1082 006246 005077 172736                ;
1083 006252 052777 000100 172730        ;
1084 006260 005067 171512                ;
1085 006264 000240                       ;
1086 006266 104003                       ;
1087 006270 005077 172714                ;
1088 006274 104012                       ;
1089 006276 012777 006316 172714        ;
1090 006304 012716 006312                ;
1091 006310 000002                       ;
1092 006312 000240                       ;
1093 006314 000401                       ;
1094 006316 104003                       ;
1095 006320 005077 172664                ;
1096 006324 104012                       ;
1097                                     ;*****
1098 006326 000021                       ; PRGO TEST ROUTINE 21 *
1099 006330 006410                       ; ADDRESS OF NEXT ROUTINE *

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1100 006332 001750          1000.          ;TEST ITERATION COUNT          *
1101 006334 006344          PORA          ;SCOPE ENTRY POINT            *
1102                                     ;*****
1103                                     ;TEST ABILITY TO SET AND CLEAR PUNCH ID BIT
1104 006336 012767 000340 171432 PORA: MOV #PRTY7,PSW ;SET PRIORITY 7.
1105 006344 052777 000100 172642 PORA: BIS #BIT6,@TPS ;SET PUNCH ID BIT.
1106 006352 032777 000100 172634 PORA: BIT #BIT6,@TPS ;CHECK PUNCH ID BIT.
1107 006360 001002          BNE .+6 ;BRANCH IF PUNCH ID BIT IS SET.
1108 006362 104003          ERROR ;ERROR1. PUNCH ID BIT DID NOT SET.
1109 006364 104012          SCOPE
1110 006366 042777 000100 172620 BIC #BIT6,@TPS ;CLEAR PUNCH ID BIT.
1111 006374 032777 000100 172612 BIT #BIT6,@TPS ;CHECK PUNCH ID BIT.
1112 006402 001401          BEQ .+4 ;BRANCH IF PUNCH ID BIT IS CLEAR
1113 006404 104003          ERROR ;ERROR2. PUNCH ID BIT FAILED TO CLEAR.
1114 006406 104012          SCOPE
1115                                     ;*****
1116 006410 000022          POT22: 22 ; PRGD TEST ROUTINE 22          *
1117 006412 006452          POT23 ; ADDRESS OF NEXT ROUTINE      *
1118 006414 000024          20. ; TEST ITERATION COUNT         *
1119 006416 006426          POSA ; SCOPE ENTRY POINT           *
1120                                     ;*****
1121                                     ;TEST ABILITY TO CLEAR PUNCH ID BIT WITH RESET INSTRUCTION
1122 006420 012767 000340 171350 PORA: MOV #PRTY7,PSW ;SET PRIORITY 7.
1123 006426 052777 000100 172560 POSA: BIS #BIT6,@TPS ;SET PUNCH ID BIT.
1124 006434 104011          SRESET ;RESET
1125 006436 032777 000100 172550 POSA: BIT #BIT6,@TPS ;CHECK PUNCH ID BIT.
1126 006444 001401          BEQ .+4 ;BRANCH IF PUNCH ID BIT IS CLEAR.
1127 006446 104003          ERROR ;ERROR. RESET FAILED TO CLEAR PUNCH ID BIT.
1128 006450 104012          SCOPE
1129                                     ;*****
1130 006452 000023          POT23: 23 ; PRGD TEST ROUTINE 23          *
1131 006454 006526          POT24 ; ADDRESS OF NEXT ROUTINE      *
1132 006456 001750          1000. ; TEST ITERATION COUNT         *
1133 006460 006462          POT4 ; SCOPE ENTRY POINT           *
1134                                     ;*****
1135                                     ;TEST ABILITY TO SET AND CLEAR THE PUNCH MAINTENANCE BIT
1136 006462 052777 000004 172524 POT4: BIS #BIT2,@TPS ;SET MAINTANCE BIT.
1137 006470 032777 000004 172516 POT4: BIT #BIT2,@TPS ;CHECK MAINTENANCE BIT
1138 006476 001002          BNE .+6 ;BRANCH IF MAINTENANCE BIT SET.
1139 006500 104003          ERROR ;ERROR1. MAINTENANCE BIT FAILED TO SET.
1140 006502 104012          SCOPE
1141 006504 042777 000004 172502 POT4: BIC #BIT2,@TPS ;CLEAR MAINTENANCE BIT.
1142 006512 032777 000004 172474 POT4: BIT #BIT2,@TPS ;CHECK MAINTENANCE BIT
1143 006520 001401          BEQ .+4 ;BRANCH IF MAINTENANCE BIT IS CLEAR.
1144 006522 104003          ERROR ;ERROR2. MAINTENANCE BIT FAILED TO CLEAR.
1145 006524 104012          SCOPE
1146                                     ;*****
1147 006526 000024          POT24: 24 ; PRGD TEST ROUTINE 24          *
1148 006530 006562          POT25 ; ADDRESS OF NEXT ROUTINE      *
1149 006532 000024          20. ; TEST ITERATION COUNT         *
1150 006534 006536          POUA ; SCOPE ENTRY POINT           *
1151                                     ;*****
1152                                     ;TEST THAT RESET INSTRUCTION CLEARS THE MAINTENANCE BIT.
1153 006536 052777 000004 172450 POUA: BIS #BIT2,@TPS ;SET MAINTENANCE BIT.
1154 006544 104011          SRESET ;ISSUE RESET
1155 006546 032777 000004 172440 POUA: BIT #BIT2,@TPS ;CHECK MAINTENANCE BIT

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1156 006554 001401          BEQ      .+4          ;BRANCH IF MAINTENANCE BIT CLEAR.
1157 006556 104003          ERROR                     ;ERROR. RESET FAILED TO CLEAR
1158 006560 104012          SCOPE                     ;THE MAINTENANCE BIT. SCOPE.
1159 *****
1160 006562 000025          POT25: 25                ; PRGD TEST ROUTINE 25 *
1161 006564 006604          POT26                ; ADDRESS OF NEXT ROUTINE *
1162 006566 001750          1000.                 ; TEST ITERATION COUNT *
1163 006570 006572          POVA                 ; SCOPE ENTRY POINT *
1164 *****
1165 ;TEST THAT RESET SETS THE PUNCH READY BIT, AND THAT READY CAN BE READ RELIABLY.
1166 006572 105777 172416          POVA: TSTB  @TPS        ;CHECK PUNCH READY.
1167 006576 100401          BMI      .+4          ;BRANCH IF PUNCH READY IS SET.
1168 006600 104003          ERROR                     ;ERROR. RESET FAILED TO SET READY, OR FAILED TO READ IT
1169 006602 104012          SCOPE                     ;SCOPE
1170 *****
1171 006604 000026          POT26: 26                ; PRGD TEST ROUTINE 26 *
1172 006606 006634          POT27                ; ADDRESS OF NEXT ROUTINE *
1173 006610 000024          20.                   ; TEST ITERATION COUNT *
1174 006612 006614          POWA                 ; SCOPE ENTRY POINT *
1175 *****
1176 ;TEST THAT PUNCH READY RESETS BY LOADING PUNCH BUFFER.
1177 006614 104023          POWA: RESET2          ;LOAD PUNCH BUFFER
1178 006616 005077 172374          CLR      @TPB         ;CHECK PUNCH READY BIT.
1179 006622 105777 172366          TSTB  @TPS        ;BR IF PUNCH READY IS CLEAR.
1180 006626 100001          BPL      .+4          ;ERROR. BUFFER LOAD FAILED TO CLEAR READY.
1181 006630 104003          ERROR                     ;SCOPE
1182 006632 104012          SCOPE                     ;SCOPE
1183 *****
1184 006634 000027          POT27: 27                ; PRGD TEST ROUTINE 27 *
1185 006636 006670          POT30                ; ADDRESS OF NEXT ROUTINE *
1186 006640 000024          20.                   ; TEST ITERATION COUNT *
1187 006642 006644          POXA                 ; SCOPE ENTRY POINT *
1188 *****
1189 ;TEST THAT BYTE LOAD OF PUNCH BUFFER +1 DOES NOT RESET READY.
1190 006644 104023          POXA: RESET2          ;BYTE LOAD PUNCH BUFFER+1
1191 006646 016700 172344          MOV      TPB,%0       ;CHECK PUNCH READY BIT
1192 006652 005200          INC      %0           ;BRANCH IF PUNCH READY STILL SET.
1193 006654 105010          CLRB   @%0           ;ERROR. BYTE LOAD OF PUNCH BUFFER+1
1194 006656 105777 172332          TSTB  @TPS        ;CLEARED READY. SCOPE
1195 006662 100401          BMI      .+4          ;PRGD TEST ROUTINE 30 *
1196 006664 104003          ERROR                     ;ADDRESS OF NEXT ROUTINE *
1197 006666 104012          SCOPE                     ;TEST ITERATION COUNT *
1198 *****
1199 006670 000030          POT30: 30                ; SCOPE ENTRY POINT *
1200 006672 006722          POT31                ; ADDRESS OF NEXT ROUTINE *
1201 006674 000024          20.                   ; TEST ITERATION COUNT *
1202 006676 006700          POYA                 ; SCOPE ENTRY POINT *
1203 *****
1204 ;TEST THAT PUNCH BECOMES READY SOMETIME AFTER BUFFER LOAD.
1205 006700 104023          POYA: RESET2          ;LOAD PUNCH BUFFER.
1206 006702 005077 172310          CLR      @TPB         ;WAIT.
1207 006706 104400          DELAYX                    ;CHECK PUNCH READY BIT.
1208 006710 105777 172300          TSTB  @TPS        ;BRANCH IF PUNCH READY IS SET.
1209 006714 100401          BMI      .+4          ;READY NOT SET SOMETIME AFTER BUFFER LOAD.
1210 006716 104003          ERROR                     ;SCOPE
1211 006720 104012          SCOPE                     ;SCOPE

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1212          ;*****
1213 006722 000031 POT31: 31 ; PRGO TEST ROUTINE 31 *
1214 006724 006762          POT32 ; ADDRESS OF NEXT ROUTINE *
1215 006726 001750          1000. ; TEST ITERATION COUNT *
1216 006730 006736          POZA ; SCOPE ENTRY POINT *
1217          ;*****
1218          ;TEST THAT PUNCH READY BIT CAN CAUSE AN INTERRUPT. IF THE INTERRUPT
1219          ;IS SERVICED, IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
1220 006732 104007          STPCHV ; SET PUNCH INTERRUPT SERVICE
1221 006734 006760          POZB ; TO POZB
1222 006736 005077 172252 POZA: CLR @TPS ; DISABLE PUNCH INTERRUPTS
1223 006742 005067 171030 CLR PSW ; SET PRIORITY 0.
1224 006746 052777 000100 172240 BIS #BIT6,@TPS ; ENABLE PUNCH INTERRUPTS.
1225 006754 000240          NOP
1226 006756 104003          ERROR ; PUNCH READY FAILED TO CAUSE
1227 006760 104012          POZB: SCOPE ; INTERRUPT. SCOPE
1228          ;*****
1229 006762 000032 POT32: 32 ; PRGO TEST ROUTINE 32 *
1230 006764 007032          POT33 ; ADDRESS OF NEXT ROUTINE *
1231 006766 001750          1000. ; TEST ITERATION COUNT *
1232 006770 006776          POAAA ; SCOPE ENTRY POINT *
1233          ;*****
1234          ;TEST THAT PUNCH READY DOES NOT CAUSE AN INTERRUPT WITH PROCESSOR
1235          ;AT SAME PRIORITY LEVEL AS THE PUNCH INTERRUPT REQUEST LEVEL.
1236 006772 104007          STPCHV ; SET PUNCH INTERRUPT SERVICE
1237 006774 007026          POAAE ; TO POAAE.
1238 006776 016767 172224 170772 POAAA: MOV TPLVL,PSW ; SET PROCESSOR TO SAME PRIORITY AS PUNCH.
1239 007004 005077 172204 CLR @TPS ; DISABLE PUNCH INTERRUPTS.
1240 007010 052777 000100 172176 BIS #BIT6,@TPS ; ENABLE PUNCH INTERRUPTS.
1241 007016 000240          NOP
1242 007020 005077 172170 POAAB: CLR @TPS ; OK IF NO INTERRUPT OCCURS.
1243 007024 104012          SCOPE ; SCOPE
1244 007026 104003          POAAE: ERROR ; ERROR. PUNCH INTERRUPTED WITH PROCESSOR
1245 007030 000773          BR POAAB ; SET TO SAVE PRIORITY AS THE PUNCH.
1246          ;*****
1247 007032 000033 POT33: 33 ; PRGO TEST ROUTINE 33 *
1248 007034 007106          POT34 ; ADDRESS OF NEXT ROUTINE *
1249 007036 001750          1000. ; TEST ITERATION COUNT *
1250 007040 007046          POBAA ; SCOPE ENTRY POINT *
1251          ;*****
1252          ;TEST THAT THE PUNCH INTERRUPTS WITH PROCESSOR AT PRIORITY ONE LEVEL LOWER
1253          ;THAN THE PUNCH PRIORITY.
1254 007042 104007          STPCHV ; SET PUNCH INTERRUPT SERVICE
1255 007044 007100          POBAC ; TO POBAC.
1256 007046 005077 172142 POBAA: CLR @TPS ; DISABLE PUNCH INTERRUPTS
1257 007052 016767 172150 170716 MOV TPLVL,PSW ; SET PROCESSOR PRIORITY ONE LEVEL
1258 007060 162767 000040 170710 SUB #40,PSW ; LOWER THAN PUNCH PRIORITY
1259 007066 052777 000100 172120 BIS #BIT6,@TPS ; ENABLE PUNCH INTERRUPTS
1260 007074 000240          NOP
1261 007076 104003          ERROR ; ERROR. PUNCH FAILED TO INTERRUPT.
