

IDENTIFICATION

Product Code: MAINDEC-08-D5DB-D
Product Name: DF32 MULTI DISK
Date Created: August 22, 1968
Maintainer: Diagnostic Group
Author: E. Haight



1. ABSTRACT

"MULTI DISK" is a high speed confidence test that exercises the disk system with random data and restores the disk surface to its original state at completion.

2. REQUIREMENTS

PDP-8 or PDP-8/I
DF32 DISK LOGIC
Plus additional slave disks up to three

3. STORAGE

The main body of the program is located between loc. 0 and 1250 in memory.
Three buffers of 2000 words each. Take up the rest of memory up to 7500.
1500 to 3477 Disk Storage Buffer
3500 to 5477 Out Buffer
5500 to 7477 In Buffer

4. LOADING PROCEDURE

The procedure for normal binary tape should be followed.

5. STARTING ADDRESS AND PROCEDURE

5.1 Normal Operation

Starting Address 150 (follow procedure 6.1)

5.2 System Operation

Starting Address 155 (follow procedure 6.2)

6. OPERATING PROCEDURE

6.1 Normal Operation

- a. Load MULTI DISK into memory.
- b. Turn Write Inhibit switches to OFF.
- c. Load address 150.

- d. Set switch register to mode of operation desired.
- e. Press START.
- f. The program will continue to loop upon completion of the system being exercised.
- g. End of test command.

When the end of test command (CONTROL C) is given in the normal mode of operation, the test comes to a halt at the completion of the 2000 word buffer being exercised at the time.

6.2 MULTI DISK Used in Conjunction with the Disk Builder

- a. Call MULTI DISK from the system.
- b. Upon successful loading the program will start automatically.
- c. Set switches to desired mode of operation. Refer to paragraph 7.
- d. End of test command. When the end of test command (CONTROL C) is given in this mode, an exit from MULTI DISK to the system builder is accomplished.

6.3 Printouts

- a. When the program is first initialized it prints out the number of existing disks. Refer to paragraph 8.1.
- b. Error printouts will occur on any disk error or any data error when the read buffer is compared to the write buffer. Refer to paragraphs 8.2 and 8.3.
- c. A report of the number of data errors for each 2000 word buffer may be selected. Refer to paragraph 8.4

6.4 Error Halts

An error halt at loc. 433 will occur when no disk is present.

7. SWITCH REGISTER SETTINGS

0	1	2	3	4	5	6	7	8	9	10	11
				DISK		TRACK SELECTION					
1	0	1									
0	1	0									
0	0	1									
0	0	0									

CROSS OVER TEST 7.1

REPORT NUMBER OF ERRORS PER BUFFER 7.3

SELECT TRACK FROM SWITCH REGISTER 7.4

NORMAL

7.1 SR0 set the test exercises 2000 words starting at disk memory address 7000. The track must be selected by the operator.

7.2 With SR1 set only the number of data errors per 2000/word buffer area is reported.

7.3 SR2 set enables the operator to select the disk and track from the switch register.

8. STATUS REPORTING

8.1 Upon initialization the number of existent disks will be reported. If the number is incorrect, do not press PROGRAM HALT! Type CONTROL C, this will enable the program to restore the disk then halt.

Example:

3 EXISTENT DISK(s)

8.2 When a status register error is detected, only one error in a block will be reported.

Example:

TA0300 DA3124 SR0301
TA = DISK and TRACK
SR = STATUS REGISTER

8.3 Data Errors

All data compare errors will be reported for each block.

Example:

TA0100 WC1021 GD3670 BD3603
TA = DISK and TRACK
WC = WORD COUNT
GD = DATA WRITTEN
BD = DATA READ

8.4 The number of data error can also be reported.

Example:

TA1100 ERROR(S) 0001
TA = DISK and TRACK
ERROR(S) = NUMBER OF DATA ERRORS PER BUFFER

9. DESCRIPTION

MULTI DISK is not a diagnostic it is merely a confidence test, to insure the user the system can transfer data without errors. The test first stores 2000 words of the disk in core, then exercises that 2000 word area with random data. After exercising the disk, the program restores the disk to its original state. Then the test goes on to exercise the next 2000 word block.

Execution Time: 15 seconds per disk.

