

RC11

DATA TEST

MD-11-DZRCB-B

EP DZRCB B DL A

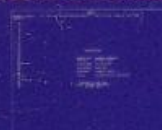
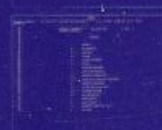
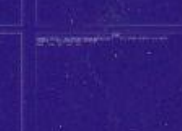
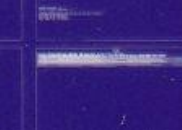
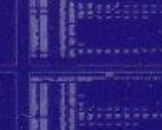
OCT 1976

COPYRIGHT © 1976

digital

FICHE 1 OF 1

Made in U.S.A.

801

MAINDEC-11-DZRCB-B
DZRCBB.F11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 1

.REM %

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZRCB-B-D
REPLACES: MAINDEC-11-DSJA
PRODUCT NAME: RC11 DISK DATA
DATE CREATED: APRIL-1973
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: BOB BRAIN/STANLEY HARACKIEWICZ

COPYRIGHT (C) 1972, 1973
DIGITAL EQUIPMENT CORPORATION
MAYNARD, MASS.

CO1

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 2

MAINDEC-11-DZRCB-B-D
TABLE OF CONTENTS

RC11 DATA TEST

PAGE 2

CONTENTS

1. ABSTRACT
2. REQUIREMENTS
 - 2.1 EQUIPMENT
 - 2.2 STORAGE
3. LOADING PROCEDURE
 - 3.1 METHOD
4. STARTING PROCEDURE
 - 4.1 WORST CASE OPERATION
 - 4.2 OPERATOR INTERVENTION
 - 4.2.1 CHANGE DISK OPERATING PARAMETERS
5. OPERATING PROCEDURE
 - 5.1 CONTROL SWITCH SETTINGS
 - 5.2 CONVERSATION MODE
 - 5.3 ROUTINE ABSTRACT
6. ERROR REPORTS
7. MISCELLANEOUS
 - 7.1 SUGGESTED POWER FAIL TEST
8. RUNTIMES

36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80

001

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 3

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 3

1. ABSTRACT

THE RC11 DISK DATA TEST IS A SERIES OF ADDRESS AND DATA RELIABILITY ROUTINES WHICH VERIFY TO THE USER THE DISK CONTROL (RC11) AND DISK (RS64) ARE OPERATING CORRECTLY. THIS TEST USED IN CONJUNCTION WITH THE RC11 DISKLESS AND RC11 MULTI DISK ASSURES THE USER OF AN ERROR FREE SYSTEM, WHEN USED IN ITS ENTIRETY.

2. REQUIREMENTS

2.1 EQUIPMENT

PDP-11 WITH RC11 AND RS64

2.2 STORAGE

DATA TEST

MAIN BODY OF PROGRAM OCCUPIES FROM LOC 0 TO 10500. THE REST OF THE AVAILABLE CORE IS DIVIDED INTO 2 BUFFERS. THE FIRST IS THE WRITE BUFFER AND THE SECOND IS THE READ BUFFER.

100
101
102
103
104
105
106
107
108
109

E01

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 4

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 4

3. LOADING PROCEDURE

3.1 METHOD OF LOADING

PROGRAM FORMAT ABSOLUTE

A. VERIFY THE BOOT LOADER IS IN MEMORY.

B. SET SWITCH REGISTER EQUAL TO *500

MEMORY SIZE *

4K	17
8K	37
12K	57
16K	77
20K	117
24K	137
28K	157

C. DEPRESS LOAD ADDRESS.

D. DEPRESS START.

4. STARTING PROCEDURE

4.1 WORST CASE DISK TEST UNIT ZERO

A) SET SWITCH REGISTER EQUAL TO 200

B) DEPRESS LOAD ADDRESS

C) SET SWITCH REGISTER EQUAL TO ZERO

D) DEPRESS START

4.2 OPERATOR INTERVENTION FOR DATA TEST ONLY.

A) SET SWITCH REGISTER EQUAL TO 200

B) DEPRESS LOAD ADDRESS

C) SET SWITCH REGISTER EQUAL TO MODE OF OPERATION
(REF. SEC 5.)

D) DEPRESS START.

159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 5

5. OPERATING PROCEDURE

5.1 CONTROL SWITCH SETTINGS

SW15	1	ENTER PROGRAM CONVERSATION MODE
	0	REF. SEC. 5.2 OPERATE WORST CASE DISK ZERO
SW14	1	DELETE TYPEOUTS
	0	REPORT MESSAGE
SW13	1	HALT ON FLAG (READY)
	0	EXECUTE NEXT OPERATION
SW12	1	DELETE DATA COMPARISONS
	0	COMPARE DATA BUFFERS
SW11	1	LOOP ON TEST
	0	CONTINUE TO NEXT TEST
SW10	1	HALT AFTER ERROR REPORT
	0	CONTINUE AFTER ERROR REPORT
SW9	1	WAIT FOR INTERRUPTS USING WAIT
	0	INSTRUCTION WAIT FOR INTERRUPTS WITH BACKGROUND TEST
SW8	1	LOOP ON DISK ADDRESS (SPECIFIED BY WORD COUNT AND DAR)
	0	CONTINUE TO NEXT DISK BUFFER AREA.
SW5	1	SELECT TRACK FROM SW (SEE NOTE 5.1.1)
	0	SELECT TRACK UNDER PROGRAM CONTROL

TRACK SELECTION

4 3 2 1 0

SELECT ONE OF 37(8) TRACKS

5.1.1 ROUTINE TO SETUP CYLINDER NUMBER FROM SWR

WHEN USING THIS OPTION, CARE MUST BE TAKEN IN THAT WHEN
ACCESSING TRACK ADDRESS 37, THE STANDARD WORK COUNT (SWRDCY)
SHOULD NOT EXCEED 4000 (8) FOR A NON-EXISTANT DRIVE ERROR
WILL OCCUR.

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 6

5.2 CONVERSATION MODE FOR PROGRAM PARAMETERS FOR DATA TEST ONLY
IN THE PROGRAM CONVERSATION MODE THE OPERATOR CAN SPECIFY
ANY ONE OR ALL OF THE PROGRAM PARAMETERS.

PROGRAM CONVERSATION

DATA TEST ONLY? (YES-NO)

IF THE OPERATOR ANSWER YES THE PROGRAM WILL ENTER ONLY THE
DATA PORTION OF TEST.

MULTI DRIVE MODE? (YES-NO)

MULTI DISK MODE IS A MODE IN THE PROGRAM WHICH ALLOWS THE
OPERATOR TO EXECISE ALL THE DISKS ON THE SYSTEM WITHOUT
RE-STARTING THE PROGRAM. THE PROGRAM AFTER EXERCISING ONE
DISK WILL REPORT A MESSAGE TELLING THE OPERATOR WHICH DISK
WILL BE SELECTED NEXT, AND THEN THE PROGRAM WILL EXERCISE
THAT DISK. WHEN A COMPLETE PASS IS ACCOMPLISHED. A PASS
COMPLETE WILL BE REPORTED AND THE TEST WILL RECYCLE.

IF THE OPERATOR ANSWERS "YES" TO THIS QUESTION, HE WILL THEN
BE ASKED HOW MANY DISKS ARE ON THE SYSTEM, AND THEN THE
PRECEDING QUESTION WILL BE SKIPPED. IF THE OPERATOR ANSWERS
"NO" TO THIS QUESTION, THE NEXT QUESTION WILL BE SKIPPED,
AND HE WILL THEN BE ASKED WHICH DISK IS TO BE EXERCISED.

NUMBER OF DRIVES(1 - 4)?

TYPE THE NUMBER OF DISKS ON THE SYSTEM, FOR MULTI DISK MODE.

EXERCISE DRIVE?

WHEN NOT IN THE MULTI DISK MODE THE OPERATOR WILL HAVE TO
SPECIFY WHAT DISK IS TO BE USED.

OPTIONAL WORD COUNT(YES-NO)

IF THE OPERATOR ANSWERS "NO" TO THIS QUESTION THE NEXT TWO
QUESTIONS WILL BE DELETED FROM THE CONVERSATION.

LENGTH (1 TO N)?

THE OPERATOR CAN SPECIFY ANY LENGTH TRANSFER FROM 1(8) TO
N(8) WORDS. THE NORMAL TRANSFER LENGTH IS N(8) WORDS WHERE
N IS THE MAXIMUM BUFFER SIZE FOR THE AVAILABLE CORE.

STARTING SECTOR?

THE OPERATOR CAN SPECIFY THE STARTING SECTOR (0-77). THIS

H01

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 7

269

SHOULD BE USED IN CONJUNCTION WITH SWITCHES 8 AND 0-5.

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 7

DATA PATTERN NO. ?

IF NO OPTIONAL DATA PATTERN IS REQUESTED (#22) THE PROGRAM
WILL EXECUTE THE FOLLOWING LIST OF DATA PATTERNS.

PATTERN	0 = 000000
"	1 = 177777
"	2 = 134510
"	3 = 043267
"	4 = 100000
"	5 = 107070
"	6 = 070707
"	7 = 125252
"	10 = 052525
"	11 = 177737
"	12 = 004102
"	13 = 136363
"	14 = 063636
"	15 = 000001
"	16 = 100005
"	17 = 000520
"	20 = 030303
"	21 = RANDOM DATA
"	22 = RUN ALL DATA PATTERNS UNDER PROGRAM CONTROL

IN THIS SECTION OF THE PROGRAM PARAMETER CONVERSATION MODE,
THE OPERATOR CAN SELECT ANY ONE OR ALL THREE OF THE CONTROL
FUNCTIONS TO BE EXECUTED. THE NORMAL SEQUENCE OF DISK
FUNCTIONS UNDER PROGRAM CONTROL IS WRITE, WRITE CHECK, AND
THEN READ. BY ENTERING THE CONVERSATION MODE THE OPERATOR
HAS GAINED COMPLETE CONTROL OVER THE DISK FUNCTIONS. HE
MUST SPECIFY YES OR NO TO ALL OF THE FOLLOWING QUESTIONS.

WRITE? (YES - NO)
WRITE CHECK? (YES - NO)
READ? (YES - NO)

TO PERFORM A WRITE CHECK ONLY, THE OPERATOR MUST FIRST WRITE
SOME KNOW DATA ON THE DISK. THIS COURSE OF ACTION ALSO
PREVAILS FOR A READ ONLY OPERATION.
* IF AND ERROR OCCURS IN THE LINE THE OPERATOR IS TYPING,
DEPRESS THE RUB-OUT. THIS CAUSES THE QUESTION TO BE RETYPED
AND ALLOWS THE OPERATOR TO PROPERLY ANSWER THE QUESTION.

* INDICATES TO THE OPERATOR THAT A CARRIAGE-RETURN SHOULD
BE TYPED AT THE INDICATED PLACE TO TERMINATE THE LINE
OF TYPED CHARACTERS.

270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 8

5.3 ROUTINE ABSTRACTS

ADDRESS TEST

RANEX - RANDOM DATA, RANDOM ADDRESS RANDOM WORD COUNT TEST

THIS ROUTINE TESTS THE ABILITY OF THE SYSTEM TO ACCESS RANDOM ADDRESS WITH RANDOM DATA AND AN INCREMENTAL WORD COUNT. THE DATA IS FIRST WRITTEN ON THE DISK AND THEN DATA IS WRITE-CHECKED. ALL ERRORS ARE REPORTED. THE WORD COUNT RUNS FROM 1 TO N(8) WORDS. WHERE N IS DESCRIBED IN 5.2.

DATA RELIABILITY - DATA PATTERN TEST

IN THIS PORTION OF THE TEST, THE ABILITY OF THE COMPLETE DISK SURFACE TO WRITE, WRITE CHECK, AND READ DATA IS TESTED. THE ROUTINE FIRST WRITES THE COMPLETE SURFACE WITH A SET DATA PATTERN, THEN A WRITE CHECK OF THE COMPLETE SURFACE IS ACCOMPLISHED, THUS REPORTING ALL ERRORS BETWEEN THE DATA WRITTEN AND THE DATA IN MEMORY. THREE READS ARE ACCOMPLISHED FOR EACH BUFFER AREA ON THE DISK. THE OPERATOR AT THIS POINT HAS SEVERAL OPTIONS AS TO WHAT COURSE OF ACTION THE PROGRAM WILL TAKE NEXT, (REF. SEC. 5.1)

324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351

352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 9

ROUTINES IN DATA TEST

600	JMP	ADT1	TRACK AND SECTOR SELECT TEST
604	JMP	ADT3	WRITE EACH WORD ADDR ON ITSELF
			AND READ BACK TO COMPARE
610	JMP	RANEX	RANDOM ADDRESS, DATA AND WORD
			COUNT TEST
614	JMP	TKSEL	ONE WORD READ TEST TO SELECTED
			TRACK

POWER FAIL ROUTINES ***DATA TEST ONLY***

650	JMP	PFT1	DISK WRITE POWER FAIL TEST
654	JMP	PFT2	DISK WRITE CHECK POWER FAIL
			TEST

6. ERROR REPORTS

6.1 STATIC AND ADDRESS REPORT.

ERROR	XXX	XXXXXX	XXXXXX
	A	B	C

A= IS THE TAG FOR THE LISTING
B= WHAT WAS EXPECTED (WORK1) OPTIONAL
C= WHAT WAS RECEIVED (WORK)

WHEN A REPORT ONLY CONTAINS ONE WORD THE PROGRAM WAS
EXPECTING ZEROS BUT RECEIVED WHAT WAS REPORTED.

6.2 ERROR REPORTS

STATUS ERROR

STATUS ERROR	XXXXXX	RCER	XXXXXX	RCDA	XXXXXX	RCCS
	A		B		C	

A= DISK ERROR REGISTER
B= DISK ADDRESS REGISTER
C= DISK CONTROL REGISTER

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 10

BIT LAYOUT OF DATA REGISTER

BIT15= ERROR
BIT14= DATA ERROR
BIT13= ADDRESS ERROR
BIT12= WRITE LOCK ERROR
BIT11= NON-EXISTENT DISK
BIT10= WRITE CHECK ERROR
BIT9= INHIBIT INCREMENTING CA
BIT8= ABORT
BIT7= READY
BIT6= INTERRUPT ENABLE
BIT5= EXTENDED MEMORY 1 (XM1)
BIT4= EXTENDED MEMORY 0 (XM0)
BIT3= MAINTENANCE
BIT2-1= FUNCTION REGISTER

BIT 2

0
1
0
1

BIT 1 OPERATION

0 LOOK AHEAD
0 READ
1 WRITE
1 WRITE CHECK

BIT0= GO (WRITE ONLY BIT).

NOTE: IF AN ERROR OCCURS, THE FOLLOWING INFORMATION IS
AVAILABLE TO THE USER IN THE DAE:

BIT4= ADDRESS NOT FOUND
BIT5= DISK OVERFLOW
BIT6= ADDRESS SYNC. ERROR
BIT7= ADDRESS PARITY ERROR
BIT8= B TRACK ERROR
BIT9= A TRACK ERROR
BIT12= NONEXISTENT MEMORY
BIT13= DATA SYNC. ERROR
BIT14= BLOCK CHECK ERROR
BIT15= DATA LATE

401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446

MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 11

6.3 DATA ERRORS

DATA ERROR XXX READ XXXXXX RCDA XX WORD ADR. XXXXXX XXXXXX
A B C D E

A= WHICH READ THE ERROR OCCURRED
B= THE DISK ADDRESS REGISTER
C= WORD ADDRESS (0-37)
D= THE DATA WRITTEN ON THE DISK
E= THE DATA READ FROM THE DISK

6.4 RANEX ERRORS

ERRORS WHICH OCCUR IN RANEX ALSO HAVE THE WORD COUNT REPORT
WITH THE ERROR MESSAGE IN THE FOLLOWING MANNER.

