

IDENTIFICATION
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PRODUCT CODE: MAINDEC-X8-DITCA-B-D
PRODUCT NAME: DEC/X8 MODULE "YC010T"
TC01/TC00 DECTAPE EXERCISER
DATE CREATED: SEPTEMBER 7, 1972
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: LEONARD E. BEYERSONRFER

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MAYNARD, MASS. 01754

1. MODULE DESCRIPTION

"TC01DT" IS A DEC/X8 SOFTWARE MODULE WHICH EXERCISES A TC01/TC00 DECTAPE SYSTEM WITH UP TO EIGHT TRANSPORTS. THE MAIN CHARACTERISTICS OF THIS MODULE ARE:

1. ALL READ/WRITE TRANSFERS CONSIST OF 777(8) WORDS AND UTILIZE EXTERNAL BUFFERS. THE FIRST LOCATION IN THE ASSIGNED BUFFER IS RESERVED FOR CURRENT BLOCK BREAK IN DURING SEARCH.
2. SEARCH OPERATIONS ARE IN NORMAL MODE, BOTH DIRECTIONS.
3. READ/WRITE OPERATIONS ARE IN CONTINUOUS MODE, BOTH DIRECTIONS.
4. ALL DRIVES WITHIN THE LIMITS OF THE LOWEST AND HIGHEST NUMBERED DRIVES (DRIVE "8" = "0" IS LOW) SPECIFIED ARE RANDOMLY UTILIZED.
5. ALL BLOCKS WITHIN THE LIMITS OF THE LOWEST*3 AND HIGHEST*3 BLOCKS SPECIFIED ARE SEQUENTIALLY USED.
6. THE OPERATIONS AT EACH BLOCK CONSIST OF WRITE/READ/CHECK FORWARD, THEN WRITE/READ/CHECK REVERSE.
7. THREE READS ARE DONE IN THE CASE OF A PARITY ERROR.

2. REQUIREMENTS

1. PROCESSORS: PDP-8, 8/1, 8/L, 8/E, 8/M AND PDP-12(1).
2. OPTIONS: TC01 OR TC00 DECTAPE CONTROL WITH UP TO EIGHT DRIVES (TU55 OR TU56).
3. SPECIAL: STANDARD PDP-8 FORMAT DECTAPES ARE RECOMMENDED (2702 BLOCKS, 201 WORDS EACH). NO GUARANTEE IS MADE FOR DECTAPES WITH ANY OTHER FORMAT.

3. RESTRICTIONS

WHEN OPERATING UNDER REVISION A OF THE DEC/X8 MONITOR/BUILDER, CHANGE TC01DT LOCATIONS 0417 AND 0420 FROM 7000 (NOP) TO 7240 AND 3456 RESPECTIVELY.

4. OPERATING INFORMATION

4.1 SPECIAL CONSIDERATIONS

THIS MODULE REQUIRES AND USES EXTERNAL BUFFERS.

4.2

BUILDING

1. JOB TYPE: INTERRUPT DRIVEN
2. PRIORITY: CRITICAL, MUST BE THE HIGHEST OR ONE OF THE HIGHEST PRIORITY MODULES DUE TO INHERENT HARDWARE DESIGN FEATURES.
3. JOB SLOTS: JF1 OR JF2 ONLY; 4 PAGES REQUIRED.
4. STANDARD DEVICE CODES: 0760, 0770
5. STANDARD WORD COUNT: 7754
6. STANDARD CURRENT ADDRESS: 7753

4.3

INITIALIZING

AFTER THE INDICATED CODE LETTER IS PRINTED
RESPOND BY TYPING THE PARAMETER IN THE MANNER
SHOWN BELOW.

CODE ----	DEFINITION -----	RESPONSE -----	LIMITS -----	PRESET -----
A	LOWEST DRIVE	N	0-7	0
B	HIGHEST DRIVE	N	0-7	0
C	LOWEST BLOCK	0 FOR NO CHANGE 1 NNNN FOR NEW	0003-2675	2600
D	HIGHEST BLOCK	0 FOR NO CHANGE 1 NNNN FOR NEW	0004-2676	2676
E	TYPE OF DATA	0 FOR RANDOM 1 NNNN FOR CONSTANT	ANY DATA WORD	RANDOM
F	BUFFER TO USE	0 FOR RANDOM 1 NNNN	LEGAL DESIGNATOR	RANDOM

IN ADDITION THE FOLLOWING MODULE LOCATIONS MAY BE
CHANGED AS INDICATED TO ACHIEVE THE DESIRED RESULTS.

1. "REPORT" (0423) MAY BE CHANGED FROM 7700 TO XX00
WHERE ANY CLEAR BITS ARE NOT REPORTED AS ERRORS.
BIT ASSIGNMENT IS THE SAME AS IN TC01/TC08 DECTAPE'S STATUS B REGISTER.
2. "PARITY" (0734) MAY BE CHANGED FROM 3200 TO 7700
TO INHIBIT CHECKING DATA AFTER A DECTAPE PARITY ERROR.

4.4

DEVICE SETUP

ALL DRIVES TO BE EXERCISED MUST BE SWITCHED TO REMOTE
AND WRITE ENABLED WITH TAPE IN PLACE.

4.5

RUNNING

1. CNTRL: UPDATED AFTER A WRITE/READ/CHECK OPERATION IS COMPLETED.
- SR10: WHEN SET TO A 1, THE BUFF CURRENTLY ASSIGNED IS RETAINED.

3. SR11: WHEN SET TO A 1, THE DRIVE CURRENTLY IN
USE IS RETAINED.

5. ERROR INFORMATION

ALL STATUS B ERRORS ARE REPORTED IN THE STANDARD
STATUS ERROR FORMAT, DATA ERRORS IN THE DATA
ERROR FORMAT. THE FIRST STATUS ERROR AFTER
ROTATION OR *C IS NOT REPORTED SINCE A
TIMING ERROR IS EXPECTED (DUE TO THE INTERRUPT SYSTEM
BEING OFF FOR A PROLONGED TIME).