/MULTI DISK II

/UP32 IUT'S

WC=7750
 CA=7751
 DCMA=6601
 DMAR=6603
 DMAM=6602
 DCEA=6611
 DSAC=6612
 DEAL=6612
 DEAC=6610
 DFSE=6621
 DFSC=6622
 DMAC=6620
 DICA=6762

7750
 7751
 6601
 6603
 6602
 6611
 6612
 6612
 6610
 6621
 6622
 6620
 6762

/WORD COUNT
 /INITIAL ADDRESS
 /CLEAR DISK FLAGS
 /READ
 /WRITE
 /CLEAR DISK EXT, ADDRESS
 /SKIP ON ADC
 /LOAD DISK EXT, ADDRESS
 /READ DISK STATUS
 /SKIP ON NO ERROR
 /SKIP ON COMPLETION FLAG
 /READ DISK MEMORY ADDRESS REGISTER
 /CLEAR DECTAPE FLAGS

*20
/CONSTANTS + TAGS

020	020
021	0200
022	0200
023	0200
024	0200
025	0200
026	0202
027	0200
028	0260
029	7600
030	0100
031	0004
032	1000
033	0370
034	5000
035	6000
036	7000
037	1777
038	2477
039	2000
040	3477
041	0003
042	4000
043	0700
044	0070
045	0007
046	1477
047	3777
048	0000
049	0000
050	0203
051	0057
052	0215
053	0212
054	0000
055	0240
056	0305
057	0330
058	0311
059	0323
060	0324
061	0305
062	0316
063	0324
064	0240
065	0304
066	0311
067	0323
068	0324
069	0305
070	0316
071	0324
072	0240
073	0304
074	0311
075	0323
076	0313
077	0250
078	0323
079	0323
080	0251

SAV,	0
SAV1,	0
SAV2,	0
SAV3,	0
BCOUNT,	0
DCOUNT,	0
K0002,	0002
K0200,	0200
K0260,	0260
K7600,	7600
K0100,	0100
K0004,	0004
K1000,	1000
K0370,	0370
K5000,	5000
K6000,	6000
K7000,	7000
K1777,	1777
K2477,	2477
K2000,	2000
K3477,	3477
K0003,	0003
K4000,	4000
K0700,	0700
K0070,	0070
K0007,	0007
K1477,	1477
K3777,	3777
CC,	0
TKA,	0
K0203,	0203
M1,	M1
0215	0215
0212	0212
0	0
0240	0240
0305	0305
0330	0330
0311	0311
0323	0323
0324	0324
0305	0305
0316	0316
0324	0324
0240	0240
0304	0304
0311	0311
0323	0323
0313	0313
0250	0250
0323	0323
0251	0251

/SPACE
/E
/X
/I
/S
/T
/E
/N
/T
/SPACE
/D
/I
/S
/K
/I
/S
/I

/STOP CODE

0104	0000	RAM,	0
0105	0542	RANDOM	AC
0106	7700	WCI,	CA
0107	7701	CAT,	ERRUR
0110	0607	FR,	RESTORE
0111	0501	RE,	CU,
0112	0714	CU,	COMPARE
0113	0421	NU,	0421
0114	0000	HU,	0
0115	0000	GJ,	0
0116	0000	SR,	0
0117	0000	DMA,	0
0120	1035	EPI,	SRP
0121	1071	EP2,	UP
0122	0600	LI,	LIA
0123	0200	MES1,	MESSAGE
0124	0204	SETUP,	SIXTY
0125	0400	BEG,	BLGIN
0126	0406	DAT,	UA*15
0127	0736	CHK,	ICB
0130	0276	PVI,	SIXTY+12
0131	7600	SYSTEM,	7600
0132	0000	AC,	0
0133	0000	LINK,	0
0134	0000	LINK,	0
0135	0000	ECOUNT,	0
0136	1200	SHERIL,	SHERT
0137	1000	CLPL,	ULF
0140	1155	IR2L,	IR2

```

0200 WITH DATA FOLLOWING
0201 /RETURN FOLLOWING END OF MESSAGE
0202 /CODE (000)
0203 *200
0204 MESSAGE, 0
0205 IOP
0206 CLA CMA /SET C(AC)=-1
0207 TAU MESSAGE /ADD LOCATION
0208 UCA 12 /AUTO=INDEX REGISTER
0209 TAU I 12 /FETCH FIRST WORD
0210 UCA MSRGHT /SAVE IT
0211 TAU MSRGHT
0212 MTK
0213 MTK /ROTATE 6 BITS RIGHT
0214 JMS TYPECH /TYPE IT
0215 TAU MSRGHT /GET DATA AGAIN
0216 JMS TYPECH /TYPE RIGHT HALF
0217 JMP MESSAGE+5
0218 MSRGHT, 0 /TEMPORARY STORAGE
0219 TYPECH, 0 /TYPE CHARACTER IN C(AC)6-11
0220 ANU MASK77
0221 SNA
0222 JMP MTP+5 /IS IT END OF MESSAGE?
0223 TAU M40 /YES: EXIT
0224 SMA /SUBTRACT 40
0225 JMP ,+3 /<40?
0226 TAU C340 /NO
0227 JMP MTP /YES: ADD 300
0228 TAU M3 /TO CODES <40
0229 SZA /SUBTRACT 3
0230 JMP ,+3 /IS IT ZERO?
0231 TAU C212 /NO
0232 JMP MTP /YES: CODE 45 IS
0233 TAU M2 /LINE FEED (212)
0234 SZA /SUBTRACT 2
0235 JMP ,+3 /IS IT ZERO?
0236 TAU C240 /NO
0237 TAU C215 /YES: CODE 45 IS
0238 TAU C240 /CARRIAGE=RETURN (215)
0239 ILS /ADD 200 TO OTHERS >40
0240 TSF /TRANSMIT CHARACTER
0241 JMP ,=-1 /WAIT FOR FLAG
0242 TAU I TYPECH /NOT SET YET
0243 TAU I TYPECH /SET: CLEAR C(AC)
0244 TAU I TYPECH /RETURN
0245 TAU I TYPECH /CLEAR TELEPRINTER
0246 TAU I TYPECH /TURN INTERRUPT ON
0247 TAU I TYPECH /RETURN
0248 TAU I TYPECH
0249 TAU I TYPECH
0250 TAU I TYPECH
0251 TAU I TYPECH
0252 TAU I TYPECH
0253 TAU I TYPECH

