

RF11

MULTI DISK
MD-11-DZRFC-B

EP-DZRFC-B-DL
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FICHE 1 OF 1

JUN 1978
digital
MADE IN USA



IDENTIFICATION

PRODUCT CODE: MAINDEC-11 DZREC-B-D
REPLACES: MAINDEC-11-05AA
PRODUCT NAME: PFI1 MULTI DISK
DATE CREATED: 1 NOVEMBER 1970
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: E. HAIGHT/C. CASAFIL

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DIGITAL EQUIPMENT CORPORATION

MAYFARD, MASS.

1. ABSTRACT

MULTI DISK IS A HIGH SPEED CONFIDENCE TEST THAT ASSURES THE USER THAT HE CAN TRANSFER DATA CORRECTLY, WITHOUT DESTROYING THE DATA ON THE DISK. MULTI DISK USES ALL EXISTING MEMORY ON THE SYSTEM AS BUFFER AREAS.

2. REQUIREMENTS

A. PDP-11 4K TO 28K OF MEMORY

TELETYPE

B. RS11 AND DS11 PLUS UP TO SEVEN ADDITIONAL DS11'S

2.2 STORAGE

THE MAIN BODY OF THE PROGRAM OCCUPIES THE FIRST 5K OCTAL (BYTES) OF MEMORY. THREE DATA BUFFERS OCCUPY THE REST OF EXISTING MEMORY.

BUFFER ORDER

OUT BUFFER = RANDOM DATA TO BE WRITTEN ON THE DISK.

IN BUFFER = AREA FOR RANDOM DATA WHEN READ FROM THE DISK.

SAVE BUFFER = AREA TO SAVE DISK WHEN EXERCISING.

3. LOADING PROCEDURE

3.1 METHOD

PROGRAM FORMAT ABSOLUTE

A. VERIFY THE BOOT LOADER IS IN MEMORY.

B. LOAD TAPE INTO READER.

C. SET SWITCH REGISTER EQUAL TO 0750

MEMORY SIZE *

4K	17
6K	37
12K	57
16K	77
20K	117
24K	137
28K	157

D. DEPRESS LOAD ADDRESS.

E. DEPRESS START.

4. STARTING PROCEDURE

- A. SET SWITCH REGISTER EQUAL TO 200.
- B. DEPRESS LOAD ADDRESS.
- C. DEPRESS START.
- D. THE PROGRAM AT THIS POINT WILL DETERMINE THE AMOUNT OF EXISTING CORE MEMORY, AND SET UP THE WORD COUNT AND BUFFER AREAS FOR THE PROGRAM.
- E. THE PROGRAM WILL NEXT REPORT THE NUMBER OF EXISTING DISK(S) WHICH ARE ON THE SYSTEM. THE NUMBER WILL RANGE FROM 1 - 10 OCTAL. THE DISK SELECTION LINES MUST BE IN SEQUENTIAL ORDER RANGING FROM 0 TO 7.

06 EXISTENT DISK(S)

5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

THE SWITCH REGISTER HAS NO CONTROL OVER THE OPERATION OF THIS PROGRAM.

5.2 STOPPING THE PROGRAM

MULTI DISK MUST ONLY BE STOPPED BY TYPING CONTROL C. IF THE USER STOPS THE PROGRAM BY DEPRESSING CONSOLE HALT, THE DISK SURFACE MAY NOT BE RESTORED.

5.3 PROGRAM ABSTRACT

MULTI DISK WAS DESIGNED TO INSURE THE USER THAT THE DISK SYSTEM IS CAPABLE OF TRANSFERRING DATA CORRECTLY WHILE NOT DESTROYING THE USERS PROGRAMS ON THE DISK SURFACE. THE PROGRAM FIRST READS FROM THE DISK, THE LENGTH OF THE TRANSFER IS DETERMINED BY THE SIZE OF MEMORY. IF AN ERROR OCCURS WHILE READING, THE PROGRAM WILL MAKE UP TO THREE ATTEMPTS AT READING THE DATA. IF THE ERROR STILL EXISTS, THE PROGRAM WILL THEN HALT. IF THE PROGRAM SUCCESSFULLY READS FROM THE DISK WITHIN THE THREE ATTEMPTS, IT WILL THEN GENERATE A RANDOM BUFFER, WRITE IT ON THE DISK, AND READ IT BACK AND VERIFY IT. AFTER COMPARING THE DATA, THE PROGRAM THEN WRITES THE ORIGINAL DATA BACK ON THE DISK, MAKING UP TO THREE ATTEMPTS TO TRANSFER IF AN ERROR IS ENCOUNTERED, BEFORE HALTING. IF THE DATA WAS SUCCESSFULLY TRANSFERRED, THE PROGRAM WILL GO TO THE NEXT DISK BUFFER UNTIL THE COMPLETE DISK SYSTEM IS EXERCISED.

NOTE: EACH WRITE IS FOLLOWED BY A WRITE CHECK.

6. ERRORS

6.1 ERROR HALTS

THE PROCESSOR HALTED AT LOC. 1462. CAUSE OF HALT NO SELECTED DISK ON THE SYSTEM, OR DISKS NOT SELECTED IN SEQUENTIAL ORDER STARTING WITH DISK A.

THE PROCESSOR HALTED AT LOC. 2004. THE CAUSE OF THE HALT, UNABLE TO READ FROM THE DISK FOR THE SAME BUFFER. THREE ATTEMPTS WERE MADE.

THE PROCESSOR HALTED AT LOC. 2256. THE CAUSE OF THE HALT, UNABLE TO RESTORE THE DISK SURFACE. THREE ATTEMPTS WERE MADE.

6.2 ERROR REPORTS

STATUS ERROR

STATUS ERROR XXDAF XXXXXDAF XXXXXDCS

A R C

A=THE DISK NUMBER AND EXTENDED DISK ADDRESS BITS.

B=THE DISK ADDRESS REGISTER

C=THE DISK CONTROL REGISTER

LAYOUT OF DISK ADDRESS BITS

DAF DAF

XXX XXX XXX XXX XXX XXX XXX

DISK NO. TRACK ADDRESS WORD ADDRESS

(6.2 CONT'D)

HIT LAYOUT OF DCS REGISTER

HIT15= ERROR
 BIT14= DISK FREEZE
 HIT13= WRITE CHECK ERROR
 BIT12= DATA PARITY ERROR
 HIT11= NON-EXISTENT DISK
 HIT10= WRITE LOCKOUT
 HIT9= MISSED TRANSFER
 BIT8= DISK CLEAR
 HIT7= READY
 HIT6= INTERRUPT ENABLE
 HIT5= EXTENDED MEMORY 1 (XM1)
 HIT4= EXTENDED MEMORY 0 (XM0)
 BIT3= MAINTENANCE
 HIT2-1= FUNCTION REGISTER

BIT 2	BIT 1	OPERATION
0	0	NOOP
1	0	READ
0	1	WRITE
1	1	WRITE CHECK

HIT0= GO (WRITE ONLY HIT)

NOTE: WHEN A FREEZE ERROR OCCURS AN ADDITIONAL ERROR MESSAGE WILL BE REPORTED, AS FOLLOWS.