RANEX ERROR XXXXXX RCDA XXXXXX WORD COUNT.
A B

A= STARTING DAR OF TRANSFER
B= WORD COUNT OF TRANSFER

6.5 DISK ADDRESS ERROR

DRIVE ADDRESS ERROR XXXXXX DMA XXXXXX RCDA
A B

A= TRUE DISK ADDRESS
B= DISK ADDRESS FOUND

THE TERMINATING DISK ADDRESS AFTER THE TRANSFER WAS NOT
CORRECT. THE RCDA SHOULD EQUAL WHAT WAS REPORTED.

6.6 PROCESSOR TIME OUT

PROCESSOR BACKGROUND TIMED OUT

THIS MESSAGE WILL BE REPORTED IF THE DISK FAILS TO RAISE A
BR REQUEST AFTER EXTENDED PERIOD OF TIME.

6.7 END

END

THIS MESSAGE IS REPORTED AT THE END OF ONE COMPLETE PASS OF
THE DISK SYSTEM.

447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501

502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547MAINDEC-11-DZRCB-B-D
DESCRIPTION

RC11 DATA TEST

PAGE 12

6.8 PARITY

THIS MESSAGE IS REPORTED IF THE PROGRAM DETECTS A MEMORY PARITY ERROR DURING EXECUTION.

7. MISCELLANEOUS

IN SOME ADDRESS TESTS THE PROGRAM DEPENDS ON WRITTING AND READING DATA CORRECTLY FROM THE DISK, AND IF IT DOES NOT IT MAY REPORT AN ADDRESS FAILURE, WHEN IN FACT IT WAS A DATA FAILURE.

7.1 SUGGESTED POWER FAIL TEST

THIS TEST IS SUGGESTED SO THAT THE ABILITY OF THE DISK TO RETAIN DATA AFTER A POWER FAILURE HAS OCCURRED MAY BE TESTED.

FOLLOW THESE STEPS IF NO ERROR OCCURS, ONE PASS SHOULD BE SUFFICIENT:

A) RUN TEST FROM 200 FOR 1 PASS.

B) LOAD AND START PFT1

C) UPON RECEIVING "OK" FROM THE PROGRAM TURN OFF THE POWER TO THE MACHINE AND THEN BACK ON AGAIN.

D) THERE SHOULD BE ATMOST ONE ERROR. ANY MORE IS CONSIDERED UNRELIABLE.

E) PERFORM THE SAME STEPS WITH PFT2. THIS TIME THERE SHOULD BE NO ERRORS.

8. RUNTIME

8.1 TYPEOUT WILL OCCUR WITHIN 15 MIN. WITH 8K OF MEMORY.

%
.TITLE MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A
:COPYRIGHT 1971, 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
;PROGRAM BY EOB BRAIN/C. CASWELL

.REM*

SWITCH

REASON

15	ENTER CONVERSATION MODE
14	INHIBIT TYPEOUTS
13	HALT ON COMPLETION
12	INHIBIT COMPARISON
11	LOOP ON TEST
10	HALT ON ERROR
9	BACKGROUND TEST
8	LOOP ON DISK ADDRESS
5	SELECT TRACK NUMBER
4 - 0	TRACKS 0 - 37*

.ENABL ABS
N= 1

000001
000001
000002
000004
000010
000020
000040
000100
000200
000400
001000
002000
004000
010000
020000
040000
100000

BIT0=1
BIT1=2
BIT2=4
BIT3=10
BIT4=20
BIT5=40
BIT6=100
BIT7=200
BIT8=400
BIT9=1000
BIT10=2000
BIT11=4000
BIT12=10000
BIT13=20000
BIT14=40000
BIT15=100000

104403
104407
104405

WRITE=TRAP+3
WRCHECK=TRAP+7
READ=TRAP+5

548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592

C02

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 15

```

593      000008      . =      0      ; TRAP CATCHER 0 - 776
594      000200      . =      200
595      000200      000167      000716      JMP      START
596      000500      . = 600
597      000600      000167      001444      JMP      ADT1      ; TRACK AND SECTOR SELECT TEST
598      000604      000167      001754      JMP      ADT3      ; WRITE EACH WORD ADDR ON ITSELF AND
599                                     ; READ BACK TO COMPARE
600
601      000610      000167      002356      JMP      RANEX      ; RANDOM ADDRESS, DATA AND
602                                     ; WORD COUNT TEST
603      000614      000167      005444      JMP      TKSEL      ; ENABLES OPERATOR TO SELECT TRACKS DYNAMICLY
604
605      000650      . = 650
606      000650      000167      006436      JMP      PFT1      ; DISK WRITE POWER FAIL TEST
607      000654      000167      006666      JMP      PFT2      ; DISK WRITE CHECK POWER FAIL TEST
608
609      ; RC11 DATA TEST
610      ; VECTORS USED IN PROGRAM
611      ; #1 LOC 210 DISK INTERRUPT
612      ; #2 LOC 30 EMT (TELETYPE OUTPUT)
613      ; #3 LOC 34 TRAP (DISK HANDLERS)
614      ; #4 LOC 14 TRACE TRAP (USED IN BACKGROUND TEST)
615      ; #5 LOC 20 IOT TRAP (USED IN CALLING BACKGROUND TEST)
616
617      001000      . =      1000

```

618			: I/O ADDRESS POINTERS	
619				
620	001000	177570	SWR:	177570
621	001002	177776	PS:	177776
622	001004	177566	TPB:	177566
623	001006	177562	TKB:	177562
624	001010	177564	TPS:	177564
625	001012	177560	TKS:	177560
626	001014	033604	ODT:	33604
627				
628			: DISK I/O REGISTERS	
629				
630	001016	177440	RCLA:	177440
631	001020	177444	RCER:	177444
632	001022	177446	RCCS:	177446
633	001024	177450	RCWC:	177450
634	001026	177452	RCBA:	177452
635	001030	177442	RCDA:	177442
636	001032	177454	RCMR:	177454
637	001034	177456	RCDB:	177456
638				
639	001036	000210	VECTOR:	210
640	001040	000212	STATUS:	212
641	001042	000200	PRIORITY:	BIT7
642				
643			: RC11 DEDICATE REGISTERS (MEMORY)	
644				
645	001044	000000	FLAG:	0
646	001046	146723	RANNU:	146723
647	001050	000000	WRDCT:	0
648	001052	000000	TRACK:	0
649	001054	000000	DMA:	0
650	001056	000000	PATNU:	0
651	001060	000000	BUF:	0
652	001062	000000	TWRDCT:	0
653	001064	000000	TDMA:	0
654	001066	000000	SWRDCT:	0
655	001070	000000	ERCOUNT:	0
656	001072	000000	SAVE:	0
657	001074	000000	SAV1:	0
658	001076	000000	PASS:	0
659	001100	000000	DSKNOR:	0
660	001102	000000	HRDR:	0
661	001104	000000	BLOCK:	0
662	001106	000000	PASSC:	0
663	001110	000000	INBUF:	0
664				
665			: RC11 WORK REGISTERS (CAN BE CHANGED IN ANY ROUTINE)	
666				
667	001112	000000	WORK:	0
668	001114	000000	WORK1:	0
669	001116	000000	WORK2:	0
670	001120	000000	WORK3:	0

: SWITCH REGISTER
: PROCESSOR STATUS REGISTER
: TELETYPE REGISTERS

: LOOK AHEAD
: DSK STATUS 2
: DSK STATUS 1
: WORD COUNT
: CURRENT TRANSFER ADDRESS
: DSK ADDRESS
: MAINTENANCE
: DATA BUFFER

: INTERRUPT VECTOR ADDRESS
: DISK INTERRUPT STATUS
: DISK PRIORITY LEVEL

: INTERNAL PROGRAM FLAG
: RANDOM NUMBER PRIME
: WORKING WORD COUNT
: WORKING DAE
: WORKING DAR
: DATA PATTERN INDEX
: WORKING DATA BUFFER (OUT-IN)
: TEMP WORD COUNT
: TEMP DAR
: STANDARD WORD COUNT
: ERROR COUNT FOR MESSAGES.

: POINTER FOR HARD ERROR

E02

MAINDEC-11-DZRCB-8
DZRCB8.P11

RC11 DATA TEST REPLACES D5JA-P82/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 17

671	001122	000005		START: RESET		;CLEAR THE WORLD
672	001124	012767	000004 177760	MOV	#4,WORK	
673	001132	012700	010272	CLRTAB: MOV	#TABLE,%0	;CLEAR ERROR TABLE
674	001136	005020		CLR	(0)+	
675	001140	005367	177746	DEC	WORK	
676	001144	001372		BNE	CLRTAB	
677	001146	012706	001000	MOV	#1000,%6	;SET UP STACK
678	001152	004567	004504	JSR	%5,EXTMEN	;SET UP DATA BUFFERS
679	001156	012706	001000	MOV	#1000,%6	;RESET STACK
680	001162	012767	006550 176640	MOV	#EMTRP,30	;SET UP TTY POINTER
681	001170	012767	000340 176634	MOV	#340,32	;LOCK UP INTERRUPTS
682	001176	012767	003674 176630	MOV	#DISK,34	;SET UP DISK HANDLER POINTER
683	001204	012767	000340 176624	MOV	#340,36	;LOCK UP INTERRUPTS
684	001212	012777	000340 177562	MOV	#340,3PS	;LOCK UP INTERRUPT LEVELS
685	001220	012767	006134 176572	MOV	#XWAIT,20	
686	001226	005067	176570	CLR	22	
687	001232	012767	007470 176564	MOV	#DOWN,24	;SET UP PWR FAIL
688	001240	012767	000340 176560	MOV	#340,26	;LOCK UP INTERRUPTS
689	001246	005067	177572	CLR	FLAG	;CLEAR PROGRAM FLAG
690	001252	005067	177576	CLR	DMA	;CLEAR DAR REGISTERS
691	001256	005067	177574	CLR	PATNU	;CLEAR PATTERN COUNT
692	001262	016767	177600 177560	MOV	SWRDCT,WRDCT	
693	001270	004767	006576	JSR	7,MAMF	;SET PARITY SWITCHES
694	001274	005777	177500	TST	2SWR	
695	001300	100464		BMI	LCONM	;OPERATE UNDER PROGRAM CONTROL
696	001302	052767	070000 177534	BIS	#70000,FLAG	
697	001310	005067	006766	CLR	TEXBUF	
698	001314	032777	004000 177500	SPECOR: BIT	#BIT11,3RCCS	;TEST FOR DISK
699	001322	001013		BNE	RCNODV	;NO DEVICE!
700	001324	022767	000004 006750	CMP	#4,TEXBUF	;TESTED FOR ALL DEVICES?
701	001332	001407		BEQ	RCNODV	;REPORT NUMBER
702	001334	062767	000001 006740	ADD	#1,TEXBUF	;INC DEVICE COUNT
703	001342	062777	004000 177460	ADD	#4000,3RCD4	;ADDRESS NEXT DISK
704	001350	000761		BR	SPECOR	
705	001352	005767	006724	RCNODV: TST	TEXBUF	;TEST FOR 0 DEVICES
706	001356	001003		BNE	REPDRV	;REPORT 0 DEVICES
707	001360	104001		EMT+1		
708	001362	011352		NODRV		
709	001364	000000		HALT		
710	001366	004567	005426	REPDRV: JSR	%5,CONV	;CONVERT TO ASCII FOR PRINT
711	001372	010302		TEXBUF		
712	001374	011377		RKNUM		
713	001376	000001		1		;TYPE NUMBER OF DRIVES
714	001400	104000		EMT	+0	
715	001402	010370		HEDSA		
716	001404	011377		RKNUM		
717	001406	177777		-1		
718	001410	016767	006666 177462	MOV	TEXBUF,DSKNOR	;SAVE # OF DISKS
719	001416	162767	000001 177454	SUB	#1,DSKNOR	;FIRST DISK IS ZERO
720	001424	006167	177450	ROL	DSKNOR	;SHIFT LEFT TO MATCH FLAG
721	001430	006167	177444	ROL	DSKNOR	;POSITION
722	001434	052767	004000 177402	BIS	#BIT11,FLAG	;SET UP PROGRAM FLAG
723	001442	005077	177362	CLR	3RCD4	;RESET DISK ADDRESS
724	001446	000167	000504	JMP	ADTST	
725						
726						;ENTER OPERATOR CONVERSATION MODE

F02

MAINDEC-11-DZRCB-8
DZRCB8.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 18

727									
728	001452					LCONM:	EMT	+1	
729	001452	104001				CONM:	CON1		;ASK ABOUT DATA TEST ONLY
730	001454	010751					JSR	%7, ALPHA	;GO WAIT FOR ANSWER
731	001456	004767	005430				CMP	#153, TEXBUF	;TEST FOR YES
732	001462	022767	000153	006612			BNE	.+10	;BRANCH IF NO
733	001470	001003					BIS	#BIT10, FLAG	
734	001472	052767	002000	177344			EMT	+1	
735	001500	104001					CON2		;ASK ABOUT MULTI DRIVE MODE
736	001502	011003					JSR	%7, ALPHA	;GO WAIT FOR ANSWER
737	001504	004767	005402				CMP	#153, TEXBUF	;TEST FOR YES
738	001510	022767	000153	006564			BNE	DATTES	
739	001516	001026					BIS	#BIT11, FLAG	
740	001520	052767	004000	177316		DSKDR:	EMT	+1	
741	001526	104001					CON3		
742	001530	011036					JSR	%7, NOCHA	
743	001532	004767	005344				SUB	#1, TEXBUF	
744	001536	162767	000001	006536			CMP	#4, TEXBUF	
745	001544	022767	000004	006530			BLOS	DSKDR	
746	001552	101765					MOV	TEXBUF, DSKNOR	
747	001554	016767	006522	177316			ROL	DSKNOR	
748	001562	006167	177312				ROL	DSKNOR	
749	001566	006167	177306				BR	ASKWC	
750	001572	000420							

G02

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 19

751	001574	104001			DATTES:	EMT	+1	
752	001576	011072				CON4		;ASK UNIT NUMBER
753	001600	004767	005276			JSR	%7, NOCHA	;WAIT FOR NO.
754	001604	022767	000004	006470		CMP	#4, TEXBUF	;IS NO = OR>4
755	001612	101770				BLOS	DATTES	;NO
756	001614	000241				CLC		
757	001616	006167	006460			ROL	TEXBUF	
758	001622	006167	006454			ROL	TEXBUF	
759	001626	056767	006450	177210		BIS	TEXBUF, FLAG	
760								
761	001634	104001			ASKWC:	EMT	+1	
762	001636	011113				CON5		;ASK ABOUT OPTIONAL WORD COUNT
763	001640	004767	005246			JSR	%7, ALPHA	;WAIT FOR ANSWER
764	001644	022767	000153	006430		CMP	#153, TEXBUF	
765	001652	001050				BNE	OPPAT	;ASK ABOUT OPTIONAL DAR
766								
767	001654	104001			WCCON:	EMT	+1	
768	001656	011151				CON6		;ASK LENGTH OF WC
769	001660	004567	005134			JSR	%5, CONV	
770	001664	001066				SWRDC		
771	001666	011170				CON6A		
772	001670	000006				6		
773	001672	104001				EMT+1		
774	001674	011170				CON6A		
775	001676	004767	005200			JSR	%7, NOCHA	
776	001702	005767	006374			TST	TEXBUF	
777	001706	001762				BEQ	WCCON	
778	001710	016767	177152	177174		MOV	SWRDC, WORK	
779	001716	005267	177170			INC	WORK	
780	001722	026767	177164	006352		CMP	WORK, TEXBUF	;IS TEXBUF LESSTHAN SWRDC
781	001730	101751				BLOS	WCCON	;YES ASK FOR COUNT AGAIN
782	001732	016767	006344	177126		MOV	TEXBUF, SWRDC	;OPERATING WORD COUNT
783	001740	016767	177122	177102		MOV	SWRDC, WRDC	
784								
785	001746	104001			OPDAR:	EMT	+1	
786	001750	011201				CON7		;ASK ABOUT OPTIONAL DAR
787	001752	004767	005124			JSR	%7, NOCHA	
788	001756	022767	000100	006316		CMP	#100, TEXBUF	;77 MAX SECTOR COUNT
789	001764	101770				BLOS	OPDAR	
790	001766	016767	006310	177060		MOV	TEXBUF, DMA	;TEMP SECTOR REGISTER

