

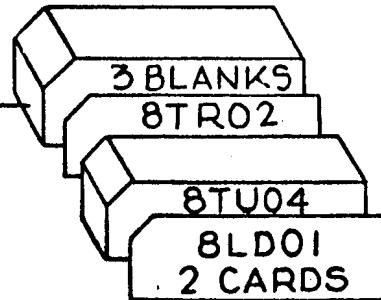
8TU06A

TAPE INTERCHANGEABILITY TEST

MARCH 15, 1961

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g0015637.png

CARD READER
SET UPPUT CARD DECK IN
HOPPER AND
DEPRESS START
KEYDEPRESS START
KEY AGAIN
TO MAKE
READYSEL 0100
ON
MEMORY ADDRESS
SELECTOR

ALTERATION SW. CONTROL
911 ON - BYPASS SHORT T/O,
ROUTING NO. T/O, AND
GYPSY TYPE OUTS.
912 - NOT USED.
913 ON - HLT ON ERROR.
914 ON - PROG. WILL STAY IN
CURRENT MEMORY LOAD
OFF - READ IN NEXT
TEST FROM TAPE
915 - NOT USED
916 ON - TO OBTAIN DIAGNOSIS

CONSOLE
SET UPSET CONSOLE
CHECK
SWITCHES
901 TO PROG.DEPRESS
RESET
AND
AUTO LOAD.ENTIRE
PROGRAM IS
READ INTO
MEMORY

START

FIG. 1 MACHINE SETUP FOR DIAGNOSTIC PROGRAM 8TU06

8TU06

TAPE INTERCHANGEABILITY TEST

A. PURPOSE OF TEST

This test is part of the engineering specifications for the 729 II and 729 IV tape drives. A multi-record tape can be generated on either of these two type drives, checked on that drive for write errors, and then the tape physically changed to any other tape drive, and read and checked for errors again.

B. METHOD OF TEST

This diagnostic assumes that main frame, tape adapter, and tape control units work, but that the condition of the individual tape drives and tape is unknown.

This test generates a fixed number of long or short worst case skew patterns on tape at high density. The operator can either specify the number of records to be written or by pressing start after HLT 1111, automatically produce a tape with 322 long records (each 2,000 characters long) and 6,762 short records of 20 characters each.

The long records consist of 20 one hundred character skew patterns comprising a fixed 2,000 character record. The pattern chosen uses 4 tracks for the first and one hundredth character written and leaves 2 of the four tracks vacant for the ninety-eight characters in-between. This is intended to cause marginal amplifier and skew troubles that combine to cause failures. The short records include all possible pairs of different 2 bit characters in each group of 21 records. The short record format is intended to combine skew and tape motion to cause failures. Using 2 bit characters makes it easier to determine the failure track, in the typeout.

After reading in the test, it will rewind all readied tapes, form a ready table, and the typeouts in section E-4 will ask the operator to store the number of records desired before interchange.

Two distinct typeouts indicate write errors during the record generation parts of the test. They are illustrated by examples in Section H-2. This is the only error detection for skew errors during the write operation.

The program can be divided into three parts.

1. Write pass on initial tape drives.

All records are written at high density.

On all readied tapes the records are generated by write routines. There are two routines, one for long records and one for short records. Whenever a CHL check occurs in writing, the tape is backspaced and another attempt is made to write. After a maximum of three backspaces, tape is skipped and the process is continued.

All CHL checks are typed out under the control of an alteration switch. (See Section E-2.)

After a tape is generated, it is rewound and the process continues on the next drive. If CHL checks are encountered on the write pass, a typeout will indicate the number of backspaces and skips. (See Section H-2.)

After writing the long and/or short records, a series of three additional records are written. They are: A tape mark, check record (followed by a skip), and a tape mark. These will be used to check WR head polarity in all drives during the first read pass after interchange.

2. Read pass on initial drives.

The generated tape is read and checked for RD errors. Bit structure typeouts of incorrect characters under alteration switch control and RD CHL check typeouts indicate errors.

3. Read pass on successive tape drives.

The above tapes if free from read errors should be interchanged and the records will be read back and checked in the same manner.

The tape reels are to be physically changed to any other tape drive.

The tape drive on which the records being changed must be one of the ready drives.

After the long and/or short records are read and checked, the write head polarity section is read. After backspacing, the final tape mark is re-written. The skip area is then examined for full bits which would indicate reversed polarity of the write head. (See Section H-2 example (g) to determine the drive with the reversed polarity.)

C. AREA OF MACHINE REQUIRED

1. Units

7080 MF
7621 TCU
At least (2) tape drives

2. Memory Locations

a. 0000 - 10214

Frontispiece, write and read routines

b. 16000 - 17000

Gypsy typeout area - tests all check indicators at end of each routine

c. 17500 - 18000

Ready table is stored here

d. 19000 - 39999 - work areas

D. LOADING PROCEDURE

1. Card

The load cards - 8LD01 are to be for input from the 714 CD RDR.

The load cards 8LD10 are to be used for input from the 7502 Console CD RDR.

2. Tape

This program may be put on tape under control of 8TR06.

The cards should be loaded in the following order:

Off Line Card Input from 714

8LD02
8TU06
8TR06 (Card #11-02)
8LD02
Next Test Program
8TR06 (Card #11-02)

On Line Direct Generation with Card Input from the 714

8LD01
8TU06
8TR06 (Card #11-01)
8LD01
Next Test Program
8TR06 (Card #11-01)

The excluded tape is 0200.

E. PROGRAM CONTROL

1. Card Deck

2 cards - 8LD01 (for 714 input) or 8LD10 (for 7502 Console
CD RDR input)
130 cards - 8TU06 Program Deck
1 card - 8TR02 Transfer Card
3 cards - Blanks

2. Alteration Switches

911 ON - Bypass short typeouts, routine number typeouts
and gypsy typeouts
912 - Not used
913 ON - Halt on error
914 ON - Program will stay in current memory load
OFF - Read in next test from tape
915 - Not used
916 ON - To obtain diagnosis of read error

3. Check Switches

901 - To program
All others to automatic

4. Manual Controls

The following typeouts will allow the operator to store the number
and type of records desired before the test begins.

a. Typeout No. 1

PRESS START FOR 1/3 REEL OF TAPE OR STORE
AT 4023

b. Typeout No. 2

A XXXX for 2000 character records

EXAMPLE:

Store - A 1000 (one thousand long records will be written
on tape).

c. Typeout No. 3

BXXXX for short records

Example:

Store - B0050 (50 x 21 - twenty character records will be written on tape).

d. Typeout No. 4

CXXXX for combination of both

Example:

Store - C0200 (200 long records and 4200 short records to be written on tape).

F. NORMAL STOPS

0000 Halts on first pass only, to allow switch setting.

1111 Halts only on first pass after typeouts mentioned in Section E-4.

9999 Interchange tapes. Start after this has been done.

9996 Tape has been read after being interchanged once.

The end of each successive READ after interchange will be denoted by HLT 9996.

G. ERROR STOPS

2222 Counter value was stored incorrectly. Press start, then after typeout, restore data at correct location. If necessary, read program in again.

3333 Program is unable to determine if 729 II or 729 IV is on line. If 7621 TCU is on line, press start.

4444 No tapes ready. Make tapes ready and start.

6666 End of file - records not complete. Store "1" in location 3000 and press start.

H. PRINTED RESULTS

1. Normal Typeouts

The following is a list of typeouts that occur on the first pass:

- (a) 901 TO PROG AND TURN 914 ON.
- (b) THE FOUR TYPEOUTS LISTED UNDER E-4 (Manual Controls)
- (c) XXX RECORDS TO BE WRITTEN. (THE NUMBER OF RECORDS STORED BY OPERATOR).
- (d) INTERCHANGE TAPES ON DRIVES (OCCURS BEFORE HLT 9999).
- (e) After each successive pass of the read routines the following is typed out: INTER CHANGE TAPES ON DRIVES.

2. Error typeouts

Examples:

(a) TAPE SKEW TEST

WR0213 - RD 0213

Position	WR	Bits	RD	Bits
Pos #3,		21	C	21

This typeout indicates that a "C" bit was picked up in either the write or read operation. (If picked up in the write operation, it did not cause a write CHL check.)

An isolated typeout of this type would indicate a bad spot or dirt on tape.

For above typeout, 916 must be on.

(b) The following typeout would indicate skew:

TAPE SKEW TEST

WR 0213 - RD 0211

Position	WR	Bits	RD	Bits
Pos #3,		21	C	21
Pos #4,	CB	42	B	421
Pos #5,	B	1	B	

The tape the record was written on was 0213 and it is being read and checked on TD 0211.

(c) 0006 BSP AFTER WR-TD 0222

The above means that six (6) CHL checks were encountered writing the required number of records asked for. The number of CHL checks equals the number of backspaces. The tape drive was 0222.

(d) 0010 SKIPS AFTER WR-TD 0212

The above indicates that, after three attempts have been made to write a record, tape is skipped and another attempt is made to write.

(e) ACTUAL NUMBER OF RECORDS ON TAPE, XXXX.

The above indicates an end of file - before counter reached zero. Test can be continued with this number of records.

(f) END OF FILE - RECORDS NOT COMPLETE STORE 1 IN LOCATION 3000 AND PRESS START.

This error would occur if both long and short records were asked for, but end of file occurred before any short records could be written. Restart test and either store smaller number in counter or use longer tapes.

(g) (1) WR POLARITY REVERSED ON, 0200-0202

(2) WR POLARITY REVERSED ON, 0202-0221

NOTE: Two typeouts are needed for diagnosis to the drive. With only one typeout either of the two tape drives could be the one at fault.

In the above example, T.D. 0202 is in error. False information is being written on tape in going from WR to RD status.

Check Write Head Polarity on 0202.

in (g)-(1) the tape was generated on drive 0200
in (g)-(2) it was generated on drive 0202

(h) CHL CHK TD 1 WR

The above is called a gypsy typeout. It informs the operator of an unexpected error indication. The error indicators interrogated by gypsies are the six CPU error indicators and the previously selected channel check indicator.

NOTE: All gypsy typeouts will be bypassed by 911 or 916 being on.

All six CPU error indicators are interrogated at the end of each pass of the test.

(i) H141 #0221

The above typeout indicates an error occurred in routine 141 on T.D. #0221.

Short timeouts like this will represent an error exit from program provided 911 is off.

(j) TAPE DRIVE #XXXX NOT READY

(k) NO TD RDY - MAKE TAPES TO TEST RDY - START

The above typeout indicates that no tapes were ready.