1262 007100 005077 172110 POBAC: CLR @TPS ; THE STOCK TWICE. DISABLE PUNCH INTERRUPT
1263 007104 104012          SCOPE ; SCOPE
1264          ;*****
1265 007106 000034 POT34: 34 ; PRGO TEST ROUTINE 34 *
1266 007110 007202          POT35 ; ADDRESS OF NEXT ROUTINE *
1267 007112 001750          1000. ; TEST ITERATION COUNT *

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1268 007114 007116          PUCAA          ;SCOPE ENTRY POINT          *
1269          ;*****
1270          ;TEST THAT PUNCH READY DOES NOT REINTERRUPT AFTER RTI WHEN READY
1271          ;BIT HAS NOT BEEN RESET.
1272 007116 104007          POCAA: STPCHV          ;SET PUNCH INTERRUPT SERVICE TO
1273 007120 007152          POCAC          ;TO POCAC.
1274 007122 005077 172066  CLR @TPS          ;DISABLE PUNCH INTERRUPTS
1275 007126 005067 170644  CLR PSW          ;SET PROCESSOR PRIORITY TO 0
1276 007132 052777 000100 172054  BIS #BIT6,@TPS          ;ENABLE PUNCH INTERRUPTS
1277 007140 000240  NOP
1278 007142 104003  ERROR          ;ERROR 1. PUNCH FAILED TO INTERRUPT.
1279 007144 005077 172044  CLR @TPS          ;DISABLE PUNCH INTERRUPT.
1280 007150 104012  SCOPE          ;SCOPE
1281 007152 012777 007172 172044  POCAC: MOV #POCAE,@TPVTR          ;HERE IF INTERRUPT OCCURS. CHANGE
1282 007160 012716 007166  MOV #POCAD,@%6          ;PUNCH VECTOR TO POCAE AND EXIT
1283 007164 000002  RTI          ;INTERRUPT
1284 007166 000240  POCAD: NOP          ;OK IF NO REINTERRUPT OCCURS
1285 007170 000401  BR POCAF
1286 007172 104003  POCAC: ERROR          ;ERR 2. PUNCH REINTERRUPTED AFTER
1287 007174 005077 172014  POCAF: CLR @TPS          ;RTI WITH READY BIT LEFT ON
1288 007200 104012  SCOPE          ;SCOPE
1289          ;*****
1290 007202 000035  POT35: 35          ; PRGO TEST ROUTINE 35          *
1291 007204 007260  POT36          ; ADDRESS OF NEXT ROUTINE          *
1292 007206 001750  1000          ; TEST ITERATION COUNT          *
1293 007210 007216  PODAA          ; SCOPE ENTRY POINT          *
1294          ;*****
1295          ;TEST THAT THE PUNCH INTERRUPTS IMMEDIATELY UPON LOWERING
1296          ;PROCESSOR PRIORITY TO 0.
1297 007212 104007  STPCHV          ;SET PUNCH INTERRUPT
1298 007214 007252  PODAC          ;TO PODAC.
1299 007216 012767 000340 170552  PODAA: MOV #PRTY7,PSW          ;SET PROCESSOR PRIORITY TO 7.
1300 007224 005077 171764  CLR @TPS          ;DISABLE PUNCH INTERRUPTS
1301 007230 052777 000100 171756  BIS #BIT6,@TPS          ;ENABLE PUNCH INTERRUPTS
1302 007236 005067 170534  CLR PSW          ;LOWER PROCESSOR PRIORITY TO 0.
1303 007242 012767 000340 170526  MOV #PRTY7,PSW          ;RAISE PRIORITY TO 7.
1304 007250 104003  ERROR          ;ERROR. PUNCH FAILED TO INTERRUPT
1305          ;IMMEDIATELY AFTER CP PRIORITY WAS SET TO 0.
1306 007252 005077 171736  PODAC: CLR @TPS          ;DISABLE PUNCH INTERRUPTS
1307 007256 104012  SCOPE          ;SCOPE
1308          ;*****
1309 007260 000036  POT36: 36          ; PRGO TEST ROUTINE 36          *
1310 007262 007342  POT37          ; ADDRESS OF NEXT ROUTINE          *
1311 007264 000024  20          ; TEST ITERATION COUNT          *
1312 007266 007276  POEAA          ; SCOPE ENTRY POINT          *
1313          ;*****
1314          ;TEST FOR CORRECT OPERATION OF THE WAIT INSTRUCTION. A WAIT INSTRUCTION
1315          ;IS PERFORMED WHILE WAITING FOR A PUNCH INTERRUPT. WHEN THE INTERRUPT
1316          ;OCCURS, THE SERVICE ROUTINE CHANGES THE WAIT INSTRUCTION TO AN ERROR
1317          ;CALL AND THEN EXITS THE INTERRUPT WITH AN RTI. EXITING THE INTERRUPT
1318          ;SHOULD RETURN CONTROL TO THE INSTRUCTION FOLLOWING THE WAIT INSTRUCTION.
1319          ;IF CONTROL IS INSTEAD RETURNED TO THE SAME LOCATION WHERE THE WAIT
1320          ;INSTRUCTION WAS LOCATED AN ERROR CALL WILL OCCUR, INDICATING A FAILURE
1321          ;OF THE WAIT INSTRUCTION.
1322 007270 104023  RESET2
1323 007272 104007  STPCHV          ;SET PUNCH INTERRUPT SERVICE

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1324 007274 007332          PUEAC          ; TO POEAC
1325 007276 012767 000001 000016 POEAA: MOV      #WAIT,POEAB ; MOVE WAIT INSTRUCTION TO POEAB
1326 007304 005077 171706          CLR      @TPB   ; LOAD PUNCH BUFFER (ENABLES PUNCH)
1327 007310 052777 000100 171676          BIS      #BIT6,@TPS ; ENABLE PUNCH INTERRUPTS
1328 007316 005067 170454          CLR      PSW    ; SET PRIORITY 0.
1329 007322 000000          POEAB: OPEN   ; THIS LOCATION CAN BE EITHER
1330                                     ; A WAIT INSTRUCTION OR AN ERROR CALL.
1331                                     ; IF AN ERROR CALL IS EXECUTED, IT
1332                                     ; INDICATES A FAILURE OF THE WAIT INSTRUCTION.
1333 007324 005077 171664          CLR      @TPS   ; DISABLE PUNCH INTERRUPTS
1334 007330 104012          SCOPE          ; SCOPE
1335 007332 012767 104003 177762 POEAC: MOV      #ERROR,POEAB ; MOVE ERROR CALL TO POEAB.
1336 007340 000002          RTI          ; EXIT INTERRUPT.
1337                                     ;*****
1338 007342 000037          POT37: 37      ; PRGO TEST ROUTINE 37 *
1339 007344 007402          POT40          ; ADDRESS OF NEXT ROUTINE *
1340 007346 000024          20.          ; TEST ITERATION COUNT *
1341 007350 007354          POFAA          ; SCOPE ENTRY POINT *
1342                                     ;*****
1343                                     ; TEST THAT LOADING THE PUNCH BUFFER WITH THE MAINTENANCE BIT SET
1344                                     ; CAUSES THE READER DONE BIT TO SET SOMETIME AFTER.
1345 007352 104023          RESET2
1346 007354 052777 000004 171632 POFAA: BIS      #BIT2,@TPS ; SET MAINTENANCE BIT
1347 007362 005077 171630          CLR      @TPB   ; LOAD PUNCH BUFFER
1348 007366 104400          DELAYX          ; WAIT.
1349 007370 105777 171614          TSTB     @TKS   ; TEST READER DONE BIT
1350 007374 100401          BMI      .+4   ; BRANCH IF READER DONE BIT SET.
1351 007376 104003          ERROR          ; ERROR. SOMETIME AFTER PUNCH
1352                                     ; BUFFER LOAD WITH MAINTENANCE BIT
1353                                     ; SET THE READER DONE BIT WAS NOT SET
1354 007400 104012          SCOPE          ; SCOPE
1355                                     ;*****
1356 007402 000040          POT40: 40      ; PRGO TEST ROUTINE 40 *
1357 007404 007472          POT41          ; ADDRESS OF NEXT ROUTINE *
1358 007406 000024          20.          ; TEST ITERATION COUNT *
1359 007410 007416          POGAA          ; SCOPE ENTRY POINT *
1360                                     ;*****
1361                                     ; TEST THAT CLEARING PUNCH READY AND/OR IE BIT CLEARS PUNCH INTERRUPT REQUEST.
1362 007412 104007          STPCHV          ; SET PUNCH VECTOR TO POGAB.
1363 007414 007466          POGAB
1364 007416 104023          POGAA: RESET2
1365 007420 012767 000340 170350 MOV      #PRTY7,PSW ; SET PRIORITY 7.
1366 007426 052777 000100 171560 BIS      #BIT6,@TPS ; ENABLE PUNCH INTERRUPTS.
1367 007434 005077 171556          CLR      @TPB   ; OUTPUT CHAR.
1368 007440 105777 171550          TSTB     @TPS   ; WAIT FOR PUNCH READY.
1369 007444 100375          BPL      -4     ;
1370 007446 005077 171542          CLR      @TPS   ; DISABLE PUNCH INTERRUPTS.
1371 007452 005077 171540          CLR      @TPB   ; LOAD BUFFER TO CLEAR PUNCH READY.
1372 007456 005067 170314          CLR      PSW    ; SET PRIORITY 0.
1373 007462 006240          NOP
1374 007464 104012          SCOPE          ; OK IF NO INTERRUPT OCCURS.
1375 007466 104003          POGAB: ERROR   ; READY CLEAR AND/OR IE BIT CLEAR DID NOT
1376 007470 104012          SCOPE          ; PREVENT PUNCH/PRINTER INTERRUPT.
1377                                     ; (INTERRUPT REQUEST DID NOT CLEAR.)
1378                                     ;*****
1379 007472 000041          POT41: 41      ; PRGO TEST ROUTINE 41 *

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1380 007474 007570          PUT42          ;ADDRESS OF NEXT ROUTINE      *
1381 007476 000024          20.          ;TEST ITERATION COUNT        *
1382 007500 007506          POHAA        ;SCOPE ENTRY POINT          *
1383                                     ;*****
1384                                     ;TEST THAT CLEARING READER DONE AND/OR IE BIT CLEARS READER INTERRUPT REQUEST.
1385 007502 104006          STRDRV      ;SET READER VECTOR TO POHAB.
1386 007504 007564          POHAB
1387 007506 104023          POHAA: RESET2
1388 007510 012767 000340 170260 1'OV          @PRTY7,PSW      ;SET PRIORITY 7.
1389 007516 052777 000004 171470 BIS          @BIT2,@TPS ;SET MAINTENANCE MODE.
1390 007524 005077 171466 CLR          @TPB      ;OUTPUT CHAR.
1391 007530 052777 000100 171452 BIS          @BIT6,@TKS ;ENABLE READER INTERRUPTS.
1392 007536 105777 171446 TSTB        @TKS      ;WAIT FOR READER DONE.
1393 007542 100375          BPL          -4
1394 007544 005077 171440 CLR          @TKS      ;DISABLE READER INTERRUPTS.
1395 007550 005777 171436 TST         @TKB      ;CLEAR READER DONE.
1396 007554 005067 170216 CLR          PSW      ;SET PRIORITY 0.
1397 007560 000240          NOP
1398 007562 104012          SCOPE
1399 007564 104003          POHAB: ERROR      ;OK IF NO INTERRUPT OCCURS.
1400 007566 104012          SCOPE      ;DONE CLEARED AND/OR IE CLEARED DID NOT
                                     ;PREVENT READER INTERRUPT.
1401                                     ;*****
1402 007570 000042          POT42: 42      ; PRGO TEST ROUTINE 42      *
1403 007572 007620          POT43      ;ADDRESS OF NEXT ROUTINE    *
1404 007574 001000          1000      ;TEST ITERATION COUNT      *
1405 007576 007600          POJAA      ;SCOPE ENTRY POINT        *
1406                                     ;*****
1407                                     ;TEST THE DL11A,B KEYBOARD JUMPERS ARE CUT PROPERLY
1408 007600 012777 173476 171402 POJAA: MOV          @173476,@TKS ;ATTEMPT TO SET NON-SETABLE BITS
1409 007606 005777 171376 TST          @TKS      ;DID ANY SET?
1410 007612 001401          BEQ          .+4      ;BR IF NO
1411 007614 104003          ERROR
1412 007616 104012          SCOPE
1413                                     ;*****
1414 007620 000043          POT43: 43      ; PRGO TEST ROUTINE 43      *
1415 007622 177777          POTLST     ;ADDRESS OF NEXT ROUTINE    *
1416 007624 001000          1000      ;TEST ITERATION COUNT      *
1417 007626 007630          POKAA      ;SCOPE ENTRY POINT        *
1418                                     ;*****
1419                                     ;TEST THE DL11A,B PRINTER JUMPERS ARE CUT PROPERLY
1420 007630 012777 177473 171356 POKAA: MOV          @177473,@TPS ;ATTEMPT TO SET NON-SETABLE BITS
1421 007636 022777 000200 171350 CMP          @BIT7,@TPS ;DID ANY SET?
1422 007644 001401          BEQ          .+4      ;BR IF NO
1423 007646 104003          ERROR
1424 007650 104012          SCOPE

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1425          .SBTTL PRG1 READER TEST
1426          Z=1
1427          X=-1
1428 007652    012767    007706    171354  PRG1:  MOV      #P1TO,KSTART      ;SET ADDRESS OF FIRST ROUTINE
1429 007660    012767    177760    173704      MOV      #177760,RCMSK
1430 007666    012767    177400    173310      MOV      #177400,STLMSK      ;SET STALL LIMIT.
1431 007674    052767    040000    171346      BIS      #BIT14,PRGID        ;ALLOW STALLS
1432 007702    000167    171736      JMP      SRSET                ;GO GET STARTED.