H02

MAINDEC-11-DZRCB-B
DZRCB8.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 20

791	001774	104001			OPPAT:	EMT	+1	
792	001776	011223				CON8		;ASK ABOUT DATA PATTERNS
793	002000	004767	005076			JSR	%7, NOCHA	
794	002004	022767	000023	006270		CMP	#23, TEXBUF	;TEST FOR CORRECT NO
795	002012	101770				BLOS	OPPAT	;ASK AGAIN
796	002014	022767	000022	006260		CMP	#22, TEXBUF	
797	002022	001414				BEQ	OPWRT	;DATA PATTERN UNDER PROGRAM CONTROL
798	002034	052767	100000	177012		BIS	#BIT15, FLAG	;SET PROGRAM FLAG
799	002032	016767	006244	177016		MOV	TEXBUF, PATNU	;OPERATOR WANTS TO SELECT DATA
800	002040	000241				CLC		
801	002042	006167	177010			ROL	PATNU	
802	002046	042767	070000	176770		BIC	#70000, FLAG	;CLEAR OP MODE BITS IN FLAG
803								
804	002054	104001			OPWRT:	EMT	+1	
805	002056	011246				CON9		;ASK ABOUT WRITE
806	002060	004767	005026			JSR	%7, ALPHA	
807	002064	022767	000153	006210		CMP	#153, TEXBUF	;TEST FOR YES
808	002072	001003				BNE	OPRD	;ASK ABOUT WRITE CHECK
809	002074	052767	040000	176742		BIS	#BIT14, FLAG	;YES SET FLAG BIT
810								
811	002102	104001			OPRD:	EMT	+1	
812	002104	011314				CON11		;ASK ABOUT READ
813	002106	004767	005000			JSR	%7, ALPHA	
814	002112	022767	000153	006162		CMP	#153, TEXBUF	;TEST FOR YES ANSWER
815	002120	001003				BNE	OPWCK	
816	002122	052767	010000	176714		BIS	#BIT12, FLAG	;SET FLAG TO READ
817								
818	002130	104001			OPWCK:	EMT+1		
819	002132	011266				CON10		;ASK ABOUT WRITE CHECK
820	002134	004767	004752			JSR	%7, ALPHA	
821	002140	022767	000153	006134		CMP	#153, TEXBUF	
822	002146	001003				BNE	ADTST	
823	002150	052767	020000	176666		BIS	#BIT13, FLAG	
824								
825	002156	032767	004000	176660	ADTST:	BIT	#BIT11, FLAG	;ARE WE IN MULTI DRIVE MODE
826	002164	001423				BEQ	EXMFLG	;BRANCH IF NO.
827	002166	104001				EMT	+1	
828	002170	010610				MES11		
829	002172	016767	176646	004700		MOV	FLAG, ACNVX	
830	002200	006067	004674			POR	ACNVX	
831	002204	006067	004670			ROR	ACNVX	
832	002210	042767	177774	004662		BIC	#177774, ACNVX	;FETCH DRIVE #
833	002216	004567	004576			JSR	%5, CONV	
834	002222	007100				ACNVX		
835	002224	010622				MES12		
836	002226	000001				1		
837	002230	104001				EMT	+1	
838	002232	010622				MES12		
839	002234	032767	002000	176602	EXMFLG:	BIT	#BIT10, FLAG	;TEST FOR DATA TEST ONLY
840	002242	001402				BEQ	+6	;DO COMPLETE TEST
841	002244	000167	000320			JMP	DATAT	;DO DATA TEST ONLY

```

842          ;***** ADDRESS TEST *****
843
844          ;RC11 ADDRESS TEST #1 (TRACK AND SECTOR SELECTION TEST)
845
846          ;WRITE 40(OCTAL) WORDS IN EACH SECTOR
847          ;THE WORD CONTAINS THE ADDRESS OF EACH SECTOR
848          ;WHEN THE COMPLETE DISK IS WRITTEN READ
849          ;BACK EACH SECTOR AND COMPARE FOR THE CORRECT
850          ;DATA IN THE SECTOR
851
852 002250 016767 176612 176614 ADT1:  MOV  SWRDCT,SAVE
853 002256 004567 002502          JSR  %5,DSKNOS          ;SET UP DISK NUMBER
854 002262 012767 000040 176576          MOV  #40,SWRDCT
855 002270 012767 000040 176552          MOV  #40,WRDCT          ;SETUP WORD COUNT
856 002276 012767 011432 176554          MOV  #OUTBUF,BUF          ;SET UP CURRENT ADDRESS
857 002304 012706 001000          MOV  #1000,%6          ;SET UP STACK
858 002310 005067 176540          CLR  DMA
859 002314 012700 011432          SEABUF: MOV  #OUTBUF,%0          ;SET UP ADDRESS BUFFER
860 002320 016701 176524          MOV  WRDCT,%1
861 002324 016720 176524          XSEABUF: MOV DMA,(0)+
862 002330 005301          DEC  %1
863 002332 001374          BNE  XSEABUF
864 002334 104403          WRITE          ;WRITE SECTOR
865 002336 105777 176460          TSTB  @RCCS          ;CHECK FOR READY
866 002342 100375          BPL  -4
867 002344 005777 176452          TST  @RCCS          ;TEST FOR ERROR
868 002350 100011          BPL  WRNEXB          ;BRANCH IF NO ERROR
869 002352 012767 000001 176510 ER1:  MOV  #1,ERCOUNT          ;***** ERROR 1 *****
870 002360 017767 176436 176524          MOV  @RCCS,WORK          ;FETCH CONTENTS OF CONTROL REG
871 002366 004567 004024          ERR1: JSR  %5,STAER          ;REPORT ERROR
872 002372 000750          BR  SEABUF          ;LOOP ON ERROR
873 002374 004767 002012          WRNEXB: JSR %7,DISBUF          ;SET UP NEXT DISK ADDR.
874 002400 000745          BR  SEABUF          ;WRITE NEXT SECTOR
875 002402 005067 176446          CLR  DMA
876 002406 016767 176476 176444 SETADT: MOV INBUF,BUF          ;SET UP CURRENT ADDRESS

```

```

877 002414 104405          RDSECT: READ
878 002416 105777 175400      TSTB      2RCCS      ;CHECK FOR READY
879 002422 100375          BPL      -4      ;NOT READY BRANCH BACK
880 002424 005777 176372      TST      2RCCS      ;TEST FOR ERROR
881 002430 100014          BPL      ADHGT      ;BRANCH IF NO ERROR
882 002432 017767 176364 176452 MOV      2RCCS,WORK ;FETCH CONTROL REG
883 002440 017767 176364 176446 MOV      2RCDA,WORK1 ;FETCH DISK ADDR
884 002446 012767 000002 176414 ER2:  MOV      #2,ERCOUNT ;***** ERROR 2 *****
885 002454 004567 004000      ERR2:  JSR      %5,STAER1 ;REPORT ERROR
886 002460 000755          BR      RDSECT      ;LOOP ON ERROR
887 002462 016700 176422      ADHGT:  MOV      INBUF,%0
888 002466 012701 000040      MOV      #40,%1
889 002472 026710 176356      SANHT:  CMP      DMA,(0) ;CMP FOR CORRECT ADDR.
890 002476 001004          BNE      ADERR      ;BRANCH IF DATA DID NOT COMPARE
891 002500 005720          INCADT:  TST      (0)+
892 002502 005301          DEC      %1
893 002504 001372          BNE      SANHT
894 002506 000412          BR      CHKADT      ;TEST NEXT WORD
895 002510 016767 176340 176376 ADERR:  MOV      DMA,WORK1 ;CORRECT ADDRESS
896 002516 011067 176370      MOV      (0),WORK ;DATA IN ERROR
897 002522 012767 000003 176340 ER3:  MOV      #3,ERCOUNT ;***** ERROR 3 *****
898 002530 004567 003724      ERR3:  JSR      %5,STAER1 ;REPORT ERROR
899
900          ;*****REPORT ONLY ONE ERROR PER SECTOR*****
901
902 002534 004767 001652      CHKADT:  JSR      %7,DISBUF ;SET UP NEXT DISK BUFFER
903 002540 000725          BR      RDSECT      ;CHECK NEXT SECTOR
904 002542 016767 176324 176316 MOV      SAVE,SWRDCT ;RESTORE STANDARD WORD COUNT
905 002550 032777 004000 176222 BIT      #BIT11,2SWR ;DOES OPERATOR WANT TO LOOP ON TEST
906 002556 001402          BEQ      .+6
907 002560 000167 177464          JMP      ADT1

```

K02

MAINDEC-1.-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 23

908	002564	005067	176264		ADT3:	CLR	DMA	
909								
910	002570	016767	176272	176252	DATA:	MOV	SWRDCT,WRDCT	
911	002576	012777	003776	176232		MOV	#DKINT,AVECTOR	
912	002604	012777	000340	176226		MOV	#340,STATUS	
913	002612	012767	002632	176262		MOV	#LDAT,HRDR	; SETUP FOR HARD ERROR
914	002620	012777	000340	176154		MOV	#340,APS	; LOCK UP PROCESSOR PRIORITY
915	002626	004567	002270			JSR	%5,PASEL	; SET UP DATA BUFFERS
916	002632	004567	001464		LDAT:	JSR	%5,OPDSEL	; SET UP DISK ADDRESS
917	002636	032767	040000	176200		BIT	#BIT14,FLAG	; TEST FOR WRITE
918	002644	001421				BEQ	ESH	; TEST FOR READ
919	002646	012767	011432	176204		MOV	#OUTBUF,BUF	; SETUP OUTPUT BUFFER
920	002654	104503				WRITE	+100	; WRITE WITH INT. ENABLED
921	002656	032777	001000	176114		BIT	#BIT9,ASWR	; FIND OUT HOW TO WAIT FOR INT
922	002664	001002				BNE	WRWAIT	; WAIT WITH WAIT INSTRUCTION
923	002656	000004				IOT		; WAIT IN BACKGROUND TEST
924	002670	000404				BR	XSLH	
925	002672	016777	176144	176102	WRWAIT:	MOV	PRIORITY,APS	
926	002700	000001				WAIT		; WAIT FOR FLAG
927	002702	004767	001504		XSLH:	JSR	%7,DISBUF	; SET BUFFER FOR WRITE
928	002706	000751				SR	LDAT	
929	002710	004567	001406		ESH:	JSR	%5,OPDSEL	; OPERATOR SELECTED CYLINDER?
930	002714	032767	010000	176122		BIT	#BIT12,FLAG	; TEST FOR READ
931	002722	001451				BEQ	SLH	
932	002724	016767	176160	176126		MOV	INBUF,BUF	; SETUP OUTPUT BUFFER
933	002732	042767	000003	176104		BIC	#3,FLAG	; CLEAR RE-READ COUNT

934	002740	012777	000340	176034	DSKRD:	MOV	#340,APS	
935	002746	005267	176072			INC	FLAG	
936	002752	104505				READ	+100	;READ + INT ENABLE
937	002754	032777	001000	176016		BIT	#BIT9,ASWR	;FIND OUT HOW TO WAIT FOR INT.
938	002762	001002				BNE	RDWAIT	;WAIT WITH WAIT INSTRUCTION
939	002764	000004				IOT		
940	002766	000404				BR	ELH	
941	002770	016777	176046	176004	RDWAIT:	MOV	PRIORITY,APS	;SET UP PRIORITY
942	002776	000001				WAIT		;WAIT FOR FLAG
943	003000	032777	010000	175772	ELH:	BIT	#BIT12,ASWR	
944	003006	001002				BNE	ADRD	
945	003010	004567	002342			JSR	%5,COMPARE	;COMPARE OUTBUFFER TO INBUFFER
946	003014	016767	176024	176070	ADRD:	MOV	FLAG,WORK	;CHECK DISK RE-READ COUNT
947	003022	042767	177774	176062		BIC	#177774,WORK	;DO 3 RE-READS.
948	003030	022767	000003	176054		CMP	#3,WORK	
949	003036	001340				BNE	DSKRD	;DO ANOTHER RE-READ
950	003040	004767	001346			JSR	%7,DISBUF	;GO SET UP DISK BUFFER.
951	003044	000721				BR	ESH	
952	003046	004567	001250		SLH:	JSR	%5,OPDSEL	;IS THE OPERATOR SELECTING THE TRACK
953	003052	032767	020000	175764		BIT	#BIT13,FLAG	;TEST FOR WRITE CHECK
954	003060	001424				BEQ	MSTR	
955	003062	012767	011432	175770		MOV	#OUTBUF,BUF	;SET UP CURRENT ADDRESS
956	003070	012777	000340	175704		MOV	#340,APS	
957	003076	104507				WRCHECK	+100	
958	003100	032777	001000	175672		BIT	#BIT9,ASWR	
959	003106	001002				BNE	WCWAIT	;WAIT FOR FLAG IN WAIT INST.
960	003110	000004				IOT		;WAIT FOR FLAG IN BACKGROUND TEST
961	003112	000404				BR	XESH	
962	003114	016777	175722	175660	WCWAIT:	MOV	PRIORITY,APS	
963	003122	000001				WAIT		;WAIT FOR THE FLAG
964	003124	004767	001262		XESH:	JSR	%7,DISBUF	;SET UP THE DISK BUFFER
965	003130	000746				BR	SLH	
966	003132	005767	175706		MSTR:	TST	FLAG	
967	003136	100002				BPL	.+6	;UNDER PROGRAM CONTROL
968	003140	000167	000374			JMP	EXTPPR	;OPERATOR SELECTED PATTERN
969	003144	062767	000002	175704		ADD	#2,PATNU	;INC PATTERN INDEX
970	003152	022767	000044	175676		CMP	#44,PATNU	
971	003160	001402				BEQ	.+6	
972	003162	000167	177402			JMP	DATAT	;NOT LAST PATTERN EXIT
973	003166	005067	175664			CLR	PATNU	;LAST PATTERN EXIT

:THIS IS A RANDOM ADDRESS RANDOM DATA TEST

974											
975											
976	003172	012706	001000			RANEX:	MOV	#1000,%6			
977	003176	012767	177000	175702			MOV	#-1000,PASSC		;SET UP PASS COUNT	
978	003204	042767	001000	175632			BIC	#BIT9,FLAG		;CLR ERROR FLAG BIT	
979	003212	012767	003442	175662			MOV	#RANER,HRDER		;SET UP FOR HARD ERROR	
980	003220	012777	003776	175610			MOV	#DKINT,VECTOR		;SET UP INTERRUPT VECTOR	
981	003226	012777	000340	175604			MOV	#340,STATUS			
982	003234	016777	175602	175540			MOV	PRIORITY,APS		;SET PRIORITY TO LEVEL 5	
983	003242	012767	000001	175642		WRLG:	MOV	#1,WORK		;SET UP RANDOM GENERATOR WORD	
984	003250	012701	011432				MOV	#OUTBUF,%1			
985	003254	004567	001702				JSR	%5,RANDOM		;GENERATE RANDOM DATA	
986	003260	016767	006146	175566			MOV	OUTBUF,DMA		;SET UP DISK ADDRESS	
987	003266	042767	174000	175560			BIC	#174000,DMA			
988	003274	012767	000040	175546			MOV	#40,WRDCT		;SET UP WORD COUNT =1SECTOR	
989	003302	016767	175542	175602			MOV	WRDCT,WORK		;GENERATE RANDOM BUFFER	
990	003310	012701	011432				MOV	#OUTBUF,%1			
991	003314	004567	001642				JSR	%5,RANDOM			
992	003320	012767	011432	175532			MOV	#OUTBUF,BUF		;SET UP OUTPUT BUFFER	
993	003326	104503					WRITE	+100			
994	003330	032777	001000	175442			BIT	#BIT9,ASWR			
995	003336	001002					BNE	+.6			
996	003340	000004					IOT				
997	003342	000404					BR	+.12			
998	003344	016777	175472	175430			MOV	PRIORITY,APS		;LOCK UP CPU	
999	003352	000001					WAIT				
1000	003354	104507					WRCHECK	+100		;WRITE CHECK THE DISK	
1001	003356	032777	001000	175414			BIT	#BIT9,ASWR			
1002	003364	001002					BNE	+.6			
1003	003366	000004					IOT				
1004	003370	000404					BR	+.12			
1005	003372	016777	175444	175402			MOV	PRIORITY,APS			
1006	003400	000001					WAIT				
1007	003402	016767	175502	175450			MOV	INBUF,BUF			
1008	003410	104505					READ	+100			
1009	003412	032777	001000	175360			BIT	#BIT9,ASWR			
1010	003420	001002					BNE	+.6			
1011	003422	000004					IOT				
1012	003424	000404					BR	+.12			
1013	003426	016777	175410	175346			MOV	PRIORITY,APS			
1014	003434	000001					WAIT				
1015	003436	004567	001714				JSR	%5,COMPARE		;COMPARE THE DATA FOR ERRORS	

