

RS64

TESTER

MD-11-DZRSA-A

EP-DZRSA-A-DL-A

OCT 1976

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FICHE 1 OF 1

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RS64 TESTER MONITOR AND EXERCISER

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZRSA-A-D
PRODUCT NAME: RS64 TESTER MONITOR AND DISK EXERCISER
DATE CREATED: 1-AUG-72
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: KEN CHAFMAN

THIS PROGRAM IS FOR FACTORY CHECK-OUT AND PRODUCTION USE ONLY.

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1. ABSTRACT

THE RS64 TESTER MONITOR AND EXERCISER IS A TIME-SHARING SYSTEM WHICH MONITORS AND SERVICES MULTIPLE RS64 TESTERS WHICH EXERCISE RS64 DISKS. THE OPERATOR OF EACH TESTER STATION HAS CONTROL OVER THE MONITORING OF HIS STATION THROUGH THE STATION'S TELETYPE. THE OPERATOR HAS THE ABILITY TO RUN AN AUTOMATIC ACCEPTANCE PROGRAM OR ANY ONE OF 20 TESTS, FOR WHICH HE MAY CHOOSE THE DATA AND ADDRESSING PARAMETERS.

2. REQUIREMENTS

2.1 EQUIPMENT

PDP-11 STANDARD PROCESSOR
KW11-L LINE FREQUENCY CLOCK
RS64 TESTERS (UP TO 16)
LT33-DC TELETYPES (ONE PER RS64 TESTER)

2.2 STORAGE

BK OF CORE IS REQUIRED

2.3 PRELIMINARY PROGRAMS

NONE

3. LOADING PROCEDURE

THE STANDARD ABSOLUTE LOADER IS USED. THE PROGRAM IS SELF STARTING.

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

NONE

4.2 STARTING ADDRESS

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4.3 OPERATOR ACTION

THE OPERATOR OF STATION #0 TYPES THE NUMBER OF STATIONS ON THE SYSTEM, THE DATE, AND THE TIME, IN RESPONSE TO REQUESTS BY THE PROGRAM.

5. OPERATING PROCEDURE

ALL OF THE FOLLOWING OPERATING PROCEDURES ARE FOR EACH INDIVIDUAL STATION, INDEPENDENT OF WHAT IS BEING DONE ON ANY OTHER STATION.

THERE ARE TWO BASIC MODES OF TESTING: AUTOMATIC ACCEPTANCE (AUTO ACCEPT) MODE, AND TEST MODE. IN ADDITION, THERE ARE TWO

[illegible]

DIFFERENT INPUT STATES: MODE SELECTION AND PARAMETER SELECTION.
THERE ARE ALSO SEVERAL CONTROL CHARACTERS DESIGNED TO AID THE
OPERATOR IN MONITORING THE STATION.

5.1 MODE SELECTION STATE

UPON COMPLETION OF THE STARTING PROCEDURES, ALL STATIONS WILL
AUTOMATICALLY RUN TEST 1 AND ENTER THE MODE SELECTION STATE.
THE MONITOR WILL THEN WAIT FOR ONE OF TWO COMMANDS FROM THE
TELETYPE:

- 1) TEST
- 2) ACCEPT

NOTE: TERMINATE COMMANDS WITH A "RETURN."

5.2 PARAMETER SELECTION STATE.

IF TEST MODE WAS SELECTED THE STATION WILL ENTER THE PARAMETER
SELECTION STATE AND TYPE THE FOLLOWING HEADING:

TST PAT SEQ TRK SEC WORD

THE OPERATOR IS NOW ABLE TO ENTER WHATEVER TESTING PARAMETERS
HE WISHES TO RUN (SEE SECTION 8 FOR PARAMETER DESCRIPTIONS).
AFTER ENTERING EACH PARAMETER NUMBER THE OPERATOR MUST TERMINATE
IT WITH A SPACE OR A TAB. WHEN ALL REQUIRED PARAMETERS ARE
ENTERED THE MONITOR WILL RESPOND WITH "OK." THE OPERATOR THEN
TYPES A "RETURN" TO START THE TEST RUNNING.

5.3 TEST MODE

IN TEST MODE THE MONITOR WILL AUTOMATICALLY PERFORM THE TEST
SELECTED BY THE ABOVE PROCEDURE. IT WILL TYPE OUT ERROR
MESSAGES WHEN ERRORS OCCUR (SEE SECTION 6 FOR ERROR MESSAGE
DESCRIPTION) AND UPON COMPLETION IT WILL TYPE THE TIME, DATE
AND NUMBER OF ERRORS IT DETECTED. IT WILL THEN ENTER THE
PARAMETER SELECTION STATE AND WAIT FOR MORE PARAMETERS.

5.4 ACCEPT MODE

IF ACCEPT MODE WAS SELECTED (IN SECTION 5.1), THE MONITOR AUTO-
MATICALLY SELECTS THE PREDETERMINED PARAMETERS WHICH ARE
INTENDED TO PROVIDE A DATA RELIABILITY INSPECTION OF THE RS64
DRIVE (SEE SECTION 8.7 FOR THESE PARAMETERS.) THE AUTOMATIC
ACCEPTANCE TEST TAKES ABOUT 12 1/2 HOURS. EVERY HALF HOUR THE
TIME, DATE AND NUMBER OF ERRORS IS TYPED, AND AT THE END, AN
ACCEPTANCE MESSAGE IS TYPED. UPON COMPLETION OF AUTO ACCEPT THE
MONITOR REENTERS THE MODE SELECTION STATE.

5.5 CONTROL C AND THE CONTINUE COMMAND.

- 5.5.1 IF THE OPERATOR WISHES TO STOP A TEST BEFORE IT HAS FINISHED, HE
MAY TYPE "CONTROL C" (1C). IF HE WAS IN TEST MODE, HE WOULD
THEN RETURN TO THE PARAMETER SELECTION STATE AND IF HE WAS IN
ACCEPT MODE HE WOULD RETURN TO THE MODE SELECTION STATES.

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- 5.5.2 IF, AFTER DOING A ↑C THE OPERATOR WISHES TO CONTINUE THE TEST HE WAS RUNNING FROM WHERE IT LEFT OFF, HE MAY DO SO BY TYPING "C" FOLLOWED BY A "RETURN". (CAUTION: THE MONITOR MAY SOMETIMES SKIP PART OF AN OPERATION WHEN "↑C" AND "C" ARE USED, THEREBY CAUSING ERRORS.)
- 5.5.3 IF THE STATION IS IN THE PARAMETER SELECTION STATE AND A ↑C IS TYPED, THE MONITOR WILL THEN GO INTO THE MODE SELECT STATE. WHEN THIS IS DONE C (CONTINUE) WILL NO LONGER WORK. LIKEWISE IF TWO SUCCESSIVE ↑C'S ARE TYPED, NO MATTER WHAT THE ORIGINAL STATE WAS, THE STATION WILL END UP IN THE MODE SELECTION STATE AND C (CONTINUE) WILL NOT WORK.
- 5.6 OTHER CONTROL CHARACTERS.
- 5.6.1 CONTROL L (↑L) - LOOP ON TEST
- IF THE OPERATOR WISHES TO REPEAT A PARTICULAR TEST OVER AND OVER AGAIN, I.E. LOOP ON THAT TEST, HE MAY DO SO BY TYPING A ↑L. THE MONITOR AUTOMATICLY RESTARTS THAT TEST WITH THE SAME PARAMETERS EVERY TIME IT HAS COMPLETED THE TEST. TO STOP THE LOOPING, THE OPERATOR SIMPLY TYPES ANOTHER ↑L. (CAUTION: THIS SWITCH IS DESIGNED FOR TEST MODE ONLY!)
- 5.6.2 CONTROL A (↑A) - ABORT 5 MINUTE READ.
- THE ↑A ONLY WORKS ON TEST 20 WHILE IT IS RUNNING. IT TERMINATES THE READING BEFORE THE 5 MINUTES IS UP. (SEE TEST 20 DESCRIPTION IN SEC B FOR MORE DETAIL)
- 5.6.3 CONTROL B (↑B) - BELL ON ERROR
- FOR CALIBRATING, THE OPERATOR MAY WANT TO KNOW IMMEDIATELY WHEN AN ERROR IS OCCURING AND WHEN IT GOES AWAY. BY TYPING ↑D (TO SUPPRESS THE ERROR MESSAGES) AND THEN ↑B, THE BELL ON THE TELETYPE WILL RING EVERY TIME AN ERROR OCCURS. A SECOND ↑B WILL SHUT THE BELL OFF.
- 5.6.4 CONTROL D (↑D) - DISCONTINUE ERROR MESSAGES
- SINCE THE ERROR MESSAGE IS RATHER LENGTHY AND TIME CONSUMMING, THE OPERATOR MAY SUPPRESS IT BY TYPING ↑D. A SECOND ↑D WILL RETURN THE ERROR MESSAGE, PROVIDED LESS THAN 64 ERRORS HAVE OCCURED. (NOTE: ERROR MESSAGES ARE AUTOMATICALLY SUPPRESSED AFTER 64 ERRORS HAVE OCCURED).
- 5.6.5 CONTROL E (↑E) - ERROR COUNT
- IF THE OPERATOR WANTS TO KNOW HOW MANY ERRORS HAVE OCCURRED ON THE TEST BEING RUN HE MAY FIND OUT BY TYPING ↑E

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5.6.6 CONTROL S (↑S) - STATUS REPORT

IF THE OPERATOR WISHES TO MONITOR THE PROGRESS OF THE TEST HE IS RUNNING, HE MAY DO SO BY TYPING ↑S. THE MONITOR WILL RESPOND WITH THE PARAMETERS THAT THE TESTER IS ON AT THAT MOMENT (SEE SECTION 8 FOR MORE DETAIL), FOLLOWED BY THE TIME AND DATE.

5.6.7 CONTROL T (↑T) - TIME AND DATE.

BY TYPING ↑T THE OPERATOR MAY FIND OUT WHAT TIME THE COMPUTER THINKS IT IS.

5.7 ILLEGAL INPUTS.

IF THE OPERATOR ACCIDENTLY STRIKES A WRONG KEY, THE MONITOR CAN USUALLY DETECT IT IMMEDIATELY AND WILL TYPE A "?" AND THEN WANT HIM TO START THE COMMAND STRING OVER. ALSO IF THE STATION IS IN A RUN MODE (TEST MODE OR ACCEPT MODE) IT WILL ONLY ACCEPT CONTROL CHARACTERS.

6. ERRORS

WHEN AN ERROR IS DETECTED BY THE TESTER, THE FOLLOWING MESSAGE IS NORMALLY TYPED (WHERE N REPRESENT AN OCTAL DIGIT):

TST	PAT	SEQ	TRK	SEC	WORD
NN	NN	NN	NN	NN	NNNNNN
ERR	OP	WCT	TRK	SEC	DB
NN	NN	NN	NN	NN	NNNNNN

THE FIRST SET OF PARAMETERS (FIRST TWO LINES) ARE THE MONITOR PARAMETERS AS DESCRIBED IN SECTION 8. THE SECOND SET OF PARAMETERS ARE THE TESTER PARAMETERS.

6.1 ERROR CODE (ERR)

01 ADDRESS SEEK ERROR (ASE):
INDICATES THAT ON A READ SECTOR OR WRITE SECTOR OPERATION, THE SECTOR ADDRESS WAS NOT FOUND IN ONE FULL REVOLUTION OF OF THE DISK

02 ADDRESS PARITY ERROR (APE):
INDICATES A SECTOR ADDRESS PARITY ERROR OCCURRED.

04 CD BIT ERROR:
INDICATES ONE OF FOUR POSSIBLE ERRORS:
A. NO GAP
B. NO CLOCK STROBE
C. NO DATA STROBE
D. THE A.C. LOW SIGNAL WAS GENERATED WHILE RUNNING A TEST

10 DATA ERROR (DE):
INDICATES THE DATA READ DID NOT COMPARE TO THE CONTENTS OF THE DATA REGISTER.

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IF MORE THAN ONE ERROR OCCURES AT ONE TIME, THE SUM
OF THE ERROR CODES WILL BE TYPED, I.E. 12 INDICATES
BOTH A DATA ERROR AND AN ADDRESS PARITY ERROR OCCURRED.

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6.2 OPERATION CODE (OP)

THE FOLLOWING CODES INDICATE THE OPERATION WHICH THE TESTER WAS PERFORMING WHEN THE ERROR OCCURRED.

- 00 DISK CLEAR:
CLEAR THE TEST SET AND DISK TO INITIAL CONDITIONS.
- 02 WRITE SECTOR:
WRITE THE SECTOR INDICATED BY THE DISK ADDRESS REGISTER. ALL 32 WORDS OF THE SECTOR ARE WRITTEN WITH THE WORD CONTAINED IN THE DATA REGISTER. CHECKS FOR A "CD BIT" ERROR.
- 04 READ SECTOR:
READ THE SECTOR INDICATED BY THE DISK ADDRESS REGISTER AND COMPARE EACH TO THE WORD CONTAINED IN THE DATA REGISTER. ALSO CHECKS "CD BIT" AND SECTOR ADDRESS PARITY.
- 12 WRITE TRACK:
SAME AS WRITE SECTOR, EXCEPT THAT IT WRITES THE ENTIRE TRACK.
- 14 READ TRACK:
SAME AS READ SECTOR EXCEPTS THAT IT READS AND COMPARES THE ENTIRE TRACK.

6.3 DISK ADDRESS REGISTER (DA)

THE DISK ADDRESS REGISTER CONTAINS THE ADDRESS AT WHICH THE ERROR OCCURRED. IT IS TYPED AS THREE SEPERATE PARAMETERS.
WORD COUNT (WCT)
TRACK ADDRESS (TRK)
SECTOR ADDRESS (SEC)

6.4 DATA REGISTER (DB)

THE DATA BUFFER CONTAINS THE WORD READ IN ERROR. IF THE ERROR OCCURRED DURING A WRITE OPERATION, THIS IS MEANINGLESS.

7. RESTRICTIONS

BECAUSE THE SYSTEM IS DESIGNED FOR TIMESHARING THE PROGRAM SHOULD NEVER HALT. THEREFORE THE OPERATOR IS SOMEWHAT RESTRICTED IN WHAT HE CAN EXAMINE WHEN AN ERROR OCCURES. HOWEVER, BECAUSE OF THE VARIETY OF TESTS AVAILABLE HE SHOULD BE ABLE TO TRACE MOST PROBLEMS BY WORKING WITHIN THE SYSTEM.

8. PARAMETER DESCRIPTIONS

THE STATUS OF THE MONITOR IS DEPENDENT ON SIX PARAMETERS. WHEN THE STATUS IS TYPED IN ERROR MESSAGES, STATUS REPORTS, AND BY THE OPERATOR, THE FOLLOWING FORMAT IS USED (WHERE N REPRESENTS AN OCTAL DIGIT):

TST	PAT	SEQ	TRK	SEC	WORD
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8.1 TESTS (TST)

TEST 00

PERFORM ALL OF THE FOLLOWING TESTS IN
SEQUENTIAL ORDER.

TEST 01

CLEAR THE DISK AND CHECK THE TESTER.

- A. CHECK THE CLR COMMAND TO MAKE SURE THE
ATTENTION BIT WILL SET AND THE ERROR
BITS ARE CLEARED
- B. WRITE THE DISK WITH ALL ZEROES, A TRACK
AT A TIME.
- C. SELECT A RANDOM ADDRESS AND WRITE THAT
SECTOR WITH A RANDOM DATA WORD.
- D. READ THE SAME SECTOR WITH A DIFFERENT
DATA WORD IN THE DB. THIS SHOULD GEN-
ERATE A DATA ERROR, WHICH THE MONITOR
CHECKS FOR AND, IF DATA READ BY THE TESTER
CORRESPONDS TO THE DATA ORIGINALLY WRITTEN,
THE ERROR IS IGNORED.
- E. REWRITE THE ABOVE SECTOR WITH ALL ZEROES.
- F. SELECT ANOTHER RANDOM ADDRESS AND WRITE
THAT TRACK WITH A NEW RANDOM DATA WORD.
- G. READ THIS TRACK WITH A DIFFERENT DATA WORD
IN THE DB AND MAKE THE SAME CHECKS AS
IN STEP D.
- H. READ JUST ONE SECTOR ON THE ABOVE TRACK
WITH A DIFFERENT DATA WORD IN THE DB AND
AGAIN CHECK AS IN STEP D.
- I. REWRITE THE ABOVE TRACK WITH ALL ZEROES.

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TEST 02	READ SECTORS. A. READ ONE SECTOR AT A TIME.
TEST 03	READ TRACKS. A. READ ONE TRACK AT A TIME.
TEST 04	WRITE SECTORS A. WRITE ONE SECTOR AT A TIME.
TEST 05	WRITE TRACKS A. WRITE ONE TRACK AT A TIME.
TEST 06	WRITE AND READ SECTORS A. WRITE A SECTOR B. READ THAT SECTOR
TEST 07	WRITE AND READ TRACK A. WRITE A TRACK B. READ THAT TRACK
TEST 10	CLEAR, READ, WRITE, READ SECTOR. A. WRITE A SECTOR WITH ZEROES. B. READ THAT SECTOR C. WRITE THAT SECTOR WITH A PATTERN WORD D. READ THAT SECTOR.
TEST 11	CLEAR, READ, WRITE, READ TRACK A. WRITE A TRACK WITH ALL ZEROES B. READ THAT TRACK C. WRITE THAT TRACK WITH A PATTERN WORD. D. READ THAT TRACK.
TEST 12	WRITE A SECTOR, CHANGE THE TRACKS AND REPEAT FOR REST OF DISK, THEN READ SECTORS WRITTEN. A. WRITE A SECTOR, THEN CHANGE TRACKS AND WRITE THE CORRESPONDING SECTOR ON THAT TRACK AND REPEAT FOR ALL TRACKS ON THE DISK. B. READ ALL THE SECTORS WRITTEN.

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TEST 13

CLEAR, WRITE A SECTOR, CHANGE TRACKS AND REPEAT,
THEN READ ALL SECTORS.

- A. WRITE A TRACK WITH ALL ZEROES
- B. WRITE ONE SECTOR ON THAT TRACK WITH A
PATTERN WORD. THEN CHANGE TRACKS AND
REPEAT A AND B UNTIL ALL TRACKS HAVE BEEN
WRITTEN.
- C. READ ALL SECTORS. THERE SHOULD BE ZEROES
ON ALL SECTORS BUT ONE OF EACH TRACK.

TEST 14

WRITE A SECTOR COMPLEMENT PATTERN WORD, WRITE
ALL OTHER SECTORS, THEN READ ALL SECTORS.

- A. WRITE ONE SECTOR WITH A PATTERN WORD, THEN
WRITE THE REST OF THAT TRACK WITH THE
COMPLEMENT PATTERN WORD.
- B. WRITE ALL OTHER TRACKS WITH THE COMPLEMENT
PATTERN WORD.
- C. READ THE ORIGINAL SECTOR WITH THE
ORIGINAL PATTERN WORD, THEN READ THE REST
OF THE TRACK WITH THE COMPLEMENT PATTERN
WORD.
- D. READ ALL THE OTHER TRACKS WITH THE
COMPLEMENT PATTERN WORD.

TEST 15

WRITE ONE SECTOR, COMPLEMENT PATTERN WORD,
WRITE REST OF TRACK, READ TRACK.

- A. WRITE ONE SECTOR WITH A PATTERN WORD, THEN
WRITE THE REST OF THAT TRACK WITH THE COM-
PLEMENT PATTERN WORD.
- B. READ THE ORIGINAL SECTOR WITH THE ORIGINAL
PATTERN WORD, THEN READ THE REST OF THE
TRACK WITH THE COMPLEMENT PATTERN WORD.

TEST 16

WRITE A TRACK, COMPLEMENT PATTERN WORD, WRITE
ALL OTHER TRACKS, THEN READ THE DISK.

- A. WRITE ONE TRACK WITH A PATTERN WORD, THEN
WRITE ALL OF THE OTHER TRACKS WITH THE
COMPLEMENT PATTERN WORD.
- B. READ THE ORIGINAL TRACK WITH THE ORIGINAL
PATTERN WORD THEN READ THE REST OF THE
DISK WITH THE COMPLEMENT PATTERN WORD.

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TEST 17

WRITE A TRACK, COMPLEMENT PATTERN WORD, WRITE THE TWO ADJACENT TRACKS, THEN READ ALL THREE TRACKS.

- A. WRITE A TRACK WITH PATTERN WORD
- B. WRITE ONE ADJACENT TRACK WITH THE COMPLEMENT PATTERN WORD.
- C. WRITE THE OTHER ADJACENT TRACK WITH THE COMPLEMENT PATTERN WORD.
- D. READ THE ORIGINAL TRACK WITH THE ORIGINAL PATTERN WORD.
- E. READ ONE ADJACENT TRACK WITH THE COMPLEMENT PATTERN WORD.
- F. READ THE OTHER ADJACENT TRACK WITH THE COMPLEMENT PATTERN WORD.

TEST 20

WRITE A TRACK, THEN READ IT FOR 5 MINUTES.

- A. WRITE TRACK
- B. READ THE TRACK CONTINUOUSLY FOR 5 MINUTES.
- C. REPEAT STEPS A AND B FOR REMAINING TRACKS.

TEST 21

DC POWER FAIL ON A WRITE TRACK

- A. WRITE ALL THE TRACKS WITH A PATTERN WORD, THEN WRITE PART OF THEM A SECOND TIME.
- B. DURING A WRITE, TURN DC POWER OFF (IGNORE ERRORS WHICH OCCUR WHILE POWER IS OFF)
- C. WAIT 20 SECONDS, THEN TURN POWER BACK ON AND CLEAR THE TESTER.
- D. WAIT ANOTHER 20 SECONDS FOR THE POWER TO STABILIZE.
- E. READ THE SECTOR WHICH WAS MOST LIKELY THE ONE BEING WRITTEN WHEN THE POWER FAIL OCCURED, THEN READ THE REST OF THE TRACK. (THE MONITOR IGNORES THE FIRST ERROR ON THAT TRACK.)
- F. AFTER THE FIRST ERROR IS ENCOUNTERED, ALL OTHER ERRORS ARE CONSIDERED AS VALID.
- G. READ THE REST OF THE DISK.

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TEST 22

DC POWER FAIL ON A REAL TRACK

- A. WRITE THE DISK WITH A PATTERN WORD.
- B. READ ALL OF THE TRACKS ONCE AND PART OF THEM A SECOND TIME.
- C. DURING A READ, TURN DC POWER OFF (IGNORE ERRORS WHICH OCCUR WHILE POWER IS OFF.)
- D. WAIT 20 SECONDS, THEN TURN POWER BACK ON AND CLEAR THE TESTER.
- E. WAIT ANOTHER 20 SECONDS FOR THE POWER TO STABILIZE.

F. READ THE ENTIRE DISK.

TEST 23

AC POWER FAIL ON A WRITE TRACK

- A. WRITE ALL THE TRACKS WITH A PATTERN WORD, THEN WRITE PART OF THEM A SECOND TIME.
- B. DURING A WRITE, TURN AC POWER OFF (IGNORE ERRORS WHILE POWER IS OFF).
- C. WAIT 20 SECONDS, THEN TURN POWER BACK ON AND CLEAR THE TESTER.
- D. WAIT 20 SECONDS FOR THE POWER TO STABILIZE AND THE MOTOR TO GET BACK UP TO SPEED, THEN TURN AC POWER BACK OFF AGAIN.
- E. REPEAT OF C
- F. REPEAT OF D
- G. REPEAT OF C
- H. WAIT 20 SECONDS FOR THE POWER TO STABILIZE AND THE MOTOR TO GET BACK UP TO SPEED.
- I. READ THE SECTOR WHICH WAS MOST LIKELY THE ONE BEING WRITTEN WHEN THE POWER FAIL OCCURED, THEN READ THE REST OF THE TRACK. (THE MONITOR IGNORES THE FIRST ERROR ON THAT TRACK).
- J. AFTER THE FIRST ERROR IS ENCOUNTERED, ALL OTHER ERRORS ARE CONSIDERED AS VALID.
- K. READ THE REST OF THE DISK.

TEST 24

AC POWER FAIL ON A READ.

- A. WRITE THE DISK WITH A PATTERN WORD
- B. READ ALL THE TRACKS ONCE AND PART OF THEM A SECOND TIME.
- C. DURING A READ, TURN AC POWER OFF. (IGNORE ERRORS WHILE POWER IS OFF.)
- D. WAIT 20 SECONDS, THEN TURN THE POWER BACK ON AND CLEAR THE TESTER.
- E. WAIT 20 SECONDS FOR THE POWER TO STABILIZE AND THE MOTOR TO GET BACK UP TO SPEED, THEN TURN AC POWER OFF AGAIN.
- F. REPEAT OF D
- G. REPEAT OF E
- H. REPEAT OF D
- I. WAIT 20 SECONDS FOR THE POWER TO STABILIZE AND THE MOTOR TO GET BACK UP TO SPEED.
- J. READ THE ENTIRE DISK.

8.2 PATTERNS (PAT)

PATTERN 00 ALL OF THE FOLLOWING EXCEPT PATTERN 12.

PATTERN 01 000000

PATTERN 02 177777

PATTERN 03 125252

PATTERN 04 052525

PATTERN 05 OCTAL CHECKERBOARD:
107070, 070707,
143434, 034343,
161616, 016161,

PATTERN 06 FLOATING ONE:
000001, 000002, 000004,
000010, 000020, 000040,
000100, 000200, 000400,
001000, 002000, 004000,
010000, 020000, 040000,
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PATTERN 07 FLOATING ZEROES:

177776, 177775, 177773,
177767, 177757, 177737,
177677, 177577, 177377,
176777, 175777, 173777,
167777, 157777, 137777,
077777

PATTERN 10 ONE'S TRANSFER:

000000, 000001, 000003,
000007, 000017, 000037,
000077, 000177, 000377,
000777, 001777, 003777,
007777, 017777, 037777,
077777, 177777

PATTERN 11 ZERO'S TRANSFER:

177777, 177776, 177774,
177770, 177760, 177740,
177700, 177600, 177400,
177000, 176000, 174000,
170000, 160000, 140000,
100000, 000000

PATTERN 12 RANDOM NUMBERS:

4096 PROGRAM GENERATED RANDOM NUMBERS

PATTERN X ALLOWS THE OPERATOR TO CHOOSE ANY 16 BIT NUMBER.

8.3 SEQUENCES (SEQ).

THE SEQUENCE DETERMINES IN WHAT ORDER THE TRACK AND/OR SECTOR ADDRESSES ARE SELECTED.

SEQUENCE 0 BOTH OF THE FOLLOWING SEQUENCES

SEQUENCE 1 SEQUENTIAL ORDER

SEQUENCE 2 RANDOM ORDER

SEQUENCE X CHOOSE A SPECIFIC TRACK AND SECTOR.

8.4 TRACK ADDRESS (TRK)

A SPECIFIC TRACK CAN ONLY BE SELECTED WHEN SEQ=X. TRACK NUMBERS ARE 0 TO 37 OCTAL.

TRK=X SELECT ALL TRACKS. SEQUENCE 1

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8.5 SECTOR ADDRESS (SEC)

A SPECIFIC SECTOR CAN ONLY BE SELECTED WHEN SEQ=X. SECTOR NUMBERS ARE 0 TO 77 OCTAL.

SEC=X SELECT ALL SECTORS, SEQUENCE 1

8.6 DATA WORD (WORD)

ANY 16 BIT WORD CAN BE SELECTED WHEN PAT=X. IT CAN BE SPECIFIED AS A SIX OR LESS CHARACTER OCTAL WORD.