1433          ;*****
1434 007706    000000      PIT0:  0                    ; PRG1 TEST ROUTINE 0 *
1435 007710    007734      PIT1:  ; ADDRESS OF NEXT ROUTINE *
1436 007712    003720      2000. ; TEST ITERATION COUNT *
1437 007714    007722      P1AA   ; SCOPE ENTRY POINT *
1438          ;*****
1439          ;READ AND CHECK 2000 CHARACTERS OF SPECIAL BINARY COUNT PATTERN. FULL SPEED.
1440 007716    004767    173714      JSR      %7,BSYNC            ;SYNC READER; SET ERROR COUNTER.
1441 007722    004767    172644      P1AA:  JSR      %7,BREAD      ;GO READ CHARACTER
1442 007726    004767    173644      JSR      %7,BCHECK          ;GO CHECK CHARACTER READ.
1443 007732    104012      SCOPE ; SCOPE
1444          ;*****
1445 007734    000001      PIT1:  1                    ; PRG1 TEST ROUTINE 1 *
1446 007736    007764      PIT2:  ; ADDRESS OF NEXT ROUTINE *
1447 007740    001750      1000. ; TEST ITERATION COUNT *
1448 007742    007750      P1BA   ; SCOPE ENTRY POINT *
1449          ;*****
1450          ;READ AND CHECK 1000 CHARACTERS OF SPECIAL BINARY COUNT PATTERN.
1451          ;RANDOM STALL BETWEEN CHARACTERS.
1452 007744    004767    173666      JSR      %7,BSYNC            ;SYNC READER; SET ERROR COUNTER
1453 007750    104002      P1BA:  STALL                ;RANDOM STALL
1454 007752    004767    172614      JSR      %7,BREAD            ;GO READ CHARACTER
1455 007756    004767    173614      JSR      %7,BCHECK          ;GO CHECK CHARACTER READ
1456 007762    104012      SCOPE ; SCOPE
1457          ;*****
1458 007764    000002      PIT2:  2                    ; PRG1 TEST ROUTINE 2 *
1459 007766    177777      PITLST ; ADDRESS OF NEXT ROUTINE *
1460 007770    000310      200.  ; TEST ITERATION COUNT *
1461 007772    010000      P1CA   ; SCOPE ENTRY POINT *
1462          ;*****
1463          ;READ AND CHECK 200 CHARACTER GROUPS OF SPECIAL BINARY COUNT PATTERN.
1464          ;RANDOM LENGTH
1465          ;GROUPS (BETWEEN 1 AND 15). RANDOM STALL BETWEEN GROUPS (0 TO 127 MSECS).
1466 007774    004767    173636      JSR      %7,BSYNC            ;SYNC READER; SET ERROR COUNTER.
1467 010000    004767    173546      P1CA:  JSR      %7,GRCNT      ;GENERATE RANDOM CHARACTER COUNT.
1468 010004    104002      STALL ; RANDOM STALL (0 TO 127 MSECS)
1469 010006    004767    172560      P1CC:  JSR      %7,BREAD      ;GO READ CHARACTER
1470 010012    004767    173560      JSR      %7,BCHECK          ;GO CHECK CHARACTER READ
1471 010016    005367    173552      DEC      RNCNT              ;DECREMENT RANDOM CHAR COUNT
1472 010022    001371      BNE     P1CC                ;GO READ AGAIN IF COUNT NOT 0.
1473 010024    104012      SCOPE ; SCOPE

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1474
1475
1476
1477 010026 012767 010060 171200
1478 010034 052767 000200 171206
1479 010042 012767 177600 173134
1480 010050 004767 174560
1481 010054 000167 171564
1482
1483 010060 000000
1484 010062 010206
1485
1486
1487 010064 104000
1488 010066 014366
1489 010070 012767 000122 171264
1490 010076 104015
1491 010100 162767 000011 171254
1492 010106 112700 000134
1493 010112 004767 174260
1494 010116 016767 171240 171260
1495 010124 005367 171254
1496 010130 001001
1497 010132 104012
1498 010134 016767 171244 171244
1499 010142 112700 000040
1500 010146 004767 174224
1501 010152 005367 171230
1502 010156 001371
1503 010160 112700 000015
1504 010164 004767 174206
1505 010170 004767 174202
1506 010174 112700 000057
1507 010200 004767 174172
1508 010204 000747
1509
1510 010206 000001
1511 010210 010272
1512
1513
1514 010212 104000
1515 010214 014417
1516 010216 012767 000016 171160
1517 010224 012767 014347 000034
1518 010232 104015
1519 010234 000406
1520 010236 012767 000017 171140
1521 010244 012767 014353 000014
1522 010252 104000
1523 010254 014341
1524 010256 005367 171122
1525 010262 001373
1526 010264 104000
1527 010266 000000
1528 010270 104012
1529

SBTTL PRG2-PRINTER TESTS
Z=2
X=-1
PRG2: MOV #P2TO,KSTART ;SET ADDRESS IF 1ST ROUTINE.
BIS #BIT7,PRGID
MOV #177600,STLMSK ;SET STALL LIMIT
JSR %7,STBF ;SET UP BUFFER AREA.
JMP SRSET ;GO GET STARTED.
;*****
P2TO: 0 ; PRG2 TEST ROUTINE 0 *
P2T1 ;ADDRESS OF NEXT ROUTINE *
;*****
;CARRIAGE RETURN TEST.
TYPE ;TYPE TITLE.
CRTST
MOV #82.,RCNT
CK37
SUB #9.,RCNT
MOVB #' \,%D ;PRINT
JSR %7,LSPCH ;"
MOV RCNT,CTRA ;RCNT TO CTRA
CTOA: DEC CTRA ;DECREMENT CTRA
BNE CTOB ;BRANCH IF NOT 0
SCOPE ;D. SCOPE
CTOB: MOV CTRA,CTRB ;SPACE COUNT TO CTRB.
CTOC: MOVB #40,%D
JSR %7,LSPCH ;SPACE.
DEC CTRB ;DECREMENT CTRB.
BNE CTOC ;BRANCH IF NOT DONE SPACING.
MOVB #15,%D
JSR %7,LSPCH ;CARRIAGE RETURN.
JSR %7,LSPCH ;DUMMY CYCLE.
MOVB #' /,%D
JSR %7,LSPCH ;PRINT "/".
BR CTOA
;*****
P2T1: 1 ; PRG2 TEST ROUTINE 1 *
P2T2 ;ADDRESS OF NEXT ROUTINE *
;*****
;RIGHT MARGIN TEST
TYPE ;TYPE TITLE
RMTST
MOV #14.,CTRA ;SET UP FOR 33/35
MOV #RM33B,RMB
CK37 ;37
BR CT1A ;NO
MOV #15.,CTRA ;YES.
MOV #RM37A,RMB ;SET UP FOR 37.
CT1A: TYPE ;TYPE----I
RM33A
DEC CTRA ;DONE N TIMES.
BNE CT1A ;BRANCH IF NOT N TIMES
TYPE ;TYPE-I-
RMB: OPEN
SCOPE ;SCOPE.
;*****

E03

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 DZKLAE PRG2-PRINTER TESTS

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1530 010272 000002          P2T2: 2          ; PRG2 TEST ROUTINE 2          *
1531 010274 010426          P2T3          ; ADDRESS OF NEXT ROUTINE          *
1532          ;*****
1533          ;SPACE TEST
1534 010276 104000          TYPE          ;TYPE TITLE.
1535 010300 014445          SPTST
1536 010302 012767 000044 171074 CT2A: MOV #36.,CTRA ;33/35 COUNT TO CTRA.
1537 010310 104000          TYPE          ;TYPE SPACE,\.
1538 010312 014363          SPTSTC
1539 010314 005367 171064          DEC CTRA          ;DONE TIMES SET IN CTRA?
1540 010320 001373          BNE CT2A          ;BRANCH IF NOT DONE
1541 010322 012767 000044 171054 CT2B: MOV #36.,CTRA ;SET UP CTRA COUNT FOR 33/35
1542 010330 012767 000001 171050 CT2C: MOV #1,CTRB
1543 010336 016767 171044 171044 CT2C: MOV CTRB,CTRC
1544 010344 112700 000015          MOVB #15,%0          ;CARRIAGE RETURN.
1545 010350 004767 174022          JSR %7,LSPCH
1546 010354 004767 174016          JSR %7,LSPCH          ;DUMMY CYCLE.
1547 010360 112700 000040          MOVB #40,%0          ;SPACE NUMBER OF TIMES
1548 010364 004767 174006          JSR %7,LSPCH          ;SET IN CTCR.
1549 010370 005367 171014          DEC CTCR          ;DONE SPACING.
1550 010374 001371          BNE CT2D          ;BRANCH IF NOT DONE SPACING.
1551 010376 112700 000057          MOVB #'/%0          ;DONE. TYPE A "/".
1552 010402 004767 173770          JSR %7,LSPCH
1553 010406 005367 170772          DEC CTRA          ;DONE 36 TIMES?
1554 010412 001001          BNE CT2E          ;BRANCH IF NOT DONE.
1555 010414 104012          SCOPE          ;DONE. SCOPE.
1556 010416 062767 000002 170762 CT2E: ADD #2,CTRB          ;MODIFY CTRB FOR NEXT TRY.
1557 010424 000744          BR CT2C          ;GO DO IT AGAIN.
1558          ;*****
1559 010426 000003          P2T3: 3          ; PRG2 TEST ROUTINE 3          *
1560 010430 010520          P2T4          ; ADDRESS OF NEXT ROUTINE          *
1561          ;*****
1562          ;LINE FEED TEST
1563 010432 104000          TYPE          ;TYPE TITLE
1564 010434 014464          LFTST
1565 010436 052767 040000 170604 BIS #BIT14,PRGID ;ALLOW STALLS.
1566 010444 012767 000110 170732 MOV #72.,CTRA ;SET 33/35 LINE FEED COUNT.
1567 010452 104015          CK37          ;37?
1568 010454 000403          BR CT3A          ;NO.
1569 010456 062767 000011 170720 CT3A: ADD #9.,CTRA ;INCREMENT LINE FEED COUNT BY 9.
1570 010464 112700 000134          MOVB #'/%0          ;TYPE "\ "
1571 010470 004767 173702          JSR %7,LSPCH
1572 010474 112700 000012          MOVB #12,%0          ;LINE FEED.
1573 010500 004767 173672          JSR %7,LSPCH
1574 010504 005367 170674          DEC CTRA          ;DONE N TIMES?
1575 010510 001001          BNE CT3B          ;BRANCH IF NOT DONE.
1576 010512 104012          SCOPE          ;DONE. SCOPE
1577 010514 104002          CT3B: STALL          ;STALL
1578 010516 000762          BR CT3A          ;REPEAT
1579          ;*****
1580 010520 000004          P2T4: 4          ; PRG2 TEST ROUTINE 4          *
1581 010522 010732          P2T5          ; ADDRESS OF NEXT ROUTINE          *
1582          ;*****
1583          ;TAB TEST
1584 010524 012767 000011 000074 MOV #9.,TBCNT ;SET TAB COUNT.
1585 010532 104014          CK35          ;35?

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1586 010534 104012          SCOPE          ;NO.
1587 010536 004567 000040 JSR          %5, TPBM ;TYPE MARKERS
1588 010542 000007          7
1589 010544 104000          TYPE
1590 010546 014315          TBMRK+1
1591 010550 012767 000007 170626 CT4A: MOV          #7, CTRA ;LINE COUNT TO CTRA
1592 010556 005067 000046 CLR          SPCNT ;0 TO SPACE COUNT.
1593 010562 004767 000044 CT4B: JSR          %7, TABP ;GO SPACE-TAB.
1594 010566 005267 000036 INC          SPCNT ;INCREMENT SPACE COUNT.
1595 010572 005367 170606 DEC          CTRA ;DONE 7 LINES?
1596 010576 001371          BNE          CT4B ;BRANCH IF NOT DONE.
1597 010600 104012          SCOPE          ;DONE. SCOPE.
1598 010602 012567 170576 TPBM: MOV          (5)+, CTRA ;TYPE TEST TITLE.
1599 010606 104000          TYPE
1600 010610 014300          TBTST
1601 010612 104000          TPBMA: TYPE          ;TYPE MARKERS
1602 010614 014326          TBMRK1
1603 010616 005367 170562 DEC          CTRA
1604 010622 001373          BNE          TPBMA
1605 010624 000205          RTS          %5 ;EXIT.
1606 010626 000000          TBCNT: OPEN          ;TAB COUNT
1607 010630 000000          SPCNT: OPEN          ;SPACE COUNT
1608 010632 104000          TABP: TYPE          ;CRLF.
1609 010634 014337          CRLF
1610 010636 016767 177764 170542 MOV          TBCNT, CTRB ;TAB COUNT TO CTRB
1611 010644 016767 177760 170536 TABPA: MOV          SPCNT, CTCR ;SPACE COUNT TO CTCR
1612 010652 001407          BEQ          TABPC ;BRANCH IF SPACE COUNT IS 0.
1613 010654 112700 000040 TABPB: MOV          #40, %0 ;SPACE
1614 010660 004767 173512 JSR          %7, LSPCH
1615 010664 005367 170520 DEC          CTCR ;DECREMENT SPACE COUNT
1616 010670 001371          BNE          TABPB ;BRANCH IF NOT YET 0.
1617 010672 112700 000011 TABPC: MOV          #11, %0 ;TAB
1618 010676 004767 173474 JSR          %7, LSPCH
1619 010702 004767 173470 JSR          %7, LSPCH ;DUMMY CYCLE
1620 010706 004767 173464 JSR          %7, LSPCH ;DUMMY CYCLE.
1621 010712 112700 000057 MOV          #' /, %0 ;TYPE " /"
1622 010716 004767 173454 JSR          %7, LSPCH
1623 010722 005367 170460 DEC          CTRB ;DECREMENT TAB COUNT.