5.1 ERROR SYMBOL DEFINITIONS

CODE: 0000 SEARCH OPERATION
0002 READ OPERATION
0004 WRITE OPERATION

0012 FALSE DATA ERROR (BAD SOFTWARE CHECKSUM
BUT DATA LOOKED GOOD ON A
WORD BY WORD CHECK.) THIS
TYPE OF ERROR MAY BE REPORTED
AFTER A PARITY ERROR AND
INDICATES THE FOLLOWING:
1) THE PARITY ERROR STOPPED
THE TRANSFER PRIOR TO COMPLETION
AND THEREBY CAUSED A SOFTWARE
SUMCHECK ERROR! 2) THE DATA THAT WAS
TRANSFERRED WAS GOOD.

003X TRANSFER INCOMPLETE
(WORD COUNT NON-ZERO
BUT NO STATUS B ERROR BIT
IS SET).

0042 THIS ERROR MAY FOLLOW CODE
0032 REPORTS AND INDICATES
THAT ALTHOUGH A TRANSFER
WAS INCOMPLETE THE DATA
THAT WAS TRANSFERRED WAS GOOD.

SA: FINAL CONTENTS OF STATUS B REGISTER.
SB: CURRENT BUFFER DESIGNATOR
SC: INITIAL WORD COUNT
SD: FINAL WORD COUNT
SE: INITIAL CURRENT ADDRESS
SF: FINAL CURRENT ADDRESS
SG: CURRENT DRIVE IN BITS 0-2.
SH: CURRENT BLOCK NUMBER AT WHICH TRANSFERS START.
SI: FINAL CONTENTS OF STATUS A REGISTER

CA: BUFFER ADDRESS
CB: GOOD DATA WORD
CC: BAD DATA WORD

5.2

TROUBLESHOOTING HINT

THE RECURRENCE OF SELECT ERRORS IS A PROBLEM WHICH MAY BE DIFFICULT TO DIAGNOSE. THE FOLLOWING STEPS MAY LEAD TO A SOLUTION.

1. KILL THE JOB.
2. CHANGE MODULE LOCATIONS 1030 TO 7000 AND 1031 TO 6766.
3. RUN THE JOB.
4. IF THE PROBLEM "DISAPPEARS" CHECK OUT THE XSA BY TIME USING THE ORIGINAL CODE.

6. LISTING (ATTACHED)
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/DEC/X8 EXTERNAL SYMBOL TABLE "EXTSYM"
/FOR USE IN ASSEMBLING DEC/X8 SOFTWARE MODULES.
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
XLIST
PAUSE

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/MAINDEC-X8-DITCA-B-L "DEC/X8" TC810T
/TC81/TC88 DECTAPE SYSTEM MODULE FOR DEC/X8
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
/THIS MODULE OPERATIONAL ON PDP-8,8/1,8/L,8/E AND PDP-12 (WITH DECTAPE?1?);
/PRG: LEN BEYERSDORFER (X2537)
/BUILDER INSTRUCTIONS:
/1.PRIORITY: CRITICAL, MUST BE ASSIGNED AT OR NEAR LEVEL 8 BECAUSE OF
/INTERRUPT LATENCY TIME REQUIREMENTS.
/2.JOB SLOT: 4 PAGES REQUIRED, SLOT JX1 OR JX2.
/INITIALIZER INSTRUCTIONS:

/CODE	DEFINED	RESPONSE	PRESET
/A1	LOWEST DRIVE TO USE	0=7	0
/B1	HIGHEST DRIVE TO USE	0=7	0
/C1	LOWEST BLOCK	0=NO CHANGE; 1 NNNN (0003-2676)	2600
/D1	HIGHEST BLOCK	0=NO CHANGE; 1 NNNN (0003-2676)	2676
/E1	TYPE OF DATA	0=RANDOM; 1 NNNN=CONSTANT	RANDOM
/F1	BUFFER ASSIGNMENT	0=RANDOM; 1 NNNN=CONSTANT	RANDOM

/SPECIAL USER MODIFICATIONS VIA RELATIVE "0" FACILITY:
/1."REPORT" MAY BE CHANGED FROM 7700 TO XX00 WHERE ANY
/CLEAR BITS INHIBIT AN ERROR REPORT FOR THAT CONDITION;
/2."PARITY" MAY BE CHANGED FROM 3900 TO 7700 TO INHIBIT
/DATA CHECKING AFTER A PARITY ERROR.
/REPORT SYMBOL DEFINITIONS:
/1.REFER TO MODULE TABLE IN THIS LISTING FOR DESCRIPTION
/OF CNTR,SA1-S11,AND DA1-DC1
/2."CODE" DEFINITIONS:

/CODE	DEFINED
/0000	SEARCH
/0002	READ
/0004	WRITE
/001X	FALSE DATA ERROR (BAD CHECKSUM BUT
/	DATA LOOKED GOOD ON WORD BY WORD CHECK.)
/0012	THIS TYPE OF ERROR MAY BE REPORTED AFTER

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68 /
69 /
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73 /
74 /003X
75 /
76 /0042
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A PARITY ERROR AND INDICATES THE FOLLOWING:
1. THE PARITY ERROR STOPPED THE TRANSFER PRIOR TO
COMPLETION AND THEREBY CAUSED A SOFTWARE
SUMCHECK ERROR! 2. THE DATA THAT WAS READ IN
WAS GOOD.
TRANSFER INCOMPLETE (MC NON-ZERO,
BUT NO STATUS ERROR BIT WAS SET.)
THIS ERROR CODE MAY FOLLOW CODE 0032 REPORTS
AND INDICATES THAT ALTHOUGH A TRANSFER WAS INCOMPLETE
THE DATA THAT WAS TRANSFERRED WAS GOOD.