I. COMMENTS

1. The first section of this test is a control section.

Every routine will be entered from the control section and will transfer back into the control section. The following locations in the control section are referred to in each routine. They are:

- (a) Location 1089 - current tape drive address.
- (b) Location 1029 - no error typeout is desired. This is a normal routine exit.
- (c) Location 0989 - a short timeout is desired. This is an error exit.
- (d) Location 1389 - after last routine, there will be a transfer to this location.

2. To restart entire test using a new counter value, it is necessary to do the following:
 - (a) Store at location 10000 an "A".
 - (b) Store at location 10186 a "W".
 - (c) Store new counter value at 4023 with an A, B, or C.
 - (d) T eset and start.
3. Alteration switch 914 should not be turned off unless the operator desires to bring in the next test from tape. 914 should not be turned off until HLT 9996 has occurred.

BKWD TR LOCATION OPN ASU ADDRESS

FWD TR PAGE 01 OF 31

8TU06

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911 ON-BYPASS T/O
 913 ON-HLT ON ERROR
 914 ON-REPEAT PROGRAM
 914 OFF-READ IN NEXT
 TEST FROM TAPE
 916 ON-DIAGNOSE READ ERROR

```
#####
# 00004 SET B    0006
# 00009 LOD 8    18999 Y999
# 00014 CMP 4    0064
# 00019 TRE L    0029-----
# 00024 TR 1    0099-----
#####
# 00029 NOP A    0099*****
# 00034 SEL 2    0500
# 00039 WR R     1874
# 00044 HLT J    0000
# 00049 SGN T    0025
# 00054 TR 1    0099-----
#####

```

SW

901 TO PROG AND TURN 914 ON
SET SWITCHES

CONSTANTS

2 005 00059
 2 005 00064
 2 005 00069
 2 024 00093
 2 001 00094

CHL CHK ON PROGRAM ENTRY

A02.....# 00099 TR 1 0254*****-----F02 TR TO RDY TBL
 I # 00104 TR 1 0399-----H02

B02.....# 00109 SEL 2 0914
 # 00114 TRS O 0099
 # 00119 TR 1 18219 Y219

C07.....# 00124 SET B 0006
 # 00129 LOD 8 18999 Y999
 # 00134 CMP 4 0064
 # 00139 TRE L 0184-----D02 TO PASS COUNTER
 # 00144 SET B 0004
 # 00149 CMP 4 0064
 # 00154 TRE L 0249-----E02 NEXT MEMORY LOAD
 # 00159 TR 1 0184-----D02 TO PASS COUNTER

CONSTANTS

2 005 00164
 2 001 00165
 2 004 00169
 2 005 00174
 2 001 00175

8TU06

A

□

□

gsD01s/001565 00184 SET B 0004 □
 □ 00189 LOD 8 0393 □
 □ 00194 SET B 0005 □
 □ 00199 ADD G 0203 □
 □ 00204 NOP A 15 31110 AAA0 □
 □ 00209 SET B 0004 □
 □ 00214 UNL 7 0393 □
 □ 00219 SET B 0002 □
 □ 00224 TR 1 0109 -----B01
 □ 00229 TR 1 0109 -----B01
 □□□□□□□□□□□□□□□□□□□□□□

PASS COUNTER
0000

CONSTANT

CONSTANTS

2 005 00234
 2 005 00239
 2 005 00244

E01
 E05
 E07.....00249 TR 1 0109 -----B01
 F01
 F08.....00254 RCV U 17504 X504 □
 □ 00259 BLM \$ 0100 □
 □ 00264 SET B 0004 □
 □ 00269 LOD 8 1494 □
 □ 00274 UNL 7 0279 □
 ●●●00279 SEL 2 0200 □
 I □ 00284 TRS O 01 0319 03/9 -----
 I □ 00289 LOD 8 0279 □
 I □ 00294 CMP 4 1504 □
 I □ 00299 TRH K 1809 -----U08
 ●●●00304 RAD H 1484 □
 I □ 00309 ADM 6 0279 □
 I □ 00314 TR 1 0279 □
 I □ 00319 LOD 8 0279 -----
 I □ 00324 CMP 4 1499 □
 I □ 00329 TRE L 0304 □
 I □ 00334 CMP 4 1504 □
 I □ 00339 TRH K 1809 -----U08
 I □ 00344 EEM 3 14 0000 0&-0 □
 I □ 00349 SDH 3 0038 □
 I □ 00354 LEM 3 15 0000 0&&0 □
 I □ 00359 UNL 7 17504 X504 □
 I □ 00364 RAD H 1489 □
 I □ 00369 ADM 6 0359 □
 I □ 00374 TR 1 0304 □
 G08.....00379 SGN T 0095 □
 □ 00384 ADM 6 0095 □
 □ 00389 TR 1 0099 -----A01
 □□□□□□□□□□□□□□□□□□□□□□

GENERATE READY TABLE

TAPE DRIVE IS READY
CMP TO 0299 LAST TAPE

&1

CMP TO 0200 EXCLUDED TAPE
CMP TO 0299 LAST TAPE
ENTER 80 MODE
SET DENSITY HIGH
LEAVE 80 MODE

&5

2 004 00393 0000
 2 001 00394 □

CONSTANTS

H01.....00399 SET B 0004 □
 □ 00404 LOD 8 1104 □
 □ 00409 UNL 7 0779 □
 □□□□□□□□□□□□□□□□□□□□□□

PLACE MASTER TRANSFER
STARTING ADDRESS

NEXT PAGE

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8TU06

J06.....
 □ 00414 SET B 0002 □
 □ 00419 LOD 8 0777 □
 □ 00424 UNL 7 1083 □
 □ 00429 UNL 7 1024 □
 □ 00434 SGN T 1082 □
 □ 00439 LOD 8 1023 □
 □ 00444 CMP 4 0448 □
 □ 00449 NOP A 3 Z* Z* □
 □ 00454 TRH K 0479 ----- I
 □ 00459 SET B 0001 □ I
 □ 00464 LOD 8 0459 □ I
 □ 00469 UNL 7 1081 □ I
 □ 00474 TR 1 0494 ----- I
 □ 00479 SET B 0001..... I
 □ 00484 LOD 8 0478 □ I
 □ 00489 UNL 7 1081 □ I
 □ 00494 SET B 0003..... I
 □ 00499 LOD 8 1083 □
 □ 00504 DIV W 0508 □
 □ 00509 NOP A 3 AB* AB* □
 □ 00514 UNL 7 1083 □
 □ 00519 UNL 7 1024 □
 □ 00524 SET B 0002 □
 □ 00529 LOD 8 0164 □
 □ 00534 UNL 7 1081 □
 □ 00539 UNL 7 1022 □
 □ 00544 SET B 0004 □
 □ 00549 LOD 8 0594 □
 □ 00554 UNL 7 0564 □

GET ROUTINE ADDRESS

□ 00479 SET B 0001..... I
 □ 00484 LOD 8 0478 □ I
 □ 00489 UNL 7 1081 □ I
 □ 00494 SET B 0003..... I
 □ 00499 LOD 8 1083 □
 □ 00504 DIV W 0508 □
 □ 00509 NOP A 3 AB* AB* □
 □ 00514 UNL 7 1083 □
 □ 00519 UNL 7 1024 □
 □ 00524 SET B 0002 □
 □ 00529 LOD 8 0164 □
 □ 00534 UNL 7 1081 □
 □ 00539 UNL 7 1022 □
 □ 00544 SET B 0004 □
 □ 00549 LOD 8 0594 □
 □ 00554 UNL 7 0564 □

COMPUTE ROUTINE NUMBER

ADD. OF FIRST READY UNIT

PLACE #1 READY TAPE
DRIVE IN PROGRAM

CONSTANTS

2 005 00589 X504
 2 005 00594 TD
 2 005 00599 &A0005
 2 005 00604 2
 2 005 00609
 2 005 00614
 2 005 00619
 2 005 00624

□ 00629 CMP 4 0609..... I
 □ 00634 TRE L 1189 ----- P06

CHECK FOR END OF TABLE
END OF TABLE

□ 00639 RAD H 0604 □
 □ 00644 ADM 6 0564 □

STEP TABLE FOR NEXT T.D.

NEXT PAGE

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00649	SET B	0001	□
00654	LOD 8	0595	□
00659	CMP 4	0600	□
00664	TRE L	0559	-----K03
00669	TR I	0704	-----
			□ □
			□ □
			□ □
			I I
			□ □
00674	SET B	0001	□
00679	LOD 8	0599	□
00684	CMP 4	0605	□
00689	TRE L	0704	-----
00694	TR I	0559	-----K03
			I I
			□ □
			□ □
			I I

SW. SET BY DIAGNOSTIC ENGINEER
TO NOP TO TEST ONLY TAPE
DRIVES ENDING IN 2

2 005 00699

CONSTANTS

00704	NOP A	0789■■■	
			I I	
			I I	
			□ □	
L05	00709	SET B	0004	□
	00714	LOD 8	1089	□
	00719	UNL 7	0729	□
	00724	UNL 7	1171	□
	00729	SEL 2		□
	00734	TRS 0 01	0779 07X9	-----
	00739	SET B 08	0043 0-43	□
	00744	SET B	19998 2998	□
	00749	NTR X 08	0744 OP44	□
	00754	TRS 0 01	0779 07X9	-----
	00759	SEL 2	0500	□
	00764	WR R	1155	□
	00769	TR I	0709	□
			I I	
			□ □	
			□ □	
			I I	

IS TAPE DRIVE READY

TD

2 005 00774

CONSTANTS

00779	TR 1■■■
		I I
		□ □

MASTER TRANSFER

2 005 00784

CONSTANTS

□ 00789	SET B	0004	□
□ 00794	LOD 8	17999 X999	□
□ 00799	CMP 4	0979	□
□ 00804	TRE L	0249	E02
□ 00809	LOD 8	0984	□
□ 00814	UNL 7	0824	□
•• 00819	SET B	0005	□
I □ 00824	LOD 8	0974	□
I □ 00829	UNL 7	0004	□
I □ 00834	SET B	1093	□
I □ 00839	UNL 7	0964	□
I □ 00844	CMP 4	1239	Q07
I □ 00849	TRE L	0969	□
I □ 00854	RAD H	0824	□
I □ 00859	ADM 6	0001	□
I □ 00864	SET B	0970	□
I □ 00869	LOD 8	0965	□
I □ 00874	CMP 4	0819	□
•• 00879	TRE L	1088	□
I □ 00884	LOD 8	1092	□
I □ 00889	CMP 4	0819	□
•• 00894	TRE L	0004	□
I □ 00899	SET B	1093	□
I □ 00904	LOD 8	0919	□
I □ 00909	UNL 7	1171	□
I □ 00914	UNL 7	0919	□
I □ 00919	SEL 2	0500	□
I □ 00924	TRS O 01	0709 07 9	L04
I □ 00929	SEL 2	1150	□
I □ 00934	WR R	0500	□
I □ 00939	SET B	0899	□
I □ 00944	TR 1	□	□

A T.D.

