IDENTIFICATION

PRODUCT CODE:	MAINDEC 9A-D4EA-D
PRODUCT NAME:	TC59 (9 TRACK) DATA RELIABILITY TEST
DATE CREATED:	January 15, 1968
MAINTAINER:	Diagnostic Group
AUTHOR;	Keith F. Nelson

1. ABSTRACT

The TC59 Data Reliability Test is primarily designed for the collection of statistical information pertaining to the data reliability of the tape drives that may be associated with the TC59 Magnetic Tape Control. The program is also designed to be usable as an aid to the hardward debugging and maintenance of the TC59 Magnetic Tape Control and its associated magnetic tape drives. This program may also be used as an extended data reliability acceptance test.

2. REQUIREMENTS

2.1 Equipment

PDP-9
TC59 Magnetic Tape Control
1 to 8 TU20 or Similar Magnetic Tape Transports

2.2 Storage

The program occupies most of memory from address Ø1ØØ to 7777.
In addition, one write buffer area is utilized and one read buffer area is utilized for data input and compare and they are:

Write Buffer occupies 10000 to 13723
Read Buffer occupies addresses 13724 to 17647

2.3 Preliminary Programs

The TC59 Control Test and Drive Function Timer programs should run in their entirety before attempting to run the Data Reliability Test.

3. Loading Procedure

Place the ABS binary tape in the Reader
Set ADDRESS to 17720
Press I/O RESET
Press READ IN

4. Starting Procedure

4.1 Control Switch Settings

When starting at address Ø2ØØ there are no control switch settings, all parameters are loaded via the teletype keyboard.

When starting at address 3ØØØ, only 1 drive may be selected and the program will halt at EOT. Control switch settings are as follows:

Once started, the program may be stopped at any time and restarting at address 2ØØØ will cause the drive error and record counters to be printed.

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
AC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		A			B	C		D		E		F		G	H		I	

SECTION	SWS	USAGE
A	Ø, 1, 2	DRIVE SELECTION
B	3, 4	WRITE ROUTINE EXIT MODE ØØ EOT Ø1 END OF RECORD LENGTH SEQUENCE 1Ø or 11 EVERY RECORD
C	5	SELECT READ PASS Ø NO READ PASS 1 MAKE READ PASS
D	6, 7	READ STOP MODE ØØ NONSTOP Ø1 START STOP 1Ø or 11 NONSTOP-START STOP RANDOM
E	8,9	RECORD LENGTH SEQUENCE ØØ 24 CHARACTER RECORDS Ø1 4ØØ8 CHARACTER RECORDS 1Ø 24 TO 4008 MIN TO MAX 11 4ØØ8 TO 24 MAX TO MIN
F	1Ø, 11	DENSITY SELECT 11 8ØØ BPI ONLY VALID SELECTION
G	12, 13	WRITE STOP MODE ØØ NON STOP Ø1 START STOP 1Ø or 11 RANDOM NON STOP START STOP DELAYS
H	14	SELECT PARITY Ø EVEN 1 ODD
I	15, 16, 17	SELECT PATTERN (See Paragraphs 4.3.2.4 and 4.3.2.5

4.2 Starting Addresses

The TC59 Data Reliability Test has 3 starting addresses.

ØØ2ØØ Enter all parameter and test selections VIA Teletype Keyboard.

Ø3ØØØ Enter drive and test parameters via AC SWS, make 1 Write or Write/Read pass to EOT and HALT. (See paragraph 4.1 for drive and Test parameters that may be selected.)

Ø2ØØØ Dump RECORD and ERROR Counters (Valid only after drive selection from 2ØØ)

4.3 Program and/or Operator Action

4.3.1 To start at Ø3ØØØ

Set the AC Switches to select drive and test parameters per paragraph 4.1.

Set ADDRESS to Ø3ØØØ
Press I/O RESET
Press START

The program will rewind the drive selected to Load Point, record test parameter selections and HALT at address.

Clear all AC Switches to Ø or set as desired per paragraph 5.1.

Press CONTINUE

The Program will exercise tape in the test sequence selected to EOT type out accumulated error information and HALT

4.3.2 To Start at ØØ2ØØ

Set ADDRESS to ØØ2ØØ
Press I/O RESET
Press START

4.3.2.1 Drive Selection

The program will type

SELECT DRIVES

Any configuration of 1 to 8 drives may be selected and drive numbers may be typed in any sequence. After each drive typed in the program will type a comma(,). Typing in the same drive number twice will cause the initial selection of that drive to be deleted.

Typing in any key except Ø to 7 will cause a question mark (?) to be typed before the comma and that key will be ignored.

After selecting drives, a carriage return will end drive selection and the program proceed to test selection. If no drives were selected at the time the carriage return is typed, the process will start over again from the "SELECT DRIVES" type out.

Some variations of selecting drives could appear as follows:

SELECT DRIVES 3, 4, 5/
SELECT DRIVES 5, 4, 3/

In either case, drives 3, 4 and 5 are selected to be run

SELECT DRIVES
SELECT DRIVES

A carriage return was typed with no drives selected.

SELECT DRIVES 1, 9?, 1, 2

Drive 2 is the only drive selected, drive 1 was deleted (typed in twice) and the 9 was ignored.

4.3.2.2 Test Selection Typeout

At completion of Drive Selection the program will type:

SELECT TESTS

TST PAT PAR RLS WMO RMO

TST Test Sequence (Ø to 8)
PAT Pattern Selection (Ø to 7)
PAR Parity Selection (Ø EVEN or 1 ODD)
RLS Record Length Sequence
Ø 24 character records
1 4ØØo character records
2 24 to 4ØØ8 Min. to Max.
3 4ØØ8 to 24 Max. to Min.

WMO Write Stop Mode
Ø NONSTOP
1 START/STOP
2 NONSTOP START/STOP RANDOM

RMO Read Stop Mode
Ø NONSTOP
1 START/STOP
2 NONSTOP START/STOP RANDOM

4.3.2.3 Test Sequence Selections

The first selection made is test, type in the number of the test desired.

TEST	DESCRIPTION
Ø	Write to EOT on one drive, type accumulated write errors, change drives
1	Write one record length sequence or 256 records, change drives, as each drive reaches EOT type accumulated write errors.
2	Write one record, change drives, as each drive reaches EOT type accumulated write errors.
3	Write EOT, type accumulated write errors, rewind, change drives, read to EOT, type accumulated read errors, change drives.
4	Write one record length sequence backspace, read, change drives as each drive reaches EOT type accumulated write and read error information.
5	Write one record, backspace, read, change drives. As each drive reaches EOT type out accumulated error information.
6	Write one record length sequence or 256 records, change drives, backspace, change drives, read, change drives. As each drive reaches EOT type accumulated error information.
7	Write one record, change drives, backspace, change drives, read, change drives. As each drive reaches EOT type accumulated error information.

8 Test 8 runs differently depending on the WMO and RMO selection. If both are selected Ø (NON STOP), each write and read pass will be made to the end on a record length sequence before changing drives. If either selection is START/STOP (1) or RANDOM (2) that pass will be made with drive change between each record. (i.e. WMO = Ø and RMO = 1, the write pass is made NONSTOP on each drive to end of RLS, the read pass is made start stop with a drive change between each record).

9 Test 9 is a read only test that may be used to test drive compatability or multiple read passes over data previously written. Either pattern 7 (RANDOM DATA) is not a valid selection for test 9 except with certain restrictions.

a. TEST 9 selections follows TEST 3
b. TEST 9 selection follows TEST 6 with AC SW 1 = 1.
c. TEST 9 selection follows TEST 8 with AC SW 1 = 1.
d. TEST 9 selection follows TEST 5 SW 1 = 1 and only a single drive was selected.

4.3.2.4 Even Parity Pattern Selection

The next selection made is pattern. There are actually 16 unique pattern selections, 8 for each parity even or odd. The patterns that may be selected by even parity are:

PAT	PAR	DATA	DESCRIPTION
Ø	Even	ØØ6Ø14	High Frequency outside skew
1	Even	377577 737737 7767767 (etc.)	Sliding no bit (Ø) character pattern.
2	Even	6415Ø3	High frequency every other track.
3	Even	773773	Half frequency outside tracks. High frequency all inside tracks.
4	Even	6ØØ4Ø2 2Ø14Ø4	Incrementing character pattern no ØØ codes.

5	Even	177777 377777 677577	Three Ø bits each tract
6	Even	177777	High frequency all but parity
7	Even	RANDOM	Random data character pattern no ØØ codes

4.3.2.5 Odd Parity Pattern Selections

The odd parity patterns that may be selected are:

PAT	PAR	DATA	DESCRIPTION
Ø	Odd	ØØ4ØØ4	Half frequency outside skew.
1	Odd	4ØØ2ØØ Ø4ØØ4Ø Ø1ØØ1Ø	Sliding 1 bit character pattern. (Isolated bit pattern.)
2	Odd	136274	High frequency every other track.
3	Odd	Ø17437 117ØØ 74Ø3ØØ	Three zeros, three ones, three zeros, three ones, six zeros every track.
4	Odd	ØØØ4Ø2 4Ø14Ø4 6Ø24Ø6	Incrementing character pattern ØØ codes included.
5	Odd	6ØØØØØ 2ØØ2ØØ 1ØØ2ØØ	Each track 3 bits then zero
6	Odd	777777	All ones pattern. High frequency all tracks.
7	Odd	RANDOM	Random data word pattern ØØ codes included.

4.3.2.6 Parity Selection (PAR)

The next selection made is parity (PAR):

Type in a Ø to select EVEN PARITY.
Type in a 1 to select ODD PARITY.

4.3.2.7 Record Length Sequence Selection (RLS)

After density, select record length sequence (RLS):

Type in a Ø for 24 character records.
Type in a 1 for 4ØØ8 character records.
Type in a 2 for 24 to 4ØØ8 character records length sequence MIN. to MAX.
Type in a 3 for 4ØØ8 to 24 character record length sequence MAX. to MIN.

4.3.2.8 Write Stop Mode Selections (WMO)

Then select Write Stop Mode (WMO):

Ø NONSTOP
1 START/STOP
2 RANDOM NONSTOP START/STOP DELAYS

4.3.2.9 Read Stop Mode Selection (RMO)

Then select Read Stop Mode (RMO):

Ø NONSTOP
1 START/STOP
2 RANDOM NONSTOP START/STOP DELAYS

4.3.2.10 Final Test Select Approval (O.K.)

After selecting RMO, the program will pause. Examine the test sequence selected, and if everything is in order, type in a space. The program will type O.K. and enter the test parameters selected into a test table. If any key other than "SPACE" is typed, all parameter selections on that line will be discarded and test parameter selection will be restarted from test selection (TST).

4.3.2.11 Illegal Select Characters

If, at any time during selection of test parameters, an invalid key is typed, all parameter selections up to that point on the line will be discarded, and parameter selection will be restarted from test selection (TST) on a new line.

After at least 1 test has been fully selected to the O.K. typeout, a Carriage Return instead of a test number will end test selection and the program will proceed to executing all tests selected.

A carriage return with no tests selected will cause the program to remain in the test selection routine.

Up to 64 tests may be selected at any one time.

An example of test parameter selection appears below:

4.3.2.12 Test Selection Examples

SELECT TESTS

TST	PAT	PAR	RLS	WMO	RMO	
?	(A carriage return was typed no tests selected.)					
Ø	7	Ø	3	Ø	Ø	O.K.
A	(An invalid test number was typed.)					
?3	5	1	1	2	1	(Space wasn't typed after RMO).
3 (Carriage Return)	5	1	1	2	1	O.K.

Only two tests were selected by the above sequence:

1. Write length of tape sequence (TEST Ø)
   Pattern 7 (Random Data) Even Parity

   MAX to MIN Record Length Sequence
   NONSTOP mode of write.

2. Write Length of Tape, rewind, read (TEST 3)
   Pattern 5 Odd parity (3 one bits each track every 27 char.)

   4ØØ8 Character Records
   Write Random NONSTOP START/STOP
   Read START/STOP

5. Operating Procedure

5.1 Operational Switch Settings

The operational switch settings may be used to:

a. Alter error recovery procedures.
b. Cause error information to be typed as each error occurs.
c. Cause a test sequence to be re-run with a variation in Pattern, Mode, Density, Parity, Record Length Sequence, or Read or Write stop modes.

5.1.1 Switches to alter error recovery

The function performed is with the switch in the or UP position

SW	FUNCTION	USAGE
2	Delete write with Extended inter-record Gap	Use of this switch will cause records with write errors to be left on tape. The read pass with data typewrites selected would they be an aid in determining write error origins.
4	Select write statistical recovery	Use of this switch will select the backspace 2 records, space forward 1 record, rewrite sequence. This sequence causes the same record to be rewritten on approximately the same area of tape. If a write error occurs.
7	Delete read retrys	This switch is included as an aid to scoping read circuits as it deletes the backspace, reread twice sequence.

5.1.2 Error Typeout Control Switches

All read and write errors are accumulated by drive, and as each drive reaches end of tape, the accumulated error information is typed on the teletype. For reliability or acceptance testing, it is not necessary for errors to be typed as they occur. Also, it is not desirable for typeouts to occur during scope loop operations.

However, the following switches have been included as an aid to hardware debugging.

The switch a 1 or UP is functions selected

SW	FUNCTION
3	Type Write Error Status
5	Type all Read Status and Data Errors

5.1.3 Switches to Alter Test Sequences

Normally, the program writes and reads to end of tape, and then starts the next test sequence that was typed in. To eliminate having to type in a long series of test selections to exercise various parameter selections and to eliminate waiting for end of tape to proceed to the next test sequence, the following switch options have been built into the Data Reliability test:

The switch a "1" or "UP" is function selected.

SW	FUNCTION
1	Dump error counters and proceed to next test sequence at the end of one record length sequence. (256 records for RLS = Ø or 1, one MIN to MAX sequence for 2, or one MAX to MIN sequence for 3).
12	Increment pattern selection and repeat last test sequence. Pattern selection is reset to its original selection after pattern 7 has been exercised.
13	Complement parity selection and repeat test sequence if new parity selection is different than the original test sequence.
15	Increment RLS selection to the next sequence. After MAX to MIN has been exercised reset RLS selection to its original test sequence selection.
16	Increment WMO to the next stop mode. After random Start/Stop has been exercised, reset WMO to its original test selection.
17	Increment RMO to the next read stop mode. After read random start/stop has been exercised, reset RMO to its original test selection.

6. ERRORS

The normal mode (All AC SWS = Ø) of operation for this test is to simply accumulate the errors that occur and to dump the contents of the counters on the teleprinter as each drive reaches end of tape.

The only error typeout that can occur in this mode is if the tape system fails to write the same record 4 times in a row with extended interrecord gap.

6.1 Error Type out Options

The options to print, write and read errors as they occur are on separate switches.

SW3 = 1 is print write errors as detected.
SW5 = 1 is print read errors as detected.

6.2 Error Typeout Formats

6.2.1 Write Error Typeouts

If SW3 = 1 and a write error status is detected by the program the following typeout will occur:

```
WRITE STATUS ERROR
  COMD        STATUS
  1Ø47ØØ      42Ø1ØØ      ØØØØ44
```

This particular typeout indicates a parity error (42Ø1ØØ) occurred while writing record number 44_8 on Drive 1 (1Ø47ØØ)

If read pass is selected and a write error occurs, the program backspaces and rewrites with extended interrecord gap. If the write error persists for four rewrites, the following typeout will occur:

```
WRITE STATUS ERROR
  COMD        STATUS
  1Ø47ØØ      42Ø1ØØ       ØØØØ44   XIRG WRITTEN 4 TIMES
```

The program will attempt write with extended gaps until end of tape is detected and this typeout will occur every fourth try that fails. Setting switch 2 to a 1 will delete all writes with extended gaps.

If AC SW1 is set to a 1, error and record counters are typed on the teleprinter.
The write dump portion of these typeouts could appear as follows:

```
  WRITE DUMP
DRV  PAT  PAR  DEN  MODE  RECRDS  LENGTH
 1    7    1  800  SSTP  002954  2016 MAX TO MIN
WRITE ERRORS = ØØØØØ9
RECOVERED AT 1 ØØØØØ2
RECOVERED AT 2 ØØØØØ3
RECOVERED AT 5 ØØØØØ1
PERMANENT      ØØØØØ3
     BADSPT
```

Two thousand, nine hundred fifty four records were written on drive 1 start stop with record length sequence 3. Nine write status errors occurred. Of the original 9 errors, two were recovered on the first rewrite, 3 were recovered at two rewrites, one was recovered at five rewrites and the other 3 were not recovered after 7 rewrites and were counted as permanent badspots. The average record length was 2Ø16 characters.

Had SW1 been a Ø, and the drive had gone to end of tape, the typeout would indicate END OF TAPE instead of WRITE DUMP.

6.2.2 Read Error Typeouts

If AC SW5 is a 1 and a read status error occurs, the following type could occur:

```
READ STATUS ERROR
  COMD STATUS RECORD LENGTH
 442ØØ  42Ø1ØØ  ØØ1745  777764
```

A parity error occured on Drive 4 while reading record number 1745_8 that was 2ð PDP-9 words long.

If AC SW1 is set to a 1 and at least one record length sequence has been completely read, read error and record counters are typed on the teleprinter as follows:

```
  READ DUMP
DRV  PAT  PAR  DEN  MODE  RECRDS  LENGTH
 0    4    0  800  NSTP  001994     2016 MIN TO MAX
READ ERRORS = ØØØØØ7
NON RECOVERABLE = ØØØØØ2
DATA ERRORS = ØØØØØ3
DATA NO STATUS = ØØØØØ1
```

During the process of reading 1994 records at 800 B P1 on drive Ø, seven read errors occured. Two of the errors still occured after 2 rereads and were counted as non recoverable, three of the error records had data errors. One record had data errors, but the status did not indicate anything was wrong with the record. Four of the read errors were recoverable.

If AC SW1 had been a 0 and the read pass had gone to end of tape, the typeout would have been headed by:

READ PASS
END OF TAPE

6.3 Error Recovery Procedures

6.3.1 Write Error Recovery Procedures

Write error recovery procedure varies according to:

a. Write Only Test
b. Read pass selected
c. SW4 = 1
d. SW2 = 1 and Read Pass selected.

If the test sequence being executed is a write only sequence, and SW4 = Ø, the write error is simply counted and the program proceeds to the next record.

If the test sequence being executed will make a read pass, and SWS 4 and 2 both = Ø, the recovery procedure is to backspace over the improperly written block and rewrite with extended interrecord gap.

If SW4 = 1 and a write error is detected, the program will execute a backspace 2 records, space forward 1 record, rewrite sequence. The sequence will be repeated up to 7 times if the write error persists. If a write error is generated by all 8 writes, the error is counted as a permanent badspot. If the write error is recovered before the seventh rewrite, one is added to the error pass recovery table for that drive and error pass. Each write error is counted twice if SW4 = 1, once as a write error and then either as a permanent badspot, or as recovered at 1 to 7 rewrites. If SW4 = 1 and read pass is selected, the backspace and write with extended interrecord gap is not executed unless the write error is determined to be a permanent badspot. If SW2 = 1 and the read pass is selected, write with extended gap is deleted.

6.3.2 Read Error Recovery Procedures

If a read error is detected by this program, it is counted as 1 error and the program executes a backspace, reread sequence. If the read error persists, the reread sequence is executed a second time. If the read error still occurs, it is counted as a non-recoverable read error.

If SW7 = 1, the program does not attempt to reread but simply continues on the next record in sequence.

Data errors in a record are only accumulated on the first read, unless they are not accompanied with a status error. Data errors with non error status must be considered non-recoverable.

9. DESCRIPTION

9.1 General

The TC59 Data Reliability Test is designed around two main subroutines and a series of shorter subroutines for manipulating drive selection and error and record position tables.

The two main subroutines are of course the write and read routines. The write routine is exited either after every record, every record length sequence (RLS) or at end of tape. The read routine is exited when the last record written on tape has been read. (Tests 8 and 9 manipulate the last record counter to cause the read routine to exit every record.)

Other subroutines used, set up drive selection to the lowest drive number, change drive selection to the next highest drive and routines to get and save error and position tables for the drive currently selected.

These subroutines are tied together in different sequences to form the test selections Ø to 9.

9.2 Test Descriptions

9.2.1 Test Ø Description

Test Ø is a write only to end of tape test. Write errors are simple accumulated and their total dumped at end of tape. As each drive reaches end of tape, its record

and error counters are typed out, a rewind is started and the program starts to write to end of tape on the next highest drive selected.

SW3 = 1 will cause each write error status to be typed as it occurs.

SW4 = 1 will cause statistical write error recovery to be executed.

SW1 = 1 will have no effect, the write routine is not exited until end of tape.

If random data is selected, (Even or Odd PAT 7) the data pattern written will be changed every record.

9.2.2 Test 1 Description

Test 1 is also a write only test. However, the write routine exit is the end of every RLS. If more than one drive is selected to be run, the program will change to the next highest drive number selected at the end of each record length sequence.

Write record and error counters are typed, by drive, as each drive reaches end of tape.

If random data is selected, the data pattern written will be changed every record.

SW3 = 1 will cause each write error status to be typed as it occurs.

SW 4 = 1 will cause the statistical write recovery to be selected.

SW1 = 1 will cause error and record counters to be typed when all drives have completed 1 RLS.

9.2.3 Test 2 Description

Test 2 is also a write only test. However, the write routine exits is every record, and drive selection is changed between every record.

As in tests Ø and 1, random data delection will cause the data pattern written to be changed every record.

All switch selections valid for TEST 1 are valid for this TEST.

Write mode non stop (WMO = Ø) is not a valid selection for this test since the write routine exit is every record.

9.2.4 Test 3 Description

Test 3 is the first of the read pass after write pass tests. This test first writes to end of tape on the lowest drive selected, starts rewinding it and then writes to end of tape on the next highest driver. After the pattern has been written to end of tape on all drives, the program reads to end of tape on each drive selected.

If a random data pattern is selected, only a single random data pattern is generated for the whole test.

Switches 2, 3, and 4 are valid selections for the write pass.

Switches 5 and 7 are valid for the readpass.

Switch 1 is ignored.