N02

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 26

1016	003442	032767	001000	175374	RANER:	BIT	#BIT9,FLAG	;TEST FOR ERRORS
1017	003450	001422				BEQ	EXRAX	;NO ERRORS
1018	003452	042767	001000	175364		BIC	#BIT9,FLAG	
1019	003460	004567	003334			JSR	%5,CONV	;SET UP FOR ADDRESS REPORT
1020	003464	001054				DMA		
1021	003466	010435				MES1		
1022	003470	000006				6		
1023	003472	004567	003322			JSR	%5,CONV	;SET UP WORD COUNT FOR REPORT
1024	003476	001050				WRDCT		
1025	003500	010521				MES3		
1026	003502	000006				6		
1027	003504	104000				EMT+0		
1028	003506	010403				HED6		
1029	003510	010435				MES1		
1030	003512	010521				MES3		
1031	003514	177777				-1		
1032	003516	005267	175364		EXRAX:	INC	PASSC	;+1 PASS COUNT
1033	003522	001247				BNE	WRLG	;BRANCH IF TEST NNT OVER
1034	003524	032777	004000	175246		BIT	#BIT11,2SWR	;LOOP ON TEST
1035	003532	001402				BEQ	+6	
1036	003534	000167	177432			JMP	RANEX	;YES LOOP ON TEST

```

1037      ;CHECK FOR MULTI DISK MODE
1038      ;IF IN MULTI DISK MODE REPORT "END"
1039      ;IF LAST DISK ON SYSTEM HAS BEEN
1040      ;EXERCISED.
1041
1042 003540 005067 175310      EXTPPR: CLR      DMA
1043 003544 032767 004000 175272      BIT      #BIT11,FLAG      ;ARE WE IN MULTI DISK MODE
1044 003552 001432      BEQ      REPOEN      ;REPORT "END"
1045 003554 016767 175264 175330      CHKDOS: MOV      FLAG,WORK      ;WHAT DISK ARE WE ON
1046 003562 042767 177763 175322      BIC      #177763,WORK      ;IF LAST DISK ON SYSTEM
1047 003570 026767 175316 175302      CMP      WORK,DSKNOR      ;REPORT END
1048 003576 001420      BEQ      REPOEN
1049 003600 016703 175306      MOV      WORK,%3      ;SET UP INDEX POINTER
1050 003604 000241      CLC
1051 003606 006003      ROR      %3      ;NORMALIZE
1052 003610 022763 000020 010272      CMP      #20,TABLE(3)      ;WHAT IS ERROR COUNT
1053 003616 101004      BHI      DRIVEROK      ;LESS THAN 20(8)-CONTINUE
1054 003620 062767 000004 175216      ADD      #4,FLAG      ;INC. DISK NO.
1055 003626 000752      BR      CHKDOS
1056 003630 062767 000004 175206      DRIVEROK: ADD      #4,FLAG      ;INC. DISK NO.
1057 003636 000414      BR      EXTPP      ;EXERCISE DISK
1058 003640 104001      REPOEN: EMT      +1      ;REPORT END OF PASS
1059 003642 011423      END
1060 003644 042767 000014 175172      BIC      #14,FLAG
1061 003652 013700 000042      MOV      #4,%0      ;GET MONITOR ADDRESS
1062 003656 001404      BEQ      EXTPP      ;SKIP IF NO HOOK
1063 003660 004710      LOGICAL: JSR      7,(0)      ;GO TO MONITOR
1064 003662 000240      NOP
1065 003664 000240      NOP
1066 003666 000240      NOP
1067 003670 000167 176262      EXTPP: JMP      ADTST      ;RECYCLE
1068
1069
1070      ;ENTER DISK HANDLER BY THE TRAP INSTRUCTION
1071      ;ARGUMENT TO TRAP INSTRUCTION IS TWO ORDER
1072      ;BYTE OF THE CONTROL REGISTER.
1073
1074 003674 012705 001030      DISK: MOV      #RCDA,%5      ;SET UP TO LOAD DISK REG
1075 003700 016775 175150 000000      MOV      DMA,%(5)      ;LOAD WORD ADDRESS
1076 003706 016767 175132 175176      MOV      FLAG,WORK
1077 003714 000367 175172      SWAB      WORK
1078 003720 006167 175166      ROL      WORK
1079 003724 042767 163777 175160      BIC      #163777,WORK
1080 003732 056775 175154 000000      BIS      WORK,%(5)
1081 003740 016755 175114      MOV      BUF,%-(5)      ;SET UP CURRENT ADDRESS
1082 003744 016755 175100      MOV      WRDCT,%-(5)      ;LOAD WORD COUNT
1083 003750 005475 000000      NEG      %(5)      ;SET UP TWO'S COMPLEMENT
1084 003754 011604      MOV      (6),%4
1085 003756 014467 175130      MOV      -(4),WORK      ;
1086 003762 042767 177600 175122      BIC      #177600,WORK
1087 003770 016755 175116      MOV      WORK,%-(5)      ;LOAD FUNCTION REG.
1088 003774 000002      RTI      ;RETURN FROM TRAP

```


C03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 28

```

1089          ;RC11 DISK INTERRUPT HANDLER
1090          ;ROUTINE CONTINUES ON ERRORS
1091
1092 003776 005046          DKINT: CLR      -(6)          ;CLEAR STACK
1093 004000 012746 004006  MOV      #1$,-(6)        ;SET RETURN
1094 004004 000002          RTI                      ;CLEAR T BIT
1095 004006 005777 175010  1$:  TST      @RCCS        ;TEST FOR ERROR
1096 004012 100402          BMI      +6              ;JUMP IF NO ERRORS
1097 004014 000167 000252  JMP      INTEXT          ;INC ERROR COUNT
1098 004020 004767 004224  JSR      %7,INCTAB        ;SET ERROR BIT
1099 004024 052767 001000 175012  BIS      @BIT9,FLAG    ;REPORT ERROR
1100 004032 017767 174762 175052  MOV      @RCER,WORK    ;CONVERT TO ASCII
1101 004040 004567 002754  JSR      %5,CONV
1102 004044 001112          WORK
1103 004046 010452          MES1A
1104 004050 000006          6
1105 004052 104001          EMT+1
1106 004054 010323          HED2
1107 004056 032777 000002 174736  BIT      @BIT1,@RCCS    ;CHECK FOR READ
1108 004064 001015          BNE      REDA            ;IF READING REPORT WHICH READ
1109 004066 016767 174752 175016  MOV      FLAG,WORK
1110 004074 042767 177774 175010  BIC      #177774,WORK
1111 004102 004567 002712  JSR      %5,CONV
1112 004106 001112          WORK
1113 004110 010625          MES13
1114 004112 000001          1
1115 004114 104001          EMT+1
1116 004116 010625          MES13

```

003

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 29

1117	004120	017767	174704	174764	REDA:	MOV	DRCCA,WORK	;SET UP 16 BITS OF ADDR.
1118	004126	004567	002666			JSR	%5,CONV	;CONVERT TO ASCII
1119	004132	001112				WORK		
1120	004134	010435				MES1		
1121	004136	000006				6		
1122	004140	104000				EMT+0		
1123	004142	010452				MES1A		
1124	004144	010435				MES1		
1125	004146	177777				-1		
1126	004150	017767	174646	174734		MOV	DRCCS,WORK	;SET UP STATUS
1127	004156	004567	002636			JSR	%5,CONV	
1128	004162	001112				WORK		
1129	004164	010467				MES2		
1130	004166	000006				6		
1131	004170	104001				EMT+1		
1132	004172	010467				MES2		
1133	004174	032777	040000	174620	CKHRDER:	BIT	%BIT14,DRCCS	;TEST FOR HARD ERROR
1134	004202	001411				BEQ	SOFTER	;GO AND CONTINUE SOFT ERROR
1135	004204	012706	001000		HRDEXIT:	MOV	%1000,%6	
1136	004210	032777	002000	174562		BIT	%BIT10,DSWR	;HALT ON ERROR
1137	004216	001401				BEQ	+.4	
1138	004220	000000				HALT		;YES HALT BIT 10 SET IN SWR
1139	004222	000177	174654			JMP	DRORDER	;EXIT HARD ERROR

E03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 30

1140	004226	005777	174572		SOFTER: TST	ARCWC		;CHECK FOR X-FER DONE
1141	004232	001417			BEQ	INTEXT		;EXIT FROM ROUTINE
1142	004234	032777	001000	174536	BIT	#BIT9,JSWR		
1143	004242	001402			BEQ	.+6		
1144	004244	162716	000002		SUB	#2,(6)		;X-FER NOT DONE SET UP FOR RETURN
1145	004250	032777	002000	174522	BIT	#BIT10,JSWR		;HALT ON ERROR
1146	004256	001401			BEQ	.+4		
1147	004260	000000			HALT			;YES HALT BIT10 SET IN SWR
1148	004262	052777	000001	174532	BIS	#1,ARCCS		;GO
1149	004270	000002			RTI			;RETURN TO WAIT INSTR.
1150								
1151	004272	032777	020000	174500	INTEXT: BIT	#BIT13,JSWR		;HALT ON COMPLETION FLAG
1152	004300	001401			BEQ	.+4		
1153	004302	000000			HALT			;YES BIT 13 SET IN SWR HALT
1154	004304	032777	001000	174466	BIT	#BIT9,JSWR		
1155	004312	001002			BNE	.+6		
1156	004314	012706	000774		MOV	#774,%6		;RESET STACK
1157	004320	000002			RTI			;EXIT
1158								
1159								
1160								
1161								
1162								
1163								
1164	004322	032777	000040	174450	OPDSEL: BIT	#BIT5,JSWR		;DOES SWR CONTAIN CYLINDER #
1165	004330	001001			BNE	.+4		
1166	004332	000205			RTS	%5		;NO! EXIT
1167	004334	017767	174440	174550	MOV	JSWR,WORK		;FETCH SWR
1168	004342	042767	177740	174542	BIC	#177740,WORK		;MASK CYLINDER BITS
1169	004350	000241			CLC			
1170	004352	006167	174534		ROL	WORK		
1171	004356	006167	174530		ROL	WORK		
1172	004362	006167	174524		ROL	WORK		
1173	004366	006167	174520		ROL	WORK		
1174	004372	006167	174514		ROL	WORK		
1175	004376	006167	174510		ROL	WORK		
1176	004402	056767	174504	174444	BIS	WORK,DMA		;LOAD CYLINDER BITS
1177	004410	000205			RTS	%5		;EXIT

;ROUTINE TO SET UP CYLINDER # FROM SWR
 ;CYLINDER NO. IN SWR 7-0
 ;ENTER FROM JSR %5, OPDSEL

F03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 31

```

1178 ;ROUTINE TO SETUP DISK BUFFERS
1179 ;ADD WORD COUNT TO STARTING DISK ADDRESSES
1180 ;COMPARE CALCULATED ADDRESS TO TERMINATING ADDRESS
1181
1182 004412 032777 000400 174360 DISBUF: BIT #BIT8,JSWR
1183 004420 001401 BEQ .+4
1184 004422 000207 RTS %7
1185 004424 004767 000370 JSR %7,BLSZ ;DEFINE BLOCK SIZE
1186 004430 016767 174450 174456 MOV BLOCK,WORK1
1187 004436 005267 174412 INCSEC: INC DMA ;+1 SECTOR COUNT
1188 004442 022767 004000 174404 CMP #4000,DMA ;DONE YET?
1189 004450 001467 BEQ BUFEXIT ;YES
1190 004452 005367 174426 DECBLK: DEC BLOCK ;-1 FROM BLOCK COUNT
1191 004456 001401 BEQ COMDAR COMDAR: MOV ;CMP DMA TO RCDA
1192 004460 000766 BR INCSEC ;RECYCLE
1193 004462 016767 174356 174430 COMDAR: MOV FLAG,WORK3
1194 004470 000367 174424 SWAB WORK3
1195 004474 006167 174420 ROL WORK3
1196 004500 042767 163777 174412 BIC #163777,WORK3
1197 004506 066767 174342 174404 ADD DMA,WORK3
1198 004514 042767 020000 174376 BIC #20000,WORK3
1199 004522 026777 174372 174300 CMP WORK3,RCDA ;COMPARE LOWER 16 BITS
1200 004530 001434 BEQ CMDAE
1201 004532 004567 002262 ERADR: JSR %5,CONV ;CONVERT DMA REG COUNT TO ASCII
1202 004536 001120 WORK3
1203 004540 010421 MESO
1204 004542 000006 6
1205 004544 017767 174260 174340 MOV RCDA,WORK
1206 004552 004567 002242 JSR %5,CONV
1207 004556 001112 WORK
1208 004560 010435 MES1
1209 004562 000006 6
1210 004564 104000 EMT +0 ;REPORT ERROR
1211 004566 010342 HED4
1212 004570 010421 MESO
1213 004572 010435 MES1
1214 004574 177777 -1
1215 004576 004767 003446 JSR %7,INCTAB ;INC ERROR COUNT
1216 004602 005067 174246 CLR DMA ;DISK ADDRESS ERROR RESTART PROGRAM
1217 004606 032777 002000 174164 BIT #BIT10,JSWR ;HALT ON ERROR
1218 004614 001401 BEQ .+4
1219 004616 000000 HALT ;SWITCH 10 SET IN SWR HALT
1220 004620 000207 RTS %7
1221
1222 004622 105767 174216 CMDAE: TSTB FLAG ;CHECK FOR LAST DISK BUFFER
1223 004626 100013 BPL BUFINX

```

G03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 32

1224	004630	005067	174220		BUFEXIT: CLR	DMA		;CLEAR ADDRESS BITS
1225	004634	062716	000002			#2 (6)		;INC STOCK POINTER
1226	004640	042767	000200	174176	AKH: BIC	#200, FLAG		
1227	004646	016767	174214	174174		SWRDCI, WRDCI		
1228	004654	000442			BR	EXTDR		;EXIT
1229	004656	005067	174234		BUFINX: CLR	WORK2		;BLOCK COUNT
1230	004662	016767	174166	174222		DMA, WORK		
1231	004670	005267	174222		XINCSEC: INC	WORK2		;NEW BLOCK COUNT
1232	004674	022767	003777	174210		#3777, WORK		;CMP FOR LAST SECTOR
1233	004702	001406			BEQ	XINC SUR		;+1 SURFACE
1234	004704	005267	174202		INC	WORK		
1235	004710	005367	174200		CONTINC: DEC	WORK1		;DEC BLOCK COUNT
1236	004714	001365			SNE	XINCSEC		;LAST BLOCK?
1237	004716	000750			BR	AKH		;SO ANOTHER STANDARD WD COUNT
1238	004720	016767	174172	174122	XINC SUR: MOV	WORK2, WRDCI		;CONVERT BLOCK COUNT TO WC
1239	004726	000241			CLC			
1240	004730	006167	174114		ROL	WRDCI		
1241	004734	006167	174110		ROL	WRDCI		
1242	004740	006167	174104		ROL	WRDCI		
1243	004744	006167	174100		ROL	WRDCI		
1244	004750	006167	174074		ROL	WRDCI		
1245	004754	052767	000200	174062	BIS	#200, FLAG		
1246	004762	000207			EXTDR: RTS	%7		;EXIT
1247								
1248								
1249								
1250	004764	016767	174054	174120	DSKNOS: MOV	FLAG, WORK		;FETCH THE FLAG WORD
1251	004772	000367	174114		SWAB	WORK		
1252	004776	006167	174110		ROL	WORK		
1253	005002	042767	163777	174102	BIC	#163777, WORK		;MASK THE DISK NUMBER
1254	005010	056777	174076	174012	BIS	WORK, ARCD A		;LOAD THE ADDRESS IN TH ADDRESS REG
1255	005016	000205			RTS	%5		;EXIT