/TC01/TC08 STANDARDS:

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/WORD COUNT:17754
/CURRENT ADDRESS:17755
/DEVICE CODES:176,77,

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/TC01/TC08 10T DEFINITIONS:

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6761 DTRA=6761 /STA+AC->AC
6762 DTCA=6762 /B->STA
6764 DTXA=6764 /AC (X+) STA->STA, B->AC
6766 DTLA=6766 /AC->STA, B->AC
6771 DTSF=6771 /PC+1->PC IF DTF OR EF TRUE
6772 DTRB=6772 /AC+STB->AC
6774 DTLB=6774 /AC6-B->STB6-B, B->AC

```

/MODULE TABLE

```

*200
JOB, B /JOB NUMBER
TEXT1, TEXT "TC01DT"
TEXT "DITCA-B"
HOMEDF, B /DF=IF
HLT/COF
JMP I HOMEDF
INTACK, CIF 00 /ACKNOWLEDGE INTERRUPT,
JMS I INRETP
-1 /PRIORITY
KILL, -1 /COMMAND TO KILL JOB,

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117 0220 7777 KILLED, -1 /MODULE SETS TO -1 WHEN JOB KILLED,
118 0221 0000 CNTR, 0 /NUMBER OF EXERCISER LOOP PASSES,
119 0222 0000 ERROR, 0 /ERROR CALL,
120 0223 3234 DCA ,+11
121 0224 7604 LAS
122 0225 0073 AND 2 K4
123 0226 7440 SZA
124 0227 3217 DCA KILL
125 0230 4211 JMS HOMEDF
126 0231 6002 IOF
127 0232 6202 CIF 00
128 0233 4461 JMS I ERFP
129 0234 0000 B
130 0235 5622 JMP I ERROR
131 0236 0000 CODE, 0 /ERROR CODE,
132 /
133 0237 7767 -11 /STATUS ERROR ENTRY TALLY,
134 0240 0000 ERRSA, 0 /STATUS REG, B
135 0241 0000 ERRSB, 0 /BUFFER WORD
136 0242 7001 ERRSC, -777 /INIT WC
137 0243 0000 ERRSD, 0 /FINAL WC
138 0244 0000 ERRSE, 0 /INIT CA
139 0245 0000 ERRSF, 0 /FINAL CA
140 0246 0000 ERRSG, 0 /INIT STAT A (DRV SELECT BITS ONLY)
141 0247 0000 ERRSH, 0 /STARTING BLOCK #
142 0250 0000 ERRSI, 0 /FINAL STAT A
143 0251 7775 -J /DATA ERROR ENTRY TALLY,
144 0252 0000 ERRDA, 0 /BUFFER ADDRESS
145 0253 0000 ERRDB, 0 /GOOD DATA
146 0254 0000 ERRDC, 0 /BAD DATA
147 /
148 /END OF MODULE TABLE
149 /
150 /
151 /
152 /
153 /
154 0255 0000 INT, 0 /SKIP CHAIN DOES JMS TO HERE,
155 0256 2275 ISB RENTRY /REENTRANT INTERRUPT?
156 0257 5267 JMP ,+10 /YES
157 0260 4211 JMS HOMEDF /DF=IF
158 0261 5662 JMP I ,+1 /VECTOR
159 0262 0000 INTRT, 0 /INTERRUPT RETURN VECTOR
160 0263 6764 DC76A, DTXA /XOR STAT A
161 0264 7240 CLA CHA /ALLOW ONE INTERRUPT
162 0265 3275 DCA RENTRY /ACKNOWLEDGE PREVIOUS INTERRUPT,
163 0266 5214 JMP INTACK
164 0267 3275 DCA RENTRY
165 0270 6214 ROF
166 0271 1020 TAO 2 KCIFDF
167 0272 3273 DCA ,+1
168 0273 7402 HLT/CIF COF
169 0274 5655 JMP I INT
170 0275 0000 RENTRY, 0
171 /

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172
173
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176
177      0276 6772      SRHCON, DTRB      /END DONE?
178      0277 7000      RTL
179      0300 7700      K7700A, 7700/SMA CLA
180      0301 5304      JMP      ,+3
181      0302 1371      TAD      K600A      /YES, TURN AROUND
182      0303 5263      JMP      INTRT+1
183      0304 6772      DC77A, DTRB      /NO, ERROR?
184      0305 7710      SPA CLA
185      0306 5340      JMP      DTERR      /YES
186      0307 6761      DC76B, DTRA      /NO, PUT DIR BIT IN LINK,
187      0310 7000      RTL
188      0311 7000      RTL
189      0312 7200      CLA
190      0313 7402      SRHCOF, HLT/COF      /OF TO BUFFER FIELD
191      0314 1644      TAD I      /BLOCK FOUND?
192      0315 7041      CIA
193      0316 1247      TAD      ERRSH
194      0317 7450      SNA
195      0320 5327      JMP      LOC8ED      /YES
196      0321 7041      CIA      /NO, DETERMINE TURN AROUND,
197      0322 7420      SNL
198      0323 1372      TAD      K2A
199      0324 7620      SNL CLA      /3 BEYOND?
200      0325 1121      TAD Z      /YES, TURN AROUND,
201      0326 5263      JMP      INTRT+1
202      0327 7402      LOC8ED, HLT/SNL CLA IF FND, SEL CLA IF REV, /BLOCK FOUND,
203      0330 5263      JMP      INTRT+1      /WRONG DIRECTION, MOVE, PASSED IT,
204      0331 1242      TAD      ERRSC      /GOOD, SET UP WC
205      0332 6201      COF      00
206      0333 3773      DCA I      DTANC
207      0334 1017      AUA, TAD      AUTO
208      0335 3236      DCA      CODE      /FILL CODE
209      0336 1252      TAD      ERRDA      /GET SWITCH TO READ OR WRITE,
210      0337 4262      JMS      INTRT      /00
211      0340 6761      DTERR, DTRA      /CLEAR GO,
212      0341 0110      AND Z      K200
213      0342 1072      TAD Z      K3
214      0343 6764      DC76C, DTXA
215      0344 6772      DC77B, DTRB      /SAVE B
216      0345 3240      DCA      ERRSA
217      0346 1073      TAD Z      K4      /CLEAR ENABLE AND FLAGS
218      0347 6764      DC76D, DTXA
219      0350 1377      TAD      (+2
220      0351 5214      JMP      INTACK      /DEFER SERVICE
221      0352 6761      DC76E, DTRA      /SAVE A
222      0353 3250      DCA      ERRS1
223      0354 6201      COF      00
224      0355 1773      TAD I      DTANC      /GET FINAL WC AND CA
225      0356 3243      DCA      ERRSD
226      0357 1774      TAD I      DTACA