9.2.5 Test 4 Description

Test 4 is also a write sequence followed by a read sequence test. The program starts with the lowest drive number selected, writes one record length sequence, backspaces (or rewinds if the first sequence written) and then reads the record length sequence. At this point, the program selects the next highest drive and writes, backspaces (or rewinds) and then reads. Random data selection will cause a new pattern to be written and read on each drive.

As each drive reaches end of tape during a write sequence, write record and error counters are typed. As each drive reaches end of tape during a read sequence, read record and error counters typed.

SW3 = 1 will cause each write status error to be typed as it occurs.

SW4 = 1 will select statistical write recovery.

SW5 = 1 will cause all read status and data errors to be typed as they occur

SW7 = 1 will delete read recovery.

SW2 = 1 will delete read recovery

SW1 = 1 will cause all counters to be dumped after 1 RLS on every drives

9.2.6 Test 5 Description

Test 5 operates similarly to test 4, except the write, backspace read sequence is for single record instead of a record length sequence. Drive change is made after every record has been read.

If a random data pattern is selected, each record written will be a different pattern.

Write record and error counters are typed as each drive reaches end of tape on a record. Read record and error counters are typed as each drive reaches end of tape on a read record.

All switch selections valid for test 4 are valid for this test.

9.2.7 Test 6 Description

Test 6 is similar in operation to test 5, in fact, identical if only a single drive is selected. However, if more than a single drive is selected, the test sequence is somewhat different.

One record length sequence is written on each drive selected, then all drives are backspaced (or rewound if the first RLS for BOT) to the beginning of the RLS, and then the record length sequence is read on each drive.

If random data is selected, the data pattern is not changed until all drives have completed the read operation.

Again, write record and error counters are typed as each drive reaches end of tape on a write pass and read record and error counters are typed as each drive reaches end of tape on a read pass.

All switch selection valid for test 4 are valid for this test.

9.2.8 Test 7 Description

Test 7 operates somewhat similar to test 6 except that a single record is written on each drive selected, each drive is backspaced, and then the record is read on each drive.

As in test 5, WMO and RMO of Ø or NON STOP are not valid selections, since the write and read routine exits are every record.

Write and read record and error counters are typed individually by drive as each drive reaches end of tape on a write or read pass.

All switch options valid for test 4 are valid for this test.

9.2.9 Test 8 Description

Test 8 is somewhat similar in operation to test 6 in that a complete record length sequence is written on all drives selected before backspacing and reading.

If either WMO or RMO selection is "Ø" or NONSTOP the program completes a full RLS in that mode before changing drives. Selecting a stop mode, (2 or 3) will cause the program to change drives between every record. (i.e. if WMO = Ø and RMO = 1) then each RLS will be written non stop, but the read pass will be made start/stop with a drive change between every record.

If random data is selected, a new data pattern is not generated until all drives have read to the end of a record length sequence.

9.2.1Ø Test 9 Description

Test 9 is the read only test, included in this series of test mainly for the purpose of a drive compatability test.

If the RMO selected is "Ø" or nonstop, the program will read tape nonstop to the end of each RLS before changing drives.

If the RMO selected is either 1 or 2, the program will change drive selections between each record.

Test 9 can be operated without restrictions for all data pattern selections except random data. (Pattern 7 Even or Odd parity). (Assuming also of course that the parity, density and record length sequence parameters agree with the information recorded on tape).

Random data can be used in conjunction with Test 9 with the following instructions:

a. One of the test sequences that hold pattern selection for a complete RLS must have been previously selected and run with SW1 = 1. These test sequences include Test 6 and Test 8 (valid for multiple drives) and Test 4 for a single drive.

b. A Test 9 must be selected as the test following when typing in test selections.

c. Test 3 writes to end of tape on all drives selected, rewinds and then reads on all drives.