T.D.

CONSTANTS

2 005 00949
 2 005 00954
 2 005 00959
 2 005 00964
 2 005 00969
 2 005 00974
 2 005 00979
 2 005 00984

&A0005
 TD
 2GHL
 X504

#MEMORY LOCATION 00989 IS
 THE ERROR ENTRY FROM
 A ROUTINE

M12
 M18
 M20
 M24

□ 00989	SEL 2	0911	□
□ 00994	TRS O	1029	N06
□ 00999	SEL 2	0500	□
□ 01004	WR R	1080	□
□ 01009	SEL 2	0913	□
□ 01014	TRS O	1024	□
□ 01019	TR 1	1029	N06
□ 01024	HLT J	•••••	□

ALTERATION SWITCHES

CODE

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8TU06

MEMORY LOCATION 01029 IS
THE NORMAL ENTRY FROM
A ROUTINE

N05	□		□	
N08	□		□	
N09	□		□	
N11	□		□	
N15	□		□	
N19	□		□	
N20	□		□	
N24.....	■	01029 SET B	0004	□
	□	01034 LOD 8	1089	□
	□	01039 UNL 7	1044	□
	□	01044 SEL 2		□
	□	01049 TRS 0	1059	■
	□	01054 TR 1	1069	■
	□	01059 IOF 3	0000	■
	□	01064 RWD 3	0002	■
	□	01069 TR 1	1354	■
	□	01074 TR 1	1314	■

LOOK FOR E.O.F. ON T.D. 1

T.D.

TURN OFF T.I. AND RWD T.D. 1
IF E.O.F.

S07

R07

CONSTANTS

2 005 01079	CODE
2 005 01084	#TD 1
2 005 01089	□
2 001 01090	#TD
2 004 01094	2
2 002 01096	□
2 003 01099	1604
2 005 01104	
2 005 01109	
2 005 01114	
2 005 01119	
2 005 01124	
2 005 01129	1W454
2 005 01134	
2 005 01139	
2 005 01144	
2 005 01149	
2 005 01154	2 ND
2 027 01181	TAPE DRIVE # ----- NOT READY
2 003 01184	□

ADVANCE MASTER TRANSFER

P03	□		□	
P14	□		□	
P16	□		□	
P21.....	■	01189 SET B	0004	□
	□	01194 LOD 8	0779	□
	□	01199 UNL 7	1214	□
	□	01204 LOD 8	1229	□
	□	01209 ADM 6	1214	□
	□	01214 LOD 8		□
	□	01219 UNL 7	0779	□
	□	01224 TR 1	0414	■

J03

CONSTANTS

2 005 01229	0195
2 005 01234	

Q05.....
 □ 01239 SEL 2 0500 □
 □ 01244 WR R 1265 □
 □ 01249 SET B 0004 □
 □ 01254 LOD 8 1304 □
 □ 01259 UNL 7 17999 X999 □
 □ 01264 TR 1 0249 -----E02
 □□□□□□□□□□□□□□□□□□□□□□

2 031 01295
 2 004 01299
 2 005 01304
 2 005 01309

CONSTANTS
 ALL 2 CHL M.L. WILL BE BYPASSED
 □ 2CHL

R06.....
 □ 01314 SET B 0004 □
 □ 01319 LOD 8 1096 □
 □ 01324 UNL 7 1329 □
 □ 01329 SEL 2 -----
 □ 01334 TRS O 1344 -----
 □ 01339 TR 1 1354 -----
 □□□□□□□□□□□□□□□□□□□□□□

TD

□ 01344 IOF 3 0000-----
 □ 01349 RWD 3 0002 -----
 □□□□□□□□□□□□□□□□□□□□□□
 S06.....
 □ 01354 NOP A 0912-----
 □ 01359 NOP A 0779 □
 □ 01364 TR 1 0559 -----K03
 □□□□□□□□□□□□□□□□□□□□□□

2 005 01369
 2 005 01374
 2 005 01379
 2 005 01384

CONSTANTS

T27.....
 □ 01389 NOP A 0911 □
 □ 01394 NOP A 1469 □
 □ 01399 NOP A 0916 □
 □ 01404 NOP A 1469 □
 □ 01409 LDA # 1409 □
 □ 01414 TRS O 10 16004 W--4 □
 □ 01419 LDA # 1419 □
 □ 01424 TRS O 11 16104 WJ&4 □
 □ 01429 LDA # 1429 □
 □ 01434 TRS O 12 16204 WB04 □
 □ 01439 LDA # 1439 □
 □ 01444 TRS O 13 16304 WC 4 □
 □ 01449 LDA # 1449 □
 □ 01454 TRS O 14 16404 WD-4 □
 □ 01459 LDA # 1459 □
 □ 01464 TRS O 15 16504 WE&4 □
 □ 01469 SEL 2 0914 □
 □ 01474 TRS O 0124 -----C01
 □ 01479 TR 1 0249 -----E02
 □ 01484 NOP A 000A □
 □ 01489 NOP A 000E □
 □ 01494 NOP A 0200 □
 □ 01499 NOP A 0200 □
 □ 01504 NOP A 0299 □
 □□□□□□□□□□□□□□□□□□□□□□

CHECK FOR UNEXPECTED
 ERRORS-GYPSY

EXCLUDED TAPE

■ 01604	SET B	0004	□
■ 01609	LOD 8	1089	□
■ 01614	UNL 7	1619	□
■ 01619	SEL 2	0200	□
■ 01624	RWD 3	0002	□
■ 01629	TR 1	1029	-----N06

H108 REWIND ROUTINE

TP ADDR

2 025 01654
 5 025 01679
 5 025 01704
 5 025 01729
 5 025 01754
 5 020 01774
 5 020 01794

CONSTANTS

■ 01799	NOP A	3004	-----□
■ 01804	TR 1	3004	-----V09

TO FIRST WR ROUTINE

U02.....■ 01809 SET B 0004 □
 ■ 01814 LOD 8 17504 X504 □
 ■ 01819 CMP 4 1833 □
 ■ 01824 TRE L 1909 -----
 ■ 01829 TR 1 0379 -----G02

MAKE SURE THERE
 IS A READY UNIT
 BLANKS
 T/O

2 004 01833
 2 039 01872
 2 001 01873
 2 027 01900
 2 001 01901

NO TD. RDY-MAKE TAPES TO TEST RDY-START
 901 TO PROG AND TURN 914 ON

CONSTANTS

■ 01909	SEL 2	0500	-----I
■ 01914	WR R	1834	□
■ 01919	HLT J	4444	□
■ 01924	TR 1	0254	-----F02

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H115-LONG RECORDS TEST, WRITE

RECORD LENGTH-2000 CHARACTERS
FIXED SKEW PATTERNS
FIRST OF 2 WRITE ROUTINES

V08..... 03004 TR 1 3859-----AA12 TRANSFER ON PASS 1, ONE TIME
 W12..... 03009 SGN T 01 3000 30 0 □
 □ 03014 ADM 6 01 3000 30 0 □
 □ 03019 SET B 0001 □
 □ 03024 LOD 8 10186 186 □
 □ 03029 CMP 4 10184 184 □
 □ 03034 TRE L 1029-----N06 TRANSFER IF TAPES HAVE BEEN
 INTERCHANGED

I
 □ 03039 SET B 0004 □
 □ 03044 LOD 8 1089 □
 □ 03049 UNL 7 3069 □
 □ 03054 UNL 7 3184 □
 □ 03059 UNL 7 4336 □
 •••• 03064 RAD H 4004 □
 I 03069 SEL 2 □
 I 03074 WR R 01 19995 Z9Z5 □
 I 03079 TRS O 01 3089 30Y9---
 I 03084 TR 1 3079 □ I
 I 03089 WR R 01 19800 Z8 0 □ I
 I 03094 TRS O 01 3109 31 9---
 I 03099 ADD G 4008 □ I
 I 03104 TR 1 3094 □ I
 I 03109 RWD 3 0002-----I
 I 03114 TRZ N 3134-----I
 I 03119 CMP 4 4012 □ I
 I 03124 TRH K 3169-----I
 I 03129 TR 1 3149-----I
 I
 I 03134 HLT J 3333-----I
 I 03139 RWD 3 0002 □ I
 I 03144 TR 1 3064 □ I
 I
 I 03149 SET B 0001-----I
 I 03154 LOD 8 4012 □ I
 I 03159 UNL 7 4347 □ I
 I 03164 TR 1 3184-----I
 I 03169 SET B 0001-----I
 I 03174 LOD 8 4011 □ I
 I 03179 UNL 7 4347 □ I
 I 03184 SEL 2 -----I
 I 03189 WR R 4330 □ I
 I 03194 LOD 8 4023 □ I
 I
 I 03199 NOP A 4804 □
 I
 I 03204 CMP 4 4031 □
 I 03209 TRE L 3229-----X10
 I 03214 CMP 4 4029 □
 I 03219 TRE L 3229-----X10
 I 03224 TR 1 1029-----N06

TO LEAVE LOAD POINT
 TO DETERMINE TYPE TAPE DRIVE
 729 II TP EXIT
 729 IV TP EXIT
 ERROR STOP-NO TP ON LINE
 OR PROGRAM ERROR. CORRECT
 AND PRESS START.