```

0254	0011	UNSIANIS	
0255	7140	MASK77, //	
0256	0340	M4, -40	
0257	7115	C340, 340	
0260	0212	M3, -3	
0261	7116	C212, 212	
0262	0215	M2, -2	
0263	0245	C215, 215	
0264	1402	SIXTY, MLI	
0265	7000	NOP	/STORE INIT NEXT TIME
0266	7000	VOP	
0267	7200	CLA	/ADDRESS OF OPERAND
0270	1604	TAU I, =4	
0271	5273	UCA, +2	
0272	5674	JMP I, +2	
0273	0000	0	
0274	0276	SIXTY+12	/ADDRESS OF OPERAND
0275	5267	JMP SIXTY+3	/CHANGING REFERENCE (P)
0276	1675	TAU I SIXTY+7	/AC (OPERAND)
0277	0051	AND K000/	
0300	3344	UCA MASKA	/000X
0301	1673	TAU I SIXTY+7	/AC (OPERAND)
0302	0050	AND K000/0	
0303	3345	UCA MASKB	/00X0
0304	1675	TAU I SIXTY+7	/AC (OPERAND)
0305	0047	AND K0700	
0306	3346	UCA MASKC	/0X00
0307	1673	TAU I SIXTY+7	/AC (OPERAND)
0310	0040	AND K/000	
0311	3347	UCA MASKD	/X000
0312	1346	TAU MASKD	/0X00
0313	7112	KTH CLL	
0314	7010	KAK	/0X00 RSS 00X0
0315	1347	TAU MASKU	/X0X0
0316	7012	KTR	
0317	7010	KAN	
0320	1350	TAU MASKU+1	/X0X0 RSS 0X0X
0321	3346	UCA MASKC	/TEMP STORAGE
0322	2264	SIXTY	/INCREMENT FOR STORAGE
0323	4274	JMP SIXTY+10	/FIND STORAGE ADDRESS
0324	1346	TAU MASKC	/6X6X
0325	3673	UCA I SIXTY+7	/STORE OPERAND AS SPECIFIED
0326	1345	TAU MASKA	/00X0
0327	7004	KAL	
0330	7006	KIL	/00X0 SL3 0X00
0331	1344	TAU MASKA	/0X00+000X=0X0X
0332	1350	TAU MASKU+1	/0X0X+6000=6X6X
0333	3347	UCA MASKU	/TEMP STORAGE
0334	2264	ISE SIXTY	/INCREMENT FOR STORAGE
0335	4274	JMP SIXTY+10	/FIND STORAGE ADDRESS
0336	1347	TAU MASKU	/6X6X
0337	3673	UCA I SIXTY+7	/STORE OPERAND AS SPECIFIED

0340 1150
0341 3274
0342 2264
0343 2604
0344 0000
0345 0000
0346 0000
0347 0000
0350 0060