Test 9 may follow a test 3 selection without the use of SW1.

```
                        .TITLE DRELI9
                        .ABS
                /TC55 DATA RELIABILITY TEST (TAPE1) OF 9 TRACK.
                /START AT 200
                /SELECT DRIVES (TYPE IN DRIVE NUMBERS 0 TO 7)
                /NUMBERS CAN BE TYPED IN ANY SEQUENCE
                /TYPING SAME NUMBER TWICE DELETES DRIVE
                /CARRIAGE RETURN ENDS SELECTION
                /SELECT TESTS
                /TST PAT PAR DEN RLS WMO RMO
                /TEST 0 WRITE ON ONE DRIVE TO EOT REWIND START NEXT DRV
                /TEST 1 WRITE ONE RLS OR 512 RECORDS CHANGE DRIVES
                /TEST 2 WRITE ONE RECORD CHANGE DRIVES
                /TEST 3 WRITE TO EOT RWD READ
                /TEST 4 WRITE 1 RLS BACK SPACE READ CHANGE DRIVES
                /TEST 5 WRITE 1 RECORD BACKSPACE READ CHANGE DRIVES
                /TEST 6 WRITE 1 RLS CHG DRV BACKSPACE CHANGE READ CHANGE
                /TEST 7 WRITE 1 RECORD CHANGE BACKSPACE CHG READ CHG
                /TEST 8 IS WRITE1 CHANGE-BACKSPACE AT END OF RLS READ1 CHANGE
                        .LOC 100
000100                  
000101  000000  MSBITS   0               /DRIVE MASTER SELECT BITS
000101  000000  CDRIVE   0               /CURRENT DRIVE
000102  000200  FDRIVE   0
000103  000200  PATNUM   0               /PATTERN BEING EXERCISED
000104  000200  PARBT1   0               /PARITY SELECTION
000105  000200  DRVDEN   0               /DRIVE AND DENSITY
000106  000200  RLTROL   0               /RECORD LENGTH CONTROL
000107  000200  MODBIT   0               /WRITE STOP MODE
000110  000200  READMD   0               /READ STOP MODE
000111  000200  RECSYS   0               /INDICATES READ PASS BE MADE
000112  000200  EXITMD   0               /EXIT EOT 1 BLOCK OR 1 RLS
000113  000200  STRLEN   0               /STARTING BLOCK LENGTH
000114  000200  COMAND   0               /COMMAND PARITY DEN DRIVE
000115  000200  BLKINC   0               /BLOCK LENGTH INCREMENTER
000116  000200  WRPASS   0               /WRITE RECOVERY COUNT
000117  000200  NUMTST   0               /NUMBER OF TESTS SELECTED
000120  000200  TSTDEX   0               /POINTER TO GET TEST
000121  000200  TBLCNT   0               /NUMBER OF TESTS EXECUTED
000122  000200  EXETST   0               /TEST BEING EXECUTED
000123  000200  EXECNT   0               /NUMBER OF TIMES EXECUTED
000124  000200  SWTEST   0
000125  000200  EOSFLG   0               /CLEARED AT END OF RLS
000126  000200  SVRECR   0               /TEMP STORAGE
                /
                        .EJECT
```

```
****
                                    /WRITE ERROR AND RECORD CONTROL REGISTERS
000127  000000          WRCHEK    0
000130  000000          RECV1     0
000131  000000          RECV2     0
000132  000000          RECV3     0
000133  000000          RECV4     0
000134  000000          RECV5     0
000135  000000          RECV6     0
000136  000000          RECV7     0
000137  000000          PERMRS    0
000140  000000          RECORD    0
000141  000000          LASRCR    0
000142  000000          WRTEOT    0
000143  000000          WRTLEN    0
000144  000000          WRRECR    0
                                    /READ ERROR AND RECORD CONTROL REGISTERS
000145  000000          READLN    0
000146  000000          COMPLN    0
000147  000000          READNX    0
000150  000000          COMPNX    0
000151  000000          CORECR    0
000152  000000          PNOSTA    0
000153  000000          CMPERR    0
000154  000000          NRREAD    0
000155  000000          RDERRS    0
000156  000000          RDEOT     0
                                    /
                                              .EJECT
```

```
****
                                /TC9 DATA RELIABILITY TEST
                                /FIRST SELECT DRIVES
      00200                             .LOC 240
      00200     200425          RELIAB  LAC SELTY1
      00201     105232                  JMS TYPET
      00202     140100                  DZM MSRITS          /CLR DRVS SELECTED
      00203     101030                  JMS WAITKY
      00204     545773                  SAD (215            /CAR RET
      00205     600216                  JMP .+11            /YES TEST FOR NO DRVS
      00206     505774                  AND (370
      00207     545775                  SAD (260            /VALID DRIVE NYMB
      00210     600222                  JMP VLDDRV          /YES PUT IT IN TABLE
      00211     760277                  LAS 277
      00212     105246                  JMS TY1ASC          /TYPE QUES
      00213     760254                  LAS 254
      00214     105246                  JMS TY1ASC          /COMMA
      00215     600203                  JMP RELIAB+3        /WAIT NEXT
      00216     200100                  LAC MSRITS
      00217     741200                  SNA                 /SELECT ANY DRIVES
      00220     600200                  JMP RELIAB
      00221     600241                  JMP SLTSTS          /DO TESTS
                                /
                                        .EJECT
```

```
****
      00222      764254          VLDDRV    LAW 254
      00223      105246                    JMS TY1ASC          /TYPE ?
      00224      221136                    LAC CHARIN          /COMPA
      00225      505774                    AND (7
      00226      241101                    DAC DRIVE           /SAVE DRIVE NUMBER
      00227      744001                    CMA                 /MAKE 2'S COMP
      00230      041102                    DAC FDRIVE
      00231      205777                    LAC (4000
      00232      441102                    ISZ FDRIVE          /BIT POSITIONED
      00233      600237                    JMP .+4             /NO
      00234      243100                    XOR MSKITS                  /ADD OR DELETE DRIVE
      00235      043100                    DAC MSKITS
      00236      600203                    JMP RELIAB+3        /GET NEXT
      00237      744220                    RCR                 /MOVE BIT OVER 1
      00240      600232                    JMP .-6             /TRY AGAIN
                 017700          TSTTRL=17700
      00241      200436          SLTSTS    LAC SELTX2
      00242      105232                    JMS TYPET
      00243      140117                    DZM NUMTST          /CLR SELECTED
      00244      226700                    LAC (TSTTRL-1
      00245      040016                    DAC 16              /SET FOR INDIRECTS
      00246      200466                    LAC CRLFSP
      00247      105232                    JMS TYPET
      00250      140117                    DZM 17              /CLR ASSMBL WORD
      00251      101133                    JMS WAITKY          /WAIT FOR KEY
      00252      545773                    SAD (215            /CAR RET
      00253      600267                    JMP TSTYQS+3                /YES SEE IF ANY SELECTED
      00254      505774                    AND (370
      00255      545775                    SAD (260            /VALID NUMBER 0 TO 7
      00256      600273                    JMP VLDTST          /YES
      00257      201136                    LAC CHARIN
      00260      546001                    SAD (270
      00261      600273                    JMP VLDTST
      00262      546002                    SAD (271
      00263      600273                    JMP VLDTST
      00264      764277          TSTYQS    LAW 277
      00265      105246                    JMS TY1ASC          /TYPE QUES
      00266      600246                    JMP SLTSTS+5        /TRY AGAIN
      00267      200117                    LAC NUMTST
      00270      741200                    SNA                 /SELECT ANY TESTS
      00271      602264                    JMP .-5             /NO
      00272      600517                    JMP EXECUT          /EXECUTE SELECTED
                                 /
                                           .EJECT
```

```
/***
 00273  201736          VLDTST  LAC CHARIN          /GET TEST NUMBER TYPED
 00274  506703                  AND (17             /MASK DIGIT
 00275  744021                  RCL
 00276  742021                  RTL                 /MOVE TO TEST POSITION
 00277  742021                  RTL
 00300  040017                  DAC 17              /SAVE IT
 00301  200471                  LAC SPA3TX          /SPACE 3
 00302  105232                  JMS TYPET
 00303  101731                  JMS WAITKY          /WAIT FOR PATTERN KEY
 00304  505774                  AND (370
 00305  545775                  SAD (260            /VALID PATTERN NUMBER
 00306  741000                  SKP                 /YES
 00307  600264                  JMP TSTYQS          /NOT VALID TYPE QUESTION
 00310  201736                  LAC CHARIN
 00311  505776                  AND (7              /MASK OCTAL
 00312  340017                  TAD 17              /COMBINE WITH TEST
 00313  040017                  DAC 17              /SAVE IT
 00314  200471                  LAC SPA3TX          /SPACE 3 MORE
 00315  105232                  JMS TYPET
 00316  101731                  JMS WAITKY          /WAIT FOR PARITY
 00317  506704                  AND (376
 00320  545775                  SAD (260            /=0 OR 1
 00321  741000                  SKP                 /YES
 00322  600264                  JMP TSTYQS          /NOT = 0 OR 1
 00323  201736                  LAC CHARIN
 00324  506705                  AND (1
 00325  744010                  RCL                 /POSITION PARITY
 00326  742010                  RTL                 /SELECT
 00327  340017                  TAD 17              /COMBINE WITH TEST
 00330  040017                  DAC 17              /AND PATTERN SELECT
 00331  200471                  LAC SPA3TX
 00332  105232                  JMS TYPET           /SPACE 3
                        /
                                .EJECT
```

```
****

                                /HAVE GOT TEST PATTERN AND PARITY NOW GET RLS
00333   101034                          JMS WAITKY      /WAIT FOR RECORD LENGTH
00334   506006                          AND (374
00335   545775                          SAD (260                /MUST BE 0-1-2-3
00336   741000                          SKP                     /OK
00337   600264                          JMP TSTYQS              /NOT VALID
00340   201036                          LAC CHARIN              /0=MINIMUM
00341   506007                          AND (3                  /MASCK SELECT
00342   546005                          SAD (1                  /SELECT MAX
00343   206010                          LAC (400                /YES
00344   546011                          SAD (2                  /MIN TO MAX
00345   206012                          LAC (1000               /YES
00346   546007                          SAD (3                  /OR MAX TO MIN
00347   206013                          LAC (1400               /YES
00350   340017                          TAD 17                  /COMBINE RLS WITH
00351   040017                          DAC 17                  /TST PAT PAR DEN
00352   200471                          LAC SPA3TX              /SPACES 3 FOR WMO
00353   105232                          JMS TYPET
00354   101030                          JMS WAITKY              /WAIT FOR KEY
00355   506006                          AND (374
00356   545775                          SAD (260                /MUST =
00357   741000                          SKP                     /0-1-OR 2
00360   600264                          JMP TSTYQS              /NOT VALID
00361   201036                          LAC CHARIN
00362   506007                          AND (3
00363   546007                          SAD (3                  /3 IS
00364   600264                          JMP TSTYQS              /NOT VALID
00365   744010                          RCL
00366   742010                          RTL                     /POSITION
00367   740010                          RAL
00370   340017                          TAD 17                  /COMBINE WITH WMO
00371   040017                          DAC 17                  /TST PAT PAR DEN RLS
00372   200471                          LAC SPA3TX
00373   105232                          JMS TYPET               /SPACE 3 MORE
00374   101030                          JMS WAITKY              /WAIT FOR READ MODE
00375   506006                          AND (374
00376   545775                          SAD (260                /MUST =0 1 OR 2
00377   741000                          SKP                     /OK SO FAR
00400   600264                          JMP TSTYQS              /NOT VALID
00401   201036                          LAC CHARIN
00402   506007                          AND (3
00403   546007                          SAD (3                  /CANNOT=
00404   600264                          JMP TSTYQS              /3 EITHER
                                /
                                .EJECT
```

```
                                        /1 IF
                                        /CONTROL
                                        /2 IF
                                        /RANDOM
                                        /COMBINE WITH TAD
                                        /TST PAT PAR RLS WMO
                                        /SPACE KEY
                                        /INDICATES ALL OK
                                        /WITH THE OUTSIDE
                                        /NOT OK
                                        /STORE TEST SELECTION
                                        /+1 TESTS COUNTED
                                        /TYPE OK
                                        /GET NEXT TEST
SELTX1  .+1
        .ASCII      <15><12><12>'SELECT DRIVES '<177>

SELTX2  .+1
        .ASCII      <15><12><12>'SELECT TESTS '<15>

        .ASCII      <12>'TST PAT PAR RLS WMO RMO'<177>

/
        .EJECT
```

```
****
00461  000462          TSTEXT  .+1
00462  064241                  .ASCII  <15><12><12>'TEST '<177>
00463  252212
00464  516524
00465  277400
00466  000467          CRLFSP  .+1
00467  064044                  .ASCII  <15><12><40><177>
00470  077420
00471  000472          SPA3TX  .+1
00472  201004                  .ASCII  <40><40><40><177>
00473  077400
00474  000475          SPA2TX  .+1
00475  201017                  .ASCII  <40><40><177>
00476  700000
00477  000500          ZEROTX  .+1
00500  301404                  .ASCII  '00  '<177>
00501  020376
00502  000503          FIV6TX  .+1
00503  325544                  .ASCII  '56  '<177>
00504  020376
00505  000506          OKTEXT  .+1
00506  475351                  .ASCII  'O.K.'<177>
00507  327376
                               .EOT
```

```
                        /TC58 DATA RELIABILITY TEST TAPE 2 OF STACK
                        /EXECUTE TESTS SELECTED AND DRIVE CONTROL ROUTINES
                        /EXECUTE TESTS CURRENTLY SELECTED
00510   225417          EXCONT  LAC (TATTRL
00511   044127                  DAC TSTDEX              /SET UP
00512   144124                  DZM TBLCNT
00513   220127                  LAC* TSTDEX             /GET TEST CONTROL WRD
00514   740211                  RTL
00515   740211                  RTL
00516   740212                  RAL
00517   506034                  AND (17
00520   044122                  DAC EXETST              /SAVE TEST NUMBER
                        /SET UP RUN MODES OUT OF CONTROL BITS
00521   220127                  LAC* TSTDEX
00522   506776                  AND (7
00523   044103                  DAC PATNUM              /SAVE PATTERN
00524   220127                  LAC* TSTDEX
00525   506720                  AND (1
00526   044104                  DAC PARRT1              /PARITY
00527   206021                  LAC (310
00530   040105                  DAC DNSDEN                      /DENSITY IS 800 BPI 9 TRACK
00531   220127                  LAC* TSTDEX
00532   506713                  AND (1400               /RECORD LENGTH
00533   040106                  DAC RLTROL                      /CONTROL BITS
00534   220127                  LAC* TSTDEX
00535   506722                  AND (62
00536   040107                  DAC MODBIT              /WRITE STOP MODE
00537   220120                  LAC* TSTDEX
00540   506723                  AND (6000
00541   040110                  DAC READMO              /READ STOP MODE
00542   206424                  LAC (XCT TBLTST
00543   340122                  TAD EXETST              /TO GET TO TEST SELECTED
00544   040561                  DAC GOTST
00545   140123                  DZM EXECNT              /ZERO TEST EXECUTE COUNT
00546   200461          TSRUNL  LAC TSTEXT
00547   105232                  JMS TYPET               /TYPE TEST
00550   200122                  LAC EXETST
00551   345775                  TAD (260
00552   105246                  JMS TY1ASC
00553   200121                  LAC TBLCNT
00554   103446                  JMS SPTCON              /TYPE TABLE POSITION
00555   200123                  LAC EXECNT
00556   103446                  JMS SPTCON              /AND TEST EXECUTE COUNT
00557   777777                  LAW -1
00560   040124                  DAC SWTEST
00561   401107          GOTST   XCT TBLTST              /DO TEST
00562   440123                  ISZ EXECNT              /+1 EXECUTE COUNT
                        /
                                .EJECT
```

```
****
                                /GET SWS SEE IF READ MODE TO CHANGE
     00563      750004                  LAS
     00564      742020                  RAR
     00565      740400                  SNL                     /CHANGE READ MODE
     00566      600604                  JMP INCWMO              /NO
     00567      777775                  LAW -3
     00570      340122                  TAD EXFTST
     00571      741100                  SPA                     /WRITE ONLY TEST
     00572      600604                  JMP INCWMO              /YES
     00573      200110                  LAC READMO
     00574      346014                  TAD (2000               /+1 READ MODE
     00575      040110                  DAC READMO
     00576      546023                  SAD (6000               /DONE RANDOM
     00577      741000                  SKP                     /YES
     00600      600546                  JMP TSRUNL              /RE EXECUTE NEXT RD MODE
     00601      220120                  LAC* TSTDEX
     00602      506023                  AND (6000               /RESET READ MODE
     00603      040110                  DAC READMO              /TO ITS 0 PASS VALUE
                                /SEE IF WRITE MODE IS TO CHANGE
     00604      750004          INCWMO  LAS
     00605      742020                  RAR
     00606      740400                  SNL                     /CHNG WRT MODE
     00607      600621                  JMP INCRLC              /NO CHECK RECORDLNTH
     00610      200107                  LAC MODBIT
     00611      346025                  TAD (20                 /+1 WRITE MODE
     00612      040107                  DAC MODBIT
     00613      546022                  SAD (60                 /DONE RANDOM
     00614      741000                  SKP                     /YES
     00615      600546                  JMP TSRUNL              /RE EXECUTE NEW W MODE
     00616      220120                  LAC* TSTDEX
     00617      506022                  AND (60
     00620      040107                  DAC MODBIT              /RESET W MODE TO STRT
                                /SEE IF RECORD LENGTH IS TO CHANGE
     00621      750004          INCRLC  LAS
     00622      506026                  AND (4
     00623      741000                  SNA                     /CHANGE RECORD LENGTH
     00624      600636                  JMP CHGPAT                      /NO TRY PATTERN SELECTION
     00625      200106                  LAC RLTROL
     00626      346010                  TAD (4000               /+1 RECORD LENTH CONTROL
     00627      040106                  DAC RLTROL
     00630      546014                  SAD (2000               /DONE ALL LENGTHS
     00631      741000                  SKP                     /YES
     00632      600546                  JMP TSRUNL              /RE EXECUTE NEW LENGTH
     00633      220120                  LAC* TSTDEX
     00634      506017                  AND (1400               /RESET TO 2 PASS
     00635      040106                  DAC RLTROL              /RECORD LENGTHS
                                /
                                        .EJECT
```

```
****
```

```
00636  752004          CHKPAT  LAS
00637  506137                  AND (47
00640  741000                  SNA                     /CHANGE PATTERNS
00641  600653                  JMP CHKPAR              /NO TRY PARITY
00642  200107                  LAC PATNUM
00643  346 00                  TAD (1
00644  240107                  DAC PATNUM              /+1 PATTERN
00645  546127                  SAD (177                /DONE RANDOM
00646  741000                  SKP                     /YES
00647  600546                  JMP TSTUNL              /RE EXECUTE NEW PATTERN
00650  220120                  LAC* TSTDEX
00651  506776                  AND (7                  /RESET TO 0 PASS
00652  240107                  DAC PATNUM              /PATTERN SELECTION
00653  752004          CHKPAR  LAS
00654  506125                  AND (21
00655  741000                  SNA                     /CHANGE PARITY
00656  600667                  JMP RPTTST              /NO
00657  200104                  LAC PARBT1
00660  246720                  XOR (1                  /COMPLEMENT PARITY
00661  040104                  DAC PARBT1
00662  220120                  LAC* TSTDEX
00663  500010                  AND 10
00664  540104                  SAD PARBT1              /BACK TO ORIGINAL PARITY
00665  741000                  SKP                     /YES
00666  600546                  JMP TSTUNL              /RE EXECUTE NEW PARITY
00667  752004          RPTTST  LAS
00670  506030                  AND (120
00671  740200                  SZA                     /STAY ON THIS TEST
00672  600545                  JMP TSTUNL-1            /YES START OVER
00673  440120                  ISZ TSTDEX              /+1 TO GET NEXT TEST
00674  440121                  ISZ TBLCNT              /+1 TABLE POSITION
00675  200121                  LAC TBLCNT
00676  540117                  SAD NUMTST              /DONE ALL SELECTED
00677  741000                  SKP                     /YES
00700  600513                  JMP EXECUT+3            /DO NEXT TEST
00701  750004                  LAS
00702  506131                  AND (220
00703  740200                  SZA                     /RECYCLE ALL SELECTED
00704  740040                  HLT                     /HALT JOB DONE
00705  600510                  JMP EXECUT              /RESTART FROM FIRST TEST
                       /
                               .EJECT
```

```
****
                                    /SAVE DRIVE RECORD AND ERRORCNTRS
00706   600706          SVCTRS      JMP .
00707   100724                      JMS CTRDEX          /SET INDICES
00710   220011                      LAC* 11
00711   060710                      DAC* 10             /SAVE DRIVE COUNTERS
00712   440012                      ISZ 12
00713   600711                      JMP .-2
00714   620706                      JMP* SVCTRS         /EXIT
                                    /RESET DRIVE COUNTERS BACK INTO PROGRAM
00715   600715          MVCTRS      JMP .
00716   100724                      JMS CTRDEX          /SET INDICES
00717   220011                      LAC* 11
00720   060010                      DAC* 10             /RESTORE DRIVE COUNTS
00721   440012                      ISZ 12
00722   600717                      JMP .-2
00723   620715                      JMP* MVCTRS         /EXIT
                                    /SET UP INDICES FOR MOVE AND SAVE CTRS
00724   600724          CTRDEX      JMP .
00725   206032                      LAC (WRCHEK-1
00726   040010                      DAC 10
00727   777750                      LAW -30
00730   040012                      DAC 12
00731   206033                      LAC (DRVADR-1
00732   340101                      TAD DRIVE
00733   040017                      DAC 17
00734   220017                      LAC* 17
00735   040011                      DAC 11
00736   620724                      JMP* CTRDEX
                                    /
                                    .EJECT
```

```
****
00737  600737          CLRALL  JMP .
00740  100752                  JMS RSFDRV          /RESET TO FIRST DRV
00741  103614                  JMS REWIND          /REWIND IT
00742  103772                  JMS CLRTRL          /CLEAR READ AND WRT CONT
00743  100706                  JMS SVBTES          /BS TO DRIVE
00744  100767                  JMS CHGDRV                  /DONE ALL
00745  600741                  JMP .-4             /NO
00746  777777                  LAW -1
00747  040125                  DAC EOSFLG
00750  142200                  DZM T11FLG
00751  620737                  JMP* CLRALL         /EXIT
                       /
                       /RESET DRIVE SELECTION TO LOWEST DRIVE NUMBER
00752  600752          RSFDRV  JMP .
00753  140101                  DZM CDRIVE          /START WITH 0
00754  205777                  LAC (400000         /BIT FOR 0
00755  041027                  DAC CDRVBT          /SAVE IT
00756  500100                  AND MSBITS          /MASK WITH DRVS SELECTED
00757  744230                  SZA!CLL             /DRIVE EXIST
00760  600765                  JMP .+5             /YES
00761  440101                  ISZ CDRIVE                  /+1 DRV NUMBER
00762  201027                  LAC CDRVBT
00763  744020                  RCR                 /MOVE BIT OVER 1
00764  600755                  JMP RSFDRV+3        /TRY AGAIN
00765  101007                  JMS SETFUN
00766  620752                  JMP* RSFDRV
                       /
                       /SELECT NEXT DRIVE IN SEQUENCE
                       /+1 EXIT ADDRESS IF LAST DRIVE TESTED
00767  600767          CHGDRV  JMP .
00770  201027                  LAC CDRVBT          /GET MASK BIT
00771  744020                  RCR                 /MOVE OVER 1
00772  440101                  ISZ CDRIVE          /+1 DRIVE NUMBER
00773  506034                  AND (776000         /MASK OF 8 BITS
00774  740200                  SZA                 /END OF 8 DRIVES
00775  601001                  JMP .+4             /NO SEE IF DRV EXISTS
00776  100752                  JMS RSFDRV          /RESET TO FIRST SELECTED
00777  440767                  ISZ CHGDRV          /+1 EXIT END OF DRIVES
01000  620767                  JMP* CHGDRV         /EXIT
01001  041027                  DAC CDRVBT          /SAVE CUR BIT
01002  500100                  AND MSBITS          /MASK DRIVES SELECTED
01003  745200                  SNA!CLL             /DRIVE EXIST
01004  600770                  JMP CHGDRV+1        /NO SEE IF NEXT EXISTS
01005  101007                  JMS SETFUN
01006  620767                  JMP* CHGDRV         /EXIT WITHOUT SKIP
                       /
                               .EJECT
```

```
****
     01007     601007          SETFUN    JMP .
     01010     220105                    LAC DRVDEN
     01011     506221                    AND (300              /MASK DENSITY BITS
     01012     040105                    DAC DRVDEN