8.7 THE FOLLOWING PARAMETERS ARE AUTOMATICALLY SELECTED FOR THE AUTO ACCEPTANCE TEST.

TST	PAT	SEQ	TRK	SEC	(TIME)
1	1	1	-	-	
2	1	1	-	-	
7	0	1	-	-	
21	3	X	*	X	
22	3	X	*	X	
23	3	X	*	X	
24	3	X	*	X	
15	5	X	*	X	
16	5	1	-	-	
17	5	1	-	-	
20	12	1	-	-	(10:40)

*= A SINGLE TRACK CHOOSEN AT RANDOM

9. PROGRAM DESCRIPTION

THE RS64 DISK MONITOR IS DESIGNED TO MONITOR AND SERVICE THE THE RS64 TEST SETS WHICH CONTROL THE RS64 DISKS UNDER TEST. THE OPERATOR OF EACH TEST STATION HAS CONTROL OVER THE MONITOR THROUGH THE STATION'S TELETYPE WHICH OPERATES UNDER INTERRUPT MODE. THERE ARE THREE MAIN SECTIONS TO THIS PROGRAM: (1) THE MONITORING SECTION, (2) THE INTERRUPT ROUTINES, AND (3) THE MONITOR STATUS BUFFERS.

9.1 MONITORING SECTION

THE MONITORING SECTION IS THE BACKGROUND PROGRAM WHICH IS CONSTANTLY POLLING STATIONS ON LINE TO DETERMINE THEIR STATUS. IF A STATION IS "ACTIVE", MEANING IT IS RUNNING A TEST, THE MONITOR CHECKS TO SEE IF THE OPERATION IS DONE OR IF AN ERROR HAS OCCURRED. IF NEITHER CONDITION IS PRESENT, IT GOES AND POLLS THE NEXT STATION.

IF AN ERROR HAS OCCURED, THE MONITOR STORES A MESSAGE CODE FOR THE TELEPRINTER SERVICE ROUTINE, INCREMENTS THE ERROR COUNTER AND PROCEEDS TO THE NEXT OPERATION. AFTER 64 ERRORS, IT NO LONGER INITIATES THE ERROR PRINTOUT.

IF THE OPERATION IS DONE THE MONITOR DETERMINES FROM THE STATUS BUFFERS WHICH TEST THAT STATION IS EXECUTING AND GOES TO THAT TEST ROUTINE. THE TEST ROUTINE UPDATES THE DATA IN THE MONITOR STATUS BUFFERS AND SENDS THE NECESSARY INFORMATION TO THE TESTER FOR EXECUTION OF THE NEXT OPERATION. IF THE TEST IS DONE THE MONITOR CHECKS IT TO SEE IF OTHER TESTS ARE TO BE PERFORMED AUTOMATICALLY. IF NOT, IT BUFFERS A MESSAGE INDICATING THE NUMBER OF ERRORS AND "DEACTIVATES" THE STATION, ALLOWING THE OPERATOR TO ENTER NEW COMMANDS AND/OR PARAMETERS.

9.2 TELETYPE INTERRUPT ROUTINES

THE TELETYPE INTERRUPT ROUTINES SERVE AS THE LINK BETWEEN THE STATION OPERATOR AND THE MONITOR. THE KEYBOARD INTERRUPT ROUTINE HANDLES THE OPERATOR'S INSTRUCTIONS TO THE MONITOR. INITIALLY THE OPERATOR CAN SELECT "ACCEPT" MODE OR "TEST" MODE. "ACCEPT" MODE AUTOMATICALLY SELECTS PREDETERMINED PARAMETERS FOR THE STATUS BUFFER AND ACTIVATES THE MONITORING SECTION. IN THE "TEST" MODE, THE ROUTINE WAITS FOR THE OPERATOR TO ENTER THE PARAMETERS HE WANTS FROM THE KEYBOARD. WHEN HE HAS ENTERED A SET OF PARAMETERS, THE MONITOR SECTION BEGINS EXECUTING THEM.

THE TELEPRINTER INTERRUPT ROUTINE BUFFERS MESSAGES REQUESTED BY THE MONITOR, ALLOWING THE MONITOR TO CONTINUE TIME SHARING WHILE THE TELEPRINTER IS TYPING.

9.3 MONITOR STATUS BUFFER

THE MONITOR STATUS BUFFERS SERVE AS A LINK BETWEEN THE MONITOR SECTION AND THE TELETYPE ROUTINES. INPUT FROM THE KEYBOARD ROUTINE IS STORED THERE FOR USE BY THE MONITOR SECTION. WHENEVER THE MONITOR HAS OUTPUT MESSAGES, THEY ARE STORED IN THE MONITOR STATUS BUFFER FOR THE TELEPRINTER INTERRUPT ROUTINE TO HANDLE. ALSO, THE MONITOR USES THE STATUS BUFFERS TO DETERMINE WHERE IT IS IN THE TESTING SEQUENCE AND WHAT IT IS SUPPOSED TO DO NEXT.

9.4 REAL TIME CLOCK INTERRUPT ROUTINE

THIS ROUTINE KEEPS TRACK OF WHAT TIME IT IS. IT IS USED TO DETERMINE WHEN A READ INSTRUCTION SHOULD BE TERMINATED AND IT CONTROLS WAIT ROUTINES, THUS LEAVING THE COMPUTER FREE FOR TIME SHARING.

9.5 POWER FAILURE INTERRUPT ROUTINE.

IF THE PROCESSOR EXPERIENCES A POWER FAILURE, THE MONITOR WILL WAIT 30 SECONDS AFTER POWER HAS BEEN RESTORED BEFORE DOING ANYTHING, THUS INSURING ALL DISK MOTORS ARE UP TO SPEED. IT THEN TRANSFERS BACK INTO THE TESTER THE PARAMETERS WHICH WERE BEING EXECUTED AT THE TIME OF THE POWER FAILURE.

10. LISTING %

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177776			
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000215			
000212			
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106612			
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000024			
022026			
000340			
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010412			
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014046			
000240			
000100			
017052			
000340			
000200			
000167	000574		
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000500			
007020			
000502			
000010			

```

.TITLE MAINDEC-11-DZRSA-A      RS64 TESTER MONITOR AND EXERCISER
.ENABL ABS
;RS64 DISK TESTER AND DIAGNOSTIC MONITOR
;COPYRIGHT 1970, BY DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS. 01754
;PROGRAMMER: KEN CHAPMAN

;DEFINITIONS
PS=177776                      ;ADDRESS OF PROCESSOR STATUS
RETIME=6                       ;TIME ALLOWED FOR A READ>67MS
SP=240                         ;ASCII FOR SPACE
CR=215                         ;ASCII FOR CARRIAGE RETURN
LF=212                         ;ASCII FOR LINE FEED
BELL=207                       ;ASCII FOR BELL
CRLF=106612                   ;ASCII FOR CARRIAGE RETURN, LINE FEED

.=0                             ;INTERRUPT VECTORS
.REPT 100                      ;NEXT LOCATION
    .+2                        ;HALT ON INTERRUPT
    HALT

.ENDR
.=24                           ;POWER FAILURE INTERUP VECTOR
    POWER                      ;PRIORITY=7
    340

.=60                           ;KEYBOARD INTERRUPT
    KIN                       ;PRIORITY=5
    240                       ;TELEPRINTER INTERRUPT
    PIN                       ;PRIORITY=5
    240

.=100                          ;LINE CLOCK INTERRUPT
    CLOCK                     ;PRIORITY=7
    340

.=200
LOAD: JMP BEGIN
    HALT

.=500
CYCLE: 7020

NUMBER: 10

;AC LINE FREQUENCY IN CYCLES PER MINUTE
;7020 FOR 60 HERTZ
;5670 FOR 50 HERTZ
;NUMBER OF STATIONS ON SYSTEM * 10

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808                                     ;*****
809
810
811      001000      001000      .=1000
812      001000      012706      000500      BEGIN:  MOV      #500,%6      ;INITIALIZE STACK POINTER
813      001004      000005      RESET      ;RESET ALL DEVICES ON THE LNBUS
814      001006      012767      000340      176762      MOV      #340,PS      ;PRIORITY=7
815      001014      004767      016420      JSR      7,DATIN      ;INPUT THE DATE AND TIME
816      001020      004767      020700      JSR      7,SETCYC
817      001024      012777      000100      016404      MOV      #100,CLKS      ;ENABLE LINE FREQUENCY CLOCK
818      001032      012700      030000      MOV      #STAT0,%0      ;START OF STATUS BUFFERS
819      001036      012701      001100      MOV      #1100,%1      ;LENGTH OF BUFFERS
820      001042      005020      LOGIN:  CLR      (0)+      ;CLEAR BUFFERS
821      001044      005301      DEC      %1      ;DONE?
822      001046      001375      BNE      LOGIN      ;LOOP BACK
823
824      ;ACTIVATE TELETYPES AND CLEAR TEST SETS
825      001050      012767      001130      176726      MOV      #NSTAT,4      ;SKIP SET UP ON TIME OUT
826      001056      012767      000340      176722      MOV      #340,6      ;PRIORITY=7
827      001064      005000      CLR      %0
828      001066      052770      000100      032400      LOOP:  BIS      #100,ATKSO(0)      ;SET TK INT ENB
829      001074      004767      005706      JSR      7,CLACS      ;CLEAR TEST SET
830      001100      012760      100700      030000      MOV      #100700,STAT0(0)      ;ACTIVE,TEST 1. TEST MODE
831      001106      012760      020000      030002      MOV      #020000,ASTAT(0)      ;SEQ 1
832      001114      052760      000020      030004      BIS      #20,FLAGS(0)      ;SET "STARTUP" FLAG
833      001122      052760      100000      030200      BIS      #100000,CSBUF(0)      ;SET WAIT FLAG
834      001130      062700      000010      NOSTAT:  ADD      #10,%0      ;NEXT
835      001134      020067      177342      CMP      %0,NUMBER      ;POLLED ALL STATIONS?
836      001140      001352      BNE      LOOP      ;NOT DONE POLLING
837      001142      012767      000006      176634      MOV      #6,4      ;GO TO 6 ON TIME OUT
838      001150      005067      176632      RESTAR:  CLR      6      ;HALT ON TIME OUT
839      001154      012767      000140      176614      MOV      #140,PS      ;PRIORITY=3
840      001162      012706      001000      MOV      #1000,%6      ;RESET STACK POINTER
841
842      ;*****
843      ;*****
844      ;MONITOR
845      ;*****
846      ;*****
847
848      001166      005000      START:  CLR      %0      ;CLEAR STATION COUNTER
849      001170      005760      030000      SCAN:  TST      STAT0(0)      ;TEST STATION STATUS
850      001174      100406      BMI      ACTIVE      ;ACTIVE STATION
851      001176      062700      000010      NEXT:  ADD      #10,%0      ;INC TO NEXT STATION
852      001202      020067      177274      CMP      %0,NUMBER      ;POLLED ALL STATIONS?
853      001206      001370      BNE      SCAN      ;NOT DONE POLLING
854      001210      000766      BR      START      ;RESTART AFTER LAST STATION

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855
856
857
858 001212 105770 032200 ACTIVE: TSTB @CSO(0) ;TEST SET CONTROL STATUS
859 001216 100425 BMI ATTN ;ATTN BIT SET
860 001220 032760 100004 030200 BIT #100004,CSBUF(0) ;WAIT FLAG OR READ?
861 001226 001763 BEQ NEXT ;NO
862 001230 100572 BMI WAIT
863 001232 016002 030600 READ: MOV RTIME(0),%2 ;GET READ START TIME
864 001236 166702 016164 SUB TIME,%2 ;COMPARE TO PRESENT TIME
865 001242 003402 BLE REDOVR ;TIME OVERFLOWED?
866 001244 166702 177230 SUB CYCLE,%2 ;YES, COMPENSATE
867 001250 062702 000006 REDOVR: ADD #RETIME,%2 ;READING TIME
868 001254 100350 BPL NEXT ;NOT DONE
869 001256 052760 000200 030200 BIS #200,CSBUF(0) ;SET ATTN TO STOP READING
870 001264 016070 030200 032200 MOV CSBUF(0),@CSO(0) ;DO IT
871 001272 032770 170000 032200 ATTN: BIT #170000,@CSO(0) ;TEST FOR ERRORS
872 001300 001045 BNE ERROR
873 001302 116001 030001 OPDONE: MOVB STAT0+1(0),%1 ;GET TEST #
874 001306 042701 177700 BIC #177700,%1 ;MASK
875 001312 006301 ASL %1 ;*2
876 001314 105060 030606 CLRB READ3(0) ;CLR READ ERROR REPEAT COUNTER
877 001320 116003 030006 MOVB PHASE(0),%3 ;PHASE?
878 001324 100003 BPL TESTS
879 001326 004767 005536 JSR 7,TEDONE
880 001332 000721 BR NEXT
881
882
883
884 001334 004771 001342 TESTS: JSR 7,@TEST(1) ;GO TEST
885 001340 000716 BR NEXT
886
887 001342 001632 TEST: TEST0
888 001344 001634 TEST1
889 001346 002464 TEST2
890 001350 002552 TEST3
891 001352 002622 TEST4
892 001354 002664 TEST5
893 001356 002736 TEST6
894 001360 003026 TEST7
895 001362 003234 TEST10
896 001364 003356 TEST11
897 001366 003500 TEST12
898 001370 003610 TEST13
899 001372 003770 TEST14
900 001374 004202 TEST15
901 001376 004366 TEST16
902 001400 004522 TEST17
903 001402 004766 TEST20
904 001404 005264 TEST21
905 001406 005606 TEST22
906 001410 006040 TEST23
907 001412 006422 TEST24
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908
909 ;*****
910
911 001414 032760 000001 030004 ERROR: BIT #1,FLAGS(0) ;"IGNORE ERRORS" FLAG UP?
912 001422 001327 BNE OPDONE ;YES
913 001424 032760 007400 030400 BIT #7400,PSTAT(0) ;LAST MESSAGE DONE?
914 001432 001032 BNE ERBUSY ;NO
915 001434 005260 030604 INC ERCONT(0) ;CJUNT NUMBER OF ERRORS
916 001440 001432 BEQ ERCOVE ;OVERFLOW?
917 001442 032760 177700 030604 BIT #177700,ERCONT(0) ;WAISTING PAPER?
918 001450 001003 BNE ERROR1 ;YES, STOP ERROR MESSAGE
919 001452 005760 030004 TST FLAGS(0) ;SUPRESS ERROR TYPE-OUT FLAG UP?
920 001456 100012 BPL ERMES ;NO
921 001460 032760 000002 030004 ERROR1: BIT #2,FLAGS(0) ;BELL FLAG?
922 001466 001403 BEQ NOBELL
923 001470 112760 000241 030401 MOVB #241,PSTAT+1(0) ;MESS 12, LINE 1 - RING BELL
924 001476 004767 000044 NOBELL: JSR 7,ERREAD
925 001502 000635 BR NEXT
926
927 001504 042760 100000 030000 ERMES: BIC #100000,STAT(0) ;DEACTIVATE
928 001512 112760 000007 030401 MOVB #007,PSTAT+1(0) ;MESSAGE 0, LINE 7
929 001520 004767 006636 ERBUSY: JSR 7,CRACT
930 001524 000624 BR NEXT
931
932 001526 032760 007400 030400 ERCOVE: BIT #7400,PSTAT(0)
933 001534 001371 BNE ERBUSY
934 001536 112760 000142 030401 MOVB #142,PSTAT+1(0) ;MESS 6, LINE 2 - ERROR COUNT OVERFLOW
935 001544 000765 BR ERBUSY
936
937 ;*****
938 ;SUBROUTINE TO REPEAT READS UP TO 3 TIMES WHEN ERRORS OCCUR.
939 ;*****
940
941 001546 032760 000004 030200 ERREAD: BIT #4,CSBUF(0) ;READ?
942 001554 001411 BEQ EREAD1 ;NO
943 001556 005770 032200 TST #CSO(0) ;DATA ERROR?
944 001562 100006 BPL EREAD1 ;NO
945 001564 105260 030606 INCB READ3(0) ;COUNT REPEATS
946 001570 126027 030606 000003 CMPB READ3(0),#3 ;DONE 3 REPEATS?
947 001576 103402 BLO EREAD2 ;NO
948 001600 000167 005202 EREAD1: JMP CLRCS ;CLR TESTER AND RTS
949
950 001604 012770 000200 032200 EREAD2: MOV #200,#CSO(0) ;CLEAR THE ERROR BITS
951 001612 000167 005136 JMP TRANS1 ;TRANSFER BUFFS TO TESTER AND RTS
952
953 ;*****
954 001616 026760 015604 030600 WAIT: CMP TIME,RTIME(0)
955 001624 001226 BNE OPDONE
956 001626 000167 177344 JMP NEXT
957
958 ;*****
959 001632 000000 TESTO: HALT

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971 001634 006303
972 001636 000173 001642
973 001642 001666
974 001644 001732
975 001646 002026
976 001650 002054
977 001652 002110
978 001654 002130
979 001656 002144
980 001660 002200
981 001662 002232
982 001664 002252
983
984 001666 005260 030006
985 001672 005070 032204
986 001676 005070 032202
987 001702 004767 005100
988 001706 052760 100000 030200
989 001714 012760 000074 030406
990 001722 016760 015500 030600
991 001730 000207
992
993 001732 105770 032200
994 001736 100416
995 001740 005360 030406
996 001744 001366
997 001746 005260 030604
998 001752 042760 100000 030000
999 001760 112760 000010 030401
1000 001766 004767 006370
1001 001772 000207
1002
1003 001774 032770 177577 032200
1004 002002 001361
1005 002004 005770 032204
1006 002010 001356
1007 002012 105260 030006
1008 002016 005060 030204
1009 002022 000167 004710
1010
1011 002026 004767 005132
1012 002032 102402
1013 002034 000167 004676
1014
1015 002040 105260 030006

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*****
TEST1-MAKE SURE THE TESTER WORKS AND THE DISK "FUNCTIONS."
FIRST, DO A CLEAR AND MAKE SURE ATTN BIT SETS.
THEN, WRITE THE DISK WITH ZEROES (TO REDUCE CHANGE OF PARITY ER)
THEN, WRITE A RANDOM SECTOR WITH A RANDOM PATTERN.
THEN, READ THAT SECTOR WITH A DIFFERENT RANDOM PATTERN,
THUS GENERATING AN ERROR. CHECK FOR THE CORRECT ERROR.
DO THE SAME FOR A TRACK.
*****
TEST1:  ASL      %3
        JMP      @T1(3)      ;JMP TO RIGHT PHASE OF TEST
T1:     T1Z
        T1A
        T1B
        T1C
        T1D
        T1E
        T1F
        T1G
        T1H
        T1I

T1Z:    INC      PHASE(0)
        CLR      @DAO(0)
        CLR      @DBO(0)
        JSR      7,CLRCS
        BIS      #100000,CSBUF(0) ;SET "WAIT" FLAG
        MOV      #74,WAITER(0) ;SET UP WAIT COUNTER
T1Z1:   MOV      TIME,RTIME(0) ;SET UP WAIT TIMER
        RTS      7

T1A:    TSTB     @CSO(0)      ;ATTEN BIT SET?
        BMI     T1A2         ;YES
        DEC     WAITER(0)    ;WAITED 1 SEC?
        BNE     T1Z1         ;NO
T1A1:   INC      ERCONT(0)   ;COUNT THE ERRORS
        BIC     #100000,STATO(0);DEACTIVATE
        MOVB    #010,PSSTAT+1(0);MESSO,LINE10
        JSR     7,CRACT
        RTS      7

T1A2:   BIT      #177577,@CSO(0) ;STATUS BUFFER CLEAR?
        BNE     T1A1         ;FAILED TO CLEAR
        TST     @DAO(0)
        BNE     T1A1
        INCB    PHASE(0)
        CLR     @DBUF(0)
        JMP     WTRK

T1B:    JSR      7,NEXTAD
        BVS     T1B1
        JMP     WTRK

T1B1:   INCB     PHASE(0)

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1016	002044	004767	000256		JSR	7,T1PX	;GET RANDOM ADDR. AND RANDOM PAT.
1017	002050	000167	004642		JMP	WSCT	;WRITE A SECTOR
1018							
1019	002054	105260	030006		T1C:	INCB	PHASE(0)
1020	002060	016060	030204	030206	MOV	DBBUF(0),OLDATA(0)	
1021	002066	004767	006150		JSR	7,RANDOM	
1022	002072	010160	030204		MOV	%1,DBBUF(0)	
1023	002076	052760	000001	030004	BIS	#1,FLAGS(0)	;SET "IGNORE ERRORS" FLAG
1024	002104	000167	004616		JMP	RSCT	;READ THE SECTOR
1025							
1026	002110	105260	030006		T1D:	INCB	PHASE(0)
1027	002114	004767	000232		JSR	7,T1PY	;CHECK FOR ERRORS
1028	002120	005060	030204		CLR	DBBUF(0)	;CLEAR THAT SECTOR AGAIN
1029	002124	000167	004566		JMP	WSCT	
1030							
1031	002130	105260	030006		T1E:	INCB	PHASE(0)
1032	002134	004767	000166		JSR	7,T1PX	;GET NEW RAN. ADDR. AND RAN. PAT.
1033	002140	000167	004572		JMP	WTRK	;WRITE A TRACK
1034							
1035	002144	105260	030006		T1F:	INCB	PHASE(0)
1036	002150	016060	030204	030206	MOV	DBBUF(0),OLDATA(0)	
1037	002156	004767	006060		JSR	7,RANDOM	
1038	002162	010160	030204		MOV	%1,DBBUF(0)	
1039	002166	052760	000001	030004	BIS	#1,FLAGS(0)	;SET "IGNORE ERRORS" FLAG
1040	002174	000167	004546		JMP	RTRK	
1041							
1042	002200	105260	030006		T1G:	INCB	PHASE(0)
1043	002204	004767	000142		JSR	7,T1PY	;CHECK FOR ERRORS
1044	002210	004767	006026		JSR	7,RANDOM	
1045	002214	010160	030204		MOV	%1,DBBUF(0)	
1046	002220	052760	000001	030004	BIS	#1,FLAGS(0)	;SET "IGNORE ERRORS" FLAG
1047	002226	000167	004474		JMP	RSCT	
1048							
1049	002232	105260	030006		T1H:	INCB	PHASE(0)
1050	002236	004767	000110		JSR	7,T1PY	;CHECK FOR ERRORS
1051	002242	005060	030204		CLR	DBBUF(0)	
1052	002246	000167	004464		JMP	WTRK	
1053							
1054	002252	105060	030006		T1I:	CLRB	PHASE(0)
1055	002256	005060	030200		CLR	CSBUF(0)	
1056	002262	005070	032200		CLR	ACSQ(0)	
1057	002266	005070	032202		CLR	QDBQ(0)	
1058	002272	005070	032204		CLR	QDAQ(0)	
1059	002276	032760	000020	030004	BIT	#20,FLAGS(0)	; "START UP" FLAG SET?
1060	002304	001544			BEQ	TDONE	;NO
1061	002306	005060	030000		CLR	STATQ(0)	
1062	002312	005060	030002		CLR	ASTAT(0)	
1063	002316	005060	030004		CLR	FLAGS(0)	
1064	002322	000167	004600		JMP	TOUT1	

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1065
1066
1067 002326 004767 005710
1068 002332 016760 005130 030204
1069 002340 042701 174000
1070 002344 010160 030202
1071 002350 000207
1072
1073 002352 042760 000001 030004
1074 002360 032770 070000 032200
1075 002366 001033
1076 002370 005770 032200
1077 002374 100030
1078 002376 026070 030206 032202
1079 002404 001024
1080 002406 017001 032204
1081 002412 032760 000010 030200
1082 002420 001006
1083 002422 042701 174000
1084 002426 026001 030202
1085 002432 001011
1086 002434 000207
1087
1088 002436 042701 174077
1089 002442 016002 030202
1090 002446 042702 174077
1091 002452 020102
1092 002454 001767
1093 002456 005726
1094 002460 000167 177262

*****
T1PX: JSR 7,RANDOM
      MOV LONUM,DBBUF(0)
      BIC #174000,%1
      MOV %1,DABUF(0)
      RTS 7
*****
T1PY: BIC #1,FLAGS(0) ;CLR "IGNORE ERRORS" FLAG
      BIT #070000,%CSO(0) ;OTHER THAN DATA ERROR?
      BNE TIPYC ;YES, TESTER ERROR
      TST %CSO(0) ;DATA ERROR?
      BPL TIPYC ;NO, TESTER ERROR
      CMP OLDATA(0),%DBO(0) ;TESTER READ PROPER ERROR DATA?
      BNE TIPYC ;NO, TESTER OR DISK ERROR
      MOV %DAO(0),%1
      BIT #10,CSBUF(0)
      BNE T1PYB
      BIC #174000,%1
      CMP DABUF(0),%1
      BNE T1PYC
T1PYA: RTS 7
T1PYB: BIC #174077,%1
      MOV DABUF(0),%2
      BIC #174077,%2
      CMP %1,%2
      BEQ T1PYA
T1PYC: TST (6)+ ;INCREMENT STACK POINTER
      JMP T1A1

```

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1095
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1100 002464 003012
1101 002466 005260 030006
1102 002472 032760 040000 030000
1103 002500 001002
1104 002502 004767 004674
1105 002506 000167 004214
1106
1107 002512 004767 004446
1108 002516 102402
1109 002520 000167 004202
1110
1111 002524 005060 030006
1112 002530 032760 000100 030000
1113 002536 001027
1114 002540 052760 003400 030000
1115 002546 000167 000272
1116
1117
1118
1119
1120
1121
1122 002552 003012
1123 002554 005260 030006
1124 002560 032760 040000 030000
1125 002566 001002
1126 002570 004767 004606
1127 002574 000167 004146
1128
1129 002600 004767 004360
1130 002604 102402
1131 002606 000167 004134
1132
1133 002612 005060 030006
1134 002616 000167 004200
1135
1136
1137
1138
1139
1140 002622 003006
1141 002624 005260 030006
1142 002630 004767 004546
1143 002634 000167 004056
1144
1145 002640 004767 004320
1146 002644 102373
1147 002646 004767 004620
1148 002652 102370
1149 002654 005060 030006
1150 002660 000167 004136

;*****
;TEST2 - READ SECTOR (ALL ZEROES)
;*****
TEST2: BGT T2A
T2Z: INC PHASE(0)
      BIT #40000,STATO(0) ;ALL TESTS?
      BNE T2Z1
      JSR 7,PATIN
T2Z1: JMP R5CT

T2A: JSR 7,NEXTAD
     BVS T2A1
     JMP R5CT

T2A1: CLR PHASE(0) ;PHASE = 0
      BIT #100,STATO(0) ;ACCEPT MODE?
      BNE TDONE ;NO, SEE IF DONE
      BIS #3400,STATO(0) ;TEST 7
      JMP T7Z

;*****
;TEST3 - READ TRACK (ALL ZEROES)
;*****
TEST3: BGT T3A
T3Z: INC PHASE(0)
      BIT #40000,STATO(0) ;ALL TESTS?
      BNE T3Z1 ;YES
      JSR 7,PATIN
T3Z1: JMP RTRK