XXX HARD ERROR

LAYOUT OF HITS 0 - 7

HIT0= CMA INH. (NOT AN ERROR CONDITION)
 BIT1= UNUSED
 BIT2= NON-EXISTENT MEMORY ERROR
 BIT3= UNUSED
 HIT4= TRACK C TIMING ERROR
 BIT5= TRACK B TIMING ERROR
 HIT6= TRACK A TIMING ERROR
 BIT7= ADDRESS PARITY ERROR

6.3 DATA ERRORS

DATA ERROR XADAF XXXXXXDAP XXXXXXGOOD DATA XXXXXHAFI DATA

A P C D

A=THE DISK NUMBER AND EXTENDED DISK ADDRESS BITS
B=THE DISK ADDRESS REGISTER
C=THE DATA WRITTEN ON THE DISK
D=THE DATA READ FROM THE DISK

6.4 DISK ADDRESS ERROR

DISK ADDRESS ERROR XADAEXXXXXDAH

THE TERMINATING DISK ADDRESS AFTER THE TRANSFER WAS NOT CORRECT
THE DAF AND DAR SHOULD EQUAL WHAT WAS REPORTED. CHECK THE
MF11 PANEL FOR THE ERROR ADDRESS.

6.5 PROCESSOR TIME OUT

PROCESSOR BACKGROUND TIMED OUT.

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

6.6 MEMORY PARITY ERROR

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

6.7 END

END

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

7. RESTRICTIONS

THE DISKS MUST BE IN SEQUENTIAL ORDER HANGING FROM DISK
SELECT A - 7.

8. PROGRAM DESCRIPTION

MULTI DISK IS NOT A DIAGNOSTIC - IT IS MERELY A CONFIDENCE
TEST. IF THE USER ENCOUNTERS ANY PROBLEMS WITH THE SYSTEM
WHILE OPERATING MULTI DISK, HE SHOULD NOT TRY TO DIAGNOSE THE
PROBLEM USING THIS PROGRAM. IF PROBLEMS ARE ENCOUNTERED, IT
IS SUGGESTED THAT THE USER REVERTS TO DISK DATA AS A MEANS
OF DIAGNOSING HIS PROBLEM.

```
1  
2 .TITLE MAINDEC-11-DZHFCA-A MF11 MULTI LISK REPLACES D5AA  
3  
4 ;COPYRIGHT 1973 DIGITAL EQUIPMENT CORP., MAYNARD, MASS.  
5 ;PROGRAM BY E. HAIGHT/C. CASSELL  
6  
7 .FNAML APS  
8  
9  
10  
11 .AAAA1 FITM#1  
12 .AAAA2 FIT#2  
13 .AAAA4 FIT2#4  
14 .AAAA1# FIT3#1#  
15 .AAAA2# FIT4#2#  
16 .AAAA4# FIT5#4#  
17 .AAAA1# FIT6#1##  
18 .AAAA2# FIT7#2##  
19 .AAAA4# FIT#4##  
20  
21 .AAAA1# BIT#1###  
22 .AAAA2# BIT1#2###  
23 .AAAA4# BIT11#4#2#  
24 .AAAA1# BIT12#1###  
25 .AAAA2# BIT13#2###  
26 .AAAA4# BIT14#4#0##  
27 .AAAA1# BIT15#1#0#0#  
28 ;  
29 ;  
30 ;  
31 .WRITE=TRAP+3  
32 .PCHECK=TRAP+7  
33 .PEAL=TRAP+5  
34  
35 .=H ;TRAP CATCHER A=176  
36  
37  
38  
39  
40  
41  
42 .=7#4  
43 .AAA7#4 .AAA167 .AAA3624 JMP STAMP  
44  
45  
46 .=2#4  
47 .AAA2#4 .AAA167 .AAA722 JMP START  
48  
49 ;STATIC ROUTINES  
50 .=3#4  
51 ;  
52 ;  
53 ;  
54 ;  
55 ;  
56 ;  
57 ;MF11 MULTI LISK  
58 ;VECTORS USED IN PROGRAM  
59 ;#1 LOC 2#4 DISK INTERRUPT  
60 ;#2 LOC 3# FMT (TELETYPE OUTPUT)  
61 ;#3 LOC 3# TRAP (DISK HANDLERS)  
62 ;#4 LOC 1# TRACE TRAP (USED IN BACKGROUND TEST)  
63 ;#5 LOC 2# IOT TRAP (USED IN CALLING BACKGROUND TEST)  
64
```


MAINDEC-11-DZFCA-A REII MULTI DISK REPLACES D5AA
DZFCH.PIC

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65

001000

.81000

```

67          .FVIN
68          ;
69          ;I/O ADDRESS POINTERS
70  001000  177570  SOPS: 177570          ;SWITCH REGISTER
71  001002  177770  FSI: 177770          ;PROCESSOR STATUS REGISTER
72  001004  177500  IPPS: 177500          ;TELETYPE REGISTERS
73  001006  177562  TMS: 177562
74  001010  177564  TPS: 177564
75  001012  177560  TKS: 177560
76          ;
77          ;DISK I/O REGISTERS
78          ;
79  001014  177460  DCS: 177460          ;DISK CONTROL REGISTER
80  001016  177462  MC: 177462           ;COUNT REGISTER
81  001020  177464  CMA: 177464          ;CURRENT ADDRESS REGISTER
82  001022  177466  DARS: 177466         ;LOWER 16 BITS OF DISK ADDRESS
83  001024  177470  DAF: 177470          ;EXTENSION ADDRESS REGISTER
84  001026  177472  DRP: 177472          ;DATA BUFFER REGISTER
85  001030  177474  MA: 177474           ;MAINTENANCE REGISTER
86  001032  177476  APS: 177476          ;LOOK AHEAD REGISTER
87  001034  000200  VECTOR: 204          ;INTEERRUPT VECTOR ADDRESS
88  001036  000206  STATUS: 206          ;DISK INTEERRUPT STATUS
89  001040  000208  PRIORITY: 017       ;DISK PRIORITY LEVEL
90          ;
91          ;
92          ;
93          ;
94          ;
95          ;
96          ;
97          ;PREDICATE REGISTERS (MEMORY)
98          ;
99  001042  000000  FLAG: 0              ;INTERNAL PROGRAM FLAG
100 001044  146723  RANUM: 146723        ;RANDOM NUMBER PRIME
101 001046  000000  WPDCT: 0             ;WORKING WORD COUNT
102 001050  000000  TRACK: 0            ;WORKING DAF
103 001052  000000  DMA: 0              ;WORKING DATA BUFFER (OUT-IN)
104 001054  000000  PATNU: 0            ;DATA PATTERN INDEX
105 001056  000000  BIF: 0              ;WORKING DATA BUFFER (OUT-IN)
106 001060  000000  TWRDCT: 0           ;TEMP WORD COUNT
107 001062  000000  TDMA: 0             ;TEMP DAF
108 001064  000000  SWRDCT: 0           ;STANDARD WORD COUNT
109 001066  000000  ERCOUNT: 0          ;ERROR COUNT FOR MESSAGES.
110 001070  000000  SAVF: 0
111 001072  000000  SAVI: 0
112 001074  000000  PASS: 0
113 001076  000000  DSKNOP: 0
114 001100  000000  MRDR: 0             ;PUNTER FOR HARD EPOCH
115 001102  000000  HIGH: 0
116 001104  000000  LIMIT: 0
117 001106  000000  TTRACK: 0           ;TEMP TRACK NO.
118 001110  000000  TDSKNO: 0           ;TEMP DISK NO.
119 001112  005360  OUTBUF: BUFFER
120 001114  000000  INBUF: 0