1624 010726 001346          BNE          TABPA ;BRANCH IF NOT DONE TABBING.
1625 010730 000207          RTS          %7 ;DONE. EXIT.
1626
1627 010732 000005 P2T5: 5 ;*****
1628 010734 010750 P2T6 ; PRG2 TEST ROUTINE 5 *
; ADDRESS OF NEXT ROUTINE *
1629
1630 ;*****
;TYPE LINE OF CHARACTERS ABC
1631 010736 104000          TYPE          ;TYPE "CHARACTER TESTS"
1632 010740 014507          CRTST
1633 010742 104016          TYPLN3 ;TYPE LINE
1634 010744 014176          A
1635 010746 104012          SCOPE          ;SCOPE
1636
1637 010750 000006 P2T6: 6 ;*****
1638 010752 010762 P2T7 ; PRG2 TEST ROUTINE 6 *
; ADDRESS OF NEXT ROUTINE *
1639
1640 ;*****
;TYPE LINE OF CHARACTERS DEF
1641 010754 104016          TYPLN3 ;TYPE LINE

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1642 010756 014201
 1643 010760 104012
 1644
 1645 010762 000007
 1646 010764 010774
 1647
 1648
 1649 010766 104016
 1650 010770 014204
 1651 010772 104012
 1652
 1653 010774 000010
 1654 010776 011006
 1655
 1656
 1657 011000 104016
 1658 011002 014207
 1659 011004 104012
 1660
 1661 011006 000011
 1662 011010 011020
 1663
 1664
 1665 011012 104016
 1666 011014 014212
 1667 011016 104012
 1668
 1669 011020 000012
 1670 011022 011032
 1671
 1672
 1673 011024 104016
 1674 011026 014215
 1675 011030 104012
 1676
 1677 011032 000013
 1678 011034 011044
 1679
 1680
 1681 011036 104016
 1682 011040 014220
 1683 011042 104012
 1684
 1685 011044 000014
 1686 011046 011056
 1687
 1688
 1689 011050 104016
 1690 011052 014223
 1691 011054 104012
 1692
 1693 011056 000015
 1694 011060 011070
 1695
 1696
 1697 011062 104016

```

D
SCOPE                                ;SCOPE
:*****
P2T7: 7                               ; PRG2 TEST ROUTINE 7      *
      P2T10                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS GHI
      TYPLN3                           ;TYPE LINE
G
SCOPE                                ;SCOPE
:*****
P2T10: 10                             ; PRG2 TEST ROUTINE 10   *
      P2T11                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS OF JKL
      TYPLN3                           ;TYPELINE
J
SCOPE                                ;SCOPE
:*****
P2T11: 11                             ; PRG2 TEST ROUTINE 11   *
      P2T12                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS MNO
      TYPLN3                           ;TYPE LINE
M
SCOPE                                ;SCOPE
:*****
P2T12: 12                             ; PRG2 TEST ROUTINE 12   *
      P2T13                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS PQR
      TYPLN3                           ;TYPE LINE
P
SCOPE                                ;SCOPE
:*****
P2T13: 13                             ; PRG2 TEST ROUTINE 13   *
      P2T14                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS STU
      TYPLN3                           ;TYPE LINE
S
SCOPE                                ;SCOPE
:*****
P2T14: 14                             ; PRG2 TEST ROUTINE 14   *
      P2T15                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS VWX
      TYPLN3                           ;TYPE LINE
V
SCOPE                                ;SCOPE
:*****
P2T15: 15                             ; PRG2 TEST ROUTINE 15   *
      P2T16                           ;ADDRESS OF NEXT ROUTINE *
:*****
;TYPE LINE OF CHARACTERS YZO
      TYPLN3                           ;TYPE LINE

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1698 011064 014226
 1699 011066 104012
 1700
 1701 011070 000016
 1702 011072 011102
 1703
 1704
 1705 011074 104016
 1706 011076 014231
 1707 011100 104012
 1708
 1709 011102 000017
 1710 011104 011114
 1711
 1712
 1713 011106 104016
 1714 011110 014234
 1715 011112 104012
 1716
 1717 011114 000020
 1718 011116 011126
 1719
 1720
 1721 011120 104016
 1722 011122 014237
 1723 011124 104012
 1724
 1725 011126 000021
 1726 011130 011140
 1727
 1728
 1729 011132 104016
 1730 011134 014242
 1731 011136 104012
 1732
 1733 011140 000022
 1734 011142 011152
 1735
 1736
 1737 011144 104016
 1738 011146 014245
 1739 011150 104012
 1740
 1741 011152 000023
 1742 011154 011164
 1743
 1744
 1745 011156 104016
 1746 011160 014250
 1747 011162 104012
 1748
 1749 011164 000024
 1750 011166 011176
 1751
 1752
 1753 011170 104016

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      Y
      SCOPE                               ;SCOPE
*****
P2T16: 16                               ; PRG2 TEST ROUTINE 16 *
      P2T17                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS 123
      TYPLN3                               ;TYPE LINE
      ONE
      SCOPE                               ;SCOPE
*****
P2T17: 17                               ; PRG2 TEST ROUTINE 17 *
      P2T20                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS 456
      TYPLN3                               ;TYPE LINE
      FOUR
      SCOPE                               ;SCOPE
*****
P2T20: 20                               ; PRG2 TEST ROUTINE 20 *
      P2T21                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS 789
      TYPLN3                               ;TYPE LINE
      SEVEN
      SCOPE                               ;SCOPE
*****
P2T21: 21                               ; PRG2 TEST ROUTINE 21 *
      P2T22                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS!"#
      TYPLN3                               ;TYPE LINE
      C41
      SCOPE                               ;SCOPE
*****
P2T22: 22                               ; PRG2 TEST ROUTINE 22 *
      P2T23                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS $%&
      TYPLN3                               ;TYPE LINE
      C44
      SCOPE                               ;SCOPE
*****
P2T23: 23                               ; PRG2 TEST ROUTINE 23 *
      P2T24                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS '()
      TYPLN3                               ;TYPE LINE
      C47
      SCOPE                               ;SCOPE
*****
P2T24: 24                               ; PRG2 TEST ROUTINE 24 *
      P2T25                               ;ADDRESS OF NEXT ROUTINE *
*****
;TYPE LINE OF CHARACTERS *+,
      TYPLN3                               ;TYPE LINE

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1754 011172 014253          C52
1755 011174 104012          SCOPE
1756                                     ;SCOPE
1757 011176 000025          P2T25: 25 ; PRG2 TEST ROUTINE 25 *
1758 011200 011210          P2T26 ; ADDRESS OF NEXT ROUTINE *
1759                                     ;*****
1760                                     ;TYPE LINE OF CHARACTERS -./
1761 011202 104016          TYPLN3 ;TYPE LINE
1762 011204 014256          C55
1763 011206 104012          SCOPE
1764                                     ;SCOPE
1765 011210 000026          P2T26: 26 ; PRG2 TEST ROUTINE 26 *
1766 011212 011222          P2T27 ; ADDRESS OF NEXT ROUTINE *
1767                                     ;*****
1768                                     ;TYPE LINE OF CHARACTERS :;<
1769 011214 104016          TYPLN3 ;TYPE LINE
1770 011216 014261          C72
1771 011220 104012          SCOPE
1772                                     ;SCOPE
1773 011222 000027          P2T27: 27 ; PRG2 TEST ROUTINE 27 *
1774 011224 011234          P2T30 ; ADDRESS OF NEXT ROUTINE *
1775                                     ;*****
1776                                     ;TYPE LINE OF CHARACTERS =>?
1777 011226 104016          TYPLN3 ;TYPE LINE
1778 011230 014264          C75
1779 011232 104012          SCOPE
1780                                     ;SCOPE
1781 011234 000030          P2T30: 30 ; PRG2 TEST ROUTINE 30 *
1782 011236 011246          P2T31 ; ADDRESS OF NEXT ROUTINE *
1783                                     ;*****
1784                                     ;TYPE LINE OF CHARACTERS a(\
1785 011240 104016          TYPLN3 ;TYPE LINE
1786 011242 014267          C100
1787 011244 104012          SCOPE
1788                                     ;SCOPE
1789 011246 000031          P2T31: 31 ; PRG2 TEST ROUTINE 31 *
1790 011250 011260          P2T32 ; ADDRESS OF NEXT ROUTINE *
1791                                     ;*****
1792                                     ;TYPE LINE OF CHARACTERS ] AND LEFT ARROW
1793 011252 104016          TYPLN3 ;TYPE LINE
1794 011254 014272          C135
1795 011256 104012          SCOPE
1796                                     ;SCOPE
1797 011260 000032          P2T32: 32 ; PRG2 TEST ROUTINE 32 *
1798 011262 011316          P2T33 ; ADDRESS OF NEXT ROUTINE *
1799                                     ;*****
1800                                     ;TYPE 2 LINES OF ALL CHARACTERS, FIRST LINE FULL SPEED. SECOND LINE WITH STALLS.
1801 011264 004767 173456   JSR    %7,FBALL ;FILL BUFFER WITH ALL CHARACTERS.
1802 011270 042767 040000   BIC    %BIT14,PRGID ;CLEAR STALL BIT IN PRGID
1803 011276 004767 173236   JSR    %7,TYPLN ;TYPE LINE.
1804 011302 052767 040000   BIS    %BIT14,PRGID ;SET STALL BIT IN PRGID
1805 011310 004767 173224   JSR    %7,TYPLN ;TYPE LINE.
1806 011314 104012          SCOPE ;SCOPE.
1807                                     ;*****
1808 011316 000033          P2T33: 33 ; PRG2 TEST ROUTINE 33 *
1809 011320 011400          P2T34 ; ADDRESS OF NEXT ROUTINE *

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1810 ;*****
1811 ;TYPE 12 LINES OF ASR33 WORST CASE PATTERN. ALTERNATE LINES WITH STALLS.
1812 011322 104013 CK33 ;33?
1813 011324 104012 SCOPE ;NO. BYPASS TEST.
1814 011326 104000 TYPE ;TYPE "WORST CASE PATTERN TEST"
1815 011330 014533 WCPTST
1816 011332 004767 173450 JSR %7,FW336 ;PATTERN TO BUFFER.
1817 011336 012767 000006 170040 MOV #6,CTRA ;SET COUNT TO 6
1818 011344 042767 040000 167676 CT33A: BIC #BIT14,PRGID ;CLEAR STALL BIT IN PRGID.
1819 011352 004767 173162 JSR %7,TYPLN ;TYPE LINE
1820 011356 052767 040000 167664 BIS #BIT14,PRGID ;SET STALL BIT IN PRGID.
1821 011364 004767 173150 JSR %7,TYPLN ;TYPE LINE.
1822 011370 005367 170010 DEC CTRA ;DONE 6 TIMES?
1823 011374 001363 BNE CT33A ;BRANCH IF NOT 6 TIMES YET.
1824 011376 104012 SCOPE ;DONE. SCOPE.
1825 ;*****
1826 011400 000034 P2T34: 34 ; PRG2 TEST ROUTINE 34 *
1827 011402 177777 P2TLST ;ADDRESS OF NEXT ROUTINE *
1828 ;*****
1829 ;TYPE 12 LINES OF ASR35 WORST CASE PATTERN. ALTERNATE LINES WITH STALLS.
1830 011404 104014 CK35 ;35?
1831 011406 104012 SCOPE ;NO. BYPASS TEST.
1832 011410 104000 TYPE ;TYPE "WORST CASE PATTERN TEST"
1833 011412 014533 WCPTST
1834 011414 004767 173426 JSR %7,FW356 ;PATTERN TO BUFFER.
1835 011420 012767 000006 167756 MOV #6,CTRA ;SET COUNT TO 6.
1836 011426 042767 040000 167614 CT34A: BIC #BIT14,PRGID ;CLEAR STALL BIT IN PRGID.
1837 011434 004767 173100 JSR %7,TYPLN ;TYPE LINE.
1838 011440 052767 040000 167602 BIS #BIT14,PRGID ;SET STALL BIT IN PRGID.
1839 011446 004767 173066 JSR %7,TYPLN ;TYPE LINE
1840 011452 005367 167726 DEC CTRA ;DONE 6 TIMES?
1841 011456 001363 BNE CT34A ;BRANCH IF NOT 6 TIMES YET.
1842 011460 104012 SCOPE ;DONE. SCOPE.

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1843          ;SBTTL PRG3-PUNCH TEST
1844          ;PRG3 - PUNCH TEST
1845          000003
1846          177777
1847 011462 012767 011510 167544 PRG3: MOV #P3T0,KSTART ;ADDR OF 1ST ROUTINE TO KSTART.
1848 011470 052767 040000 167552 PRG3: BIS #BIT14,PRGID ;ALLOW STALLS.
1849 011476 012767 177400 171500 PRG3: MOV #177400,STLMSK ;SET STALL MASK
1850 011504 000167 170134 PRG3: JMP SRSET ;GO GET STARTED
1851          ;*****
1852 011510 000000 P3T0: 0 ; PRG3 TEST ROUTINE 0 *
1853 011512 011566 P3T1 ; ADDRESS OF NEXT ROUTINE *
1854 011514 000005 5 ; TEST ITERATION COUNT *
1855 011516 011520 P3AA ; SCOPE ENTRY POINT *
1856          ;*****
1857          ;PUNCH SPECIAL BINARY COUNT PATTERN IN PUNCH MODE 0 (FULL SPEED)
1858 011520 012767 001000 167634 P3AA: MOV #512,RCNT ;SET CHARACTER COUNT TO 512
1859 011526 004767 000216 P3AA: JSR %7,PFRT ;GO PUNCH FRONT END.