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227      0360 3245      DCA      ERR0F
228      0361 1240      TAD      ERRSA      /ANY ERROR BIT SET?
229      0362 0300      AND      K7700A
230      0363 7450      SNA
231      0364 5776      JMP I      (G02
232      0365 5775      JMP I      (G01
233
234      0366 0000      DATCON, 0
235      0367 1253      TAD      ERR0B
236      0370 5766      JMP I      DATCON
237      0371 0600      K600A, 000
238      0372 0002      K2A, 2
239      0373 7754      DTANC, 7754
240      0374 7755      DTACA, 7755
241
242      /END OF PAGE
243      0375 0413      *
244      0376 0400
245      0377 0352      *400
246      0400
247
248
249
250      0400 4777      G02, JMS I      (HOMEDF
251      0401 1774      TAD I      (ERRSD      /CHECK TRANSFER DONE
252      0402 7000      SNA CLA
253      0403 5210      JMP      ,+5
254      0404 1775      TAD I      (CODE
255      0405 1103      TAD Z      K30      /OK
256      0406 3775      DCA I      (CODE      /CHANGE CODE
257      0407 5223      JMP      G03
258      0410 2774      ISZ I      (G0
259      0411 2774      ISZ I      (G0
260      0412 5773      JMP I      (G00UT
261      0413 0456      G01, AND I E      (OFMSP
262      0414 0225      AND      REPORT
263      0415 7640      SEA CLA
264      0416 7120      STL
265      0417 7000      NOP
266      0420 7000      NOP
267      0421 4777      JMS I      (HOMEDF
268      0422 7430      SEL
269      0423 4772      G03, JMS I      (ERROR
270      0424 5773      JMP I      (G00UT      /REPORT?
271      0425 7700      REPORT, 7700      /YES,
272
273
274
275      /RANDOM NUMBER GENERATOR
276
277      0426 0000      RANDOM, 0
278      0427 2260      ISZ      RAN1
279      0430 7000      NOP
280      0431 1261      TAD      RAN2

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281	0432	1264	TAD	K1111A	
282	0433	7104	CLL	RAL	
283	0434	7420	SNL		
284	0435	7001	IAC		
285	0436	3261	DCA	RAN2	
286	0437	1260	TAD	RAN1	
287	0440	1261	TAD	RAN2	
288	0441	5626	JMP	I	RANDOM
289	0442	0000	SAVRAN,	0	/PRESET
290	0443	3261	DCA	RAN2	
291	0444	4777	JMS	I	(HOMEDF
292	0445	1260	TAQ	RAN1	
293	0446	3262	DCA	SAV1	
294	0447	1261	TAD	RAN2	
295	0450	3263	DCA	SAV2	
296	0451	5642	JMP	I	SAVRAN
297	0452	0000	RESRAN,	0	/RESTORE
298	0453	1262	TAD	SAV1	
299	0454	3260	DCA	RAN1	
300	0455	1263	TAD	SAV2	
301	0456	3261	DCA	RAN2	
302	0457	5652	JMP	I	RESRAN
303	0460	0000	RAN1,	0	
304	0461	0000	RAN2,	0	
305	0462	0000	SAV1,	0	
306	0463	0000	SAV2,	0	
307	0464	1111	K1111A,	1111	
308					
309					
310	0465	0000	RELEAS,	0	/ROUTINE TO RELEASE EXTERNAL BUFFER
311	0466	1771	TAD	I	(ERRSB
312	0467	6002	IOF		
313	0470	6202	CIF	00	
314	0471	4457	RLBUFF		
315	0472	5665	JMP	I	RELEAS
316					
317					
318	0473	0000	DATCHK,	0	/CHECK DATA,
319	0474	1776	TAD	I	(ERRSD
320	0475	4770	JMS	I	(SUMCHK
321	0476	7041	CIA		/SUNCHECK,
322	0477	1767	TAD	I	(SUMSAV
323	0500	7650	SNA	CLA	/Q000?
324	0501	5673	JMP	I	DATCHK
325	0502	4252	JMS		RESRAN
326	0503	1776	TAD	I	(ERRSD
327	0504	4334	JMS		DATSET
328	0505	3312	DCA	,+5	/SAVE CDF TO BUFFER FIELD,
329	0506	1766	TAD	I	(DATGEV
330	0507	3334	DCA		/MOVE DATA GENERATOR POINTER TO THIS
331	0510	4734	JMS	I	/PAGE
332	0511	3765	DCA	I	(ERRDB
333	0512	7402	HLT/CDP		/GENERATE 1 WORD,
334	0513	1417	AUS,	TAD	I
335	0514	4777	JMS	I	(HOMEDF