```

121	001116	000000	SAVR01:	0
122			:	
123			30011	WORK REGISTERS
124			:(CAN BE CHANGED IN ANY REGISTER)	
125	001120	000000	WOP01:	0
126	001122	000000	WOP02:	0
127	001124	000000	WOP03:	0

```

120
129 001126 000005          START:  RESET                ;CLEAR THE ...
130 001130 012706 001000          MOV      01000,06          ;SET UP STACK
131 001134 012767 000006 176647          MOV      06,4
132 001142 005067 176640          CLP      6
133 001146 012777 002374 177660          MOV      00AINT,0VECTOR  ;SET UP DISK POINTER
134 001154 012777 000340 177654          MOV      0340,0STATUS    ;LOCK UP INTERRUPTS
135 001162 012767 003760 176640          MOV      00FTRP,30       ;SET UP TTY POINTER
136 001170 012767 000340 176634          MOV      0340,32         ;LOCK UP INTERRUPTS
137 001176 012767 002322 176630          MOV      0DISK,34        ;SET UP DISK HANDLER POINTER
138 001204 012767 000340 176624          MOV      0340,36         ;LOCK UP INTERRUPTS
139 001212 012777 000340 177562          MOV      0340,0PS        ;LOCK UP INTERRUPT LEVELS
140 001220 005067 177610          CLM      FLAG            ;CLEAR PROGRAM FLAG
141 001224 005067 177620          CLM      TRACK           ;CLEAR TRACK REGISTERS
142 001230 005067 177610          CLM      DMA             ;CLEAR DMA REGISTERS
143 001234 005067 177614          CLP      PATTN           ;CLEAR PATTN COUNT
144 001240 012767 003572 176552          MOV      0XWAIT,20
145 001246 005067 176550          CLP      22
146 001252 012767 004454 176544          MOV      0D000,24        ;SET UP FOR POWER FAIL
147 001260 012767 000340 176640          MOV      0340,126       ;LOCK UP INTERRUPTS
148 001266 004767 003000          JSR      07,0AMP         ;SET UP PARITY SWITCHES
149
150
151
152 001272 012777 000340 177502          ;THIS ROUTINE DETERMINES HOW MUCH MEMORY IS ON THE SYSTEM
153 001300 013767 000002 177562          ;
154 001306 001410          ;
155 001310 100432          ;
156 001312 162767 000020 177550          ;EXTMEM: MOV      0340,0PS        ;LOCK UP PRIORITY LEVELS
157 001320 022767 005360 177542          MOV      0042,0SAVE      ;GET MONITOR ADDR
158 001326 100444          BEQ      18              ;SKIP IF ZERO
159 001330 012767 001400 176446          BNE     LGMEM           ;GREATER THAN 16K
160 001336 012767 000340 176442          SUB     020,0SAVE        ;DEC IT
161 001344 012767 017446 177516          CMP     0BUFFER,0SAVE    ;IS IT ACT 11?
162 001352 005777 177512          BNE     GOTMEM          ;NO-SPIP
163 001356 022767 177446 177504          18:    MOV      0MAXREF,4   ;SET UP PROCESSOR TRAP
164 001364 001410          MOV      0340,6
165 001366 062767 020000 177474          MOV      017446,0SAVE    ;SET UP REFERENCE TO 4K
166 001374 000766          FXREF: TST  0SAVE        ;REFERENCE MEMORY
167 001376 162767 000020 177464          CMP     0177446,0SAVE    ;TEST FOR GREATER THAN 20K
168 001404 000415          BFC     0MAXREF         ;SET UP FOR NEXT REFERENCE
169
170          BR    EXREF          ;REFERENCE NEXT BANK
171          LGMEM: SUB     020,0SAVE    ;DEC. IT
172          BR    GOTMEM
173          ;
174          ;TRAPS HERE IF MEM TIMES OUT
175          ;
176          MAXREF: MOV     01000,06    ;RESET STACK
177          MOV     06,4              ;RESET VECTOR
178          CLP     6
179          SUB     020,000,0SAVE      ;
180          BIT     0BIT1,0FLAG
181          ;ROUTINE TO REPORT THE NUMBER OF EXISTENT DISK(S)
182          ;ON THE SYSTEM.
183          GOTMEM: CLP    000K
184          INDSK: MOV    000K,0DAP    ;LOAD DISK EXT. ADDR,HITS
185          BIT    0BIT11,0DCS        ;TEST FOR NON-EXISTENT DISK

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182	001460	001010		
183	001462	062767	000004	177430
184	001470	022767	000000	177422
185	001476	001471		
186	001500	000761		

RNF	NEIST
ANI	04,400K
CMP	040,000K
RFG	004
RH	INLSK

BRANCH IF NOT EXISTENT DISP SET
SET UP THAT DISP NO.
CHECK FOR N DISKS
BRANCH IF N DISKS

187								
188	001522	006067	177412		MFUST:	POP	0000	
189	001506	006067	177406			POP	0000	
190	001512	032767	000017	177400		HIT	017,0000	
191	001520	001002				NOF	000	
192	001522	000000				HALT		
193	001524	000777				NO	.	
194	001526	004567	002400			JSR	00,0000	
195	001532	001120				NOFK		
196	001534	005213				MFS11		
197	001536	000002				2		
198	001540	100000				EXT	00	
199	001542	005031				HEDSA		
200	001544	005213				MFS11		
201	001546	177777				-1		
202	001550	005367	177344			DFC	0000	
203	001554	006167	177340			ROL	0000	
204	001560	006167	177334			ROL	0000	
205	001564	016767	177330	177304		MOV	0000,0000	
206						;ROUTINE TO SET UP WRITE/READ BUFFERS		
207						;		
208						;		
209	001572	166767	177314	177270		SWP	000000,SAVE	
210	001600	005067	177314			CLP	0000	
211	001604	162767	000003	177256	SETUP:	SWP	03,SAVE	;DIVIDE MEMORY BY 3
212	001612	022767	000003	177250		CMR	03,SAVE	
213	001620	101003				RMI	OVERFLO	;BRANCH IF NO REMAINDER
214	001622	005267	177272			INC	0000	;1 COUNT
215	001626	000766				NO	SETRUF	
216	001630	042767	000001	177262	OVERFLO:	BIC	0000,0000	
217	001636	016767	177250	177250		MOV	000000,INBUF	;SET UP IN-BUFFER
218	001644	066767	177250	177242		ADD	0000,INBUF	;
219	001652	016767	177236	177236		MOV	INBUF,SAVEBUF	;SET UP SAVE BUFFER
220	001660	066767	177234	177230		ADD	0000,SAVEBUF	
221	001666	016767	177226	177170		MOV	0000,SWDCT	;SET UP WORD COUNT
222	001674	000241				CLC		
223	001676	006067	177162			ROK	SWDCT	;DIVIDE BYTSX2
224	001702	012767	003724	176150		MOV	000000,00	;SET UP TTY VECTOR
225	001710	012767	000340	176144		MOV	0340,02	
226	001716	052777	000100	177066		RIS	0000,0000	;ENABLE TTY INTERRUPT
227						;		
228	001724	016767	177134	177114	DATA:	MOV	SWDCT,WDCT	;SET UP WORD COUNT
229	001732	012767	001724	177140		MOV	0DATAT,WDCT	;SET UP FOR HARD ERROR
230	001740	005067	177106			CLP	LMA	
231	001744	005067	177100			CLP	TRACF	
232	001750	012777	000340	177024	ND5AV:	MOV	0340,000	;LOCK UP PROCESSOR PRIORITY
233	001756	016767	177134	177072		MOV	SAVEBUF,HUF	;SET UP CURRENT ADDR
234	001764	042767	000003	177050		BIC	03,FLAG	

235										
236	001777	042767	001000	177042	LIAT:	MIC	ORIT9,FLAG			
237	002000	005267	177036			INC	FLAG			
238	002004	104505				WFAH	0100			
239	002006	000004				IOT			WAIT FOR FLAG IN BACKGROUND TEST	
240	002010	032767	001000	177024		HIT	ORIT9,FLAG		CHECK FOR ERROR	
241	002016	001414				WFO	WPIAT		WRITE HARDWARE DATA	
242	002020	016767	177016	177072		MOV	FLAG,WORK		TRY TO READ 3 TIMES	
243	002026	042767	177774	177064		MIC	0177774,WORK			
244	002034	022767	000003	177056		CMP	03,WORK			
245	002042	001353				WVE	LDAT			
246	002044	000000				HALT			UNABLE TO READ FROM	
247	002046	000777				BR	.		DISK	
248	002050	012767	002170	177022	WPIAT:	MOV	04NSAV,WORK		SET UP FOR HARD FROM	
249	002056	016767	177030	176772		MOV	00THUF,WORK		SET UP HARDWARE BUFFER	
250	002064	104503				WRITE	0100			
251	002066	000004				IOT			WAIT FOR FLAG IN BACKGROUND	
252	002070	042767	000003	176744		MIC	03,FLAG			
253	002076	016767	177012	176752		MOV	04NSAV,WORK		SET UP COMMENT ADDR	
254	002104	042767	001000	176730	WAND:	MIC	ORIT9,FLAG			
255	002112	005267	176724			INC	FLAG			
256	002116	104505				WFAH	0100			
257	002120	000004				IOT			WAIT FOR FLAG IN BACKGROUND	
258	002122	004567	001216			JSH	05,COMPARE		COMPARE DATA	
259	002126	032767	001000	176706		HIT	ORIT9,FLAG		CHECK FOR ERROR	
260	002134	001415				WFO	WNSAV		RESTORE DISK BUFFER	
261	002136	016767	176700	176754		MOV	FLAG,WORK		CHECK FOR 3 HEADS	
262	002144	042767	177774	176746		MIC	0177774,WORK			
263	002152	022767	000003	176740		CMP	03,WORK			
264	002160	001351				WVE	WAND		GO HEAD DATA	
265	002162	042767	000003	176652		MIC	03,FLAG			
266	002170	042767	001000	176644	WNSAV:	BIC	ORIT9,FLAG		CLEAR PROGRAM FROM FLAG	
267	002176	016767	176714	176652		MOV	SAVBUF,WORK		SET UP COMMENT ADDRESS	
268	002204	104503				WRITE	0100			
269	002206	000004				IOT			WAIT IN BACKGROUND TEST	
270	002210	104507				WRCHECK	0100			
271	002212	000004				IOT			WAIT FOR FLAG	
272	002214	032767	001000	176620		HIT	ORIT9,FLAG		CHECK FOR ERROR	
273	002222	001413				WFO	STOPHI			
274	002224	016767	176612	176666		MOV	FLAG,WORK			
275	002232	042767	177774	176660		MIC	0177774,WORK			
276	002240	022767	000003	176652		CMP	03,WORK			
277	002246	001350				BNE	WNSAV			
278	002250	000000				HALT				
279	002252	005767	176564		STOPHI:	TST	FLAG		RESTORE DISK AND EXIT	
280	002256	100417				MHI	WFOPE		SET UP NEXT DISK BUFFER	
281	002260	004767	000362			JSP	07,DISKUF		READ NEXT BUFFER	
282	002264	000167	177460			JMP	WNSAV		REPORT END.	
283	002270	100001				ENT	01			
284	002272	005352				END				
285	002274	013700	000042			MOV	0042,00		GET MONITOR ADDRESS	
286	002300	001404				BFO	LXIT		SKIP IF NO WORK	
287	002302	004710			LOGICAL:	JSP	7,(0)		GO TO MONITOR	
288	002304	000204				NOP				

289 002306 000240
290 002310 000240
291 002312 000167 177406
292 002316 000000
293 002320 000777

NOP
NOP
EXIT: JMF
RESTORE: .
NR

DATAT
HAIT
.

RECYCLE TEST
DO NOT RESTORE .RPM

348	002522	005057			MFS2	
349	002524	000006			6	
350	002526	104001			EMT+1	
351	002530	005057			MFS2	
352	002532	032777	040000	176254	HIT	0HIT14.PICS