1860 011532 004767 172270 P3AB: JSR %7,INBIN ;INITIALIZE SPECIAL BINARY COUNT
1861 011536 004767 172322 P3AB: JSR %7,GTBIN ;GET BINARY CHARACTER
1862 011542 004767 172630 P3AB: JSR %7,LSPCH ;GO PUNCH THE CHARACTER
1863 011546 005367 167610 P3AB: DEC RCNT ;DECREMENT CHAR COUNT.
1864 011552 001371 P3AB: BNE P3AB ;BRANCH IF COUNT NOT YET 0 YET.
1865 011554 004767 000206 P3AB: JSR %7,PLTLR ;PUNCH TRAILER.
1866 011560 004767 000230 P3AB: JSR %7,PCHECK ;CHECK DATA PUNCHED.
1867 011564 104012 P3AB: SCOPE ;SCOPE
1868          ;*****
1869 011566 000001 P3T1: 1 ; PRG3 TEST ROUTINE 1 *
1870 011570 011646 P3T2 ; ADDRESS OF NEXT ROUTINE *
1871 011572 000005 5 ; TEST ITERATION COUNT *
1872 011574 011576 P3BA ; SCOPE ENTRY POINT *
1873          ;*****
1874          ;PUNCH SPECIAL BINARY COUNT PATTERN IN PUNCH MODE 1 (RANDOM STALLS AFTER
1875          ;PUNCHING EACH CHARACTER.)
1876 011576 012767 001000 167556 P3BA: MOV #512,RCNT ;SET CHARACTER COUNT TO 512.
1877 011604 004767 000140 P3BA: JSR %7,PFRT ;GO PUNCH FRONT END.
1878 011610 004767 172212 P3BB: JSR %7,INBIN ;INITIALIZE SPECIAL BINARY COUNT.
1879 011614 004767 172244 P3BB: JSR %7,GTBIN ;GET BINARY CHARACTER.
1880 011620 004767 172552 P3BB: JSR %7,LSPCH ;GO PUNCH THE CHARACTER.
1881 011624 104002 P3BB: STALL ;RANDOM STALL.
1882 011626 005367 167530 P3BB: DEC RCNT ;DECREMENT CHAR COUNT.
1883 011632 001370 P3BB: BNE P3BB ;BRANCH IF COUNT NOT YET 0.
1884 011634 004767 000126 P3BB: JSR %7,PLTLR ;PUNCH TRAILER.
1885 011640 004767 000150 P3BB: JSR %7,PCHECK ;CHECK DATA PUNCHED.
1886 011644 104012 P3BB: SCOPE ;SCOPE
1887          ;*****
1888 011646 000002 P3T2: 2 ; PRG3 TEST ROUTINE 2 *
1889 011650 177777 P3T2LST ; ADDRESS OF NEXT ROUTINE *
1890 011652 000005 5 ; TEST ITERATION COUNT *
1891 011654 011664 P3CA ; SCOPE ENTRY POINT *
1892          ;*****
1893          ;PUNCH SPECIAL BINARY COUNT PATTERN IN PUNCH MODE 2.
1894          ;(RANDOM STALL BEFORE PUNCHING RANDOM LENGTH GROUP OF CHARACTERS).
1895          ;MAXIMUM GROUP LENGTH: 15)
1896 011656 012767 177760 171706 P3CA: MOV #177760,RCMSK ;SET CHAR GROUP MASK FOR 17(8) MAX).
1897 011664 012767 001000 167470 P3CA: MOV #512,RCNT ;SET CHARACTER COUNT TO 512.
1898 011672 004767 000052 P3CA: JSR %7,PFRT ;GO PUNCH FRONT END.

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1899	011676	004767	172124								
1900	011702	004767	171644		P3CB:	JSR	%7,INBIN				; INITIALIZE SPECIAL BINARY COUNT.
1901	011706	104002				JSR	%7,GRCNT				; GENERATE RANDOM CHARACTER COUNT
1902	011710	004767	172150			STALL					; RANDOM STALL.
1903	011714	004767	172456		P3CC:	JSR	%7,GTBIN				; GET BINARY CHARACTER.
1904	011720	005367	167436			JSR	%7,LSPCH				; PUNCH THE CHARACTER.
1905	011724	001404				DEC	RCNT				; DECREMENT CHAR COUNT
1906	011726	005367	171642			BEQ	P3CD				; BRANCH IF COUNT IS 0.
1907	011732	001366				DEC	RNCNT				; NOT 0. DECREMENT RANDOM CHAR COUNT.
1908	011734	000762				BNE	P3CC				; BRANCH IF COUNT NOT YET 0.
1909	011736	004767	000024		P3CD:	BR	P3CB				; BRANCH IF COUNT 0.
1910	011742	004767	000046			JSR	%7,PLTLR				; PUNCH TRAILER.
1911	011746	104012				JSR	%7,PCHECK				; CHECK DATA PUNCHED.
1912						SCOPE					; SCOPE.
1913	011750	004767	000012			; ROUTINE TO PUNCH FRONT END.					
1914	011754	012700	000377		PFRNT:	JSR	%7,PLTLR				; PUNCH LEADER
1915	011760	004767	172412			MOV	#377,%0				
1916	011764	000207				JSR	%7,LSPCH				; PUNCH SYNC CHARACTER. (RUBOUT)
1917	011766	012767	000106	167410	PLTLR:	RTS	%7				; EXIT.
1918	011774	012700	000177		PLTRA:	MOV	#70.,CTRA				; SET CTRA TO 70.
1919	012000	004767	172372			MOV	#177,%0				
1920	012004	005367	167374			JSR	%7,LSPCH				; PUNCH CODE 177 FOR LEADER/TRAILER
1921	012010	001371				DEC	CTRA				; PUNCHED 70?
1922	012012	000207				BNE	PLTRA				; BRANCH IF NOT YET 70.
1923	012014	012767	000226	167362	PCHECK:	RTS	%7				; DONE EXIT.
1924	012022	004767	170544		PCHKA:	MOV	#150.,CTRA				; SET SYNC COUNT TO 150.
1925	012026	122767	000377	167330		JSR	%7,BREAD				; READ CHARACTER
1926	012034	001405				CMPB	#377,CRBUF				; IS IT SYNC CHARACTER? (377)
1927	012036	005367	167342			BEQ	PCHKB				; BRANCH IF SYNC CHAR FOUND.
1928	012042	001367				DEC	CTRA				; NOT FOUND. DECREMENT CTRA.
1929	012044	104010				BNE	PCHKA				; BRANCH IF NOT 150 CHARS READ YET.
1930	012046	000762				EHALT					; 150 CHARS READ AND NO SYNC. HALT.
1931	012050	004767	171752			BR	PCHECK				; TRY AGAIN.
1932	012054	012767	001000	167322	PCHKB:	JSR	%7,INBIN				; INITIALIZE BINARY COUNT.
1933	012062	004767	170504			MOV	#512.,CTRA				; SET CHARACTER COUNT TO 512.
1934	012066	004767	171772		PCHKC:	JSR	%7,BREAD				; READ CHARACTER.
1935	012072	110067	167267			JSR	%7,GTBIN				; GET BINARY COUNT CHARACTER.
1936	012076	104004				MOVB	%0,CRBUF+1				
1937	012100	005367	167300			DATCHK					; COMPARE CHARACTERS.
1938	012104	001366			PCHKD:	DEC	CTRA				; 512 CHARS READ?
1939	012106	000207				BNE	PCHKC				; BRANCH IF NOT 512 CHARS YET.
						RTS	%7				; EXIT.

M03

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 DZKLAE PRG4-KEYBOARD TEST

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1940          .SBTTL PRG4-KEYBOARD TEST
1941          Z=4
1942          X=-1
1943 012110 012767 012134 167116 PRG4: MOV #P4T0,KSTART
1944 012116 052767 000200 167124     BIS #BIT7,PRGID
1945 012124 104000     TYPE
1946 012126 014567     KMSG1
1947 012130 000167 167510     JMP SRSET
1948          ;*****
1949 012134 000000 P4T0: 0 ; PRG4 TEST ROUTINE 0 *
1950 012136 012240     P4T1 ; ADDRESS OF NEXT ROUTINE *
1951          ;*****
1952          ;TEST THAT PRESSING KEY SETS DONE FLAG.
1953 012140 012767 000005 167236 ETOA: MOV #5,CTRA
1954 012146 104006     STRDRV
1955 012150 012204     ET0B
1956 012152 104000     TYPE ;TYPE "PRESS A KEY WITHIN 10 SECS."
1957 012154 014605     KMSG2
1958 012156 052777 000100 167024     BIS #BIT6,@TKS ;ENABLE KYBD INTERRUPT.
1959 012164 005067 165606     CLR PSM
1960 012170 104024     DELAY ;WAIT 10 SECONDS
1961 012172 023420     10000.
1962 012174 104000     TYPE ;TYPE "NO KEYBOARD REQUEST."
1963 012176 015007     KMSG6
1964 012200 104010     EHALT ;HALT.
1965 012202 000411     BR ETOCA
1966 012204 105777 167000     ET0B: TSTB @TKS ;TEST FOR DONE BIT ON
1967 012210 100403     BMI ETOC ;BRANCH IF DONE BIT SET.
1968 012212 104000     TYPE ;DONE BIT NOT SET. TYPE:FALSE KEY-
1969 012214 015035     KMSG7 ;BOARD OR READER INTERRUPT.
1970 012216 104010     EHALT ;HALT
1971 012220 012716 012226     ETOC: MOV #ETOCA,@%6 ;EXIT INTERRUPT.
1972 012224 000002     RTI
1973 012226 104011     ETOCA: SRESET ;DONE 5 TIMES?
1974 012230 005367 167150     DEC CTRA ;BRANCH IF NOT DONE.
1975 012234 001344     BNE ETOA ;SCOPE
1976 012236 104012     SCOPE ;SCOPE
1977          ;*****
1978 012240 000001 P4T1: 1 ; PRG4 TEST ROUTINE 1 *
1979 012242 012320     P4T2 ; ADDRESS OF NEXT ROUTINE *
1980          ;*****
1981          ;ECHO TEST. KEYED CHARACTER IS TYPED. RUBOUT ENDS ROUTINE.
1982 012244 104000     TYPE ;TYPE TITLE AND INSTRUCTIONS.
1983 012246 014645     KMSG3
1984 012250 105777 166734     ET1A: TSTB @TKS ;WAIT FOR DONE FLAG
1985 012254 100375     BPL .-4
1986 012256 117767 166730 167100     MOVB @TKB,CRBUF ;MOVE KYBD CHAR TO CRBUF.
1987 012264 116777 167074 166724     MOVB CRBUF,@TPB ;ECHO CHAR READ.
1988 012272 105777 166716     TSTB @TPS ;WAIT FOR PRINTER DONE.
1989 012276 100375     BPL .-4
1990 012300 042767 000200 167056     BIC #BIT7,CRBUF ;CLEAR BIT 7 FROM CRBUF.
1991 012306 122767 000177 167050     CMPB #177,CRBUF ;COMPARE CRBUF TO RUBOUT (177)
1992 012314 001355     BNE ET1A ;BRANCH IF NOT RUBOUT (177)
1993 012316 104012     SCOPE ;SCOPE
1994          ;*****
1995 012320 000002 P4T2: 2 ; PRG4 TEST ROUTINE 2 *

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1996	012322	177777			P4TLST		;ADDRESS OF NEXT ROUTINE	*
1997					;*****			
1998					;OCTAL EQUIVALENT TEST. THE OCTAL EQUIVALENT OF ANY CHARACTER KEYED			
1999					;IS PRINTED. RUBOUT ENDS ROUTINE.			
2000	012324	104001			TYPES		;TYPE TITLE AND INSTRUCTIONS.	
2001	012326	014747			KMSG4			
2002	012330	014660			KMSG3A			
2003	012332	177777			-1			
2004	012334	005067	167024		CLR	CRBUF		
2005	012340	105777	166644		TSTB	@TKS		;WAIT FOR DONE FLAG.
2006	012344	100375			BPL	-4		
2007	012346	117767	166640	167010	MOVB	@TKB,CRBUF		;CHARACTER TO CRBUF
2008	012354	004567	171646		JSR	%5,ACNV4		;CONVERT CHAR IN CRBUF TO
2009	012360	001364			CRBUF			;PRINTABLE OCTAL
2010	012362	015001			OCTEQV			
2011	012364	104000			TYPE			;TYPE OCTAL EQUIVALENT
2012	012366	014777			KMSG5			
2013	012370	042767	000200	166766	BIC	#BIT7,CRBUF		;CLEAR BIT 7 FROM CRBUF
2014	012376	022767	000177	165760	CMP	#177,CRBUF		;TEST FOR RUBOUT CHARACTER.
2015	012404	001355			BNE	ET2A		;BRANCH IF NOT RUBOUT (177).
2016	012406	104012			SCOPE			;SCOPE.

Line	Address	Code	Hex	Hex	Label	Comment
2017					.SBTTL	PRGS COMBINED TEST
2018	012410	104005			PRGS: CHALT	;SETUP HALT.
2019	012412	004767	172216		JSR %7,STBF	;SETUP BUFFER
2020	012416	052767	040000	166624	BIS #BIT14,PRGID	;ALLOW STALLS.
2021	012424	012767	177600	170552	MOV #177600,STLMSK	;SETMAX STALL TO 255 MSECS.
2022	012432	005067	000054		CLR PCHCNT	
2023	012436	005067	000046		CLR RBUSY	
2024	012442	104006			STRDRV	;SET READER SERVICE TO RZERO.
2025	012444	013064			RZERO	
2026	012446	104007			STPCHV	;SET PUNCH SERVICE TO PCHDAT.
2027	012450	012734			PCHDAT	
2028	012452	012767	000241	000612	MOV #241,SEEDO	;INITIALIZE PUNCH
2029	012460	004767	000574		JSR %7,INITO	
2030	012464	012767	000077	166714	MOV #63,CTRB	
2031	012472	112377	166520		MOVB (3)+,ATPB	;PUNCH FIRST CHAR.