336	0515	3764	DCA	I	(ERRDC	/SAVE IN BAD,
337	0516	1017	AUC,	TAD	AUTO	/GET ADDR AND SAVE,
338	0517	3763	DCA	I	(ERRDA	
339	0520	1764	TAD	I	(ERRDC	/GOOD=BAD?
340	0521	7041	CIA			
341	0522	1765	TAD	I	(ERRDB	
342	0523	7440	SEA			
343	0524	4772	JMS	I	(ERROR	/NO, DATA ERROR (AC NOT 0)
344	0525	2762	ISE	I	(BUFTAL	/DONE?
345	0526	5310	JMP		,=16	/NO,
346	0527	1775	TAD	I	(CODE	/YES, SET CODE=001X
347	0530	1076	TAD	Z	K10	
348	0531	3775	DCA	I	(CODE	
349	0532	4772	JMS	I	(ERROR	/CLOSE ERROR ROUTINE,
350	0533	5673	JMP	I	DATCHK	/OUT,
351	0534	0000	DATSET,	0		/SET UP FOR DATA GENERATE OR CHECK,
352	0535	7041	CIA			/COMPUTE LENGTH TO FILL OR CHECK,
353	0536	1761	TAD	I	(ERRSC	
354	0537	7450	SNA			
355	0540	5673	JMP	I	DATCHK	
356	0541	3762	DCA	I	(BUFTAL	/SAVE IT,
357	0542	1760	TAD	I	(ERRSE	/PUT CA IN AUTO INDEX,
358	0543	3017	AUD,	DCA	AUTO	
359	0544	1771	TAD	I	(ERRSB	/COMPUTE CDF TO BUFFER FIELD,
360	0545	0105	AND	Z	K70	
361	0546	1064	TAD	Z	KCDF	
362	0547	5734	JMP	I	DATSET	/EXIT WITH IT IN AC,
363	0550	0000	INISR1,	0		/INITIALIZE SERVICE 1,
364	0551	4757	JMS	I	(INISR3	/SERVICE 3
365	0552	7112	CLL	RTR		/MOVE TO BITS 1-3
366	0553	7012	RTR			
367	0554	7010	RAR			
368	0555	7041	CIA			/NEGATE
369	0556	5750	JMP	I	INISR1	/OUT
370			/END OF PAGE			
371						
372						
373	0557	1136				
374	0560	0244				
375	0561	0242				
376	0562	0731				
377	0563	0252				
378	0564	0254				
379	0565	0253				
380	0566	0760				
381	0567	0732				
382	0570	0743				
383	0571	0241				
384	0572	0222				
385	0573	1034				
386	0574	1000				
387	0575	0236				
388	0576	0243				
389	0577	0211				
		0600				

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390
391
392
393
394 /RUNNER
395 0600 3777 RUN, DCA I (ERRSB /"RUN" IS THE RUNNING ADDRESS
396 0601 3776 DCA I (CNTR
397
398 /THIS IS THE START OF THE EXERCISER LOOP
399
400 0602 7240 EXERA, CLA CMA /SET START BLOCK TO LOBLOCK=1
401 0603 1336 TAO LOBLOK
402 0604 3775 DCA I (ERRSM
403 0605 7344 EXERB, CLA CLL CMA RAL /SET UP DIR REVERSAL CNTR
404 0606 3335 DCA DIRCNT
405 0607 7001 IAG /+1 TO STARTING BLOCK
406 0610 1775 TAD I (ERRSM
407 0611 3775 DCA I (ERRSM
408 0612 1775 TAD I (ERRSM /CHECK IN LIMITS
409 0613 1337 TAD HIBLOK
410 0614 7700 SMA CLA
411 0615 9202 JMP EXERA /BACK TO BLOCK 18
412 0616 1342 TAD SNLCLA /SET UP FOR FWD DIR
413 0617 7410 SKP
414 0620 1224 EXERC, TAD SELCLA /SET FOR REV DIR
415 0621 3774 DCA I (LOCBD
416 0622 7604 LAS /CHANGE DRIVES?
417 0623 7010 RAR
418 0624 7630 SELCLA, SEL CLA
419 0625 9231 JMP ,+4 /NO
420 0626 4773 JMS I (RANDOM
421 0627 0313 AND K7000A
422 0630 3772 DCA I (ERRSG
423 0631 1772 TAD I (ERRSG /CHECK IN LIMITS
424 0632 7110 CLL RAR
425 0633 1340 TAD LODRV
426 0634 7710 SPA CLA
427 0635 9226 JMP ,+7 /OUT OF LIMITS
428 0636 1772 TAD I (ERRSG
429 0637 7110 CLL RAR
430 0640 1341 TAD HIDRV
431 0641 7740 SMA SEA CLA
432 0642 9226 JMP ,+14 /OUT OF LIMITS
433 0643 4757 BUFGEN, JMS I BUFGVE /GET BUFFER
434 0644 1777 TAD I (ERRSB /FIGURE CA
435 0645 0131 AND E K7600
436 0646 3771 DCA I (ERRSE
437 0647 0201 DATGEN, CDF 00
438 0650 1466 TAD I E K0
439 0651 4770 JMS I (SAVRAN /PRESET RANGEN
440 0652 4767 JMS I (DATSET
441 0653 3256 DCA ,+3
442 0654 1256 TAD BUFCDF
443 0655 3766 DCA I (SRHCDF
444 0656 7402 BUFCDF, HLT/CDF /FILL BUFFER