```

353
354 002540 001430      REG      SOFTEN      ;GO AND CONTINUE SOFT FROM
355 002542 017767 176256 176352      MOV      00AF,00PK ;FETCH FROM EXT. BITS
356 002550 000367 176344      SWAB     00PK
357 002554 042767 177400 176336      BIC      017740,00PK
358 002562 004567 001432      JSR      05,CONV    ;CONVERT TO ASCII
359 002566 001120      WOPR
360 002570 005073      MFS2A
361 002572 000003      J
362 002574 104000      FMT0P
363 002576 005031      MFS5A
364 002600 005073      MFS2A
365 002602 177777      -1
366 002604 052777 000400 176202      BIS      0010,00CS ;CLEAR THE DISK
367 002612 012706 001000      MOV      0100,06
368 002616 000177 176256      JMP      000000
369 002622 005777 176170      SOFTEN: TST     00C ;CHECK FOR X-FER DONE
370 002626 001404      BEQ      INTEXT   ;EXIT FROM ROUTINE
371 002630 052777 000001 176156      BIS      0010,00CS ;SET GO AND CONTINUE
372 002636 000002      RTI
373 002640 012706 000774      INTEXT: MOV     0774,06 ;RETURN TO WAIT INST.
374 002644 000002      RTI      ;RESET STACK
375      ;EXIT
376      ;
377      ;ROUTINE TO SETUP DISK BUFFERS
378      ;ADD WORD COUNT TO STARTING DISK ADDRESSES
379      ;COMPARE CALCULATED ADDRESS TO TERMINATING ADDRESS
380      ;
381 002646 066767 176174 176176      DISBUF: ADD     0000,DMA ;ADD WORD COUNT TO LOWER 16 BITS
382 002654 103002      HCC
383 002656 005267 176166      COMPAR: INC     TRACK ;OVERFLOW ADD ONE TO TRACK
384 002662 026777 176164 176132      CMF     DMA,00AF ;COMPARE LOWER 16 BITS
385 002670 001403      RFQ
386 002672 052767 000100 176142      BIS      0010,FLAG
387 002700 017767 176120 176214      CM0AE: MOV     00AF,00PK1 ;FETCH EXT. ADDR BITS
388 002706 042767 177740 176206      BIC      017740,00PK1 ;MASK TRACK AND DISK ADDR
389 002714 042767 177740 176126      BIC      017740,TRACK
390 002722 026767 176122 176172      CMP     TRACK,00PK1 ;ARE THEY EQUAL
391 002730 001100      BNE
392 002732 105767 176104      ERADW   FLAG ;ERROR IN DATA REG
393 002736 100015      TSTW   FLAG ;CHECK FOR LAST DISK BUFFER
394 002740 005067 176106      RPL     EXTCMP
395 002744 005067 176100      CLW     DMA ;CLEAR LOWER 16 BITS
396 002750 042767 000200 176064      CLW     TRACK ;CLEAR EXT. ADDR. BITS.
397 002756 062716 000004      HIC      0200,FLAG
398 002762 016767 176076 176056      ADD     04,(6) ;INC STACK POINTER
399 002770 000457      MOV     SWROCT,ARUCT ;EXIT
      HW      EXIDW

```

370											
371	002772	042767	177774	176122	EXTCMP:	RIC	0177774,WORK1				:MASK EXT. TRACK BITS
372	003000	022767	000003	176114		CMP	03,WORK1				:COMPARE FOR LAST TRACK
373	003006	001033				MOV	AKH				:NOT LAST TRACK EXIT
374	003010	017767	176010	176102		MOV	00AF,WORK				
375	003016	042767	177743	176074		RIC	0177743,WORK				
376	003024	026767	176070	176044		CMP	WORK,DSKNOH				
377	003032	001021				MOV	AKH				
378	003034	017767	175762	176056		MOV	00AH,WORK				:FETCH LOWER 16 BITS OF ADDRESS
379	003042	066767	176000	176050		AND	WORDT,WORK				:WILL DISK OVERFLOW
380	003050	103012				ACC	AKH				
381	003052	052767	000200	175762		RIS	0200,FLAG				
382	003060	017767	175736	175760		MOV	00AH,WORDT				:DISK WILL OVERFLOW
383	003066	005167	175754			COM	WORDT				:SET UP NEW WORD COUNT
384	003072	005267	175750			INC	WORDT				:
385	003076	017767	175722	175744	AKH:	MOV	00AE,TRACK				
386	003104	042767	177740	175736		RIC	0177740,TRACK				:MASK TRACK BITS
387	003112	017767	175704	175732		MOV	00AH,DMA				:LOAD 16 BITS OF ADDRESS
388	003120	032767	000100	175714		RIT	0010,FLAG				
389	003126	001001				MOV	004				
390	003130	000207			EXTDR:	RIS	07				:EXIT
391	003132	004567	001062		FRADR:	JSP	05,CONV				:CONVERT DMA REG COUNT TO ASCII
392	003136	001052				DMA					
393	003140	005033				MFS1					
394	003142	000006				6					
395	003144	004567	001050			JSP	05,CONV				:CONVERT TRACK REG COUNT TO ASCII
396	003150	001050				TRACK					
397	003152	005047				MFS1A					
398	003154	000002				2					
399	003156	104000				FMT	00				:REPORT ERROR
400	003160	005004				HED4					
401	003162	005047				MFS1A					
402	003164	005033				MFS1					
403	003166	177777				-1					
404	003170	005067	175656			CLH	DMA				:DISK ADDRESS FROM RE-START PRG.
405	003174	005067	175650			CLP	TRACK				
406	003200	000000				HALT					