     01013     220101                    LAC COPIVE
     01014     744220                    RCR                   /MOVE DRIVE NUMBER TO 0 TO 2
     01015     742220                    RTR
     01016     740220                    RAR
     01017     340105                    TAD DRVDEN            /DRIVE + DENSITY
     01020     040105                    DAC DRVDEN
     01021     220104                    LAC PARBT1
     01022     740200                    SZA
     01023     206035                    LAC (40000
     01024     340105                    TAD DRVDEN            /PUT IN PARITY BIT
     01025     040114                    DAC COMAND
     01026     621007                    JMP* SETFUN
     01027     000000          CORVBT    0
                               /WAIT FOR KBD FLAG READ CHARACTER
     01030     601030          WAITKY    JMP .
     01031     700301                    KSF
     01032     601031                    JMP .-1
     01033     700312                    KRR
     01034     041036                    DAC CHARIN
     01035     621030                    JMP* WAITKY
     01036     000000          CHARIN    0
                               /
                                         .EJECT
```

```
****
                    007400          DR0TAB=7400
                    000040          DRINCR=40
                    007440          DR1TAB=DR0TAB+DRINCR
                    007500          DR2TAB=DR1TAB+DRINCR
                    007540          DR3TAB=DR2TAB+DRINCR
                    007600          DR4TAB=DR3TAB+DRINCR
                    007640          DR5TAB=DR4TAB+DRINCR
                    007700          DR6TAB=DR5TAB+DRINCR
                    007740          DR7TAB=DR6TAB+DRINCR
 01037              007400          DRVADR  DR0TAB
 01040              007440          DR1TAB
 01041              007500          DR2TAB
 01042              007540          DR3TAB
 01043              007600          DR4TAB
 01044              007640          DR5TAB
 01045              007700          DR6TAB
 01046              007740          DR7TAB
                                /TEST FOR ALL DRIVES TO HAVE REACHED EOT
 01047      601047  ALLEOT  JMP .
 01050      200111          LAC RECSYS
 01051      740200          SZA                     /READ PASS SELECTED
 01052      601064          JMP TRDEOT              /YES USE RDEOT
 01053      100752          JMS RSFDRV
 01054      100715          JMS MVCTRS
 01055      200142          LAC WRTEOT
 01056      741200          SNA
 01057      601075          JMP ALLEOS              /TEST EXIT EOS SELECTED
 01060      100767          JMS CHGDRV
 01061      601054          JMP ALLEOT+5
 01062      441047          ISZ ALLEOT
 01063      621047          JMP* ALLEOT
 01064      100752  TRDEOT  JMS RSFDRV              /START FIRST DRV
 01065      100715          JMS MVCTRS              /GET CTRS
 01066      200156          LAC RDEOT /GET READ TO EOT
 01067      741200          SNA                     /THIS DRV AT EOT
 01070      601075          JMP ALLEOS              /NO TEST EOS SW
 01071      100767          JMS CHGDRV              /TESTED ALL FOR EOT
 01072      601065          JMP TRDEOT+1            /NO
 01073      441047          ISZ ALLEOT              /ALL AT EOT SKP EXIT
 01074      621047          JMP* ALLEOT
 01075      750004  ALLEOS  LAS                     /GET SWS
 01076      742010          RTL                     /EXIT END OF SEQUENCE
 01077      740400          SNL                     /NO GO TO EOT
 01100      621047          JMP* ALLEOT
 01101      200125          LAC FOSFLG
 01102      740200          SZA                     /WRITTEN TO EOS
 01103      621047          JMP* ALLEOT             /NO EXIT
 01104      441047          ISZ ALLEOT              /SKIP TO END OF TEST
 01105      102004          JMS CTRDMP              /PRINT ERR CTRS
 01106      621047          JMP* ALLEOT             /EXIT
                    /
                            .EOT
```

```
                                /DRELI9  -  TAPE 3
                                /TEST RUN LOOPS
                                /TESTS 0 TO 7
                                /TABLE OF JMS TO TEST
01107       101121              TBLTST      JMS TEST0
01110       101135              .           JMS TEST1
01111       101161              .           JMS TEST2
01112       101203              .           JMS TEST3
01113       101225              .           JMS TEST4
01114       101253              .           JMS TEST5
01115       101301              .           JMS TEST6
01116       101343              .           JMS TEST7
01117       101405              .           JMS TEST10
01120       102075              .           JMS TEST11
                                /
                                            .EJECT
```

```
****
                                /TEST 0 WRITE TO EOT
                                /REWIND GO TO NEXT DRIVE
01121   601121          TEST0   JMP .
01122   140112                  DZM EXITMO          /SET EXIT END OF TAPE
01123   140111                  DZM RECSYS          /NO READ PASS
01124   100737                  JMS CLRALL          /CLEAR ERR CTRS REWIND
01125   103072                  JMS CLRTRL
01126   103720                  JMS GENPAT          /GENERATE DATA PATTERN
01127   103103                  JMS WRITIT          /WRITE
01130   000000                  0
01131   103614                  JMS REWIND          /REWIND
01132   100767                  JMS CHGDRV          /ANYMORE DRIVES
01133   601125                  JMP TEST0+4         /YES
01134   621121                  JMP* TEST0          /XIT TEST 0
                                /TEST 1 WRITE 1 RECORD LENGTH SEQUENCE
                                /CHANGE DRIVES
01135   601135          TEST1   JMP .
01136   206036                  LAC (20000
01137   040112                  DAC EXITMO          /EXIT WRITE ROUTINE END OF RLS
01140   140111                  DZM RECSYS          /CLEAR ERROR CTRS REWIND
01141   100737                  JMS CLRALL          /CLEAR ERROR CTRS REWIND
01142   100752                  JMS RSFDRV
01143   100715                  JMS MVCTRS          /GET DRIVE COUNTERS
01144   200142                  LAC WRTEOT          /THIS ONE AT EOT
01145   740200                  SZA
01146   601153                  JMP .+5             /DRIVE AT EOT SKIP WRITE
01147   103720                  JMS GENPAT          /GENERATE NEW PATTERN
01150   103103                  JMS WRITIT          /START WRITE
01151   000000                  0
01152   100706                  JMS SVCTRS          /SAVE CTRS THIS DRIVE
01153   100767                  JMS CHGDRV          /DONE 1 RLS ALL DRIVES
01154   601143                  JMP TEST1+6         /NO DO NEXT DRIVE
01155   101047                  JMS ALLEOT
01156   601142                  JMP TEST1+5
01157   621135                  JMP* TEST1
                        /
                                .EJECT
```

```
****
                                /TEST 2 WRITE 1 RECORD SEQUENCE
                                /CHG DRIVES GO TO EOT
01160   601160          TEST2   JMP .
01161   206035                  LAC (40000
01162   040112                  DAC EXITMO          /SET EXIT EVERY RECORD
01163   140111                  DZM RECSYS          /NO READ PASS TO BE MADE
01164   100737                  JMS CLRALL          /CLEAR DRV CTRS REWIND
01165   100752                  JMS RSFDRV
01166   100715                  JMS MVCTRS          /GET CTRS THIS DRIVE
01167   200142                  LAC WRTEOT
01170   740200                  SZA                 /AT EOT
01171   601176                  JMP .+5             /YES SKIP WRITE
01172   103720                  JMS GENPAT          /GENERATE PATTERN
01173   103103                  JMS WRITIT          /WRITE 1 RECORD
01174   000000                  0
01175   100706                  JMS SVCTRS          /SAVE COUNTERS
01176   100767                  JMS CHGDRV          /DONE ALL DRIVE
01177   601166                  JMP TEST2+6         /NO
01200   101047                  JMS ALLEOT          /TEST FOR ALL AT EOT
01201   601165                  JMP TEST2+5         /NOT YET DO MORE WRITES
01202   621160                  JMP* TEST2          /EXIT TEST 2
                                /TEST 3 WRITE TO EOT REWIND
                                /CHNG DRIVES READ
01203   601203          TEST3   JMP .
01204   140112                  DZM EXITMO          /EXIT AT EOT
01205   206037                  LAC (10000
01206   040111                  DAC RECSYS          /SET READ PASS SELECTED
01207   100737                  JMS CLRALL          /CLEAR ALL AND REWIND
01210   103720                  JMS GENPAT          /GENERATE PATTERN
01211   100715                  JMS MVCTRS          /GET CTRS THIS DRIVE
01212   103103                  JMS WRITIT          /WRITE PASS TO EOT
01213   000000                  0
01214   103614                  JMS REWIND          /REWIND THE DRIVE
01215   100767                  JMS CHGDRV          /CHANGE
01216   601211                  JMP TEST3+6         /NOT DONE ALL DO NEXT WRITE
01217   100715                  JMS MVCTRS
01220   140140                  DZM RECORD
01221   104407                  JMS READIT          /MAKE READ PASS
01222   100767                  JMS CHGDRV          /DONE ALL DRIVES
01223   601217                  JMP .-4             /NO EXIT
01224   621203                  JMP* TEST3
                                /
                                .EJECT
```

```
****
                                /TEST 4 WRITE 1 RLS
                                /BACKSPACE READ CHG DRIVES
01225   601225          TEST4   JMP .
01226   206036                  LAC (24000
01227   040112                  DAC EXITMO              /SET EXIT END OF RLS
01230   206037                  LAC (14000
01231   040111                  DAC RECSYS              /SET READ PASS WRITE RECVR
01232   100737                  JMS CLRALL              /CLEAR ALL CTRS REWIND
01233   100752                  JMS RSETDRV
01234   100715                  JMS MVCTRS              /GET CTRS THIS DRIVE
01235   103720                  JMS GENPAT              /GENERATE PATTERN
01236   200142                  LAC WRTEOT
01237   740200                  SZA                     /THIS DRIVE AT EOT
01240   601246                  JMP .+6                 /YES
01241   103103                  JMS WRITIT              /MAKE WRITE PASS
01242   000000                  0
01243   105200                  JMS GOBKWD              /BACK UP
01244   104407                  JMS READIT              /MAKE READ PASS
01245   100706                  JMS SVCTRS
01246   100767                  JMS CHGDRV              /CHANGE DRIVES
01247   601234                  JMP TEST4+7             /NOT DONE ALL DRIVES
01250   101047                  JMS ALLEOT              /TEST FOR EOT
01251   601233                  JMP TEST4+6             /NOT ALL THERE YET .
01252   621225                  JMP* TEST4              /EXIT
                                /TEST 5 WRITE 1 RECORD BACKSPACE READ
                                /THEN CHANGE DRIVES
01253   601253          TEST5   JMP .
01254   206035                  LAC (40000
01255   040112                  DAC EXITMO              /SET EXIT EVERY RECORD
01256   206037                  LAC (14000
01257   040111                  DAC RECSYS              /WRITE PASS MAKE READ RECVR
01260   100737                  JMS CLRALL              /CLEAR CTRS REWIND
01261   100752                  JMS RSETDRV
01262   103720                  JMS GENPAT              /GENERATE PATTERN
01263   100715                  JMS MVCTRS              /MOVE THIS DRVS CTRS
01264   200142                  LAC WRTEOT
01265   740200                  SZA                     /THIS DRIVE AT EOT
01266   601274                  JMP .+6                 /YES SKIP WRITE
01267   103103                  JMS WRITIT              /MAKE WRITE 1 RECORD
01270   000000                  0
01271   105200                  JMS GOBKWD              /BACK SPACE
01272   104407                  JMS READIT              /READ
01273   100706                  JMS SVCTRS
01274   100767                  JMS CHGDRV              /DONE ALL DRIVES
01275   601262                  JMP TEST5+7             /NO
01276   101047                  JMS ALLEOT              /TEST FOR ALL AT EOT
01277   601261                  JMP TEST5+6             /NOT THERE
01300   621253                  JMP* TEST5              /EXIT 5
                                /
                                .EJECT
```

```
****
                                /TEST 6 WRITE 1 RECORD LENGTH SEQUENCE
                                /CHANGE DRIVES REPEAT
                                /BACKSPACE CHANGE DRIVES REPEAT
                                /READ CHNG DRVS REPEAT
01301   601301          TEST6   JMP .
01302   206737                  LAC (1Ø000
01303   040111                  DAC RECSYS          /SET READ SELECTED
01304   206736                  LAC (23000
01305   040112                  DAC EXITMQ          /EXIT END OF RLS
01306   100737                  JMS CLRALL          /CLEAR CTRS REWIND
01307   100752                  JMS RSFDRV
01310   103727                  JMS GENPAT          /GENERATE PATTERN
01311   100715                  JMS MVCTRS          /GET CTRS THIS DRIVE
01312   200142                  LAC WRTEOT
01313   740200                  SZA                 /AT EOT
01314   601321                  JMP .+5             /YES SKIP WRITE
01315   103103                  JMS WRITIT
01316   000000                  Ø
01317   100706                  JMS SVCTRS          /SAVE CTRS
01320   100767                  JMS CHGDRVS         /WRITTEN DIV ALL DRVS
01321   601311                  JMP .-10  /NO
01322   100715                  JMS MVCTRS          /GET CTRS AGAIN (NEW DRV)
01323   200156                  LAC RDFOT
01324   741200                  SNA                 /READ TO EOT IS SKP
01325   105200                  JMS GOBKWD          /BACK SPACE
01326   100706                  JMS SVCTRS          /SAVE POSITION
01327   100767                  JMS CHGDRV          /CHANGE DRVS
01330   601322                  JMP .-6             /NOT ALL BACKSPACED
01331   100715                  JMS MVCTRS          /NOT ALL BACKSPACED
01332   200156                  LAC RDFOT
01333   741200                  SNA                 /READ TO EOT
01334   104407                  JMS READIT          /NO MAKE READ PASS
01335   100706                  JMS SVCTRS          /SV CTRS AGAIN
01336   100767                  JMS CHGDRV          /DONE ALL
01337   601331                  JMP .-6             /NO MAKE READ PASS
01340   101047                  JMS ALLEOT          /ALL DRVS AT EOT
01341   601307                  JMP TEST6+6         /NO
01342   621301                  JMP* TEST6          /EXIT 6
                        /
                                .EJECT
```

```
****

                        /TEST 7 WRITE 1 RECORD CHG DRVS
                        /BACKSPACE CHG DRVS
                        /READ CHG DRVS
01343   601343          TEST7   JMP .
01344   206035                  LAC (4^000
01345   040112                  DAC EXITMO          /SET EXIT EVERY RECORD
01346   206037                  LAC (1^000
01347   040111                  DAC RECSYS          /READ PASS SELECTED
01350   100737                  JMS CLRALL          /CLR CTRS REWIND
01351   100752                  JMS RSFDRV
01352   103727                  JMS GENPAT          /GENERATE PATTERN
01353   100715                  JMS MVCTRS          /GET DRIVE COUNTERS
01354   200142                  LAC WRTEOT
01355   740200                  SZA                 /THIS DRIVE AT EOT
01356   601362                  JMP .+4             /YES SKIP WRITE
01357   103103                  JMS WRITIT          /NOT AT EOT YET WRITE
01360   000000                  0
01361   100706                  JMS SVCTRS          /SAVE CTRS THIS DRIVE
01362   100767                  JMS CHGDRV          /DONE ALL
01363   601353                  JMP TEST7+10         /DNO DO NEXT
01364   100715                  JMS MVCTRS          /GET CTRS NEXT DRIVE
01365   200156                  LAC RDEOT
01366   741200                  SNA                 /READ TO EOT
01367   105200                  JMS GOBKWD          /NO BACKSPACE
01370   100706                  JMS SVCTRS          /SAVE POSITION
01371   100767                  JMS CHGDRV          /DONE ALL
01372   601364                  JMP .-6             /NO
01373   100715                  JMS MVCTRS          /GET CTRS NEXT DRIVE
01374   200156                  LAC RDEOT
01375   741200                  SNA                 /AT EOT
01376   104407                  JMS READIT          /NO READ IT
01377   100706                  JMS SVCTRS          /SAVE CTRS
01400   100767                  JMS CHGDRV          /DONE READ ON ALL
01401   601373                  JMP .-6             /NO
01402   101047                  JMS ALLEOT          /TEST ALL DRVS AT EOT
01403   601351                  JMP TEST7+6         /NOT ALL THERE YET
01404   621343                  JMP* TEST7          /EXIT TEST 7
                        /
                                .EJECT
```

```
****

                        /TC50 DATA RELIABILITY TEST
                        /WRITE 1 RECORD CHG DRVS
                        /REPEAT UNTIL END RLS
                        /BACKSPACE CHG
                        /READ 1 RECORD CHANGE RPT TO END RLS
01405   601405  TEST10  JMP .
01406   200127          LAC MODBIT          /GET WRITE MODE
01407   740200          SZA                 /NONSTOP
01410   206035          LAC (40000                  /NO START STOPEXIT EVERY
01411   741200          SNA                 /START STOP
01412   206036          LAC (20000          /NONSTOP XIT RLS
01413   040112          DAC EXITMO                  /SET EXIT EVRY RECORD
01414   206037          LAC (10000
01415   040111          DAC RECSYS                  /MAKE READ RECOVERY
01416   100737          JMS CLRALL                  /CLR CTRS REWIND
01417   103720  TS10L2  JMS GENPAT
01420   100752          JMS RSFDRV
01421   100715          JMS MVCTRS
01422   200140          LAC RECORD
01423   040144          DAC WRRECR
01424   100706          JMS SVCTRS
01425   100767          JMS CHGDRV                  /RESET ALL DRVS
01426   601421          JMP .-5                     /NO SAVE LASRCR NXT DRV
01427   777777          LAW -1
01430   040125          DAC EOSFLG
01431   100752  TS10L1  JMS RSFDRV                  /SET TO 0 AT END RLS
01432   100715          JMS MVCTRS
01433   200142          LAC WRTEOT
01434   740200          SZA                 /DRV WRITTEN TO EOT
01435   601445          JMP .+10            /YES DON'T WRITE ANY MORE
01436   200144          LAC WRRECR
01437   040126          DAC SVRECR                  /SAVE START OF RLS
01440   103103          JMS WRITIT                  /WRITE 1 RECORD
01441   000000          0
01442   200126          LAC SVRECR                  /RESTORE START OF RLS
01443   040144          DAC WRRECR
01444   100706          JMS SVCTRS                  /SAVE CTRS THIS DRV
01445   100767          JMS CHGDRV                  /ANY DRVS LEFT
01446   601432          JMP TS10L1+1        /YES WRITE ON IT
01447   200125          LAC EOSFLG
01450   741200          SNA                 /DRIVES AT END RLS
01451   601460          JMP .+7             /YES BACK UP
01452   100715          JMS MVCTRS                  /MOVE CTRS
01453   200142          LAC WRTEOT                  /GET WRITTEN EOT FLG
01454   741200          SNA                 /DRIVE AT EOT
01455   601431          JMP TS10L1          /NO AT LEAST 1 ISN'T
01456   100767          JMS CHGDRV                  /IF SKPS ALL DRVS AT EOT
01457   601452          JMP .-5             /SEE IF NXT DRV AT EOT
01460   100752          JMS RSFDRV                  /START FIRST DRV AGAIN
01461   100715          JMS MVCTRS                  /GET CTRS
01462   200156          LAC RDEOT
01463   741200          SNA                 /DRV READ TO EOT
01464   105200          JMS GORKWD                  /NO BACK SPACE
01465   100706          JMS SVCTRS
```

```
01466   100767          JMS CHKDRV              /BACKED UP ALL DRVS
01467   601461          JMP .-6         /NO DO THIS ONE
                /
                .EJECT
```

```
****
01470   100752          JMS RSFDRV              /RESET TO FIRST DRIVE
01471   100715  T10RDP  JMS MVCTRS              /GET DRV CTRS
01472   200156          LAC RDEOT
01473   740200          SZA                     /READ TO EOT ON THIS ONE
01474   601513          JMP T10RND              /YES BYPASS READ
01475   200141          LAC LASRCR
01476   540140          SAD RECORD              /READ TO LAST RECORD WRITTEN
01477   601513          JMP T10RND              /YES
01500   040126          DAC SVRECR              /SAVE LAST RECORD
01501   200110          LAC READMO              /GET READ
01502   741200          SNA                     /NONSTOP
01503   601507          JMP .+4                 /YES
01504   200140          LAC RECORD
01505   040141          DAC LASRCR              /SET EOS TO
01506   440141          ISZ LASRCR              /LAST READ +1
01507   104407          JMS READIT              /READ 1 RECORD
01510   200126          LAC SVRECR
01511   040141          DAC LASRCR              /RESTORE LAST WRITTEN
01512   100706          JMS SVCTRS              /SAVE COUNTER
01513   100767  T10RND  JMS CHGDRV              /DONE 1 ON ALL DRVS
01514   601471          JMP T10RDP              /NO DO 1 MORE ON NEXT
01515   100715          JMS MVCTRS              /GET CTRS CURREN DRV
01516   200141          LAC LASRCR
01517   540140          SAD RECORD              /READ TO EOS THIS DRV
01520   741000          SKP
01521   601470          JMP T10RDP-1            /NOT AT EOS READ AGAIN
01522   100767          JMS CHGDRV
01523   601515          JMP .-6
01524   101047          JMS ALLEOT              /TEST FOR ALL READ TO EOT
01525   601417          JMP TS10L2              /AT LEAST 1 ISN'T YET
01526   621405          JMP* TEST10             /ALL DRVS AT EOT EXIT TEST
                /
                        .EJECT
```

```
****

                                /DUMP ERROR COUNTERS ON ALL DRIVES
                                /FIRST SAVE COUNTERS CURRENTLY IN LOCATIONS
02000                                .LOC 2000
02000   100724          ERRDMP  JMS SVCTRS
02001   102004                  JMS CTRDMP
02002   740040                  HLT
02003   602002                  JMP .-1
02004   602004          CTRDMP  JMP .
02005   100752                  JMS RSFDRV
02006   100715                  JMS MVCTRS
02007   202230                  LAC T11FLG
02010   741200                  SNA
02011   602022                  JMP CDMEND-5
02012   202232                  LAC WRETEX
02013   105232                  JMS TYPET
02014   202054                  LAC EHDRTX
02015   105232                  JMS TYPET
02016   103451                  JMS WRTDMP
02017   200111                  LAC RECSYS
02020   741200                  SNA
02021   602027                  JMP CDMEND
02022   202243                  LAC RDETEX
02023   105232                  JMS TYPET
02024   202254                  LAC EHDRTX
02025   105232                  JMS TYPET
02026   105014                  JMS READMP
02027   100767          CDMEND  JMS CHGDRV
02030   602006                  JMP CTRDMP+2
02031   622004                  JMP* CTRDMP
                                .EJECT
```

```
****
     02032     002033          WRETEX    .+1
     02033     064241                    .ASCII    <15><12><12>' WRITE DUMP '<15><12><177>
     02034     220256
     02035     512232
     02036     442500
     02037     422531
     02040     550100
     02041     064257
     02042     700000
     02043     002044          RDETEX    .+1
     02044     064241                    .ASCII    <15><12><12>' READ DUMP '<15><12><177>
     02045     220244
     02046     426030
     02047     420210
     02050     526332
     02051     020032
     02052     053760
     02053     000000
     02054     002055          FHDRTX    .+1
     02055     422452                    .ASCII    'DRV PAT PAR DEN MODE RECRDS LENGTH'
     02056     620240
     02057     406504
     02060     050202
     02061     511210
     02062     442634
     02063     202331
     02064     742212
     02065     202450
     02066     541644
     02067     422464
     02070     046212
     02071     472172
     02072     444000
     02073     064244                    .ASCII    <15><12><40><177>
     02074     077400
                                 /
                                         .EJECT
```

```
****
                        /TEST 11 READ ONLY RANDOM PAT SELECTION INVALID
                        /EXCEPT IN CERTAIN CASES
                        /
02075   602375          TEST11  JMP .
02076   100737                  JMS CLRALL              /CLR CTRS REWIND
02077   206035                  LAC (43000
02100   040112                  DAC EXITMO              /SET WRITE EXIT EVERY RECORD
02101   777777                  LAW -1
02102   042200                  DAC T11FLG              /SET TEST 11 WRITE EXIT
02103   103103                  JMS WRITIT              /SET UP RECORD LENGTHS
02104   000000                  0
02105   200125                  LAC EOSFLG              /GET END OF RLS FLAG
02106   740200                  SZA                     /INCREMENT TO END
02107   103320                  JMS TESINC              /NO RETURN IS .-2
02110   200140                  LAC RECORD
02111   042177                  DAC T11INC              /SAVE SEQUENCE LENGTH
                        /IF RANDOM PAT DO NOT REGEN
02112   140140                  DZM RECORD
02113   200103                  LAC PATNUM
02114   545776                  SAD (7                  /= 7 IS RANDOM
02115   741000                  SKP
02116   103720                  JMS GENPAT
02117   777777          T11LP1  LAW -1
02120   040125                  DAC EOSFLG              /SET START OF SEQUENCE
02121   100752                  JMS RSFDRV
02122   100715                  JMS MVCTRS              /GET CTRS THIS DRV
02123   200156                  LAC RDEOT
02124   740200                  SZA                     /THIS DRV AT EOT
02125   602132                  JMP .+5                 /YES
02126   200140                  LAC RECORD              /CURRENT RECORD
02127   342177                  TAD T11INC              /+ SEQUENCE LENGTH
02130   040141                  DAC LASRCR              /FOR READ EXIT
02131   100706                  JMS SVCTRS              /SAVE CTRS THIS DRIVE
02132   100767                  JMS CHGDRV              /DONE ALL
02133   602122                  JMP T11LP1+3            /NO SET UP NEXT DRIVE
02134   100752                  JMS RSFDRV
02135   100715          T11RDL  JMS MVCTRS              /GET DRIVE CTRS
02136   200156                  LAC RDEOT
02137   740200                  SZA                     /THIS ONE AT EOT
02140   602155                  JMP T11END              /YES DONT READ
02141   200141                  LAC LASRCR
02142   040126                  DAC SVRECR              /SAVE END OF RLS RECORDS
02143   200110                  LAC READMO
02144   741200                  SNA                     /SELECTION NON STOP
02145   602151                  JMP .+4                 /YES GO TO END RLS
                        /
                                .EJECT
```

```