T3A: JSR 7,NEXTAD
     BVS T3A1
     JMP RTRK

T3A1: CLR PHASE(0)
TDONE: JMP TESDON

;*****
;TEST4 - WRITE SECTOR
;*****
TEST4: BGT T4A
T4Z: INC PHASE(0)
      JSR 7,PATIN
T4Z1: JMP W5CT

T4A: JSR 7,NEXTAD
     BVC T4Z1
      JSR 7,NEXPAT
      BVC T4Z1
      CLR PHASE(0)
      JMP TESDON

```


1151					
1152					*****
1153					;TEST5 - WRITE TRACK
1154					*****
1155					
1156	002664	003006		TEST5:	BGT TSA
1157	002666	005260	030006	T52:	INC PHASE(0)
1158	002672	004767	004504		JSR 7,PATIN
1159	002676	000167	004034		JMP WTRK
1160					
1161	002702	004767	004256	T5A:	JSR 7,NEXTAD
1162	002706	102402			BVS TSA1
1163	002710	000167	004022		JMP WTRK
1164					
1165	002714	004767	004552	T5A1:	JSR 7,NEXPAT
1166	002720	102402			BVS TSA2
1167	002722	000167	004010		JMP WTRK
1168					
1169	002726	005060	030006	T5A2:	CLR PHASE(0)
1170	002732	000167	004064		JMP TESDON
1171					
1172					*****
1173					;TEST6 - WRITE AND READ SECTOR
1174					*****
1175					
1176	002736	001403		TEST6:	BEQ T6Z
1177	002740	005303			DEC %3
1178	002742	001407			BEQ T6A
1179	002744	000412			BR T6B
1180					
1181	002746	005260	030006	T6Z:	INC PHASE(0)
1182	002752	004767	004424		JSR 7,PATIN
1183	002756	000167	003734	T6A1:	JMP WSCT
1184					
1185	002762	005260	030006	T6A:	INC PHASE(0)
1186	002766	000167	003734	T6B1:	JMP RSCT
1187					
1188	002772	004767	004166	T6B:	JSR 7,NEXTAD
1189	002776	102003			BVC T6B2
1190	003000	004767	004466		JSR 7,NEXPAT
1191	003004	102404			BVS T6B3
1192	003006	005360	030006	T6B2:	DEC PHASE(0)
1193	003012	000167	003700		JMP WSCT
1194					
1195	003016	005060	030006	T6B3:	CLR PHASE(0)
1196	003022	000167	003774		JMP TESDON

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1197
1198
1199
1200
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1202 003026 006303
1203 003030 000173 003034
1204 003034 003044
1205 003036 003060
1206 003040 003070
1207 003042 003130
1208
1209 003044 005260 030006
1210 003050 004767 004326
1211 003054 000167 003656
1212
1213 003060 005260 030006
1214 003064 000167 003656
1215
1216 003070 004767 004070
1217 003074 102003
1218 003076 004767 004370
1219 003102 102404
1220 003104 005360 030006
1221 003110 000167 003622
1222
1223 003114 005060 030006
1224 003120 032760 000100 030000
1225 003126 001233
1226 003130 032770 000100 032404
1227 003136 001412
1228 003140 032760 007400 030400
1229 003146 001410
1230 003150 112760 000003 030006
1231 003156 005060 030200
1232 003162 000207
1233
1234 003164 004767 005172
1235 003170 112760 000122 030401
1236 003176 012760 150603 030000
1237 003204 004767 005032
1238 003210 042701 174077
1239 003214 010160 030202
1240 003220 052701 030000
1241 003224 010160 030002
1242 003230 000167 002056

;*****
;TEST7 - WRITE AND READ TRACK
;*****
TEST7: ASL      %3
        JMP     @T7(3)      ;JMP TO RIGHT PHASE OF TEST
T7:      T7Z
        T7A
        T7B
        T7C

T7Z:     INC     PHASE(0)
        JSR     7,PATIN
T7A1:    JMP     WTRK

T7A:     INC     PHASE(0)
T7B1:    JMP     RTRK

T7B:     JSR     7,NEXTAD
        BVC     T7B2
        JSR     7,NEXPAT
        BVS     T7B3
T7B2:    DEC     PHASE(0)
        JMP     WTRK

T7B3:    CLR     PHASE(0)      ;PHASE=0
        BIT     #100,STAT0(0) ;TEST MODE?
        BNE     TDONE         ;YES, CONTINUE TO NEXT TEST
T7C:     BIT     #100,@TPSO(0) ;TP "BUSY"?
        BEQ     T7C1         ;NO
        BIT     #7400,PSTAT(0);MESSAGE BUFFER EMPTY?
        BEQ     T7C2         ;YES
        MOV     #3,PHASE(0)   ;PHASE=3, WAIT FOR TP TO FINISH
        CLR     CSBUF(0)      ;CLR CS BUFFER
        RTS     7

T7C1:    JSR     7,CRACK
T7C2:    MOVB    #122,PSTAT+1(0);ACTIVATE TP
        MOV     #150603,STAT0(0);MESS 5,LINE 2
        JSR     7,RANDOM      ;TEST 21, ACCEPT MODE, PATTERN 3
        BIC     #174077,%1    ;GET A RANDOM NUMBER
        MOV     %1,DABUF(0)   ;RANDOM TRACK ADDR
        BIS     #030000,%1    ;INTO ADDR BUFF
        MOV     %1,ASTAT(0)   ;SEQ 1, SINGLE TRACK
        JMP     T21Z          ;INTO ADDR STATUS

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1243
1244
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1249 003234 006303
1249 003236 000173 003242
1250 003242 003254
1251 003244 003274
1252 003246 003304
1253 003250 003322
1254 003252 003332
1255
1256 003254 004767 004122
1257 003260 005260 030006
1258 003264 005060 030204
1259 003270 000167 003422
1260
1261 003274 005260 030006
1262 003300 000167 003422
1263
1264 003304 005260 030006
1265 003310 016060 030204 030204
1266 003316 000167 003374
1267
1268 003322 005260 030006
1269 003326 000167 003374
1270
1271 003332 005060 030006
1272 003336 004767 003622
1273 003342 102346
1274 003344 004767 004122
1275 003350 102343
1276 003352 000167 003444

```

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;*****
;TEST 10 - CLEAR, READ, WRITE, READ SECTOR
;*****
TEST10: ASL      :3
          JMP     @T10(3)      ;JMP TO RIGHT PHASE OF TEST
T10:      T10Z
          T10A
          T10B
          T10C
          T10D

T10Z:     JSR     7,PATIN
T10Z1:    INC     PHASE(0)
          CLR     DBBUF(0)
          JMP     WSC1

T10A:     INC     PHASE(0)
          JMP     RSCT

T10B:     INC     PHASE(0)
          MOV     OLDDATA(0),DBBUF(0) ;RESTOR THE DATA BUFFER
          JMP     WSC1

T10C:     INC     PHASE(0)
          JMP     RSCT

T10D:     CLR     PHASE(0)
          JSR     7,NEXTAD
          BVC     T10Z1
          JSR     7,NEXPAT
          BVC     T10Z1
          JMP     TESDON

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1282 003356 006303
1283 003360 000173 003364
1284 003364 003376
1285 003366 003416
1286 003370 003426
1287 003372 003444
1288 003374 003454
1289
1290 003376 004767 004000
1291 003402 005260 030006
1292 003406 005060 030204
1293 003412 000167 003320
1294
1295 003416 005260 030006
1296 003422 000167 003320
1297
1298 003426 005260 030006
1299 003432 016060 030206 030204
1300 003440 000167 003272
1301
1302 003444 005260 030006
1303 003450 000167 003272
1304
1305 003454 005060 030006
1306 003460 004767 003500
1307 003464 102346
1308 003466 004767 004000
1309 003472 102343
1310 003474 000167 003322

*****
:TEST 11 - CLEAR, READ, WRITE, READ TRACK
*****

TEST11: ASL      %3
          JMP     @T11(3)      ;JMP TO RIGHT PHASE OF TEST
T11:      T11Z
          T11A
          T11B
          T11C
          T11D

T11Z:     JSR     7,PATIN
T11Z1:    INC     PHASE(0)
          CLR     DBBUF(0)
          JMP     WTRK

T11A:     INC     PHASE(0)
          JMP     RTRK

T11B:     INC     PHASE(0)
          MOV     OLDATA(0),DBBUF(0) ;RESTOR THE DATA BUFFER
          JMP     WTRK

T11C:     INC     PHASE(0)
          JMP     RTRK

T11D:     CLR     PHASE(0)
          JSR     7,NEXTAD
          BVC     T11Z1
          JSR     7,NEXPAT
          BVC     T11Z1
          JMP     TESDON

```

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1311
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1317 003500 006303
1318 003502 000173 003506
1319 003506 003514
1320 003510 003530
1321 003512 003552
1322
1323 003514 004767 003662
1324 003520 105260 030006
1325 003524 000167 003166
1326
1327 003530 004767 004210
1328 003534 001402
1329 003536 000167 003154
1330
1331 003542 105260 030006
1332 003546 000167 003154
1333
1334 003552 004767 004166
1335 003556 001402
1336 003560 000167 003142
1337
1338 003564 105060 030006
1339 003570 004767 003370
1340 003574 102351
1341 003576 004767 003670
1342 003602 102346
1343 003604 000167 003212

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;*****
;TEST 12 - WRITE ONE SECTOR, CHANGE TRACKS AND WRITE THAT SECTOR,
;          THEN GO BACK AND READ THOSE SECTORS WRITTEN.
;*****

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```

TEST12: ASL      %3
        JMP      @T12(3)      ;JMP TO RIGHT PHASE OF TEST
T12:    T12Z
        T12A
        T12B

T12Z:   JSR      7,PATIN      ;START PAT
T12Z1:  INCB     PHASE(0)     ;PHASE = 1
        JMP      WSCT

T12A:   JSR      7,CHATAK     ;CHANGE TRACKS
        BEQ      T12A2
        JMP      WSCT

T12A2:  INCB     PHASE(0)     ;PHASE = 2
        JMP      RSCT        ;READ

T12B:   JSR      7,CHATAK     ;CHANGE TRACKS
        BEQ      T12B1
        JMP      RSCT

T12B1:  CLRB     PHASE(0)     ;PHASE = 0
        JSR      7,NEXTAD
        BVC     T12Z1
        JSR      7,NEXPAT
        BVC     T12Z1
        JMP      TESDON

```

E03

MAINDEC-11-DZRS-A
DZRSAA.P11

RS64 TESTER MONITOR AND EXERCISER

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1344
1345
1346 ;*****
1347 ;TEST 13 - CLEAR TRACK, WRITE ONE SECTOR, CHANGE TRACKS AND REPEAT
1348 ;      THEN READ ALL SECTORS
1349 ;*****
1350 TEST13: ASL      %3
1351          JMP      @T13(3)      ;JMP TO RIGHT PHASE OF TEST
1352 T13:     T13Z
1353          T13A
1354          T13B
1355          T13C
1356
1357 003610 006303 003550 T13Z: JSR      7,PATIN
1358 003612 000173 030006 T13Z1: INCB    PHASE(0)      ;PHASE = 1
1359 003616 003626 030204 T13Z2: CLR     DBBUF(0)
1360 003620 003646 003070      JMP      WTRK
1361 003622 003664
1362 003624 003706
1363 003626 004767 003550 T13A: INC     PHASE(0)      ;PHASE = 2
1364 003632 105260 030006      MOV     OLDATA(0),DBBUF(0)
1365 003636 005060 030204      JMP      WSCT
1366 003642 000167 003032
1367 003646 005260 030006 T13B: JSR      7,CHATAK
1368 003652 016060 030006      BEQ     T13B1
1369 003656 000167 004054      DECB    PHASE(0)
1370 003664 004767 004054      BR      T13Z2
1371 003670 001403 030006
1372 003672 105360 030006 T13B1: INCB    PHASE(0)      ;PHASE = 3
1373 003676 000757 004054      BR      T13C1
1374 003700 105260 030006
1375 003704 000407 004064 T13C: JSR      7,CHASEC      ;CHANGE SECTORS
1376 003706 004767 004064      BEQ     T13C1      ;Z=1, SAME SECTOR
1377 003712 001404 030204      CLR     DBBUF(0)
1378 003714 005060 030002      JMP      RSCT
1379 003720 000167 003002
1380 003724 004767 004014 T13C1: JSR      7,CHATAK      ;CHANGE TRACKS
1381 003730 001405 030206      BEQ     T13C2      ;Z=1, DONE
1382 003732 016060 030204      MOV     OLDATA(0),DBBUF(0) ;RESTORE DATA BUFF
1383 003736 000167 002762      JMP      RSCT
1384 003744 005060 030006 T13C2: CLR     PHASE(0)
1385 003750 004767 003210      JSR      7,NEXTAD
1386 003754 102326 003510      BVC     T13Z1
1387 003756 004767 003510      JSR      7,NEXPAT
1388 003762 102325 003032      BVC     T13Z2
1389 003764 000167 003032      JMP      TESDON

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1396 003770 006303
1397 003772 000173 003776
1398 003776 004010
1399 004000 004024
1400 004002 004046
1401 004004 004102
1402 004006 004124
1403
1404 004010 004767 003366
1405 004014 105260 030006
1406 004020 000167 002672
1407
1408 004024 004767 003746
1409 004030 001404
1410 004032 004767 004000
1411 004036 000167 002654
1412
1413 004042 105260 030006
1414 004046 004767 003672
1415 004052 001404
1416 004054 004767 003756
1417 004060 000167 002652
1418
1419 004064 105260 030006
1420 004070 016060 030206 030204
1421 004076 000167 002624
1422
1423 004102 004767 003670
1424 004106 001404
1425 004110 004767 003722
1426 004114 000167 002606
1427
1428 004120 105260 030006
1429 004124 004767 003614
1430 004130 001404
1431 004132 004767 003700
1432 004136 000167 002604
1433
1434 004142 005060 030006
1435 004146 016060 030206 030204
1436 004154 042760 000010 030200
1437 004162 004767 002776
1438 004166 102312
1439 004170 004767 003276
1440 004174 102307
1441 004176 000167 002620

;*****
;TEST14 - WRITE ONE SECTOR, COMPLEMENT THE PATTERN WORD,
;WRITE ALL OTHER SECTORS, THE READ ALL SECTORS
;*****

TEST14: ASL      %3
        JMP      @T14(3)      ;JMP TO RIGHT PHASE OF TEST
T14:     T14Z
        T14A
        T14B
        T14C
        T14D

T14Z:    JSR      7,PATIN
T14Z1:   INCB     PHASE(0)
        JMP      WSC1          ;WRITE ONE SECTOR

T14A:    JSR      7,CHASEC      ;CHANGE SECTOR
        BEQ      T14A1          ;ALL SECTORS THAT TRACK DONE?
        JSR      7,COMPAT      ;COMPLEMENT THE PATERN WORD
        JMP      WSC1          ;WRITE ALL OTHER SECTORS

T14A1:   INCB     PHASE(0)
T14B:    JSR      7,CHATAK
        BEQ      T14B2
        JSR      7,COMPAT
        JMP      WTRK

T14B2:   INCB     PHASE(0)
        MOV      OLDDATA(0),DBBUF(0) ;RESTOPE DATA BUFF
        JMP      RSC1

T14C:    JSR      7,CHASEC
        BEQ      T14C1
        JSR      7,COMPAT
        JMP      RSC1

T14C1:   INCB     PHASE(0)
T14D:    JSR      7,CHATAK
        BEQ      T14D1
        JSR      7,COMPAT
        JMP      RTRK

T14D1:   CLR      PHASE(0)      ;PHASE=0
        MOV      OLDDATA(0),DBBUF(0) ;RESTORE DATA BUFFER
        BIC      #10,CSBUF(0)    ;CLR TRACK BIT TO GET NEXT SECTOR
        JSR      7,NEXTAD
        BVC      T14Z1
        JSR      7,NEXPAT
        BVC      T14Z1
        JMP      TESDON

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1442
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1447 004202 006303
1448 004204 000173 004210
1449 004210 004216
1450 004212 004232
1451 004214 004266
1452
1453 004216 004767 003160
1454 004222 105260 030006
1455 004226 000167 002464
1456
1457 004232 004767 003540
1458 004236 001404
1459 004240 004767 003572
1460 004244 000167 002446
1461 004250 105260 030006
1462 004254 016060 030206 030204
1463 004262 000167 002440
1464
1465 004266 004767 003504
1466 004272 001404
1467 004274 004767 003536
1468 004300 000167 002422
1469
1470 004304 005060 030006
1471 004310 016060 030206 030204
1472 004316 004767 002642
1473 004322 102337
1474 004324 004767 003142
1475 004330 102334
1476 004332 032760 000100 030000
1477 004340 001402
1478 004342 000167 002454
1479
1480 004346 105260 030001
1481 004352 012760 020000 030002
1482 004360 005060 030202
1483 004364 000406

;*****
;TEST 15 - WRITE ONE SECTOR, COMPLEMENT THE PATTERN WORD,
;WRITE THE REST OF THE TRACK, THEN READ THAT TRACK
;*****
TEST15: ASL      %3
        JMP      @T15(3)      ;JMP TO RIGHT PHASE OF TEST
T15:    T15Z
        T15A
        T15B

T15Z:   JSR      7,PATIN
T15Z1:  INCB     PHASE(0)      ;PHASE = 1
        JMP      W SCT        ;WRITE ONE SECTOR

T15A:   JSR      7,CHASEC      ;CHANGE SECTORS
        BEQ      T15A1        ;Z=1 MEANS DONE TRACK
        JSR      7,COMPAT      ;COMPLEMENT THE PATTERN WORD
        JMP      W SCT        ;WRITE ALL OTHER SECTORS
T15A1:  INCB     PHASE(0)      ;PHASE = 2
        MOV      OL DATA(0),DBBUF(0) ;RESTORE DAT BUFF
        JMP      R SCT        ;READ THE ORIGINAL SECTOR

T15B:   JSR      7,CHASEC      ;CHANGE SECTORS
        BEQ      T15B1        ;Z=1 MEANS DONE TRACK
        JSR      7,COMPAT      ;COMPLEMENT THE PATTERN WORD
        JMP      R SCT        ;READ THE OTHER SECTORS

T15B1:  CLR      PHASE(0)      ;PHASE = 0
        MOV      OL DATA(0),DBBUF(0) ;RESTORE DATA BUFFER
        JSR      7,NEXTAD      ;NEW ADDRESS
        BVC      T15Z1        ;V=0, NOT DONE
        JSR      7,NEXPAT      ;GET NEXT PATTERN
        BVC      T15Z1
        BIT      #100,STAT0(0) ;ACCEPT MODE?
        BEQ      T15B2        ;YES
        JMP      TESDON

T15B2:  INCB     STAT0+1(0)     ;NEXT TEST (16)
        MOV      #020000,ASTAT(0) ;SEQUENCE 1
        CLR      DBBUF(0)      ;CLR ADDR BUFF
        BR       T16Z          ;TEST16 NEXT

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1490 004366 006303
1491 004370 000173 004374
1492 004374 004402
1493 004376 004416
1494 004400 004452
1495
1496 004402 004767 002774
1497 004406 105260 030006
1498 004412 000167 002320
1499
1500 004416 004767 003322
1501 004422 001404
1502 004424 004767 003406
1503 004430 000167 002302
1504
1505 004434 105260 030006
1506 004440 016060 030206 030204
1507 004446 000167 002274
1508
1509 004452 004767 003266
1510 004456 001404
1511 004460 004767 003352
1512 004464 000167 002256
1513
1514 004470 005060 030006
1515 004474 016060 030206 030204
1516 004502 004767 002456
1517 004506 102337
1518 004510 004767 002756
1519 004514 102334
1520 004516 000167 002300

;*****
;TEST 16 - WRITE A TRACK, COMPLEMENT THE PATTERN WORD,
;WRITE ALL OTHER TRACKS, THEN READ THE DISK.
;*****

TEST16: ASL      %3
        JMP      @T16(3)      ;JMP TO RIGHT PHASE OF TEST
T16:    T16Z
        T16A
        T16B

T16Z:   JSR      7,PATIN
T16Z1:  INCB     PHASE(0)      ;PHASE = 1
        JMP      WTRK          ;WRITE ONE TRACK

T16A:   JSR      7,CHATAK      ;CHANGE TRACKS
        BEQ      T16A1        ;Z=1 MEANS DONE
        JSR      7,COMPAT      ;COMPLEMENT THE PATTERN WORD
        JMP      WTRK          ;WRITE ALL OTHER TRACKS

T16A1:  INCB     PHASE(0)      ;PHASE = 2
        MOV      OLDDATA(0),DBBUF(0) ;RESTORE DATA BUFF
        JMP      RTRK

T16B:   JSR      7,CHATAK      ;CHANGE TRACKS
        BEQ      T16B1        ;Z=1 MEANS DONE
        JSR      7,COMPAT      ;COMPLEMENT PAT WORD
        JMP      RTRK          ;READ THE OTHER TRACKS

T16B1:  CLR      PHASE(0)      ;PHASE = 0
        MOV      OLDDATA(0),DBBUF(0) ;RESTORE DATA BUFFER
        JSR      7,NEXTAD      ;NEW ADDRESS
        BVC     T16Z1          ;V=0, NOT DONE
        JSR      7,NEXPAT      ;NEW PATTERN WORD.
        BVC     T16Z1          ;V=0, NOT DONE
        JMP      TESDON        ;TEST DONE

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1521
1522
1523      ;*****
1524      ;TEST17 - WRITE A TRACK, COMPLEMENT THE PATTERN WORD,
1525      ;WRITE THE TWO ADJACENT TRACKS, THEN READ ALL 3 TRACKS
1526      ;*****
1527 004522 006303      TEST17: ASL      %3
1528 004524 000173      JMP      @T17(3)      ;JMP TO RIGHT PHASE OF TEST
1529 004530 004546      T17:      T17Z
1530 004532 004562      T17A      T17A
1531 004534 004602      T17B      T17B
1532 004536 004622      T17C      T17C
1533 004540 004654      T17D      T17D
1534 004542 004674      T17E      T17E
1535 004544 004714      T17F      T17F
1536
1537 004546 004767 002630      T17Z: JSR      7,PATIN
1538 004552 105260 030006      T17Z1: INCB     PHASE(0)
1539 004556 000167 002154      JMP      WTRK
1540
1541 004562 005260 030006      T17A: INC      PHASE(0)      ;PHASE=2
1542 004566 004767 003260      JSR      7,ADJAC1      ;GET ADJACENT TRACK ADDR
1543 004572 004767 003240      JSR      7,COMPAT
1544 004576 000167 002134      JMP      WTRK
1545
1546 004602 005260 030006      T17B: INC      PHASE(0)      ;PHASE=3
1547 004606 004767 003302      JSR      7,ADJAC2      ;GET OTHER ADJACENT TRACK ADDR
1548 004612 004767 003220      JSR      7,COMPAT
1549 004616 000167 002114      JMP      WTRK
1550
1551 004622 105260 030006      T17C: INCB     PHASE(0)      ;PHASE=4
1552 004626 016060 030002 030202      MOV     ASTAT(0),DABUF(0) ;RESTORE ADDR BUFF
1553 004634 042760 174000 030202      BIC     #174000,DABUF(0) ;MASK
1554 004642 016060 030206 030204      MOV     OLDATA(0),DBBUF(0) ;RESTORE DATA BUFF
1555 004650 000167 002072      JMP      RTRK
1556
1557 004654 105260 030006      T17D: INCB     PHASE(0)      ;PHASE=5
1558 004660 004767 003166      JSR      7,ADJAC1      ;GET ADJACENT TRACK ADDR
1559 004664 004767 003146      JSR      7,COMPAT
1560 004670 000167 002052      JMP      RTRK
1561
1562 004674 105260 030006      T17E: INCB     PHASE(0)      ;PHASE=6
1563 004700 004767 003210      JSR      7,ADJAC2      ;GET OTHER ADJACENT TRACK ADDR
1564 004704 004767 003126      JSR      7,COMPAT
1565 004710 000167 002032      JMP      RTRK
1566
1567 004714 005060 030006      T17F: CLR      PHASE(0)
1568 004720 016060 030206 030204      MOV     OLDATA(0),DBBUF(0) ;RESTORE DATA BUFFER
1569 004726 004767 002232      JSR      7,NEXTAD
1570 004732 102307      BVC     T17Z1
1571 004734 004767 002532      JSR      7,NEXPAT
1572 004740 102304      BVC     T17Z1
1573 004742 032760 000100 030000      BIT     #100,STAT0(0) ;ACCEPT MODE?
1574 004750 001402      BEQ     T17F1      ;YES
1575 004752 000167 002044      JMP      TESDON
1576

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1577 004756 012760 150212 030000 T17F1: MOV #150212,STAT0(0);TEST 20,RANDOM PATTERN
1578 004764 000411 BR 1202;TEST20 NEXT

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1579
1580
1581
1582
1583
1584
1585 004766 006303
1586 004770 000173 004774
1587 004774 005010
1588 004776 005032
1589 005000 005064
1590 005002 005130
1591 005004 005144
1592 005006 005174
1593
1594 005010 004767 002366
1595 005014 012760 000200 030402
1596 005022 005260 030006
1597 005026 000167 001704
1598
1599 005032 005260 030006
1600 005036 005060 030406
1601 005042 116760 012362 030406
1602 005050 004767 001672
1603 005054 052760 100000 030200
1604 005062 000207
1605
1606 005064 105770 032200
1607 005070 100005
1608 005072 032760 000100 030000
1609 005100 001363
1610 005102 000420
1611
1612 005104 116701 012320
1613 005110 166001 030406
1614 005114 100002
1615 005116 062701 000074
1616 005122 162701 000005
1617 005126 100405
1618 005130 105260 030006
1619 005134 042760 100000 030200
1620 005142 000207
1621
1622 005144 005060 030006
1623 005150 004767 002010
1624 005154 102404
1625 005156 032760 000100 030000
1626 005164 001316
1627 005166 004767 002300
1628 005172 102313
1629 005174 032760 000100 030000
1630 005202 001402
1631 005204 000167 001612
1632
1633 005210 004767 001572
1634 005214 032760 007400 030400

;*****
;TEST20-WRITE A TRACK, THEN READ IT FOR 5 MINUTES
;OR UNTIL INTERRUPTED BY "1A"
;*****
TEST20: ASL      %3
          JMP      @T20(3)          ;JMP TO RIGHT PHASE OF TEST
T20:      T20Z
          T20A
          T20B
          T20C
          T20D
          T20E

T20Z:     JSR      7,PATIN
          MOV      #200,PRANK(0)    ;4 TIMES THROUGH ALL TRACKS
T20Z1:    INC      PHASE(0)
          JMP      WTRK

T20A:     INC      PHASE(0)
          CLR      WAITER(0)        ;MAKE SURE HIGH BYTE IS CLR
          MOV      MINUTE,WAITER(0) ;START TIME FOR 5 MIN. READ
T20A1:    JSR      7,RTRK          ;START READING
          BIS      #100000,CSBUF(0) ;SET WAIT FLAG
          RTS      7

T20B:     TSTB     @CS0(0)          ;ATTEN BIT?
          BPL      T20B1            ;NO, CHECK TIME
          BIT      #100,STAT0(0)    ;ACCEPT MODE?
          BNE      T20A1            ;NO, START READING AGAIN
          BR       T20D

T20B1:    MOV      MINUTE,%1        ;GET PRESENT TIME
          SUB      WAITER(0),%1     ;LESS READ START TIME
          BPL      T20B2            ;NEXT HOUR?
          ADD      #74,%1           ;COMPENSATE FOR HR CHANGE
          SUB      #5,%1            ;5 MINUTES UP?
          BMI      T20C1            ;NO, RTS
          INC      PHASE(0)
          BIC      #100000,CSBUF(0) ;CLR WAIT FLAG
          RTS      7

T20C:     INCB     PHASE(0)
          BIC      #100000,CSBUF(0) ;CLR WAIT FLAG
T20C1:    RTS      7

T20D:     CLR      PHASE(0)
          JSR      7,NEXTAD
          BVS      T20D1
          BIT      #100,STAT0(0)
          BNE      T20Z1
          JSR      7,NEXPAT
          BVC      T20Z1
          BIT      #100,STAT0(0)    ;ACCEPT MODE?
          BEQ      T20E1            ;YES
          JMP      TESDON

T20E1:    JSR      7,CLRCS
          BIT      #7400,PSTAT(0)