2032	012476	052777	000100	166510	BIS #BIT6,ATPS	;ENABLE PUNCH INTERRUPT.
2033	012504	104400			DELAYX	;STALL WHILE AWAITING INTERRUPTS.
2034	012506	000776			BR -2	;BACK TO WAIT.
2035	012510	000000			RBUSY: OPEN	
2036	012512	000000			PCHCNT: OPEN	
2037	012514	105777	166474		TSTPB	;CHECK FOR DONE.
2038	012520	100401			BMI .+4	;BRANCH IF DONE SET.
2039	012522	104010			EHALT	;NOT DONE. FALSE INTERRUPT.
2040	012524	005267	177762		INC PCHCNT	;INCREMENT PUNCH COUNT.
2041	012530	000207			RTS %7	;EXIT.
2042	012532	026727	177754	000024	PCONT: CMP PCHCNT,#20.	;CHECK PUNCH COUNT.
2043	012540	103424			BLO PCONTC	;BRANCH IF LESS THAN 20.
2044	012542	105767	177742		TSTB RBUSY	;READER BUSY?
2045	012546	100406			BMI PCONTA	;BRANCH IF READER BUSY.
2046	012550	052767	000200	177732	BIS #BIT7,RBUSY	;NOT BUSY. SET IT BUSY.
2047	012556	052777	000101	166424	BIS #101,ATKS	;ENABLE READER AND INTERRUPT.
2048	012564	026727	177722	000050	PCONTA: CMP PCHCNT,#40.	;RECHECK PUNCH COUNT.
2049	012572	101402			BLOS PCONTB	;BRANCH IF EQUAL OR LESS THAN 40.
2050	012574	005077	166414		CLR ATPS	;DISABLE PUNCH INTERRUPT.
2051	012600	032777	000400	165366	PCONTB: BIT #BIT8,JSRPTR	;CHECK FOR FULL SPEED RUN.
2052	012606	001001			BNE PCONTC	;BRANCH IF FULL SPEED DESIRED.
2053	012610	104002			STALL	;GO STALL.
2054	012612	112377	166400		PCONTC: MOVB (3)+,ATPB	;LOAD PUNCH BUFFER.
2055	012616	000002			RTI	;EXIT INTERRUPT.
2056	012620	105777	166364		TSTRDR: TSTB ATKS	;CHECK FOR READER DONE.
2057	012624	100401			BMI .+4	;BRANCH IF DONE SET.
2058	012626	104010			EHALT	;NOT DONE. FALSE INTERRUPT.
2059	012630	117767	166356	166526	MOVB ATKB,CRBUF	;CHECK READ TO CRBUF.
2060	012636	005367	177650		DEC PCHCNT	;DECREMENT PUNCH COUNT.
2061	012642	000207			RTS %7	;EXIT.
2062	012644	005767	177642		RCONT: TST PCHCNT	;TEST PUNCH COUNT.
2063	012650	001006			BNE RCONTA	;BRANCH IF COUNT NOT 0.
2064	012652	042767	000200	177630	BIC #BIT7,RBUSY	;COUNT 0. CLEAR RBUSY.
2065	012660	005077	166324		CLR ATKS	;CLEAR READER INTERRUPT ENABLE.
2066	012664	000002			RTI	;EXIT INTERRUPT
2067	012666	026727	177620	000024	RCONTA: CMP PCHCNT,#20.	;COUNT LARGER THAN 20?
2068	012674	101014			BHI RCONTC	;BRANCH IF COUNT LARGER THAN 20.
2069	012676	032777	000100	166310	BIT #BIT6,ATPS	;NOT LARGER. PUNCH INTERRUPT ENABLED?
2070	012704	001003			BNE RCONTB	;BRANCH IF ENABLED.
2071	012706	052777	000100	166300	BIS #BIT6,ATPS	;ENABLE PUNCH INTERRUPTS.
2072	012714	032777	000400	165252	RCONTB: BIT #BIT8,JSRPTR	;CHECK FOR FULL SPEED RUN.

2073	012722	001001			BNE	RCONTC		: BRANCH IF FULL SPEED DESIRED.
2074	012724	104026			RSTALL			: GO STALL.
2075	012726	005277	166256		RCONTC: INC	RTKS		: ENABLE READER.
2076	012732	000002			RTI			: EXIT INTERRUPT.
2077	012734	004767	177554		PCHDAT: JSR	%7, TSTPCH		: CHECK PUNCH.
2078	012740	005367	166440		DEC	CTRA		: 74 CHARS OUTPUTTED?
2079	012744	001272			BNE	PCONT		: BRANCH IF NOT.
2080	012746	005367	166434		DEC	CTRB		: 63 LINES OUTPUTTED?
2081	012752	001405			BEQ	PCHDTA		: BRANCH IF YES.
2082	012754	005267	000312		INC	SEED0		: NO. SETUP FOR NEXT LINE.
2083	012760	004767	000274		JSR	%7, INIT0		: SETUP LINE. 74 TO CTRA
2084	012764	000662			BR	PCONT		: CONTINUE.
2085	012766	105067	002152		PCHDTA: CLRB	BLOCK1		: FILL PUNCH BUFFER WITH ZEROES.
2086	012772	004567	171342		JSR	%5, BMOVE		
2087	012776	015144			BLOCK1			
2088	013000	015145			BLOCK1+1			
2089	013002	000107			71.			
2090	013004	012703	015142		MOV	#BLOCKA, %3		: PUNCH BUFFER ADDRESS TO R3.
2091	013010	012767	000024	166366	MOV	#20., CTRA		: SET CHAR COUNT TO 20.
2092	013016	104007			STPCHV			: SET PUNCH SERVICE TO PCHZER.
2093	013020	013024			PCHZER			
2094	013022	000643			BR	PCONT		: CONTINUE.
2095	013024	004767	177464		PCHZER: JSR	%7, TSTPCH		: CHECK PUNCH.
2096	013030	005367	166350		DEC	CTRA		: ALL CHARS OUTPUTTED?
2097	013034	001236			BNE	PCONT		: BRANCH IF NOT.
2098	013036	012767	000241	000226	MOV	#241, SEED0		: YES
2099	013044	004767	000210		JSR	%7, INIT0		: SETUP LINE. 74 TO CTRA
2100	013050	012767	000077	166330	MOV	#63., CTRB		: SET LINE COUNT TO 63
2101	013056	104007			STPCHV			: SET PUNCH SERVICE TO PCHDAT.
2102	013060	012734			PCHDAT			
2103	013062	000623			BR	PCONT		: CONTINUE.
2104	013064	004767	177530		RZERO: JSR	%7, TSTRDR		: CHECK READER.
2105	013070	105767	166270		TSTB	CRBUF		: TEST CHARACTER READ.
2106	013074	001663			BEQ	RCONTC		: BRANCH IF 0.
2107	013076	004767	000002		JSR	%7, RZERA		: SET UP TO READ DATA.
2108	013102	000415			BR	RDATA		
2109	013104	012767	000241	000204	RZERA: MOV	#241, SEED1		: SET UP LINE. 74 TO CTRC
2110	013112	004767	000166		JSR	%7, INIT1		
2111	013116	012767	000077	166266	MOV	#63., CTRD		: SET LINE COUNT TO 63.
2112	013124	104006			STRDRV			: SET READER SERVICE TO RDATA.
2113	013126	013132			RDATA			
2114	013130	000207			RTS	%7		: EXIT
2115	013132	004767	177462		RDATA: JSR	%7, TSTRDR		: CHECK READER.
2116	013136	112467	166223		RDATA: MOV	(4)+, CRBUF+1		: MOVE EXPECTED CHAR TO CRBUF+1
2117	013142	104004			DATCHK			: CHECK DATA.
2118	013144	005367	166240		DEC	CTRC		: 74 CHARACTERS CHECKED?
2119	013150	001235			BNE	RCONTC		: BRANCH IF NOT.
2120	013152	005367	166234		DEC	CTRD		: 63 LINES CHECKED?
2121	013156	001405			BEQ	RDATA		: BRANCH IF YES.
2122	013160	005267	000132		INC	SEED1		: NO. SETUP NEXT LINE AND
2123	013164	004767	000114		JSR	%7, INIT1		: 74 TO CTRC.
2124	013170	000625			BR	RCONTC		: CONTINUE.
2125	013172	105067	002060		RDATA: CLRB	BLOCK2		: FILL READ BUFFER WITH ZEROES.
2126	013176	004567	171136		JSR	%5, BMOVE		
2127	013202	015256			BLOCK2			
2128	013204	015257			BLOCK2+1			

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 DZKLAE PRGS COMBINED TEST

2129	013206	000107			71.		
2130	013210	012704	015254		MOV	#BLOCKB,%4	:READ BUFFER ADDRESS TO R4
2131	013214	012767	000024	166166	MOV	#20.,CTAC	:SET CHAR COUNT TO 20.
2132	013222	104006			STRDRV		:SET READER SERVICE TO R2OZER
2133	013224	013230			R2OZER		
2134	013226	000606			RDATC:	BR	:CONTINUE.
2135	013230	004767	177364		R2OZER:	JSR	:CHECK READER
2136	013234	112467	166125		MOV	(4)+,CRBUF+1	:MOVE EXPECTED CHAR TO CRBUF+1
2137	013240	104004			DATCHK		:CHECK DATA.
2138	013242	005367	166142		DEC	CTAC	:ALL CHARS CHECKED?
2139	013246	001367			BNE	RDATC	:BRANCH IF NOT.
2140	013250	004767	177630		JSR	%7,RZERA	:SET UP TO READ DATA.
2141	013254	000167	177364		JMP	RCNT	
2142	013260	012703	015142		INITO:	MOV	:PUNCH BUFFER ADDRESS TO R3
2143	013264	004567	000040		JSR	#BLOCKA,%3	:FILL PUNCH BUFFER WITH DATA
2144	013270	015144			BLOCK1	%5,DTFL	:STARTING WITH CHAR IN SEEDO
2145	013272	000000			SEEDO:	OPEN	
2146	013274	012767	000112	166102	MOV	#74.,CTRA	
2147	013302	000207			RTS	%7	:EXIT
2148	013304	012704	015254		INIT1:	MOV	:READ BUFFER ADDRESS TO R4
2149	013310	004567	000014		JSR	#BLOCKB,%4	:FILL READ BUFFER WITH DATA
2150	013314	015256			BLOCK2	%5,DTFL	:STARTING WITH A CHAR IN SEED1.
2151	013316	000000			SEED1:	OPEN	
2152	013320	012767	000112	166062	MOV	#74.,CTAC	
2153	013326	000207			RTS	%7	:EXIT
2154	013330	012502			DTFL:	(5)+,%2	:STARTING ADDRESS TO R2.
2155	013332	012501			MOV	(5)+,%1	:SEED TO R1.
2156	013334	012767	000110	166020	MOV	#72.,RCNT	:CHAR COUNT TO RCNT.
2157	013342	022701	000340		DTFLA:	CMP	: (R1)EQUAL 340?
2158	013346	001002			BNE	DTFLB	:BRANCH IF NOT.
2159	013350	012701	000241		MOV	#241,%1	:EQUAL. RESET TO 241.
2160	013354	110122			DTFLB:	MOVB	:MOVE CHAR TO BUFFER
2161	013356	005201			INC	%1,(2)+	:INCREMENT (R1).
2162	013360	005367	165776		DEC	RCNT	:BUFFER FULL?
2163	013364	001366			BNE	DTFLA	:BRANCH IF NOT.
2164	013366	000205			RTS	%5	:YES. EXIT

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2165          .SBTTL PRG6, PRG7
2166          :PRG6-READER EXERCISER, SPECIAL BINARY COUNT PATTERN
2167          :SR15=HALT ON ERROR, SR14=0 STALL, SR14=1 FULL SPEED
2168 013370 012767 177600 167606 PRG6: MOV #177600,STLMSK ;SET STALL LIMIT
2169 013376 012767 177760 170166      MOV #177760,RCHSK ;SET RANDOM CHARACTER LIMIT.
2170 013404 052767 040000 165636      BIS #BIT14,PRGID ;ALLOW STALLS.
2171 013412 004767 170220              JSR %7,BSYNC ;SYNC READER.
2172 013416 004767 170130 GTA: JSR %7,GRCNT ;GENERATE RANDOM CHAR COUNT.
2173 013422 032777 000400 164544      BIT #BIT8,JSRPTR ;CHECK FOR FULL SPEED RUN
2174 013430 001001              BNE GTB ;BRANCH IF FULL SPEED DESIRED.
2175 013432 104002              STALL ;STALL.
2176 013434 004767 167132 GTA: JSR %7,BREAD ;READ CHARACTER
2177 013440 004767 170132      JSR %7,BCHECK ;GO CHECK IT
2178 013444 005367 170124      DEC RNCNT ;DECREMENT CHAR COUNT
2179 013450 001371              BNE GTB ;BRANCH IF COUNT NOT 0.
2180 013452 000761              BR GTA ;COUNT 0. START OVER.
2181          :PRG7-PRINTER EXERCISER. KEYBOARD CONTROLLED.
2182          :TYPES LINES WITH ANY 5 CHARACTERS. STALLS OR FULL SPEED.
2183 013454 004767 171154 PRG7: JSR %7,STBF ;SET UP BUFFER.
2184 013460 104000              TYPE ;TYPE TITLE
2185 013462 015063              P7MG1
2186 013464 052767 040000 165556 HTA: BIS #BIT14,PRGID ;SET STALL BIT IN PRGID.
2187 013472 012767 177600 167504      MOV #177600,STLMSK ;SET STALL MASK.
2188 013500 012703 015144      MOV #BLOCK1,%3
2189 013504 104000              TYPE ;TYPE "TYPE IN DATA".
2190 013506 015111              P7MG2
2191 013510 005777 165476      TST #TKB ;CLEAR BUFFER.
2192 013514 012767 000006 165662 HTB: MOV #6,CTRA ;CHAR COUNT TO CTRA.