****
     02146   200140              LAC RECORD              /NEXT TO BE READ
     02147   040141              DAC LASRCR
     02150   440141              ISZ LASRCR              /+1 EXIT READ AFTER 1 RECORD
     02151   104407              JMS READIT              /READ 1 OR TO END RLS
     02152   200126              LAC SVRECR
     02153   040141              DAC LASRCR              /RESTORE END RECORD
     02154   100706              JMS SVCTRS              /SAVE CTRS THIS DRIVE
     02155   100767    T11END    JMS CHGDRV              /DONE ALL DRIVES
     02156   602135              JMP T11RDL              /NO
     02157   101047              JMS ALLEOT
     02160   741000              SKP
     02161   622075              JMP* TEST11
     02162   100752              JMS RSFDRV
     02163   100715              JMS MVCTRS              /GET CTRS AGAIN
     02164   200140              LAC RECORD
     02165   540141              SAD LASRCR              /AT END RLS
     02166   140125              DZM EOSFLG              /YES
     02167   100767              JMS CHGDRV              /CHECKED ALL DRIVES
     02170   602163              JMP .-5           /NO ONE MAY BE AT EOT
     02171   200125              LAC EOSFLG
     02172   740200              SZA               /AT END OF RLS
     02173   602135              JMP T11RDL              /NO READ SOME MORE
     02174   101047              JMS ALLEOT              /TEST EOS DUMP SW
     02175   602117              JMP T11LP1              /NOT EOS EXIT READ MORE
     02176   622075              JMP* TEST11             /EXIT TEST 11
     02177   000000    T11INC    0
     02200   000000    T11FLG
                       .EOT
```

```
                    /
                    /TC52-TU10 DATA RELIABILITY TEST (TAPE 4) OF 9 TRACK
                    /START AT 3000 SWITCHES = COMMAND
                    /
                    /SWITCHES 15 TO 17  PATTERN SELECTION 0-7
                    /SWITCHES#14          PARITY 0 = EVEN  1 = ODD
                              /SWITCHES 12 AND 13 = MODE (WRITE) 6 AND 7 = MODE (READ)
                              /00 = NONSTOP
                              /01 = START STOP DRIVE SETTLE DOWN
                              /10 OR 11 RANDOM START STOP NONSTOP
                    /SWITCHES 10 AND 11 = DENSITY
                    /SWITCHES 8 AND 9 = RECORD LENGTH SEQUENCE
                              /00 = MINIMUM LENGTH (24 CHAR)
                              /01 = MAXIMUM LENGTH (4008 CHAR)
                              /10 = MIN TO MAX 24 TO 4008 CHAR
                              /11 = MAX TO MIN 4008 TO 24 CHAR
                    /SWITCH 5=1 IS MAKE A READ PASS
                    /SW3AND4=00 WRITE PASS TO EOT
                    /=01 WRITE PASS 1 SEQUENCE OR 512 IF FIXED GEN
                    /=10 WRITE EXIT EVERY RECORD
                    /
                    /SWITCHES 0 TO 2 = DRIVE NUMBER
                    /RUN SWITCHES SW3 = TYPE ALL ERRORS AS THEY OCCUR (WRITE)
                              /SW4 = STATISTICAL RECOVERY PROCEDURE (WRITE)
                    /SW5 = 1-TYPE ALL ERRORS AS THEY OCCUR  (READ)
                    /SW6 = 1-STATISTICAL RECOVERY PROCEDURE (READ)
                    /SW7 = 1-DELETE ALL READ RECOVERY ATTEMPTS
                    /
                    /IOT DEFINITIONS
                    /
707352              MTRS=707352
707312              MTPC=707312
707341              MTSF=707341
707321              MTCR=707321
707301              MTTR=707301
707326              MTLC=707326
707304              MTGO=707304
707322              MTAF=707322
707324              LCM=707324
                    /
                    /RECORD LENGTH AND BUFFER DEFINITIONS
003724              MAXLEN=3724           /4008 CHARACRERS 1336 WORDS
000014              MINLEN=14             /24 CHARACTERS 12 WORD
010000              WRBUF=10000
000033              CALOC=33
000032              WCLOC=32
000515              MSEC=515
100000              EOTBIT=100000
013724              EOBUF1=WRBUF+MAXLEN
013724              EOBUF2=EOBUF1
                    /
                              .EJECT
```

```
****
                        /CAL TRAP
     00020                          .LOC 20
     00020      200020              20
     00021      740040              HLT
                        /
                        /START OF TEST 1 PASS GET SWS HALT EXC
     03000                          .LOC 3700
     03000      750024  STRTFS      LAS
     03001      506440              AND (730000
     03002      040105              DAC DRVDEN                  /DRIVE NUM
     03003      103614              JMS REWIND                  /FOR REWIND
     03004      750004              LAS
     03005      043016              DAC PASSWS                  /SWS TO BE EXECUTED
     03006      506003              AND (17             /MASK PATTERN AND PAR
     03007      040103              DAC PATNUM                  /FOR FIRST GENERATE
     03010      140104              DZM PARBT1                  /AND CLEAR OLD PARITY
     03011      103070              JMS CLRTBL                  /CLR RECORD AND ERR TBLS
     03012      140124              DZM SWTEST
     03013      740040              HLT
     03014      103720              JMS GENPAT
     03015      103103              JMS WRITIT
     03016      000000  PASSWS      0
     03017      200111              LAC PECSYS
     03020      741200              SNA
     03021      603024              JMP .+3
     03022      105200              JMS CORKWD
     03023      104407              JMS READIT
     03024      707752              MTRS
     03025      506715              AND (4000
     03026      741200              SNA
     03027      603014              JMP PASSWS-2        /NEW RNDOM EVERY PASS
     03030      740040              HLT
     03031      603000              JMP STRTFS
                        /
                                    .EJECT
```

```
                                        /
                                        /RANDOM NUMBER GENERATOR
                                        /
0?032   603733          RANGEN  JMP .
0?033   233?6?                  LAC RANDEX
0?034   546?41                  SAD (RANTBL+16
0?035   741?0?                  SKP
0?036   603?4?                  JMP RANTAD-1
0?037   2?6?43                  LAC (RANTBL
0?040   343?6?                  DAC RANDEX
0?041   233?57                  LAC RANCON
0?042   745130                  SPA!CLL
0?043   744?02                  STL
0?044   740?1?                  RAL
0?045   343?57                  DAC RANCON
0?046   223?6?                  LAC* RANDEX
0?047   343?67          RANTAD  TAD RANCON
0?050   063?6?                  DAC* RANDEX
0?051   233?71                  LAC RANSAV
0?052   740?2?                  RAW
0?053   363?6?                  TAD* RANDEX
0?054   343?71                  DAC RANSAV
0?055   443?6?                  ISZ RANDEX
0?056   603732                  JMP* RANGEN
                                /
0?057   123456          RANCON  123456
0?060   0?3?71          RANDEX      RANTBL+10
0?061   654321          RANTBL  654321
0?062   361416                  361416
0?063   055363                  055363
0?064   546?6?                  546060
0?065   243035                  243035
0?066   762572                  762572
0?067   453237                  453237
0?070   150214                  150214
                                /
0?071   000?0?          RANSAV  0
                                /
                                .EJECT
```

```
                                /CLEAR READ AND WRITE TABLES
 03072   603072   CLRTBL  JMP .
 03073   220139          LAC (WRCHEK-1           /CLEAR ALL
 03074   040010          DAC 10                  /WRITE TABLES TO 0
 03075   777750          LAW -30                 /AND READ TABLES
 03076   040011          DAC 11                  /THERE ARE 13
 03077   160210          DZM* 10
 03100   440011          ISZ 11                  /DONE ALL
 03101   603077          JMP .-2                 /NO
 03102   623072          JMP* CLRTBL
                         /
                         /TC59 DATA RELIABILITY TEST
                         /WRITE PORTION
                         /
 03103   603103   WRITIT  JMP .
 03104   200140          LAC RECORD
 03105   741200          SNA
 03106   603111          JMP .+3
 03107   443103          ISZ WRITIT
 03110   603174          JMP NOINCR
 03111   200124          LAC SWTEST
 03112   740200          SZA
 03113   603144          JMP NOTSWS
 03114   223103          LAC* WRITIT             /GET TEST CONTROL WORD
 03115   505776          AND (7                  /MASK PATTERN NUMBER
 03116   040103          DAC PATNUM              /SAVE IT
 03117   223103          LAC* WRITIT             /WORD AG
 03120   506020          AND (10                 /MASK PAR SELECT
 03121   040104          DAC PARBT1              /SAVE IT
 03122   223103          LAC* WRITIT             /GET IT AGAIN
 03123   506043          AND (700300             /DENSITY AND DRIVE
 03124   040105          DAC DRVDEN              /SAVE IT
 03125   223103          LAC* WRITIT             /GET WORD AGAIN
 03126   506013          AND (1400               /RECORD LENGTH
 03127   040106          DAC RLTROL              /CONTROL BITS
 03130   223103          LAC* WRITIT             /GET WORD
 03131   506022          AND (60                 /MASK START STOP
 03132   040107          DAC MODBIT              /MODE BITS
 03133   223103          LAC* WRITIT
 03134   506023          AND (6000
 03135   040110          DAC READMO
 03136   223103          LAC* WRITIT
 03137   506037          AND (1000
 03140   040111          DAC RECSYS
 03141   223103          LAC* WRITIT
 03142   506044          AND (6000
 03143   040112          DAC EXITMO
 03144   443103   NOTSWS  ISZ WRITIT              /STEP ADDRESS FOR EXIT
                         /
                         .EJECT
```

```
                                /
                                /NOW SET UP RECORD LENGTH CONTROL
                                /
03145   200106                  LAC RLTROL          /RECORD LENGTH
03146   500112                  AND (4 0            /STARTING LENGTH BIT
03147   780222                  SZA!CLA             /MAXIMUM LENGTH
03150   774054                  LAW -MAXLEN         /YES MAXIMUM
03151   741222                  SNA                 /OR MINIMUM LENGTH
03152   777764                  LAW -MINLEN         /YES MINIMUM
03153   040113                  DAC STRLEN          /SAVE STARTING LENGTH
03154   140115                  DZM BLKINC          /CLEAR LENGTH INCREMENT
03155   200106                  LAC RLTROL          /GET RECORD LENGTH CONTROL
03156   506012                  AND (1000           /MASK CHANGE LENGTH BIT
03157   741200                  SNA                 /CHANGE RECORD LENGTH
03160   603172                  JMP NOINCR-2        /NO
03161   200111                  LAC (2
03162   040115                  DAC BLKINC          /SAVE IT AS A + NUM
03163   774054                  LAW -MAXLEN
03164   540113                  SAD STRLEN          /LENGTH START AT MAX
03165   603172                  JMP NOINCR-2        /YES LEAVE INCR +
03166   200115                  LAC BLKINC          /RECORD LENGTH START
03167   740001                  CMA                 /IS MINIMUM
03170   040115                  DAC BLKINC          /MAKE IT - SO
03171   440115                  ISZ BLKINC          /BLOCK WILL GET LONGER
03172   200113                  LAC STRLEN          /STARTING RECORD LENTH
03173   040143                  DAC WRTLEN          /TO CURRENT BLOCK LENTH
                                /
                                .EJECT
```

```
                                /EITHER NO LENGTH INCREMENT OR ALREADY SET UP
 03174   200134                 MOINC   LAC PARBT1                    /GET PARITY SELECTION
 03175   744120                         RCR                     /MOVE BIT OVER TO COMMAND PARITY BIT
 03176   742020                         RTR;    RTR;    RTR;    RAR
 03177   742020
 03200   742020
 03201   740020
 03202   340125                         TAD DRVDEN              /COMBINE WITH DRV DENSITY
 03203   040114                         DAC COMAND              /SAVE IT
 03204   200140                         LAC RECORD
 03205   040144                         DAC WRRECR
 03206   442200                         ISZ T11FLG
 03207   741000                         SKP
 03210   623103                         JMP* WRITIT
 03211   777770                         LAW -10
 03212   040116                         DAC WRPASS
                                /
                                /START THE WRITE SEQUENCE FROM BOT
 03213   206045                 STRTOP  LAC (4400               /WRITE + ENI
 03214   340114                         TAD COMAND              /DRIVE DENSITY AND PARITY
 03215   707321                         MTCR
 03216   603215                         JMP .-1
 03217   707326                         MTLC                    /LOAD THE COMMAND
 03220   740000                         NOP
 03221   707301                         MTTR
 03222   603221                         JMP .-1
 03223   200143                 NONSTP  LAC WRTLEN                      /RECORD LENGTH
 03224   040032                         DAC WCLOC               /TO WORD COUNT REG
 03225   206046                         LAC (WRBUF-1            /BUFFER ADDRESS
 03226   040033                         DAC CALOC               /TO CA LOCATION
 03227   707304                         MTGO                    /GO DRIVE GO
 03230   200103                         LAC PATNUM
 03231   545776                         SAD (7                  /RANDOM PAT SELECTED
 03232   103267                         JMS STRPAT              /YES NEW PAT EVERY BLOCK
 03233   103627                         JMS WAITI               /WAIT FOR INTERRUPT
 03234   741100                         SPA                     /ANY ERROR FLAG
 03235   603370                         JMP ERROR               /YES SEE IF EOT
 03236   777770                         LAW -10
 03237   540116                         SAD WRPASS                      /RECOVERY PASS
 03240   603247                         JMP TSTSTP                      /NO SEE IF START STOP
 03241   200116                         LAC WRPASS
 03242   346047                         TAD (ISZ PERMBS         /LAST PASS K-
 03243   043244                         DAC .+1                 /TO +1 RECVR PASS
 03244   440130                         ISZ RECV1
 03245   777770                         LAW -10
 03246   040116                         DAC WRPASS
                                        .EJECT
```

```
****
      03247     200107          TSTSTP    LAC MODBIT                    /GET START STOP MODE FROM MODBIT
      03250     740200                    SZA                     /NON STOP
      03251     603257                    JMP STOPOP                    /NO START STOP
      03252     777770                    LAW -13
      03253     540116                    SAD WRPASS
      03254     103320                    JMS TESINC                    /CLEAR ALL MAGTAPE FLAGS
      03255     707322                    MTAF
      03256     603223                    JMP NONSTP                    /GO AGAIN
      03257     506027          STOPOP    AND (40
      03260     740200                    SZA                     /START STOP RANDOM
      03261     103277                    JMS RANSTP                    /YES
      03262     777770                    LAW -10
      03263     540116                    SAD WRPASS
      03264     103320                    JMS TESINC
      03265     103642                    JMS WATRDY              /JUST START STOP
      03266     603213                    JMP STRTOP              /WAIT DRIVE READY GO AGAIN
                                /
                                          .EJECT
```

```
↑↑↑↑
                                /IF READ SELECTED DO NOT REGENERATE RANDOM
                                /RANDOM PAT SELECTED IF NOT ERR PASS REGEN
     03267     603267           STRPAT    JMP .
     03270     200111                     LAC RECSYS
     03271     740200                     SZA
     03272     623267                     JMP* STRPAT
     03273     777770                     LAW -10
     03274     540116                     SAD WRPASS          /SKIP IS ERROR PASS
     03275     103720                     JMS GENPAT          /NOT ERROR PASS REGENERATE
     03276     623267                     JMP* STRPAT
     03277     603277           RANSTP    JMP .               /STALL RANDOM TIME
     03300     103032                     JMS RANGEN          /GET RANDOM NUMBER
     03301     506050                     AND (177            /MASK FOR 0 TO 127
     03302     740001                     CMA                 /MAKE -1 TO -128
     03303     043316                     DAC MTIMER          /FOR COUNTIM MILLISEC
     03304     346026                     TAD (4
     03305     740100                     SMA                 /COUNT -1 TO -4
     03306     603252                     JMP TSTSTP+3        /YES GO NONSTOP
     03307     777263                     LAW -MSEC           /TO COUNT 1 MILLISEC
     03310     043317                     DAC MTIMER+1
     03311     443317                     ISZ MTIMER+1        /TIME 1 MILLISEC
     03312     603311                     JMP .-1
     03313     443316                     ISZ MTIMER          /WAITED RANDOM TIME
     03314     603307                     JMP .-5             /NO
     03315     623277                     JMP* RANSTP         /GO AGAIN
     03316     000000           MTIMER    0
     03317     000000                     0
                                /
                                          .EJECT
```

```
****
                                /
                                /SEE IF RECORD LENGTH SHOULD BE CHANGED
                                /
03320   000000  TESINC  0                       /ENTER
03321   440140          ISZ RECORD
03322   200115          LAC BLKINC              /GET INCREMENTER
03323   741200          SNA                     /LENGTH CHANGING
03324   603352          JMP TES2K               /NO GET OUT
03325   340143          TAD WRTLEN              /INCR + REC LENGTH
03326   040143          DAC WRTLEN              /SAVE IT
03327   346051          TAD (MINLEN
03330   740100          SMA                     /COUNT LESS THAN MIN
03331   603343          JMP RESETL              /YES RESET IT
03332   206052          LAC (MAXLEN+1           /+ MAX + 1
03333   340143          TAD WRTLEN                      /- CURRENT LENGTH
03334   741100          SPA
03335   603343          JMP RESETL
03336   200112          LAC EXITMO
03337   506035          AND (40000
03340   741200          SNA
03341   623320          JMP* TESINC
03342   623103          JMP* WRITIT
03343   200113  RESETL  LAC STRLEN              /RESET LENGTH TO
03344   040143          DAC WRTLEN              /CURRENT START
03345   140125          DZM EOSFLG
03346   200112          LAC EXITMO
03347   741200          SNA
03350   623320          JMP* TESINC
03351   623103          JMP* WRITIT
03352   200140  TES2K   LAC RECORD                      /GET NEXT RECORD NUMBER
03353   506053          AND (377
03354   740200          SZA
03355   603363          JMP .+6                 /RECORD NOT AN INC OF 256
03356   140125          DZM EOSFLG              /MULT OF 256 CLEAR EOS FLG
03357   200112          LAC EXITMO              /EXIT MODE
03360   740200          SZA                     /GO TO END OF TAPE
03361   623103          JMP* WRITIT             /NO EXIT WRITE SEQUENCE
03362   623320          JMP* TESINC             /EXIT AT EOT ONLY
03363   200112          LAC EXITMO              /GET EXIT MODE
03364   506035          AND (40000              /MASK EXIT EVERY
03365   740200          SZA                     /EXIT EVERY RECORD
03366   623103          JMP* WRITIT             /YES
03367   623320          JMP* TESINC             /NOT EXIT EVERY RECORD
                        /
                        .EJECT
```

```
                                /ERROR STATUS SEE IF EOT
                                /CHECK SWITCH OPTIONS
03370   536054          ERROR   AND (373600           /MASK ALL ERROR BITS
03371   741200                  SNA                  /EXCEPT EOT
03372   603565                  JMP ENDTAP           /ERR WAS EOT NO ERR
03373   777777                  LAW -1
03374   540116                  SAD WRPASS           /FIRST ERR
03375   440127                  ISZ WRCHEK           /YES +1 NUM WRITE ERR
03376   750004                  LAS
03377   506035                  AND (40000
03400   741200                  SNA                  /TYPE ALL ER = 1
03401   603412                  JMP TESREC           /NO SEE IF RECVR SELECTED
03402   206055                  LAC (TEXT1
03403   105232                  JMS TYPET            /TYPE WRITE STATUS ERROR
03404   707312                  MTRC
03405   105312                  JMS TYPEC            /TYPE COMMAND
03406   203641                  LAC STATRD
03407   103646                  JMS SPTCON           /SPACE 2 AND TYPE
03410   200140                  LAC RECORD
03411   103646                  JMS SPTCON           /SPACE 2 TYPE BLOCK NUMBER
                                /
03412   750004          TESREC  LAS
03413   506036                  AND (20000           /RECOVER STATISTICALLY
03414   740200                  SZA                  /SELECTED
03415   603434                  JMP STAREC           /YES
03416   200111                  LAC RECSYS
03417   740200                  SZA
03420   105114                  JMS XRGREC
03421   740000                  NOP
03422   777770                  LAW -10
03423   040116                  DAC WRPASS
03424   203641                  LAC STATRD
03425   506015                  AND (4000
03426   740200                  SZA                  /EOT
03427   603565                  JMP ENDTAP                   /YES TYPE
03430   707321                  MTCR                 /IS CU READY
03431   603247                  JMP TSTSTP                   /CONTROL NOT READY NO TYPEOUT
03432   103642                  JMS WATRDY           /WAIT FOR DRIVE
03433   603262                  JMP STOPOP+3         /START AGAIN
                                /
                                .EJECT
```

```
****
03434   440116          STAREC  ISZ WRPASS              /TRIED 7 REWRITES
03435   603440                  JMP .+3                 /NO
03436   440137                  ISZ PERMBS              /YES +1 PERM BAD SPOT
03437   603416                  JMP TESREC+4            /GO DO NEXT BLOCK
03440   103655                  JMS BACK2               /BACKUP 2 RECORDS
03441   707352                  MTRS
03442   506056                  AND (BOTBIT             /AT BOTTOM
03443   740200                  SZA
03444   603213                  JMP STRTOP
03445   103670                  JMS SPACE1              /NOT BOT COME FWD 1
03446   206015                  LAC (4000               /CHANGE SPACE
03447   707324                  LCM                     /BACK TO WRITE
03450   603247                  JMP TSTSTP              /CHECK NONSTOP MODE
03451   603451          WRTDMP  JMP .
03452   200105                  LAC DRVDEN
03453   742010                  RTL;        RTL
03454   742010
03455   105341                  JMS TY1OCT
03456   103702                  JMS SPACE3
03457   200103                  LAC PATNUM
03460   105341                  JMS TY1OCT
03461   103702                  JMS SPACE3
03462   200104                  LAC PARBT1
03463   742020                  RTR;        RAR
03464   740020
03465   105341                  JMS TY1OCT
03466   200105                  LAC DRVDEN
03467   742020                  RTR;        RTR;        RTR
03470   742020
03471   742020
03472   506007                  AND (3
03473   346057                  TAD (LAC DENTYP
03474   043475                  DAC .+1
03475   203600                  LAC DENTYP
03476   105232                  JMS TYPET
                        /
                                .EJECT
```

```
****
      03477     200107              LAC MODBIT
      03500     742020              RTR;      RTR
      03501     742020
      03502     506007              AND (3
      03503     346060              TAD (LAC TYMODE
      03504     043505              DAC .+1
      03505     206061              LAC (TYMODE
      03506     105232              JMS TYPET
      03507     200140              LAC RECORD
      03510     105346              JMS TYDECI
      03511     200106              LAC RLTROL
      03512     742020              RTR;      RTR;      RTR;      RTR
      03513     742020
      03514     742020
      03515     742020
      03516     506007              AND (3
      03517     346062              TAD (LAC LTHTBL
      03520     043521              DAC .+1
      03521     203610              LAC LTHTBL
      03522     105232              JMS TYPET
      03523     206063              LAC (TEXT10
      03524     105232              JMS TYPET           /WRITE ERRORS =
      03525     200127              LAC WRCHEK
      03526     105346              JMS TYDECI
      03527     777771              LAW -7
      03530     040010              DAC 10
      03531     206064              LAC (RECV1-1
      03532     040011              DAC 11
      03533     140012              DZM 12
      03534     440012              ISZ 12
                                    /
                                    .EJECT
```

```
****
                                        /
        03535   220011          TYRECV  LAC* 11
        03536   040013                  DAC 13
        03537   741200                  SNA
        03540   603552                  JMP TYRALL
        03541   206065                  LAC (TEXT11
        03542   105232                  JMS TYPET
        03543   206066                  LAC (TEXT12
        03544   105232                  JMS TYPET
        03545   200012                  LAC 12
        03546   105341                  JMS TY1OCT
        03547   103702                  JMS SPACE3
        03550   200013                  LAC 13
        03551   105346                  JMS TYDECI
        03552   440012          TYRALL  ISZ 12
        03553   440010                  ISZ 10
        03554   603535                  JMP TYRECV
        03555   200137                  LAC PERMBS
        03556   741200                  SNA
        03557   623451                  JMP* WRTDMP
        03560   206067                  LAC (TEXT13
        03561   105232                  JMS TYPET
        03562   200137                  LAC PERMBS
        03563   105346                  JMS TYDECI
        03564   623451                  JMP* WRTDMP
                                        /
                                        /WRITE PASS DRV IS AT END OF TAPE
        03565   206070          ENDTAP  LAC (TEXT2
        03566   440140                  ISZ RECORD              /TYPE EOT TEXT
        03567   105232                  JMS TYPET
        03570   103451                  JMS WRTDMP              /DUMP COUNTERS
        03571   777777                  LAW -1
        03572   040142                  DAC WRTEOT              /SET WRITE TO EOT
        03573   623103                  JMP* WRITIT             /EXIT
                                        /
                                        .EJECT
```