;ROUTINE TO SET UP THE DISK NUMBER FOR THE ADDRESS TEST

H03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 33

```

1256                                     ;THIS ROUTINE CONVERTS A WORD COUNT TO A BLOCK COUNT
1257
1258 005020 012767 000037 174056 BLSZ:  MOV  #37,BLOCK
1259 005026 016767 174016 174056      MOV  WRDCT,WORK      ;FETCH WORD COUNT
1260 005034 036767 174044 174050      BIT   BLOCK,WORK
1261 005042 001410      BEQ   RORBLK
1262 005044 046767 174034 174040      BIC   BLOCK,WORK      ;SET UP BLOCK OVERFLOW
1263 005052 005267 174026      INC   BLOCK
1264 005056 066767 174022 174026      ADD   BLOCK,WORK
1265 005064 000241      RORBLK: CLC
1266 005066 006067 174020      ROR   WORK
1267 005072 006067 174014      ROR   WORK
1268 005076 006067 174010      ROR   WORK
1269 005102 006067 174004      ROR   WORK
1270 005106 006067 174000      ROR   WORK
1271 005112 016767 173774 173764      MOV  WORK,BLOCK      ;BLOCK COUNT
1272 005120 000207      RTS   %7      ;EXIT
1273
1274
1275                                     ;ROUTINE TO SELECT DATA PATTERNS FOR TEST
1276
1277                                     ;ENTER FROM JSR %5,PASEL
1278
1279 005122 016700 173730      PASEL:  MOV  PATNU,%0      ;SET UP PATTERN NUMBER
1280 005126 016767 173716 173756      MOV  WRDCT,WORK      ;SET UP WORK
1281 005134 012701 011432      MOV  #OUTBUF,%1      ;LOC. OF OUTBUFFER
1282 005140 022700 000042      CMP   #42,%0      ;TEST FOR RANDOM DATA NUMBER
1283 005144 001406      BEQ   RANDOM      ;GO GENERATE RANDOM DATA
1284 005146 016021 005314      FILDAT: MOV  PAT0(0),(1)+      ;FILL BUFFER
1285 005152 005367 173734      DEC   WORK      ;DEC. WORK COUNT
1286 005156 001373      BNE   FILDAT      ;LOAD NEXT WORD
1287 005160 000205      RTS   %5      ;BUFFER FULL

```



```

1288 ;RANDOM DATA GENERATOR SUBROUTINE
1289
1290 005162 016700 000122 RANDOM: MOV LONUM,%0 ;SET UP R0 WITH 5 DIGITS LOW
1291 005166 016704 000120 MOV HINUM,%4 ;SET UP R1 WITH 5 DIGITS HIGH
1292 005172 012703 000007 MOV #7,%3 ;SET UP SHIFT COUNT
1293 005176 005002 CLR %2 ;CLEAR R2
1294 005200 006300 SHIFT: ASL %0 ;SHIFT R0 LEFT AND
1295 005202 006104 ROL %4 ;ROTATE CARRY INTO LSB OF R1 INTO
1296 005204 006102 ROL %2 ;ROTATE CARRY OUT OF R1 INTO R2
1297 005206 005303 DEC %3 ;DECREMENT R3
1298 005210 001373 BNE SHIFT ;CONTINUE SHIFT LOOP
1299 005212 066700 000072 ADD LONUM,%0 ;ADDN IN NUMBER TO MAKE X 129
1300 005216 005504 ADC %4 ;PROPOGATE CARRY
1301 005220 066704 000066 ADD HINUM,%4 ;ADDN IN NUMBER TO MAKE X 129
1302 005224 005502 ADC %2 ;PROPOGATE CARRY
1303 005226 062700 001057 ADD #1057,%0 ;ADDN LOW CONSTANT
1304 005232 005504 ADC %4 ;PROPOGATE CARRIES
1305 005234 005502 ADC %2 ;PROPOGATE AGAIN
1306 005236 062704 047401 ADD #47401,%4 ;ADDN HIGH CONSTANT
1307 005242 005502 ADC %2 ;PROPOGATE CARRY
1308 005244 062702 000006 ADD #6,%2 ;ADDN HIGHEST CONSTANT
1309 005250 062700 000002 ADD #2,%0 ;REPRIME R0 WITH HIGH DIGIT
1310 005254 005504 ADC %4 ;PROPOGATE CARRY
1311 005256 010067 000026 MOV %0,LONUM ;PUT R0 BACK IN LONUM
1312 005262 010021 MOV %0,(1)+ ;HOLD LONUM FOR PROGRAM
1313 005264 005367 173622 DEC WORK
1314 005270 001406 BEQ EXGEN
1315 005272 010467 000014 MOV %4,HINUM ;PUT R1 BACK IN HINUM
1316 005276 010421 MOV %4,(1)+ ;HOLD HINUM FOR PROGRAM
1317 005300 005367 173606 DEC WORK
1318 005304 001326 BNE RANDOM
1319 005306 000205 EXGEN: RTS ;RETURN TO PROGRAM
1320 005310 000000 LONUM: 0
1321 005312 000000 HINUM: 0

```

```
PAT0: 0
PAT1: 177777
PAT2: 134510
PAT3: 043267
PAT4: 100000
PAT5: 107070
PAT6: 070707
PAT7: 052525
PAT10: 125252
PAT11: 177737
PAT12: 004102
PAT13: 136363
PAT14: 063636
PAT15: 000001
PAT16: 100005
PAT17: 000520
PAT20: 030303
:PAT21 RANDOM DATA
```

```

COMPARE: CLR      WORK2           ;WORD COUNT
          CLR      WORK1
          MOV      DMA,WORK
          MOV      #40,BLOCK      ;LO DENSITY DRIVE
          MOV      #OUTBUF,SAVE   ;SET UP OUTBUFFER POINTER
          MOV      INBUF,SAV1     ;SET UP IN BUFFER POINTER
WRDCMP:  CMP      @SAVE,@SAV1     ;COMPARE BUFFERS
          BNE      WDERR          ;WORD IN ERROR
WRDINC:  INC      WORK2           ;+1 WORD COUNT
          INC      WORK1
          CMP      WRDCT,WORK2    ;IS COMPLETE BUFFER CHECKED
          BEQ      ADAM          ;EXIT ROUTINE
          BIT      BLOCK,WORK1
          BEQ      BLAD1
BALDIX:  INC      WORK
          CLR      WORK1
BLAD1:   ADD      #2,SAVE
          ADD      #2,SAV1
          BR       WRDCMP        ;COMPARE NEXT WORD
ADAM:    RTS          %5         ;EXIT THIS ROUTINE

```


K03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 36

1367	005506	052767	001000	173330	WDERR:	BIS	#BIT9,FLAG	;SET ERROR BIT
1368	005514	004567	001300			JSR	%5,CONV	;CONVERT WORD ADDR TO ASCII
1369	005520	001112				WORK		
1370	005522	010435				MES1		
1371	005524	000006				6		
1372	005526	004567	001266			JSR	%5,CONV	
1373	005532	001114				WORK.1		
1374	005534	010543				MES4		
1375	005536	000002				2		
1376	005540	017767	173326	001332		MOV	QSAVE,ACNVX	;FETCH GOOD DATA
1377	005546	004567	001246			JSR	%5,CONV	;CONVERT GOOD DATA TO ASCII
1378	005552	007100				ACNVX		
1379	005554	010563				MES5X		
1380	005556	000006				6		
1381	005560	017767	173310	001312		MOV	QSAV1,ACNVX	;FETCH BAD DATA
1382	005566	004567	001226			JSR	%5,CONV	;CONVERT TO ASCII
1383	005572	007100				ACNVX		
1384	005574	010575				MES6X		
1385	005576	000006				6		
1386	005600	016767	173240	001272		MOV	FLAG,ACNVX	;WHICH READ THE
1387	005606	042767	177774	001264		BIC	#177774,ACNVX	;ERROR OCCURRED ON
1388	005614	004567	001200			JSR	%5,CONV	
1389	005620	007100				ACNVX		
1390	005622	010625				MES13		
1391	005624	000001				1		
1392	005626	104000				EMT	+0	;PRINT MESSAGE
1393	005630	010306				HED1		
1394	005632	010625				MES13		
1395	005634	010435				MES1		
1396	005636	010543				MES4		
1397	005640	010560				MES5		
1398	005642	010572				MES6		
1399	005644	177777				-1		
1400	005646	032777	002000	173124		BIT	#BIT10,QSWR	;HALT ON ERROR
1401	005654	001401				BEQ	.+4	
1402	005656	000000				HALT		;YES HALT BIT 10 SET IN SWR
1403	005660	000662				BR	WRDINC	;GO COMPARE NEXT WORD

```

1404 ;EXTENDED MEMORY EXERCISER
1405 ;THE PROGRAM DETERMINES HOW MUCH MEMORY
1406 ;IS ON THE SYSTEM THEN IT
1407 ;GENERATES A RANDOM BUFFER THAT SIZE
1408 ;AND WRITES AND WRITE CHECKS THE DATA
1409
1410 005662 012777 000340 173112 EXTMEN: MOV #340,APS ;LOCK UP PRIORITY LEVELS
1411 005670 013767 000042 173174      MOV @#42,SAVE ;GET MONITOR ADDRESS
1412 005676 001410      BEQ 1$ ;SKIP IF 0
1413 005700 100432      BMI LGMEM ;GREATER THAN 16K
1414 005702 162767 000020 173162      SUB #20,SAVE ;DEC IT
1415 005710 022767 011432 173154      CMP #OUTBUF,SAVE ;IS IT ACT11?
1416 005716 100432      BMI GOTMEM ;NO - SKIP
1417 005720 012767 005776 172056 1$: MOV #MAXREF,4 ;SET UP I/O BUS TRAP
1418 005726 012767 000340 172052      MOV #340,6
1419 005734 012767 017446 173130      MOV #17446,SAVE ;SET UP FOR 4K
1420 005742 005777 173124      EXREF: TST @SAVE ;REFERENCE MEMORY
1421 005746 022767 177446 173116      CMP #177446,SAVE ;TEST FOR GREATER THAN 28K
1422 005754 001410      BEQ MAXREF ;LAST REFERENCE MADE TO I/O REG.
1423 005756 062767 020000 173106      ADD #20000,SAVE ;SET UP FOR NEXT MEMORY REF.
1424 005764 000766      BR EXREF ;GO REFERENCE MEMORY
1425 005766 162767 000024 173076 LGMEM: SUB #24,SAVE ;DEC IT
1426 005774 000403      BR GOTMEM
1427
1428 ;ENTER HERE WHEN I/O BUS ERROR OCCURS
1429
1430 005776 162767 020000 173066 MAXREF: SUB #20000,SAVE
1431 006004 012767 000006 171772 GOTMEM: MOV #6,4 ;RESTORE I/O BUS TRAP
1432 006012 005067 171770      CLR 6
1433 006016 162767 011432 173046      SUB #OUTBUF,SAVE ;SET UP NEW WORD COUNT
1434 006024 006067 173042      ROR SAVE
1435 006030 016767 173036 173012      MOV SAVE,WRDCT ;
1436 006036 042767 000001 173026      BIC #BIT0,SAVE
1437 006044 012767 011432 173036      MOV #OUTBUF,INBUF
1438 006052 066767 173014 173030      ADD SAVE,INBUF
1439 006060 006067 172764      ROR WRDCT
1440 006064 042767 000027 172756      BIC #37,WRDCT
1441 006072 004767 176722      JSR %7,BLSZ
1442 006076 000241      BUFOK: CLC
1443 006100 006167 173000      ROL BLOCK
1444 006104 006167 172774      ROL BLOCK
1445 006110 006167 172770      ROL BLOCK
1446 006114 006167 172764      ROL BLOCK
1447 006120 006167 172760      ROL BLOCK
1448 006124 016767 172754 172734      MOV BLOCK,SWRDCT
1449 006132 000205      RTS %5

```

M03

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 38

```

1450 ;BACKGROUND TEST FOR INTERRUPTS
1451
1452 006134 012767 006262 171652 XWAIT: MOV #RTIX,14 ;SET UP TRACE TRAP
1453 006142 005067 171650 CLR 16
1454 006146 012737 006170 000010 MOV #15,2#10 ;SET ILL INST.
1455 006154 006727 000000 SXT #0 ;TEST FOR 11/45
1456 006160 012767 000006 000074 MOV #6,RTIX ;MAKE IT AN RTT
1457 006166 000401 BR 2$ ;SKIP JUNK
1458 006170 022626 1$: CMP (6)+,(6)+ ;CLEAR STACK
1459 006172 012737 000012 000010 2$: MOV #12,2#10 ;RESET 10
1460 006200 005067 172672 CLR PASS ;SET UP TIME BASE
1461 006204 012746 000020 MOV #RTIX,-(6) ;SET TRACE TRAP BIT
1462 006210 012746 006216 MOV #16,-(6)
1463 006214 000002 RTI ;RETURNS TO NEXT LOC WITH T BIT SET
1464 006216 005027 000000 CLR #0
1465 006222 005267 177772 XINCW: INC XINCW-2
1466 006226 105767 177766 TSTB XINCW-2
1467 006232 100373 BPL XINCW
1468 006234 005267 172636 INC PASS
1469 006240 001401 BEQ .+4
1470 006242 000765 BR XINCW-4
1471 ;REPORT BACKGROUND TEST TIMED OUT
1472 006244 005046 CLR -(6) ;CLEAR PS ON STACK
1473 006246 012746 006254 MOV #15,-(6) ;SET RETURN
1474 006252 000002 RTI ;CLEAR TRACE BIT
1475 006254 104001 1$: EMT+1
1476 006256 010642 TIMO
1477 006260 000000 HALT
1478 006262 000002 RTIX: RTI
1479
1480 ;ROUTINE TO ALLOW THE OPERATOR TO SET BITS
1481 ;THIS ROUTINE ENABLES THE OPERATOR TO SELECT A TRACK STATICLY
1482 ;THE ROUTINE DOES A ONE WORD READ TO SELECT THE TRACK
1483 ;THE OPERATOR MAY CHANGE THE SWITCH REGISTER AT ANY TIME
1484 ;SWR4-0 EQUALS THE TRACK NUMBER
1485 ;SWR6-5 EQUALS THE DISK NUMBER
1486
1487 006264 017767 172510 172622 TKSEL: MOV 2SWR,WORK1 ;FETCH SWR
1488 006272 017767 172502 172616 MOV 2SWR,WORK2
1489 006300 042767 177600 172606 BIC #177600,WORK1 ;MASK DISK AND TRACK NO.
1490 006306 016767 172602 172576 MOV WORK1,WORK
1491 006314 000241 CLC
1492 006316 006167 172570 ROL WORK
1493 006322 006167 172564 ROL WORK
1494 006326 006167 172560 ROL WORK
1495 006332 006167 172554 ROL WORK
1496 006336 006167 172550 ROL WORK
1497 006342 006167 172544 ROL WORK
1498 006346 016777 172540 172454 MOV WORK,2ARCD A ;DISK ADDRESS LOADED
1499 006354 016777 172530 172444 MOV INBUF,2ARCB A ;LOAD CURRENT ADDRESS
1500 006362 012777 177777 172434 MOV #177777,2ARCC W ;LOAD WORD COUNT
1501 006370 012777 000005 172424 MOV #5,2ARCC S ;GO AND READ
1502 006376 105777 172420 TSTB 2ARCC S ;TEST FOR READY
1503 006402 100375 BPL .-4
1504 006404 026777 172506 172366 SRCHG: CMP WORK2,2SWR
1505 006412 001324 BNE TKSEL ;SWR HAS CHANGED

```

N03.