2193 013522 004767 171360      JSR %7,GKBCR ;GET AND STORE KYBD CHARACTER.
2194 013526 005367 165652      DEC CTRA ;GOT 6 CHARACTERS?
2195 013532 001373              BNE HTB ;BRANCH IF NOT 6 CHARS YET.
2196 013534 042767 000200 165622      BIC #BIT7,CRBUF
2197 013542 122767 000177 165614      CMPB #177,CRBUF ;CHECK 6TH CHAR FOR RUBOUT.
2198 013550 001013              BNE HTC ;BRANCH IF NOT A RUBOUT.
2199 013552 042767 040000 165470      BIC #BIT14,PRGID ;RUBOUT. CLEAR STALL BIT IN PRGID.
2200 013560 104015              CK37 ;37?
2201 013562 000406              BR HTC ;NO.
2202 013564 004567 170550      JSR %5,BMOVE ;YES. FILL 81 CHAR LINE.
2203 013570 015144              BLOCK1
2204 013572 015151              BLOCK1+5
2205 013574 000114              76.
2206 013576 000405              BR HTD
2207 013600 004567 170534 HTC: JSR %5,BMOVE ;FILL 72 CHAR LINE.
2208 013604 015144              BLOCK1
2209 013606 015151              BLOCK1+5
2210 013610 000103              67.
2211 013612 004767 170722 HTD: JSR %7,TYPLN ;TYPE LINE.
2212 013616 005777 164352      TST JSRPTR ;CHANGE DATA? (SR15=1).
2213 013622 100720              BMI HTA ;YES. GO CHANGE DATA
2214 013624 000772              BR HTD ;NO CONTINUE WITH SAME DATA.

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2215						.SBTTL PRG10, PRG11, PRG12	
2216						.PRG10. PUNCH SPECIAL BINARY COUNT PATTERN TEST TAPE	
2217	013626	012746	000024			PRG10: MOV #20.,-(6)	;PUNCH 20 BLANK CHAR. LEADER
2218	013632	005000				CLR %0	
2219	013634	004767	170536			PRG10A: JSR %7,LSPCH	
2220	013640	005316				DEC %6	
2221	013642	001374				BNE PRG10A	
2222	013644	004767	170156			JSR %7,INBIN	;INITIALIZE SPECIAL BINARY COUNT
2223	013650	004767	170210			PRG10B: JSR %7,GTBIN	;GET BINARY CHARACTER.
2224	013654	004767	170516			JSR %7,LSPCH	;PUNCH CHARACTER
2225	013660	000773				BR PRG10B	;REPEAT.
2226							
2227							
2228							
2229							
2230							
2231	013662	104005					
2232	013664	004767	000036			PRG11: CHALT	;HALT TO SET SR.
2233	013670	000775				ITA: JSR %7,C1112	;GO OUTPUT CHARACTER SET IN LEFT
2234						BR ITA	;HALF OF SR AND STALL PER SR RIGHT.
2235							
2236							
2237							
2238							
2239							
2240							
2241							
2242	013672	104005					
2243	013674	004767	000020			PRG12: CHALT	;HALT TO SET SR.
2244	013700	017700	165306			JTA: JSR %7,C1112M	;GO OUTPUT CHARACTER FROM SR LEFT AND
2245	013704	000005				MOV %TKB,%0	;STALL PER SR RIGHT. (TKB) TO RO.
2246	013706	000005				RESET	; "FIX" (TKB) IN DATA LIGHTS.
2247	013710	000005				RESET	
2248	013712	000005				RESET	
2249	013714	000005				RESET	
2250	013716	000766				BR JTA	;REPEAT.
2251							
2252	013720	052777	000004	165266		C1112M: BIS #4,%TPS	;SET MAINTENANCE MODE (PUNCH).
2253	013726	117767	164242	000022		C1112: MOVB %SRPTR,%XTY	;STALL COUNT TO XTY.
2254	013734	005767	000016			TST %XTY	;DISREGARD 0 DELAY.
2255	013740	001002				BNE C1112A	
2256	013742	005267	000010			INC %XTY	
2257	013746	117777	164223	165242		C1112A: MOVB %SRPTR+1,%TPB	;LOAD PUNCH BUFFER.
2258	013754	104024				DELAY	;DELAY (APPROXIMATELY) THE NUMBER OF
2259	013756	000000				XTY: OPEN	;MSECS. SPECIFIED AT SR RIGHT
2260	013760	000207				RTS %7	;EXIT

GO4

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DZKLAE PRG13, PRG14

2261
2262
2263
2264
2265

.SBTTL PRG13, PRG14
:PRG13-MAINTENANCE MODE SINGLE CHARACTER DATA TEST.
:WITH MAINTENANCE MODE SET, OUTPUTS ONTO PUNCH BUFFER AND BACK ONTO
:READER BUFFER THE CHARACTER SET IN SR LEFT. THE CHARACTER IN THE
:READER BUFFER IS COMPARED TO THE CHARACTER IN SR LEFT. IF THE 2 CHARACTERS

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2266 ;DISAGREE THE PROGRAM HALTS. THE DATA LIGHTS WILL THEN CONTAIN:
2267 ;
2268 ;LEFT HALF: THE EXPECTED CHARACTER (SR LEFT).
2269 ;RIGHT HALF: THE CHARACTER IN THE READER BUFFER.
2270 013762 104005 PRG13: CHALT ;HALT TO SET SR.
2271 013764 052777 000004 165222 KTA: BIS #4, @TPS ;SET MAINTENANCE MODE.
2272 013772 105777 165216 KTB: TSTB @TPS ;WAIT FOR READY.
2273 013776 100375 BPL -4
2274 014000 117767 164171 165357 MOVB @SRPTR+1, CRBUF+1 ;S/B CHAR TO CRBUF+1.
2275 014006 116777 165353 165202 MOVB CRBUF+1, @TPB ;OUTPUT CHARACTER.
2276 014014 105777 165170 TSTB @TKS ;WAIT FOR READER DONE FLAG.
2277 014020 100375 BPL -4
2278 014022 117767 165164 165334 MOVB @TKB, CRBUF ;CHAR READ TO CRBUF.
2279 014030 104004 DATCHK ;GO CHECK AGAINST S/B CHAR.
2280 014032 000754 BR KTA ;REPEAT.
2281
2282 ;PRG14-MAINTENANCE MODE SPECIAL BINARY COUNT PATTERN DATA TEST.
2283 ;PERFORMS SAME OPERATION AS PRG13, EXCEPT THAT SPECIAL BINARY COUNT
2284 ;PATTERN IS USED.
2285 014034 012767 002000 165342 PRG14: MOV #1024, CTRA ;SET UP FOR 1024 CHECKS.
2286 014042 004767 167760 JSR %7, INBIN ;INITIALIZE BINARY COUNT
2287 014046 012767 177600 167130 MOV #177600, STLMSK ;SET STALL LIMIT
2288 014054 052767 040000 165166 BIS #BIT14, PRGID ;ALLOW STALLS
2289 014062 052777 000004 165124 LTA: BIS #4, @TPS ;SET MAINTENANCE MODE.
2290 014070 032777 000400 164076 BIT #BIT8, @SRPTR ;CHECK STALL SWITCH
2291 014076 001001 BNE LTB ;BRANCH IF NO STALL WANTED
2292 014100 104002 STALL ;STALL
2293 014102 105777 165106 LTB: TSTB @TPS ;WAIT FOR READY.
2294 014106 100375 BPL -4
2295 014110 004767 170016 JSR %7, GTBINP ;GET BIN CHARACTER.
2296 014114 110167 165245 MOVB %1, CRBUF+1 ;MOVE TO S/B CHAR.
2297 014120 110177 165072 MOVB %1, @TPB ;OUTPUT BIN CHARACTER.
2298 014124 105777 165060 TSTB @TKS ;WAIT FOR READER DONE.
2299 014130 100375 BPL -4
2300 014132 117767 165054 165224 MOVB @TKB, CRBUF ;CHAR IN READ BUFFER TO CRBUF.
2301 014140 104004 DATCHK ;GO CHECK AGAINST S/B CHAR.
2302 014142 005737 000042 TST @#42 ;CHAIN OR AUTO ACCEPT?
2303 014146 001745 BEQ LTA ;BR IF NOT.
2304 014150 005367 165230 DEC CTRA ;DONE REQUIRED TIMES?
2305 014154 001342 BNE LTA ;BR IF NOT.
2306 014156 000167 165670 JMP CHNC ;YES. GO EXIT.

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2307	014162	047	137	127	A33WP6: .BYTE	047,137,127,057,127,137
2308	014165	057	127	137		
2309	014170	047	133	077	A35WP6: .BYTE	047,133,077,103,077,133
2310	014173	103	077	133		
2311	014176	101	102	103	A: .BYTE	101,102,103
2312	014201	104	105	106	D: .BYTE	104,105,106
2313	014204	107	110	111	G: .BYTE	107,110,111
2314	014207	112	113	114	J: .BYTE	112,113,114
2315	014212	115	116	117	M: .BYTE	115,116,117
2316	014215	120	121	122	P: .BYTE	120,121,122
2317	014220	123	124	125	S: .BYTE	123,124,125
2318	014223	126	127	130	V: .BYTE	126,127,130
2319	014226	131	132	060	Y: .BYTE	131,132,060
2320	014231	061	062	063	ONE: .BYTE	061,062,063
2321	014234	064	065	066	FOUR: .BYTE	064,065,066
2322	014237	067	070	071	SEVEN: .BYTE	067,070,071
2323	014242	041	042	043	C41: .BYTE	041,042,043
2324	014245	044	045	046	C44: .BYTE	044,045,046
2325	014250	047	050	051	C47: .BYTE	047,050,051
2326	014253	052	053	054	C52: .BYTE	052,053,054
2327	014256	055	056	057	C55: .BYTE	055,056,057
2328	014261	072	073	074	C72: .BYTE	072,073,074
2329	014264	075	076	077	C75: .BYTE	075,076,077
2330	014267	100	133	134	C100: .BYTE	100,133,134
2331	014272	135	136	137	C135: .BYTE	135,136,137
2332	014275	377	000	377	C377: .BYTE	377,000,377
2333	014300	021445	040524	020102	TBTST: .ASCII	'%#TAB TEST%#'
2334	014306	042524	052123	021445		
2335	014314	020040	020040	020040	TBMK: .ASCII	' /a'
2336	014322	020040	040057			
2337	014326	020040	020040	020040	TBMK1: .ASCII	' /a'
2338	014334	027440	100			
2339	014337	045	100		CRLF: .ASCII	'%a'
2340	014341	055	026455	044455	RM33A: .ASCII	'----Ia'
2341	014346	100				
2342	014347	055	026511	100	RM33B: .ASCII	'-I-a'
2343	014353	055	026455	044455	RM37A: .ASCII	'----I-Ia'
2344	014360	044455	100			
2345	014363	134	040040		SPTSTC: .ASCII	'\ a'
2346	014366	021445	040503	051122	CRTST: .ASCII	'%#CARRIAGE RETURN TEST%#a'
2347	014374	040511	042507	051040		
2348	014402	052105	051125	020116		
2349	014410	042524	052123	021445		
2350	014416	100				
2351	014417	045	051043	043511	RMTST: .ASCII	'%#RIGHT MARGIN TEST%#a'
2352	014424	052110	046440	051101		
2353	014432	044507	020116	042524		
2354	014440	052123	021445	100		
2355	014445	045	051443	040520	SPTST: .ASCII	'%#SPACE TEST%#a'
2356	014452	042503	052040	051505		
2357	014460	022524	040043			
2358	014464	021445	044514	042516	LFTST: .ASCII	'%#LINE FEED TEST%#a'
2359	014472	043040	042505	020104		
2360	014500	042524	052123	021445		
2361	014506	100				
2362	014507	045	041443	040510	CHRTST: .ASCII	'%#CHARACTER TESTS%#a'

2363	014514	040522	052103	051105	
2364	014522	052040	051505	051524	
2365	014530	021445	100		
2366	014533	045	053443	051117	WCPTST: .ASCII '%#WORST CASE PATTERN TEST%#'
2367	014540	052123	041440	051501	
2368	014546	020105	040520	052124	
2369	014554	051105	020116	042524	
2370	014562	052123	021445	100	
2371	014567	045	045443	041131	KMSG1: .ASCII '%#KYBD TEST%#'
2372	014574	020104	042524	052123	
2373	014602	021445	100		
2374	014605	045	051120	051505	KMSG2: .ASCII '%PRESS A KEY WITHIN 10 SECONDS.'
2375	014612	020123	020101	042513	
2376	014620	020131	044527	044124	
2377	014626	047111	030440	020060	
2378	014634	042523	047533	042116	
2379	014642	027123	100		
2380	014645	045	042443	044103	KMSG3: .ASCII '%#ECHO TEST'
2381	014652	020117	042524	052123	
2382	014660	041445	040510	040522	KMSG3A: .ASCII '%CHARACTER KEYED WILL BE TYPED.'
2383	014666	052103	051105	045440	
2384	014674	054505	042105	053440	
2385	014702	046111	020114	042502	
2386	014710	052040	050131	042105	
2387	014716	056			
2388	014717	045	052522	047502	.ASCII '%#RUBOUT ENDS ROUTINE.%#'
2389	014724	052125	042440	042116	
2390	014732	020123	047522	052125	
2391	014740	047111	027105	021445	
2392	014746	100			
2393	014747	045	047443	052103	KMSG4: .ASCII '%#OCTAL EQUIVALENT TEST'
2394	014754	046101	042440	052521	
2395	014762	053111	046101	047105	
2396	014770	020124	042524	052123	
2397	014776	100			
2398	014777	045	040		KMSG5: .ASCII '% '
2399	015001	040	020040	022440	OCTEQV: .ASCII '% %'
2400	015006	100			
2401	015007	045	047516	045440	KMSG6: .ASCII '%#NO KEYBOARD REQUEST.'