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1635	005222	001404				BEQ	T2OE2
1636	005224	112760	000005	030006		MOVB	#5, PHASE(0)
1637	005232	000207				RTS	7
1638							
1639	005234	112760	000226	030401	T2OE2:	MOVB	#226, PSTAT+1(0) ; MESS 11, LINE 6 - ACCEPT COMPLETED
1640	005242	004767	003114			JSR	7, CRACT
1641	005246	005060	030000			CLR	STAT(0)
1642	005252	005060	030002			CLR	ASTAT(0)
1643	005256	005060	030006			CLR	PHASE(0)
1644	005262	000207				RTS	7

```
1645
1646
1647 ;*****
1648 ;TEST21 - DC POWER FAIL ON A WRITE TRACK
1649 ;*****
1650 TEST21: ASL      %3
1651          JMP      @T21(3)          ;JMP TO RIGHT PHASE OF TEST
1652 T21:      T21Z
1653          T21A
1654          T21B
1655          T21C
1656          T21D
1657          T21E
1658          T21F
1659          T21G
1660
1661 T21Z:     JSR      7,PATIN
1662 T21Z1:    INCB     PHASE(0)
1663          JMP      WTRK
1664
1665 T21A:     JSR      7,CHATAK          ;NEW TRACK
1666          BEQ      T21A1
1667          JMP      WTRK          ;WRITE TRACK
1668
1669 T21A1:    MOV      TIME,RTIME(0)    ;SAVE TIME FOR POWER FAIL
1670          JSR      7,WTRK          ;WRITE TRACK
1671          BIS      #100000,CSBUF(0) ;SET WAIT FLAG
1672          BR       T21C2
1673
1674 T21B:     BIS      #1,FLAGS(0)      ;SET "IGNORE ERRORS" FLAG
1675          MOV      #412,@CSO(0)    ;TURN DC POWER OFF (KEEP ON WRITING)
1676          MOV      TIME,WAITER(0)  ;SAVE TIME
1677          BR       T21C2
1678
1679 T21C:     JSR      7,W20S          ;WAIT 20 SEC. (POWER OFF)
1680          BMI      T21C1          ;DONE
1681          MOV      TIME,RTIME(0)
1682          RTS      7
1683
1684 T21C1:    MOV      @DAO(0),%1      ;GET DISK ADDR
1685          BIC      #177700,%1      ;MASK SECTOR ADDR
1686          BIC      #77,DABUF(0)
1687          BIS      %1,DABUF(0)
1688          JSR      7,CLRCS          ;TURN POWER BACK ON AND CLEAR
1689          MOV      TIME,WAITER(0)
1690          T21C2:    INC      PHASE(0)
1691          RTS      7
1692
1693 T21D:     JSR      7,W2S          ;WAIT 2 SEC. (POWER ON)
1694          BMI      T21D1          ;20 SEC. UP
1695          JMP      CLRCS          ;DO ANOTHER CLEAR...TO BE SURE!
1696
1697 T21D1:    INCB     PHASE(0)        ;PHASE=E
1698          JMP      RSCT          ;READ PROBABLE BAD SECTOR
1699
1700 T21E:     BIT      #170000,@CSO(0) ;ERROR?
```

1701	005516	001405			BEQ	T21F		;NO
1702	005520	105260	030006		INCB	PHASE(0)		
1703	005524	042760	000001	030004	BIC	#1, FLAGS(0)		;NO LONGER IGNORE ERRORS
1704	005532	004767	002240		T21F: JSR	7, CHASEC		
1705	005536	001402			BEQ	T21F1		
1706	005540	000167	001162		JMP	RSCT		
1707								
1708	005544	042760	000001	030004	T21F1: BIC	#1, FLAGS(0)		;MAKE SURE "IGNORE ERRORS" FLAG IS CLR
1709	005552	005260	030006		INC	PHASE(0)		
1710	005556	004767	002162		T21G: JSR	7, CHATAK		
1711	005562	001402			BEQ	T21G1		;Z=1, DONE
1712	005564	000167	001156		JMP	RTRK		;READ TRACK
1713								
1714	005570	005060	030006		T21G1: CLR	PHASE(0)		
1715	005574	004767	001672		JSR	7, NEXPAT		
1716	005600	102246			BVC	T21Z1		;V=1 MEANS DONE
1717	005602	000167	001214		JMP	TESDON		

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1720
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1723 005606 006303
1724 005610 000173 005614
1725 005614 005632
1726 005616 005646
1727 005620 005660
1728 005622 005702
1729 005624 005726
1730 005626 005754
1731 005630 006010
1732
1733 005632 004767 001544
1734 005636 105260 030006
1735 005642 000167 001070
1736
1737 005646 004767 002072
1738 005652 001452
1739 005654 000167 001056
1740
1741 005660 004767 002060
1742 005664 001054
1743 005666 004767 001054
1744 005672 052760 100000 030200
1745 005700 000422
1746
1747 005702 052760 000001 030004
1748 005710 012770 000414 032200
1749 005716 016760 011504 030406
1750 005724 000410
1751 005726 004767 002240
1752 005732 100013
1753 005734 004767 001046
1754 005740 016760 011462 030406
1755 005746 005260 030006
1756 005752 000207
1757
1758 005754 004767 002166
1759 005760 100404
1760 005762 016760 011440 030600
1761 005770 000207
1762
1763 005772 042760 000001 030004
1764 006000 105260 030006
1765 006004 000167 000736
1766
1767 006010 004767 001730
1768 006014 001402
1769 006016 000167 000724
1770
1771 006022 005060 030006
1772 006026 004767 001440
1773 006032 102301

*****
:TEST 22 - DC POWER FAIL ON A READ TRACK
*****
TEST22: ASL      %3
          JMP      T22(3)          ;JMP TO RIGHT PHASE OF TEST
T22:      T22Z
          T22A
          T22B
          T22C
          T22D
          T22E
          T22F

T22Z:     JSR      7,PATIN
T22Z1:    INCB     PHASE(0)
          JMP      WTRK

T22A:     JSR      7,CHATAK
          BEQ      T22E3
          JMP      WTRK

T22B:     JSR      7,CHATAK
          BNE      T22F1
          JSR      7,RTRK
          BIS      #100000,CSBUF(0) ;SET WAIT FLAG
          BR       T22D1

T22C:     BIS      #1,FLAGS(0)      ;SET "IGNORE ERRORS" FLAG
          MOV      #414,ACSO(0)     ;DC POWER OFF (KEEP ON READING)
          MOV      TIME,WAITER(0)   ;SAVE TIME
          BR       T22D1

T22D:     JSR      7,W20S           ;WAIT 20 SEC. (POWER OFF)
          BPL      T22E1

          JSR      7,CLACS
          MOV      TIME,WAITER(0)   ;TURN POWER BACK ON AND CLEAR
          INC      PHASE(0)         ;SAVE TIME
          RTS      7

T22E:     JSR      7,W2S           ;WAIT 2 SEC. (POWER ON)
          BMI      T22E2
          MOV      TIME,RTIME(0)

T22E1:    MOV      7
          RTS

T22E2:    BIC      #1,FLAGS(0)     ;CLEAR "IGNORE ERRORS" FLAG
T22E3:    INCB     PHASE(0)
          JMP      RTRK

T22F:     JSR      7,CHATAK
          BEQ      T22F2
          JMP      RTRK

T22F1:    JMP
T22F2:    CLR      PHASE(0)
          JSR      7,NEXPAT
          BVC      T22Z1
  
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1774 006034 000167 000762
1775

JMP TESDON

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1776
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1781 006040 006303
1782 006042 000173 006046
1783 006046 006076
1784 006050 006112
1785 006052 006146
1786 006054 006164
1787 006056 006234
1788 006060 006264
1789 006062 006234
1790 006064 006264
1791 006066 006302
1792 006070 006324
1793 006072 006346
1794 006074 006372
1795
1796 006076 004767 001300
1797 006102 005260 030006
1798 006106 000167 000624
1799
1800 006112 004767 001626
1801 006116 001402
1802 006120 000167 000612
1803
1804 006124 016760 011276 030600
1805 006132 004767 000600
1806 006136 052760 100000 030200
1807 006144 000430
1808
1809 006146 052760 000001 030004
1810 006154 012770 001012 032200
1811 006162 000416
1812
1813 006164 004767 002026
1814 006170 100040
1815 006172 017001 032204
1816 006176 042701 177700
1817 006202 042760 000077 030202
1818 006210 050160 030202
1819 006214 004767 000566
1820 006220 016760 011202 030406
1821 006226 005260 030006
1822 006232 000207
1823
1824 006234 004767 001732
1825 006240 100402
1826 006242 000167 000540
1827
1828 006246 052760 100000 030200
1829 006254 012770 001014 032200
1830 006262 000756
1831

;*****
;TEST23 - AC POWER FAIL ON A WRITE TRACK
;*****

TEST23: ASL      %3
          JMP      @T23(3)          ;JMP TO RIGHT PHASE OF TEST
T23:      T23Z
          T23A
          T23B
          T23C
          T23D
          T23E
          T23F
          T23G
          T23H
          T23I
          T23J
          T23K

T23Z:     JSR      7,PATIN
T23Z1:    INCB     PHASE(0)
          JMP      WTRK

T23A:     JSR      7,CHATAK          ;NEW TRACK
          BEQ      T23A1
          JMP      WTRK              ;WRITE TRACK

T23A1:    MOV      TIME,RTIME(0)    ;SAVE TIME FOR POWER FAIL
          JSR      7,WTRK            ;WRITE TRACK
          BIS      #100000,CSBUF(0) ;SET WAIT FLAG
          BR       T23C3

T23B:     BIS      #1,FLAGS(0)      ;SET "IGNORE ERRORS" FLAG
          MOV      #1012,@CSO(0)    ;TURN AC POWER OFF (KEEP ON WRITING)
          BR       T23C2

T23C:     JSR      7,W60S            ;WAIT 60 SEC. (POWER OFF)
          BPL      T23E1
          MOV      @DAO(0),%1
          BIC      #177700,%1        ;MASK SECTOR ADDR
          BIC      #77,DABUF(0)
          BIS      %1,DABUF(0)
          T23C1:   JSR      7,CLRCS
          T23C2:   MOV      TIME,WAITER(0) ;TURN POWER BACK ON AND CLEAR
          T23C3:   INC      PHASE(0)
          RTS      7

T23D:     JSR      7,W20S            ;WAIT 20 SEC. (POWER ON)
          BMI      T23D1
          JMP      CLRCS              ;20 SEC. UP, DO ANOTHER POWER DOWN
                                      ;DO ANOTHER CLEAR...TO BE SURE!

T23D1:    BIS      #100000,CSBUF(0) ;SET WAIT FLAG
          MOV      #1014,@CSO(0)    ;TURN POWER OFF (WITH A READ)
          BR       T23C2

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1832	006264	004767	001726		T23E:	JSR	7, W60S	;WAIT 60 SEC. (POWER OFF)
1833	006270	100751				BMI	T23C1	;DONE
1834	006272	016760	011130	030600	T23E1:	MOV	TIME, RTIME(0)	
1835	006300	000207				RTS	7	
1836								
1837		006234			T23F =	T23D		;ANOTHER POWER DOWN
1838								
1839		006264			T23G =	T23E		;ANOTHER POWER UP
1840								
1841	006302	004767	001664		T23H:	JSR	7, W20S	;WAIT 20 SEC. (POWER ON)
1842	006306	100402				BMI	T23H1	;20 SEC. UP
1843	006310	000167	000472			JMP	CLRCS	;DO ANOTHER CLEAR...TO BE SURE!
1844								
1845	006314	105260	030006		T23H1:	INCB	PHASE(0)	;PHASE=I
1846	006320	000167	000402			JMP	RSCT	;READ PROBABLE BAD SECTOR
1847								
1848	006324	032770	170000	032200	T23I:	BIT	#170000, ACSO(0)	;ERROR?
1849	006332	001405				BEQ	T23J	;NO
1850	006334	105260	030006			INCB	PHASE(0)	
1851	006340	042760	000001	030004		BIC	#1, FLAGS(0)	;NO LONGER IGNORE ERRORS
1852	006346	004767	001424		T23J:	JSR	7, CHASEC	
1853	006352	001402				BEQ	T23J1	
1854	006354	000167	000346			JMP	RSCT	
1855								
1856	006360	042760	000001	030004	T23J1:	BIC	#1, FLAGS(0)	;MAKE SURE "IGNORE ERRORS" FLAG IS CLR
1857	006366	005260	030006			INC	PHASE(0)	
1858	006372	004767	001346		T23K:	JSR	7, CHATAK	
1859	006376	001402				BEQ	T23K1	;Z=1, DONE
1860	006400	000167	000342			JMP	RTRK	;READ TRACK
1861								
1862	006404	005060	030006		T23K1:	CLR	PHASE(0)	
1863	006410	004767	001056			JSR	7, NEXPAT	
1864	006414	102232				BVC	T23Z1	;V=1 MEANS DONE
1865	006416	000167	000400			JMP	TESDON	

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1868
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1871 006422 006303
1872 006424 000173 006430
1873 006430 006456
1874 006432 006472
1875 006434 006504
1876 006436 006526
1877 006440 006560
1878 006442 006606
1879 006444 006560
1880 006446 006606
1881 006450 006560
1882 006452 006624
1883 006454 006650
1884
1885 006456 004767 000720
1886 006462 105260 030006
1887 006466 000167 000244
1888
1889 006472 004767 001246
1890 006476 001460
1891 006500 000167 000232
1892
1893 006504 004767 001234
1894 006510 001055
1895 006512 004767 000230
1896 006516 052760 100000 030200
1897 006524 000425
1898
1899 006526 052760 100000 030200
1900 006534 052760 000001 030004
1901 006542 012770 001014 032200
1902 006550 016760 010652 030406
1903 006556 000410
1904
1905 006560 004767 001432
1906 006564 100013
1907 006566 004767 000214
1908 006572 016760 010630 030406
1909 006600 005260 030006
1910 006604 000207
1911
1912 006606 004767 001360
1913 006612 100745
1914 006614 016760 010606 030600
1915 006622 000207
1916
1917 006560
1918
1919 006606
1920
1921 006560

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;TEST 24 - AC POWER FAIL ON A READ TRACK

TEST24: ASL %3
JMP 2T24(3) ;JMP TO RIGHT PHASE OF TEST

T24: T24Z
T24A
T24B
T24C
T24D
T24E
T24F
T24G
T24H
T24I
T24J

T24Z: JSR 7,PATIN
T24Z1: INCB PHASE(0)
JMP WTRK

T24A: JSR 7,CHATAK
BEQ T24I1
JMP WTRK

T24B: JSR 7,CHATAK
BNE T24I2
JSR 7,RTRK
BIS #100000,CSBUF(0)
BR T24D1

T24C: BIS #100000,CSBUF(0) ;SET WAIT FLAG
BIS #1,FLAGS(0) ;SET "IGNORE ERRORS" FLAG
MOV #1014,ACSO(0) ;TURN AC POWER OFF (KEEP ON READING)
MOV TIME,WAITER(0) ;20 SEC
BR T24D1

T24D: JSR 7,W60S ;WAIT 60 SEC. (POWER OFF)
BPL T24E1
JSR 7,CLRCS ;TURN POWER BACK ON AND CLEAR
MOV TIME,WAITER(0) ;20 SEC
T24D1: INC PHASE(0)
RTS 7

T24E: JSR 7,W20S ;WAIT 20 SEC. (POWER ON)
BMI T24C
T24E1: MOV TIME,RTIME(0)
RTS 7

T24F = T24D ;WAIT 20 THEN POWER ON AGAIN

T24G = T24E ;WAIT 20 THEN POWER OFF AGAIN

T24H = T24D ;WAIT 20 THEN POWER ON AGAIN

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1922								
1923	006624	004767	001342		T24I:	JSR	7, W20S	;WAIT 20 SEC. (POWER ON)
1924	006630	100371				BPL	T24E1	;NOT DONE
1925	006632	042760	000001	030004		BIC	#1, FLAGS(0)	;CLEAR "IGNORE ERRORS" FLAG
1926	006640	005260	030006		T24I1:	INC	PHASE(0)	
1927	006644	000167	000076		T24I2:	JMP	RTRK	
1928								
1929	006650	004767	001070		T24J:	JSR	7, CHATAK	;GET NEXT TRACK
1930	006654	001402				BEG	T24J1	;Z=1, DONE
1931	006656	000167	000064			JMP	RTRK	
1932								
1933	006662	005060	030006		T24J1:	CLR	PHASE(0)	
1934	006666	004767	000600			JSR	7, NEXPAT	
1935	006672	102273				BVC	T24Z1	
1936	006674	032760	000100	030000		BIT	#100, STATO(0)	;ACCEPT MODE?
1937	006702	001072				BNE	TEDONE	;NO, DONE TESTS
1938	006704	012760	146605	030000		MOV	#146605, STATO(0)	;TEST 15, ACCEPT MCDE, PATTERN 5
1939	006712	000167	175300			JMP	T15Z	;TEST 15 NEXT

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1943
1944 006716 012760 000002 030200 WSCT: MOV #2,CSBUF(0) ;OP CODE TO BUFFER
1945 006724 000416 BR TRANS
1946
1947 006726 012760 000004 030200 RSCT: MOV #4,CSBUF(0) ;OP CODE TO BUFFER
1948 006734 000407 BR TRANS1
1949
1950 006736 012760 000012 030200 WTRK: MOV #12,CSBUF(0) ;OP CODE TO BUFFER
1951 006744 000406 BR TRANS
1952
1953 006746 012760 000014 030200 RTRK: MOV #14,CSBUF(0) ;OP CODE TO BUFFER
1954 006754 016760 010446 030600 TRANS1: MOV TIME,RTIME(0) ;READ START TIME
1955 006762 016070 030202 032204 TRANS: MOV DABUF(0),ADAO(0)
1956 006770 016070 030204 032202 MOV DBBUF(0),ADBO(0)
1957 006776 016070 030200 032200 MOV CSBUF(0),ACSO(0)
1958 007004 000207 RTS 7
1959
1960 007006 005070 032200 CLRCS: CLR ACSO(0) ;CLEAR THE STATION
1961 007012 042760 177767 030200 BIC #177767,CSBUF(0) ;CLR ALL BUT TRK BIT OF CS BUFF
1962 007020 000207 RTS 7
1963
1964
1965
1966
1967 007022 032760 000040 030004 TESDON: BIT #40,FLAGS(0) ;"LOOP ON TEST" FLAG?
1968 007030 001011 BNE TLOOP ;YES
1969 007032 032760 040000 030000 BIT #40000,STATO(0) ;ALL TESTS?
1970 007040 001413 BEQ TEDONE ;NO
1971 007042 105260 030001 INCB STATO+1(0) ;NEXT TEST
1972 007046 105060 030006 TESRET: CLRB PHASE(0) ;MAKE SURE PHASE=0
1973 007052 000207 RTS 7 ;RETURN TO MONITOR
1974
1975 007054 005260 032206 TLOOP: INC LOOPC(0) ;INCREMENT THE LOOP COUNTER
1976 007060 032760 002000 030004 BIT #2000,FLAGS(0)
1977 007066 001367 BNE TESRET
1978 007070 032760 007400 030400 TEDONE: BIT #7400,PSTAT(0) ;MESS DONE?
1979 007076 001404 BEQ TOUT
1980 007100 112760 177777 030006 MOVB #-1,PHASE(0)
1981 007106 000207 RTS 7 ;RETURN TO MONITOR
1982
1983 007110 032760 000040 030004 TOUT: BIT #40,FLAGS(0) ;"LOOP ON TEST"
1984 007116 001014 BNE TYLOOP
1985 007120 012760 000010 030004 MOV #10,FLAGS(0) ;SET "MESSAGE 4" FLAG (CLR ALL OTHERS)
1986 007126 112760 000062 030401 TOUT1: MOVB #062,PSTAT+1(0) ;MESS 3, LINE 2
1987 007134 004767 001222 JSR 7,CRACT
1988 007140 042760 100200 030000 BIC #100200,STATO(0) ;DEACTIVATE TEST SET
1989 007146 000737 BR TESRET
1990 007150 112760 000321 030401 TYLOOP: MOVB #321,PSTAT+1(0)
1991 007156 004767 001200 JSR 7,CRACT
1992 007162 000731 BR TESRET

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007164 016001 030002
007170 042760 003777 030002
007176 032701 040000
007202 001046
007204 032760 000010 030200
007212 001010
007214 032701 014000
007220 001016
007222 005201
007224 032701 003777
007230 001040
007232 000422

007234 032701 010000
007240 001017
007242 062701 000100
007246 032701 003700
007252 001027
007254 000411

007256 032701 004000
007262 001364
007264 005201
007266 032701 000077
007272 001017
007274 162701 000100
007300 005701
007302 100027
007304 012760 010000 030404
007312 052760 040000 030002
007320 005360 030404
007324 001411
007326 004767 000710
007332 042701 174000
007336 010160 030202
007342 050160 030002
007346 000207

007350 005701
007352 100003
007354 042760 040000 030002
007362 042701 174000
007366 010160 030202
007372 050160 030002
007376 000262
007400 000207

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;*****
;SUBROUTINE TO SELECT ANOTHER ADDRESS
;*****
NEXTAD: MOV    ASTAT(0),%1
        BIC    #3777,ASTAT(0) ;CLR ADDR FROM ASTAT
        BIT    #40000,%1      ;RANDOM SEQUENCE?
        BNE    NADRAN         ;YES
        BIT    #10,CSBUF(0)   ;TRACK OP CODE?
        BNE    NADTOP         ;YES
        BIT    #14000,%1      ;SINGLE TRACK OR SECTOR?
        BNE    NADSIN         ;YES
        INC    %1
        BIT    #3777,%1
        BNE    NADMOR
        BR     NASEQ

NADTOP: BIT    #10000,%1      ;SINGLE TRACK?
        BNE    NASEQ         ;YES
        ADD    #100,%1        ;NEXT TRACK
        BIT    #3700,%1
        BNE    NADMOR
        BR     NASEQ

NADSIN: BIT    #4000,%1      ;SINGLE SECTOR?
        BNE    NADTOP        ;YES
        INC    %1            ;NEXT SECTOR
        BIT    #77,%1        ;DONE?
        BNE    NADMOR        ;NO
        SUB    #100,%1
        TST    %1            ;BOTH SEQ?
        BPL    NADONE        ;NO
        MOV    #10000,SRANK(0) ;RANDOM NUMBER COUNT
        BIS    #40000,ASTAT(0) ;SET RANDOM SEQ BIT
        NADRAN: DEC    SRANK(0) ;COUNT DONE?
        BEQ    NADBOS        ;YES
        JSR    7,RANDOM      ;GET ADDR
        NADMOR: BIC    #174000,%1 ;MASK
        MOV    %1,DABUF(0)
        BIS    %1,ASTAT(0)    ;LOAD
        RTS    7

NADBOS: TST    %1            ;ALL SEQ?
        BPL    NADONE        ;NO
        BIC    #40000,ASTAT(0) ;YES, CLR RAN SEQ BIT
        NADONE: BIC    #174000,%1 ;MASK ADDR
        MOV    %1,DABUF(0)      ;SAVE ADDR
        BIS    %1,ASTAT(0)      ;SAVE ADDR
        SEV
        RTS    7
;V=1 MEANS DONE

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2049 007402 016001 030000 PATIN: MOV STATO(0),%1
2050 007406 042701 177760 BIC #177760,%1
2051 007412 001410 BEQ PATO
2052 007414 006301 ASL %1
2053 007416 016160 007442 030204 PATUR: MOV PATER-2(1),DBBUF(0)
2054 007424 012760 001000 030402 MOV #1000,PRANK(0)
2055 007432 000514 BR PARET
2056
2057 007434 032760 000020 030000 PATO: BIT #20,STATO(0) ;PATX?
2058 007442 001110 BNE PARET ;YES
2059
2060 007444 000000 PATER: 000000 ;PAT1
2061 007446 177777 177777 ;PAT2
2062 007450 125252 125252 ;PAT3
2063 007452 052525 052525 ;PAT4
2064 007454 107070 107070 ;PAT5-OCTAL CHECKERBOARD
2065 007456 000001 000001 ;PAT6-FLOATING ONE
2066 007460 177776 177776 ;PAT7-FLOATING ZERO
2067 007462 000000 000000 ;PAT10-ONES'S TRANSFER
2068 007464 177777 177777 ;PAT11-ZERO'S TRANSFER
2069 007466 123456 LONUM: 123456 ;PAT12-RANDOM NUMBERS
2070 007470 176543 HINUM: 176543
2071
2072
2073
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2075
2076 007472 016001 030000 NEXPAT: MOV STATO(0),%1 ;GET STATUS
2077 007476 042701 177760 BIC #177760,%1 ;MASK PATTERN #
2078 007502 006301 ASL %1 ;*2
2079 007504 000171 007510 JMP @PATER(1)
2080
2081 007510 007732 PATER: PADONE ;PAT20=ONLY ONE PATTERN
2082 007512 007570 PANEX ;PAT1 = SINGLE PATTERN
2083 007514 007570 PANEX ;PAT2 = SINGLE PATTERN
2084 007516 007570 PANEX ;PAT3 = SINGLE PATTERN
2085 007520 007570 PANEX ;PAT4 = SINGLE PATTERN
2086 007522 007536 PAT5 ;OCTAL CHECKERBOARD
2087 007524 007562 PAT6
2088 007526 007616 PAT7
2089 007530 007634 PAT10
2090 007532 007652 PAT11
2091 007534 007674 PAT12

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2092
2093 007536 022760 016161 030204 PAT5: CMP #016161,DBBUF(0) ;LAST WORD?
2094 007544 001411 BEQ PANEX ;YES
2095 007546 003002 BGT PAT5A
2096 007550 006260 030204 ASR DBBUF(0)
2097 007554 005160 030204 PAT5A: COM DBBUF(0)
2098 007560 000441 BR PARET
2099
2100 007562 005760 030204 PAT6: TST DBBUF(0)
2101 007566 100034 BPL PAT6A
2102 007570 032760 000040 030000 PANEX: BIT #40,STATO(0) ;ALL PAT?
2103 007576 001455 BEQ PADONE ;NO
2104 007600 020127 000022 CMP %1,#22 ;LAST PAT?
2105 007604 001443 BEQ PADON
2106 007606 005260 030000 INC STATO(0)
2107 007612 005721 TST (1)+ ;ADD 2 TO R1
2108 007614 000700 BR PATUR
2109
2110 007616 005760 030204 PAT7: TST DBBUF(0)
2111 007622 100362 BPL PANEX
2112 007624 000261 SEC
2113 007626 006160 030204 ROL DBBUF(0)
2114 007632 000414 BR PARET
2115
2116 007634 005760 030204 PAT10: TST DBBUF(0)
2117 007640 100753 BMI PANEX
2118 007642 000261 SEC
2119 007644 006160 030204 ROL DBBUF(0)
2120 007650 000405 BR PARET
2121
2122 007652 005760 030204 PAT11: TST DBBUF(0)
2123 007656 100344 BPL PANEX
2124 007660 006360 030204 PAT6A: ASL DBBUF(0)
2125 007664 016060 030204 030206 PARET: MOV DBBUF(0),OLDDATA(0) ;V=0, NOT DONE
2126 007672 000207 RTS 7
2127
2128 007674 005360 030402 PAT12: DEC PRANK(0)
2129 007700 001733 BEQ PANEX
2130 007702 004767 000334 JSR 7,RANDOM
2131 007706 010160 030204 MOV %1,DBBUF(0)
2132 007712 000764 BR PARET
2133
2134 007714 042760 000037 030000 PADON: BIC #37,STATO(0)
2135 007722 005260 030000 INC STATO(0)
2136 007726 004767 177450 JSR 7,PATIN
2137 007732 016060 030204 030206 PADONE: MOV DBBUF(0),OLDDATA(0)
2138 007740 000262 SEV ;V=1 MEANS DONE
2139 007742 000207 RTS 7