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445 0657 4760 JMS I DATGEV
446 0660 3417 AUE, DCA I AUTO
447 0661 2331 ISE BUFTAL
448 0662 9257 JMP ,+3
449 0663 4765 JMS I (HOMEDF
450 0664 4343 JMS SUMCHK
451 0665 3332 DCA SUMSAV
452 0666 1141 TAD Z M3 /SET FOR 3 REREADS ON PARITY ERROR
453 0667 3333 DCA PARTAL
454 0670 3764 DCA I (CODE
455 0671 1073 TAD Z K4
456 0672 4763 JMS I (00
457 0673 0190 0130 /SWITCH TO WRITE
458 0674 5314 JMP K7000A+1 /ERROR
459 0675 4767 DTRO, JMS I (DATSET /CLEAR BUFFER
460 0676 3277 DCA ,+1
461 0677 7402 HLT/CDF
462 0700 3417 AUF, DCA I AUTO
463 0701 2331 ISE BUFTAL
464 0702 5300 JMP ,+2
465 0703 4765 JMS I (HOMEDF
466 0704 3764 DCA I (CODE
467 0705 7126 STL RTL /READ
468 0706 4763 JMS I (00
469 0707 0190 0130 /SWITCH TO READ
470 0710 5317 JMP ,+7 /ERROR
471 0711 4762 JMS I (DATCHK /CHECK DATA
472 0712 2776 DTOUT, ISE I (CNTR
473 0713 7000 K7000A, 7000/NOP
474 0714 2335 ISE DIRCNT /NEXT FWD OR REV?
475 0715 9202 JMP EXERC /REV
476 0716 5205 JMP EXERB /FWD
477 0717 1701 TAD I (ERRSA
478 0720 0334 AND PARITY /CHECK DATA AFTER PARITY ERROR
479 0721 7650 SMA CLA
480 0722 4762 JMS I (DATCHK /YES
481 0723 1741 TAD I (ERRSA /PARITY ERROR
482 0724 0110 AND Z K200
483 0725 7440 SEA CLA
484 0726 2333 ISE PARTAL /3 REREADS
485 0727 5275 JMP DTRO
486 0730 5312 JMP DTOUT
487 0731 0000 BUFTAL, 0
488 0732 0000 SUMSAV, 0
489 0733 0000 PARTAL, 0
490 0734 3500 PARITY, 3500
491 0735 0000 DIRCNT, 0
492 0736 2600 LOBLOK, 2600
493 0737 5102 HIBLOK, -2676
494 0740 0000 LODRV, 0
495 0741 0000 HIDRV, 0
496 0742 7620 SNLCLA, SNL CLA
497 0743 0000 SUMCHK, 0
498 0744 4767 JMS I (DATSET /SUMCHECK BUFFER
499 0745 3346 DCA ,+1

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500 0746 7402 HLT/CDP
501 0747 7100 CLL
502 0750 1417 AUG, TAD I AUTO
503 0751 7430 SRL
504 0752 7001 TAC
505 0753 2331 ISL BUFTAL
506 0754 5347 JMP .+5
507 0755 4765 JMS I (HOMEDF
508 0756 5743 JMP I SUMCHK
509
510
511 /END OF PAGE
512
513 0757
514
515
516 0757 1047
517 0760 0426
518 0761 0240
519 0762 0473
520 0763 1000
521 0764 0236
522 0765 0211
523 0766 0313
524 0767 0534
525 0770 0442
526 0771 0244
527 0772 0246
528 0773 0426
529 0774 0327
530 0775 0247
531 0776 0221
532 0777 0241
533 1000
534
535
536
537
538
539
540
541
542
543
544
545
546 1000 0000
547 1001 3017
548 1002 1777
549 1003 7450
550 1004 5210
551 1005 3776
552 1006 4775
553 1007 5004

/ROUTINE TO SET UP TC01/TC00 TO READ OR WRITE (UNLESS "KILL" =1)
/NOTE: THESE LOG'S ARE SPECIFIED BELOW THE *, SO THAT THE ADDRESSES
/INDICATED ARE MODIFIED PROPERLY BY THE DEC-X8 LOADER,
DATGEV, BUFRAN /BUFRAN
DATGEV, RANDOM /DATCON

/1. SET UP ERRSB,ERRSC,ERRSE,ERRSG AND ERRSH
/2. ENSURE DF=IF
/3. PUT 0002 IN AC FOR READ, 0004 FOR WRITE
/4. JMS I (GO
/5. 0130 FOR READ, 0150 FOR WRITE
/6. EFFECTIVELY RETURNS HERE IF STATUS ERROR (ALREADY REPORTED)
/7. RETURNS HERE IF NO STATUS ERRORS

GO, B
AUM, DCA AUTO /SAVE CODE;
TAD I (KILL /KILL JOB IF KILL NON ZERO
SNA
JMP .+4
DCA I (KILLED
JMS I (RELEAS
SERVEX

```

```

554 1010 1600
555 1011 3774
556 1012 1773
557 1013 6201
558 1014 3633
559 1015 4772
560 1016 1771
561 1017 0105
562 1020 6774
563 1021 1370
564 1022 3767
565 1023 7240
566 1024 6002
567 1025 3766
568 1026 1765
569 1027 1235
570 1030 6762
571 1031 6764
572 1032 5004
573 1033 7755
574 1034 5000
575 1035 0614
576
577
578
579
580
581
582
583
584 1036 0000
585 1037 1771
586 1040 7041
587 1041 1246
588 1042 7650
589 1043 5636
590 1044 4247
591 1045 5237
592 1046 0000
593
594
595
596 1047 0000
597 1050 7604
598 1051 7012
599 1052 7220
600 1053 1771
601 1054 7460
602 1055 5263
603 1056 7640
604 1057 4775
605 1060 6002
606 1061 6202
607 1062 4460
608 1063 3771