4
 2
 T.D. & MOD NO.
 NEXT WR ROUTINE ADDRESS
 CMP TO C
 CMP TO A
 EXIT

X09.....
03229 SET B 0004
03234 LOD 8 1089
03239 UNL 7 4336
03244 UNL 7 4355
03249 UNL 7 3474
03254 UNL 7 3649
03259 UNL 7 3719
03264 UNL 7 4076
03269 UNL 7 4102
03274 UNL 7 3589

TP ADDR

03279 RCV U 38004 H004
03284 SET B 0000
03289 SET B 0060
03294 SET B 01 0002 00 2
03299 SND / 01 4479 44X9
03304 NTR X 3299
03309 SET B 0060
03314 SND / 01 4489 44Y9
03319 NTR X 3314
03324 SET B 0060
03329 SND / 01 4499 44Z9
03334 NTR X 3329
03339 SET B 0020
03344 SND / 01 4509 45 9
03349 NTR X 3344

PATTERN GENERATOR

03354 SET B 04 0004 0 04
03359 LOD 8 04 4039 4 39
03364 SET B 05 0004 0 4
03369 LOD 8 05 4035 4 T5
03374 SET B 06 0000 0 -0
03379 SET B 06 0020 0 K0
03384 SET B 0004
03389 LOD 8 4043
03394 UNL 7 3414
03399 LOD 8 4051
03404 UNL 7 3419
03409 SET B 0001

03414 LOD 8 4515
03419 UNL 7 38000 H000
03424 ADM 6 04 3414 3U14
03429 ADM 6 05 3419 3U-9
03434 NTR X 06 3409 3U-9
03439 SET B 02 0004 00-4

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□ 03444 LOD 8 02 4027 40K7 □	SET XXXX IN COUNTER
□ 03449 RAD H 07 4004 4 E4 □	
□ 03454 UNL 7 07 4055 4 E5 □	
□ 03459 UNL 7 07 4081 4 H1 □	
□ 03464 RAD H 08 4004 4-04 □	
□ 03469 RAD H 03 4004 40&4 □	
• 03474 SEL 2 □	CLEAR COUNTER
II 03479 NOP A 02 9880 98Q0 □	
II 03484 WR R 01 38000 H0 0 □	WR ERROR PATTERN
II 03489 TRS 0 01 3499 34Z9 □	
III 03494 TR 1 3489 □ I	
III 03499 TRS 0 02 3624 36K4 □	CHL CHK TD 1 WR
III 03504 SUB P 02 4008 40-8 □	
III 03509 TRS 0 03 3719 □	TAPE INDICATOR ON NORMAL EXIT
III 03514 TRZ N 02 3524 35K4 □	
III 03519 TR 1 3474 □ I	
III 03524 CMP 4 07 4127 4/87 □ I	BYPASS BSP T/O
III 03529 TRE L 07 3559 3VE9 □	
III 03534 UNL 7 07 4055 4 E5 □	
III 03539 UNL 7 08 4081 4-81 □	
III 03544 SEL 2 0500 □	BSP TYPEOUT
III 03549 WR R 4052 □ I	SKP TYPEOUT
III 03554 WR R 4078 □ I	
I I	
I I 03559 SET B 0001 ••••• □ I	
I I 03564 LOD 8 4023 □	CMP TO C
I I 03569 CMP 4 4031 □	
I I 03574 TRE L 3689 □	CMP TO B
I I 03579 CMP 4 4030 □	
I I 03584 TRE L 1029 □	
I I	
Y12 03589 SEL 2 □	WR 3 CHAR RECORD
03594 WTM 3 0001 □	
03599 WR R 4120 □	
03604 SKP 3 0009 □	
03609 WTM 3 0001 □	
03614 RWD 3 0002 □	
03619 TR 1 1029 □	N06
I I	
I I 03624 ADD G 07 4008 4 &8 □	BSP COUNTER
I I 03629 LDA # 3629 □	
I I 03634 TR 1 16604 W604 □	
I I 03639 ADD G 03 4008 40&8 □	
I I 03644 CMP 4 03 4016 40A6 □	
I I 03649 SEL 2 03 □	
I I 03654 TRE L 03 3669 36F9 □	
I I 03659 BSP 3 0004 □	
I I 03664 TR 1 3484 □	
I I 03669 BSP 3 0004 ••••• □	
I I 03674 SKP 3 0009 □	
I I 03679 ADD G 08 4008 4-08 □	SKIP COUNTER
I I 03684 TR 1 3469 □	
I I	
I I 03689 SET B 0004 ••••• □	WRITE SHORT TAG BETWEEN LONG RECORD GROUP AND SHORT RECORD GROUP
I I 03694 LOD 8 1089 □	
I I 03699 UNL 7 3704 □	
I I 03704 SEL 2 0000 □	
I I 03709 WR R 4330 □	
I I 03714 TR 1 1029 □	N06
I I	

Z11..... 03719 SEL 2
 03724 IOF 3 0000
 03729 RWD 3 0002
 03734 ST F 02 4116 41J6
 03739 SET B 0004
 03744 LOD 8 4027
 03749 SUB P 4116
 03754 UNL 7 4395
 03759 SEL 2 0500
 03764 WR R 4349
 03769 SET B 0001
 03774 LOD 8 4023
 03779 CMP 4 4031
 03784 TRE L 3839
 03789 CMP 4 4030
 03794 TRE L 3839
 03799 CMP 4 07 4127 4/B7
 03804 TRE L 07 3589 3VH9
 03809 SEL 2 0500
 03814 UNL 7 07 4055 4 E5
 03819 UNL 7 08 4081 4-81
 03824 WR R 4052
 03829 WR R 4078
 03834 TR 1 3589
 03839 SEL 2 0500.....
 03844 WR R 4398
 03849 HLT J 6666
 03854 TR 1 0989
 I-----M05 SHORT T/O EXIT

NUMBER STORED-REMAINDER
EQUALS NO. OF RECORDS ON
TAPE

CMP TO C
 CMP TO B
 BYPASS BSP T/O
 BSP TYPEOUT
 SKP TYPEOUT
 EXIT TYPEOUT

AA09..... 03859 SEL 2 0500
 03864 WR R 4128
 03869 WR R 4178
 03874 WR R 4209
 03879 WR R 4236
 03884 HLT J 1111
 03889 SET B 0001
 03894 LOD 8 4023
 03899 CMP 4 4031
 03904 TRE L 3974
 03909 CMP 4 4030
 03914 TRE L 3974
 03919 CMP 4 4029
 03924 TRE L 3974
 03929 CMP 4 4535
 03934 TRE L 3959
 03939 SEL 2 0500
 03944 WR R 4270
 03949 HLT J 2222
 03954 TR 1 3859
 I-----RESTART

CMP TO C
 CMP TO B
 CMP TO A
 CMP TO BLANK

03959 SET B 0005.....
 03964 LOD 8 4021
 03969 UNL 7 4027
 I-----
 03974 SET B 0004.....
 03979 LOD 8 4027
 03984 UNL 7 4306
 03989 SEL 2 0500
 03994 WR R 4303
 03999 TR 1 3009-----W09

CONSTANT AREA

2 001 04000		&0000
2 004 04004		&0001
2 004 04008		&0724
2 004 04012		0003
2 004 04016		C0322
2 005 04021		
2 001 04022		XXXX
2 005 04027		□ A
2 001 04028		B
2 001 04029		C
2 001 04030		0100
2 001 04031		0001
2 004 04035		
2 004 04039		
3 04043	4515	FIRST WR ADDRESS FOR SHORT REC.
3 04047	9315	H000
2 004 04051		0000 -COUNTER-NO OF BSP
2 004 04055		BSP AFTER WR-TD
2 021 04076		□ 0000 -COUNTER-NO OF SKIPS
2 001 04077		SKP AFTER WR-TD
2 004 04081		
2 021 04102		
2 001 04103		
2 001 04104		
2 004 04108		
2 004 04112		
5 004 04116		&0021
2 003 04122	00	&0025
2 001 04123		REMAINDER IN COUNTER
2 004 04127		YYY
		□ 0000
2 035 04162		TYPEOUT AREA
2 014 04176		PRESS START FOR 1/3 REEL OF TAPE OR
2 001 04177		STORE AT 4023
2 030 04207		□ AXXXX FOR 2000 CHAR RECORDS
2 001 04208		□ BXXXX FOR SHORT RECORDS
2 026 04234		□ CXXXX FOR COMBINATIONS OF BOTH
2 001 04235		RESTART- DATA STORED INCORRECT
2 033 04268		LY
2 001 04269		□ XXXX RECORDS TO BE WRITTEN
2 030 04299		
2 002 04301		
2 001 04302		
2 026 04328		
2 001 04329		
2 009 04338	00	
2 009 04338		TD-
2 009 04347		729 MOD X
2 001 04348		□
2 009 04357		TD-
2 025 04382		ACTUAL NUMBER OF RECORDS
2 009 04391		ON TAPE,
2 004 04395		XXXX
2 001 04396		□
2 024 04420		END OF FILE-RECORDS NOT
2 030 04450		COMPLETE STORE 1 IN LOCATION
2 020 04470		3000 AND PRESS START
2 001 04471		□

FUNDAMENTAL PATTERNS

2 010 04484	00	1111111111
2 010 04494		&&&&&&&
2 010 04504		@@@@#@@@@
2 010 04514		3333333333
2 020 04534		AAZZ77AA□□CCRR□□33\$\$
2 001 04535		BLANK

H124-SKEW TEST, WRITE
SHORT RECORDS

□ 04804 SET B 0001 □
 □ 04809 LOD 8 10186 186 □
 □ 04814 CMP 4 10184 184 □
 □ 04819 TRE L 1189 -----P06
 □ 04824 LOD 8 4023 □
 □ 04829 CMP 4 4031 □
 □ 04834 TRE L 4874 -----
 □ 04839 CMP 4 4030 □ I
 □ 04844 TRE L 4874 -----
 □ 04849 SET B 0004 □ I
 □ 04854 LOD 8 1089 □ I
 □ 04859 UNL 7 4864 □ I
 □ 04864 SEL 2 □ I
 □ 04869 TR 1 1189 -----P06
 □ 04874 SET B 0004 □ I
 □ 04879 LOD 8 1089 □
 □ 04884 UNL 7 4076 □
 □ 04889 UNL 7 4102 □
 □ 04894 UNL 7 4964 □
 □ 04899 UNL 7 5114 □
 □ 04904 UNL 7 5224 □
 □ 04909 UNL 7 4355 □
 □ 04914 UNL 7 5149 □
 □ 04919 RAD H 07 4004 4 &4 □
 □ 04924 RAD H 08 4004 4-04 □
 □ 04929 RAD H 09 4112 4J/2 □
 □ 04934 SET B 02 0004 00-4 □
 □ 04939 LOD 8 02 4027 40K7 □
 □ 04944 RAD H 04 4108 4/08 □
 □ 04949 SET B 0004 □
 □ 04954 LOD 8 4047 □
 □ 04959 UNL 7 4979 □

TRANSFER IF TAPES HAVE BEEN
INTERCHANGED

AB15 04964 SEL 2 □
 □ 04969 RAD H 03 4004 40&4 □
 □ 04974 NOP A 02 9880 98Q0 □
 AC15 04979 WR R 9315 □
 04984 TRS O 01 4994 49Z4 -----
 04989 TR 1 4984 □ I
 04994 TRS O 02 5084 50Q4 -----AD15
 04999 NOP A 6004 □
 05004 SUB P 04 4008 4 08 □
 05009 TRZ N 04 5024 5 24 -----
 05014 ADM 6 09 4979 4RX9 □ I
 05019 TR 1 4964 □ I
 05024 SUB P 02 4008 40-8 . . . I
 05029 TRS O 5149 -----AE15
 05034 TRZ N 02 5044 50M4 -----
 05039 TR 1 4944 □ I
 05044 SEL 2 0500 I
 05049 CMP 4 07 4127 4/B7 □
 05054 TRE L 07 5224 5SB4 -----AF15
 05059 UNL 7 07 4055 4 E5 □
 05064 UNL 7 08 4081 4-81 □
 05069 WR R 4052 □
 05074 WR R 4078 □
 05079 TR 1 5224 -----AF15