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2141
2142      ;*****
2143      ;SUBROUTINE TO CHANGE TRACKS WITHOUT CHANGING ASTAT
2144      ;*****
2145 007744 062760 000100 030202 CHATAK: ADD    #100,DABUF(0)
2146 007752 042760 174000 030202      BIC    #174000,DABUF(0)
2147 007760 016002 030002      MOV    ASTAT(0),%2
2148 007764 042702 174000      BIC    #174000,%2
2149 007770 020260 030202      CMP    %2,DABUF(0)      ;Z=1 MEANS DONE
2150 007774 000207      RTS    7
2151
2152      ;*****
2153      ;SUBROUTINE TO CHANGE SECTORS WITHOUT CHANGING ASTAT
2154      ;      ALSO CHECKS FOR SAME SECTOR (Z=1)
2155      ;*****
2156
2157 007776 005260 030202 CHASEC: INC    DABUF(0)
2158 010002 016002 030202      MOV    DABUF(0),%2
2159 010006 042702 177700      BIC    #177700,%2
2160 010012 001003      BNE    CHASE1
2161 010014 162760 000100 030202      SUB    #100,DABUF(0)
2162 010022 016001 030002 CHASE1: MOV    ASTAT(0),%1
2163 010026 042701 177700      BIC    #177700,%1
2164 010032 020201      CMP    %2,%1
2165 010034 000207      RTS    7      ;V=0, Z=0
2166

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2167
2168
2169 ;*****
2170 ;SUBROUTINE TO LOAD COMPLEMENT PATTERN IN DATA BUFFER
2171 ;*****
2172 010036 016060 030206 030204 COMPAT: MOV OLDDATA(0),DBBUF(0)
2173 010044 005160 030204 COM DBBUF(0)
2174 010050 000207 RTS 7
2175
2176 ;*****
2177 ;SUBROUTINES TO GET ADJACENT TRACK ADDRESSES FOR TEST17.
2178 ;THIS IS NECESSARY BECAUSE THE TRACKS ARE PHYSICALLY STAGGERED.
2179 ;THE ORDER, FROM INSIDE TO OUTSIDE IS:
2180 ;30,20,31,21,32,22,33,23,34,24,35,25,36,26,37,27,
2181 ;00,10,01,11,02,12,03,13,04,14,05,15,06,16,07,17.
2182 ;
2183 ;*****
2184
2185 010052 016001 030202 ADJAC1: MOV DABUF(0),%1 ;GET THE ORIGINAL TRACK ADDR
2186 010056 032701 001000 BIT #1000,%1 ;7<TRK<20,27<TRK?
2187 010062 001407 BEQ ADJ1B ;NO
2188 010064 032701 002000 BIT #2000,%1 ;TRK>17?
2189 010070 001402 BEQ ADJ1A ;NO
2190 010072 162701 000200 SUB #200,%1 ;COMPENSATE
2191 010076 162701 001700 ADJ1A: SUB #1700,%1 ;COMPENSATE
2192 010102 062701 001000 ADJ1B: ADD #1000,%1 ;NEW ADDR
2193 010106 010160 030202 MOV %1,DABUF(0) ;LOAD ADDR BUFFER
2194 010112 000207 RTS 7
2195
2196 010114 016001 030202 ADJAC2: MOV DABUF(0),%1 ;GET THE FIRST ADJACENT TRACK ADDR
2197 010120 032760 002000 030002 BIT #2000,ASTAT(0) ;WAS ORIGINAL TRK>17?
2198 010126 001402 BEQ ADJ2A ;NO
2199 010130 062701 000200 ADD #200,%1 ;COMPENSATE
2200 010134 162701 000100 ADJ2A: SUB #100,%1 ;NEW ADDR
2201 010140 010160 030202 MOV %1,DABUF(0) ;LOAD ADDR BUFFER
2202 010144 000207 RTS 7
2203
2204 ;*****
2205 ;SUBROUTINE TO SEE IF 2 SECONDS HAVE PASSED
2206 ;*****
2207
2208 010146 016002 030406 W2S: MOV WAITER(0),%2 ;GET WAIT START TIME
2209 010152 166702 007250 SUB TIME,%2 ;SUBTRACT PRESENT TIME
2210 010156 003402 BLE W2S1 ;BRANCH IF NO OVERFLOW
2211 010160 166702 170314 SUB CYCLE,%2 ;SUBTRACT A MINUTE
2212 010164 066702 011634 W2S1: ADD CYCLO2,%2 ;ADD 2 SECONDS
2213 010170 000207 RTS 7
2214
2215 ;*****
2216 ;SUBROUTINE TO SEE IF 20 SEC. HAVE PASSED.
2217 ;*****
2218
2219 010172 016002 030406 W20S: MOV WAITER(0),%2
2220 010176 166702 007224 SUB TIME,%2
2221 010202 003402 BLE W20S1
2222 010204 166702 170270 SUB CYCLE,%2

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2223	010210	066702	011606	W20S1: ADD	CYCL20,%2	
2224	010214	000207		RTS		;PLUS=NOT DONE, MINUS=DONE
2225						
2226						;*****
2227						;SUBROUTINE TO SEE IF 60 SECONDS HAVE PASSED
2228						;*****
2229						
2230	010216	016002	030406	W60S: MOV	WAITER(0),%2	;GET WAIT START TIME
2231	010222	166702	007200	SUB	TIME,%2	;SUBTRACT PRESENT TIME
2232	010226	003402		BLE	W60S1	;BRANCH IF NO OVERFLOW
2233	010230	166702	170004	SUB	CYCLE,%2	;SUBTRACT A MINUTE
2234	010234	066702	010000	W60S1: ADD	CYCL60,%2	;ADD 60 SECONDS
2235	010240	000207		RTS		

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010242	010046	
010244	010246	
010246	010346	
010250	016700	177212
010254	016701	177210
010260	012703	177771
010264	005002	
010266	006300	
010270	006101	
010272	006102	
010274	005203	
010276	001373	
010300	066702	177162
010304	005501	
010306	066701	177156
010312	005502	
010314	062700	001057
010320	005501	
010322	005502	
010324	062701	047401
010330	005502	
010332	062702	000006
010336	060200	
010340	005501	
010342	010067	177120
010346	010167	177116
010352	012603	
010354	012602	
010356	012600	
010360	000207	

:RANDOM NUMBER SUBROUTINE - R1 CONTAINS HINUM

RANDOM:	MOV	%0,-(6)	:SAVE R0
	MOV	%2,-(6)	:SAVE R2
	MOV	%3,-(6)	:SAVE R3
	MOV	_ONUM,%0	:SET R0 WITH LOW
	MOV	HINUM,%1	:SET R1 WITH HIGH
	MOV	#-7,%3	:SET SHIFT COUNT
SHIFT:	CLR	%2	
	ASL	%0	:SHIFT R0 LEFT AND
	ROL	%1	:ROTATE CARRY INTO R1 AND
	ROL	%2	:ROTATE CARRY INTO R2.
	INC	%3	:CHECK FOR DONE
	BNE	SHIFT	:CONTINUE SHIFT LOOP
	ADD	_ONUM,%2	:ADD NUMBER TO MAKE X 129
	ADC	%1	:PROPOGATE CARRY
	ADD	HINUM,%1	:ADD NUMBER TO MAKE X 129
	ADC	%2	:PROPOGATE CARRY
	ADD	#1057,%0	:ADD LOW CONSTANT
	ADC	%1	:PROPOGATE CARRY
	ADC	%2	:PROPOGATE CARRY
	ADD	#47401,%1	:ADD HIGH CONSTANT
	ADC	%2	:PROPOGATE CARRY
	ADD	#5,%2	:ADD HIGHEST CONSTANT
	ADD	%2,%0	:REPRIME R0 WITH HIGHEST DIGIT
	ADC	%1	:PROPOGATE CARRY
	MOV	%0,_ONUM	:SAVE R0
	MOV	%1,HINUM	:SAVE R1
	MOV	(6)+,%3	:RESTORE R3
	MOV	(6)+,%2	:RESTORE R2
	MOV	(6)+,%0	:RESTORE R0
	RTS	7	:RETURN

:SUBROUTINE TO MAKE SURE THE TELEPRINTER IS ACTIVE

CRACT:	BIT	#100,_TPSO(0)	:TELEPRINTER BUSY?
	BNE	CRACT2	:YES
	CLRB	PSTAT(0)	:CLEAR POINTER
CRACT1:	MOV	#100,_TPSO(0)	:INT ENB (MAKE BUSY)
	CLR	_TPBO(0)	:TYPE A NULL
CRACT2:	RTS	7	

2292
2293
2294
2295
2296
2297 010412 010046
2298 010414 010146
2299 010416 010246
2300 010420 010346
2301 010422 010446
2302 010424 005000
2303 010426 012767 000002 167352
2304 010434 105770 032400
2305 010440 100415
2306 010442 062700 000010
2307 010446 020067 170030
2308 010452 001365
2309 010454 005067 167326
2310 010460 012604
2311 010462 012603
2312 010464 012602
2313 010466 012601
2314 010470 012600
2315 010472 000002
2316
2317
2318
2319
2320 010474 005067 167306
2321 010500 010003
2322 010502 006303
2323 010504 006303
2324 010506 062703 031200
2325 010512 017001 032402
2326 010516 042701 177600
2327 010522 020127 000024
2328 010526 003030
2329 010530 006301
2330 010532 000171 010536
2331 010536 010670
2332 010540 010770
2333 010542 011054
2334 010544 011132
2335 010546 011264
2336 010550 011304
2337 010552 010670
2338 010554 010670
2339 010556 010670
2340 010560 012210
2341 010562 010670
2342 010564 010670
2343 010566 011320
2344 010570 013404
2345 010572 010670
2346 010574 010670

:KEYBOARD INTERRUPT ROUTINE

KIN: MOV %0,-(6) ;SAVE REGISTERS
MOV %1,-(6)
MOV %2,-(6)
MOV %3,-(6)
MOV %4,-(6)
CLR %0
KLOOP: MOV #2,6 ;RTI ON NONEXISTANT TTY
TSTB @TKSO(0) ;TK DONE FLAG?
BMI TKSERV ;SERVICE TTY
KRETUR: ADD #10,%0 ;INC TO NEXT STATION
CMP %0,NUMBER ;POLLED ALL STATIONS?
BNE KLOOP ;NOT DONE POLLING
CLR 6 ;HALT ON TIME OUT
MOV (6)+,%4 ;RESTORE REGISTERS
MOV (6)+,%3
MOV (6)+,%2
MOV (6)+,%1
MOV (6)+,%0
RTI

:KEYBOARD SERVICE ROUTINE

TKSERV: CLR 6 ;HALT ON TIME OUT
MOV %0,%3
ASL %3
ASL %3
ADD #PBUF,%3 ;R3=PBUF ADDR.
MOV @TKBO(0),%1 ;GET ASCII
BIC #177600,%1 ;MASK PARITY
CMP %1,#024
BGT TKO
ASL %1 ;R1*2 FOR INDIRECT INDEXED ADDRESSING
JMP @TKCONT(1)
TKCONT: ILLEG
CONTA
CONTB
CONTC
CONTD
CONTE
ILLEG
ILLEG
ILLEG
SPACE ;TAB=011
ILLEG
ILLEG
CONTL
ENDIN ;CR=015
ILLEG
ILLEG

```

2338 010576 010670          ILLEG
2339 010600 010670          ILLEG
2340 010602 011402          CONTR
2341 010604 011460          CONTS
2342 010606 011476          CONTT
2343
2344 010610 105760 030000    TK0:  TSTB  STAT(0)      ;RUN MODE?
2345 010614 100425          BMI    ILLEG          ;YES, GO TYPE "?"
2346 010616 020127 000132    CMP    %1, #132      ;>"Z",
2347 010622 003022          BGT    ILLEG
2348 010624 020127 000100    CMP    %1, #100      ;ALPHA?
2349 010630 003402          BLE    TK1
2350 010632 000167 000720    JMP    ALPHA
2351
2352 010636 020127 000072    TK1:  CMP    %1, #072      ;>"9"?
2353 010642 002012          BGE    ILLEG
2354 010644 020127 000060    CMP    %1, #060      ;NUMERIC?
2355 010650 002402          BLT    TK2
2356 010652 000167 001216    JMP    NUMB
2357
2358 010656 020127 000040    TK2:  CMP    %1, #040      ;SPACE?
2359 010662 001002          BNE    ILLEG
2360 010664 000167 001320    JMP    SPACE
2361
2362 ;*****
2363 ;ILLEGAL CHARACTER HANDLER
2364 ;*****
2365
2366 010670 005060 031000    ILLEG: CLR    KSTAT(0)      ;CLEAR INPUT BUFFER
2367 010674 032770 000100 032404 BIT    #100, #TPSO(0)
2368 010702 001014          BNE    ILBUSY
2369 010704 012713 106612    MOV    #CRLF, (3)      ;CRLF INTO PBUF
2370 010710 005060 030400    CLR    PSTAT(0)
2371 010714 052770 000100 032404 BIS    #100, #TPSO(0)      ;MAKE BUSY
2372 010722 112770 000077 032406 MOVB  #'?', #TPBO(0)      ;TYPE "?"
2373 010730 000167 177506    JMP    KRETUR
2374
2375 010734 004767 002766    ILBUSY: JSR    7, BUSY
2376 010740 112715 000077    MOV    #'?', (5)
2377 010744 004767 002756    ILCRLF: JSR    7, BUSY
2378 010750 112715 000215    MOV    #CR, (5)
2379 010754 004767 002746    JSR    7, BUSY
2380 010760 112715 000212    MOV    #LF, (5)
2381 010764 000167 177452    JMP    KRETUR
2382

```

```

2383
2384
2385
2386
2387
2388
2389 010770 105760 030000
2390 010774 100335
2391 010776 116001 030001
2392 011002 042701 177700
2393 011006 020127 000020
2394 011012 001326
2395 011014 012770 000214 032200
2396 011022 105260 030006
2397 011026 004767 002622
2398 011032 004767 002670
2399 011036 112715 000136
2400 011042 004767 002660
2401 011046 112715 000101
2402 011052 000734
2403
2404
2405
2406
2407
2408
2409
2410 011054 032760 000002 030004
2411 011062 001404
2412 011064 042760 000002 030004
2413 011072 000403
2414
2415 011074 052760 000002 030004
2416 011102 004767 002546
2417 011106 004767 002614
2418 011112 112715 000136
2419 011116 004767 002604
2420 011122 112715 000102
2421 011126 000167 177310
2422
2423
2424
2425
2426
2427
2428
2429 011132 004767 175650
2430 011136 105760 030000
2431 011142 100426
2432 011144 012702 000005
2433 011150 012701 030000
2434 011154 060001
2435 011156 005021
2436 011160 005021
2437 011162 005021
2438 011164 005011

```

```

*****
"CONTROL A" (1A) HANDLER
1A RAISES THE ATTEN BIT TO STOP READING IN TEST 22 ONLY
*****

```

```

CONTA: TSTB STATO(0) ;RUN MODE?
        BPL ILLEG ;NO
        MOVB STATO+1(0),%1 ;GET TEST #
        BIC #177700,%1
        CMP %1,%20 ;TEST 20?
        BNE ILLEG ;NO
        MOV #214,ACSO(0) ;ATTEN BIT UP, STOP READING
        INCB PHASE(0) ;NEXT PHASE
        JSR 7,ECHO ;MAKE SURE TP IS "BUSY"
        JSR 7,BUSY
        MOVB #1,(5)
        JSR 7,BUSY
        MOVB #1A,(5)
        BR ILCALF

```

```

*****
"CONTROL B" (1B) HANDLER
RINGS THE BELL ON ERRORS IF NO ERROR MESSAGE.
SECOND TIME STOPS THE BELL.
*****

```

```

CONTB: BIT #2,FLAGS(0)
        BEQ CONTBA
        BIC #2,FLAGS(0)
        BR CONTBB
CONTBA: BIS #2,FLAGS(0)
CONTBB: JSR 7,ECHO
        JSR 7,BUSY
        MOVB #1,(5)
        JSR 7,BUSY
        MOVB #1B,(5)
        JMP KRETUR

```

```

*****
"CONTROL C" (1C) HANDLER
IF STATION IS ACTIVE, CLEARS ONLY ACTIVE AND MODE BITS
IF NOT ACTIVE, CLEARS ALL BUFFERS
*****

```

```

CONTC: JSR 7,CLRCS ;CLR CS BUFFER
        TSTB STATO(0) ;RUN MODE?
        BMI CONTCC ;YES
        MOV #5,%2 ;THERE ARE FIVE FOUR WORD BUFFER AREAS!
        MOV #STATO,%1 ;FIRST BUFFER AREA ADDR
        ADD %0,%1 ;ADD STATION "*"
CONTC: CLR (1)+ ;CLR ALL BUFFERS
        CLR (1)+
        CLR (1)+
        CLR (1)

```



```

2439 011166 062701 000172      ADD      #172,%1      ;NEXT BUFFER AREA ADDR
2440 011172 005302      DEC      %2
2441 011174 001370      BNE      CONTCA
2442 011176 060001      ADD      %0,%1
2443 011200 060001      ADD      %0,%1
2444 011202 060001      ADD      %0,%1
2445 011204 012702 000020      MOV      #20,%2      ;THERE ARE 20 WORDS IN THE PBUF
2446 011210 005021      CONTCB: CLR      (1)+
2447 011212 005302      DEC      %2
2448 011214 001375      BNE      CONTCB
2449 011216 000410      BR       CONTCB
2450
2451 011220 042760 100200 030000  CONTC: BIC      #100200,STAT(0) ;CLEAR ACTIVE BIT AND RUN BIT
2452 011226 052760 000100 030004  BIS      #100,FLAGS(0) ;SET "CONTINUE" FLAG
2453 011234 005060 030400      CLR      PSTAT(0) ;RESET PBUF STATUS
2454 011240 012723 041536      CONTC: MOV      #'IC,(3)+ ;ASCII FOR "IC"
2455 011244 012723 106612      MOV      #CRLF,(3)+ ;ASCII FOR CRLF
2456 011250 005013      CLR      (3) ;END OF MESS MARK
2457 011252 032770 000100 032404  BIT      #100,ATPS(0) ;TP "BUSY"?
2458 011260 001532      BEQ      EXCONA ;NO
2459 011262 000533      BR       KRET1
2460
2461 ;*****
2462 ;"CONTROL D" (↑D) HANDLER
2463 ;*****
2464
2465 011264 062760 100000 030004  CONTD: ADD      #100000,FLAGS(0) ;SET "DON'T TYPE ERROR MESSAGE" FLAG
2466 011272 005060 030400      CLR      PSTAT(0) ;CLR PRINTER BUFF
2467 011276 012723 042136      MOV      #'↑D,(3)+ ;ASCII FOR "↑D"
2468 011302 000502      BR       EXCONT
2469
2470 ;*****
2471 ;"CONTROL E" (↑E) HANDLER
2472 ;↑E CAUSES TYPE OUT OF NUMBER OF ERRORS SO FAR
2473 ;*****
2474
2475 011304 012760 030400 030400  CONTE: MOV      #30400,PSTAT(0) ;MESS 3, LINE 1
2476 011312 012723 042536      MOV      #'↑E,(3)+ ;ASCII FOR "↑E"
2477 011316 000474      BR       EXCONT
2478
2479 ;*****
2480 ;"CONTROL L" (↑L) HANDLER
2481 ;↑L CAUSES A TEST TO LOOP ON ITSELF UNTIL RELEASED BY ANOTHER ↑L.
2482 ;*****
2483
2484 011320 032760 000040 030004  CONTL: BIT      #40,FLAGS(0)
2485 011326 001404      BEQ      CONTLA
2486 011330 042760 000040 030004  BIC      #40,FLAGS(0)
2487 011336 000405      BR       CONTLB
2488
2489 011340 005060 032206      CONTLA: CLR      LOOPC(0) ;CLR LOOP COUNTER
2490 011344 052760 000040 030004  BIS      #40,FLAGS(0) ;SET LOOP FLAG
2491 011352 004767 002276      CONTLB: JSR      7,ECHO
2492 011356 004767 002344      JSR      7,BUSY
2493 011362 112715 000136      MOV      #'↑,(5)
2494 011366 004767 002334      JSR      7,BUSY

```

```

2495 011372 112715 000114      MOVB  #1L(5)
2496 011376 000167 177040      JMP   KRETUR
2497
2498 ;*****
2499 ;"CONTROL R" (1R) HANDLER
2500 ;1R CAUSES COUNT TYPE OUT TO BE SUPRESSED ON LOOPING.
2501 ;SECOND 1R RESUMES TYPE OUT
2502 ;*****
2503
2504 011402 032760 002000 030004 CONTR: BIT  #2000,FLAGS(0)
2505 011410 001404          BEQ   CONTRA
2506 011412 042760 002000 030004          BIC   #2000,FLAGS(0)
2507 011420 000403          BR    CONTRB
2508
2509 011422 052760 002000 030004 CONTRA: BIS  #2000,FLAGS(0) ;SET THE "LOOP ON TEST" FLAG
2510 011430 004767 002220 CONTRB: JSR  7,ECHO
2511 011434 004767 002266          JSR  7,BUSY
2512 011440 112715 000136          MOVB  #1,(5)
2513 011444 004767 002256          JSR  7,BUSY
2514 011450 112715 000122          MOVB  #1R(5)
2515 011454 000167 176762          JMP   KRETUR
2516
2517 ;*****
2518 ;"CONTROL S" (1S) HANDLER
2519 ;*****
2520
2521 011460 012760 012000 030400 CONTS: MOV  #12000,PSTAT(0) ;MESS 1, LINE4
2522 011466 012723 051536          MOV  #1S,(3)+ ;ASCII FOR "1S"
2523 011472 005023          CLR   (3)+ ;END OF MESS MARK
2524 011474 000405          BR    EXCONT ;GO CHECK FOR BUSY TP
2525
2526 ;*****
2527 ;"CONTROL T" (1T) HANDLER
2528 ;1T CAUSES THE PRESENT DATE AND TIME TO BE TYPED
2529 ;*****
2530
2531 011476 012760 050400 030400 CONTT: MOV  #50400,PSTAT(0) ;MESS 5, LINE 1
2532 011504 012723 052136          MOV  #1T,(3)+ ;ASCII FOR "1T"
2533 011510 012723 106612 EXCONT: MOV  #CRLF,(3)+ ;ASCII FOR CRLF
2534 011514 005013          CLR   (3) ;END OF MESS MARK
2535 011516 032770 000100 032404          BIT  #100,2TPSO(0) ;TP "BUSY"?
2536 011524 001410          BEQ   EXCONA ;NO
2537 011526 032770 170000 032200          BIT  #170000,2CSO(0) ;ANY ERRORS?
2538 011534 001406          BEQ   KRET1 ;NO
2539 011536 052760 100000 030000          BIS  #100000,STATO(0) ;SET ACTIVE BIT
2540 011544 000402          BR    KRET1
2541
2542 011546 004767 176610 EXCONA: JSR  7,CRACT ;ACTIVATE TTY
2543 011552 000167 176664 KRET1: JMP   KRETUR

```



```

2544
2545 ;*****
2546 ;ALPHA CHARACTER HANDLER
2547 ;*****
2548
2549 011556 032760 000100 030000 ALPHA: BIT #100,STAT0(0) ;TEST MODE?
2550 011564 001106 BNE XNUM ;YES, GO CHECK FOR "X" OR "C"
2551 011566 005760 031000 TST KSTAT(0)
2552 011572 001452 BEQ NEWCOM
2553 011574 126027 031001 000002 CMPB KSTAT+1(0),#2
2554 011602 003144 BGT ILLO
2555 011604 001426 BEQ KTEST
2556 011606 126027 031000 000005 CMPB KSTAT(0),#5
2557 011614 003137 BGT ILLO
2558 011616 001416 BEQ AT
2559 011620 126027 031000 000003 CMPB KSTAT(0),#3
2560 011626 003007 BGT AP
2561 011630 001403 BEQ AE
2562 011632 020127 000103 CMP #1,#103 ;ASCII "C"?
2563 011636 000424 BR AOK
2564
2565 011640 020127 000105 AE: CMP #1,#105 ;ASCII "E"?
2566 011644 000421 BR AOK
2567
2568 011646 020127 000120 AP: CMP #1,#120 ;P?
2569 011652 000416 BR AOK
2570
2571 011654 020127 000124 AT: CMP #1,#124 ;T?
2572 011660 000413 BR AOK
2573
2574 011662 126027 031000 000003 KTEST: CMPB KSTAT(0),#3
2575 011670 003111 BGT ILLO
2576 011672 001770 BEQ AT
2577 011674 126027 031000 000001 CMPB KSTAT(0),#1
2578 011702 001756 BEQ AE
2579 011704 020127 000123 AOK: CMP #1,#123 ;ASCII "S"?
2580 011710 001101 BNE ILLO
2581 011712 005260 031000 INC KSTAT(0)
2582 011716 000462 BR NBACK
2583
2584 011720 020127 000124 NEWCOM: CMP #1,#124
2585 011724 001416 BEQ NTEST
2586 011726 020127 000101 CMP #1,#101
2587 011732 001417 BEQ NACCEP
2588 011734 020127 000103 CMP #1,#103
2589 011740 001065 BNE ILLO
2590 011742 032760 000100 030004 BIT #100,FLAGS(0) ;"CONTINUE" FLAG?
2591 011750 001461 BEQ ILLO ;NO, ILLEGAL CHARACTER
2592 011752 012760 001401 031000 MOV #1401,KSTAT(0)
2593 011760 000441 BR NBACK
2594
2595 011762 012760 001001 031000 NTEST: MOV #1001,KSTAT(0)
2596 011770 000435 BR NBACK
2597
2598 011772 012760 000401 031000 NACCEP: MOV #401,KSTAT(0)
2599 012000 000431 BR NBACK

```

```

2600
2601 012002 105760 031000      XNUM:  TSTB  KSTAT(0)      ; POINTER AT 0?
2602 012006 001042              BNE  ILLO              ; NO
2603 012010 020127 000103      CMP  %1, #103          ; C?
2604 012014 001013              BNE  XNUMX
2605 012016 032760 000100 030004  BIT  #100, FLAGS(0) ; "CONTINUE" FLAG SET?
2606 012024 001433              SEQ  ILLO              ; NO, CAN'T CONTINUE!
2607 012026 042760 000100 030004  BIC  #100, FLAGS(0) ; CLR "CONTINUE" FLAG
2608 012034 112760 000006 031001  MOVB #06, KSTAT+1(0) ; ARG 06 = "OK"
2609 012042 000410              BR   NBACK
2610
2611 012044 020127 000130      XNUMX: CMP  %1, #130          ; X?
2612 012050 001021              BNE  ILLO
2613 012052 017060 032402 031002  MOV  @TKB0(0), KBUF(0)
2614 012060 005260 031000      INC  KSTAT(0)
2615 012064 004767 001564      NBACK: JSR  7, ECHO
2616 012070 000167 176346      JMP  KRETUR
2617
2618 ;*****
2619 ; NUMERIC HANDLER
2620 ;*****
2621
2622 012074 032760 000100 030000  NUMB:  BIT  #100, STAT(0) ; TEST MODE?
2623 012102 001006              BNE  TESNUM ; YES
2624 012104 032760 001400 030004  BIT  #1400, FLAGS(0) ; SERIAL NUMBER FLAGS?
2625 012112 001364              BNE  NBACK ; YES, ECHO IT
2626 012114 000167 176550      ILLO:  JMP  ILLEG ; NO, ILLEGAL CHARACTER
2627
2628 012120 020127 000070      TESNUM: CMP  %1, #070 ; ">"?
2629 012124 002373              BGE  ILLO ; NOT AN OCTAL NUMBER
2630 012126 126027 031000 000002  CMPB  KSTAT(0), #2
2631 012134 002013              BGE  WORIN
2632 012136 116005 031000      NUMBIN: MOVB  KSTAT(0), %5
2633 012142 060005              ADD  %0, %5
2634 012144 110165 031002      MOVB  %1, KBUF(5)
2635 012150 142765 000260 031002  BICB  #260, KBUF(5)
2636 012156 005260 031000      INC  KSTAT(0)
2637 012162 000740              BR   NBACK
2638
2639 012164 126027 031001 000005  WORIN: CMPB  KSTAT+1(0), #5
2640 012172 001350              BNE  ILLO
2641 012174 126027 031000 000006  CMPB  KSTAT(0), #6
2642 012202 002344              BGE  ILLO
2643 012204 000167 177726      JMP  NUMBIN
2644