.EJECT

```
****
                                /
      03574     005516          TYMODE    TEXT7       /NONST
      03575     005522                    TEXT8       /STSTP
      03576     005526                    TEXT9       /RNDOM
      03577     005526                    TEXT9       /RNDOM
      03600     005502          DENTYP    TEXT4       /TYPE 200
      03601     005506                    TEXT5       /TYPE 556
      03602     005512                    TEXT6       /TYPE 800
      03603     005512                    TEXT6       /DITTO 800
                                /
      03604     000010          INCTBL    10          /24 CHAR 200 BPI
      03605     000004                    4           /12 CHAR 556 BPI
      03606     000002                    2           /6  CHAR 800 BPI
      03607     000002                    2           /INCASE SWITCH GOOF
                                /
      03610     005532          LTHTBL    TYPMIN
      03611     005540                    TYPMAX
      03612     005547                    TYPAV1      /TYPE AVERAGE 1
      03613     005557                    TYPAV2      /TYPE AVERAGE 2
                                /
                                          .EJECT
```

```
****
                        /REWIND TO LOAD POINT
                        /
03614   603614  REWIND  JMP .
03615   200105          LAC DRVDFNA         /DRIVE NUMBER
03616   707321          MTCR
03617   603616          JMP .-1
03620   707326          MTLC                /LOAD COMMAND
03621   707301          MTTR                /DRIVE READY
03622   603621          JMP .-1             /NO
03623   206012          LAC (1000           /REWIND
03624   707324          LCM                 /CHANGE NOT TO REWIND
03625   707304          MTGO                /GO
03626   623614          JMP* REWIND         /EXIT
                        /
                        /
                        /WAIT FOR PROGRAM INTERRUPT
                        /
03627   603627  WAITI   JMP .
03630   206071          LAC (JMP IRECD
03631   040001          DAC 1
03632   700042          ION
03633   603633          JMP .
                        /
03634   707341  IRECD   MTSF
03635   740040          HLT
03636   707352          MTRS
03637   043641          DAC STATRD
03640   623627          JMP* WAITI
                        /
03641   000000  STATRD  0
                        /
                        /
                        /WAIT FOR CU AND DRIVE READY
                        /
03642   603642  WATRDY  JMP .
03643   707301          MTTR
03644   603643          JMP .-1
03645   623642          JMP* WATRDY
                        /
                        .EJECT
```

```
****
                                /SPACE 2 AND TYPE CONTENTS
                                /
03646   603646          SPTCON  JMP .
03647   043654                  DAC SPTSAV
03650   103711                  JMS SPACE2
03651   203654                  LAC SPTSAV
03652   105312                  JMS TYPEC
03653   623646                  JMP* SPTCON
03654   000000          SPTSAV  0
                                /
                                /
                                /BACKSPACE 2 RECORDS
                                /
03655   603655          BACK2   JMP .
03656   103642                  JMS WATRDY
03657   200114                  LAC COMAND
03660   346072                  TAD (7400
03661   707326                  MTLC
03662   777776                  LAW -2
03663   040032                  DAC WCLOC
03664   707304                  MTGO
03665   707341                  MTSF
03666   603665                  JMP .-1
03667   623655                  JMP* BACK2
                                /
                                /
                                /SPACE FORWARD 1 RECORD
                                /
03670   603670          SPACE1  JMP .
03671   206023                  LAC (6000
03672   707324                  LCM
03673   777777                  LAW -1
03674   040032                  DAC WCLOC
03675   707322                  MTAF
03676   707304                  MTGO
03677   707341                  MTSF
03700   603677                  JMP .-1
03701   623670                  JMP* SPACE1
                                /
                                /
                                /SPACE 3 PLACES
                                /
03702   603702          SPACE3  JMP .
03703   203706                  LAC .+3
03704   105232                  JMS TYPET
03705   623702                  JMP* SPACE3
03706   003707                  .+1
03707   201004                  .ASCII '    '<177>
03710   077400
                                /
                                .EJECT
```

```
****
                                /SPACE 2 PLACES
                                /
      03711     603711          SPACE2    JMP .
      03712     203715                    LAC .+3
      03713     105232                    JMS TYPET
      03714     623711                    JMP* SPACE2
      03715     003716                    .+1
      03716     201017                    .ASCII '  '<177>
      03717     700000
                                /
                                          .EOT
```

```
                        /TAPE 5 TC59 DATA RELIABILITY
                        /PATTERN GENERATION ROUTINES
                        /TC59 DATA RELIABILITY TEST
                        /ENTRANCE IS JMS GENPAT
                        /PATNUM = 0 TO 7 PATTERN NUMBER
                        /PARBT1 = 0 EVEN PARITY  10 ODD PARITY
                        /PATNUM + PARBT1 GETS PATTERNS 0 TO 17
                        /
                        /
                        /GENERATE PATTERNS CONTROL ROUTINE
                        /PATTERN NUMBER + PARITY BIT + ADDRESS
                        /OF PATTERN TABLE
                        /
03720   603720  GENPAT   JMP .
03721   200103          LAC PATNUM          /PATTERN NUMBER
03722   340104          TAD PARBT1          /+ PARITY BIT
03723   346073          TAD (PATTBL         /+ TABLE ADDRESS OF JMS
03724   345777          TAD (XCT            /+ EXECUTE INSTRUCTION
03725   043726          DAC .+1             /TO EXECUTE JMS TO PATTERN
03726   403730          XCT PATTRL          /GENERATE 1 OF 16 PATTERNS
03727   623720          JMP* GENPAT         /EXIT
                        /
                        /FIRST 8 JMS TO EVEN PARITY PATTERNS
03730   103750  PATTBL  JMS GNEV00          /HIGH FREQUENCE OUTSIDE TRACKS
03731   103754          JMS GNEV01          /SLIDING NO BIT
03732   103770          JMS GNEV02          /HIGH FREQUENCE ODD TRACKS
03733   103774          JMS GNEV03          /HIGH FREQUENCY INSIDE HALF OUT
03734   104000          JMS GNEV04          /CHARACTER COUNT NO 00
03735   104004          JMS GNEV05          /NO BIT EACH TRACK 3 FRAMES
03736   104020          JMS GNEV06          /SLIDING 0 18 BITS
03737   104024          JMS GNEV07          /RANDOM CHARACTER NO 00
                        /
                        /
                        /2ND 8 JMS TO ODD PARITY GENERATION
                        /
03740   104054          JMS GNOD00          /HALF FREQUENCY OUTSIDE TRACKS
03741   104060          JMS GNOD01          /SLIDING ONE BIT CHAR
03742   104074          JMS GNOD02          /HIGH FREQUENCY EVEN TRACKS
03743   104100          JMS GNOD03          /THREE ONES THREE 0 TRACK
03744   104114          JMS GNOD04          /INC CHARACTER 00 INCLUDED
03745   104120          JMS GNOD05          /THREE ONE BITS ALL TRKS
03746   104134          JMS GNOD06          /ALL ONES HIGH FREQUENCY ALL TRACKS
03747   104140          JMS GNOD07          /RANDOM WORD PATTERN
                        /
                        /PATTERN 0 EVEN PARITY HIGH FREQUENCY
                        /OUTSIDE SKEW PATTERN
                        /
03750   603750  GNEV00  JMP .
03751   104156          JMS STRONE
03752   006014          006014
03753   623750          JMP* GNEV00
                        /
                        .EJECT
```

```
****
                                /PATTERN 1 EVEN PARITY
                                /SLIDING 0 BIT CHARACTER PATTERN
                                /
03754   603754          GNEV01  JMP .
03755   104206                  JMS ST9WRD
03756   377577                  377577
03757   737737                  737737
03760   767767                  767767
03761   775775                  775775
03762   577377                  577377
03763   677677                  677677
03764   757757                  757757
03765   773773                  773773
03766   776776                  776776
03767   623754                  JMP* GNEV01
                                /
                                /
                                /PATTERN 2 EVEN PARITY
                                /HIGH FREQUENCY PATTERN EVEN TRACKS
                                /
03770   603770          GNEV02  JMP .
03771   104156                  JMS STRONE
03772   641503                  641503
03773   623770                  JMP* GNEV02
                                /
                                /
                                /PATTERN NO 3 EVEN PARITY
                                /HALF FREQUENCY OUTSIDE TRACKS
                                /HIGH FREQUENCY INSIDE TRACKS
                                /
03774   603774          GNEV03  JMP .
03775   104156                  JMS STRONE
03776   773773                  773773
03777   623774                  JMP* GNEV03
                                /
                                .EJECT
```

```
                                /
                                /PATTERN NUMBER 4 EVEN PARITY
                                /INCREMENTING CHARACTER PATTERN
                                /
04000   604000                  GNEV04  JMP .
04001   206074                          LAC (SNA
04002   104231                          JMS GENINC
04003   624000                          JMP* GNEV04
                                /
                                /
                                /PATTERN NO 5 EVEN PARITY
                                /3 0 BITS EACH TRACK EVERY 7TH WORD
                                /
04004   604004                  GNEV05  JMP .
04005   104307                          JMS STHALF
04006   177777                          177777
04007   677577                          677577
04010   737677                          737677
04011   757737                          757737
04012   767757                          767757
04013   773767                          773767
04014   775773                          775773
04015   776775                          776775
04016   777376                          777376
04017   624004                          JMP* GNEV05
                                /
                                        .EJECT
```

```
****
                        /PATTERN NUMBER 6 EVEN PARITY
                        /HIGH FREQUENCY ALL BUT PARITY
                        /
04020   604020          GNEV06  JMP .
04021   104156                  JMS STRONE
04022   177777                  177777
04023   624020                  JMP* GNEV06
                        /
                        /
                        /PATTERN NUMBER 7 EVEN PARITY
                        /RANDOM DATA PATTERN
                        /THROW AWAY ALL WORD WITH 00 CODES
                        /
04024   604024          GNEV07  JMP .
04025   104275                  JMS SETSTR
04026   777764                  LAW -MINLEN
04027   040013                  DAC 13
04030   103032                  JMS RANGEN
04031   040012                  DAC 12
04032   506075                  AND (177400
04033   741200                  SNA
04034   604030                  JMP GNEV07+4
04035   200012                  LAC 12
04036   506053                  AND (377
04037   741200                  SNA
04040   604030                  JMP GNEV07+4
04041   200012                  LAC 12
04042   104354                  JMS GT9PAR              /GET FOR ODD PARITY
04043   246076                  XOR (600000             /CHANGE TO EVEN
04044   060010                  DAC* 10
04045   440011                  ISZ 11
04046   741000                  SKP
04047   624024                  JMP* GNEV07
04050   440013                  ISZ 13
04051   604030                  JMP GNEV07+4
04052   104166                  JMS MOVEUP
04053   624024                  JMP* GNEV07
                        /
                        /
                        /FIRST OF ODD PARITY PATTERNS
                        /HALF FREQUENCY OUTSIDE TRACKS
                        /LOW FREQUENCY SKEW
                        /
04054   604054          GNOD00  JMP .
04055   104156                  JMS STRONE
04056   004004                  004004
04057   624054                  JMP* GNOD00
                        /
                                .EJECT
```

```
                        /ODD PARITY PATTERN 1
                        /SLIDING ONE BIT CHARACTER PATTERN
                        /
04060   604060          GNOD01  JMP .
04061   104206                  JMS ST0WRD
04062   400200                  400200
04063   040040                  040040
04064   010010                  010010
04065   002002                  002002
04066   200400                  200400
04067   100100                  100100
04070   020020                  020020
04071   004004                  004004
04072   002002                  002002
04073   624060                  JMP* GNOD01
                        /
                        /
                        /ODD PARITY PATTERN NUMBER 2
                        /HIGH FREQUENCY ODD NUMBERED TRACKS
                        /
04074   604074          GNOD02  JMP .
04075   104156                  JMS STRONE
04076   136274                  136274
04077   624074                  JMP* GNOD02
                        /
                        /
                        /ODD PARITY PATTERN NUMBER 3
                        /3 ONES 3 ZEROS  3 ONES  6 ZEROS EVERY TRACK
                        /
04100   604100          GNOD03  JMP .
04101   104307                  JMS STHALF
04102   017437                  017437
04103   740300                  740300
04104   037076                  037076
04105   700601                  700601
04106   076174                  076174
04107   601403                  601403
04110   174370                  174370
04111   003407                  003407
04112   770360                  770360
04113   624100                  JMP* GNOD03
                        /
                        /
                        /ODD PARITY PATTERN NUMBER 4
                        /CHARACTER COUNT PATTERN WITH 00 CODES
                        /
04114   604114          GNOD04  JMP .
04115   206077                  LAC (SKP
04116   104231                  JMS GENINC
04117   624114                  JMP* GNOD04
                        /
                                .EJECT
```

```
++++
                                /ODD PARITY PATTERN NUMBER 5
                                /EACH TRACK BY ITSELF FOR 3 FRAMES
                                /
04120   604120          GNOD05  JMP .
04121   104307                  JMS STHALF
04122   600000                  600000
04123   100200                  100200
04124   040100                  040100
04125   020040                  020040
04126   010020                  010020
04127   004010                  004010
04130   002004                  002004
04131   001002                  001002
04132   004001                  004001
04133   624120                  JMP* GNOD05
                                /
                                /
                                /ODD PARITY PATTERN NUMBER 6
                                /HIGH FREQUENCY ALL TRACKS
                                /
04134   604134          GNOD06  JMP .
04135   104156                  JMS STRONE
04136   777777                  777777
04137   624134                  JMP* GNOD06
                                /
                                /
                                /ODD PARITY PATTERN NUMBER 7
                                /RANDOM WORDS INCLUDING 00 CODES
                                /
04140   604140          GNOD07  JMP .
04141   104275                  JMS SETSTR
04142   777764                  LAW -MINLEN
04143   040014                  DAC 14
04144   103032                  JMS RANGEN
04145   104354                  JMS GT9PAR
04146   060010                  DAC* 10
04147   440011                  ISZ 11
04150   741000                  SKP
04151   624140                  JMP* GNOD07
04152   440014                  ISZ 14
04153   604144                  JMP GNOD07+4
04154   104166                  JMS MOVEUP
04155   624140                  JMP* GNOD07
                                /
                                .EJECT
```

```
                        /STORE WORD SUBROUTINES
                        /GENERATE PATTERNS IN WRITE BUFFER
                        /
04156   604156  STRONE  JMP .
04157   104275          JMS SETSTR          /SET UP INDEXES
04160   224156          LAC* STRONE         /GET WORD
04161   060010          DAC* 10             /STORE IT
04162   440011          ISZ 11              /FILLED BUFFER
04163   604161          JMP .-2             /NO FILL BUFFER
04164   444156          ISZ STRONE          /STEP EXIT
04165   624156          JMP* STRONE                 /EXIT
                        /MOVE THE FIRST SERIES OF
                        /RANDOM DATA WORDS IN WRITE BUFF
                        /SEVERAL TIMES UNTIL BUFFER FULL
04166   604166  MOVEUP  JMP .
04167   140016          DZM 16
04170   777764          LAW -MINLEN
04171   040014          DAC 14                      /SET MINIMUM LENTH
04172   206046          LAC (WRBUF-1        /START AT A NEW PLACE
04173   340016          TAD 16                      /IN WRBUF EACH MOVE PASS
04174   040015          DAC 15                      /TO GET WORDS
04175   220015          LAC* 15                     /GET A WORD
04176   060010          DAC* 10                     /MOVE IT UP
04177   440011          ISZ 11                      /BUFFER FULL
04200   741000          SKP                         /NO
04201   624166          JMP* MOVEUP                 /EXIT
04202   440014          ISZ 14                      /DONE TO END OF SERIES
04203   604175          JMP MOVEUP+7                /NO
04204   440016          ISZ 16
04205   604170          JMP MOVEUP+2
                        /
                        .EJECT
```

```
****
                                /STORE A 9 WORD PATTERN IN WRITE BUFFER
                                /
04206   604206          ST9WRD  JMP .
04207   104275                  JMS SETSTR              /SET INDEXES
04210   777767                  LAW -11                 /-7
04211   040012                  DAC 12                  /FOR COUNTING
04212   777777                  LAW -1                  /ADDRESS
04213   344206                  TAD ST9WRD              /-1
04214   040013                  DAC 13                  /FOR INDIRECTS
04215   220013          ST7LP   LAC* 13                 /GET NEXT WORD
04216   060010                  DAC* 10                 /STORE IT
04217   440011                  ISZ 11                  /BUFFER FULL
04220   741000                  SKP                     /NO
04221   604225                  JMP .+4                 /BUFFER FULL, EXIT
04222   440012                  ISZ 12                  /DONE 7 WORDS
04223   604215                  JMP ST7LP               /NO GET NEXT
04224   604210                  JMP ST9WRD+2            /RESET FOR NEXT 7
04225   206100                  LAC (11
04226   344206                  TAD ST9WRD              /ENTER +7
04227   044206                  DAC ST9WRD              /TO EXIT OVER DATA
04230   624206                  JMP* ST9WRD             /GET OUT
                                /
                                /
                                .EJECT
```

```
                        /GENERATE AN INCREMENTING CHARACTER PATTERN
                        /IF AC = SKP ODD PARITY ASC CODES OK
                        /IF AC = SNA EVEN PARITY THROW 000 AWAY XOR PARITY WITH 500000
                        /
04231   604231  GENINC  JMP .
04232   044270          DAC GENSKP          /STORE SKIP OR SNA
04233   546077          SAD (SKP            /IF AC = SKP
04234   750000          CLA                 /FIRST CHAR IS 00
04235   740200          SZA                 /IF AC = SNA
04236   206005          LAC (1              /FIRST CHAR I 0 1
04237   044274          DAC NXCHAR          /FIRST CHARACTER
04240   740200          SZA
04241   206076          LAC (600000
04242   044406          DAC INCXOR
04243   104275          JMS SETSTR          /SET UP 10 AND 11
04244   204274  GENWRD  LAC NXCHAR          /GET NEXT CHARACTER
04245   744010          RCL                 /MOVE IT INTO MIDDLE 6 BITS
04246   742010          RTL                 /OF THE WORD
04247   742010          RTL;        RTL;    RAL
04250   742010
04251   740010
04252   040012          DAC 12              /SAVE IT
04253   104264          JMS INCRIT          /GENERATE NEXT
04254   340012          TAD 12              /COMBINE WITH 1 AND 2
04255   104354          JMS GT9PAR
04256   244406          XOR INCXOR                  /IN CASE EVN
04257   060010          DAC* 10             /STORE IN BUFFER
04260   104264          JMS INCRIT          /FIRST CHAR NEXT WORD
04261   440011          ISZ 11              /FILLED BUFFER
04262   604244          JMP GENWRD          /NO
04263   624231          JMP* GENINC         /BUFFER FULL EXIT
                        //
                        .EJECT
```

```
****
     04264     604264          INCRIT    JMP .
     04265     204274                    LAC NXCHAR          /LAST CHARACTER
     04266     346005                    TAD (1              /+1
     04267     506101                    AND (77             /MASK 6 BITS
     04270     741200          GENSKP    SNA!SKP             /SNA EVEN PARITY - SKP ODD PARITY
     04271     206005                    LAC (1              /00 CODE ILLEGAL EVEN PARITY
     04272     044274                    DAC NXCHAR          /SAVE FOR NEXT TIME
     04273     624264                    JMP* INCRIT         /EXIT AC = CHAR
     04274     000000          NXCHAR    0                   /TO SAVE CHARACTER
                               /
                               /
                               /SET UP 10 AND 11 STORE PATTERN
                               /
     04275     604275          SETSTR    JMP .
     04276     200140                    LAC RECORD
     04277     740200                    SZA
     04300     200143                    LAC WRTLEN
     04301     741200                    SNA
     04302     774054                    LAW -MAXLEN
     04303     040011                    DAC 11              /WORD COUNT TO 11
     04304     206046                    LAC (WRBUF-1
     04305     040010                    DAC 10              /BUFFER-1 TO 10
     04306     624275                    JMP* SETSTR         /EXIT
                               /
                                         .EJECT
```

```
****
                                /STORE WORD AND HALF WORD PATTERN
04307   604307          STHALF  JMP .                   /ENTR
04310   104275                  JMS SETSTR                      /GET ADR AND WC
04311   744000                  CLL                     /TO INDICATE WORD1 WORD2
04312   777767                  LAW -11
04313   040012                  DAC 12                  /TO COUNT 9
04314   204307                  LAC STHALF
04315   040013                  DAC 13                  /TO GET LAST 8
04316   224307                  LAC* STHALF                     /GET FIRST
04317   741000                  SKP                     /SKP FOR FIRST WORD
04320   220013          SHLOOP  LAC* 13
04321   740002                  CML                     /COMP L=1 FIRST L=0 2ND WORD
04322   740400                  SNL                     /FIRST WORD OF PAIR
04323   604334                  JMP STHWD2                      /NO 2ND
04324   040014                  DAC 14                  /SAVE FIRST WRD
04325   060010                  DAC* 10                 /PUT IT IN BUFFER
04326   440011          STHINC  ISZ 11                  /BUFFER FULL
04327   741000                  SKP                     /NO
04330   604350                  JMP STHXIT                      /EXIT ST HALF
04331   440012                  ISZ 12                  /DONE 9
04332   604320                  JMP SHLOOP                      /NO
04333   604312                  JMP STHALF+3            /RESTORE 13 GET 1 OF 9
                                /2ND WORD OF PAIR IS AC COMBINE HALFS
04334   040015          STHWD2  DAC 15                  /SAVE 2ND OF PAIR
04335   506102                  AND (200377                     /MASK 2ND CHAR AND PAR
04336   040016                  DAC 16                  /SAVE IT
04337   200014                  LAC 14                  /GET 1ST OF PAIR
04340   506103                  AND (577400                     /MASK 1ST CHAR AND PAR
04341   340016                  TAD 16                  /COMBINE WITH 2ND
04342   060010                  DAC* 10                 /PUT IT IN BUFFER
04343   440011                  ISZ 11                  /BUFFER FULL
04344   741000                  SKP                     /NO
04345   604350                  JMP STHXIT                      /YES EXIT
04346   200015                  LAC 15                  /GET 2ND WORD
04347   604325                  JMP STHINC-1            /STORE AND COUNT
04350   204307          STHXIT  LAC STHALF                      /ENTR
04351   346100                  TAD (11                 /+9
04352   044307                  DAC STHALF                      /FOR EXIT
04353   624307                  JMP* STHALF
                                /
                                .EJECT
```

```
****
                                /GENERATE PARITY (ODD) FOR BOTH 8 BIT CHAR IN AC
     04354      604354  GT9PAR  JMP .
     04355      506104          AND (177777             /CLR UPPER 2 BITS (PARITY)
     04356      044404          DAC SVPWRD              /SAVE WORD
     04357      506075          AND (177400             /MASK FIRST CHAR
     04360      104371          JMS GETPBL              /GET ITS PARITY IN LINK
     04361      740020          RAR                 /MOVE TO 1ST CHAR PBIT
     04362      344404          TAD SVPWRD              /+ WORD
     04363      044404          DAC SVPWRD              /SAVE AGAIN
     04364      506053          AND (377            /MASK 2ND CHAR
     04365      104371          JMS GETPBL              /GET ITS PARITY IN LINK
     04366      742020          RTR                 /POSITION TO 2ND CHAR PBIT
     04367      344404          TAD SVPWRD              /+ REST OF WORD
     04370      624354          JMP* GT9PAR             /EXIT
     04371      604371  GETPBL  JMP .
     04372      144405          DZM PARCTR              /CLR BIT CTR
     04373      744020          RCR                 /PUT A BIT IN LINK
     04374      741400          SZL                 /IS IT A 1
     04375      444405          ISZ PARCTR              /YES +1 NUMBER BIT 3
     04376      740200          SZA                 /DONE ALL
     04377      604373          JMP .-4             /NO
     04400      204405          LAC PARCTR              /EXIT
     04401      740020          RAR                 /WITH LINK
     04402      750002          CML!CLA             /= ODD OR EVEN AC=0
     04403      624371          JMP* GETPBL
     04404      000000  SVPWRD  0
     04405      000000  PARCTR  0
     04406      000000  INCXOR  0
                                .EOT
```

```
                        /TC59 DATA RELIABILITY (TAPE 6) OF 9 TRACK
                        /READ PORTION TC59 DATA RELIABILITY TEST
                        /AC SWS 6 AND 7 WERE TO INDICATE
                        /READ MODE AT START
                        /SWS = 00 IS NON STOP
                        /SWS = 01 IS START STOP
                        /SWS = 10 OR 11 IS START STOP NON STOP RANDOM
                        /
04407   604407  READIT  JMP .
04410   200140          LAC RECORD
04411   740200          SZA
04412   604416          JMP .+4
04413   200113          LAC STPLEN              /SET UP INITIAL
04414   040145          DAC READLN      /READ LENGTH
04415   040146          DAC COMPLN      /AND COMPARE LENGTH
04416   777775          LAW -3
04417   044725          DAC RDPASS      /READ PASS COUNTER
04420   206105          LAC (RDBUF1-1   /RECORD INITIALLY
04421   040147          DAC READNX      /READ INTO BUFFER1
04422   206105          LAC (RDBUF2-1   /EVERY OTHER RECORD
04423   040150          DAC COMPNX      /ALTERNATES BUF1-BUF2
04424   707321  RDSTPD  MTCR
04425   604424          JMP .-1         /WAIT CU READY
04426   206106          LAC (2400       /READ ENI
04427   340114          TAD COMAND              /+ DRIVE AND DENSITY
04430   707326          MTLC            /LOAD COMMAND
04431   777777          LAW -1          /SET TAPE STOPPED
04432   044726          DAC RSTPFL      /DELETE NONSTOP COMPARE
04433   707301          MTTR            /WAIT DRIVE READY
04434   604433          JMP .-1
04435   200147  READGO  LAC READNX              /SET UP CA AND
04436   040033          DAC CALOC       /WC FOR NEXT BLOCK
04437   200145          LAC READLN      /TO BE READ IN
04440   040032          DAC WCLOC
04441   707304          MTGO            /START OR CONTINUE
04442   444726          ISZ RSTPFL      /GOING NONSTOP
04443   104575  NSCOMP  JMS CODATA      /YES COMPARE LAST BLOCK
04444   103627          JMS WAITI       /WAIT FOR INTERRUPT
04445   741100          SPA             /EF=1
04446   604522          JMP RDERRO      /YES SEE IF EOT
04447   750004          LAS
04450   740020          RAR
04451   740400          SNL
04452   604457          JMP RTSSTP
04453   203641          LAC STATRD
04454   506015          AND (4000
04455   740200          SZA
04456   605004          JMP RNDTAP
04457   200110  RTSSTP  LAC READMO      /GET READ MODE BITS
04460   740200          SZA             /NON STOP
04461   604473          JMP RDSTPC              /NO
04462   144726          DZM RSTPFL      /CLR STOPPED FLAG
04463   707322          MTAF            /AND MTF
04464   104727          JMS RDINCR      /INCR FOR NEXT BLOCK
04465   200140          LAC RECORD
```

```
04466   540141                  SAD LASRCR
04467   604471                  JMP RDEXIT
04470   604435                  JMP READGO          /GO AGAIN COMPARE THIS ONE
04471   104575          RDEXIT  JMS CODATA
04472   624407                  JMP* READIT
                        /
                                .EJECT
```

```
****
     04473    506[illegible]    RDSTPC    AND (4700          /MASK READ RNDM STOP
     04474    740220            SZA                          /USE SETTLE DOWN
     04475    604504            JMP RNDRDS                   /NO RANDOM
     04476    104727            JMS RDINCR                   /FOR NEXT BLOCK
     04477    104575            JMS COMATA                   /COMPARE THIS ONE
     04500    200147            LAC RECORD
     04501    540141            SAD LASRCR
     04502    624407            JMP* READIT
     04503    604424            JMP RDSTPD                   /GO AGAIN
     04504    103032    RNDRDS  JMS RANGEN                   /GET RNDOM
     04505    506054            AND (177                     /MASK Ø TO 127
     04506    740001            CMA                          /MAKE -1 TO -128
     04507    043316            DAC MTIMER                   /TO COUNT MILLISEC
     04510    346026            TAD (4
     04511    740100            SMA                          /NUMBER 4 OR LESS