CMP TO C

CMP TO B

TP ADDR

TP ADDR

T/O

&0025

NO OF GROUPS OF RECORDS

&0021

WR 21 RECORDS OF 20 CHARACTERS
CLEAR COUNTEREACH THIS GROUP OF PATTERNS
TEST EVERY TRACK FOR BIT PICK
UP OR BIT DROP OUT.
CHL CHK TD 1 WR

READ SECTION

TRZ WHEN ALL 20 RECORDS
ARE WRITTEN SUCESSFULLYTAPE INDICATOR ON
NORMAL EXIT
WR NEXT BLOCK OF TWENTY ONE

BYPASS BSP T/O

AD14.....	05084 ADD G 07 4008 4 &8 □ 05089 LDA # 5089 □ 05094 TR 1 16604 W604 □ 05099 ADD G 03 4008 40&8 □ 05104 CMP 4 03 4016 40A6 □ 05109 TRE L 03 5129 51B9 ----- 05114 SEL 2 ----- 05119 BSP 3 0004 ----- 05124 TR 1 4979 ----- AC14 05129 BSP 3 0004 ----- 05134 SKP 3 0009 □ 05139 ADD G 08 4008 4-08 □ 05144 TR 1 4964 ----- AB14 □□□□□□□□□□□□□□□□□□□□□□□□□□□□□	INCREASE BSP COUNTER
AE14.....	05149 SEL 2 □ 05154 IOF 3 0000 □ 05159 ST F 02 4116 41J6 □ 05164 SET B 0004 □ 05169 LOD 8 4027 □ 05174 SUB P 4116 □ 05179 UNL 7 4395 □ 05184 SEL 2 0500 □ 05189 WR R 4349 □ 05194 CMP 4 07 4127 4/B7 □ 05199 TRE L 07 5224 5SB4 ----- 05204 UNL 7 07 4055 4 E5 □ I 05209 UNL 7 08 4081 4-81 □ I 05214 WR R 4052 □ I 05219 WR R 4078 □ I □□□□□□□□ I □□□□□□□□ I I I	NUMBER STORED-REMAINDER EQUALS NO. OF RECORDS ON TAPE
		BYPASS BSP T/O
		BSP TYPEOUT SKP TYPEOUT
AF14.....	05224 SEL 2 ----- 05229 WTM 3 0001 □ 05234 WR R 4120 □ 05239 SKP 3 0009 □ 05244 WTM 3 0001 □ 05249 RWD 3 0002 □ 05254 TR 1 1029 ----- N06 □□□□□□□□□□□□□□□□□□□□□□□□□□□□□	WR 3 CHAR RECORD

EACH 2000 CHAR RECORD IS READ
INTO 34000-36000 AND FROM
THERE IT IS CMP 50 CHAR AT
A TIME.
WITH 916 ON A BIT STRUCTURE
TYPEOUT WILL RESULT IF ERRORS
ARE PRESENT.

06004 SET B	0001	□
06009 LOD 8	4023	□
06014 CMP 4	4031	□
06019 TRE L	6039	-----■
06024 CMP 4	4029	□ I
06029 TRE L	6039	-----■ Y
06034 TR I	1189	-----■ I -----P06
06039 SET B	0004	••••■
06044 LOD 8	1089	□
06049 UNL 7	6154	□
06054 UNL 7	6249	□
06059 UNL 7	7009	□
06064 UNL 7	7039	□
06069 UNL 7	9987	□
06074 SET B 07	0004 0 &4	□
06079 LOD 8 07	4027 4 B7	□

CMP TO C

CMP TO A

SHORT RECORDS ONLY

TP ADDR

07 WILL CONTAIN THE NO. OF
LONG RECORDS ASKED FOR BY
YOU THE OPERATOR

06084 SET B 08	0001 0-01	□
06089 LOD 8 08	6833 6Q33	□
06094 SET B 09	0001 0-1	□
06099 LOD 8 09	6834 6QT4	□
06104 SET B 10	0001 0--1	□
06109 LOD 8 10	6835 6QL5	□
06114 SET B 11	0001 0-&1	□
06119 LOD 8 11	6836 6QC6	□
06124 SET B 12	0001 0&01	□
06129 LOD 8 12	6837 6H37	□
06134 SET B 13	0001 0& 1	□
06139 LOD 8 13	6838 6HT8	□
06144 SET B 14	0001 0&-1	□
06149 LOD 8 14	6839 6HL9	□
06154 SEL 2		□
06159 NOP A 01	19800 Z8 0	□
06164 NOP A 01	19800 Z8 0	□
06169 RD Y	19800 Z800	□
06174 TRS O 03	6179 61G9	-----■

C

B

A

8

4

2

1

TAPE DRIVE AND MODEL NO.

06179 SET B	0001	••••■
06184 LOD 8	6840	□
06189 ADM 6	6405	□
06194 RAD H 01	6844 68U4	□

&

&39

06199 NOP A	8204	□
-------------	------	---

TO SECOND READ TEST

06204 SET B	0004	□
06209 LOD 8	6828	□
06214 UNL 7	6284	□
06219 LOD 8	6832	□
06224 UNL 7	6289	□
06229 SET B 15	0000 0&&0	□
06234 SET B 15	0004 0&&4	□
06239 RCV U	32004 B004	□
06244 BLM \$	0400	□

TO RESET LOD AND CMP
ADDRESSES

NEXT PAGE

```

    □ 06249 SEL 2
    □ 06254 RD Y 32000 B000 □
    □ 06259 TRS O 01 6269 62W9--I
    □ 06264 TR I 6259 □ I
    □ 06269 LDA # 6269••••••••I
    □ 06274 TRS O 03 16704 W7&4 □
    □ 06279 SET B 0050 □
    I □ 06284 LOD 8 32049 B049 □
    I □ 06289 CMP 4 38049 H049 □
    I □ 06294 RAD H 04 6848 6Y48 □
    I □ 06299 ADM 6 04 6284 6S84 □
    I □ 06304 ADM 6 04 6289 6S89 □
    I □ 06309 TRE L 6324--I
    I □ 06314 TRS O 11 6319 6LA9--I
    I □ 06319 TR I 6364--I
    I □ 06324 ADD G 15 6848 6HD8••••I
    II □ 06329 SUB P 01 6852 68V2 □
    II □ 06334 TRZ N 01 6344 63U4--I
    I+ □ 06339 TRP M 01 6279 62X9 □ I I
    I □ 06344 SUB P 07 6852 6YE2••••I
    I □ 06349 TRZ N 07 6359 6TE9--I
    I □ 06354 TRP M 07 6194 6/I4--I AG16
    I □ 06359 TR I 6969--I AP19
    I □ 06364 SEL 2 0916••••••••I
    I □ 06369 TRS O 6379--I
    I+ □ 06374 TR I 6324 □ I

```

CHL CHK TD 1 RD

TURN OFF 901

INCREASE BY 50

LOOK AT NEXT BLOCK OF 50
DECREASE BY ONE
NORMAL EXIT916 ON
916 OFF

UPDATE LOD ADDRESS

```

    □ 06379 LDA # 6284••••••••I
    □ 06384 SUB P 6856 □
    □ 06389 ULA * 6484 □

```

UPDATE CMP ADDRESS
AVOID TYPEOUT

```

    I
    □ 06394 LDA # 6289 □
    □ 06399 SUB P 6856 □
    □ 06404 ULA * 6489 □
    □ 06409 TR I 6469--I AK18

```

	□ 06414 SEL 2 0500	□	TP ADDR
	□ 06419 SET B 0004	□	
	□ 06424 LOD 8 1089	□	
	□ 06429 UNL 7 6961	□	
	□ 06434 LOD 8 19806 Z806	□	LONG RECORDS TYPEOUT
	□ 06439 UNL 7 6952	□	
	□ 06444 WR R 6946	□	
	□ 06449 WR R 6868	□	
	□ 06454 WR R 6886	□	
	□ 06459 WR R 6915	□	
	□ 06464 SGN T 6405	□	
AK17.....	• 06469 RAD H 02 6852 68N2	□	&0001
	□ 06474 RAD H 03 6860 68F0	□	&0049
AL19.....	• 06479 SET B 0001	□	CHAR READ
	I 06484 LOD 8 0000	□	CHAR WRITTEN
	I 06489 CMP 4 0000	□	
	I 06494 TRE L 6504	-----	TO ANALYSIS OF BIT STRUCTURE
	I 06499 TR 1 6589	-----	
	I □ 06504 ADM 6 02 6484 64Q4	• • I	
	I □ 06509 ADM 6 02 6489 64Q9	□	
	I □ 06514 ADD G 15 6852 6HE2	□	
	I □ 06519 SUB P 03 6852 68E2	□	
	I □ 06524 TRZ N 03 6534 65C4	-----	
	+--- 06529 TRP M 03 6479 64G9	□	
AM19.....	• 06534 SUB P 01 6852 68V2	• • I	INCREASE BY ONE
	□ 06539 TRZ N 01 6549 65U9	-----	REDUCE BY ONE
	□ 06544 TRP M 01 6279 62X9	-----	EXAMINE NEXT CHAR.
	□ 06549 SUB P 07 6852 6YE2	• • I	
	□ 06554 TRZ N 07 6564 6VF4	-----	
	□ 06559 TRP M 07 6204 6S&4	-----	AJ17 LOOK AT NEXT BLOCK OF 50
	□ 06564 SET B 0001	• • • • I	AH16 READ NEXT RECORD
	□ 06569 LOD 8 4023	□	
	□ 06574 CMP 4 4031	□	
	□ 06579 TRE L 0989	-----	M05 EXIT-SHORT T/O
	□ 06584 TR 1 6969	-----	AP19 POLARITY TEST
	□ 06589 SET B 0004	• • • • I	
	□ 06594 LOD 8 6484	□	
	□ 06599 UNL 7 6634	□	
	□ 06604 LOD 8 6489	□	
	□ 06609 UNL 7 6709	□	
	□ 06614 SET B 0007	□	
	□ 06619 LOD 8 6867	□	
	□ 06624 UNL 7 6934	□	
	□ 06629 UNL 7 6944	□	
	I		CLEAR TYPEOUT AREA
	□ 06634 RCV U	□	CHAR READ
	□		
	□ 06639 TZB • 07 6649 6WD9	-----	C BIT
	□ 06644 UNL 7 08 6938 6R38	□ I	B BIT
	□ 06649 TZB • 06 6659 6WN9	■■■■ I	A BIT
	□ 06654 UNL 7 09 6939 6RT9	□	
	□ 06659 TZB • 05 6669 6WW9	■■■■ I	
	□ 06664 UNL 7 10 6940 6RMO	□	
	□ 06669 TZB • 04 6679 6W79	■■■■ I	
	□ 06674 UNL 7 11 6941 6RD1	□	
	□ 06679 TZB • 03 6689 66H9	■■■■ I	4 BIT
	□ 06684 UNL 7 12 6942 6I42	□	
	□ 06689 TZB • 02 6699 66R9	■■■■ I	2 BIT
	□ 06694 UNL 7 13 6943 6IU3	□	
	□ 06699 TZB • 01 6709 67 9	■■■■ I	AN19 1 BIT
	□ 06704 UNL 7 14 6944 6IM4	□	