```

```

2645
2646
2647
2648
2649
2650 012210 132760 000300 030000 SPACE: BITB #300,STATO(0) ;TEST MODE?
2651 012216 003736 BLE ILLO ;NO, ILLEGAL MODE
2652 012220 116001 031002 MOVB KBUF(0),%1 ;FIRST CHAR
2653 012224 116002 031001 MOVB KSTAT+1(0),%2 ;WHICH ARG?
2654 012230 006302 ASL %2
2655 012232 000172 012236 JMP @SPACE1(2) ;JMP TO INPUTING ROUTINES
2656 012236 012254 SPACE1: TSTIN
2657 012240 012400 INPAT
2658 012242 012540 SEQIN
2659 012244 012770 TRKIN
2660 012246 013104 SCTIN
2661 012250 013212 WRDIN
2662 012252 010670 ILLEG
2663
2664 012254 005060 030006 TSTIN: CLR PHASE(0)
2665 012260 005060 032206 CLR LOOPC(0) ;CLR LOOP COUNTER
2666 012264 042760 000004 030004 BIC #4,FLAGS(0) ;CLR "TEST 2 OR 3" FLAG
2667 012272 126027 031000 000001 CMPB KSTAT(0),#1 ;IN POINTER
2668 012300 003006 BGT HITST ;2 DIGITS
2669 012302 001416 BEQ LOTST ;1 DIGIT
2670 012304 112760 000101 030001 ALLTST: MOVB #101,STATO+1(0) ;ALL TESTS + TEST 1
2671 012312 000167 000766 JMP TAB
2672
2673 012316 006301 HITST: ASL %1
2674 012320 006301 ASL %1
2675 012322 006301 ASL %1
2676 012324 105060 031002 CLRB KBUF(0)
2677 012330 000360 031002 SWAB KBUF(0)
2678 012334 066001 031002 ADD KBUF(0),%1
2679 012340 020127 000024 LOTST: CMP %1,%24 ;>LAST TEST?
2680 012344 003263 BGT ILLO ;NO
2681 012346 110160 030001 MOVB %1,STATO+1(0)
2682 012352 001754 BEQ ALLTST
2683 012354 005301 DEC %1
2684 012356 001406 BEQ LOT2
2685 012360 162701 000002 SUB #2,%1
2686 012364 003003 BGT LOT2
2687 012366 052760 000004 030004 BIS #4,FLAGS(0) ;"TEST 2 OR 3" FLAG
2688 012374 000167 000704 LOT2: JMP TAB
2689
2690 012400 042760 000077 030000 INPAT: BIC #77,STATO(0) ;CLR PATTERN STATUS
2691 012406 120127 000330 CMPB %1,#330 ;PATTERN X?
2692 012412 001445 BEQ XPAT ;YES
2693 012414 126027 031000 000001 CMPB KSTAT(0),#1 ;INPUT POINTER
2694 012422 003006 BGT HIPAT ;2 DIGITS
2695 012424 001416 BEQ LOPAT ;1 DIGIT
2696 012426 052760 000041 030000 ALLPAT: BIS #41,STATO(0) ;ALL PATTERNS
2697 012434 000167 000644 JMP TAB
2698
2699 012440 006301 HIPAT: ASL %1
2700 012442 006301 ASL %1

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2701	012444	006301			ASL	%1	
2702	012446	105060	031002		CLRB	KBUF(0)	
2703	012452	000360	031002		SWAB	KBUF(0)	
2704	012456	066001	031002		ADD	KBUF(0),%1	
2705	012462	020127	000012		LOPAT: CMP	%1,%12	
2706	012466	101212			BHI	ILL0	
2707	012470	032760	000004	030004	BIT	#4,FLAGS(0)	; "TEST 2 OR 3" FLAG?
2708	012476	001405			BEQ	LOPAT1	; NO
2709	012500	005301			DEC	%1	
2710	012502	032701	000014		BIT	#14,%1	; PAT 1,2,3,OR 4?
2711	012506	001007			BNE	XPAT	; NO
2712	012510	005201			INC	%1	
2713	012512	005701			LOPAT1: TST	%1	
2714	012514	001744			BEQ	ALLPAT	
2715	012516	060160	030000		ADD	%1,STATO(0)	
2716	012522	000167	000556		JMP	TAB	
2717							
2718	012526	052760	000020	030000	XPAT: BIS	#20,STATO(0)	; SPECIAL PATTERN
2719	012534	000167	000544		JMP	TAB	
2720							
2721	012540	042760	174000	030002	SEQIN: BIC	#174000,ASTAT(0)	; CLR SEQUENCE STATUS
2722	012546	012760	010000	030404	MOV	#10000,SRANK(0)	; SET UP RANDOM SEQ COUNTER
2723	012554	120127	000330		CMPB	%1,%330	; SEQUENCE X?
2724	012560	001413			BEQ	XSEQ	; YES
2725	012562	126027	031000	000001	CMPB	KSTAT(0),#1	; INPUT POINTER
2726	012570	003014			BGT	HISEQ	
2727	012572	001417			BEQ	LOSEQ	
2728	012574	012760	120000	030002	ALSEQ: MOV	#120000,ASTAT(0)	; ALL SEQ AND SEQ 1 BITS
2729	012602	005060	030202		CLR	DABUF(0)	
2730	012606	000437			BR	SEQTAB	
2731							
2732	012610	052760	034000	030002	XSEQ: BIS	#34000,ASTAT(0)	; SET SEQ=1, SING TRK + SCT
2733	012616	000167	000462		JMP	TAB	
2734							
2735	012622	105701			HISEQ: TSTB	%1	
2736	012624	001113			BNE	ILL1	
2737	012626	116001	031003		MOVB	KBUF+1(0),%1	
2738	012632	020127	000002		LOSEQ: CMP	%1,%2	
2739	012636	003106			BGT	ILL1	
2740	012640	001410			BEQ	SEQ2	
2741	012642	005701			TST	%1	
2742	012644	001753			BEQ	ALSEQ	
2743	012646	012760	020000	030002	MOV	#20000,ASTAT(0)	
2744	012654	005060	030202		CLR	DABUF(0)	
2745	012660	000412			BR	SEQTAB	
2746							
2747	012662	004767	175354		SEQ2: JSR	7, RANDOM	
2748	012666	042701	174000		BIC	#174000,%1	; MASK ALL BUT ADDR
2749	012672	010160	030202		MOV	%1,DABUF(0)	
2750	012676	052701	040000		BIS	#40000,%1	; SET RAN SEQ BIT
2751	012702	010160	030002		MOV	%1,ASTAT(0)	
2752	012706	062760	001400	031000	SEQTAB: ADD	#1400,KSTAT(0)	
2753	012714	032760	000020	030000	BIT	#20,STATO(0)	
2754	012722	001570			BEQ	TAB	
2755	012724	126027	031000	000001	CMPB	KSTAT(0),#1	
2756	012732	003005			BGT	XWROB	

2757	012734	001402			BEQ	XWRDA	
2758	012736	004767	000712		JSR	7,ECHO	
2759	012742	004767	000706		XWRDA: JSR	7,ECHO	
2760	012746	004767	000702		XWRDB: JSR	7,ECHO	
2761	012752	112760	000041	030401	MOVB	#41,PSTAT+1(0)	;MESSAGE 2 - LINE 1
2762	012760	105060	031000		CLRB	KSTAT(0)	
2763	012764	000167	175452		JMP	KRETUR	
2764	012770	120127	000330		TRKIN: CMPB	%1,#330	;ALL TRKS?
2765	012774	001405			BEQ	ALLTRK	
2766	012776	126027	031000	000001	CMPB	KSTAT(0),#1	;INPUT POINTER
2767	013004	003007			BGT	HITRK	
2768	013006	001417			BEQ	LOTRK	
2769	013010	012760	024000	030002	ALLTRK: MOV	#24000,ASTAT(0)	
2770	013016	005060	030202		CLR	DABUF(0)	
2771	013022	000530			BR	TAB	
2772							
2773	013024	006301			HITRK: ASL	%1	
2774	013026	006301			ASL	%1	

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2775	013030	006301			ASL	%1	
2776	013032	105060	031002		CLRB	KBUF(0)	
2777	013036	000360	031002		SWAB	KBUF(0)	
2778	013042	066001	031002		ADD	KBUF(0),%1	
2779	013046	020127	000040	LOTRK:	CMP	%1,#40	;OUT OF RANGE?
2780	013052	002402			BLT	LOK1	;NO
2781	013054	000167	175610	ILL1:	JMP	ILLEG	
2782	013060	000301		LOK1:	SWAB	%1	
2783	013062	006201			ASR	%1	
2784	013064	006201			ASR	%1	
2785	013066	010160	030202		MOV	%1,DABUF(0)	
2786	013072	052701	034000		BIS	#34000,%1	
2787	013076	010160	030002		MOV	%1,ASTAT(0)	
2788	013102	000500			BR	TAB	
2789							
2790							
2791	013104	120127	000330	SCTIN:	CMPB	%1,#330	;ALL SECTORS?
2792	013110	001405			BEQ	ALLSCT	
2793	013112	126027	031000 000001		CMPB	KSTAT(0),#1	
2794	013120	003005			BGT	HISCT	
2795	013122	001415			BEQ	LOSCT	
2796	013124	042760	004077 030002	ALLSCT:	BIC	#4077,ASTAT(0)	
2797	013132	000420			BR	SCTTAB	
2798							
2799	013134	006301		HISCT:	ASL	%1	
2800	013136	006301			ASL	%1	
2801	013140	006301			ASL	%1	
2802	013142	105060	031002		CLRB	KBUF(0)	
2803	013146	000360	031002		SWAB	KBUF(0)	
2804	013152	066001	031002		ADD	KBUF(0),%1	
2805	013156	020127	000077	LOSCT:	CMP	%1,#77	
2806	013162	101334			BHI	ILL1	
2807	013164	050160	030002		BIS	%1,ASTAT(0)	
2808	013170	050160	030202		BIS	%1,DABUF(0)	
2809	013174	032760	000020 030000	SCTTAB:	BIT	#20,STAT(0)	
2810	013202	001040			BNE	TAB	
2811	013204	105260	031001		INCB	KSTAT+1(0)	
2812	013210	000435			BR	TAB	
2813	013212	012704	031002	WRDIN:	MOV	#KBUF,%4	
2814	013216	060004			ADD	%0,%4	
2815	013220	121427	000055		CMPB	(4),#055	
2816	013224	001012			BNE	NOTNEG	
2817	013226	005001			CLR	%1	
2818	013230	105360	031000		DECB	KSTAT(0)	
2819	013234	001417			BEQ	POS	
2820	013236	005204			INC	%4	
2821	013240	006301		WLOOP:	ASL	%1	
2822	013242	006301			ASL	%1	
2823	013244	006301			ASL	%1	
2824	013246	111402			MOVB	(4),%2	
2825	013250	060201			ADD	%2,%1	
2826	013252	005204		NOTNEG:	INC	%4	
2827	013254	105360	031000		DECB	KSTAT(0)	
2828	013260	003367			BGT	WLOOP	
2829	013262	122760	000055 031002		CMPB	#055,KBUF(0)	
2830	013270	001001			BNE	POS	

2831	013272	005401			NEG	%1
2832	013274	010160	030204	POS:	MOV	%1,DBBUF(0)
2833	013300	010160	030206		MOV	%1,OLDATA(0)
2834	013304	004767	000344	TAB:	JSR	7,ECHO
2835	013210	116001	031000		MOVB	KSTAT(0),%1
2836	013314	162701	000005		SUB	#5,%1
2837	013320	100004		TABLOP:	BPL	OKOUT
2838	013322	004767	000366		JSR	7,SPACES
2839	013326	005201			INC	%1
2840	013330	000773			BR	TABLOP
2841						
2842	013332	062760	000400	031000	OKOUT:	ADD #400,%STAT(0)
2843	013340	105060	031000		CLRB	KSTAT(0)
2844	013344	126027	031001	000000	CMPB	KSTAT+1(0),#6
2845	013352	001012			BNE	KRET2
2846	013354	005060	030604		CLR	ERCONT(0)
2847	013360	004767	000342		JSR	7,BUSY
2848	013364	112715	000317		MOVB	#317,(5)
2849	013370	004767	000332		JSR	7,BUSY
2850	013374	112715	000313		MOVB	#313,(5)
2851	013400	000167	175036	KRET2:	JMP	KRETUR

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2857 013404 132760 000300 030000 ENDIN: BITB #300,STAT0(0) ;WHICH MODE?
2858 013412 100421 BMI ILL2 ;RUN MODE IS ILLEGAL
2859 013414 001410 BEQ MONDON ;NOT TEST MODE
2860 013416 126027 031001 000006 CMPB KSTAT+1(0),#6
2861 013424 001014 BNE ILL2
2862 013426 052760 100200 030000 MONACT: BIS #100200,STAT0(0) ;ACTIVATE MONITOR
2863 013434 300457 BR ECCR
2864
2865 013436 116001 031001 MONDON: MOVB KSTAT+1(0),%1 ;GET ARGUMENT
2866 013442 005301 DEC %1 ;ARG=1=ACCEPT?
2867 013444 001415 BEQ ACMODE ;YES
2868 013446 005301 DEC %1 ;ARG=2=TEST?
2869 013450 001404 BEQ ENTEST ;YES
2870 013452 005301 DEC %1 ;ARG=3=CONTINUE?
2871 013454 001764 BEQ MONACT ;YES
2872 013456 000167 175206 ILL2: JMP ILLEG ;NO, ILLEGAL CHARACTER
2873
2874 013462 052760 000100 030000 ENTEST: BIS #100,STAT0(0)
2875 013470 112760 000102 030401 MOVB #102,PSTAT+1(0) ;MESS4, LINE2
2876 013476 000426 BR ECCRO
2877
2878 013500 032760 000400 030004 ACMODE: BIT #400,FLAGS(0) ;M SER. NO. FLAG?
2879 013506 001050 BNE PSERNO ;YES
2880 013510 032760 001000 030004 BIT #1000,FLAGS(0) ;P SER. NO. FLAG?
2881 013516 001440 BEQ MSERNO ;NO
2882 013520 042760 001000 030004 BIC #1000,FLAGS(0) ;CLEAR M SER.NO. FLAG
2883 013526 012760 140641 030000 MOV #140641,STAT0(0) ;ACCEPT STARTING STATUS
2884 013534 005060 030002 CLR ASTAT(0)
2885 013540 016760 003664 030602 MOV MINUTE,STIME(0) ;SAVE STARTING TIME
2886 013546 112760 000162 030401 MOVB #162,PSTAT+1(0) ;MESS 7.LINE 2 - AUTO ACCEPT START MESS
2887 013554 005060 030604 ECCRO: CLR ERCONT(0)
2888 013560 005060 032206 CLR LOOPC(0) ;CLR LOOP COUNTER
2889 013564 105060 030006 CLRB PHASE(0)
2890 013570 004767 173212 JSR 7,CLRCS
2891 013574 004767 000054 ECCR: JSR 7,ECHO ;CR
2892 013600 004767 000122 JSR 7,BUSY
2893 013604 112715 000212 MOVB #212,(5) ;LF
2894 013610 005060 031000 CLR KSTAT(0)
2895 013614 000167 174622 JMP KRETUR
2896
2897 013620 112760 000261 030401 MSERNO: MOVB #261,PSTAT+1(0) ;MESS13, LINE1-M SERIAL NUMBER
2898 013626 000403 BR PSERI
2899
2900 013630 112760 000301 030401 PSERNO: MOVB #301,PSTAT+1(0) ;MESS14, LINE1-P SERIAL NUMBER
2901 013636 062760 000400 030004 PSERI: ADD #400,FLAGS(0) ;SET FLAG
2902 013644 004767 000004 JSR 7,ECHO
2903 013650 000167 174566 JMP KRETUR

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2909 013654 032770 000100 032404 ECHO: BIT      #100,ATPS0(0)  ;"BUSY"?
2910 013662 001007          SNE      ECBUSY
2911 013664 052770 000100 032404      BIS      #100,ATPS0(0)  ;MAKE BUSY
2912 013672 017070 032402 032406      MOV      ATKB0(0),ATPB0(0);ECHO
2913 013700 000207          RTS      7
2914 013702 004767 000020          ECBUSY: JSR      7,BUSY
2915 013706 117015 032402          MOV      ATKB0(0),(5)
2916 013712 000207          RTS      7
2917
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2922 013714 004767 000006          SPACES: JSR      7,BUSY
2923 013720 112715 000240          MOV      #240,(5)
2924 013724 000207          RTS      7
2925
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2931 013726 010146          BUSY:  MOV      %1,-(6)      ;SAVE R1
2932 013730 010246          MOV      %2,-(6)      ;SAVE R2
2933 013732 116005 030400          MOV      PSTAT(0),%5      ;GET POINTER
2934 013736 060305          ADD      %3,%5      ;SET UP POINTER
2935 013740 010502          MOV      %5,%2      ;SAVE POINTER IN R2
2936 013742 010301          MOV      %3,%1      ;GET PBUF ADDR.
2937 013744 062701 000040          ADD      #40,%1      ;END OF BUFFER IN R1
2938 013750 105725          BLOOP:  TSTB      (5)+      ;END OF MESS?
2939 013752 001420          BEQ      POINT      ;YES
2940 013754 020501          CMP      %5,%1      ;END OF BUFFER?
2941 013756 001001          BNE      ENDAR      ;NO
2942 013760 010305          MOV      %3,%5      ;YES, GO TO BEG OF BUF
2943 013762 020502          ENDAR:  CMP      %5,%2      ;FULL BUFFER?
2944 013764 001371          BNE      BLOOP      ;NO
2945 013766 020503          CMP      %5,%3      ;BEGINNING OF BUFFER?
2946 013770 001001          BNE      BUFUL1      ;NO
2947 013772 010105          MOV      %1,%5      ;YES, GO TO END OF BUFFER
2948 013774 105045          BUFUL1: CLRB      -(5)      ;CLEAR LAST SLOT
2949 013776 020503          CMP      %5,%3      ;BEGINNING OF BUFFER?
2950 014000 001001          BNE      BUFUL2      ;NO
2951 014002 010105          MOV      %1,%5      ;YES, GO TO END OF BUFFER
2952 014004 112745 000207          BUFUL2: MOV      #BELL,-(5)      ;BELL IN NEXT TO LAST SLOT
2953 014010 005205          INC      %5      ;RS POINTS TO LAST SLOT
2954 014012 000412          BR       BUSIES      ;EXIT
2955
2956 014014 020501          POINT:  CMP      %5,%1      ;END OF BUFFER?
2957 014016 001404          BEQ      ENDAR1      ;YES
2958 014020 020502          CMP      %5,%2      ;FULL BUFFER?
2959 014022 001764          BEQ      BUFUL1      ;YES
2959 014024 105015          CLRB      (5)      ;NO, CLR 2ND FREE SLOT

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2960 014026 000403
2961
2962 014030 020302
2963 014032 001760
2964 014034 105013
2965 014036 005305
2966 014040 012602
2967 014042 012601
2968 014044 000207

BR BUSIER
ENDARI: CMP %3,%2 ;FULL BUFFER?
BEQ BUFUL1 ;YES
CLAB (3) ;NO, CLR 2ND FREE SLOT
BUSIER: DEC %5 ;R5 POINTS TO 1ST FREE SLOT
BUSIES: MOV (6)+,%2 ;RESTORE R2
MOV (6)+,%1 ;RESTORE R1
RTS 7

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014050 010146
014052 010246
014054 010346
014056 010446
014060 005000
014062 012767 000002 163716
014070 022770 000300 032404
014076 001415
014100 062700 000010
014104 020067 164372
014110 001364
014112 005067 163670
014116 012604
014120 012603
014122 012602
014124 012601
014126 012600
014130 000002

014132 005067 163650
014136 010003
014140 006303
014142 006303
014144 062703 031200
014150 010004
014152 062704 030400
014156 111401
014160 060301
014162 105711
014164 001412
014166 111170 032406
014172 105011
014174 005214
014176 032714 000340
014202 001736
014204 142714 000040
014210 001733
014212 105024
014214 132714 000017
014220 001460
014222 105314
014224 001567
014226 121427 000020
014232 103460
014234 001563
014236 121427 000040

; TELEPRINTER INTERRUPT ROUTINE

PIN: MOV %0, -(6)
MOV %1, -(6)
MOV %2, -(6)
MOV %3, -(6)
MOV %4, -(6)
CLR %0
PLOOP: MOV #2, 6
CMP #300, JTPSO(0)
BEQ TPSEV
PRETUR: ADD #10, %0
CMP %0, NUMBER ; POLLED ALL STATIONS?
BNE PLOOP ; NOT DONE POLLING
CLR 6
MOV (6)+, %4
MOV (6)+, %3
MOV (6)+, %2
MOV (6)+, %1
MOV (6)+, %0
RTI

; TELEPRINTER SERVICE ROUTINE

TPSEV: CLR 6
MOV %0, %3
ASL %3
ASL %3
ADD #PBUF, %3 ; PBUF ADDR IN R3
MOV %0, %4 ; STATION # TO R4
ADD #PSTAT, %4 ; PSTAT ADDR IN R4
MOVB (4), %1 ; POINTER IN R1
ADD %3, %1 ; CHAR. ADDR. IN R1
TSTB (1) ; END OF OUTPUT?
BEQ PUFEM ; YES, GET NEXT MESS
MOVB (1), JTPBO(0) ; NO, PRINT CHAR.
CLRB (1) ; CLR BUFFER
INC (4) ; MOVE POINTER
BIT #340, (4) ; END OF BUFF?
BEQ PRETUR ; NO
BICB #40, (4)
BEQ PRETUR
PUFEM: CLRB (4)+ ; CLR TP POINTER
BITB #17, (4) ; LINE=0?
BEQ PRIDON ; YES, MESSAGE DONE
DECB (4)
BEQ LINE00
CMPB (4), #20
BLC MESS0
BEQ LINE00 ; MESS1 LINE0 = LINE00
CMPB (4), #40

3025	014242	103471		BLO	MESS1	
3026	014244	001525		BEQ	L20	
3027	014246	121427	000060	CMPB	(4), #60	
3028	014252	103472		BLO	MESS2	
3029	014254	001523		BEQ	L30	
3030	014256	121427	000100	CMPB	(4), #100	
3031	014262	103550		BLO	LINE00	
3032	014264	001521		BEQ	L40	
3033	014266	121427	000120	CMPB	(4), #120	
3034	014272	103506		BLO	L06	;MESS4 LINE1 = LINE06
3035	014274	001543		BEQ	LINE00	
3036	014276	121427	000140	CMPB	(4), #140	
3037	014302	103514		BLO	L51	
3038	014304	001537		BEQ	LINE00	;MESS6 LINE0 = LINE00
3039	014306	121427	000160	CMPB	(4), #160	
3040	014312	103512		BLO	L61	
3041	014314	001533		BEQ	LINE00	;MESS7 LINE0 = LINE00
3042	014316	121427	000200	CMPB	(4), #200	
3043	014322	103510		BLO	L71	
3044	014324	001527		BEQ	LINE00	;MESS10 LINE0 = LINE00
3045	014326	121427	000220	CMPB	(4), #220	
3046	014332	103506		BLO	L101	
3047	014334	001507		BEQ	L110	
3048	014336	121427	000240	CMPB	(4), #240	
3049	014342	103437		BLO	MESS11	
3050	014344	001511		BEQ	L120	
3051	014346	121427	000300	CMPB	(4), #300	
3052	014352	103510		BLO	L130	
3053	014354	001511		BEQ	L140	
3054	014356	000167	002206	JMP	LIN150	
3055						
3056	014362	005070	032404	PRIDON: CLR	ATPS0(0)	
3057	014366	005304		DEC	%4	
3058	014370	005014		CLR	(4)	
3059	014372	000642		BR	PRETUR	
3060						
3061						
3062						
3063						
3064						
3065	014374	121427	000002	MESS0: CMPB	(4), #002	
3066	014400	103431		BLO	L01	
3067	014402	001432		BEQ	L02	
3068	014404	121427	000004	CMPB	(4), #004	
3069	014410	103431		BLO	L03	
3070	014412	001432		BEQ	L04	
3071	014414	121427	000006	CMPB	(4), #006	
3072	014420	103431		BLO	L05	
3073	014422	001432		BEQ	L06	
3074	014424	000433		BR	L07	
3075						
3076	014426	121427	000022	MESS1: CMPB	(4), #022	
3077	014432	101026		BHI	L06	
3078	014434	001423		BEQ	L05	
3079	014436	000420		BR	L04	
3080						

;MESSAGES

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3081	014440	000000		MESS2:	HALT	
3082						
3083	014442	121427	000222	MESS11:	CMPB	(4), #222
3084	014446	103426			BLO	L30
3085	014450	001455			BEQ	LINE00
3086	014452	121427	000224		CMPB	(4), #224
3087	014456	103440			BLO	L113
3088	014460	001441			BEQ	L114
3089	014462	000430			BR	L71
3090						
3091	014464	000167	000324	L01:	JMP	LINE01
3092	014470	000167	000500	L02:	JMP	LINE02
3093	014474	000167	000604	L03:	JMP	LINE03
3094	014500	000167	000636	L04:	JMP	LINE04
3095	014504	000167	001026	L05:	JMP	LINE05
3096	014510	000167	001156	L06:	JMP	LINE06
3097	014514	000167	001212	L07:	JMP	LINE07
3098	014520	000167	001250	L20:	JMP	LINE20
3099	014524	000167	001270	L30:	JMP	LINE30
3100	014530	000167	001354	L40:	JMP	LINE40
3101	014534	000167	001372	L51:	JMP	LINE51
3102	014540	000167	001424	L61:	JMP	LINE61
3103	014544	000167	001460	L71:	JMP	LINE71
3104	014550	000167	001520	L101:	JMP	LINE101
3105	014554	000167	001544	L110:	JMP	LINE110
3106	014560	000167	001606	L113:	JMP	LINE113
3107	014564	000167	001624	L114:	JMP	LINE114
3108	014570	000167	001666	L120:	JMP	LINE120
3109	014574	000167	001674	L130:	JMP	LINE130
3110	014600	000167	001726	L140:	JMP	LINE140

;MESS11, LINE1 = LINE30

```

3111
3112
3113 014604 116701 002621
3114 014610 004767 002172
3115 014614 112723 000072
3116 014620 116701 002604
3117 014624 004767 002156
3118 014630 116701 002576
3119 014634 012702 000240
3120 014640 110223
3121 014642 110223
3122 014644 110223
3123 014646 004767 002134
3124 014652 116701 002555
3125 014656 006301
3126 014660 006301
3127 014662 016123 014730
3128 014666 016123 014732
3129 014672 112723 000055
3130 014676 116701 002532
3131 014702 004767 002100
3132 014706 112723 000215
3133 014712 112723 000212
3134 014716 105013
3135 014720 005070 032406
3136 014724 000167 177150
3137 014730 030055 030060
3138 014734 045055 047101 043055
3139 014742 041105 046455 051101
3140 014750 040455 051120 046455
3141 014756 054501 045055 047125
3142 014764 045055 046125 040455
3143 014772 043525 051455 050105
3144 015000 047455 052103 047055
3145 015006 053117 042055 041505
3146
3147 015014 012704 015146
3148 015020 017001 032204
3149 015024 042701 174077
3150 015030 006301
3151 015032 006301
3152 015034 000301
3153 015036 004767 001704
3154 015042 012704 015154
3155 015046 017001 032204
3156 015052 004767 001670
3157 015056 012704 015140
3158 015062 017001 032204
3159 015066 042701 003777
3160 015072 006201
3161 015074 006201
3162 015076 006201
3163 015100 000301
3164 015102 004767 001640
3165 015106 012704 015162
3166 015112 017001 032202

```