     04512    604462            JMP RTSSTP+3                 /YES GO NONSTOP
     04513    777763            LAW -MSEC                    /TO COUNT 1 MILLISEC
     04514    043317            DAC MTIMER+1
     04515    443317            ISZ MTIMER+1                 /TIME 1 MILLISEC.
     04516    604515            JMP .-1
     04517    443316            ISZ MTIMER                   /WAITED ALL
     04520    604514            JMP .-4                      /NO
     04521    604476            JMP RDSTPC+3                 /COMPARE DATA START AGAIN
                                /MAG TAPE STATUS INDICATES ERR SEE IF EOT
     04522    506054    PDERRO  AND (373600                  /MASK OFF EOT
     04523    741200            SNA                          /OTHERS =1
     04524    605004            JMP RNDTAP                   /NO MUST BE EOT
     04525    750004            LAS                          /GET SWS
     04526    506037            AND (10000
     04527    741200            SNA                          /TYPE ALL READ ERRS
     04530    604543            JMP RTSREC                   /NO SEE IF RECOVR SELECTED
     04531    206107            LAC (TEXT15
     04532    105232            JMS TYPET                    /RD STATUS ERROR
     04533    707312            MTRC
     04534    105312            JMS TYPEC                    /TYPE COMMAND
     04535    203641            LAC STATRD
     04536    103646            JMS SPTCON                   /AND STATUS
     04537    200140            LAC RECORD
     04540    103646            JMS SPTCON                   /AND RECORD NUMBER
     04541    200145            LAC READLN
     04542    103646            JMS SPTCON                   /AND LENGTH
                                /
                                .EJECT
```

```
****
                        /+1 READ ERRS IF FIRST ERR PASS
      04543     777775  RTSREC  LAW -3
      04544     544725          SAD RDPASS          /FIRST PASS ERR
      04545     440155          ISZ RDERRS          /YES +1 RD ERRS
      04546     104727          JMS RDINCR          /INCR SET UP COMPARE
      04547     104575          JMS CODATA          /COMPARE DATA
      04550     750004          LAS
      04551     506014          AND (2000
      04552     741200          SNA                 /DELETE ALL RECORDRY
      04553     604566          JMP RPASN3                  /NO TRY AGAIN
      04554     777775  RPASS3  LAW -3
      04555     044725          DAC RDPASS          /RESET PASS COUNTER
      04556     203641          LAC STATRD
      04557     506015          AND (4000
      04560     740200          SZA                 /IS END OF TAPE=1
      04561     605006          JMP RNDTAP+2        /YES TYPE EOT
      04562     200140          LAC RECORD
      04563     540141          SAD LASRCR
      04564     624407          JMP* READIT
      04565     604424          JMP RDSTPD          /ALWAYS STOP TAPE ON ERR
                        /SEE IF ALL REREADS HAVE BEEN MADE
      04566     444725  RPASN3  ISZ RDPASS                  /DONE ALL REREADS
      04567     604572          JMP .+3             /NO
      04570     440154          ISZ NRREAD          /+1 NON REC READ
      04571     604554          JMP RPASS3          /DO NEXT RECORD
      04572     104762          JMS SETBAK                  /PUT POINTERS BACK THIS ONE
      04573     104770          JMS BACK1           /BACK UP
      04574     604424          JMP RDSTPD          /GO AGAIN
                        /
                                .EJECT
```

```
                                /COMPARE WRITE BUFFER AGAINST DATA READ
004575  604575          CODATA  JMP .
004576  144722                  DZM CERFLG+1            /0 ERROR COUNTER
004577  777777                  LAW -1
004600  244721                  DAC CERFLG              /SET HEADER NOT TYPED
004601  206744                  LAC (WBBUF-1
004602  244711                  DAC 11                  /TO GET WORDS WRITTEN
004603  200157                  LAC COMPNX
004604  040711                  DAC 11                  /TO GET WORDS READ
004605  200144                  LAC COMPLN
004606  040712                  DAC 12                  /TO COUNT SAME
004607  220711          COLOOP  LAC* 11                 /GET WORD WRITTEN
004610  044723                  DAC COGOOD              /SAVE FOR TYPE OUT
004611  220711                  LAC* 11                 /GET WORD READ
004612  544723                  SAD COGOOD              /ARE THEY=
004613  741000                  SKP                     /YES
004614  604640                  JMP COERRO              /COUNT OR TYPE ERRORS
004615  440712          COINCR  ISZ 12                  /DONE ALL WORDS
004616  624607                  JMP COLOOP              /NO COMPARE NEXT
004617  224722                  LAC CERFLG+1            /GET ERROR COUNT
004620  741000                  SNA                     /ANY ERRORS
004621  624575                  JMP* CODATA             /NO EXIT
004622  777775                  LAW -3
004623  544725                  SAD RDPASS              /FIRST PASS
004624  440153                  ISZ CMPERR              /YES +1 COMPARE ERRORS
004625  223641                  LAC STATRD              /GET STATUS THIS RECORD
004626  506054                  AND (373600
004627  741000                  SNA
004630  440152                  ISZ RNOSTA                      /NO EF +1 COMPARE NO ERR
004631  204575                  LAC CODATA              /GET ENTR ADDRSS
004632  506110                  AND (17777              /MASK ADDRS BITS
004633  546111                  SAD (NSCOMP+1           /ENTERED NONSTOP
004634  741000                  SKP                     /YES
004635  624575                  JMP* CODATA             /NOT NONSTP ENTER EXIT
004636  104770                  JMS BACK1               /BACKUP TAPE IS
004637  604550                  JMP RPASS3-4            /1 RECORD PAST FAILED
                        /
                                .EJECT
```

```
****
                                /DATA DID NOT COMPARE SAVE INCR TEST FOR TYPE
04640   044724          COERRO  DAC COREAD              /SAVE WORD READ
04641   750004                  LAS                     /GET SWS
04642   444722                  ISZ CERFLG+1            /+1 ERRS THIS BLOCK
04643   506437                  AND (10000
04644   741200                  SNA                     /TYPE ALL READ ERROR
04645   604615                  JMP COINCR              /NO
04646   444721                  ISZ CERFLG              /HDR TYPED ALREADY
04647   604674                  JMP COTYDA              /YES TYPE DATA
04650   203641                  LAC STATRD
04651   741100                  SPA
04652   604674                  JMP COTYDA-2
04653   204726                  LAC RSTPFL
04654   740200                  SZA                     /GOING NONSTOP
04655   604662                  JMP .+5                 /NO
04656   777777                  LAW -1
04657   040032                  DAC WCLOC               /STOP DATA
04660   206112                  LAC (17776                      /KEEP OUT
04661   040033                  DAC CALOC               /LAST WORD
04662   206113                  LAC (TEXT16                     /READ DATA ERROR
04663   105232                  JMS TYPET               /COMD STATUS RECORD LENGTH
04664   707312                  MTRC
04665   105312                  JMS TYPEC               /TYPE COMMAND
04666   203641                  LAC STATRD
04667   103646                  JMS SPTCON              /TYPE STATUS
04670   200151                  LAC CORECRD             /RECORD NUMBER
04671   103646                  JMS SPTCON
04672   200146                  LAC COMPLN              /AND RECORD LENTH
04673   103646                  JMS SPTCON
04674   206114                  LAC (TEXT17             /DATA ADDRESS
04675   105232                  JMS TYPET
04676   777774          COTYDA  LAW -4
04677   344721                  TAD CERFLG
04700   740100                  SMA                     /DONE 4 DATA TYPEOUTS
04701   604615                  JMP COINCR              /YES
04702   206115                  LAC (TEXT11             /CAR RET
04703   105232                  JMS TYPET               /LINE FEED LINE FEED
04704   204723                  LAC COGOOD
04705   105312                  JMS TYPEC               /TYPE DATA WRITTEN
04706   200010                  LAC 10
04707   103646                  JMS SPTCON              /AND BUFFER ADDRESS
04710   206116                  LAC (TEXT18                     /WRITTEN CARRET LF
04711   105232                  JMS TYPET
04712   204724                  LAC COREAD
04713   105312                  JMS TYPEC               /TYPE DATA READ
04714   200011                  LAC 11
04715   103646                  JMS SPTCON              /AND BUFFER ADDRESS
04716   206117                  LAC (TEXT19
04717   105232                  JMS TYPET               /READ CARRET LF
04720   604615                  JMP COINCR
                        /
                                .EJECT
```

```
***
04721   xxxxxx  ERRFLG  0                       /HEADER NOT TYPED=LAW -1
04722   xxxxxx          0                       /TO COUNT DATA ERROR
04723   xxxxxx  COSOUD  0                       /DATA WORD WRITTEN
04724   xxxxxx  COREAD  0                       /INCO WORD READ
04725   xxxxxx  RDPASS  0                       /READ PASS COUNTER
04726   xxxxxx  xSTPFL  0                       /TAPE NOT MOVING AT GO
                /SET UP POINTERS FOR NEXT RECORD
04727   624727  RDINCR  JMP .
04730   200147          LAC READNX              /SHUFFLE
04731   040117          DAC 17                  /BUFFER ADDRESSES
04732   200152          LAC COMPNX                      /FOR READ AND
04733   040147          DAC READNX              /COMPARE
04734   200117          LAC 17
04735   040152          DAC COMPNX
04736   200145          LAC READLN              /READ LENGTH
04737   040146          DAC COMPLN              /TO COMPARE LENGTH
04740   200140          LAC RECORD              /RECORD
04741   040151          DAC CORECRD             /TO COMPARE RECORD
04742   440142          ISZ RECORD              /+1 FOR NEXT RECORD
04743   200115          LAC RLKINC                      /GET LENGTH INCR
04744   741200          SNA                     /LENGTH CHANGING
04745   624727          JMP* RDINCR             /NO EXIT
                /RECORD LENGTH IS CHANGING COUNT IT
04746   340145          TAD READLN              /LENGTH + OR-INCR
04747   040145          DAC READLN              /FOR NEXT RECORD
04750   346051          TAD (MINLEN
04751   741200          SMA                     /LENGTH LESS THAN MIN
04752   604757          JMP RESTRL              /YES RESET TO MAX
04753   206052          LAC (MAXLEN+1           /MAXIMUM +1
04754   340145          TAD READLN              /-CURRENT
04755   741100          SMA                     /EXCFED MAX RESET TO MIN
04756   624727          JMP* RDINCR             /LENTH OK
04757   200113  RESTRL  LAC STPLEN              /STARTING LENTH
04760   040145          DAC READLN              /BACK TO INITIAL
04761   624727          JMP* RDINCR             /EXIT
                /
                        .EJECT
```

```
****
                                /SET RECORD POINTERS BACK BUFFERS LEFT ALONE
 04762   604762                 SETBAK  JMP .
 04763   200146                         LAC COMPLN
 04764   040145                         DAC READLN          /RESET READ LENGTH
 04765   200151                         LAC CORECRD
 04766   040147                         DAC RECORD          /AND RECORD NUMBER
 04767   624762                         JMP* SETBAK
                                /
                                /BACK SPACE 1 RECORD SAME DRIVE
                                /OR GET BACK IN SYNC FOR NONSTOP REREAD
 04770   604770                 BACK1   JMP .
 04771   707301                         MTTR
 04772   604771                         JMP .-1             /WAIT DRIVE READY
 04773   206072                         LAC (7400           /BACKSPACE
 04774   340114                         TAD COMAND                  /+ DRIVE AND DENSITY
 04775   707326                         MTLC                /LOAD COMMAND
 04776   777777                         LAW -1
 04777   040032                         DAC WCLOC           /1 RECORD
 05000   707304                         MTGO                /START TAPE
 05001   707341                         MTSF
 05002   605001                         JMP .-1             /WAIT FOR DONE
 05003   624770                         JMP* BACK1          /EXIT
                                /
                                /DRIVE HAS REACHED EOT IN READ TYPE OUT
 05004   104727                 RNDTAP  JMS RDINCR
 05005   104575                         JMS CODATA
 05006   206120                         LAC (TEXT20
 05007   105232                         JMS TYPET
 05010   206121                         LAC (TEXT2
 05011   105232                         JMS TYPET
 05012   105014                         JMS READMP
 05013   624407                         JMP* READIT
                                /
                                /DUMP READ ERROR COUNTERS
 05014   605014                 READMP  JMP .
 05015   200105                         LAC DRVDEN
 05016   742013                         RTL
 05017   742010                         RTL
 05020   105341                         JMS TY10CT
 05021   103702                         JMS SPACE3
 05022   200103                         LAC PATNUM
 05023   105341                         JMS TY10CT
 05024   103702                         JMS SPACE3
 05025   200104                         LAC PARBT1
 05026   742020                         RTR
 05027   740020                         RAR
 05030   105341                         JMS TY10CT
 05031   200105                         LAC DRVDEN
 05032   742020                         RTR
 05033   742020                         RTR
 05034   742020                         RTR
 05035   506007                         AND (3
                                /
                                        .EJECT
```

```
***
 0F036   326067          TAD (LAC DENTYP
 0F037   246142          DAC .+1
 0F040   203600          LAC DENTYP
 0F041   105232          JMS TYPET
 0F042   200111          LAC READMO
 0F043   742020          RTR
 0F044   742020          RTR
 0F045   742020          RTR
 0F046   742020          RTR
 0F047   742020          RTR
 0F050   506007          AND (3
 0F051   346060          TAD (LAC TYMODE
 0F052   246054          DAC .+1
 0F053   203574          LAC TYMODE
 0F054   105232          JMS TYPET
 0F055   200147          LAC RECORD
 0F056   105346          JMS TYDECI
 0F057   200136          LAC RLTROL
 0F060   742020          RTR
 0F061   742020          RTR
 0F062   742020          RTR
 0F063   742020          RTR
 0F064   506007          AND (3
 0F065   346062          TAD (LAC LTHTBL
 0F066   246067          DAC .+1
 0F067   203610          LAC LTHTRL
 0F070   105232          JMS TYPET
 0F071   206125          LAC (TEXT21          /READ ERROR =
 0F072   105232          JMS TYPET
 0F073   200155          LAC RDERRS
 0F074   105346          JMS TYDECI
 0F075   206126          LAC (TEXT22          /NON RECOVERED =
 0F076   105232          JMS TYPET
 0F077   200154          LAC NRREAD
 0F100   105346          JMS TYDECI
 0F101   206127          LAC (TEXT23          /DATA ERRORS =
 0F102   105232          JMS TYPET
 0F103   200153          LAC CMPERR
 0F104   105346          JMS TYDECI
 0F105   206130          LAC (TEXT24          /DATA NO STAT =
 0F106   105232          JMS TYPET
 0F107   200152          LAC RNOSTA
 0F110   105346          JMS TYDECI
 0F111   777777          LAW -1
 0F112   040156          DAC RDEOT
 0F113   625614          JMP* READMP
                 /
                         .EJECT
```

```
                        /WRITE RECOVERY UTILIZING EXTENDED INTER RECORD
                        /USER EITHER AFTER 7 REWRITES OR
                        /AFTER EACH WRITE ERROR IF STATISTICAL
                        /RECOVERY NOT SELECTED
                        /USED ONLY IF READ PASS SELECTED
05114   605114  XRGREC  JMP .
05115   777774          LAW -4
05116   040116          DAC WRPASS                      /TO COUNT 4 REWRITES
05117   750004          LAS
05120   506056          AND (140000
05121   740200          SZA
05122   605143          JMP XRGRCD
05123   104770          JMS BACK1               /BACK UP 1 RECORD
05124   206131          LAC (14400              /WRITE XIRG
05125   340114          TAD COMAND                      /+ DRIVE DENSITY PARITY
05126   707321          MTCR
05127   605126          JMP .-1                 /WAIT FOR CONTROL
05130   707326          MTLC
05131   200143          LAC WRTLEN              /SET UP WC AND
05132   040032          DAC WCLOC               /CURRENT ADDRESS
05133   206046          LAC (WRBUF-1
05134   040033          DAC CALOC
05135   707301          MTTR                    /WAIT FOR DRIVE
05136   605135          JMP .-1
05137   707304          MTGO                    /START WRITE XIRG
05140   103627          JMS WAITI               /WAIT FOR STATUS
05141   741120          SPA                     /ERROR
05142   605145          JMP .+4                 /YES
05143   777770  XRGRCD  LAW -10
05144   040116          DAC WRPASS              /RESET 7 COUNTER
05145   625114          JMP* XRGREC             /EXIT WRITE XIRG
05146   506054          AND (373600             /MASK OFF EOT
05147   741200          SNA                     /SOME OTHER BIT
05150   605143          JMP XRGRCD                      /NOT EOT ONLY
05151   440116          ISZ WRPASS              /DONE 4 XIRG
05152   605117          JMP XRGREC+3            /NO DO 1 MORE
                        /
                        .EJECT
```

```
                                /
                                /TYPEOUT STATUS EVERY 4 XFRS,
 MP153      206132                      LAC (TEXT1
 MP154      105232                      JMS TYPET              /WRITE STATUS ERROR
 MP155      777315                      MTRC
 MP156      105310                      JMS TYPEC              /TYPE COMMAND
 MP157      203641                      LAC STATRD
 MP160      105446                      JMS SPTCON             /TYPE STATUS
 MP161      203142                      LAC RECORD
 MP162      105446                      JMS SPTCON             /TYPE RECORD NUMBER
 MP163      206133                      LAC (TEXT14            /4TH EXTENDED REC GAP
 MP164      105232                      JMS TYPET
 MP165      203641                      LAC STATRD
 MP166      506015                      AND (4400
 MP167      741220                      SNA                    /EOT=1
 MP170      605115                      JMP XRGREC+1           /NO TRY 4 MORE
 MP171      206134                      LAC (5400              /WRITE
 MP172      340105                      TAD DRVDEN             /END OF FILE
 MP173      777726                      MTLC
 MP174      740000                      NOP
 MP175      707304                      MTGO
 MP176      103627                      JMS WAITI /WAIT EOF DONE
 MP177      625114                      JMP* XRGREC            /EXIT
                                /
                                        .EJECT
```

```
****
 05200  605200          GOBKWD  JMP .
 05201  200140                  LAC RECORD              /GET LAST WRITTEN
 05202  040141                  DAC LASRCR              /SAVE IT
 05203  200144                  LAC WRRECR              /RESTORE TO FIRST
 05204  040140                  DAC RECORD
 05205  740200                  SZA                     /BLOCK 0 FIRST
 05206  605211                  JMP .+3                 /NO BACKSPACE
 05207  103614                  JMS REWIND              /YES REWIND
 05210  625200                  JMP* GOBKWD             /EXIT
 05211  777777                  LAW -1
 05212  340140                  TAD RECORD              /TWO COMPLEMENT
 05213  740001                  CMA                     /FIRST RECORD
 05214  340141                  TAD LASRCR              /FROM LAST RECORD=DIFF
 05215  740001                  CMA
 05216  040032                  DAC WCLOC               /MAKE-FOR BACKUP
 05217  440032                  ISZ WCLOC               /2 COMP ALSO
 05220  206072                  LAC (7400               /BKSPAC
 05221  340114                  TAD COMAND              /+ DRIVE PAR DENS
 05222  707321                  MTCR
 05223  605222                  JMP .-1                 /WAIT C4 READY
 05224  707326                  MTLC
 05225  707301                  MTTR
 05226  605225                  JMP .-1                 /WAIT DRIVE READY
 05227  707304                  MTGO
 05230  103627                  JMS WAITI               /WAIT DONE
 05231  625200                  JMP* GOBKWD             /EXIT
                        /
                                .EOT
```

```
                        /
                        /TC58 DATA RELIABILITY TEST TAPE 7 OF 9 TRACK
                        /TYPE OUT ROUTINES
                        /TYPET OUTPUT 5-7 PACKED ASCII CHARACTERS
                        /
05232   605232          TYPET   JMP .
05233   045307                  DAC CMDPTR
05234   777777                  LAW -1
05235   045312                  DAC PAIRCT
                        /
05236   105254          TYPLUP  JMS GETCHR
05237   546052                  SAD (177
05240   625232                  JMP* TYPET
05241   741200                  SNA
05242   605236                  JMP TYPLUP
05243   346231                  TAD (200
05244   105246                  JMS TY1ASC
05245   605236                  JMP TYPLUP
                        /
                        /
                        /OUTPUT 1 ASCII CHARACTER AC = CHAR
                        /
05246   605246          TY1ASC  JMP .
05247   700406                  TLS
05250   700401                  TSF
05251   605250                  JMP .-1
05252   700402                  TCF
05253   625246                  JMP* TY1ASC
                        /
                        /
                        /UNPACK ROUTINE 5-7 ASCII
                        /
05254   605254          GETCHR  JMP .
05255   445312                  ISZ PAIRCT
05256   605270                  JMP NUCHAR
05257   225307          NUPAIR  LAC* CMDPTR
05260   045305                  DAC LFHALF
05261   445307                  ISZ CMDPTR
05262   225307                  LAC* CMDPTR
05263   045306                  DAC RTHALF
05264   445307                  ISZ CMDPTR
05265   045312                  DAC PAIRCT
05266   777773                  LAW 17773
05267   045310                  DAC PAIRCT
05270   777770          NUCHAR  LAW 17770
05271   045311                  DAC TEMPER
05272   205306          GETBCK  LAC RTHALF
05273   740211                  RAL
05274   445311                  ISZ TEMPER
05275   605302                  JMP GETMRE
05276   506052                  AND (177
05277   625254                  JMP* GETCHR
                        /
                                .EJECT
```

```
****
     05300    045336          GETMRE    DAC RTHALF
     05301    205335                    LAC LFHALF
     05302    740010                    RAL
     05303    045335                    DAC LFHALF
     05304    605272                    JMP GETBCK
                              /
     05305    000000          LFHALF    0
     05306    000000          RTHALF    0
     05307    000000          CMDPTR    0
     05310    000000          PAIRCT    0
     05311    000000          TEMPER    0
                              /
                              /
                              /TYPE CONTENTS OCTAL
                              /
     05312    605312          TYPEC     JMP .
     05313    045421                    DAC TYPECT
     05314    742020                    RTR;      RTR;      RTR
     05315    742020
     05316    742020
     05317    045422                    DAC TYPECT+1
     05320    742020                    RTR;      RTR;      RTR
     05321    742020
     05322    742020
     05323    105331                    JMS TY2OCT
     05324    205422                    LAC TYPECT+1
     05325    105331                    JMS TY2OCT
     05326    205421                    LAC TYPECT
     05327    105331                    JMS TY2OCT
     05330    625312                    JMP* TYPEC
                              /
                              .EJECT
```

```
                                /TYPE 2 OCTAL CHARACTERS
                                /
0F331   605331          TY2OCT  JMP .
0F332   045423                  DAC TYPECT+2
0F333   740022                  RTR;        DAP
0F334   740022
0F335   105341                  JMS TY1OCT
0F336   225423                  LAC TYPECT+2
0F337   105341                  JMS TY1OCT
0F340   625331                  JMP* TY2OCT
                                /
                                /
                                /TYPE 1 OCTAL CHARACTER
                                /
0F341   605341          TY1OCT  JMP .
0F342   565776                  AND (7
0F343   345775                  TAD (260
0F344   105246                  JMS TY1ASC
0F345   625341                  JMP* TY1OCT
                                /
                                /
                                /TYPE CONTENTS DECIMAL
                                /ENTER AC = 18
                                /BIT UNSIGNED NUMBER
                                /CONVERT TO 6 DECIMAL DIGITS AND OUTPUT
                                /
0F346   605346          TYDECI  JMP .
0F347   045412                  DAC TYOUOT
0F350   777772                  LAW -6
0F351   045311                  DAC TEMPER
0F352   045421                  DAC TYPECT
0F353   206135                  LAC (DCHAR6
0F354   045422          TYDLUP  DAC TYPECT+1
0F355   105371                  JMS TYVERT
0F356   065422                  DAC* TYPECT+1
0F357   777777                  LAW -1
0F360   345422                  TAD TYPECT+1
0F361   445311                  ISZ TEMPER
0F362   605354                  JMP TYDLUP
0F363   225422          TYDOUT  LAC* TYPECT+1
0F364   105246                  JMS TY1ASC
0F365   445422                  ISZ TYPECT+1
0F366   445421                  ISZ TYPECT
0F367   605363                  JMP TYDOUT
0F370   625346                  JMP* TYDECI
                                /
                                .EJECT
```

```
****
                                /CONVERT 1 DECIMAL CHARACTER TO ASCII
                                /(TYQUOT) = 18-BIT UNSIGNED NUMBER
                                /
05371   605371          TYVERT  JMP .
05372   205412                  LAC TYQUOT
05373   145412                  DZM TYQUOT
05374   740100                  SMA
05375   605402                  JMP TVRTPL
05376   445412                  ISZ TYQUOT
05377   346136                  TAD (-12
05400   741100                  SPA
05401   605376                  JMP .-3
05402   346136          TVRTPL  TAD (-12
05403   741100                  SPA
05404   605407                  JMP .+3
05405   445412                  ISZ TYQUOT
05406   605402                  JMP TVRTPL
05407   346137                  TAD (12
05410   345775                  TAD (260
05411   625371                  JMP* TYVERT
                                /
05412   000000          TYQUOT  0
05413   000000          DCHAR1  0
05414   000000          DCHAR2  0
05415   000000          DCHAR3  0
05416   000000          DCHAR4  0
05417   000000          DCHAR5  0
05420   000000          DCHAR6  0
05421   000000          TYPECT  0
05422   000000                  0
05423   000000                  0
                                /
                                .EJECT
```

```
                                /TEXT 1
                                /WRITE STATUS ERROR
                                /COMD STATUS
                                /XXXXXX YXXXXX
                                /
05424   064241          TEXT1   .ASCII <15><12><12>'WRITE STATUS ERROR'
05425   253644
05426   446512
05427   520046
05430   522032
05431   452646
05432   202132
05433   251236
05434   510430
05435   000020
05436   064244                  .ASCII <15><12>' COMD   STATUS'
05437   041636
05440   466104
05441   020100
05442   516510
05443   152252
05444   514000
05445   000000
05446   064257                  .ASCII <15><12><177>
05447   700000
                                /
                                /
                                /TEXT 2
                                /END OF TAPE
                                /DRV PAT PAR DEN MODE RECRDS LENGTH
                                /
05450   064241          TEXT2   .ASCII <15><12><12>'END OF TAPE'
05451   242634
05452   421011
05453   743100
05454   522032
05455   042400
05456   064250                  .ASCII <15><12>'DRV PAT PAR DEN '
05457   451254
05460   202410
05461   152100
05462   502032
05463   220210
05464   426344
05465   000000
05466   466370                  .ASCII 'MODE RECRDS LENGTH'
05467   442500
05470   512130
05471   351210
05472   515011
05473   442634
05474   436511
05475   000000
05476   064244                  .ASCII <15><12><40><177>
```

```
05477   077400
                        /
                        /
                        /TEXT 3  3 SPACES
                        /
05500   201004          TEXT3     .ASCII <40><40><40><177>
05501   077400
                        /
                        /
                        /TEXT 4 200 FOR 200 BPI
                        /
05502   201006          TEXT4     .ASCII '  200'<177>
05503   230140
05504   774000
05505   000000
                        /
                                  .EJECT
```

```
                                /TEXT 5  556 FOR 556 BPI
                                /
005506  201264                 TEXT5    .ASCII '  556'<177>
005507  532554
005510  774000
005511  000000
                                /
                                /
                                /TEXT6  800 FOR 800 BPI
                                /
005512  201067                 TEXT6    .ASCII '  800'<177>
005513  032140
005514  774000
005515  000000
                                /
                                /
                                /TEXT 7  NSTP FOR NONSTOP MODE
                                /
005516  202352                 TEXT7    .ASCII ' NSTP '<177>
005517  352240
005520  203760
005521  000000
                                /
                                /
                                /TEXT 8  SSTP FOR START STOP MODE
                                /
005522  202472                 TEXT8    .ASCII ' SSTP '<177>
005523  352240
005524  203760
005525  000000
                                /
                                /
                                /TEXT 9 RNDM FOR RANDOM START STOP NONSTOP
                                /
005526  202451                 TEXT9    .ASCII ' RNDM '<177>
005527  642232
005530  203760
005531  000000
                                /
                                /
                                /TYPE MINIMUM RECORD LENGTH IN CHARACTERS
                                /
005532  201004                 TYPMIN   .ASCII '    24 MIN'<177>
005533  020100
005534  311504
005535  046622
005536  473760
005537  000000
                                /
                                /
                                /TYPE MAXIMUM RECORD LENGTH IN CHARACTERS
                                /
005540  201004                 TYPMAX   .ASCII '  4008 MAX'<177>
005541  032140
```

```
JF542       301604
JF543       046602
JF544       543765
JF545       000000
```