NEXT PAGE

AN18.....
 □ 06709 RCV U
 □
 □ 06714 TZB • 07 6724 6XB4--
 □ 06719 UNL 7 08 6928 6R28 □ I
 □ 06724 TZB • 06 6734 6XL4--
 □ 06729 UNL 7 09 6929 6RS9 □ I
 □ 06734 TZB • 05 6744 6XU4--
 □ 06739 UNL 7 10 6930 6RL0 □ I
 □ 06744 TZB • 04 6754 6X54--
 □ 06749 UNL 7 11 6931 6RC1 □ I
 □ 06754 TZB • 03 6764 67F4--
 □ 06759 UNL 7 12 6932 6I32 □ I
 □ 06764 TZB • 02 6774 67P4--
 □ 06769 UNL 7 13 6933 6IT3 □ I
 □ 06774 TZB • 01 6784 67Y4--
 □ 06779 UNL 7 14 6934 6IL4 □ I
 □
 □ 06784 ADM 6 02 6484 64Q4--
 □ 06789 ADM 6 02 6489 64Q9 □
 □ 06794 ADD G 15 6852 6HE2 □
 □ 06799 UNL 7 15 6925 6IB5 □
 □ 06804 SEL 2 0500 □
 □ 06809 WR R 6917 □
 □ 06814 SUB P 03 6852 68E2 □
 □ 06819 TRZ N 03 6534 65C4 -- AM18
 □ 06824 TR 1 6479 -- AL18
 □
 □

CHAR WRITTEN
 C BIT
 B BIT
 A BIT
 8 BIT
 4 BIT
 2 BIT
 1 BIT

CONSTANTS AND TYPEOUTS

2 004 06828	B049
2 004 06832	H049
2 007 06839	CBA8421
2 001 06840	&
2 004 06844	&0039
2 004 06848	&0050
2 004 06852	&0001
2 004 06856	&0099
2 004 06860	&0049
5 007 06867	BLANKS
2 017 06884	LONG RECORDS TEST
2 001 06885	□
2 028 06913	POSITION WR BITS, RD BITS
2 001 06914	□
2 001 06915	□
2 001 06916	□
2 011 06927	POS # ,
2 007 06934	□
2 010 06944	WR -RD
2 001 06945	□
2 017 06962	□
2 001 06963	□

AP17
 AP18.....
 □ 06969 SET B 0001 □
 □ 06974 LOD 8 4023 □
 □ 06979 CMP 4 4031 □
 □ 06984 TRE L 1029 -- N06
 □ 06989 LOD 8 10186 186 □
 □ 06994 CMP 4 10184 184 □
 □ 06999 TRE L 7029 -- AR20
 □ 07004 TR 1 7039 -- AS20
 □ 07009 SEL 2 □
 □ 07014 IOF 3 0000 □
 □ 07019 RWD 3 0002 □
 □ 07024 TR 1 1029 -- N06
 □

CMP TO C
 EXIT
 CMP TO I
 INTERCHANGE HAS BEEN MADE
 RWD TAPE
 EXIT

AQ20.....
 □ 07009 SEL 2 □
 □ 07014 IOF 3 0000 □
 □ 07019 RWD 3 0002 □
 □ 07024 TR 1 1029 -- N06
 □

AR19..... 07029 NOP A 7009 -----AQ19 SWITCH
□ 07034 SGN T 7025 □
AS19..... 07039 SEL 2 7064 -----
□ 07044 TRS O 01 30000 60 0 □ I
□ 07049 RD Y 01 7039 70T9 □ I
□ 07054 TRS O 01 7054 0000 I
□ 07059 TR 1 7054 31000 A000 □
□ 07064 IOF 3 7064 7084 70Y4 -----
□ 07069 RD Y 01 7074 7074 □ I
□ 07074 TRS O 01 7074 31002 A002 . . . I
□ 07079 TR 1 7074 4122 □ I
□ 07084 LOD 8 7084 7109 -----
□ 07089 CMP 4 7089 7109 -----
□ 07094 TRE L 7099 -----
□ 07099 BSP 3 01 0004 00 4 □ I
□ 07104 TR 1 7039 7124 71S4 -----
□ 07109 RD Y 01 7124 7124 □ I
□ 07114 TRS O 01 7114 7114 □ I
□ 07119 TR 1 7114 7144 -----
□ 07124 TRS O 7124 31000 A0 0 □ I
□ 07129 RD Y 01 7144 31000 A0 0 □ I
□ 07134 TRS O 7154 7154 -----
□ 07139 TR 1 7154 1029 -----N06
□ 07144 BSP 3 0004 I
□ 07149 WTM 3 0001 □ I
□ 07154 IOF 3 0000 I
□ 07159 BSP 3 0004 □ I
□ 07164 BSP 3 0004 □ I
□ 07169 WR R 02 9940 99M0 □
□ 07174 RD Y 31010 A010 □
□ 07179 TRS O 02 7189 71Q9 -----
□ 07184 TR 1 7009 -----AQ19 EXIT
□ 07189 LOD 8 31012 A012 . . . I
□ 07194 CMP 4 4122 □ I
□ 07199 TRE L 7234 -----
□ 07204 SEL 2 0500 □ I
□ 07209 SET B 0004 □ I
□ 07214 LOD 8 19806 Z806 □ I
□ 07219 UNL 7 9982 □ I
□ 07224 WR R 9954 □ I
□ 07229 TR 1 9954 7009 -----AQ19 EXIT
□ 07234 LDA # 7234 I
□ 07239 TRS O 02 16704 W7-4 □
□ 07244 TR 1 0989 -----M05 CHL CHK
□ 07245 TR 1 0989 -----M05 SHORT T/O EXIT

NEXT PAGE

H141- SHORT RECORD SKEW TEST

08204 SET B 0001 □
 08209 LOD 8 4023 □
 08214 CMP 4 4031 □
 08219 TRE L 8239 -----
 08224 CMP 4 4030 □ I
 08229 TRE L 8239 -----
 08234 TR I 1189 -----
 08239 SET B 0004 ••••• I
 08244 LOD 8 1089 □
 08249 UNL 7 8254 □
 08254 SEL 2 □
 08259 NOP A 01 19800 Z8 0 □
 08264 NOP A 01 19800 Z8 0 □
 08269 RD Y 19800 Z800 □
 08274 TRS O 03 8279 82G9 -----
 TAPE DRIVE AND MODEL NO.

CMP TO C
 CMP TO B
 EXIT
 TP ADDR

08279 SET B 08 0001 0-01 ••• I
 08284 LOD 8 08 9836 9Q36 □
 08289 SET B 09 0001 0-1 □
 08294 LOD 8 09 9837 9QT7 □
 08299 SET B 10 0001 0-1 □
 08304 LOD 8 10 9838 9QL8 □
 08309 SET B 11 0001 0-&1 □
 08314 LOD 8 11 9839 9QC9 □
 08319 SET B 12 0001 0601 □
 08324 LOD 8 12 9840 9H40 □
 08329 SET B 13 0001 0& 1 □
 08334 LOD 8 13 9841 9HU1 □
 08339 SET B 14 0001 06-1 □
 08344 LOD 8 14 9842 9HM2 □
 08349 SET B 01 0004 00-4 □
 08354 LOD 8 01 9869 98W9 □
 08359 SET B 0001 □
 08364 LOD 8 9859 □
 08369 ADM 6 8645 □
 08374 SET B 15 0004 0&&4 □
 08379 LOD 8 15 4027 4&B7 □
 15 WILL CONTAIN THE NO OF
 SHORT RECORDS ASKED FOR BY
 YOU THE OPERATOR

C
 B
 A
 8
 4
 2
 1

08384 SET B 05 0000 0 0 □
 08389 SET B 05 0021 0 S1 □
 08394 SET B 07 0004 0 &4 □

NEXT TEST

08404 LOD 8 07 9846 9YD6 □
 08409 SET B 0004 □
 08414 LOD 8 1089 □
 08419 UNL 7 8439 □
 08424 UNL 7 9109 □
 08429 UNL 7 9079 □
 08434 UNE 7 9987 □
 08439 SEL 2 □
 08444 RCV U 36004 F004 □
 08449 BLM \$ 0101 □
 08454 WR R 02 0210 02J0 □
 08459 RD Y 36000 F000 □
 08464 LDA * 8464 □
 08469 TRS O 03 16704 W7&4 □
 08474 SET B 0000 □
 08479 SET B 0004 □
 08484 UNL 7 8734 □
 08489 UNL 7 8739 □
 08494 LOD 8 9873 □
 08499 UNL 7 8519 □
 08504 LOD 8 9877 □
 08509 UNL 7 8524 □

20 IN ASU 07
 TP ADDR

SET RECORD COUNTER TO 21
 CHL CHK TD 1 RD

LOAD 20 CHAR SKEW RECORD

DETERMINES RECORD

NORMAL EXIT
LOOP916 ON
BY PASS DIAGNOSIS

&0039

&0040

AVOID TYPEOUT

TP ADDR

SKEW TEST TYPEOUT

20 POSITION RECORD

RESET COUNTER

CHAR READ
CHAR WRITTENTO ANALYSIS OF BIT STRUCTURE
INCREASE BY &1CHARACTER COUNTER
NEXT CHAR
NEXT RECORDEXIT
LOOP

AU23.....
 □ 08514 SET B 0020 □
 □ 08519 LOD 8 36019 F019 □
 □ 08524 CMP 4 9334 □
 □ 08529 ADM 6 07 8519 8VA9 □
 □ 08534 ADM 6 01 8524 85S4 □
 □ 08539 ADM 6 01 8524 85S4 □
 □ 08544 ADM 6 01 8524 85S4 □
 □ 08549 ADM 6 01 8524 85S4 □
 □ 08554 ADM 6 01 8524 85S4 □
 □ 08559 ADM 6 07 8524 8VB4 □
 □ 08564 TRE L 8579 -----
 □ 08569 TRS O 11 8574 8NG4 -----
 □ 08574 TR 1 8604 -----
 □ 08579 NTR X 05 8514 8V/4 -----
 □ 08584 SUB P 15 9865 9HF5 □
 □ 08589 TRZ N 15 8599 8EI9 -----
 □ 08594 TR 1 8384 ----- AT21
 □ 08599 TR 1 9054 ----- AX23
 □□□□□□□□□□□□□□□□□□□□□□