2402	015014	054505	047502	051101	
2403	015022	020104	042522	052521	
2404	015030	051505	027124	100	
2405	015035	045	040506	051514	KMSG7: .ASCII '%FALSE KYBD INTERRUPT'
2406	015042	020105	054513	042102	
2407	015050	044440	052116	051105	
2408	015056	052522	052120	100	
2409	015063	045	050043	044522	P7MG1: .ASCII '%#PRINTER EXERCISER%#'
2410	015070	052116	051105	042440	
2411	015076	042530	041522	051511	
2412	015104	051105	021445	100	
2413	015111	045	052043	050131	P7MG2: .ASCII '%#TYPE IN DATA :'
2414	015116	020105	047111	042040	
2415	015124	052101	020101	040072	
2416	015132	020125	100		BKSU: .ASCII 'U '
2417	015135	040	020040	020040	DECVAL: .ASCII ', '
2418	015142	000001			DEND: .END

ETOA	012146	1954#	1975													
ETOB	012204	1955	1966#													
ETOC	012220	1967	1971#													
ETOCA	012226	1965	1971	1973#												
ET1A	012250	1984#	1992													
ET2A	012340	2005#	2015													
FBALL	004746	761#	1801													
FBF3	004702	733	746#													
FBF3A	004712	746*	748#													
FBF3B	004720	751#														
FORMD	002112	249	288#													
FORMDA	002144	295#	299													
FORMDB	002152	292	297#													
FOUR	014234	1714	2321#													
FM336	005006	775#	1816													
FM356	005046	789#	1834													
G	014204	1650	2313#													
GETRDY	001646	243#	261	275	285	287										
GKBCR	005106	803#	2193													
GRCNT	003552	553#	555	1467	1900	2172										
GTA	013416	2172#	2180													
GTB	013434	2174	2176#	2179												
GTBIN	004064	561	584	586	588	617#	1861	1879	1902	1934	2223					
GTBINP	004132	626#	2295													
GTRDYA	001676	249#	259													
GTRDYB	001702	250#														
GTRDYC	001716	251	253#													
GTRDYD	001740	256	258#													
HERE	002076	279	284#													
HTA	013464	2186#	2213													
HTB	013522	2193#	2195													
HTC	013600	2198	2201	2207#												
HTD	013612	2206	2211#	2214												
ICTR	001244	134#	270*	293*	298*	319*										
INBIN	004026	572	604#	1860	1878	1899	1931	2222	2286							
INCPRG	001606	232#														
INCRTN	001750	260#														
INITO	013260	2029	2083	2099	2142#											
INIT1	013304	2110	2123	2148#												
ITA	013664	2232#	2233													
J	014207	1658	2314#													
JTA	013674	2243#	2250													
KMSG1	014567	1946	2371#													
KMSG2	014605	1957	2374#													
KMSG3	014645	1983	2380#													
KMSG3A	014660	2002	2382#													
KMSG4	014747	2001	2393#													
KMSG5	014777	2012	2398#													
KMSG6	015007	1963	2401#													
KMSG7	015035	1969	2405#													
KSTART	001234	130#	243	814*	1428*	1477*	1847*	1943*								
KTA	013764	2271#	2280													
KTB	013772	2272#														
LFTST	014464	1564	2358#													
LOGIC	002062	48	281#													
LSPCH	004376	686#	724	809	1493	1500	1504	1505	1507	1545	1546	1548	1552	1571		

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 DZKLAÉ CROSS REFERENCE TABLE -- USER SYMBOLS

POKC	005662	966	970#
POLA	005676	975	979#
POMA	005760	992	999#
POMB	006004	1001	1004#
PONA	006032	1009	1018#
PONC	006054	1015	1023#
POOA	006102	1028	1037#
POOE	006132	1034	1043#
POPA	006162	1051	1060#
POP8	006214	1057	1067#
POQA	006242	1073	1079#
POGC	006276	1080	1088#
POOD	006312	1089	1091#
POGE	006316	1088	1093#
PORA	006344	1101	1105#
POSA	006426	1119	1123#
POTA	006462	1133	1136#
POTLST=	177777	97#	1415
POTO	005156	814	817#
POT1	005206	818	829#
POT10	005530	913	926#
POT11	005564	927	941#
POT12	005622	942	956#
POT13	005664	957	972#
POT14	005732	973	989#
POT15	006006	990	1006#
POT16	006056	1007	1025#
POT17	006136	1026	1048#
POT2	005236	830	841#
POT20	006222	1049	1070#
POT21	006326	1071	1098#
POT22	006410	1099	1116#
POT23	006452	1117	1130#
POT24	006526	1131	1147#
POT25	006562	1148	1160#
POT26	006604	1161	1171#
POT27	006634	1172	1184#
POT3	005266	842	853#
POT30	006670	1185	1199#
POT31	006722	1200	1213#
POT32	006762	1214	1229#
POT33	007032	1230	1247#
POT34	007106	1248	1265#
POT35	007202	1266	1290#
POT36	007260	1291	1309#
POT37	007342	1310	1338#
POT4	005316	854	865#
POT40	007402	1339	1356#
POT41	007472	1357	1379#
POT42	007570	1380	1402#
POT43	007620	1403	1414#
POT5	005400	866	883#
POT6	005442	884	897#
POT7	005476	898	912#
POUA	006536	1150	1153#
POVA	006572	1163	1166#

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 DZKLAE CROSS REFERENCE TABLE -- USER SYMBOLS

P0WA	006614	1174	1177#
P0XA	006644	1187	1190#
P0YA	006700	1202	1205#
P0ZA	006736	1216	1222#
P0ZB	006760	1221	1227#
P1AA	007722	1437	1441#
P1BA	007750	1448	1453#
P1CA	010000	1461	1467#
P1CC	010006	1469#	1472
P1TLST=	177777	98#	1459
P1T0	007706	1428	1434#
P1T1	007734	1435	1445#
P1T2	007764	1446	1458#
P2TLST=	177777	99#	1827
P2T0	010060	1477	1483#
P2T1	010206	1484	1510#
P2T10	010774	1646	1653#
P2T11	011006	1654	1661#
P2T12	011020	1662	1669#
P2T13	011032	1670	1677#
P2T14	011044	1678	1685#
P2T15	011056	1686	1693#
P2T16	011070	1694	1701#
P2T17	011102	1702	1709#
P2T2	010272	1511	1530#
P2T20	011114	1710	1717#
P2T21	011126	1718	1725#
P2T22	011140	1726	1733#
P2T23	011152	1734	1741#
P2T24	011164	1742	1749#
P2T25	011176	1750	1757#
P2T26	011210	1758	1765#
P2T27	011222	1766	1773#
P2T3	010426	1531	1559#
P2T30	011234	1774	1781#
P2T31	011246	1782	1789#
P2T32	011260	1790	1797#
P2T33	011316	1798	1808#
P2T34	011400	1809	1826#
P2T4	010520	1560	1580#
P2T5	010732	1581	1627#
P2T6	010750	1628	1637#
P2T7	010762	1638	1645#
P3AA	011520	1855	1858#
P3AB	011536	1861#	1864
P3BA	011576	1872	1876#
P3BB	011614	1879#	1883
P3CA	011664	1891	1897#
P3CB	011702	1900#	1908
P3CC	011710	1902#	1907
P3CD	011736	1905	1909#
P3TLST=	177777	100#	1889
P3T0	011510	1847	1852#
P3T1	011566	1853	1869#
P3T2	011646	1870	1888#
P4TLST=	177777	101#	1996

P4T0	012134	1943	1949#															
P4T1	012240	1950	1978#															
P4T2	012320	1979	1995#															
P7MG1	015063	2185	2409#															
P7MG2	015111	2190	2413#															
RBUSY	012510	2023#	2035#	2044	2046*	2064*												
RCMSK	003572	554	558#	1429#	1896*	2169*												
RCNT	001362	174#	1489#	1491#	1494	1858*	1863*	1876*	1882*	1897*	1904*	2156*	2162*					
RCONT	012644	2062#	2106	2119	2124	2134	2141											
RCONTA	012666	2063	2067#															
RCONTB	012714	2070	2072#															
RCONTC	012726	2068	2073	2075#														
RDAT	013132	2113	2115#															
RDATA	013136	2108	2116#															
RDATB	013172	2121	2125#															
RDATC	013226	2134#	2139															
RDELAY=	104025	173#	509															
RDCNT=	003210	485#	488#	497*														
ROLY	003206	172	486#															
ROLYA	003230	490#	498															
ROLYB	003236	491#	496															
RESET2=	104023	171#	904	919	933	948	963	979	996	1016	1035	1058	1077	1177				
		1190	1205	1322	1345	1364	1387											
RIND	004050	604#	606	607	610#	619*												
RMB	010266	1517#	1521#	1527#														
RMTST	014417	1515	2351#															
RM33A	014341	1523	2340#															
RM33B	014347	1517	2342#															
RM37A	014353	1521	2343#															
RNCNT	003574	556#	559#	1471*	1906*	2178*												
RNGEN	002520	381#	476	505	553													
RP1	002566	381	385#	392	394#													
RP2	002570	384	388	391*	395#													
RSETT2	002512	170	377#															
RSTAL	003306	173	502#															
RSTALL=	104026	174#	2074															
RSTLA	003320	503	505#															
RSTLAA	003340	508#	510#															
RSTLB	003342	507	511#															
RSTPC	002360	335#	343	345#														
RSTPSW	002362	336#	342	346#														
RSTREG=	104021	169#	677															
RSTRG	002324	168	335#															
RTNNO	001240	132#	217	223*	255	289*												
RZERA	013104	2107	2109#	2140														
RZERO	013064	2025	2104#															
RO	=%000000	57#	278#	301	302*	303*	304*	305*	306*									
R2OZER	013230	2133	2135#															
R6	=%000006	58#	262#															
S	014220	1682	2317#															
SAVREG=	104020	168#	670															
SAVRG	002264	167	322#															
SCOPE =	104012	162#	320	825	827	837	839	849	851	861	863	876	881	895				
		910	924	939	954	970	987	1004	1023	1042	1046	1068	1087	1096				
		1109	1114	1128	1140	1145	1158	1169	1182	1197	1211	1227	1243	1263				
		1280	1288	1307	1334	1354	1374	1376	1398	1400	1412	1424	1443	1456				

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 DZKLAÉ CROSS REFERENCE TABLE -- USER SYMBOLS

		1457	1462#	1476#	1482	1485#	1509	1512#	1529	1532#	1558	1561#	1579	1582#
		1626	1629#	1636	1639#	1644	1647#	1652	1655#	1660	1663#	1668	1671#	1676
		1679#	1684	1687#	1692	1695#	1700	1703#	1708	1711#	1716	1719#	1724	1727#
		1732	1735#	1740	1743#	1748	1751#	1756	1759#	1764	1767#	1772	1775#	1780
		1783#	1788	1791#	1796	1799#	1807	1810#	1825	1828#	1846#	1851	1856#	1868
		1873#	1887	1892#	1942#	1948	1951#	1977	1980#	1994	1997#			
XTY	013756	2253*	2254	2256*	2259#									
Y	014226	1698	2319#											
Z	= 000004	812#	816	828	840	852	864	882	896	911	925	940	955	971
		988	1005	1024	1047	1069	1097	1115	1129	1146	1159	1170	1183	1198
		1212	1228	1246	1264	1289	1308	1337	1355	1378	1401	1413	1426#	1433
		1444	1457	1475#	1482	1509	1529	1558	1579	1626	1636	1644	1652	1660
		1668	1676	1684	1692	1700	1708	1716	1724	1732	1740	1748	1756	1764
		1772	1780	1788	1796	1807	1825	1845#	1851	1868	1887	1941#	1948	1977
		1994												
	= 015142	28#	29	31	33	35	37	39	46	47#	102#	105#	119#	316
		435	454	459	485	548	564	568	620	629	689	805	893	908
		922	937	952	983	985	1092	1107	1112	1126	1138	1143	1156	1167
		1180	1195	1209	1350	1369	1393	1410	1422	1985	1989	2006	2034	2038
		2057	2273	2277	2294	2299								

.SDIV	10
.SEOP	10
.SERRO	10
.SERRT	10
.SMULT	10
.SPOWE	10
.SRAND	10
.SRDDE	10
.SRDOC	10
.SREAD	10
.SR2AZ	10
.SSAVE	10
.SSB2D	10
.SSB2O	10
.SSCOP	10
.SSIZE	10
.SSUPR	10
.STRAP	10
.STYPB	10
.STYPD	10
.STYPE	10
.STYPO	10
.S4OCA	10
.1170	10

N05

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DZKLAE CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

	869	887	901	916	930	945	960	976	993	1010	1029	1052	1074	1102	1120
	1134	1151	1164	1175	1188	1203	1217	1233	1251	1269	1294	1313	1342	1360	1383
	1406	1418	1438	1449	1462	1485	1512	1532	1561	1582	1629	1639	1647	1655	1663
	1671	1679	1687	1695	1703	1711	1719	1727	1735	1743	1751	1759	1767	1775	1783
	1791	1799	1810	1828	1856	1873	1892	1951	1980	1997					
.PAGE	220	811	1425	1474	1843	1940	2017	2165	2215	2261	2307				
.REPT	1	46													
.SBTTL	811	1425	1474	1843	1940	2017	2165	2215	2261						
.WORD	282														

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

*.DZKLAE.SEQ/SOL/CRF/PAGNUM/NL:TOC=SYSMAC.CO,DZKLAE
RUN-TIME: 32 42 5 SECONDS
RUN-TIME RATIO: 122/80=1.5
CORE USED: 43K (85 PAGES)

B06

Searcher runtime 11 Seconds, 48 MCS, 293 disk reads, 4 disk writes, 65 pages