IAU PNT /HOUSE KEEPING
UCA SIXTY+10 /INCREMENT FOR RETURN
ISE SIXTY /RETURN
JMP I SIXTY
0
0
0
0
MASKA,
MASKB,
MASKC,
MASKD,
6060

0000	0000		
0001	0001	JMP I 00FL	/GO SERVICE INTERRUPT
0002	0002		
0003	0003	JMP I 0000	/ENTER MAIN ROUTINE
0004	0004	LUP	
0005	0005	JMP I 00SU	

0400

0400 0601
 0401 7200
 0402 5054
 0403 5021
 0404 5025
 0405 6615
 0406 7200
 0407 6616
 0410 0026
 0411 7440
 0412 5250
 0413 1025
 0414 7001
 0415 5025
 0416 1021
 0417 1054
 0420 5021
 0421 1025
 0422 7041
 0423 1055
 0424 7650
 0425 5250
 0426 1021
 0427 5205
 0430 7200
 0431 1025
 0432 7450
 0433 7402
 0434 1050
 0435 5062
 0436 1057
 0437 5010
 0440 6042
 0441 7200
 0442 1410
 0443 7450
 0444 5251
 0445 6046
 0446 6041
 0447 5246
 0450 5240
 0451 7200
 0452 6611
 0453 6611
 0454 6001
 0455 5024
 0456 5055
 0457 1040
 0460 1021
 0461 1047
 0462 7040

*400
 /ROUTINE TO DETERMINE # OF DISK'S
 /ON EACH SYSTEM

BEGIN,
 UCMA
 CLA CC
 UCA CC
 UCA SAV1 /DISK ADDRESS
 UCA DCOUNT /# COUNT OF DISK
 DEAL
 CLA
 UCAU
 AND K0002 /TEST FOR NON-EXTSTENT
 SZA
 JMP +16
 IAU DCOUNT
 IAC DCOUNT /+1 DISK COUNT
 UCA DCOUNT
 IAU SAV1
 IAU K1000 /SELECT NEXT DISK
 UCA SAV1
 IAU DCOUNT
 CIA
 IAU K0004
 SNA CLA
 JMP +3
 IAU SAV1 /NEXT DISK
 JMP BEGIN+5
 CLA
 IAU DCOUNT
 SNA
 MLI
 IAU K0200 /NO DISK PRESENT
 UCA M1+5 /ASCII CODE
 IAU M1
 UCA 10
 ICF
 CLA
 IAU I 10 /AUTO INDEX
 SNA /END OF MESSAGE
 JMP DA /YES
 ILS
 TSP
 JMP -1
 JMP -10
 CLA
 UCMA
 UCMA /DATA TEST
 UCMA /CLEAR DISK EXT, ADDRESS
 UCMA /CLEAR DISK FLAGS
 ION /TURN INTERRUPT ON
 UCA DCOUNT
 UCA TKA
 IAU K1000 /MINUS 1000
 IAU SAV1
 IAU K0700 /MAX, AMOUNT OF STORAGE PER DISK
 UCMA