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 39

1506 006414 000773

BK

SRCHG

;LOOP ON SAME ADDR

B04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 40

```

1507          ;ROUTINE TO REPORT ERROR COUNT AND CONTENTS OF ONE REGISTER
1508
1509 006416 004567 000376 STAER: JSR      %5,CONV      ;CONVERT OCTAL TO ASCII
1510 006422 001112          WORK          ;DATA TO BE CONVERTED
1511 006424 010575          MES6X         ;ADDRESS OF MESSAGE
1512 006426 000006          6
1513 006430 004567 000364 JSR      %5,CONV      ;CONVERT OCTAL TO ASCII
1514 006434 001070          ERCOUNT        ;
1515 006436 010401          HED5X         ;ADDRESS OF MESSAGE
1516 006440 000001          1
1517 006442 104000          EMT           +0      ;REPORT MESSAGE
1518 006444 010372          HED5
1519 006446 010572          MES6
1520 006450 177777          -1
1521 006452 004767 001572 JSR      %7,INCTAB    ;INCREMENT ERROR COUNT
1522 006456 000426          BR      STAERX
1523
1524          ;ROUTINE TO REPORT ERROR COUNT AND THE CONTENTS OF TWO REGISTERS
1525
1526 006460 004567 000334 STAER1: JSR      %5,CONV      ;CONVERT OCTAL TO ASCII
1527 006464 001112          WORK          ;DATA TO BE CONVERTED
1528 006466 010575          MES6X         ;ADDRESS OF MESSAGE
1529 006470 000006          6
1530 006472 004567 000322 JSR      %5,CONV      ;CONVERT OCTAL TO ASCII
1531 006476 001114          WORK1         ;DATA TO BE CONVERT
1532 006500 010563          MES5X         ;ADDRESS OF MESSAGE
1533 006502 000006          6
1534 006504 004567 000310 JSR      %5,CONV      ;CONVERT OCTAL TO ASCII
1535 006510 001070          ERCOUNT        ;
1536 006512 010401          HED5X         ;ADDRESS OF MESSAGE
1537 006514 000001          1
1538 006516 104000          EMT           +0      ;REPORT MESSAGE
1539 006520 010372          HED5
1540 006522 010563          MES5
1541 006524 010572          MES6
1542 006526 177777          -1
1543 006530 004767 001514 JSR      %7,INCTAB    ;INCREMENT ERROR COUNT
1544 006534 032777 002000 STAERX: BIT      #BIT10,JSWR
1545 006542 001401          BEQ      .+4
1546 006544 000000          HALT
1547 006546 000205          RTS      %5      ;EXIT ROUTINE
1548
1549          ;ROUTINE TO DECODE EMT CALLS
1550          ;EMT+1=TYPE ONE LINE OF TEXT
1551          ;EMT+0=TYPE A SERIES OF LINES
1552
1553 006550 011600          EMTRP: MOV      (6),%0
1554 006552 022740 104001 CMP      #EMT+1,-(0)    ;WAS THE CALL EMT+1
1555 006556 001103          BNE      TYP        ;NO! TYPE A SERIES OF LINES OF TEXT
1556 006560 000430          B?      TYP        ;YES TYPE ONE LINE OF TEXT

```

```

1557      ;SUBROUTINE TO OUTPUT ASCII MESSAGES ON THE TTY
1558
1559      006562 011600      TYP:  MOV  2%6,%0      ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1560      006564 062716 000002      ADD  2,2%6      ;SET UP EXIT.
1561      006570 011000      MOV  2%0,%0      ;ADDRESS OF MESSAGE TO RD.
1562      006572 112067 000164      TYP:  MOV  (0)+,TYPDAT      ;GET CHARACTER
1563      006576 122767 000100 000156      CMPB  100,TYPDAT      ;CHECK FOR "2" CHARACTER
1564      006604 001005      BNE  TYP      ;BRANCH IF NOT "2".
1565      006606 005067 000150      CLR  TYPDAT      ;OUTPUT NULL TO
1566      006612 004767 000030      JSR  7,TYP      ;CLEAR BUFFER
1567      006616 000002      RTI      ;TERMINATOR CHAR. DONE. EXIT.
1568      006620 122767 000045 000134      TYP:  CMPB  45,TYPDAT      ;CHECK FOR "%".
1569      006626 001442      BEQ  TYP      ;BRANCH IF "%".
1570      006630 122767 000042 000124      CMPB  42,TYPDAT      ;NOT "%". CHECK FOR "2".
1571      006636 001443      BEQ  TYP      ;BRANCH IF "2".
1572      006640 004767 000002      JSR  7,TYP      ;TYPE CHAR IN TYPDAT
1573      006644 000752      BR  TYP
1574      006646 032777 040000 172124      TYP:  BIT  8BIT14,2SWR
1575      006654 001026      BNE  TYEXIT
1576      006656 116777 000100 172120      MOV  TYPDAT,2TPB      ;OUTPUT CHARACTER TO PRINTER
1577      006664 105777 172120      TSTB  2TPB      ;WAIT FOR DONE FLAG.
1578      006670 100375      BPL  -4
1579      006672 122767 000015 000062      CMPB  15,TYPDAT      ;CHECK FOR CR
1580      006700 001003      BNE  15      ;NO-SKIP
1581      006702 012767 000011 000054      MOV  9, NULL      ;SET NULL COUNTER
1582      006710 005767 000050      IS:  TST  NULL      ;TEST COUNTER
1583      006714 001406      BEQ  TYEXIT      ;ZERO-EXIT
1584      006716 005367 000042      DEC  NULL      ;DECREMENT
1585      006722 112767 000000 000032      MOV  0,TYPDAT      ;ZERO OUTPUT
1586      006730 000746      BR  TYP      ;OUTPUT NULL
1587      006732 000207      TYEXIT: RTS  7      ;EXIT
1588      006734 112767 000015 000020      TYP:  MOV  15,TYPDAT      ;MOVE CARRIAGE RETURN CODE TO TYPDAT
1589      006742 004767 177700      JSR  7,TYP      ;GO TYPE CHAR.
1590      006746 112767 000012 000006      TYP:  MOV  12,TYPDAT      ;MOVE LF CODE TO TYPDAT.
1591      006754 004767 177666      JSR  7,TYP      ;GO TYPE CHAR.
1592      006760 000704      BR  TYP
1593      006762 000000      TYPDAT: 0
1594      006764 000000      NULL: 0
1595      ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
1596      006766 011600      TYP:  MOV  2%6,%0      ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
1597      006770 062716 000002      ADD  2,2%6      ;UPDATE TO NEXT MESSAGE ADDRESS
1598      006774 011067 000014      MOV  2%0,TYPSB      ;ADDRESS OF MESSAGE TO TYPSB
1599      007000 022767 177777 000006      CMP  1,TYPSB      ;CHECK FOR TERMINATOR
1600      007006 001001      BNE  TYPSA      ;BRANCH IF NOT TERMINATOR.
1601      007010 000002      RTI      ;TERMINATOR. EXIT
1602      007012 104001      TYP:  EMT  +1      ;CALL ON TYP SUB TO TYPE MESSAGE
1603      007014 000000      TYPSB: 0      ;ADDRESS OF MESSAGE GOES HERE
1604      007016 000763      BR  TYPS      ;GO PROCESS NEXT MESSAGE
1605
1606      ;OCTAL TO ASCII CONVERT ROUTINE
1607
1608      ;ENTER ROUTINE AS FOLLOWS
1609      ;JSP%5,CONV
1610      ;ADDR=ADDRESS OF NUMBER TO BE CONVERTED
1611      ;ADDR BYTE=LSB OF WHERE ASCII IS GOING
1612

```


D04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 42

1613
1614
1615 007020 013567 000054
1616 007024 012501
1617 007026 012502
1618 007030 060201

:ASCII#=THE NUMBER OF ASCII CHAR. TO BE CONVERTED

CONV: MOV 2(5)+,ACNVX ;VALUE OF # TO BE CONVERTED
MOV (5)+,%1 ;ASCII ADDR
MOV (5)+,%2 ;# OF ASCII CHAR
ADD %2,%1

E04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 43

1619	007032	016703	000042		ACVN:	MOV	ACNVX,%3	
1620	007036	042703	177770			BIC	#177770,%3	;ISOLATE LEAST SIGNIFICANT OCTAL#
1621	007042	062703	000060			ADD	#60,%3	;SET UP ASCII#
1622	007046	110341				MOVB	%3,-(1)	;STORE ASCII CHAR
1623	007050	042767	000007	000022		BIC	#7,ACNVX	
1624	007056	006067	000016			ROR	ACNVX	;ROTATE OCTAL#
1625	007062	006067	000012			ROR	ACNVX	
1626	007066	006067	000006			ROR	ACNVX	
1627	007072	005302				DEC	%2	; -1 FROM ASCII CHAR COUNT
1628	007074	001356				BNE	ACVN	
1629	007076	000205				RTS	%5	;EXIT # CONVERTED
1630	007100	000000			ACNVX:	0		;WORK REGISTER
1631								
1632								;ROUTINE TO HANDLE KEYBOARD CONVERSATION
1633								;ROUTINE ACCEPTS NUM. OR ALPHA CHARACTERS
1634								
1635	007102	012767	000040	001174	NOCHA:	MOV	#40,TSTCH	;SET UP FOR NUM. CHAR.
1636	007110	000403				BR	TYST	
1637	007112	012767	000100	001164	ALPHA:	MOV	#100,TSTCH	;SET UP FOR ALPHA CHAR
1638	007120	012777	000340	171654	TYST:	MOV	#340,%PS	;LOCK UP INTERRUPTS
1639	007126	005067	001150			CLR	TEXBUF	;CLEAR TEXT BUFFER REG
1640	007132	105777	171654		TSTFLG:	TSTB	%TKS	;CHECK FOR FLAG
1641	007136	100375				BPL	TSTFLG	
1642	007140	017777	171642	171636		MOV	%TKB,%TPB	;CHARACTER IN BUFFER
1643	007146	105777	171636			TSTB	%TPS	;ECHO CHARACTER
1644	007152	100375				BPL	.-4	
1645	007154	022777	000377	171624		CMP	#377,%TKB	;CHECK FOR RUB-OUT
1646	007162	001014				BNE	CKCH	;EXIT IF NOT RUB-OUT
1647	007164	104001				EMT	+1	
1648	007166	010606				MESB		;REPORT RUB-OUT ACKNOWLEDGED
1649	007170	042767	000007	001104		BIC	#7,TEXBUF	
1650	007176	006067	001100			ROR	TEXBUF	
1651	007202	006067	001074			ROR	TEXBUF	
1652	007206	006067	001070			ROR	TEXBUF	
1653	007212	000747				BR	TSTFLG	;GO WAIT FOR NEW CHAR.
1654	007214	022777	000215	171564	CKCH:	CMP	#215,%TKB	;CHECK FOR CARRIAGE RETURN
1655	007222	001001				BNE	.-4	
1656	007224	000207				RTS	%7	;EXIT DELIMITER TYPED
1657	007226	036777	001052	171552		BIT	TSTCH,%TKB	
1658	007234	001003				BNE	CHOK	
1659	007236	104001				EMT	+1	;REPORT QUESTION MARK
1660	007240	010604				MES7		
1661	007242	000733				BR	TSTFLG	;WAIT FOR CORRECT CHAR.
1662	007244	017767	171536	171640	CHOK:	MOV	%TKB,WORK	
1663	007252	042767	177770	171632		BIC	#177770,WORK	
1664	007260	000241				CLC		
1665	007262	006167	001014			ROL	TEXBUF	
1666	007266	000241				CLC		
1667	007270	006167	001006			ROL	TEXBUF	
1668	007274	000241				CLC		
1669	007276	006167	001000			ROL	TEXBUF	
1670	007302	066767	171604	000772		ADD	WORK,TEXBUF	;ADD CHARACTER
1671	007310	000710				BR	TSTFLG	;WAIT FOR NEW CHARACTER

F04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 44

```

1672 ;RC11 POWER FAIL TEST #1
1673 ;DISK ZERO
1674 ;WRITE COMPLETE DISK WITH 125252 PATTERN
1675 ;REPORT "OK"
1676 ;START WRITING THE SAME PATTERN
1677 ;WHEN POWER FAIL OCCURS ABORT TRANSFER
1678 ;SETUP NEW ENTRY POINT AND HALT
1679
1680 ;POWER UP AND WRITE CHECK THE DISK FOR ERRORS
1681
1682 ;***ONLY ONE ERROR IS CONSIDERED ACCEPTABLE***
1683
1684 007312 012706 001000 PFT1: MOV #1000,%6 ;SET UP STACK
1685 007316 004767 000374 JSR %7,POWFAL ;WRITE 125252 ON DISK
1686 007322 005067 171526 PFWAT: CLR DMA
1687 007326 005067 171520 CLR TRACK
1688 007332 012767 007322 171542 MOV #PFWAT,HRDER ;SET UP FOR HARD ERROR
1689 007340 012767 007470 170456 MOV #DOWN,%4 ;SET UP POWER FAIL VEC.
1690 007346 012767 000340 170452 MOV #340,%6
1691 007354 104503 MYBYWR: WRITE +100
1692 007356 032777 001000 171414 BIT #BIT9,%SWR
1693 007364 001002 BNE .+6
1694 007366 000004 IOT
1695 007370 000404 BR .+12
1696 007372 016777 171444 171402 MOV PRIORITY,%PS
1697 007400 000001 WAIT
1698 007402 004767 175004 JSR %7,DISBUF ;SET UP NEW DISK BUFFER
1699 007406 000762 BR MYBYWR
1700 007410 000744 BR PFWAT
1701
1702 ;ROUTINE TO CHECK DATA AFTER POWER FAIL
1703
1704 007412 005067 171436 UPCHK: CLR DMA
1705 007416 005067 171430 CLR TRACK
1706 007422 012767 007412 171452 MOV #UPCHK,HRDER ;SET UP FOR HARD ERROR
1707 007430 104507 CHKDAT: WRCHECK +100
1708 007432 032777 001000 171340 BIT #BIT9,%SWR
1709 007440 001002 BNE .+6
1710 007442 000004 IOT
1711 007444 000404 BR .+12
1712 007446 016777 171370 171326 MOV PRIORITY,%PS
1713 007454 000001 WAIT
1714 007456 004767 174730 JSR %7,DISBUF ;SET UP NEW DISK BUFFER
1715 007462 000762 BR CHKDAT
1716 007464 000167 177632 JMP PFWAT ;GO WAIT FOR ANOTHER
1717 ;POWER FAIL