/

.EJECT

```
****
005546  000700          S
                        /TYPE AVERAGE LENGTH MIN TO MAX
                        /
005547  201004          TYPAV1    .ASCII '   2016 MIN TO MAX'<177>
005550  031140
005551  305544
005552  046622
005553  471012
005554  447500
005555  466033
005556  077400
                        /
                        /
                        /TYPE AVERAGE MAX TO MIN
                        /
005557  201004          TYPAV2    .ASCII '   2016 MAX TO MIN'<177>
005560  031140
005561  305544
005562  046602
005563  541012
005564  447500
005565  466231
005566  677400
                        /
                        /
                        /TEXT 10  WRITE ERRORS =
                        /
005567  064252          TEXT10    .ASCII <15><12>'WRITE ERRORS='<177>
005570  751222
005571  522124
005572  042644
005573  512372
005574  251572
005575  774000
005576  000000
                        /
                        /
                        /TEXT 11 CAR RET LINEFEED
                        /
005577  064257          TEXT11    .ASCII <15><12><177>
005600  700000
                        /
                        /
                        /TEXT 12  RECOVERED AT
                        /
005601  512130          TEXT12    .ASCII 'RECOVERED AT '<177>
005602  347654
005603  426450
005604  542100
005605  406504
005606  077400
                        /
                        /
                                  .EJECT
```

```
****
                                    /TEXT 13 PERMANENT BAD/SPT
                                    /
05607       064252                  TEXT13     .ASCII <15><12>'PERMANENT BADSPT '<177>
05610       042644
05611       466031
05612       642634
05613       521017
05614       240613
05615       516412
05616       420376
                                    /
                                    /
                                    /TEXT 14  XIRG WRITTEN 4 TIMES
                                    /
05617       202611                  TEXT14 '   .ASCII ' XIRG WRITTEN 4 TIMES'<177>
05620       151216
05621       202572
05622       244650
05623       522131
05624       620150
05625       202511
05626       146612
05627       517760
05630       000000
                                    /
                                    /
                                    /TEXT 15
                                    /READ STATUS ERROR
                                    /COMD STATUS RECORD LENGTH
                                    /
05631       064241                  TEXT15     .ASCII <15><12><12>'READ STATUS ERROR'
05632       251212
05633       406104
05634       051650
05635       406512
05636       551500
05637       426452
05640       247644
05641       064244                             .ASCII <15><12>' COMD STATUS RECORD LENGTH'<15><12><177>
05642       041636
05643       466104
05644       051650
05645       406512
05646       551500
05647       512130
05650       347644
05651       421711
05652       442634
05653       436511
05654       006424
05655       774000
05656       000000
                                    /
                                    /
```

```
                                /TEXT 16  READ DATA ERROR
                                /
005657      064241              TEXT16    .ASCII <15><12><12>'READ DATA ERROR'<15><12>
005660      251212
005661      406104
005662      042202
005663      522024
005664      042644
005665      512372
005666      206424
005667      202071                        .ASCII ' COMD   STATUS  RECORD  LENGTH'<15><12><177>
005670      746610
005671      201004
005672      051650
005673      406512
005674      551500
005675      202450
005676      541636
005677      512104
005700      020230
005701      426350
005702      752220
005703      064257
005704      700000
                                /
                                /
                                /TEXT 17  DATA ADDRESS
                                /
005705      064244              TEXT17    .ASCII <15><12>' DATA   ADDRS'<15><12><177>
005706      042202
005707      522024
005710      020100
005711      406110
005712      451246
005713      064257
005714      700000
                                /
                                /
                                /TEXT 18  DATA WRITTEN
                                /
005715      202572              TEXT18    .ASCII ' WRITTEN'<15><12><177>
005716      244650
005717      522131
005720      606424
005721      774000
005722      000000
                                /
                                /
                                /
                                /TEXT 19  DATA READ
                                /
005723      202450              TEXT19    .ASCII ' READ'<15><12><177>
005724      540610
005725      064257
005726      700000
```

```
                                /
                                /
                                /TEXT 20  READ PASS
                                /
005727      064241              TEXT20    .ASCII <15><12><12>'READ PASS'<177>
005730      251212
005731      406104
005732      050200
005733      516477
005734      700000
                                /
                                /
                                /
                                          .EJECT
```

```
****
                                /TEXT 21  READ ERRORS =
                                /
05735   064252                  TEXT21    .ASCII <15><12>'READ ERRORS = '<177>
05736   242602
05737   421010
05740   551244
05741   476452
05742   320172
05743   203760
05744   000000
                                /
                                /
                                /TEXT 22  NON RECOVERABLE =
                                /
05745   064251                  TEXT22    .ASCII <15><12>'NON RECOVERABLE='<177>
05746   647634
05747   202450
05750   541636
05751   532132
05752   240604
05753   462127
05754   577400
                                /
                                /
                                /TEXT 23  DATA ERRORS =
05755   064250                  TEXT23    .ASCII <15><12>'DATA ERRORS='<177>
05756   440650
05757   405010
05760   551244
05761   476452
05762   336776
                                /
                                /
                                /TEXT 24  DATA ERR WITH NO STATUS ERR
                                /
05763   064250                  TEXT24    .ASCII <15><12>'DATA NO STATUS='<177>
05764   440650
05765   405011
05766   647500
05767   516510
05770   152252
05771   515737
05772   700000
                                /
        000000                            .END
05773   000215          *LIT
05774   000370          *LIT
05775   000260          *LIT
05776   000007          *LIT
05777   400000          *LIT
06000   017677          *LIT
06001   000270          *LIT
06002   000271          *LIT
06003   000017          *LIT
```

```
06004   000376   *LIT
06005   000001   *LIT
06006   000374   *LIT
06007   000003   *LIT
06010   000400   *LIT
06011   000002   *LIT
06012   001000   *LIT
06013   001400   *LIT
06014   002000   *LIT
06015   004000   *LIT
06016   000240   *LIT
06017   017700   *LIT
06020   000010   *LIT
06021   000300   *LIT
06022   000060   *LIT
06023   006000   *LIT
06024   401107   *LIT
06025   000020   *LIT
06026   000004   *LIT
06027   000040   *LIT
06030   000100   *LIT
06031   000200   *LIT
06032   000126   *LIT
06033   001036   *LIT
06034   776000   *LIT
06035   040000   *LIT
06036   020000   *LIT
06037   010000   *LIT
06040   700000   *LIT
06041   003071   *LIT
06042   003061   *LIT
06043   700300   *LIT
06044   060000   *LIT
06045   004400   *LIT
06046   007777   *LIT
06047   440137   *LIT
06050   000177   *LIT
06051   000014   *LIT
06052   003725   *LIT
06053   000377   *LIT
06054   373600   *LIT
06055   005424   *LIT
06056   100000   *LIT
06057   203600   *LIT
06060   203574   *LIT
06061   003574   *LIT
06062   203610   *LIT
06063   005567   *LIT
06064   000127   *LIT
06065   005577   *LIT
06066   005601   *LIT
06067   005607   *LIT
06070   005450   *LIT
06071   603634   *LIT
06072   007400   *LIT
```

```
006073      003732      *LIT
006074      741200      *LIT
006075      177400      *LIT
006076      000000      *LIT
006077      741000      *LIT
006100      000011      *LIT
006101      000077      *LIT
006102      200377      *LIT
006103      577400      *LIT
006104      177777      *LIT
006105      013723      *LIT
006106      002400      *LIT
006107      005631      *LIT
006110      017777      *LIT
006111      004444      *LIT
006112      017776      *LIT
006113      005657      *LIT
006114      005705      *LIT
006115      005577      *LIT
006116      005715      *LIT
006117      005723      *LIT
006120      005727      *LIT
006121      005450      *LIT
006122      203600      *LIT
006123      203574      *LIT
006124      203610      *LIT
006125      005735      *LIT
006126      005745      *LIT
006127      005755      *LIT
006130      005763      *LIT
006131      014400      *LIT
006132      005424      *LIT
006133      005617      *LIT
006134      005400      *LIT
006135      005420      *LIT
006136      777766      *LIT
006137      000012      *LIT
```

```
-LLEOS     01075
-LLEOT     01047
-ACK1      04770
(ACK2      03655
-LKINC     00115
-OTBIT    100000
(ALOC     000033
)OMEND     02027
)DRIVE     00101
)DRVRT     01027
)ERFIG     04721
)HARIN     01036
)HGDRV     00767
)HGPAT     00636
)HRPAR     00653
)LRAIL     00737
)LRTRL     03072
)MDPTR     05307
)MPERR     00153
)ODATA     04575
)OFRRO     04640
)OGOOD     04723
)OINCR     04615
)OLOOP     04607
)OMAND     00114
)OMPIN     00146
)OMPNX     00150
)OREAD     04724
)ORECR     00151
)OTYDA     04676
)RLFSP     00466
)THDFX     00724
)TRDMP     02004
)CHAR1     05413
)CHAR2     05414
)CHAR3     05415
)CHAR4     05416
)CHAR5     05417
)CHAR6     05420
)E)TYP     03600
)RINCR    000040
)RVADR     01037
)RVDEN     00105
)R)TAB    007400
)R1TAB    007440
)R2TAB    007500
)R3TAB    007540
)R4TAB    007600
)R5TAB    007640
)R6TAB    007700
)R7TAB    007740
)HERTX     02054
)N)TAB     03565
)OSFIG     00125
)RWDMP     02000
```

```
-R-OR       03370
-XFCNT      00123
 XFCUT      00510
-XFTST      00122
-XITMO      00112
FDRIVE      00102
-I/6TX      00502
-E-INC      04231
GETPAT      03720
-E-SKP      04270
-E-WRD      04244
GETBCK      05272
GETCHR      05254
GETMRE      05300
GETPRL      04371
-NEV00      03750
-NEV01      03754
-NEV02      03770
-NEV03      03774
-NEV04      04000
-NEV05      04004
-NEV06      04020
-NEV07      04024
-NOD00      04054
-NOD01      04060
-NOD02      04074
-NOD03      04100
-NOD04      04114
-NOD05      04120
-NOD06      04134
-NOD07      04140
-OK-KWD     05200
-OTST       00561
-T-PAR      04354
INCRIT      04264
INCRIC      00621
INCTRL      03604
INCWMO      00604
INCXOR      04406
INFCO       03634
_ARROR      00141
_D%        707324
_F-AIF      05305
_T-TRL      03610
MAXLEN     003724
MINLEN     000014
NOBIT       00107
NOVEUP      04166
NSBITS      00100
NSEC       000515
NTAF       707322
NTCR       707321
NTGO       707304
NTIMER      03316
NTLC       707326
```

```
ATAC        707312
ATAS        707352
ATAF        707341
ATTR        707301
AVCTRS       00715
BDINCR       03174
BDNSTP       03223
BDTSWS       03144
BRREAD       00154
BSCOMP       04443
BUCHAR       05270
BUCTST       00117
BUPAIR       05257
BXCHAR       04274
CKTEXT       00505
DAIRCT       05310
DARBT1       00104
DARCTR       04405
DASSWS       03016
DATNUM       00103
DATTRL       03730
DERRRS       00137
DANCON       03057
DANDFX       03060
DANGEN       03032
DANSAV       03071
DANSTP       03277
DANTAD       03047
DANTRL       03061
DDBUF1      013724
DDBUF2      013724
DDEOT        00156
DDERRO       04522
DDERRS       00155
DDETFX       02043
DDEXIT       04471
DDINCR       04727
DDPASS       04725
DDSTPC       04473
DDSTPD       04424
DEADCO       04435
DEADIT       04407
DEADIN       00145
DEADMO       00110
DEADMP       05014
DEADNX       00147
DECORD       00140
DESYS        00111
DETV1        00130
DETV2        00131
DETV3        00132
DETV4        00133
DETV5        00134
DETV6        00135
DETV7        00136
```

EST1	01135
EST10	01405
EST11	02075
EST2	01160
EST3	01203
EST4	01225
EST5	01253
EST6	01301
EST7	01343
ES2K	03352
EXT1	05424
EXT10	05567
EXT11	05577
EXT12	05601
EXT13	05607
EXT14	05617
EXT15	05631
EXT16	05657
EXT17	05705
EXT18	05715
EXT19	05723
EXT2	05450
EXT20	05727
EXT21	05735
EXT22	05745
EXT23	05755
EXT24	05763
EXT3	05500
EXT4	05502
EXT5	05506
EXT6	05512
EXT7	05516
EXT8	05522
EXT9	05526
REENT	01064
SPUNL	00546
STDEX	00120
STEXT	00461
STSTP	03247
STTRL	017700
STYOS	00264
S101 1	01431
S101 2	01417
Y-TRL	05402
Y-ECI	05346
Y-LUP	05354
Y-OUT	05363
Y-ODE	03574
Y-AV1	05547
Y-AV2	05557
Y-EC	05312
Y-ECT	05421
Y-ET	05232
Y-LUP	05236
Y-MAX	05540

```
'Y-MIN      05532
'Y-OUT      05412
'Y-ALL      03552
'Y-ECV      03535
'Y/ERT      05371
'Y1ASC      05246
'Y1OCT      05341
'Y2OCT      05331
'1'ROP      01471
'1-RND      01513
'11END      02155
'11FLG      02200
'11INC      02177
'11LP1      02117
'11RDL      02135
'L-DRV      00222
'L TST      00273
!AITI       03627
!AITKY      01030
!ATRDY      03642
!CLOC      000032
!P-UF      010000
!R'CHEK     00127
!R-TEX      02032
!RITIT      03103
!R-ASS      00116
!R-ECR      00144
!RIOMP      03451
!RTEOT      00142
!RTLEN      00143
(RRRCD      05143
(RGREC      05114
'ERDTX      00477
```

1I'LEN	00014
NCLOC	00032
CALOC	00033
)RINCR	00040
1S=ITS	00100
)D=IVE	00101
FD=IVE	00102
PAINUM	00103
PA=RT1	00104
)R/DEN	00105
RLTROL	00106
1OOBIT	00107
READMO	00110
REGSyS	00111
EXITMO	00112
STRLEN	00113
COMAND	00114
RLKINC	00115
NRPASS	00116
NUMTST	00117
TSTDFX	00120
TRLCNT	00121
EXFTST	00122
EXFCNT	00123
SWTEST	00124
EOSFIG	00125
SVPECR	00126
NRCHFK	00127
RECV1	00130
RECV2	00131
RECV3	00132
RECV4	00133
RECV5	00134
RECV6	00135
RECV7	00136
PERMRS	00137
RECORD	00140
LASRCR	00141
NRTEOT	00142
NRTLEN	00143
NR=ECR	00144
RE=DIN	00145
CO=PIN	00146
READNX	00147
CO=PNX	00150
CO=ECR	00151
ENDSTA	00152
CMPERR	00153
NR=EAD	00154
NDERRS	00155
RDFOT	00156
RELIAB	00200
AL)DRV	00222
SLTSTS	00241
TSTYOS	00264

```
[illegible] TST     00273
[illegible] TX1     00425
[illegible] TX2     00476
[illegible]TEXT     00461
[illegible]ESP      00466
[illegible]3TX      00471
[illegible]2TX      00474
[illegible]0TX      00477
[illegible]6TX      00512
[illegible]EXT      00515
[illegible]CUT      00510
[illegible]C        00515
[illegible]UNL      00546
[illegible]TST      00561
[illegible]MMD      00604
[illegible]RIC      00621
[illegible]PAT      00636
[illegible]PAR      00653
[illegible]TST      00667
[illegible]TRS      00706
[illegible]TRS      00715
[illegible]DFX      00724
[illegible]AIL      00737
[illegible]ERRV     00752
[illegible]DPV      00767
[illegible]FUN      01007
[illegible]VBT      01027
[illegible]ITKY     01030
[illegible]RTN      01036
[illegible]ADR      01037
[illegible]EOT      01047
[illegible]EOT      01064
[illegible]EOS      01075
[illegible]TST      01107
[illegible]T0       01121
[illegible]T1       01135
[illegible]T2       01160
[illegible]T3       01203
[illegible]T4       01225
[illegible]T5       01253
[illegible]T6       01301
[illegible]T7       01343
[illegible]T1W      01405
[illegible]0L2      01417
[illegible]0L1      01431
[illegible] RDP     01471
[illegible]RNU      01513
[illegible]DMP      02000
[illegible]DMP      02004
[illegible] END     02027
[illegible]TEX      02032
[illegible]TEX      02043
[illegible]RTX      02054
[illegible]T11      02075
[illegible]LP1      02117
```

```
T11ROL      02135
T11END      02155
T11INC      02177
T11FLG      02200
ST1TES      03000
PASSWS      03016
PASGEN      03032
PASTAD      03047
PASCON      03057
PASDEX      03060
PASTRL      03061
PASSAV      03071
CLRTRL      03072
PRTTIT      03103
SOTSWS      03144
NOINCR      03174
STRTOP      03213
PONSTP      03223
TSTSTP      03247
STOPOP      03257
STRPAT      03267
PASSTP      03277
ATIMER      03316
TESINC      03320
PESETL      03343
TES2K       03352
ERROR       03370
TESREC      03412
STAREC      03434
PRTDMP      03451
TYPECV      03535
TYPALL      03552
PNOTAP      03565
TYPODE      03574
PENTYP      03600
INCTRL      03604
LT-TRL      03610
PE-INO      03614
PATTI       03627
IRECD       03634
STATRD      03641
 ATRDY      03642
PRTCON      03646
PRTSAV      03654
PACK2       03655
PPACF1      03670
PPACF3      03702
PPACF2      03711
PE PAT      03720
PATLEN     003724
PATTRL      03730
PN-V00      03750
PNEV01      03754
PNEV02      03770
PNEV03      03774
```

ESTRL	04757
ETBAK	04762
A K1	04770
N TAP	05004
EADMP	05014
R RFC	05114
R RCD	05143
O KWD	05200
Y ET	05232
Y LUP	05236
Y1ASC	05246
ETCHR	05254
UPAIR	05257
UCHAR	05270
ETBCK	05272
ETMRE	05300
EHALF	05305
THALF	05306
MPTR	05307
AIRCT	05310
EMPER	05311
YPEC	05312
Y2OCT	05331
Y1OCT	05341
YDECI	05346
YDLUP	05354
YDOUT	05363
YVERT	05371
V TPL	05402
YOUNT	05412
C AR1	05413
C AR2	05414
C AR3	05415
C AR4	05416
C AR5	05417
C AR6	05420
Y ECT	05421
EXT1	05424
EXT2	05450
EXT3	05500
EXT4	05502
EXT5	05506
EXT6	05512
EXT7	05516
EXT8	05522
EXT9	05526
Y MIN	05532
Y MAX	05540
	05546
Y AV1	05547
Y AV2	05557
EXT10	05567
EXT11	05577
EXT12	05601
EXT13	05607

```
T14     05617
T15     05631
T16     05647
T17     05725
T18     05715
T19     05723
T20     05727
T21     05735
T22     05745
T23     05755
T24     05763
TAB     007400
TAB     007440
TAB     007500
TAB     007540
TAB     007600
TAB     007640
TAB     007700
TAB     007740
UF      010000
UF1     013724
UF2     013724
TTRL    017700
TBIT    100000
TR      707321
TO      707304
TC      707312
TR      707321
TF      707322
        707324
TC      707326
TF      707341
TS      707352
```