DA,

0463 5020
0464 1020
0465 5021
0466 7504
0467 5022

UCA SAV
IAU SAV
UCA SAV1
LAS
UCA SAV2

/SELECT MODE OF OPERATION

/

0470	IAU TKA	/TRACK
0471	JEAL	/LOAD DISK AND TRACK
0472	LLA	/
0473	JMS I RAW	/GENERATE RANDOM WORD
0474	IAU SAV2	/FETCH MODE
0475	NOP	
0476	AND K1000	/COMPARE FOR TRACK SELECT
0477	SNA	
0478	JMP RAI	/NO
0479	CLA	/YES
0480	IAU SAV2	
0481	AND K0370	
0482	RTL	
0483	RAL	
0484	UCA TKA	
0485	IAU TKA	
0486	JEAL	/LOAD TRACK ADDRESS
0487	LLA	/COMPARE FOR CROSSOVER
0488	IAU SAV2	
0489	NOP	
0490	AND K4000	
0491	SNA	
0492	JMP ,+4	/EXERCISE TRACK
0493	CLA	/CROSSOVER ADDRESS
0494	IAU K7000	
0495	UCA BCOUNT	
0496	IAU K6000	
0497	UCA I WCT	
0498	IAU K1477	
0499	UCA I CAT	/LOAD CURRENT ADDRESS
0500	IAU BCOUNT	
0501	UMAR	/SAVE DISK CONTENTS
0502	NOP	
0503	JMP ,	
0504	JMS I RE	/RESTORE ORG, TRACK
0505	IAU K6000	/2000 TRANSFERS
0506	UCA I WCT	
0507	IAU K3477	
0508	UCA I CAT	/WRITE BUFFER=1
0509	IAU BCOUNT	
0510	UMAR	/WRITE
0511	NOP	
0512	JMP ,	
0513	JMS I RE	/RESTORE ORG TRACK
0514	IAU K6000	
0515	UCA I WCT	
0516	IAU K5477	
0517	UCA I CAT	/READ BUFFER=1
0518	IAU BCOUNT	
0519	UMAR	
0520	NOP	
0521	JMP ,	
0522	JMS I CU	/COMPARE DATA
0523	IAU K1477	
0524	UCA I CAT	
0525	IAU BCOUNT	
0526	UMAR	
0527	NOP	
0528	JMP ,	
0529	JMS I RE	
0530	IAU K6000	
0531	UCA I WCT	
0532	IAU K3477	
0533	UCA I CAT	
0534	IAU BCOUNT	
0535	UMAR	
0536	NOP	
0537	JMP ,	
0538	JMS I RE	
0539	IAU K6000	
0540	UCA I WCT	
0541	IAU K5477	
0542	UCA I CAT	
0543	IAU BCOUNT	
0544	UMAR	
0545	NOP	
0546	JMP ,	
0547	JMS I CU	
0548	IAU K1477	
0549	UCA I CAT	
0550	IAU BCOUNT	
0551	UMAR	
0552	NOP	
0553	JMP ,	
0554	JMS I CU	

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0200 4211
 0201 7200
 0202 1037
 0203 5506
 0204 1022
 0205 5507
 0206 1024
 0207 0602
 0208 7000
 0209 5566
 0210 4211
 0211 5522

0000

JMS I RE
 JLA
 JAU K000P
 JCA I WLT
 JAJ K1477
 JCA I CAT
 JAU HCOUNT
 JMAM
 JUP
 JMP I RE
 JMS I RE
 JMP I LI

/LOAD S.C.
 /LOAD S.A.
 /WRITE
 /CHECK FOR ERROR
 /RESTORE DRG, TRACK.