TAD I GO /GET SWITCH TO READ OR WRITE
DCA I (ERRDA
TAD I (ERRSE /SET UP CA
CDF 00
DCA I DTACA1
JMS I (HOMEDF
TAD I (ERRSB /GET FIELD AND LOAD STAAT B
AND 2 K70
DC77C, DTLB
TAD (SRHCON /PRESET INTERRUPT RETURN
DCA I (INTR
CLA CHA /ALLOW ONE INTERRUPT
IOF
DCA I (RENTRY
TAD I (ERRSG /GET DRIVE
TAD K614A /SEARCH,REV,NORM,ENABLE
DC76F, DTCA /CLEAN A
DC76G, DTXA /XOR A
SERVEX
DTACA1, 7755
GOOUT, JMP I GO
K614A, 614

/ROUTINE TO ASSIGN AND HOLD A SPECIFIED BUFFER WHICH MUST BE
/LEGALLY SPECIFIED IN CONBUF (STANDARD BUFFER DESIGNATOR)

BUFRAN, B
TAD ERRSB /GET CURRENT BUFFER WORD,
CIA
TAD CONBUF
SNA CLA /SPECIFIED BUFFER ASSIGNED?
JMP I BUFRAN /YES, EXIT,
JMS BUFRAN /NO, GET NEW BUFFER,
JMP BUFRAN+1 /CHECK IT
CONBUF, B /MUST CONTAIN LEGAL BUFFER DESIGNATOR,

/ROUTINE TO ASSIGN A BUFFER OBSERVING SR 10,

BUFRAN, B
LAP /PUT SR 10 (NOT) IN LINK,
RTR
CLA CHL
TAD ERRSB /BUFFER WORD IN AC,
SNA SZA
JMP .+6 /EXIT IF AC NON ZERO AND LINK SET,
SZA CLA
JMS RELEAS /RELEASE BUFFER IF AC NON ZERO,
IOF /ASSIGN A BUFFER
CIF 00
ASSUFF
DCA ERRSB /SAVE BUFFER DESIGNATOR,

```

```

609 1064 5647      JMP I  BUFRAN      /EXIT.
610
611
612
613      /INITIALIZER
614
615 1065 1364      INIT.  TAD  (TEXT1      /"INIT" IS INITIALIZING ADDRESS.
616 1066 3270      DCA  LTRCOD
617 1067 4444      MESSAGE
618 1070 0000      LTRCOD, 0
619 1071 1117      INITLP, TAD Z  K301      /SET CODE TO "A"
620 1072 3270      DCA  LTRCOD
621 1073 4763      JMS I  (INISR1      /GET LOW DRIVE;
622 1074 3762      DCA I  (LODRV      /SAVE IN BITS 1-3 NEGATED
623 1075 4763      JMS I  (INISR1      /SAME FOR HIGH DRIVE.
624 1076 3761      DCA I  (HIDRV
625 1077 4325      JMS  INISR2      /LOW BLOCK LIMIT
626 1100 7410      SKP
627 1101 3760      DCA I  (LOBLOK
628 1102 4325      JMS  INISR2      /HIGH BLOC LIMIT
629 1103 9304      JMP  ,+3
630 1104 7041      CIA
631 1105 3757      DCA I  (HIBLOK
632 1106 4325      JMS  INISR2      /TYPE OF DATA;
633 1107 5313      JMP  ,+4      /RANDOM
634 1110 3756      DCA I  (ERRDB      /CONSTANT-SAVE IN GOOD DATA;
635 1111 1399      TAD  (DATCON      /PRESET POINTERS,
636 1112 7410      SKP
637 1113 1394      TAD  (RANDOM
638 1114 3793      DCA I  (DATGEV
639 1115 4325      JMS  INISR2
640 1116 9322      JMP  ,+4      /BUFFER ASSIGNMENT;
641 1117 3246      DCA  CONBUF      /RANDOM
642 1120 1392      TAD  (BUFCON      /CONSTANT-SAVE IN HOLDER;
643 1121 7410      SKP      /PRESET POINTERS,
644 1122 1391      TAD  (BUFRAN
645 1123 3750      DCA I  (BUFGEV
646 1124 9020      INITEX
647 1125 0000      INISR2, 0
648 1126 4336      JMS  INISR3
649 1127 7050      SNA CLA
650 1130 9725      JMP I  INISR2
651 1131 2325      ISE  INISR2
652 1132 4495      SPACE2
653 1133 4443      FOROCT
654 1134 9271      JMP  INITLP
655 1135 9725      JMP I  INISR2
656
657 1136 0000      INISR3, 0
658 1137 4494      CRLF
659 1140 1270      TAD  LTRCOD
660 1141 4490      TYPE
661 1142 4495      SPACE2
662 1143 4442      ONEOCT
663 1144 9271      JMP  INITLP

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664 1145 2270      ISE  LTRCOD      /UPDATE LETTER CODE;
665 1146 9736      JMP I  INISR3      /OUT.
666
667      /END OF PAGE AND END OF PROGRAM CODE
668
669      *
670 1150 0757
671 1151 1047
672 1152 1036
673 1153 0760
674 1154 0426
675 1155 0366
676 1156 0253
677 1157 0737
678 1160 0736
679 1161 0741
680 1162 0740
681 1163 0590
682 1164 0201
683 1165 0246
684 1166 0275
685 1167 0262
686 1170 0276
687 1171 0241
688 1172 0211
689 1173 0244
690 1174 0292
691 1175 0465
692 1176 0220
693 1177 0217

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0000
0100

0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1100 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

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3700

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4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

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5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