□ 08604 SEL 2 0916 -----
 □ 08609 TRS O 8619 -----
 □ 08614 TR 1 8579 □
 □□□□□□□□□□□□□□□□□□□□□

□ 08619 LDA # 8519 -----
 □ 08624 SUB P 9853 -----
 □ 08629 ULA * 8734 □
 □ 08634 LDA # 8524 □
 □ 08639 SUB P 9858 □
 □ 08644 ULA * 8739 □
 □ 08649 TR 1 8709 -----
 □ 08654 SEL 2 0500 □
 □ 08659 SET B 0004 □
 □ 08664 LOD 8 1089 □
 □ 08669 UNL 7 6961 □
 □ 08674 LOD 8 19806 Z806 □
 □ 08679 UNL 7 6952 □
 □ 08684 WR R 9878 □
 □ 08689 WR R 6946 □
 □ 08694 WR R 9893 □
 □ 08699 WR R 9847 □
 □ 08704 SGN T 8645 □
 □□□□□□□□□□□□□□□□□□□□□

AV23.....
 □ 08709 SET B 03 0000 00&0 -----
 □ 08714 SET B 03 0020 00B0 □
 □ 08719 SET B 02 0000 00-0 □
 □ 08724 SET B 02 0002 00-2 □
 □ 08729 SET B 0001 □
 □ 08734 LOD 8 0000 □
 □ 08739 CMP 4 0000 □
 □ 08744 TRE L 8754 -----
 □ 08749 TR 1 8799 ----- AW23
 □ 08754 ADM 6 01 8734 87T4 -----
 □ 08759 ADM 6 01 8739 87T9 □
 □ 08764 ADD G 02 9861 9801 □
 □ 08769 NTR X 03 8729 87B9 □
 □ 08774 NTR X 05 8514 8V/4 □
 □ 08779 SUB P 15 9865 9HF5 □
 □ 08784 TRZ N 15 8794 8G14 -----
 □ 08789 TR 1 8384 ----- AT21
 □ 08794 TR 1 9054 ----- AX23
 □□□□□□□□□□□□□□□□□□□□□

AW22.....
 □ 08799 SET B 0004 □
 □ 08804 LOD 8 8734 □
 □ 08809 UNL 7 8844 □
 □ 08814 LOD 8 8739 □
 □ 08819 UNL 7 8919 □
 □ 08824 SET B 0007 □
 □ 08829 LOD 8 9953 □
 □ 08834 UNL 7 9935 □
 □ 08839 UNL 7 9945 □
 □□□□□□□□□□□□□□□□□□□□□□

□ 08844 RCV U □
 □
 □ 08849 TZB • 07 8859 8YE9 □
 □ 08854 UNL 7 08 9939 9R39 □ I
 □ 08859 TZB • 06 8869 8Y09 □
 □ 08864 UNL 7 09 9940 9RUO □ I
 □ 08869 TZB • 05 8879 8YX9 □
 □ 08874 UNL 7 10 9941 9RM1 □ I
 □ 08879 TZB • 04 8889 8Y89 □
 □ 08884 UNL 7 11 9942 9RD2 □ I
 □ 08889 TZB • 03 8899 88I9 □
 □ 08894 UNL 7 12 9943 9I43 □ I
 □ 08899 TZB • 02 8909 89-9 □
 □ 08904 UNL 7 13 9944 9IU4 □ I
 □ 08909 TZB • 01 8919 89/9 □
 □ 08914 UNL 7 14 9945 9IM5 □ I
 □□□□□□□□□□□□□□□□□□□□□ I
 I I

INCORRECT CHAR.

C
B
A
8
4
2
1

□ 08919 RCV U ••••• I
 □
 □ 08924 TZB • 07 8934 8ZC4 □
 □ 08929 UNL 7 08 9929 9R29 □ I
 □ 08934 TZB • 06 8944 8ZM4 □
 □ 08939 UNL 7 09 9930 9RTO □ I
 □ 08944 TZB • 05 8954 8ZV4 □
 □ 08949 UNL 7 10 9931 9RL1 □ I
 □ 08954 TZB • 04 8964 8Z64 □
 □ 08959 UNL 7 11 9932 9RC2 □ I
 □ 08964 TZB • 03 8974 89G4 □
 □ 08969 UNL 7 12 9933 9I33 □ I
 □ 08974 TZB • 02 8984 89Q4 □
 □ 08979 UNL 7 13 9934 9IT4 □ I
 □ 08984 TZB • 01 8994 89Z4 □
 □ 08989 UNL 7 14 9935 9IL5 □ I
 □ 08994 ADM 6 01 8734 87T4 □ I
 □ 08999 ADM 6 01 8739 87T9 □
 □ 09004 ADD G 02 9861 9801 □
 □ 09009 SEL 2 0500 □
 □ 09014 UNL 7 02 9926 99K6 □
 □ 09019 WR R 9920 □
 □ 09024 NTR X 03 8729 87B9 ----- AV22
 □ 09029 NTR X 05 8514 8V/4 ----- AU22
 □ 09034 SUB P 15 9865 9HF5 □
 □ 09039 TRZ N 15 9049 9&D9 □
 □ 09044 TR 1 8384 ----- AT21
 □ 09049 TR 1 9054 □
 □□□□□□□□□□□□□□□□□□□□□ I

CORRECT CHAR

C
B
A
8
4
2
1

LONG TYPEOUT
 NEXT CHAR
 NEXT RECORD

EXIT
LOOP

AX22.....
 □ 09054 SET B 0001 ••••• I
 □ 09059 LOD 8 10186 186 □
 □ 09064 CMP 4 10184 184 □
 □ 09069 TRE L 9099 ----- AY24
 □ 09074 TR 1 9109 ----- AZ24
 □□□□□□□□□□□□□□□□□□□□□ I

CMP TO I
 INTERCHANGE HAS BEEN MADE
 ONE TIME TRANSFER

□ 09079 SEL 2	0000	□	
□ 09084 IOF 3	0002	□	
□ 09089 RWD 3	1029	□	N06 RWD TAPE EXIT
□ 09094 TR 1			
□ 09099 NOP A	9079	□	SWITCH
□ 09104 SGN T	9095	□	
AY23.....	09109 SEL 2		T.I. ON
	09114 TRS O	9134	
	09119 RD Y	01 30000 80 0	I
AZ23.....	09124 TRS O	01 9109 91 9	I
	09129 TR 1	9124	
	09134 IOF 3	0000	
	09139 RD Y	31000 A000	□
	09144 TRS O	01 9154 91V4	□
	09149 TR 1	9144	□ I
	09154 LOD 8	31002 A002	•••
	09159 CMP 4	4122	□
	09164 TRE L	9179	□
	09169 BSP 3	01 0004 00 4	□ I
	09174 TR 1	9109	□ I
	09179 RD Y	01 31000 A0 0	•••
	09184 TRS O	01 9194 9124	□
	09189 TR 1	9184	□ I
	09194 TRS O	9214	•••••
	09199 RD Y	01 31000 A0 0	□ I
	09204 TRS O	9224	□
	09209 TR 1	1029	□ N06 EXIT
	09214 BSP 3	0004	•••••
	09219 WTM 3	0001	□ I
	09224 IOF 3	0000	•••••
	09229 BSP 3	0004	□
	09234 BSP 3	0004	□
	09239 WR R	02 9940 99M0	□
	09244 RD Y	31010 A010	□
	09249 TRS O	02 9259 92N9	□
	09254 TR 1	9079	□ I
	09259 LOD 8	31012 A012	•••
	09264 CMP 4	4122	□
	09269 TRE L	9304	□
	09274 SEL 2	0500	□ I
	09279 SET B	0004	□ I
	09284 LOD 8	19806 Z806	□
	09289 UNL 7	9982	□ I
	09294 WR R	9954	□ I
	09299 TR 1	9079	□ I
	09304 LDA #	9304	•••••
	09309 TRS O	02 16704 W7-4	□
	09314 TR 1	0989	□ M05
			CHL CHK SHORT T/O EXIT

NEXT PAGE

CONSTANTS

RECORD #1

1K1Y1@161&1M1Q1U1510

□

RECORD #2

2J2M2Q2Y2@292/2&252U

□

RECORD #3

4&4Y404Q49434J4/4K4S

□

RECORD #4

52585 5-5Q5K5&5Y5S50

□

RECORD #5

6&6Q6J6Y6/696-6 6861

□

RECORD #6

34383 3-3M3Q3&3U3Y3@

□

RECORD #7

8&8M8K8J8U858/868583

□

RECORD #8

Q M K J @ 0 9 6 5 3

□

RECORD #9

-Y-U-S-/---0-9-6-5-3

□

RECORD #10

969S9U9&9K9M9-9 9491

□

RECORD #11

050/0U0J0&0MO-0 0401

□

RECORD #12

@1@2@ @-@&@K@J@S@/@3

□

RECORD #13

J6J0J@JYJSJUJ J8J4J2

□

RECORD #14

K9K5K@K/KUKYK K8K4K1

□

RECORD #15

M3M9M0M/MUMYM M1M4M8

□

RECORD #16

Q Q1Q4Q2QUQSQ/Q6Q5Q3

□

RECORD #17

&1&2&4&8&@&0&9&6&5&3

□

RECORD #18

/6/0/@/K/M/Q/-/8/4/2

□

RECORD #19

S8S4S1S-SQSMSJS@S5S9

□

RECORD #20

U1U2U8U-UJUKUQU0U9U3

□

RECORD #21

Y3Y6Y5YMYKYJY-Y4Y2Y1

□

2 007 09842
2 004 09846
2 001 09847
2 001 09848
2 005 09853
2 005 09858
2 001 09859
2 002 09861
2 004 09865
2 004 09869
2 004 09873
3 09877

CBA8421
0020
 G00039
 G00044
 G01
 G0001
 0001
 F019

9334 9334

TYPEOUT AREA

2 014 09891
2 001 09892
2 026 09918
2 001 09919
2 009 09928
2 007 09935
2 010 09945
2 001 09946
5 007 09953
2 025 09978
2 004 09982
2 001 09983
2 004 09987
2 001 09988