```

;*****
LINE00: MOVB HOUR,%1 ;GET HOUR
        JSR 7,DECIM2
        MOVB #'',(3)+ ;ASCII FOR ":" IN TP BUFFER
        MOVB MINUTE,%1
        JSR 7,DECIM2
        MOVB DATE,%1 ;GET DATE
        MOV #SP,%2
        MOVB %2,(3)+
        MOVB %2,(3)+
        MOVB %2,(3)+
        JSR 7,DECIM2 ;PUT DECIMAL DATE IN PBUF
        MOVB MONTH,%1 ;GET MONTH
        ASL %1 ;*2
        ASL %1 ;*2
        MOV LOOTAB(1),(3)+ ;MONTH INTO PBUF
        MOV LOOTAB+2(1),(3)+
        MOVB #'',(3)+ ;ASCII FOR "-" IN TP BUFFER
        JSR 7,DECIM2 ;GET YEAR
        MOVB #CR,(3)+ ;PUT DECIMAL YEAR IN PBUF
        MOVB #LF,(3)+ ;ASCII FOR A LINE FEED
        CLRB (3) ;END OF MESS MARK
        CLR #TPBO(0) ;TYPE A NULL TO ACTIVATE TP
        JMP PRETUR
LOOTAB: .ASCII /-000/
        .ASCII /-JAN-FEB-MAR-APR-MAY-JUN-JUL-AUG-SEP-OCT-NOV-DEC/
;*****
LINE01: MOV #LOIB,%4
        MOV #DAO(0),%1 ;GET TESTER TRACK ADDR.
        BIC #174077,%1
        ASL %1
        ASL %1
        SWAB %1
        JSR 7,OCTAL2
        MOV #LOIC,%4
        MOV #DAO(0),%1 ;GET TESTER SECTOR ADDR.
        JSR 7,OCTAL2
        MOV #LOIA,%4
        MOV #DAO(0),%1 ;GET TESTER WORD COUNT
        BIC #3777,%1 ;MASK
        ASR %1
        ASR %1
        ASR %1
        SWAB %1
        JSR 7,OCTAL2
        MOV #LOID,%4
        MOV #DDBO(0),%1 ;GET TESTER DATA BUFFER

```


3167	015116	004767	001474			JSR	7,OCTAL6	
3168	015122	052760	100000	030000		BIS	#100000,STATO(0)	;ACTIVATE MONITOR
3169	015130	004767	164412			JSR	7,ERREAD	;REPEAT READ ERRORS
3170	015134	004567	001674			JSR	5,PRINT	
3171	015140	000	000		LO1A:	.BYTE	0,0	
3172	015142	240	240	240		.BYTE	SP,SP,SP,SP	
3173	015145	240						
3174	015146	000	000		LO1B:	.BYTE	0,0	
3175	015150	240	240	240		.BYTE	SP,SP,SP,SP	
3176	015153	240						
3177	015154	000	000		LO1C:	.BYTE	0,0	
3178	015156	240	240	240		.BYTE	SP,SP,SP,SP	
3179	015161	240						
3180	015162	000	000	000	LO1D:	.BYTE	0,0,0,0,0,0	
3181	015165	000	000	000				
3182	015170	215	212	000		.BYTE	CR,LF,0	
3183		015174				.EVEN		
3184								
3185								
3186	015174	017001	032200		LINE02:	MOV	#CSO(0),%1	;GET ERROR CODE
3187	015200	042701	007777			BIC	#7777,%1	;MASK
3188	015204	006001				ROR	%1	
3189	015206	006201				ASR	%1	
3190	015210	006201				ASR	%1	
3191	015212	006201				ASR	%1	
3192	015214	000301				SWAB	%1	
3193	015216	012704	015266			MOV	#LO2A,%4	
3194	015222	004767	001520			JSR	7,OCTAL2	
3195	015226	016001	030200			MOV	#CSBUF(0),%1	;GET OP CODE
3196	015232	042701	177760			BIC	#177760,%1	
3197	015236	012704	015274			MOV	#LO2B,%4	
3198	015242	004767	001500			JSR	7,OCTAL2	
3199	015246	004567	001562			JSR	5,PRINT	
3200	015252	042523	020103	020040		.ASCII	/SEC DB/	
3201	015260	020040	041104					
3202	015264	215	212			.BYTE	CR,LF	
3203	015266	000	000		LO2A:	.BYTE	0,0	
3204	015270	240	240	240		.BYTE	SP,SP,SP,SP	
3205	015273	240						
3206	015274	000	000		LO2B:	.BYTE	0,0	
3207	015276	240	240	240		.BYTE	SP,SP,SP,SP,0	
3208	015301	240	000					
3209		015304				.EVEN		
3210								
3211								
3212	015304	004567	001524		LINE03:	JSR	5,PRINT	
3213	015310	051105	020122	020040		.ASCII	/ERR OP WCT TRK /	
3214	015316	050117	020040	020040				
3215	015324	041527	020124	020040				
3216	015332	051124	020113	020040				
3217	015340	000				.BYTE	0	
3218		015342				.EVEN		
3219								
3220	015342	032760	014000	030002	LINE04:	BIT	#14000,ASTAT(0)	;SEQ X?
3221	015350	001015				BNE	LO4X	;YES
3222	015352	112767	000260	000123		MOVB	#260,LO4A	;ASCII "0"

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```

3223 015360 112767 000261 000116      MOVB      #261,L04A+1      ;ASCII "1"
3224 015366 032760 040000 030002      BIT        #40000,ASTAT(0) ;SEQ 2?
3225 015374 001411                      BEQ        L04Y          ;NO
3226 015376 105267 000102      INCB      L04A+1      ;YES, ASCII "2"
3227 015402 000406                      BR         L04Y
3228
3229 015404 112767 000330 000071 L04X:  MOVB      #330,L04A
3230 015412 112767 000240 000064      MOVB      #240,L04A+1
3231 015420 016001 030202      L04Y:  MOV      DABUF(0),%1      ;GET TRACK ADDR
3232 015424 042701 174077      BIC      #174077,%1      ;MASK
3233 015430 006101                      ROL        %1
3234 015432 006101                      ROL        %1
3235 015434 000301                      SWAP      %1
3236 015436 012704 015511      MOV      #L04B,%4
3237 015442 004767 001300      JSR      7,OCTAL2
3238 015446 016001 030202      MOV      DABUF(0),%1      ;GET BUFFERED SECTOR ADDR
3239 015452 012704 015517      MOV      #L04C,%4
3240 015456 004767 001264      JSR      7,OCTAL2
3241 015462 016001 030204      MOV      DBBUF(0),%1      ;GET BUFFERED DATA
3242 015466 012704 015525      MOV      #L04D,%4
3243 015472 004767 001120      JSR      7,OCTAL6
3244 015476 004567 001332      JSR      5,PRINT
3245 015502          240                      .BYTE      SP
3246 015503          000          000      L04A:  .BYTE      0,0
3247 015505          240          240      .BYTE      SP,SP,SP,SP
3248 015510          240
3249 015511          000          000      L04B:  .BYTE      0,0
3250 015513          240          240      .BYTE      SP,SP,SP,SP
3251 015516          240
3252 015517          000          000      L04C:  .BYTE      0,0
3253 015521          240          240      .BYTE      SP,SP,SP,SP
3254 015524          240
3255 015525          000          000      L04D:  .BYTE      0,0,0,0,0,0
3256 015530          000          000
3257 015533          215          212      .BYTE      CR,LF,0
3258
3259
3260 ;*****
3261 015536 116001 030001      LINE05: MOVB      STAT0+1(0),%1      ;GET TEST NO.
3262 015542 012704 015655      MOV      #L05B,%4
3263 015546 004767 001174      JSR      7,OCTAL2
3264 015552 116001 030006      MOVB      PHASE(0),%1      ;GET PHASE
3265 015556 001002                      BNE        L05A          ;NOT PHASE 0
3266 015560 162701 000040      SUB      #40,%1          ;FOR SPACE
3267 015564 062701 000300      L05A:  ADD      #300,%1      ;LETTER ASCII
3268 015570 110167 000063      MOVB      %1,L05C
3269 015574 116001 030000      MOVB      STAT0(0),%1      ;GET PATTERN NO.
3270 015600 012704 015663      MOV      #L05D,%4
3271 015604 032701 000020      BIT      #20,%1          ;PAT X?
3272 015610 001005                      BNE        L05X          ;YES
3273 015612 042701 177760      BIC      #177760,%1
3274 015616 004767 001124      JSR      7,OCTAL2
3275 015622 000404                      BR         L05Y
3276
3277 015624 112724 000240      L05X:  MOVB      #240,(4)+
3278 015630 112714 000330      MOVB      #330,(4)      ;ASCII "X"

```


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3279	015634	004567	001174		LOS Y:	JSR	5, PRINT
3280	015640	042523	020103	020040		.ASCII	/SEC WORD/
3281	015646	053440	051117	104			
3282	015653	215	212			.BYTE	CR, LF
3283	015655	000	000		LOS B:	.BYTE	0, 0
3284	015657	000	240	240	LOS C:	.BYTE	0, SP, SP, SP
3285	015662	240					
3286	015663	000	000		LOS D:	.BYTE	0, 0
3287	015665	240	240	240		.BYTE	SP, SP, SP, 0
3288	015670	000					
3289		015672				.EVEN	
3290							
3291					;*****		
3292	015672	004567	001136		LINE06:	JSR	5, PRINT
3293	015676	215	212			.BYTE	CR, LF
3294	015700	051524	020124	020040		.ASCII	/TST PAT SEQ TRK /
3295	015706	040520	020124	020040			
3296	015714	042523	020121	020040			
3297	015722	051124	020113	020040			
3298	015730	000				.BYTE	0
3299		015732				.EVEN	
3300							
3301					;*****		
3302	015732	004567	001076		LINE07:	JSR	5, PRINT
3303	015736	215	212			.BYTE	CR, LF
3304	015740	047520	051523	041111		.ASCII	/POSSIBLE TESTER MALFUNCTION/
3305	015746	042514	052040	051505			
3306	015754	042524	020122	040515			
3307	015762	043114	047125	052103			
3308	015770	047511	116				

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3309 015773 000
3310

.BYTE 0
.EVEN

```

3311
3312
3313 015774 004567 001034
3314 016000 020040 054040 020130
3315 016006 020040 054040 020130
3316 016014 020040 040
3317 016017 000
3318
3319
3320
3321 016020 032760 000010 030004
3322 016026 001405
3323 016030 112760 000102 030401
3324 016036 005060 030004
3325 016042 016001 030604
3326 016046 012704 016076
3327 016052 004767 000540
3328 016056 004567 000752
3329 016062 051105 047522 051522
3330 016070 020072 020040 020040
3331 016076 000 000 000
3332 016101 000 000 000
3333 016104 215 212 000
3334
3335
3336
3337 016110 004567 000720
3338 016114 042523 020103 020040
3339 016122 053440 051117 104
3340 016127 215 212 000
3341
3342
3343
3344 016132 004567 000676
3345 016136 215 212
3346 016140 052521 041511 020113
3347 016146 042526 044522 054506
3348 016154 041440 046517 046120
3349 016162 052105 042105
3350 016166 240 000
3351
3352
3353
3354 016170 004567 000640
3355 016174 215 212
3356 016176 051105 047522 020122
3357 016204 047503 047125 020124
3358 016212 053117 051105 046106
3359 016220 053517 040440 124
3360 016225 240 000
3361
3362
3363
3364 016230 004567 000600
3365 016234 051522 032066 040440
3366 016242 052125 020117 041501

```

```

LINE20: JSR 5,PRINT
.ASCII / XX XX /

.BYTE 0
.EVEN

```

```

LINE30: BIT #10,FLAGS(0) ;"MESSAGE 4" FLAG?
BEQ L30A ;NO
MCVB #102,PSTAT+1(0) ;MESSAGE 4, LINE 2
CLR FLAGS(0) ;CLR "MESSAGE 4" FLAG
L30A: MOV ERCONT(0),%1
MOV #L30B,%4
JSR 7,OCTAL6
JSR 5,PRINT
.ASCII /ERRORS: /

L30B: .BYTE 0,0,0,0,0,0,CR,LF,0

.EVEN

```

```

LINE40: JSR 5,PRINT
.ASCII /SEC WORD/

.BYTE CR,LF,0
.EVEN

```

```

LINE51: JSR 5,PRINT
.BYTE CR,LF
.ASCII /QUICK VERIFY COMPLETED/

.BYTE SP,0
.EVEN

```

```

LINE61: JSR 5,PRINT
.BYTE CR,LF
.ASCII /ERROR COUNT OVERFLOW AT/

.BYTE SP,0
.EVEN

```

```

LINE71: JSR 5,PRINT
.ASCII /RS64 AUTO ACCEPT/

```

3367	016250	042503	052120		
3368	016254	215	212		
3369	016256	052123	051101	042524	.BYTE CR,LF
3370	016264	035104			.ASCII /STARTED:/
3371	016266	240	240	240	.BYTE SP,SP,SP,SP,0
3372	016271	240	000		.EVEN
3373		016274			
3374					
3375					*****
3376	016274	004567	000534		LIN101: JSR 5,PRINT
3377	016300	215	212		.BYTE CR,LF
3378	016302	047520	042527	020122	.ASCII /POWER FAILED AT/
3379	016310	040506	046111	042105	
3380	016316	040440	124		
3381	016321	240	000		.BYTE SP,0
3382		016324			.EVEN
3383					
3384					*****
3385	016324	010001			LIN110: MOV %0,%1
3386	016326	006201			ASR %1
3387	016330	006201			ASR %1
3388	016332	006201			ASR %1
3389	016334	012704	016364		MOV #L110A,%4
3390	016340	004767	000402		JSR 7,OCTAL2
3391	016344	004567	000464		JSR 5,PRINT
3392	016350	052123	052101	047511	.ASCII /STATION #: /
3393	016356	020116	035043	020040	
3394	016364	000	000	215	L110A: .BYTE 0,0,CR,LF,0
3395	016367	212	000		.EVEN
3396		016372			
3397					
3398					*****
3399	016372	004567	000436		LIN113: JSR 5,PRINT
3400	016376	047503	050115	042514	.ASCII /COMPLETED:/
3401	016404	042524	035104		
3402	016410	240	240	000	.BYTE SP,SP,0
3403		016414			.EVEN
3404					
3405					*****
3406	016414	116001	030603		LIN114: MOVB STIME+1(0),%1
3407	016420	004767	000362		JSR 7,DECIM2
3408	016424	112723	000072		MOVB #' : (3)+ ;ASCII FOR ":" IN TP BUFFER
3409	016430	116001	030602		MOVB STIME(0),%1
3410	016434	004767	000346		JSR 7,DECIM2
3411	016440	116701	000766		MOVB DATE,%1 ;GET PRESENT DATE
3412	016444	126760	000761	030603	CMPB HOUR,STIME+1(0) ;NEXT DAY?
3413	016452	002001			BGE L114A
3414	016454	005301			DEC %1
3415	016456	000167	176152		L114A: JMP L00A
3416					
3417					*****
3418	016462	112770	000007	032406	LIN120: MOVB #007,@TPBO(0)
3419	016470	000167	175404		JMP PRETUR
3420					
3421					*****
3422	016474	004567	000334		LIN130: JSR 5,PRINT

3423	016500	215	212
3424	016502	051522	032066
3425	016510	042523	044522
3426	016516	047040	046525
3427	016524	035122	020040
3428	016530	000	
3429		016532	
3430			
3431			
3432	016532	004567	000276
3433	016536	215	212
3434	016540	051522	032066
3435	016546	042523	044522
3436	016554	047040	046525
3437	016562	035122	020040
3438	016566	000	
3439		016570	
3440			
3441			
3442	016570	016001	032206
3443	016574	012704	016610
3444	016600	004767	000142
3445	016604	004567	000224
3446	016610	000	000
3447	016613	212	000
3448		016616	

.BYTE CR,LF
.ASCII /RS64M SERIAL NUMBER: /

.BYTE 0
.EVEN

LIN140: JSR 5,PRINT
.BYTE CR,LF
.ASCII /RS64P SERIAL NUMBER: /

.BYTE 0
.EVEN

LIN150: MOV LOOPC(0),%1
MOV #L150A,%4
JSR 7,OCTAL2
JSR 5,PRINT
215 L150A: .BYTE 0,0,CR,LF,0

.EVEN

```

3443
3450
3451
3452
3453
3454 016616 112714 000260
3455 016622 010102
3456 016624 100001
3457 016626 105214
3458 016630 042702 170370
3459 016634 052702 060260
3460 016640 110264 000005
3461 016644 105002
3462 016646 000302
3463 016650 000261
3464 016652 106002
3465 016654 110264 000002
3466 016660 010102
3467 016662 006202
3468 016664 006202
3469 016666 006202
3470 016670 042702 170370
3471 016674 052702 060260
3472 016700 110264 000004
3473 016704 105002
3474 016706 000302
3475 016710 000261
3476 016712 106002
3477 016714 110264 000001
3478 016720 010102
3479 016722 006102
3480 016724 006102
3481 016726 000302
3482 016730 042702 000370
3483 016734 052702 000260
3484 016740 110264 000003
3485 016744 000207
3486
3487
3488
3489
3490
3491 016746 042701 177700
3492 016752 010102
3493 016754 042702 000370
3494 016760 052702 000260
3495 016764 110264 000001
3496 016770 006201
3497 016772 006201
3498 016774 006201
3499 016776 052701 000260
3500 017002 110114
3501 017004 000207

```

```

:*****
:SUBROUTINE TO CONVERT OCTAL NUMBER TO ASCII
:*****

```

```

OCTAL6: MOVB    #260,(4)
        MOV     %1,%2
        BPL     0C6A
        INCB    (4)
0C6A:   BIC     #170370,%2
        BIS     #060260,%2
        MOVB    %2,5(4)
        CLRB    %2
        SWAB    %2
        SEC
        RORB    %2
        MOVB    %2,2(4)
        MOV     %1,%2
        ASR     %2
        ASR     %2
        ASR     %2
        BIC     #170370,%2
        BIS     #060260,%2
        MOVB    %2,4(4)
        CLRB    %2
        SWAB    %2
        SEC
        RORB    %2
        MOVB    %2,1(4)
        MOV     %1,%2
        ROL     %2
        ROL     %2
        SWAB    %2
        BIC     #370,%2
        BIS     #260,%2
        MOVB    %2,3(4)
        RTS     7

```

```

:*****
:SUBROUTINE TO CONVERT 2 BIT OCTAL NUMBER TO ASCII
:*****

```

```

OCTAL2: BIC     #177700,%1
        MOV     %1,%2
        BIC     #370,%2
        BIS     #260,%2
        MOVB    %2,1(4)
        ASR     %1
        ASR     %1
        ASR     %1
        BIS     #260,%1
        MOVB    %1,(4)
        RTS     7

```


3502
3503
3504
3505
3506
3507 017006 112713 000257
3508 017012 105213
3509 017014 162701 000012
3510 017020 002374
3511 017022 005203
3512 017024 062701 000272
3513 017030 110123
3514 017032 000207
3515
3516
3517
3518
3519 017034 112570 032406
3520 017040 112523
3521 017042 001376
3522 017044 005726
3523 017046 000167 175026