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694	0001	FIELD 1
695		/LOADER CALL
696		INIT:RUN:INT
697	1200 1065	
698	1201 0680	
699	1202 0255	
700		
701	1203 6771	DTBF:0:1:HLT:HLT:HLT
	1204 0000	
	1205 0001	
702	1206 7402	
703	1207 7402	
704	1210 7402	
705		
706	1211 7770	-10:IAU:IAU8:IAUC:IAUD:IAUE:IAUF:IAU0:IAUH
707	1212 0334	
708	1213 0913	
709	1214 0916	
710	1215 0943	
711	1216 0660	
712	1217 0700	
713	1220 0750	
714	1221 1001	
715		
716	1222 7776	-2
717		
718	1223 0760	0760:-10:DC76A:DC76B:DTERR:DC76C:DC76D:DC76E:DC76F:DC76G
	1224 7770	
719	1225 0263	
720	1226 0307	
721	1227 0340	
722	1230 0343	
723	1231 0347	
724	1232 0392	
725	1233 1030	
726	1234 1031	
727		
728	1235 0770	0770:-5:1:SRH00N:DC77A:DC77B:DC77C
	1236 7773	
	1237 0001	
729	1240 0276	
730	1241 0304	
731	1242 0344	
732	1243 1020	
733		
734	1244 7777	-1:7754:-1:DTANG
	1245 7754	
	1246 7777	
735	1247 0373	
736		
737	1250 7777	-1:7755:-2:DTACA:DTACA1
	1251 7755	
	1252 7776	
738	1253 0374	

739	1254 1033
740	
741	88

```

0000
0100

0200
0300

0400
0500

0600
0700

1000
1100

1200 11111111 11111111 11111111 11111111 11111111 11111000 00000000 00000000
1300 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

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1500

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1700

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4000
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6700

7000
7100

7200
7300

7400
7500

7600
7700

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ASBUFF	4468	ERRDB	0253	K2800	0122	M20	0135
ASBUFP	0068	ERRDC	0254	K212	0111	M200	0131
AUA	0334	ERROR	0222	K215	0112	M240	0127
AUD	0513	ERRP	0061	K240	0113	M260	0126
AUC	0516	ERRSA	0240	K260	0114	M270	0125
AUD	0543	ERRSB	0241	K272	0115	M3	0141
AUE	0668	ERRSC	0242	K277	0116	M30	0134
AUF	0708	ERRSD	0243	K2A	0372	M4	0140
AUG	0758	ERRSE	0244	K3	0072	M40	0133
AUM	1001	ERRSF	0245	K30	0103	M43	0132
AUTO	0017	ERRSG	0246	K301	0117	M5	0137
BUFCDF	0656	ERRSH	0247	K32	0067	M7	0136
BUFCON	1036	ERRSI	0250	K323	0120	MESSAGE	4444
BUFGEN	0643	EXERA	0602	K4	0073	MESSAGEP	0044
BUFGEV	0757	EXERB	0605	K40	0104	MUL26P	0065
BUFRAN	1047	EXERC	0620	K400	0121	ONEOCP	0042
BUFTAL	0731	EXINT	0020	K0	0074	ONEOCT	4442
CNTR	0221	EXSERV	0004	K0200	0103	PARITY	0734
CODE	0236	EXTMEM	0161	K040	0104	PARTAL	0733
CONBUF	1046	FOROCP	0043	K0402	0003	PRNT1	4451
CNLF	4454	FOROCT	4443	K000A	0371	PRNT1P	0051
CNLF	0054	GO	1000	K614A	1035	PRNT2	4452
DATCHK	0473	G01	0413	K64	0070	PRNT2P	0052
DATCON	0366	G02	0400	K7	0075	PRNT4	4453
DATGEN	0647	G03	0423	K70	0105	PRNT4P	0053
DATGEV	0768	GOOUT	1034	K7000A	0713	RAN1	0460
DATSET	0534	HI8LOK	0737	K7010	0125	RAN2	0461
CC76A	0263	HIORV	0741	K7020	0126	RANDOM	0462
CC76B	0307	HOMEDP	0211	K7040	0127	RELEASE	0465
CC76C	0343	IMRETP	0026	K7000	0131	RENTRY	0275
CC76D	0347	INISR1	0550	K77	0106	REPORT	0425
CC76E	0392	INISR2	1125	K7700A	0300	RETRAN	0422
CC76F	1030	INISR3	1136	K7735	0132	RLBUFF	4457
CC76G	1031	INIT	1065	K7740	0133	RLBUPP	0057
CC77A	0304	INITEX	3020	K7750	0134	RUN	0600
CC77B	0344	INITLP	1071	K7760	0135	SAV1	0462
CC77C	1020	INT	0059	K7771	0136	SAV2	0463
CIRGNT	0735	INTACK	0214	K7773	0137	SAVRAN	0442
CTACA	0374	INTRT	0262	K7774	0140	SERVEX	3004
CTACA1	1033	IOFMSF	0056	K7775	0141	SNLCLA	0742
CTANC	0373	JOB	0200	K00F	0044	SPACE2	4455
CTCA	0762	K0	0064	K01F	0005	SPACEP	0055
CTERR	0340	K10	0076	K01FDF	0000	SRHCOF	0313
CTLA	0766	K100	0107	KILL	0217	SRHCON	0276
CTLB	0774	K11	0077	KILLED	0200	SUMCHK	0743
CTOUT	0712	K1111A	0464	K10F	0004	SUMSAV	0732
CTRA	0761	K110	0071	L10N	4440	SBLCLA	0624
CTRB	0772	K13	0100	L10NP	0040	TEXT1	0201
CTRD	0675	K17	0101	LOBLOK	0736	THOOCF	0041
CTSF	0771	K177	0130	LOGGED	0307	THOOCY	4441
CTXA	0764	K20	0102	LODRV	0740	TYPE	4450
ERRDA	0252	K200	0110	LTRCOO	1070	TYPEP	0050

ERRORS DETECTED: 0
 LINKS GENERATED: 4
 RUN-TIME: 7 SECONDS
 3K CORE USED