0500	CLA		
0501	IAU CC		
0502	CLA		/COMPARE FOR COMPLETION COMMAND
0503	IAU K0205		
0504	SNA CLA		/YES EXIT
0505	JMP CCSU+2		/NO CONTINUE
0506	IAU BCOUNT		/
0507	CLA		
0510	IAU K6000		
0511	SNA ,+6		/INCREMENT TRACK
0512	JMP ,+6		
0515	CLA		
0514	IAU BCOUNT		
0515	IAU K2000		
0516	JCA BCOUNT		
0517	JMP I DAT		
0520	CLA		
0521	JCA BCOUNT		/ZERO BUFFER COUNT
0522	IAU TKA		
0523	IAU K0100		
0524	JCA TKA		
0525	IAU SAV1		
0526	UMA CLA		
0527	SKP ,+5		
0530	JMP ,+5		
0531	IAU SAV1		
0532	IAU K0100		
0533	JCA SAV1		
0534	JMP I DAT		
0535	IAU SAV		
0536	JCA SAV1		/SET UP FOR NEXT PASS
0537	JCA TKA		
0540	JMP I DAT		
0541	JMP I DAT		
0542	RANDOM, 0		/FILL OUTBUFFER WITH RANDOM DATA
0543	IAU K6000		/2000 TRANSFERS
0544	JCA SAV3		/OUT PUT BUFFER-1
0545	IAU K3477		
0546	JCA 11		/AUTO INDEX
0547	IAU NU		/RANDOM#
0550	KAL CLL		
0551	SZL		
0552	IAU K0005		
0553	JCA NU		
0554	IAU NU		
0555	JCA I 11		/FILL BUFFER
0556	ISE SAV3		/DONE
0557	JMP , -10		/NO
0560	JMP I RANDOM		/YES
0561	JMP I RANDOM		/
0562	0500		
0563	0501		
0564	0502		
0565	0503		
0566	0504		
0567	0505		
0568	0506		
0569	0507		
0570	0510		
0571	0511		
0572	0512		
0573	0515		
0574	0514		
0575	0515		
0576	0516		
0577	0517		
0578	0520		
0579	0521		
0580	0522		
0581	0523		
0582	0524		
0583	0525		
0584	0526		
0585	0527		
0586	0530		
0587	0531		
0588	0532		
0589	0533		
0590	0534		
0591	0535		
0592	0536		
0593	0537		
0594	0540		
0595	0541		
0596	0542		
0597	0543		
0598	0544		
0599	0545		
0600	0546		
0601	0547		
0602	0550		
0603	0551		
0604	0552		
0605	0553		
0606	0554		
0607	0555		
0608	0556		
0609	0557		
0610	0560		
0611	0561		
0612	0562		
0613	0563		
0614	0564		
0615	0565		
0616	0566		
0617	0567		
0618	0568		
0619	0569		
0620	0570		
0621	0571		
0622	0572		
0623	0573		
0624	0574		
0625	0575		
0626	0576		
0627	0577		
0628	0578		
0629	0579		
0630	0580		
0631	0581		
0632	0582		
0633	0583		
0634	0584		
0635	0585		
0636	0586		
0637	0587		
0638	0588		
0639	0589		
0640	0590		
0641	0591		
0642	0592		
0643	0593		
0644	0594		
0645	0595		
0646	0596		
0647	0597		
0648	0598		
0649	0599		
0650	0600		
0651	0601		
0652	0602		
0653	0603		
0654	0604		
0655	0605		
0656	0606		
0657	0607		
0658	0608		
0659	0609		
0660	0610		

```

0001 0000 RESTORE, CLA 0
0002 7200 TAU TKA
0003 1000 /LOAD TK
0004 0510 CLA
0005 7200 JMP I RESTORE
0006 0501 /

0007 7200 ERROR, CLA
0008 6621 UFSE
0009 0300 JMP ,+7
0010 6622 UFSC
0011 0267 JMP ,=-4
0012 6611 UCEA
0013 6601 UCMA
0014 6001 ION
0015 0400 JMP I INT
0016 7200 CLA
0017 1024 TAU BCOUNT
0018 0117 UCA DMA
0019 0616 DEAC
0020 7000 NOP
0021 0116 UCA SR
0022 6622 UFSC
0023 0306 JMP ,=-1
0024 6611 UCEA
0025 0601 UCMA
0026 4520 JMS I EP1
0027 0400 JMP I INT
0028 0200 COMPARE, CLA 0
0029 7200 UCA ECOUNT
0030 0100 TAU K3477
0031 1044

0032 0010 UCA 10
0033 1042 TAU K5477
0034 0011 UCA 11
0035 1037 TAU K6000
0036 0025 UCA DCOUNT
0037 1410 TAU I 10
0038 0115 UCA G0
0039 1411 TAU I 11
0040 0114 UCA B0
0041 1115 TAU G0
0042 0041 CIA
0043 1114 TAU B0
0044 0740 SEA CLA
0045 0341 JMP ,+4
0046 2025 ISE DCOUNT
0047 0325 JMP COMPARE+11
0048 0354 JMP ERXT
0049 0740 LAS
0050 0045 ANU K2000
0051 0740 SEA CLA

0052 0010 ICB,
0053 1042
0054 0011
0055 1037
0056 0025
0057 1410
0058 0115
0059 1411
0060 0114
0061 1115
0062 0041
0063 1114
0064 0740
0065 0341
0066 2025
0067 0325
0068 0354
0069 0740
0070 0045
0071 0740

```

0744	5352	JMP	*,6	
0745	1225	IAU	ECOUNT	
0746	0041	AND	K1777	
0747	7000	VOP		/DISK ADDRESS
0750	3117	JCA	DMA	
0751	5365	JMP	*,14	/+1 ERROR COUNT
0752	2155	ISE	ECOUNT	/FETCH NEXT WORD
0753	5336	JMP	ICH	/COMPARE FOR AC BIT 1
0754	7604	LAS		
0755	0043	AND	K2000	
0756	7450	SNA		/NORMAL TYPE OUT
0757	5714	JMP	I COMPARE	
0760	7200	CLA		
0761	1135	IAU	ECOUNT	
0762	7440	SEA		
0763	4536	JMS	I SHERTL	/RETURN TO ROUTINE
0764	5714	JMP	I COMPARE	/PRINT DATA ERROR
0765	4521	JMS	I EP2	
0766	5336	JMP	ICH	