```

437
438
439
440
441 ;ROUTINE TO FILL BUFFERS WITH RANDOM DATA
442
443
444
445 ;ENTER FROM JSK 87,PANEX
446
447 PANEX:
448 PAN3202 016767 175640 175710      MOV      WPDCT,WORD      ;SET UP WORD
449 PAN3210 012705 001112              MOV      ROUTHUP,85    ;LOC. OF OUTBUFFER
450
451
452
453 ;RANDOM DATA GENERATOR SUBROUTINE
454 PAN3214 016700 000120      DAYGEN: MOV      LONUM,80      ;SET UP R2 WITH 5 DIGITS LOW
455 PAN3220 016701 000116              MOV      MINUM,81      ;SET UP R1 WITH 5 DIGITS HIGH
456 PAN3224 012703 000007              MOV      R7,83        ;SET UP SHIFT COUNT
457 PAN3230 005002              CLR      R2           ;CLEAR R2
458 PAN3232 006300      SHIFT: ASL      R0           ;SHIFT R0 LEFT AND
459 PAN3234 006101              ROL      R1           ;ROTATE CARRY INTO LSH OF R1 INTO
460 PAN3236 006102              ROL      R2           ;ROTATE CARRY OUT OF R1 INTO R2
461 PAN3240 005303              DEC      R3           ;DECREMENT R3
462 PAN3242 001373              BNE      SHIFT       ;CONTINUE SHIFT LOOP
463 PAN3244 006700 000070      ADD      LONUM,R0     ;ADDN IN NUMBER TO MAKE X 129
464 PAN3250 005501              ADC      R1           ;PROPOGATE CARRY
465 PAN3252 006701 000064      ADD      MINUM,R1     ;ADDN IN NUMBER TO MAKE X 129
466 PAN3256 005502              ADC      R2           ;PROPOGATE CARRY
467 PAN3260 002700 001057      ADD      01057,00     ;ADDN LOW CONSTANT
468 PAN3264 005501              ADC      R1           ;PROPOGATE CARRIES
469 PAN3266 005502              ADC      R2           ;PROPOGATE AGAIN
470 PAN3270 002701 0047401      ADD      047401,01    ;ADDN HIGH CONSTANT
471 PAN3274 005502              ADC      R2           ;PROPOGATE CARRY
472 PAN3276 002702 000006      ADD      06,02       ;ADDN HIGHEST CONSTANT
473 PAN3302 006000      ADD      02,00       ;REFINE R0 WITH HIGH DIGIT
474 PAN3304 005501              ADC      R1           ;PROPOGATE CARRY
475 PAN3306 010067 000026      MOV      R0,LONUM    ;PUT R0 BACK IN LONUM

```

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476
477 003312 010025      MOV      00,(S)0      ;HOLD COUNT FOR PROGRAM
478 003314 005367 175600      DFC      WORK
479 003320 001406      BFC      EXGEN
480 003322 010167 000014      MOV      01,MINUM      ;PUT P1 BACK IN MINUM
481 003326 010125      MOV      01,(S)0      ;HOLD MINUM FOR PROGRAM
482 003330 005367 175600      DFC      WORK
483 003334 001327      MVE      DAYGE1
484 003336 000207      EXGEN:   RTS          ;RETURNS TO PROGRAM
485 003340 000000      LONUM:   0
486 003342 000000      MINUM:   0
487
488
489      ;DATA COMPARISON ROUTINE
490      ;IF AN ERROR OCCURS BETWEEN THE OUT-BUFFER AND
491      ;THE IN-BUFFER AN ERROR WILL BE REPORTED IN THE
492      ;FOLLOWING MANNER
493      ;DATA ERROR XX DAF XXXXXX DAF XXXXXX GOOD DATA XXXXX BAD DATA
494
495
496 003344 005067 175554      COMPARE:ICL      WORK2      ;FOUND COUNT
497 003350 016767 175536 175512      MOV      OUTHUF,SAVE      ;SET UP OUTHUFFER POINTER
498 003356 016767 175532 175506      MOV      INHUF,SAVE      ;SET UP IN-BUFFER POINTER
499 003364 027777 175500 175500      BRDCMP:  CMP      OSAVE,OSAVE      ;COMPARE BUFFERS
500 003372 001016      BNE      WDEFH      ;FOUND IN ERROR
501 003374 005267 175524      BRDINC:  INC      WORK2      ;+1 WORD COUNT
502 003400 026767 175442 175510      CMP      BRDCT,WORK2      ;IS COMPLETE BUFFER CHECKED
503 003406 001407      BFO      ADAM      ;EXIT ROUTINE
504 003410 002767 000002 175452      ADD      02,SAVE
505 003416 002767 000002 175446      ADD      02,SAVE
506 003424 000757      BR      BRDCMP      ;COMPARE NEXT WORD
507 003426 000205      ADAM:    RTS          ;EXIT THIS ROUTINE
508
509
510 003430 0052767 001000 175404      WDEFH:   BIS      BRIT9,FLAG      ;SET ERROR BIT
511 003436 016767 175410 175454      MOV      LMA,WORK      ;FETCH STARTING DISK ADDR
512 003444 016767 175400 175450      MOV      TRACK,WORK1
513 003452 006767 175446 175440      ADD      WORK2,WORK
514 003460 003002      RCC      00
515 003462 005267 175434      INC      WORK1
516 003466 004567 000526      JSP      05,CONV      ;CONVERT WORD ADDR TO ASCII
517 003472 001120      WORK1
518 003474 005033      MFSI
519 003476 000006      6
520 003500 004567 000510      JSP      05,CONV      ;CONVERT TRACK ADDR TO ASCII
521 003504 001122      WORK1
522 003506 005047      MFSIA
523 003510 000002      2
524 003512 017767 175352 175400      MOV      OSAVE,WORK      ;FETCH GOOD DATA
525 003520 004567 000474      JSP      05,CONV      ;CONVERT GOOD DATA TO ASCII
526 003524 001120      WORK
527 003526 005156      MESS
528 003530 000006      6
529 003532 017767 175334 175360      MOV      OSAVE,WORK      ;FETCH BAD DATA
530 003540 004567 000454      JSP      05,CONV      ;CONVERT TO ASCII

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MAINDFC-11-DZPFC-A RE11 MULTI DISK REPLACES D5AA
DZPFC.RIC

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532 003544 001123
531 003546 005172
532 003552 000006

WOPF
MFSH
6