```

G04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 45

```

1718          ;POWER DOWN ROUTINE
1719          ;ABORT DISK AND HALT
1720
1721 007470 052777 000400 171324 DOWN: BIS      #BIT8,DRCCS      ;ABORT DISK
1722 007476 012767 007506 170320      MOV      #UP,24          ;SET POWER FAIL VECTOR
1723 007504 000000
1724
1725 007506 012767 007470 170310 UP:    MOV      #DOWN,24
1726 007514 012706 001000      MOV      #1000,%6
1727 007520 012767 177324 171364      MOV      #-300,WORK      ;SET UP TWENTY SECOND TIMER
1728 007526 000005 TIMCNT: RESET
1729 007530 005267 171356      INC      WORK              ;+1 TIMER
1730 007534 001374      BNE      TIMCNT          ;TWO SECONDS NOT UP GO WAIT
1731 007536 104001      EMT      +1              ;REPORT PWR FAIL
1732 007540 010702      PWRF
1733 007542 000167 177644      JMP      UPCHK          ;GO CHECK DISK
1734
1735
1736          ;POWER FAIL TEST #2
1737          ;DISK ZERO
1738          ;WRITE COMPLETE DISK WITH 125252 PATTERN
1739          ;REPORT "OK"
1740          ;WRITE CHECK DISK AND WAIT FOR POWER FAIL
1741          ;WHEN POWER COMES BACK WRITE CHECK DISK AGAIN
1742          ;AND CHECK FOR ERRORS
1743          ;***NO ERRORS SHOULD OCCUR.***
1744
1745          ;DO NOT CREATE ANOTHER POWER FAIL UNTIL
1746          ;THE ADDRESS REGISTER HAS COMPLETELY CYCLED
1747          ;THROUGH.
1748
1749 007546 012706 001000 PFT2:  MOV      #1000,%6      ;SET UP STACK
1750 007552 004767 000140      JSR      %7,POWFAL      ;WRITE 125252 ON DISK
1751 007556 005067 171272 PWRFL:  CLR      DMA
1752 007562 005067 171264      CLR      TRACK
1753 007566 012767 007556 171306      MOV      #PWRFL,HRDR      ;SET UP HARD ERROR
1754 007574 012767 007646 170222      MOV      #PWRDN,24      ;SET UP POWER FAIL VEC.
1755 007602 012767 000340 170216      MOV      #340,26
1756 007610 104507 CHKDSK: WRCHECK +100
1757 007612 032777 001000 171160      BIT      #BIT9,DSWR
1758 007620 001002      BNE      .+6
1759 007622 000004      IOT
1760 007624 000404      BR      .+12
1761 007626 016777 171210 171146      MOV      PRIORITY,SPS
1762 007634 000001      WAIT
1763 007636 004767 174550      JSR      %7,DISBJF      ;CHECK NEXT BUFFER
1764 007642 000762      BR      CHKDSK
1765 007644 000744      BR      PWRFL

```

H04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 46

```

1766 ;ROUTINE TO ABORT DISK DURING POWER FAIL
1767
1768 007646 052777 000400 171146 PWRDN: BIS #BIT8,DRCCS ;CLEAR THE DISK
1769 007654 012767 007664 170142 MOV #PWRFL,24 ;SET UP RESTART
1770 007662 000000 HALT
1771
1772 007664 012767 007646 170132 PWRUP: MOV #PWRDN,24 ;RESET POWER FAIL VECTOR
1773 007672 012706 001000 MOV #1000,%6
1774 007676 012767 177324 171206 MOV #-300,WORK ;SET UP TWENTY SECOND TIMER
1775 007704 000005 XTIMCNT:RESET
1776 007706 005267 171200 INC WORK ;+1 TIMER
1777 007712 001374 BNE XTIMCNT ;TWO SECONDS NOT UP GO WAIT
1778 007714 000720 BR PWRFL ;GO CHECK DISK
1779

```

```

1780 ;ROUTINE TO WRITE THE COMPLETE DISK
1781 ;WITH 125252 PATTERN
1782 ;WRITE CHECK AND REPORT ERRORS IF THEY
1783 ;OCCUR
1784 ;REPORT "OK" AT COMPLETION
1785

```

```

1787 007716 011667 171164 POWFAL: MOV (6),PASSC
1788 007722 012706 001000 MOV #1000,%6
1789 007726 012767 000020 171122 MOV #20,PATNU ;SET UP PATTERN
1790 007734 005067 171114 CLR DMA
1791 007740 005067 171106 CLR TRACK
1792 007744 012767 002000 171114 MOV #2000,SWRDC ;SETUP WORD COUNT
1793 007752 016767 171110 171070 MOV SWRDC,WRDC
1794 007760 004567 175136 JSR %5,PASEL ;GENERATE DATA BUFFER
1795 007764 012767 011432 171066 MOV #OUTBUF,BUF ;SET UP CURRENT ADDRESS
1796 007772 012767 007716 171102 MOV #POWFAL,WRDCR
1797 010000 104503 WRDNW: WRITE +100
1798 010002 032777 001000 170770 BIT #BIT9,DSWR ;CHECK ON HOW TO WAIT
1799 010010 001002 BNE .+6
1800 010012 000004 IOT ;BACKGROUND TEST
1801 010014 000404 BR .+12
1802 010016 016777 171020 170756 MOV PRIORITY,APS
1803 010024 000001 WAIT
1804 010026 104507 WRCHECK +100
1805 010030 032777 001000 170742 BIT #BIT9,DSWR
1806 010036 001002 BNE .+6
1807 010040 000004 IOT
1808 010042 000404 BR .+12
1809 010044 016777 170772 170730 MOV PRIORITY,APS
1810 010052 000001 WAIT
1811 010054 004767 174332 JSR %7,DISBUF ;SET UP NEW DISK BUFFER
1812 010060 000747 BR WRDNW ;WRITE NEW BUFFER
1813 010062 104001 EMT +1
1814 010064 010635 OK
1815 010066 000177 171014 JMP APSASC
1816

```

```

1817 ;ROUTINE TO SET ACTION ENABLE ON MA/MF PARITY MEMORIES
1818 ;CALL JSR PC, MAMF
1819 172100 PARCSR= 172100
1820 000114 PARVEC= 114
1821 000004 ERRVEC= 4

```

```

1822      000006      SP=      %6
1823
1824 010072 012737 010164 000114 MAMF: MOV      #PARSRV,2#PARVEC ;SET PARITY INTERRUPT VECTOR
1825 010100 012737 000340 000116      MOV      #340,2#PARVEC+2 ;AND PRIORITY LEVEL 7 ON INTERRUPT
1826 010106 013746 000004      MOV      2#ERRVEC, -(SP) ;SAVE CURRENT ERROR VECTOR
1827 010112 013746 000006      MOV      2#ERRVEC+2, -(SP) ;AND PRIORITY LEVEL
1828 010116 012737 000006 000004      MOV      #ERRVEC+2, 2#ERRVEC
1829 010124 012737 000002 000006      MOV      #RTI, 2#ERRVEC+2
1830 010132 012700 172100      MOV      #PARCSR,%0 ;GET FIRST CSR ADDRESS
1831 010136 012702 000001      MOV      #1,%2
1832 010142 012720 000001      1$: MOV      #1,(0)+ ;SET ACTION ENABLE IF AVAILABLE
1833 010146 006302      ASL      %2 ;SHIFT AVAILABILITY INDICATOR
1834 010150 103374      BCC      1$
1835 010152 012637 000006      MOV      (SP)+, 2#ERRVEC+2 ;RESTORE ERROR VECTOR
1836 010156 012637 000004      MOV      (SP)+, 2#ERRVEC ;PRIORITY LEVEL AND INTERRUPT VECTOR
1837 010162 000207      RTS      %7
1838
1839 ;PARITY ERROR SERVICE ROUTINE
1840 ;WHEN A PARITY ERROR IS DETECTED THE ROUTINE SCANS
1841 ;MEMORY FOR THE PARITY ERROR. WHEN THE ERROR
1842 ;IS DETECTED THE PROGRAM HALTS WITH THE ADDRESS
1843 ;CAUSING THE ERROR IN R0
1844 ;TO CONTINUE PRESS CONTINUE
1845
1846 010164 104001      PARSRV: EMT+1
1847 010166 010724      PARERR
1848 010170 012737 010216 000114      MOV      #2$, 2#PARVEC ;REPOSITION PARITY ERROR INT.
1849 010176 012737 010244 000004      MOV      #4$, 2#ERRVEC ;SET TIME OUT TRAP
1850 010204 005037 000006      CLR      2#ERRVEC+2
1851 010210 005000      CLR      %0
1852 010212 005720      1$: TST      (0)+ ;SCAN MEMORY
1853 010214 000776      BR      1$
1854 010216 000000      2$: HALT ;PARITY ERROR - ADDRESS
1855 ;CAUSING ERROR IS IN REGISTER 0
1856 010220 000005      3$: RESET
1857 010222 012737 010164 000114      MOV      #PARSRV, 2#PARVEC ;RESTORE PARITY VECTOR
1858 010230 012737 000006 000004      MOV      #ERRVEC+2, 2#ERRVEC ;RESTORE TIME OUT HALT
1859 010236 004767 177630      JSR      %7, MAMF
1860 010242 000002      RTI
1861 010244 000000      4$: HALT ;ERROR - PARITY ERROR NOT DETECTED ON SCAN
1862 010246 000764      BR      3$ ;4(SP) CONTAINS PC WHERE
1863 ;PARITY ERROR WAS ORIGINALLY DETECTED
1864
1865 010250 016703 170570      INCTAB: MOV      FLAG,%3
1866 010254 042703 177763      BIC      #177763,%3 ;MASK DRIVE NO
1867 010260 000241      CLC
1868 010262 006003      ROR      %3 ;NORMALIZE
1869 010264 005263 010272      INC      TABLE(3) ;INCREMENT ERROR COUNT
1870 010270 000207      RTS      %7
1871 010272 000000      TABLE: 0 ;ERROR COUNT DRIVE 0
1872 010274 000000      0 ;ERROR COUNT DRIVE 1
1873 010276 000000      0 ;ERROR COUNT DRIVE 2
1874 010300 000000      0 ;ERROR COUNT DRIVE 3

```

J04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 48

1875	010302	000000			TEXBUF: 0
1876	010304	000000			TSTCH: 0
1877					
1878	010306	042045	052101	020101	HED1: .ASCII /%DATA ERROR 2/
1879	010314	051105	047522	020122	
1880	010322	100			
1881	010323	045	052123	052101	HED2: .ASCII /%STATUS ERROR 2/
1882	010330	051525	042440	051122	
1883	010336	051117	040040		
1884	010342	042045	044522	042526	HED4: .ASCII /%DRIVE ADDRESS ERROR 2/
1885	010350	040440	042104	042522	
1886	010356	051523	042440	051122	
1887	010364	051117	040040		
1888	010370	040045			HED5A: .ASCII /%2/
1889	010372	042445	051122	051117	HED5: .ASCII /%ERROR /
1890	010400	040			
1891	010401	000	100		HED5X: .BYTE 0,'2
1892	010403	045	040522	042516	HED6: .ASCII /%RANEX ERROR 2/
1893	010410	020130	051105	047522	
1894	010416	020122	100		
1895	010421	040	020040	020040	MES0: .ASCII / DMA 2/
1896	010426	020040	046504	020101	
1897	010434	100			
1898	010435	040	020040	020040	MES1: .ASCII / RCDA 2/
1899	010442	020040	041522	040504	
1900	010450	040040			
1901	010452	020040	020040	020040	MES1A: .ASCII / RCER 2/
1902	010460	051040	042503	020122	
1903	010466	100			
1904	010467	040	020040	020040	MES2: .ASCII / RCCS 2/
1905	010474	020040	041522	051503	
1906	010502	040040			
1907	010504	020040	020040	020040	MES2A: .ASCII / RCLA 2/
1908	010512	051040	046103	020101	
1909	010520	100			
1910	010521	040	020040	020040	MES3: .ASCII / WORD COUNT 2/
1911	010526	020040	047527	042122	
1912	010534	041440	052517	052116	
1913	010542	100			
1914	010543	040	020040	047527	MES4: .ASCII / WORD ADR. 2/
1915	010550	042122	040440	051104	
1916	010556	040056			
1917	010560	020040	040		MES5: .ASCII / /
1918	010563	000	000	000	MES5X: .BYTE 0,0,0,0,0,0,'2
1919	010566	000	000	000	
1920	010571	100			
1921	010572	020040	040		MES6: .ASCII / /
1922	010575	000	000	000	MES6X: .BYTE 0,0,0,0,0,0,'2
1923	010600	000	000	000	
1924	010603	100			
1925	010604	040077			MES7: .ASCII /'2/
1926	010606	040057			MES8: .ASCII /'2/
1927	010610	052445	044516	020124	MES11: .ASCII /%UNIT NO. 2/
1928	010616	047516	040056		
1929	010622	020040	100		MES12: .ASCII / 2/
1930	010625	040	051040	040505	MES13: .ASCII / READ 2/

K04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST

REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 49

1931	010632	020104	100		
1932	010635	045	045517	040041	OK: .ASCII "%OK!"
1933	010642	050045	047522	042503	TIMO: .ASCII "%PROCESSOR BACKGROUND TIMED OUT!"
1934	010650	051523	051117	041040	
1935	010656	041501	043513	047522	
1936	010664	047125	020104	044524	
1937	010672	042515	020104	052517	
1938	010700	040124			
1939	010702	050045	053517	051105	PWRF: .ASCII "%POWER HAS FAILED!"
1940	010710	044040	051501	043040	
1941	010716	044501	042514	040104	
1942					
1943	010724	046445	046505	051117	PARERR: .ASCII "%MEMORY PARITY ERROR!"
1944	010732	020131	040520	044522	
1945	010740	054524	042440	051122	
1946	010746	051117	100		
1947	010751	045	040504	040524	CON1: .ASCII "%DATA TEST ONLY? (YES-NO)!"
1948	010756	052040	051505	020124	
1949	010764	047117	054514	020077	
1950	010772	054450	051505	047055	
1951	011000	024517	100		
1952	011003	045	052515	052114	CON2: .ASCII "%MULTI DRIVE MODE? (YES-NO)!"
1953	011010	020111	051104	053111	
1954	011016	020105	047515	042504	
1955	011024	024077	042531	026523	
1956	011032	047516	040051		
1957	011036	047045	046525	042502	CON3: .ASCII "%NUMBER OF DRIVES (1 TO 4)!"
1958	011044	020122	043117	042040	
1959	011052	044522	042526	020123	
1960	011060	030450	052040	020117	
1961	011066	024464	040077		
1962	011072	042445	042530	041522	CON4: .ASCII "%EXERCISE DRIVE!"
1963	011100	051511	020105	051104	
1964	011106	053111	037505	100	
1965	011113	045	050117	044524	CON5: .ASCII "%OPTIONAL WORD COUNT (YES-NO)!"
1966	011120	047117	046101	053440	
1967	011126	051117	020104	047503	
1968	011134	047125	020124	054450	
1969	011142	051505	047055	024517	
1970	011150	100			
1971	011151	045	042514	043516	CON6: .ASCII "%LENGTH (1 TO 2)!"
1972	011156	044124	024040	020061	
1973	011164	047524	040040		
1974	011170	020040	020040	020040	CON6A: .ASCII "/)!"
1975	011176	037451	100		
1976	011201	045	052123	051101	CON7: .ASCII "%STARTING SECTOR!"
1977	011206	044524	043516	051440	
1978	011214	041505	047524	037522	
1979	011222	100			
1980	011223	045	040504	040524	CON8: .ASCII "%DATA PATTERN NO.!"
1981	011230	050040	052101	042524	
1982	011236	047122	047040	027117	
1983	011244	040077			
1984	011246	053445	044522	042524	CON9: .ASCII "%WRITE? (YES-NO)!"
1985	011254	024077	042531	026523	
1986	011262	047516	040051		

L04

MAINDEC-11-DZRCB-B
DZRCBB.P11

RC11 DATA TEST

REPLACES D5JA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 50

1987	011266	053445	044522	042524	CON10: .ASCII	/%WRITE CHECK?(YES-NO)@/
1988	011274	041440	042510	045503		
1989	011302	024077	042531	026523		
1990	011310	047516	040051			
1991	011314	051045	040503	037504	CON11: .ASCII	/%READ?(YES-NO)@/
1992	011322	054450	051505	047055		
1993	011330	024517	100			
1994	011333	040	020040	100	PATMES: .ASCII	/ @/
1995	011337	045	040520	052124	PATHED: .ASCII	/%PATTERN @/
1996	011344	051105	020116	040040		
1997	011352	042045	044522	042526	NODRV: .ASCII	/%DRIVE ZERO OFF LINE@/
1998	011360	055040	051105	020117		
1999	011365	043117	020106	044514		
2000	011374	042516	100			
2001	011377	045	020040	051104	RKNUM: .ASCII	/% DRIVE(S) ON LINE@/
2002	011404	053111	024105	024523		
2003	011412	047440	020116	044514		
2004	011420	042516	100			
2005	011423	045	047105	077504	END: .ASCII	/%END/(<177>)/@/
2006	011430	100				
2007						
2008		011432				
2009	011432	000000			OUTBUF: 0	.EVEN
2010						
2011		000001				.END

MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A
DZRCBB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A
DZRCBB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

MAINDEC-11-DZRCB-B R011 DATA TEST REPLACES DSJA-PB2/DZRCB-A
DZRCBB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

HED5X	010401	1515	1536	1891#															
HED6	010403	1029	1892#																
HINUM	005312	1291	1301	1315*	1321#														
HNDER	001102	660#	913*	979*	1139	1688*	1706*	1753*	1796*										
HINDEX	004204	1135#																	
INBUF	001110	663#	876	887	932	1007	1352	1437*	1438*	1499									
INCAOT	002500	891#																	
INCSER	004436	1187#	1192																
INCTAB	010250	1098	1215	1521	1543	1865#													
INTEXT	004272	1097	1141	1151#															
LCONN	001452	695	728#																
LDAT	002632	913	916#	928															
LGMEM	005766	1413	1425#																
LOGICA	003660	1063#																	
LONUM	005310	1290	1299	1311*	1320#														
NAME	010072	693	1824#	1859															
MAXREF	005776	1417	1422	1430#															
MESO	010421	1203	1212	1895#															
MES1	010435	1021	1029	1120	1124	1208	1213	1370	1395	1899#									
MES1A	010452	1103	1123	1901#															
MES11	010610	828	1927#																
MES12	010622	835	838	1929#															
MES13	010625	1113	1116	1390	1394	1930#													
MES2	010467	1129	1132	1904#															
MES2A	010504	1907#																	
MES3	010521	1025	1030	1910#															
MES4	010543	1374	1396	1914#															
MES5	010560	1397	1540	1917#															
MES5X	010563	1379	1532	1918#															
MES6	010572	1398	1519	1541	1921#														
MES6X	010575	1384	1511	1528	1922#														
MES7	010604	1660	1925#																
MES8	010606	1648	1926#																
MSTR	003132	954	966#																
MYBYWR	007354	1691#	1699																
N	000304	572#	869	870#	884	885#	897	898#											
NOCHA	007102	743	753	775	787</														

MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A
DZRCBB.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

MACY11 27(732) 10-SEP-76 15:13 PAGE 55

[illegible]

005

MAINDEC-11-DZRCB-B
DZRCBB.P11RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A
CROSS REFERENCE TABLE -- USER SYMBOLS

MACY11 27(732) 10-SEP-76 15:13 PAGE 56

SAVI	001074	1423*	1425*	1430*	1433*	1434*	1435	1436*	1439										
SEABUF	002314	657*	1352*	1353	1364*	1381													
SETADT	002406	859*	872	874															
SHIFT	005200	876*																	
SLH	003046	1294*	1298																
SOFTER	004226	931	952*	965															
SP	=%000006	1134	1140*																
SPECOR	001314	1822*	1826*	1827*	1835	1836													
SACHG	006404	698*	704																
STAER	006416	1504*	1506																
STAERX	006534	871	1509*																
STAERI	006460	1522	1544*																
START	001122	885	898	1526*															
STATUS	001040	595	671*																
SWR	001000	640*	912*	981*															
		620*	694	905	921	937	943	958	994	1001	1009	1034	1136	1142					
		1145	1151	1154	1164	1167	1182	1217	1400	1487	1488	1504	1544	1574					
SWROCT	001066	1692	1708	1757	1798	1805													
		654*	692	770	778	782*	783	852	854*	904*	910	1227	1448*	1792*					
		1793																	
TABLE	010272	673	1052	1869*	1871*														
TDMA	001064	653*																	
TEXBUF	010302	697*	700	702*	705	711	718	732	738	744*	745	747	754	757*					
		758*	759	764	776	780	782	788	790	794	796	799	807	814					
		821	1639*	1649*	1650*	1651*	1652*	1665*	1667*	1669*	1670*	1875*							
TIMCNT	007526	1728*	1730																
TIMO	010642	1476	1933*																
TKB	001006	623*	1642	1645	1654	1657	1662												
TKS	001012	625*	1640																
TKSEL	006264	603	1487*	1505															
TPB	001004	622*	1576*	1642*															
TPS	001010	624*	1577	1643															
TRACK	001052	648*	1687*	1705*	1752*	1791*													
TSTCH	010304	1635*	1637*	1657	1876*														
TSTFLG	007132	1640*	1641	1653	1661	1671													
TWROCT	001062	652*																	
TYEXIT	006732	1575	1583	1587*															
TYP	006562	1556	1559*																
TYPA	006572	1562*	1573	1592															
TYPC	006620	1564	1568*																
TYPD	006646	1566	1572	1574*	1586	1589	1591												
TYPDAT	006762	1562*	1563	1565*	1568	1570	1576	1579	1585*	1588*	1590*	1593*							
TYPF	006734	1569	1588*																
TYPG	006746	1571	1590*																
TYPG	006766	1555	1596*	1604															
TYPSA	007012	1600	1602*																
TYPSB	007014	1598*	1599	1603*															
TYST	007120	1636	1638*																
JP	007506	1722	1725*																
UPCHK	007412	1704*	1706	1733															
VECTOR	001036	639*	911*	980*															
WCCON	001654	767*	777	781															
WCHAIT	003114	959	962*																
WDERR	005506	1354	1367*																
WORK	001112	667*	672*	675*	778*	779*	780	870*	882*	896*	946*	947*	948	983*					
		989*	1045*	1046*	1047	1049	1076*	1077*	1078*	1079*	1080	1085*	1086*	1087					

E05

MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A
DZRCB8.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

MACY11 27(732) 10-SEP-76 15:13 PAGE 57

WORK1	001114	1100*	1102	1109*	1110*	1112	1117*	1119	1126*	1128	1167*	1168*	1170*	1171*
		1172*	1173*	1174*	1175*	1176	1205*	1207	1230*	1232	1234*	1250*	1251*	1252*
		1253*	1254	1259*	1260	1262*	1264*	1266*	1267*	1268*	1269*	1270*	1271	1280*
		1285*	1313*	1317*	1349*	1361*	1369	1490*	1492*	1493*	1494*	1495*	1496*	1497*
		1498	1510	1527	1662*	1663*	1670	1727*	1729*	1774*	1776*			
		668*	883*	995*	1186*	1235*	1348*	1356*	1359	1362*	1373	1487*	1489*	1490
		1531												
WORK2	001116	669*	1229*	1231*	1238	1347*	1355*	1357	1488*	1504				
WORK3	001120	670*	1193*	1194*	1195*	1196*	1197*	1198*	1199	1202				
WRCHC=	104407	591*	957	1000	1707	1756	1804							
WRDCMP	005416	1353*	1365											
WRDCT	001050	647*	692*	783*	855*	860	910*	988*	989	1024	1082	1227*	1238*	1240*
		1241*	1242*	1243*	1244*	1259	1280	1357	1435*	1439*	1440*	1793*		
		1355*	1403											
WRDINC	005426	1797*	1812											
WRDNW	010000	590*	864	920	993	1691	1797							
WRITE =	104403	983*	1033											
WRLG	003242	868	873*											
WRNEXB	002374	922	925*											
WRWAIT	002672	961	964*											
XESH	003124	1231*	1236											
XINCSE	004670	1233	1238*											
XINCST	004720	1465*	1466	1467	1470									
XINCW	006222	861*	863											
XSEABU	002324	924	927*											
XSLH	002702	1775*	1777											
XTIMCN	007704	685	1452*											
XWAIT	006134	593*	594*	596*	605*	617*	733	840	866	879	906	967	971	995
.	= 011434	997	1002	1004	1010	1012	1035	1096	1137	1143	1146	1152	1155	1165
		1183	1218	1401	1462	1469	1503	1545	1578	1644	1655	1693	1695	1709
		1711	1758	1760	1799	1801	1806	1808	2009*					

F05

MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A
DZRCBB.P11 CROSS REFERENCE TABLE -- MACRO NAMES

MACY11 27(732) 10-SEP-76 15:13 PAGE 59

ERROR 616# 869 884 897

G05

 MAINDEC-11-DZRCB-B
 DZRCBB.P11

RC11 DATA TEST REPLACES DSJA-PB2/DZRCB-A

MACY11 27(732) 10-SEP-76 15:13 PAGE 61

CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

ADC	1300	1302	1304	1305	1307	1310									
ADD	702	703	969	1054	1056	1197	1225	1264	1299	1301	1303	1306	1308	1309	1363
	1364	1423	1438	1560	1597	1618	1621	1670							
ASL	1294	1833													
BCC	1834														
BEQ	701	777	797	826	840	906	918	931	954	971	1017	1035	1044	1048	1062
	1134	1137	1141	1143	1146	1152	1183	1189	1191	1200	1218	1233	1261	1283	1314
	1358	1360	1401	1412	1422	1469	1545	1569	1571	1583					
BMI	1053														
BIC	802	832	933	947	978	987	1018	1046	1060	1079	1086	1110	1168	1196	1198
	1225	1253	1262	1387	1436	1440	1489	1620	1623	1649	1663	1866			
BIS	696	722	734	740	759	798	809	816	823	1080	1099	1148	1176	1245	1254
	1367	1721	1768												
BIT	698	825	839	905	917	921	930	937	943	953	958	994	1001	1009	1016
	1034	1043	1107	1133	1136	1142	1145	1151	1154	1164	1182	1217	1260	1359	1400
	1544	1574	1657	1692	1708	1757	1798	1805							
BLOS	746	755	781	799	795										
BMI	695	1096	1413	1416											
BNE	676	699	706	733	739	765	808	815	822	863	890	893	922	938	944
	949	959	995	1002	1010	1033	1108	1155	1165	1236	1286	1298	1318	1354	1505
	1555	1564	1575	1580	1600	1628	1646	1655	1658	1693	1709	1730	1758	1777	1799
	1806														
BFL	866	868	879	881	967	1223	1467	1503	1578	1641	1644				
BR	704	750	872	874	886	894	903	924	928	940	951	961	965	997	1004
	1012	1055	1057	1192	1228	1237	1365	1403	1424	1426	1457	1470	1506	1522	1556
	1573	1586	1592	1604	1636	1653	1661	1671	1695	1699	1700	1711	1715	1760	1764
	1765	1778	1801	1808	1812	1853	1862								
CLC	756	800	1050	1169	1239	1265	1442	1491	1664	1666	1668	1867			
CLR	674	686	689	690	691	697	723	859	875	908	973	1042	1092	1216	1224
	1229	1293	1347	1348	1362	1432	1453	1460	1464	1472	1565	1639	1686	1687	1704
	1705	1751	1752	1790	1791	1850	1851								
CMP	700	732	738	745	754	764	780	788	794	796	807	814	821	889	948
	970	1047	1052	1188	1199	1232	1282	1353	1357	1415	1421	1458	1504	1554	1599
	1645	1654													
CMPB	1563	1568	1570	1579											
DEC	675	862	892	1190	1235	1285	1297	1313	1317	1584	1627				
EMT	707	714	729	735	741	751	761	767	773	785	791	804	811	818	827
	837	1027	1058	1105	1115	1122	1131	1210	1392	1475	1517	1538	1554	1602	1647
	1659	1731	1813	1846											
HALT	594	709	1138	1147	1153	1219	1402	1477	1546	1723	1770	1854	1861		
INC	779	935	1032	1187	1231	1234	1263	1355	1356	1361	1465	1468	1729	1776	1969
IOT	923	939	960	996	1003	1011	1694	1710	1759	1800	1907				
JMP	595	597	598	601	603	606	607	724	841	907	968	972	1036	1067	1097
	1139	1716	1733	1815											
JSR	678	693	710	731	737	743	753	763	769	775	787	793	806	813	820
	833	853	871	873	885	898	902	915	916	927	929	945	950	952	964
	985	991	1015	1019	1023	1063	1098	1101	1111	1118	1127	1195	1201	1206	1215
	1368	1372	1377	1382	1388	1441	1509	1513	1521	1526	1530	1534	1543	1566	1572
	1589	1591	1695	1698	1714	1750	1763	1794	1811	1859					
MOV	672	673	677	679	680	681	682	683	684	685	687	688	692	718	747
	778	782	783	790	799	829	852	854	855	856	857	859	860	861	869
	870	876	882	883	884	887	888	895	896	897	904	910	911	912	913
	914	919	925	932	934	941	946	955	956	962	976	977	979	980	981
	982	983	984	986	988	989	990	992	998	1005	1007	1013	1045	1049	1061
	1074	1075	1076	1081	1082	1084	1085	1087	1093	1100	1109	1117	1126	1135	1156
	1167	1186	1193	1205	1227	1230	1238	1250	1258	1259	1271	1279	1280	1281	1294

H05

MAINDEC-11-DZRCB-B RC11 DATA TEST REPLACES D5JA-PB2/DZRCB-A
DZRCBB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

MACY11 27(732) 10-SEP-76 15:13 PAGE 62

	1290	1291	1292	1311	1312	1315	1316	1349	1350	1351	1352	1376	1381	1386	1410
	1411	1417	1418	1419	1431	1435	1437	1448	1452	1454	1456	1459	1461	1462	1473
	1487	1488	1490	1498	1499	1500	1501	1553	1559	1561	1581	1596	1596	1615	1616
	1617	1619	1635	1637	1638	1642	1662	1684	1688	1689	1690	1696	1706	1712	1722
	1725	1726	1727	1749	1753	1754	1755	1761	1769	1772	1773	1774	1787	1788	1789
	1792	1793	1795	1796	1802	1809	1824	1825	1826	1827	1828	1829	1830	1831	1832
	1835	1836	1848	1849	1857	1858	1865								
MOV8	1562	1576	1585	1588	1590	1622									
NEG	1083														
NOP	1064	1065	1066												
RESET	671	1728	1775	1856											
ROL	720	721	748	749	757	758	801	1078	1170	1171	1172	1173	1174	1175	1195
	1240	1241	1242	1243	1244	1252	1295	1296	1443	1444	1445	1446	1447	1492	1493
	1494	1495	1496	1497	1665	1667	1669								
ROR	830	831	1051	1266	1267	1268	1269	1270	1434	1439	1624	1625	1626	1650	1651
	1652	1868													
RTI	1088	1094	1149	1157	1463	1474	1478	1567	1601	1829	1860				
RTS	1166	1177	1184	1220	1246	1255	1272	1287	1319	1366	1449	1547	1587	1629	1656
	1837	1870													
SUB	719	744	1144	1414	1425	1430	1433								
SWAB	1077	1194	1251												
SXT	1455														
TRAP	590	591	592												
TST	694	705	776	867	880	891	966	1095	1140	1420	1582	1852			
TSTB	865	878	1222	1466	1502	1577	1640	1643							
WAIT	926	942	963	999	1006	1014	1697	1713	1762	1803	1810				
.ASCII	1878	1881	1884	1888	1889	1892	1895	1898	1901	1904	1907	1910	1914	1917	1921
	1925	1926	1927	1929	1930	1932	1933	1939	1943	1947	1952	1957	1962	1965	1971
	1974	1976	1980	1984	1987	1991	1994	1995	1997	2001	2005				
.BYTE	1891	1918	1922												
.ENABL	571														
.END	2011														
.EVEN	2008														
.LIST	550	594	870	885	898										
.MACR	616														
.MLIST	550	594	870	885	898										
.REM	1	553													
.REPT	594														
.TITLE	549														

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

*DZRCBB.DZRCBB.SEO/SOL/CRF/DS:ERFZ/EN:ABS=DSKM:DZRCBB.P11
RUN-TIME: 5 12 2 SECONDS
RUN-TIME RATIO: 56/22=2.5
CORE USED: 8K (15 PAGES)

Spooler runtime 7 Seconds, 232 KCS, 190 disk reads, 3 disk writes, 59 pages

[illegible]