EXIT,

*1.000

1000

```

1000 3132 UCA AC
1001 7010 RAR
1002 3134 UCA LINK
1003 6041 ISF
1004 5207 JMP I +3
1005 6042 ICF
1006 5227 JMP EXIT
1007 6031 KSF
1010 5214 JMP I +4
1011 6036 KRB
1012 3054 UCA CC
1013 5227 JMP EXIT
1014 7200 CLA
1015 1051 IAU K000/
1016 7040 GMA
1017 3135 UCA ECOUNT
1020 2135 ISZ ECOUNT
1021 5220 JMP I -1
1022 6622 UFSC
1023 5226 JMP I +3
1024 2000 ISZ INT
1025 5510 JMP I ER
1026 5540 JMP I IR2L

EXIT,
1027 7200 CLA
1030 1134 IAU LINK
1031 7004 RAL
1032 1132 IAU AC
1033 6001 ION
1034 5400 JMP I INT
1035 0300 0
1036 4524 JMS I SETUP
1037 0055 IKA
1040 1055 I +1D
1041 1056 I +1D
1042 4524 JMS I SETUP
1043 0117 UMA
1044 1061 I +1D
1045 1062 I +1D
1046 4524 JMS I SETUP
1047 0116 SR
1050 1065 I +1D
1051 1066 I +1D
1052 4523 JMS I MES1
1053 4543 4543
1054 2401 2401

1055 4060
1056 6060
1057 4004

/ROUTINE TO SERVICE INTERRUPTS
/
/
/STORE AC
/STORE LINK
/SKIP ON TELEPRINTER FLAG
/NO FLAG
/CLEAR FLAG
/EXIT SERVICE
/SKIP ON KEYBOARD FLAG
/NO FLAG
/READ BUFFER
/STORE CHARACTER
/EXIT SERVICE

/SKIP ON DISK COMPLETION

/REPORT UNDEFINED INTERRUPT

/FETCH LINK
/RESTORE LINK
/FETCH AC
/TURN INTERRUPT ON
/RETURN

/TRACK ADDRESS

/TA (TRACK ADDRESS)
/
/DISK MEMORY ADDRESS

```

1000 0140
1001 0000
1002 0000
1003 4023
1004 2240
1005 0000
1006 0000
1007 0000
1070 5635

0140
0000
0000
4023
2240
0000
0000
0
JMP I SRP

/SWITCH REGISTER

1071 0000
1072 4524
1073 0000
1074 1115
1075 1116
1076 4524
1077 0117

0
JMS I SETUP
IKA
I*21
I*21
JMS I SETUP
UMA

/DATA PRINT OUT ROUTINE

UP,

1100 1121
1101 1122
1102 4524
1103 0115
1104 1125
1105 1126

I*21
I*21
JMS I SETUP
GU
I*21
I*21

/GOOD DATA

```

1106 4524 JMS I SETUP
1107 0114 BU
1110 1131 *+21 /BAU DATA
1111 1132 *+21
1112 4523 JMS I MES1
1113 4543
1114 2401 /TA (TRACK ADDRESS)
1115 4060 /WORDCOUNT
1116 0060
1117 4027 /GD (GOOD DATA)
1120 0340 /BD (BAD DATA)
1121 0360
1122 0060
1123 4007
1124 0440
1125 0060
1126 0060
1127 4002
1130 0440
1131 0060
1132 0060
1133 0000
1134 5671 JMS I DP

1132 4523 JMS I MES1
1136 4543
1137 2516
1140 0405 /GO TO PRINTOUT ROUTINE
1141 0626 /CARRIAGE RETURN+LINE FEED
1142 4011 /CHARACTERS
1143 1624 /U AND N
1144 2640 /F AND E
1145 0000 /SPACE AND I
1146 7402 /N AND T
/ / AND SPACE
/ /STOP CODE

/PRINTOUT ROUTINE FOR DATA ERROR'S
/PRINTS # OF ERROR'S
*1200
SHEET, 0 JMS I SETUP
1200 0000 IKA
1201 4524 *+12
1202 0005 *+12
1203 1215 JMS I SETUP
1204 1216 ECOUNT
1205 4524 /SETUP WORD FOR PRINTOUT
1206 0135 /#OF DATA ERRORS
1207 1225
1210 1226
1211 4523 JMS I MES1
1212 4543
1213 4024

```


1214 0140
 1215 6060
 1216 6060
 1217 4040
 1220 0222
 1221 2217
 1222 2220
 1223 2321
 1224 7240
 1225 6060
 1226 6060
 1227 0000
 1230 5600

0140
 6060
 6060
 4040
 0222
 2217
 2220
 2321
 7240
 6060
 6060
 0
 JMP I SMLRT

/STOP CODE
 /RETURN

0150
 4002
 0151 7402

*150
 START1, JMS CCSU
 MLI

0155
 6012
 0156 6022
 0157 6762
 0160 7000
 0161 7000
 0162 7000
 0163 4002
 0164 2531

*155
 START2, MRB
 PCF /CLEAR READER FLAG
 UTCA /CLEAR PUNCH FLAG
 NOP /CLEAR DECTAPE FLAG
 NOP
 NOP
 JMS CCSU
 JMP I SYSTEM