```
533
534 003552 104000          FMT      00          ;PRINT MESSAGE
535 003554 004722          MFDI
536 003556 005147          MFSIA
537 003560 005033          MFSJ
538 003562 005156          MFS5
539 003564 005172          MFS6
540 003566 177777          -1
541 003570 000701          BP      000INC      ;GO COMPARE NEXT WORD
542
543
544
545
546
547
548
549
550 003572 012767 003722 174214 XWAIT: MOV      00TIX,14      ;SET UP INACT TRAP
551 003600 005067 174212          CLP      16
552 003604 012737 003626 000010      MOV      018,0010      ;SET ILLEGAL INST
553 003612 006727 000000          SXT      00          ;TEST FOR 11/45
554 003616 012767 000006 000076      MOV      06,PTIX      ;MAKE IT AN HTT
555 003624 000401          BP      28          ;SKIP JUNK
556 003626 022626          18:      CMP      (6)+,(6)+      ;CLEAR STACK
557 003630 012737 000012 000010      28:      MOV      012,0010      ;RESET I/O
558 003636 005067 175232          CLP      PASS          ;SET UP TIME MASE
559 003642 052777 000020 175132      BIS      0BIT4,0PS      ;SET TRACE HIT
560 003650 005027 000000          CLP      00
561 003654 005267 177772          XINCW: INC      XINCw-2
562 003660 105767 177766          TSTB    XINCw-2
563 003664 100373          BPL     XINCw
564 003666 005267 175202          INC     PASS
565 003672 001401          BEQ     0+4
566 003674 000765          BR     XINCw-4
567
568 003676 042777 000020 175076 ;REPORT BACKGROUND TEST TIMED OUT
569 003704 005046          BIC     0BIT4,0PS      ;CLEAR TRACE HIT
570 003706 012746 003714          CLP     -(6)          ;CLEAR PS ON STACK
571 003712 000002          MOV     018,-(6)      ;SET RETURN
572 003714 104001          18:      RTI
573 003716 005243          TIMO
574 003720 000000          HALT
575 003722 000002          RTIX:   RTI
576
```

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577
578
579
580
581
582 003724 017767 175056 175166 CNTLC: MOV      BTRH, AOPP      ;FETCH KEYBOARD BUFFER
583 003732 042767 000200 175160      PIC      BRIT7, AOPK      ;MASK FOR 33
584 003740 022767 000003 175152      CMP      B3, AOPK      ;TEST FOR CNTLC
585 003746 001003      MNE      .+10         ;NOT CNTLC EXIT
586 003750 052767 100000 175064      MHS      BRIT15, FLAG   ;SET FLAG BIT
587 003756 000002      RTI                     ;EXIT ROUTINE
588
589
590
591
592
593 003760 011600      EMTRP: MOV      (A), B0
594 003762 022740 104001      CMP      BEMT+1, -(A)   ;WAS THE CALL EMT+1
595 003766 001077      BNE      TYP5          ;NO! TYPE A SERIES
596 003770 000400      BR      TYP           ;TYPE ONE LINE
597
598 003772 011600      ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
599 003774 062716 000002      TYP:  MOV      B00, B0   ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
600 004000 011000      ADD      B2, B00        ;SET UP EXIT.
601 004002 112067 000154      MOV      B00, B0        ;ADDRESS OF MESSAGE TO P.
602 004006 122767 000100 000140      TYFA: MOVH     (0)+, TYPDAT ;GET CHARACTER
603 004010 001005      CMVB    B100, TYPDAT   ;CHECK FOR "0" CHARACTER
604 004016 005067 000140      MNE     TYPC          ;BRANCH IF NOT "0".
605 004022 004767 000030      CLF     TYPDAT        ;OUTPUT NULL TO
606 004026 000002      JSR     B7, TYPD      ;CLEAR BUFFER
607 004030 122767 000045 000124      RTI     ;TERMINATOR CHAR. DONE. EXIT.
608 004036 001436      TYPC: CMPE    B45, TYPDAT ;CHECK FOR "8".
609 004040 122767 000042 000114      BFC     TYPF          ;BRANCH IF "8".
610 004046 001437      CMPH    B42, TYPDAT   ;NOT "8". CHECK FOR "8".
611 004050 004767 000002      BFO     TYPG          ;BRANCH IF "8"
612 004054 000752      JSR     B7, TYPD      ;TYPE CHAR IN TYPDAT
613 004056 116777 000100 174720      RR      TYPA          ;OUTPUT CHARACTER TO PRINTER
614 004064 105777 174720      TYPD: MOVH     TYPDAT, BTPB ;WAIT FOR DONE FLAG.
615 004070 100375      TSTR    BTP5
616 004072 122767 000015 000062      RPL     .-4
617 004100 001003      CMPE    B15, TYPDAT   ;CHECK FOR CR
618 004102 012767 000011 000054      IS:   MNE     IS      ;NO SKIP
619 004110 005767 000050      MOV     B00, NULL     ;SET NULL COUNTER
620 004114 001406      TST     NULL          ;TEST COUNTER
621 004116 005367 000042      BFC     TYEXIT        ;ZERO-EXIT
622 004122 112767 000000 000032      OFC     NULL          ;DECREMENT
623 004130 000752      MOVH    B0, TYPDAT   ;ZERO OUTPUT
624 004132 000207      RR      TYPD          ;OUTPUT NULL.
625 004134 112767 000015 000020      TYEXIT: RTS          ;EXIT
626 004142 004767 177710      TYFE: MOVH    B15, TYPDAT ;MOVE CARRIAGE RETURN CODE TO TYPDAT
627 004146 112767 000012 000006      JSR     B7, TYPD      ;GO TYPE CHAR.
628 004154 004767 177676      TYFG: MOVH    B12, TYPDAT ;MOVE LF CODE TO TYPDAT.
629 004160 000710      JSR     B7, TYPD      ;GO TYPE CHAR.
630 004162 000000      TYFDAT: BR      TYPA

```

631	004164	000000		NULL:	0	
632				;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER		
633	004166	011600		TYPSE:	MOV	006,07
634	004170	062716	000002		ADD	02,006
635	004174	011067	000014		MOV	006,TYPSM
636	004200	022767	177777	000006	CMP	0-1,TYPSM
637	004206	001001			RNF	TYPSA
638	004210	000002			BTI	