TAPE SKEW TEST
 POSITION WR BITS, RD BITS
 POS #

 BLANKS
WR POLARITY REVERSED ON,
0200

 POS #

10004 NOP A	10049 049	■	SWITCH
10009 SET B	0001	■ I	
10014 LOD 8	10184 184	■ I	
10019 UNL 7	10186 186	■ I	
10024 SEL 2	0500	■ I	
10029 WR R	10187 187	■ I	STOP FOR INTERCHANGE IS TO BE MADE
10034 HLT J	9999	■ I	
10039 SGN T 05	10000 0	■ I	
10044 TR I	1389	■ I	T07 WILL RESTART PROGRAM
10049 SET 8	0001	■ I	
10054 LOD 8	10185 185	■ I	
10059 NOP A	10186 186	■ I	CHANGE NOP TO UNL FOR RESTART
10064 SEL 2	0914	■ I	
10069 TRS O	10079 079	■ I	
10074 TR I	18219 Y219	■ I	BRING IN NEXT M.L.
10079 SEL 2	0500	■ I	
10084 WR R	10187 187	■ I	
10089 HLT J	9996	■ I	INTERCHANGE TAPES 2ND TIME
10094 TR I	1389	■ I	T07 BEGIN 3RD READ

5 050 10184
5 034 10178
5 005 10283
2 001 10184
2 001 10185
2 001 10186
2 027 10213
2 001 10214

I
W
W
■
INTERCHANGE TAPES ON DRIVES

THIS IS THE AREA FOR
THE GYPSY TYPEOUTS

WILL BE ENTERED FROM
THE FRONTISPICE OR A CUPEL

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□□□□□□□□□□□□□□□□□□□□□□
□ 16004 ADD G   16196 W196 □
□ 16009 ULA *   16064 W064 □
□ 16014 SEL 2    0911   □
□ 16019 TRS O    16044 W044 □
□ 16024 SEL 2    0916   □
□ 16029 TRS O    16044 W044 □
□ 16034 SEL 2    0500   □
□ 16039 WR R     16070 W070 □
□ 16044 SET B    0004   □
□ 16049 LOD 8    1089   □
□ 16054 UNL 7    16059 W059 □
□ 16059 SEL 2    0000   □
□ 16064 TR 1     16064 W064 □
□□□□□□□□□□□□□□□□□□□□□□
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TYPEOUT FOR 900 CHECK

BA29.....

TP ADDR

2 005 16069	
2 007 16076	900 CHK
2 003 16079	□
2 005 16084	
2 007 16091	901 CHK
2 003 16094	□
2 005 16099	

CONSTANTS

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□□□□□□□□□□□□□□□□□□□□□□
□ 16104 ADD G   16196 W196 □
□ 16109 ULA *   16064 W064 □
□ 16114 SEL 2    0911   □
□ 16119 TRS O    16044 W044 □
□ 16124 SEL 2    0916   □
□ 16129 TRS O    16044 W044 □
□ 16134 SEL 2    0500   □
□ 16139 WR R     16085 W085 □
□ 16144 TR 1     16044 W044 □
□□□□□□□□□□□□□□□□□□□□□□
```

TYPEOUT FOR 901 CHECK

2 005 16149	
2 007 16156	902 CHK
2 003 16159	□
2 007 16166	903 CHK
2 003 16169	□
2 007 16176	904 CHK
2 003 16179	□
2 007 16186	905 CHK
2 003 16189	□
2 005 16194	
2 002 16196	610
2 003 16199	

CONSTANTS

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□□□□□□□□□□□□□□□□□□□□□□
□ 16204 ADD G   16196 W196 □
□ 16209 ULA *   16064 W064 □
□ 16214 SEL 2    0911   □
□ 16219 TRS O    16044 W044 □
□ 16224 SEL 2    0916   □
□ 16229 TRS O    16044 W044 □
□ 16234 SEL 2    0500   □
□ 16239 WR R     16150 W150 □
□ 16244 TR 1     16044 W044 □
□□□□□□□□□□□□□□□□□□□□□□
```

TYPEOUT FOR 902 CHECK

2 050 16294
2 005 16299

SPACE
SPACE

□ 16304 ADD G	16196 W196 □	TYPEOUT FOR 903 CHECK
□ 16309 ULA *	16064 W064 □	
□ 16314 SEL 2	0911 □	
□ 16319 TRS O	16044 W044 -----BA28	
□ 16324 SEL 2	0916 □	
□ 16329 TRS O	16044 W044 -----BA28	
□ 16334 SEL 2	0500 □	
□ 16339 WR R	16160 W160 □	
□ 16344 TR 1	16044 W044 -----BA28	

2 050 16394
2 005 16399

SPACE
SPACE

□ 16404 ADD G	16196 W196 □	TYPEOUT FOR 904 CHECK
□ 16409 ULA *	16064 W064 □	
□ 16414 SEL 2	0911 □	
□ 16419 TRS O	16044 W044 -----BA28	
□ 16424 SEL 2	0916 □	
□ 16429 TRS O	16044 W044 -----BA28	
□ 16434 SEL 2	0500 □	
□ 16439 WR R	16170 W170 □	
□ 16444 TR 1	16044 W044 -----BA28	

2 005 16449

CONSTANTS

□ 16454 ADD G	16196 W196 □	TYPEOUT FOR ANY TYPE OF CHL CHK TP ADDR
□ 16459 ULA *	16589 W589 □	
□ 16464 SET B	0004 □	
□ 16469 LOD 8	1089 □	
□ 16474 UNL 7	16584 W584 □	
□ 16479 TRS O 02	16554 W5N4 -----BB30	
□ 16484 TR 1	16584 W584 -----BC30	

2 005 16489
2 008 16497
2 002 16499

CHL CHK
□

□ 16504 ADD G	16196 W196 □	TYPEOUT FOR 905 CHECK
□ 16509 ULA *	16064 W064 □	
□ 16514 SEL 2	0911 □	
□ 16519 TRS O	16044 W044 -----BA28	
□ 16524 SEL 2	0916 □	
□ 16529 TRS O	16044 W044 -----BA28	
□ 16534 SEL 2	0500 □	
□ 16539 WR R	16180 W180 □	
□ 16544 TR 1	16044 W044 -----BA28	

2 005 16549

CONSTANTS

CONSTANTS

CONSTANTS

CONSTANTS

CONSTANTS

BB29.....
 16554 SEL 2 0911 □
 16559 TRS O 16584 W584--*
 16564 SEL 2 0916 □ I
 16569 TRS O 16584 W584--*
 16574 SEL 2 0500 □ I
 16579 WR R 16490 W490 □ I
 16584 SEL 2 * * * * □ I
 16589 TR I 16589 W589 □
 BC29.....

TAPE DRIVE

2 010 16599

16604 ADD G 16799 W799 □
 16609 ULA * 16679 W679 □
 16614 SET B 0004 □
 16619 LOD 8 1089 □
 16624 UNL 7 16674 W674 □
 16629 UNL 7 16692 W692 □
 16634 TRS O 02 16644 W6M4--*
 16639 TR I 16674 W674--*
 16644 SEL 2 0911 * * * * □ I
 16649 TRS O 16674 W674--*
 16654 SEL 2 0916 □ I
 16659 TRS O 16674 W674--*
 16664 SEL 2 0500 □ I
 16669 WR R 16680 W680 □ I
 16674 SEL 2 * * * * □ I
 16679 TR I 16679 W679 □

CHL CHECK ON TAPE
DRIVE ONE DURING WRITE
TP ADDR

2 016 16695
2 004 16699CHL CHK TD 1 WR
□

CONSTANTS

16704 ADD G 16799 W799 □
 16709 ULA * 16779 W779 □
 16714 SET B 0004 □
 16719 LOD 8 1089 □
 16724 UNL 7 16774 W774 □
 16729 UNL 7 16792 W792 □
 16734 TRS O 02 16744 W7M4--*
 16739 TR I 16774 W774--*
 16744 SEL 2 0911 * * * * □ I
 16749 TRS O 16774 W774--*
 16754 SEL 2 0916 □ I
 16759 TRS O 16774 W774--*
 16764 SEL 2 0500 □ I
 16769 WR R 16780 W780 □ I
 16774 SEL 2 * * * * □ I
 16779 TR I 16779 W779 □

CHL CHK ON TAPE
DRIVE ONE DURING READ
TP ADDR

2 016 16795
2 001 16796
2 003 16799CHL CHK TD 1 RD
□
& 10

CONSTANTS

□ 16804 ADD G 16999 W999 □
□ 16809 ULA * 16879 W879 □
□ 16814 SET B 0004 □
□ 16819 LOD 8 1096 □
□ 16824 UNL 7 16874 W874 □
□ 16829 UNL 7 16892 W892 □
□ 16834 TRS O 02 16844 W8M4--▼
□ 16839 TR 1 16874 W874-■-▲
□□□□□□□□□□□□□□□□□□□□□□□□

CHL CHK ON TAPE DRIVE
TWO DURING WRITE

2

□ 16844 SEL 2 0911•••••■■■
□ 16849 TRS O 16874 W874-■-▲
□ 16854 SEL 2 0916 □ I
□ 16859 TRS O 16874 W874--▼
□ 16864 SEL 2 0500 □ I
□ 16869 WR R 16880 W880 □ I
□ 16874 SEL 2 16879 W879 □
□□□□□□□□□□□□□□□□□□□□□□

CONSTANTS

2 016 16895
2 001 16896CHL CHK TD 2 WR
□

□ 16904 ADD G 16999 W999 □
□ 16909 ULA * 16979 W979 □
□ 16914 SET B 0004 □
□ 16919 LOD 8 1096 □
□ 16924 UNL 7 16974 W974 □
□ 16929 UNL 7 16992 W992 □
□ 16934 TRS O 02 16944 W9M4--▼
□ 16939 TR 1 16974 W974-■-▲
□□□□□□□□□□□□□□□□□□□□□□

CHL CHK ON TAPE DRIVE
TWO DURING READ

□ 16944 SEL 2 0911•••••■■■
□ 16949 TRS O 16974 W974-■-▲
□ 16954 SEL 2 0916 □ I
□ 16959 TRS O 16974 W974--▼
□ 16964 SEL 2 0500 □ I
□ 16969 WR R 16980 W980 □ I
□ 16974 SEL 2 16979 W979 □
□□□□□□□□□□□□□□□□□□□□□□

CONSTANTS

2 016 16995
2 001 16996
2 003 16999CHL CHK TD 2 RD
□
& 10

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