\$

THERE ARE NO ERRORS

SYMBOL TABLE

AL	0152
BOUVI	0024
BU	0114
BEG	0120
BEGIN	0400
CA	7701
CAT	0107
CC	0004
CCSU	0002
CHK	0127
CLF	1000
CLFL	0137
CU	0112
CUMPAK	0714
C212	0260
C210	0252
C240	0250
C340	0250
JA	0401
UAT	0126
UAEA	6011
UOMA	6001
UBOUNT	0020
UEAC	6016
UEAL	6010
UFSC	6022
UPSE	6021
UMA	0117
UMAC	6026
UMAK	6000
UMAM	6000
UP	1071
USAC	6012
UICA	6752
EQOUNT	0130
EP1	0120
EP2	0121
EK	0110
EMRUR	0657
EMXT	0704
EXIT	1027
GU	0110
IBT	0606
ICB	0706
INT	0000
IK2	1100
IM2L	0140
K0002	0020
K0000	0040
K0004	0000
K0007	0001
K0070	0000
K0100	0000

SYMBOL	TAB-#
K0200	0027
K0203	0030
K0260	0030
K0370	0032
K0700	0047
K1000	0034
K1477	0052
K1777	0041
K2000	0043
K3000	0036
K3477	0044
K3777	0053
K4000	0046
K5477	0042
K0000	0037
K7000	0040
K7600	0031
LINK	0134
LINL	0133
LI	0122
LJA	0000
MASKA	0344
MASKB	0342
MASKC	0346
MASKD	0347
MASK77	0234
MESSAGE	0400
MESI	0123
MSRGT	0217
MIP	0244
M1	0057
M2	0261
M3	0237
M40	0252
MU	0113
PNT	0130
RANDOM	0042
RAW	0102
KA1	0222
KA2	0243
KE	0111
RESTOR	0051
SAV	0020
SAV1	0021
SAV2	0022
SAV3	0023
SETUP	0124
SHEAT	1200
SHEATL	0130
SIXTY	0264
SK	0116
SKP	1033
SIANT1	0150

SYMBOL TABLE

SIANT2	0155
SYSTEM	0131
IN	0470
IRA	0055
TYPECH	0220
MA1	0552
MA2	0555
ML	7/50
MUT	0106

SYMBOL TABLE

LNT	0000
CCSU	0002
SAV	0020
SAV1	0021
SAV2	0022
SAV3	0023
BCOUNT	0024
ULCOUNT	0025
K0002	0026
K0200	0027
K0200	0030
K7600	0031
K0100	0032
K0004	0033
K1000	0034
K0370	0035
K0000	0036
K0000	0037
K7000	0040
K1777	0041
K0477	0042
K2000	0043
K0477	0044
K0003	0045
K4000	0046
K0700	0047
K0070	0050
K0007	0051
K1477	0052
K0777	0053
UL	0054
LKA	0055
K0203	0056
M1	0057
KAW	0105
MUT	0106
GAT	0107
EM	0110
ME	0111
UU	0112
NU	0113
DU	0114
GU	0115
SK	0116
UMA	0117
EP1	0120
EP2	0121
LI	0122
MES1	0123
SETUP	0124
BEG	0125
JAT	0126
CHK	0127

SYMBOL TABLE

PVT	013W
SYSTEM	0131
AL	0132
LINK	0133
LINK	0134
EVOUVI	0135
SMERTL	0136
ULFL	0137
IK2L	0140
SIART1	013W
SIART2	0135
MESSAGE	020W
MSRGHT	0217
TYPECH	022W
MIP	0244
MASK//	0254
M40	0255
U34W	0256
M3	0257
U212	026W
M2	0261
U215	0262
U245	0265
SIXTY	0264
MASKA	0344
MASKB	0345
MASKC	0346
MASKD	0347
BEGIV	0400
UA	0451
TK	0470
KA1	0522
WA1	0532
KA2	0543
WA2	0555
LJA	0600
IBT	0606
RANDOM	0642
KESTOK	0661
ERRUR	0667
LUMPAH	0714
LUB	0736
ERXT	0754
ULF	100W
EXIT	1027
SRP	1035
UP	1071
IK2	1135
SMERT	120W
ULMA	6601
UMAK	6603
UMAM	6605
UVEA	6611

SYMBOL TABLE

USAC	6612
UEAL	6613
UEAU	6616
UPSE	6621
UPSU	6622
UMAC	6626
UICA	6/62
RU	7/50
UA	7/51