;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
;UPDATE TO NEXT MESSAGE ADDRESS
;ADDRESS OF MESSAGE TO TYPSM
;CHECK FOR TERMINATOR
;BRANCH IF NOT TERMINATOR.
;TERMINATOR, EXIT


```
639  
640 004212 104001 TYP5A: FMT +1 ;CALL JSR SUB TO TYPE MESSAGE  
641 004214 000000 TYP5M: 0 ;ADDRESS OF MESSAGE GOES HERE  
642 004216 000763 MP TYP5 ;GO PROCESS NEXT MESSAGE  
643 ;  
644 ;  
645 ;  
646 ;  
647 ;OCTAL TO ASCII CONVERT ROUTINE  
648 ;  
649 ;ENTER ROUTINE AS FOLLOWS  
650 ;JSR 05, CONV  
651 ;ADDR=ADDRESS OF NUMBER TO BE CONVERTED  
652 ;ADDR BYTE=LSB OF WHERE ASCII IS GOING  
653 ;ASCII=THE NUMBER OF ASCII CHAR. TO BE CONVERTED  
654 ;  
655 ;  
656 004220 013567 000306 CONV: MOV 0(5)+, ACNVX ;VALUE OF 0 TO BE CONVERTED  
657 004224 012501 MOV (5)+, 01 ;ASCII ADDR  
658 004226 012502 MOV (5)+, 02 ;0 OF ASCII CHAR  
659 004230 060201 ADD 02, 01  
660 004232 016703 000274 ACVX: MOV ACNVX, 03  
661 004236 042703 177770 BIC 0177770, 03 ;ISOLATE LEAST SIGNIFICANT OCTAL0  
662 004242 062703 000060 ADD 060, 03 ;SET UP ASCII0  
663 004246 110341 MOV0 03, -(1) ;STORE ASCII CHAR  
664 004250 042767 000007 000254 HIC 07, ACNVX  
665 004256 006067 000250 ROP ACNVX ;ROTATE OCTAL0  
666 004262 006067 000744 ROP ACNVX  
667 004266 006067 000240 ROP ACNVX  
668 004272 005302 DEC 02 ;-1 FROM ASCII CHAR COUNT  
669 004274 001356 BNE ACVX  
670 004276 000205 RTS 05 ;EXIT 0 CONVERTED  
671 ;ROUTINE TO SET ACTION ENABLE ON MA/MF PARITY MEMORIES  
672 ;CALL JSR P, MAMF  
673 172100 PARCSH=172100  
674 000114 PARVEC=114  
675 000004 ERRVEC=4  
676 000006 SP=06  
677  
678 004300 012737 004372 000114 MAMF: MOV 0PARSHV, 00PARVEC ;SET PARITY INTERRUPT VECTOR  
679 004306 012737 004340 000116 MOV 0300, 00PARVEC+2 ;AND PRIORITY LEVEL 1 ON INTERRUPT  
680 004314 013746 000004 MOV 00ERRVEC, -(SP) ;SAVE CURRENT ERROR VECTOR  
681 004320 013746 000006 MOV 00ERRVEC+2, -(SP) ;AND PRIORITY LEVEL  
682 004324 012737 000006 000004 MOV 00ERRVEC+2, 00ERRVEC  
683 004332 012737 000002 000006 MOV 0011, 00ERRVEC+2  
684 004340 012700 172100 MOV 0PARCSH, 00 ;GET FIRST CSH ADDRESS  
685 004344 012702 000001 MOV 01, 02  
686 004350 012720 000001 10: MOV 01, (A)+ ;SET ACTION ENABLE IF AVAILABLE  
687 004354 006302 ASL 02 ;SHIFT AVAILABILITY INDICATOR  
688 004356 103374 HCC 10  
689 004360 012637 000006 MOV (SP)+, 00ERRVEC+2 ;RESTORE ERROR VECTOR  
690 004364 012637 000004 MOV (SP)+, 00ERRVEC ;PRIORITY LEVEL AND INTERRUPT VECTOR  
691 004370 000207 RTS 07  
692 ;PARITY ERROR SERVICE ROUTINE
```

```
693          WHEN A PARITY ERROR IS DETECTED THE ROUTINE SCANS
694          MEMORY FOR THE PARITY ERROR. WHEN THE ERROR
695          IS DETECTED THE PROGRAM HALTS WITH THE ADDRESS
696          CAUSING THE ERROR IN R2
697          ;TO CONTINUE PRESS CONTINUE
698          PARSR2: BMT+1
699          PARERR:
700          MOV     028,00PARVPC      ;REPOSITION PARITY ERROR INT
701          MOV     048,00ERRVPC      ;SET TRAP OUT TRAP
702          CTR     00ERRVPC+2
703          TST     (,)+
704          IF     10
705          HALT
706
707
708          38:  RESET
709          MOV     0PARSHV,00PARVPC  ;RESTORE PARITY VECTOR
710          MOV     0ERRVPC+2,00ERRVPC ;RESTORE TRAP OUT HALT
711          JSR     07,4AMF
712          RTI
713          48:  HALT
714          HF     38
715
716          ;ERROR = PARITY ERROR NOT DETECTED ON SCAN
717          ;IF (SF) CONTAINS PC WHERE
718          ;PARITY ERROR WAS ORIGINALLY DETECTED
719          ;
720          ;DO NOT JUMP ROUTINE
721          ;JUMP DISK AND HALT
722
723          58:  DIS     0BIT0,DCS      ;JUMP DISK
724          MOV     01P,24
725          HALT
726
727          ;
728          UP8:  MOV     0D0WH,24
729          MOV     01M,06
730          MOV     0-30P,0040M
731          TIMEOUT:
732          INC     00M
733          RAL     TIMEOUT
734          BMT+1
735          PHRF
736          JMP     START
737
738          ACI-VX: P
739          ;
740          ;
741          ;
742          ;
743          ;THIS ROUTINE ENABLES THE OPERATOR TO SELECT A TRACK STATICLY
744          ;THE ROUTINE DOES A ONE WORD READ TO SELECT THE TRACK
745          ;THE OPERATOR MAY CHANGE THE SWITCH REGISTER AT ANY TIME
746          ;SWR6=0 EQUALS THE TRACK NUMBER
747          ;SWR9=7 EQUALS THE DISK NUMBER
748          ;
749          STAMP: DIS     0BIT0,DCS
750          MOV     0SWF,00M1      ;FETCH SWR
```

747	004550	016767	174346	174347	MOV	WOPR1,WOPR	
748	004556	042767	176200	174334	BIC	0170000,WOPR	;MASK DISK AND TRACE NO.
749	004564	006067	174330		ROP	WOPR	
750	004570	006067	174324		ROP	WOPR	
751	004574	006067	174320		ROP	WOPR	
752	004600	006067	174314		ROP	WOPR	
753	004604	006067	174310		ROP	WOPR	
754	004610	016777	174304	174206	MOV	WOPR,0D0E	;DISK EXT. ADDR. REG. LOADED
755	004616	017767	174156	174274	MOV	0S0P,WOPR	
756	004624	000367	174270		SWAP	WOPR	
757	004630	006167	174264		ROL	WOPR	
758	004634	006167	174260		ROL	WOPR	
759	004640	006167	174254		ROL	WOPR	
760	004644	042767	003777	174246	BIC	03777,WOPR	
761	004652	016777	174242	174142	MOV	WOPR,0D0E	;DISK ADDRESS REG LOADED
762	004660	012777	001114	174132	MOV	01N00F,0CMA	;LOAD CURRENT ADDRESS
763	004666	012777	177777	174122	MOV	0177777,0WC	;LOAD WORD COUNT
764	004674	052777	000005	174112	BIS	05,0DCS	;GO AND HEAD
765	004702	105777	174106		CTBUSY: TSTH	0DCS	;TEST FOR CONTROL READY
766	004706	100375			BPL	CTBUSY	;WAIT FOR CONTROL READY
767	004710	026777	174206	174062	SRCHG: CVP	WOPR1,0S0R	
768	004716	001305			BNF	STAMP	;S0R HAS CHANGED
769	004720	000773			BR	SRCHG	;S0R HAS NOT CHANGED
770							
771							
772							
773							
774							
775							
776							
777							
778							
779							
780							
781							
782							
783							
784							
785	004722	042045	052101	020101	HED1: .EVEN		
	004730	051105	047522	020122	.ASCII	/0DATA FRROR #/	
	004736	100					
786							
787							
788	004737	045	052123	052101	HED2: .ASCII	/0STATUS FRROR #/	
	004744	051525	042440	051122			
	004752	051117	040040				
789							
790							
791	004756	047445	042526	043122	HED3: .ASCII	/0OVERFLO X-FFR ERROR #/	
	004764	047511	054040	043055			
	004772	051105	042440	051122			
	005000	051117	040040				
792							
793	005004	042045	051511	020113	HED4: .ASCII	/0DISK ADDRESS FRROR #/	

	005012	042101	051104	051505				
	005020	020123	051105	047522				
	005026	020127	100					
794					:			
795					:			
796	005031	045	100		HEU5A:	.ASCII	/	00/
797					:			
798					:			
799					:			
800					:			
801					:			
802					:			
803					:			
804					:			
805	005033	040	020040	020040	MFS1:	.ASCII	/	DAH 0/
	005040	020040	040504	020122				
	005046	100						
806					:			
807					:			
808					:			
809	005047	040	020040	040504	MFS1A:	.ASCII	/	DAE 0/
	005054	020105	100					
810					:			
811					:			
812					:			
813	005057	040	020040	020040	MFS2:	.ASCII	/	DCB 0/
	005064	020040	041504	020123				
	005072	100						
814					:			
815	005073	040	020040	020040	MFS2A:	.ASCII	/	HARD ERROR0/
	005100	020040	040510	042122				
	005106	042440	051122	051117				
	005114	100						
816					:			
817					:			
818	005115	040	020040	020040	MFS3:	.ASCII	/	WORD COUNT0/
	005122	047527	042122	041440				
	005130	052517	052116	100				
819					:			
820					:			
821					:			
822	005135	040	020040	020040	MES4:	.ASCII	/	WORD ADP.0/
	005142	020040	047527	042122				
	005150	040440	051104	040056				
823					:			
824					:			
825					:			
826	005156	043411	047517	020104	MES5:	.ASCII	/	GOOD DATA 0/
	005164	040504	040524	040040				
827					:			
828					:			
829					:			
830	005172	020040	020040	020040	MES6:	.ASCII	/	BAD DATA 0/
	005200	041040	042101	042040				

MAINDFC-11-DZRFCA-A RE11 MULTI DISK REPLACES D5AA
DZRFCA.RIC

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005206 052101 020101 100

```
R31
R32
R33
R34 005213 040 020040 054105 MFS11: .ASCII / EXISTENT DISK(S).# /
    005220 051511 042524 052116
    005226 042040 051511 024113
    005234 024523 040056
R35
R36
R37 005240 020040 100 MFS12: .ASCII / # /
R38
R39
R40 005243 045 051120 041517 TIMO: .ASCII /#PROCESSOR BACKGROUND TIMED OUT# /
    005250 051505 047523 020122
    005256 040502 045503 051107
    005264 052517 042116 052040
    005272 046511 042105 047440
    005300 052125 100
R41
R42 005303 045 042515 047515 PARERR: .ASCII /#MEMORY PARITY ERROR# /
    005310 054522 050040 051101
    005316 052111 020131 051105
    005324 047522 040122
R43
R44 005330 050045 053517 051105 PPRF: .ASCII /#POWER HAS FAILED# /
    005336 044040 051501 043040
    005344 044501 042514 040104
R45
R46 005352 042445 042116 100 END: .ASCII /#END# /
R47 005360 .FVEN
R48 005360 000000 BUFFER: #
R49 005360 000001 .END
```


ACNVK	004532	ACVN	004232	ADAV	003326	ANS	001232
AFH	003076	BITM	000001	RIT1	000002	RIT10	002000
RIT11	004000	RIT12	010000	RIT13	020000	RIT14	040000
RIT15	100000	BIT2	000004	RIT1	000010	RIT6	000020
RIT5	000040	RIT6	000100	RIT7	000200	RITP	000400
RIT9	001000	RUF	001056	RUFFP	005362	CNA	001020
CMDAE	002700	CNTLC	003724	COMDAP	002662	COMPAR	003344
CONV	004220	CTBUSY	004702	DAE	001024	DAP	001022
DATAT	001724	DAYGEN	003214	DBP	001026	DCB	001014
DFLMS	002452	DISRUF	002646	DISK	002322	DKINT	002374
DWA	001052	DOWN	004454	DSKNOB	001076	EMTTP	003760
END	005352	ERAPR	003132	ERCOUN	001066	EMVLCB	000004
EXGEN	003336	EXRFF	001352	EXTCME	002772	EXTOP	003130
EXTMEM	001272	FLAG	001042	GOTMEM	001440	MEDI	004722
HFD2	004737	HED3	004756	HFD4	005004	MEDSA	005031
HIGH	001102	HINUM	003342	HOPER	001100	INBUF	001114
INDSK	001444	INTEXT	002640	LDAT	001772	LGMRN	001376
LIMIT	001104	LOGICA	002302	LOMIP	003340	LXIT	002312
MA	001030	MAMP	004300	MAXRFF	001400	MFS1	005033
MES1A	005047	MES11	005213	MES12	005240	MES2	005057
MES2A	005073	MES3	005115	MES4	005135	MES5	005156
MES6	005172	NEDST	001502	NULL	004164	OUTHUF	001112
OVERFL	001630	PAPCSP	172100	PAPERH	005303	PANRBY	000372
PARVECB	000114	PASS	001074	PATRU	001054	PC	00000007
PRIORI	001040	PHWF	005330	PS	001002	PANEX	003202
RANNU	001044	KANFD	002104	PSAV	001750	READ	004405
RFSTOP	002316	RTIX	003722	R0	00000000	R1	00000001
R7	00000002	P3	00000003	R4	00000004	R5	00000005
SAVBUF	001116	SAVE	001070	SAV1	001072	SEIHUF	001004
SHIFT	003232	SOFTER	002622	SP	00000006	SPCHG	000710
STAMP	004534	STAPT	001126	STATUS	001036	STOPBU	002252
SWP	001000	SWRDCT	001064	TOMA	001062	TDSNO	001110
TIMFOU	004512	TIMO	005243	TRB	001006	TRB	001012
TPR	001004	TPS	001010	TRACK	001050	TTHACF	001106
TWRDCT	001060	TYEXIT	004132	TYP	003772	TYPA	004002
TYPC	004030	TYPD	004056	TYPDAT	004162	TYPV	004134
TYPG	004146	TYPS	004166	TYPSA	004212	TYPSB	004214
UP	004472	VECTOR	001034	WC	001016	WDEFR	003030
WORK	001120	WORK1	001122	WORK2	001124	WCHLCS	104407
WRDAT	002050	WRDCHP	003364	WRDCT	001046	WINTC	003374
WRITE	004403	PSAV	002170	XINC	003654	XAIT	003572
.	005362						

ERRORS DETECTED: 0

0, DZRFCA/MSDZRFCA.RIC
 RUN-TIME: 3 6 0 SECONDS
 CORE USED: 4K