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;*****
;SUBROUTINE TO CHANGE TWO OCTAL DIGITS TO DECIMAL AND
;STORE IN PBUF
;*****
DECIM2: MOVB    #257,(3)      ;ASCII "0"-1
DEC2A:  INCB    (3)          ;FIRST DIGIT
        SUB     #12,%1        ;IS 1ST DIG THERE YET?
        BGE     DEC2A        ;NO
        INC     %3
        ADD     #272,%1      ;ASCII FOR SECOND DIGIT
        MOVB    %1,(3)+      ;PUT IT IN PBUF
        RTS     7            ;RETURN
;*****
;SUBROUTINE TO PUT MESSAGE IN PBUF FOR TYPING
;*****
PRINT:  MOVB    (5)+,@TPBO(0) ;TYPE FIRST CHAR
PRINTA: MOVB    (5)+,(3)+
        BNE     PRINTA
        TST     (6)+          ;ADD 2 TO R6
        JMP     PRETUR

```

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3524
3525 ;*****
3526 ;LINE FREQUENCY CLOCK INTERRUPT ROUTINE
3527 ;*****
3528
3529 017052 042777 000200 000356 CLOCK: BIC #200,ALKS
3530 017060 005267 000342 INC TIME
3531 017064 001401 BEQ TIMIN
3532 017066 000002 RTI
3533
3534 017070 010046 TIMIN: MOV %0,-(6)
3535 017072 010146 MOV %1,-(6)
3536 017074 010246 MOV %2,-(6)
3537 017076 166767 161376 000322 SUB CYCLE,TIME
3538 017104 126727 000320 000073 CMPB MINUTE,#73 ;HOUR UP?
3539 017112 001403 BEQ TIMOUR
3540 017114 105267 000310 INCB MINUTE
3541 017120 000474 BR TIMEOUT
3542
3543 017122 105067 000302 TIMOUR: CLRB MINUTE
3544 017126 126727 000277 000027 CMPB HOUR,#27 ;MIDNIGHT?
3545 017134 001403 BEQ TIMDAY ;YES, NEW DAY.
3546 017136 105267 000267 INCB HOUR
3547 017142 000463 BR TIMEOUT
3548
3549 017144 105067 000261 TIMDAY: CLRB HOUR ;CLEAR HOURS
3550 017150 126727 000256 000034 CMPB DATE,#34 ;DAY=28TH?
3551 017156 001411 BEQ FEB ;YES, CHECK FOR FEB.
3552 017160 003003 BGT TIMDAT ;DAY>28TH.
3553 017162 105267 000244 TIDA: INCB DATE ;NEXT DAY
3554 017166 000451 BR TIMEOUT
3555
3556 017170 126727 000236 000036 TIMDAT: CMPB DATE,#36 ;WHAT DAY?
3557 017176 101027 BHI TIMONT ;31ST
3558 017200 001415 BEQ SNAJ ;30TH
3559 017202 126727 000225 000002 FEB: CMPB MONTH,#2 ;FEBRUARY?
3560 017210 001364 BNE TIDA ;NO
3561 017212 132767 000003 000214 BITB #3, YEAR ;LEAP YEAR?
3562 017220 001016 BNE TIMONT ;NO, END OF MONTH
3563 017222 126727 000204 000034 CMPB DATE,#34 ;DAY=28TH?
3564 017230 001754 BEQ TIDA ;YES, GO TO 29TH.
3565 017232 000411 BR TIMONT ;29TH, END OF MONTH
3566
3567 017234 116701 000173 SNAJ: MOVB MONTH,%1 ;GET MONTH IN R1
3568 017240 032701 000010 BIT #10,%1 ;FIRST SEVEN MONTHS?
3569 017244 001401 BEQ AJ ;YES-MONTH # EVEN IF APR OR JUN
3570 017246 005101 COM %1 ;NO-MONTH # ODD IF SEP OR NOV
3571 017250 032701 000001 AJ: BIT #1,%1 ;IF EVEN THEN 30 DAY MONTH
3572 017254 001342 BNE TIDA ;31 DAY MONTH
3573 017256 112767 000001 000146 TIMONT: MOVB #1, DATE ;1ST, OHR, OMIN
3574 017264 105267 000143 INCB MONTH ;NEXT MONTH
3575 017270 126727 000137 000014 CMPB MONTH,#14 ;DECEMBER?
3576 017276 101405 BLOS TIMEOUT
3577 017300 112767 000001 000125 MOVB #1, MONTH ;JANUARY
3578 017306 105267 000122 INCB YEAR ;NEXT YEAR
3579 ;*****

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3580 ;ROUTINE TO SEE IF IT IS TIME TO TYPE ANOTHER TIME MESSAGE.
3581 ; DATE, TIME AND NUMBER OF ERRORS (MESSAGE 6) ARE TYPED OUT
3582 ; EVERY HALF HOUR ON STATIONS RUNNING AUTO ACCEPT.
3583 ;*****
3584 017312 005000 TIMOUT: CLR %0 ;SET RD UP FOR POLLING
3585 017314 105760 030000 TILOOP: TSTB STATO(0) ;ACTIVE STATION?
3586 017320 100031 SPL TIMOT2 ;NO
3587 017322 032760 000100 030000 BIT #100,STATO(0) ;ACCEPT MODE?
3588 017330 001025 BNE TIMOT2 ;NO
3589 017332 116001 030602 MOV8 STIME(0),%1 ;GET STARTING TIME (MIN ONLY)
3590 017336 116702 000066 MOV8 MINUTE,%2 ;GET PRESENT TIME
3591 017342 160102 SUB %1,%2 ;SAME?
3592 017344 001406 BEQ TIMTYP ;YES!
3593 017346 100002 BPL TIMOT1 ;R2>R1
3594 017350 062702 000074 ADD #74,%2 ;ADD 60 MIN TO R2
3595 017354 162702 000036 TIMOT1: SUB #36,%2 ;HALF HOUR?
3596 017360 001011 BNE TIMOT2 ;NO, DON'T TYPE
3597 017362 032770 000100 032404 TIMTYP: BIT #100,TPSO(0) ;TP BUSY?
3598 017370 001005 BNE TIMOT2 ;YES, FORGET THE MESSAGE!
3599 017372 112760 000062 030401 MOV8 #062,PSTAT+1(0) ;MESS 3, LINE 2 - # ERRORS AND TIME
3600 017400 004767 170756 JSR 7,CRACT ;ACTIVATE TP
3601 017404 062700 000010 TIMOT2: ADD #10,%0 ;NEXT STATION
3602 017410 020067 161066 CMP %0,NUMBER ;DONE POLLING?
3603 017414 001337 BNE TILOOP ;NO
3604 017416 012602 MOV (6)+,%2
3605 017420 012601 MOV (6)+,%1
3606 017422 012600 MOV (6)+,%0
3607 017424 000002 RTI
3608
3609 017426 174370 TIME: -3410 ;HALF A MINUTE
3610 017430 000 MINUTE: .BYTE 0
3611 017431 000 HOUR: .BYTE 0
3612 017432 000 DATE: .BYTE 0
3613 017433 000 MONTH: .BYTE 0
3614 017434 000 YEAR: .BYTE 0
3615 017436 .EVEN
3616
3617 017436 177546 LKS: 177546

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3618
3619
3620
3621
3622
3623 017440 012700 021522
3624 017444 004767 001540
3625 017450 004767 001506
3626 017454 010102
3627 017456 020227 000260
3628 017462 103441
3629 017464 020227 000270
3630 017470 103036
3631 017472 042702 000260
3632 017476 006302
3633 017500 006302
3634 017502 006302
3635 017504 010267 160772
3636 017510 004767 001446
3637 017514 020127 000215
3638 017520 001427
3639 017522 020127 000260
3640 017526 103417
3641 017530 020127 000270
3642 017534 103014
3643 017536 042701 000260
3644 017542 060201
3645 017544 006301
3646 017546 006301
3647 017550 006301
3648 017552 020127 000200
3649 017556 101003
3650 017560 010167 160716
3651 017564 001005
3652 017566 012700 021362
3653 017572 004767 001412
3654 017576 000724
3655
3656 017600 020127 000215
3657 017604 001370
3658 017606 012700 021226
3659 017612 004767 001372
3660 017616 005067 177606
3661 017622 005067 177604
3662 017626 105067 177602
3663 017632 004767 001324
3664 017636 010102
3665 017640 020227 000260
3666 017644 103477
3667 017646 020227 000272
3668 017652 103074
3669 017654 042702 000260
3670 017660 001471
3671 017662 110267 177544
3672 017666 004767 001270
3673 017672 020127 000255

;ROUTINE TO INPUT THE DATE AND TIME

DATIN: MOV #MESS24,%0
JSR 7,TYPE
KEYA: JSR 7,KEIN
MOV %1,%2
CMP %2,#260
BLO TRYAGN
CMP %2,#270
BHIS TRYAGN
BIC #260,%2
ASL %2
ASL %2
ASL %2
MOV %2,NUMBER
KEYB: JSR 7,KEIN
CMP %1,#215 ;CR?
BEQ KEYC
CMP %1,#260
BLO TRYAGN
CMP %1,#270
BHIS TRYAGN
BIC #260,%1
ADD %2,%1
ASL %1
ASL %1
ASL %1
CMP %1,#200 ;LIMIT OF 20 OCTAL STATIONS
BHI TRYAGN
MOV %1,NUMBER
BNE KEYC
TRYAGN: MOV #MESS22,%0
JSR 7,TYPE
BR KEYA
KEYC: CMP %1,#215 ;CR?
BNE TRYAGN
MOV #MESS20,%0
KEYD: JSR 7,TYPE
CLR MINUTE ;CLR MINUTE AND HOUR BYTES
CLR DATE ;CLR DATE AND MONTH BYTES
CLR YEAR ;CLR YEAR BYTE
KEY1: JSR 7,KEIN
MOV %1,%2
CMP %2,#260
BLO TRYAGN
CMP %2,#272
BHIS TRYAGN
BIC #260,%2
BEQ TRYAGN
KEY2: MOVB %2,DATE
JSR 7,KEIN
CMP %1,#255 ;"-?"

3674	017676	001430		BEQ	KEY4		;YES, ONE DIGIT DATE
3675	017700	020127	000260	CMP	%1, #260		
3676	017704	103457		BLO	TRYAG		
3677	017706	020127	000272	CMP	%1, #272		
3678	017712	103054		BHIS	TRYAG		
3679	017714	042701	000260	BIC	#260, %1		
3680	017720	006302		ASL	%2		
3681	017722	060201		ADD	%2, %1		
3682	017724	006302		ASL	%2		
3683	017726	006302		ASL	%2		
3684	017730	060201		ADD	%2, %1		
3685	017732	001444		BEQ	TRYAG		
3686	017734	032701	177740	BIT	#177740, %1		
3687	017740	001041		BNE	TRYAG		
3688	017742	110167	177464	MOVB	%1, DATE		
3689	017746	004767	001210	KEY3: JSR	7, KEIN		
3690	017752	020127	000255	CMP	%1, #255		
3691	017756	001032		BNE	TRYAG		
3692							
3693	017760	004767	001176	KEY4: JSR	7, KEIN		
3694	017764	020127	000301	CMP	%1, #301		;A?
3695	017770	001457		BEQ	K5A		
3696	017772	020127	000304	CMP	%1, #304		;D?
3697	017776	001507		BEQ	K5D		
3698	020000	020127	000306	CMP	%1, #306		;F?
3699	020004	001435		BEQ	K5F		
3700	020006	020127	000312	CMP	%1, #312		;J?
3701	020012	001421		BEQ	K5J		
3702	020014	020127	000315	CMP	%1, #315		;M?
3703	020020	001435		BEQ	K5M		
3704	020022	020127	000316	CMP	%1, #316		;N?
3705	020026	001465		BEQ	K5N		
3706	020030	020127	000317	CMP	%1, #317		;O?
3707	020034	001454		BEQ	K5O		
3708	020036	020127	000323	CMP	%1, #323		;S?
3709	020042	001443		BEQ	K5S		
3710	020044	012700	021362	TRYAG: MOV	#MESS22, %0		
3711	020050	004767	001134	JSR	7, TYPE		
3712	020054	000660		BR	KEYO		
3713	020056	004767	001100	K5J: JSR	7, KEIN		
3714	020062	020127	000301	CMP	%1, #301		;JA?
3715	020066	001461		BEQ	K6JAN		
3716	020070	020127	000325	CMP	%1, #325		;JU?
3717	020074	001531		BEQ	K6JU		
3718	020076	000762		BR	TRYAG		
3719	020100	004767	001056	K5F: JSR	7, KEIN		
3720	020104	020127	000305	CMP	%1, #305		;FE?
3721	020110	001461		BEQ	K6FEB		
3722	020112	000754		BR	TRYAG		
3723	020114	004767	001042	K5M: JSR	7, KEIN		
3724	020120	020127	000301	CMP	%1, #301		;MA?
3725	020124	001464		BEQ	K6MA		
3726	020126	000746		BR	TRYAG		
3727	020130	004767	001026	K5A: JSR	7, KEIN		
3728	020134	020127	000320	CMP	%1, #320		;AP?
3729	020140	001472		BEQ	K6APR		

3730	020142	020127	000325		CMP	%1, #325	;AU?
3731	020146	001524			BEQ	K6AUG	
3732	020150	000735			BR	TRYAG	
3733	020152	004767	001004	K5S:	JSR	7, KEIN	
3734	020156	020127	000305		CMP	%1, #305	;SE?
3735	020162	001527			BEQ	K6SEP	
3736	020164	000727			BR	TRYAG	
3737	020166	004767	000770	K5O:	JSR	7, KEIN	
3738	020172	020127	000303		CMP	%1, #303	;OC?
3739	020176	001532			BEQ	K6OCT	
3740	020200	000721			BR	TRYAG	
3741	020202	004767	000754	K5N:	JSR	7, KEIN	
3742	020206	020127	000317		CMP	%1, #317	;NO?
3743	020212	001535			BEQ	K6NOV	
3744	020214	000713			BR	TRYAG	
3745	020216	004767	000740	K5D:	JSR	7, KEIN	
3746	020222	020127	000305		CMP	%1, #305	;DE?
3747	020226	001542			BEQ	K6DEC	
3748	020230	000705			BR	TRYAG	
3749	020232	004767	000724	K6JAN:	JSR	7, KEIN	
3750	020236	020127	000316		CMP	%1, #316	;N?
3751	020242	001300			BNE	TRYAG	
3752	020244	112767	000001 177161		MOVB	#1, MONTH	;JANUARY
3753	020252	000540			BR	KEY7	
3754							
3755	020254	004767	000702	K6FEB:	JSR	7, KEIN	
3756	020260	020127	000302		CMP	%1, #302	;B?
3757	020264	001267			BNE	TRYAG	
3758	020266	112767	000002 177137		MOVB	#2, MONTH	;FEBRUARY
3759	020274	000527			BR	KEY7	
3760							
3761	020276	004767	000660	K6MA:	JSR	7, KEIN	
3762	020302	020127	000331		CMP	%1, #331	;Y?
3763	020306	001420			BEQ	K6MAY	
3764	020310	020127	000322		CMP	%1, #322	;R?
3765	020314	001253			BNE	TRYAG	
3766	020316	112767	000003 177107		MOVB	#3, MONTH	;MARCH
3767	020324	000513			BR	KEY7	
3768							
3769	020326	004767	000630	K6APR:	JSR	7, KEIN	
3770	020332	020127	000322		CMP	%1, #322	;R?
3771	020336	001242			BNE	TRYAG	
3772	020340	112767	000004 177065		MOVB	#4, MONTH	;APRIL
3773	020346	000502			BR	KEY7	
3774							
3775	020350	112767	000005 177055	K6MAY:	MOVB	#5, MONTH	;MAY
3776	020356	000476			BR	KEY7	
3777							
3778	020360	004767	000576	K6JU:	JSR	7, KEIN	
3779	020364	020127	000314		CMP	%1, #314	;L?
3780	020370	001407			BEQ	K6JUL	
3781	020372	020127	000316		CMP	%1, #316	;N?
3782	020376	001222			BNE	TRYAG	
3783	020400	112767	000006 177025		MOVB	#6, MONTH	;JUNE
3784	020406	000462			BR	KEY7	
3785							

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3786	020410	112767	000007	177015	K6JUL:	MOVB	#7, MONTH	; JULY
3787	020416	000456				BR	KEY7	
3788								
3789	020420	004767	000536		K6AUG:	JSR	7, KEIN	
3790	020424	020127	000307			CMP	%1, #307	; G?
3791	020430	001205				BNE	TRYAGA	
3792	020432	112767	000010	176773		MOVB	#10, MONTH	; AUGUST
3793	020440	000445				BR	KEY7	
3794								
3795	020442	004767	000514		K6SEP:	JSR	7, KEIN	
3796	020446	020127	000320			CMP	%1, #320	; P?
3797	020452	001026				BNE	TRYAGA	
3798	020454	112767	000011	176751		MOVB	#11, MONTH	; SEPTEMBER
3799	020462	000434				BR	KEY7	
3800								
3801	020464	004767	000472		K6OCT:	JSR	7, KEIN	
3802	020470	020127	000324			CMP	%1, #324	; T?
3803	020474	001015				BNE	TRYAGA	
3804	020476	112767	000012	176727		MOVB	#12, MONTH	; OCTOBER
3805	020504	000423				BR	KEY7	
3806								
3807	020506	004767	000450		K6NOV:	JSR	7, KEIN	
3808	020512	020127	000326			CMP	%1, #326	; V?
3809	020516	001004				BNE	TRYAGA	
3810	020520	112767	000013	176705		MOVB	#13, MONTH	; NOVEMBER
3811	020526	000412				BR	KEY7	
3812								
3813	020530	000167	177310		TRYAGA:	JMP	TRYAG	
3814								
3815	020534	004767	000422		K6DEC:	JSR	7, KEIN	
3816	020540	020127	000303			CMP	%1, #303	; C?
3817	020544	001371				BNE	TRYAGA	
3818	020546	112767	000014	176657		MOVB	#14, MONTH	; DECEMBER
3819	020554	004767	000402		KEY7:	JSR	7, KEIN	
3820	020560	020127	000255			CMP	%1, #255	; -?
3821	020564	001361				BNE	TRYAGA	
3822								
3823	020566	004767	000370		KEY8:	JSR	7, KEIN	
3824	020572	020127	000260			CMP	%1, #260	
3825	020576	103754				BLO	TRYAGA	
3826	020600	020127	000272			CMP	%1, #272	
3827	020604	103351				BHIS	TRYAGA	
3828	020606	042701	000260			BIC	#260, %1	
3829	020612	006301				ASL	%1	
3830	020614	010102				MOV	%1, %2	
3831	020616	006301				ASL	%1	
3832	020620	006301				ASL	%1	
3833	020622	060102				ADD	%1, %2	
3834								
3835	020624	004767	000332		KEY9:	JSR	7, KEIN	
3836	020630	020127	000260			CMP	%1, #260	
3837	020634	103735				BLO	TRYAGA	
3838	020636	020127	000272			CMP	%1, #272	
3839	020642	103332				BHIS	TRYAGA	
3840	020644	042701	000260			BIC	#260, %1	
3841	020650	060102				ADD	%1, %2	

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3842	020652	110267	176556		MOVB	%2, YEAR	
3843							
3844	020656	004767	000300	KEY10:	JSR	7, KEIN	
3845	020662	020127	000215		CMP	%1, #215	;CR?
3846	020666	001320			BNE	TRYAGA	
3847	020670	012700	021402		MOV	#MESS23,%0	
3848	020674	004767	000310		JSR	7, TYPE	
3849							
3850	020700	004767	000256	KEY11:	JSR	7, KEIN	
3851	020704	010102			MOV	%1,%2	
3852	020706	020227	000260		CMP	%2, #260	
3853	020712	103516			BLO	TRYAN	
3854	020714	020227	000272		CMP	%2, #272	
3855	020720	103113			BHIS	TRYAN	
3856	020722	042702	000260		BIC	#260,%2	
3857							
3858	020726	004767	000230	KEY12:	JSR	7, KEIN	
3859	020732	020127	000272		CMP	%1, #272	
3860	020736	001420			BEQ	KEY13A	
3861	020740	101103			BHI	TRYAN	
3862	020742	020127	000260		CMP	%1, #260	
3863	020746	103500			BLO	TRYAN	
3864	020750	042701	000260		BIC	#260,%1	
3865	020754	006302			ASL	%2	
3866	020756	060201			ADD	%2,%1	
3867	020760	006302			ASL	%2	
3868	020762	006302			ASL	%2	
3869	020764	060102			ADD	%1,%2	
3870							
3871	020766	004767	000170	KEY13:	JSR	7, KEIN	
3872	020772	020127	000272		CMP	%1, #272	;:?
3873	020776	001064			BNE	TRYAN	
3874							
3875	021000	020227	000027	KEY13A:	CMP	%2, #27	
3876	021004	003061			BGT	TRYAN	
3877	021006	110267	176417		MOVB	%2, HOUR	
3878	021012	004767	000144	KEY14:	JSR	7, KEIN	
3879	021016	010102			MOV	%1,%2	
3880	021020	020227	000260		CMP	%2, #260	
3881	021024	103451			BLO	TRYAN	
3882	021026	020227	000272		CMP	%2, #272	
3883	021032	103046			BHIS	TRYAN	
3884	021034	042702	000260		BIC	#260,%2	
3885							
3886	021040	004767	000116	KEY15:	JSR	7, KEIN	
3887	021044	020127	000215		CMP	%1, #215	;CR?
3888	021050	001422			BEQ	KEY16A	
3889	021052	020127	000260		CMP	%1, #260	
3890	021056	103434			BLO	TRYAN	
3891	021060	020127	000272		CMP	%1, #272	
3892	021064	103031			BHIS	TRYAN	
3893	021066	042701	000260		BIC	#260,%1	
3894	021072	006302			ASL	%2	
3895	021074	060201			ADD	%2,%1	
3896	021076	006302			ASL	%2	
3897	021100	006302			ASL	%2	

3898	021102	060102			AUD	%1,%2
3899						
3900	021104	004767	000052		KEY16: JSR	7 KEIN
3901	021110	020127	000215		CMP	%1,%215
3902	021114	001015			BNE	TRYAN
3903						
3904	021116	020227	000073		KEY16A: CMP	%2,%73
3905	021122	003012			BGT	TRYAN
3906	021124	110267	176300		MOVB	%2,MINUTE
3907	021130	012700	021357		MOV	%MESS21,%0
3908	021134	004767	000050		JSR	7,TYPE
3909	021140	105777	011240		KEY16B: TSTB	@TPSO
3910	021144	100375			BPL	KEY16B
3911	021146	000207			RTS	7
3912						
3913	021150	012700	021362		TRYAN: MOV	%MESS22,%0
3914	021154	004767	000030		JSR	7,TYPE
3915	021160	000647			BR	KEY11
3916						
3917	021162	105777	011212		KEIN: TSTB	@TKSO
3918	021166	100375			BPL	KEIN
3919	021170	017701	011206		MOV	@TKB0,%1
3920						
3921	021174	105777	011204		KOUT: TSTB	@TPSO
3922	021200	100375			BPL	KOUT
3923	021202	010177	011200		MOV	%1,@TPB0
3924	021206	000207			RTS	7
3925						
3926	021210	105777	011170		TYPE: TSTB	@TPSO
3927	021214	100375			BPL	TYPE
3928	021216	112077	011164		MOVB	(0)+,@TPB0
3929	021222	001372			BNE	TYPE
3930	021224	000207			RTS	7
3931						
3932	021226	212	212		MESS20: .BYTE	LF,LF
3933	021230	054524	042520	044440	.ASCII	/TYPE IN DAY-MONTH-YEAR FROM KEYBOARD./
3934	021236	020116	040504	026531		
3935	021244	047515	052116	026510		
3936	021252	042531	051101	043040		
3937	021260	047522	020115	042513		
3938	021266	041131	040517	042122		
3939	021274	056				
3940	021275	215	212		.BYTE	CR,LF
3941	021277	123	050105	051105	.ASCII	/SEPERATE EACH WITH A HYPHEN, SUCH AS, 20-JAN-71./
3942	021304	052101	020105	040505		
3943	021312	044103	053440	052111		
3944	021320	020110	020101	054510		
3945	021326	044120	047105	020054		
3946	021334	052523	044103	040440		
3947	021342	026123	031040	026460		
3948	021350	040512	026516	030467		
3949	021356	056				
3950	021357	215	212	000	MESS21: .BYTE	CR,LF,0
3951					.EVEN	
3952						
3953	021362	077			MESS22: .ASCII	/??/

```

3954 021363 215 212
3955 021365 124 054522 040440
3956 021372 040507 047111 041
3957 021377 215 212 000
3958
3959
3960 021402 212 212
3961 021404 054524 042520 044440
3962 021412 020116 047510 051125
3963 021420 046472 047111 052125
3964 021425 020105 051106 046517
3965 021434 045440 054505 047502
3966 021442 051101 027104
3967 021446 215 212
3968 021450 042523 042520 040522
3969 021456 042524 053440 052111
3970 021464 020110 020101 047503
3971 021472 047514 026116 051440
3972 021500 041525 020110 051501
3973 021506 020054 032461 031472
3974 021514 027065
3975 021516 215 212 000
3976 021522
3977
3978 021522 215 212
3979 021524 051522 032066 052040
3980 021532 051505 042524 020122
3981 021540 047515 044516 047524
3982 021546 020122 047101 020104
3983 021554 044504 045523 042440
3984 021562 042530 041522 051511
3985 021570 051105 056
3986 021573 215 212
3987 021575 124 050131 020105
3988 021602 044124 020105 041517
3989 021610 040524 020114 052516
3990 021616 041115 051105 047440
3991 021624 020106 052123 052101
3992 021632 047511 051516 047440
3993 021640 020116 044124 020105
3994 021646 054523 052123 046505
3995 021654 056
3996 021655 215 212
3997 021657 124 051105 044515
3998 021664 040516 042524 053440
3999 021672 052111 020110 020101
4000 021700 040503 051122 040511
4001 021706 042507 051040 052105
4002 021714 051125 027116
4003 021720 215 212 000
4004 021724
4005
4006
4007
4008
4009

```

```

.BYTE CR,LF
.ASCII /TRY AGAIN!/

```

```

.BYTE CR,LF,0
.EVEN

```

```

MESS23: .BYTE LF,LF
.ASCII /TYPE IN HOUR:MINUTE FROM KEYBOARD./

```

```

.BYTE CR,LF
.ASCII /SEPERATE WITH A COLON, SUCH AS, 15:35./

```

```

.BYTE CR,LF,0
.EVEN

```

```

MESS24: .BYTE CR,LF
.ASCII /RS64 TESTER MONITOR AND DISK EXERCISER./

```

```

.BYTE CR,LF
.ASCII /TYPE THE OCTAL NUMBER OF STATIONS ON THE SYSTEM./

```

```

.BYTE CR,LF
.ASCII /TERMINATE WITH A CARRIAGE RETURN./

```

```

.BYTE CR,LF,0
.EVEN

```

```

;*****
;SUBROUTINE TO SET UP THE 2 SEC., 20 SEC., AND 60 SEC WAIT ROUTINE
;*****

```


N07

MAINDEC-11-DZRSA-A
DZRSA.P11

RS64 TESTER MONITOR AND EXERCISER

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4010	021724	026727	156550	007020	SETCYC: CMP	CYCLE, #7020	;CHECK FOR 60 CYCLE CONSTANT
4011	021732	001406			BEQ	.60CYC	;BRANCH IF 60 CYCLE
4012	021734	026727	156540	005670	CMP	CYCLE, #5670	;CHECK FOR 50 CYCLE CONSTANT
4013	021742	001414			BEQ	.50CYC	;BRANCH IF 50 CYCLE
4014	021744	000000			HALT		;NEITHER 50 OR 60?
4015	021746	000766			BR	SETCYC	;TRY AGAIN.
4016							
4017	021750	012767	007016	000042	.60CYC: MOV	#7016, CYCL60	
4018	021756	012767	002260	000036	MOV	#2260, CYCL20	
4019	021764	012767	000170	000032	MOV	#0170, CYCL02	
4020	021772	000207			RTS	%7	
4021							
4022	021774	012767	005670	000016	.50CYC: MOV	#5670, CYCL60	
4023	022002	012767	001750	000012	MOV	#1750, CYCL20	
4024	022010	012767	000144	000006	MOV	#0144, CYCL02	
4025	022016	000207			RTS	%7	
4026							
4027	022020	000000			CYCL60: 0		
4028	022022	000000			CYCL20: 0		
4029	022024	000000			CYCL02: 0		

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022026 012767 022036 155770
022034 000000

022036 012767 022026 155760
022044 012706 001000
022050 000005
022052 012777 000100 175356
022060 012702 000140
022064 005001
022066 005301
022070 001376
022072 005302
022074 001374

022076 012767 000002 155702
022104 005000
022106 012770 000100 032400
022114 004767 166256
022120 105760 030000
022124 100015
022126 052760 100000 030000
022134 012760 101000 030400
022142 004767 166214
022146 012770 000200 032200
022154 004767 164602
022160 062700 000010
022164 020067 156312
022170 001346
022172 000167 156752

```

*****
:POWER FAILURE INTERRUPT ROUTINE.
:  ALL STATIONS GET CLEARED AFTER 30 SECONDS, AND THE MONITOR
:  PICKS UP WHERE IT LEFT OFF.
:  A POWER FAIL MESSAGE IS TYPED ON ALL STATIONS RUNNING TESTS.
*****

POWER:  MOV      #POWON,24
        HALT

POWON:  MOV      #POWER,24
        MOV      #1000,%6
        RESET    ;CLEAR OUT ALL DEVICES
        MOV      #100,%LKS
        MOV      #140,%2    ;30 SEC. WAIT LOOP
        CLR      %1
W30S:   DEC      %1
        BNE      W30S
        DEC      %2
        BNE      W30S
: POLL STATIONS: TYPE MESSAGE AND CLEAR ACTIVE STATIONS.

        MOV      #2.6      ;RTI ON TIME OUT
        CLR      %0
        MOV      #100,%TKSO(0) ;INTERUPT ENABLE
        JSR      7,CRACK1    ;INITIALIZE TELEPRINTER
        TSTB     STAT0(0)    ;STATION IN RUN MODE?
        BPL      NOTACT
        BIS      #100000,STAT0(0) ;MAKE SURE IT IS ACTIVE
        MOV      #101000,PSTAT(0) ;MESS10, LINE 2
        JSR      7,CRACK
        MOV      #200,%CSO(0) ;CLEAR ANY ERRORS
        JSR      7,TRANS     ;REDO LAST OPERATION
        NOTACT:  ADD      #10,%0
        CMP      %0,NUMBER
        BNE      LOOPOW
        JMP      RESTAR

```

MAINDEC-11-DZSA-A
DZSA.A.P11

RS64 TESTER MONITOR AND EXERCISER

4068			STAT0	=	30000
4069		030000	ASTAT	=	STAT0+2
4070		030002	FLAGS	=	STAT0+4
4071		030004	PHASE	=	STAT0+6
4072		030006	CSBUF	=	STAT0+200
4073		C30200	DABUF	=	STAT0+202
4074		030202	DBBUF	=	STAT0+204
4075		030204	OLDATA	=	STAT0+206
4076		030206	PSTAT	=	STAT0+400
4077		030400	PRANK	=	STAT0+402
4078		030402	SRANK	=	STAT0+404
4079		030404	WAITER	=	STAT0+406
4080		030406	RTIME	=	STAT0+600
4081		030600	STIME	=	STAT0+602
4082		030602	ERCONT	=	STAT0+604
4083		030604	READ3	=	STAT0+606
4084		030606	KSTAT	=	STAT0+1000
4085		031000	KBUF	=	STAT0+1002
4086		031002	PSUF	=	STAT0+1200
4087		031200	.	=	STAT0+2200
4088		032200			
4089					
4090	032200	170100	CS0:		170100
4091	032202	170102	DB0:		170102
4092	032204	170104	DA0:		170104
4093	032206	000000	LOOPC:		0
4094	032210	170110	CS1:		170110
4095	032212	170112	DB1:		170112
4096	032214	170114	DA1:		170114
4097	032216	000000			0
4098	032220	170120	CS2:		170120
4099	032222	170122	DB2:		170122
4100	032224	170124	DA2:		170124
4101	032226	000000			0
4102	032230	170130	CS3:		170130
4103	032232	170132	DB3:		170132
4104	032234	170134	DA3:		170134
4105	032236	000000			0
4106	032240	170140	CS4:		170140
4107	032242	170142	DB4:		170142
4108	032244	170144	DA4:		170144
4109	032246	000000			0
4110	032250	170150	CS5:		170150
4111	032252	170152	DB5:		170152
4112	032254	170154	DA5:		170154
4113	032256	000000			0
4114	032260	170160	CS6:		170160
4115	032262	170162	DB6:		170162
4116	032264	170164	DA6:		170164
4117	032266	000000			0
4118	032270	170170	CS7:		170170
4119	032272	170172	DB7:		170172
4120	032274	170174	DA7:		170174
4121	032276	000000			0
4122	032300	170200	CS10:		170200
4123	032302	170202	DB10:		170202

4124	032304	170204	DA10:	170204
4125	032306	000000		0
4126	032310	170210	CS11:	170210
4127	032312	170212	DB11:	170212
4128	032314	170214	DA11:	170214
4129	032316	000000		0
4130	032320	170220	CS12:	170220
4131	032322	170222	DB12:	170222
4132	032324	170224	DA12:	170224
4133	032326	000000		0
4134	032330	170230	CS13:	170230
4135	032332	170232	DB13:	170232
4136	032334	170234	DA13:	170234
4137	032336	000000		0
4138	032340	170240	CS14:	170240
4139	032342	170242	DB14:	170242
4140	032344	170244	DA14:	170244
4141	032346	000000		0
4142	032350	170250	CS15:	170250
4143	032352	170252	DB15:	170252
4144	032354	170254	DA15:	170254
4145	032356	000000		0
4146	032360	170260	CS16:	170260
4147	032362	170262	DB16:	170262
4148	032364	170264	DA16:	170264
4149	032366	000000		0
4150	032370	170270	CS17:	170270
4151	032372	170272	DB17:	170272
4152	032374	170274	DA17:	170274
4153	032376	000000		0

4154
4155 032400 177560
4156 032402 177562
4157 032404 177564
4158 032406 177566
4159 032410 176500
4160 032412 176502
4161 032414 176504
4162 032416 176506
4163 032420 176510
4164 032422 176512
4165 032424 176514
4166 032426 176516
4167 032430 176520
4168 032432 176522
4169 032434 176524
4170 032436 176526
4171 032440 176530
4172 032442 176532
4173 032444 176534
4174 032446 176536
4175 032450 176540
4176 032452 176542
4177 032454 176544
4178 032456 176546
4179 032460 176550
4180 032462 176552
4181 032464 176554
4182 032466 176556
4183 032470 176560
4184 032472 176562
4185 032474 176564
4186 032476 176566
4187 032500 176570
4188 032502 176572
4189 032504 176574
4190 032506 176576
4191 032510 176600
4192 032512 176602
4193 032514 176604
4194 032516 176606
4195 032520 176610
4196 032522 176612
4197 032524 176614
4198 032526 176616
4199 032530 176620
4200 032532 176622
4201 032534 176624
4202 032536 176626
4203 032540 176630
4204 032542 176632
4205 032544 176634
4206 032546 176636
4207 032550 176640
4208 032552 176642
4209 032554 176644

TKS0: 177560
TKB0: 177562
TPS0: 177564
TPB0: 177566
TKS1: 176500
TKB1: 176502
TPS1: 176504
TPB1: 176506
TKS2: 176510
TKB2: 176512
TPS2: 176514
TPB2: 176516
TKS3: 176520
TKB3: 176522
TPS3: 176524
TPB3: 176526
TKS4: 176530
TKB4: 176532
TPS4: 176534
TPB4: 176536
TKS5: 176540
TKB5: 176542
TPS5: 176544
TPB5: 176546
TKS6: 176550
TKB6: 176552
TPS6: 176554
TPB6: 176556
TKS7: 176560
TKB7: 176562
TPS7: 176564
TPB7: 176566
TKS10: 176570
TKB10: 176572
TPS10: 176574
TPB10: 176576
TKS11: 176600
TKB11: 176602
TPS11: 176604
TPB11: 176606
TKS12: 176610
TKB12: 176612
TPS12: 176614
TPB12: 176616
TKS13: 176620
TKB13: 176622
TPS13: 176624
TPB13: 176626
TKS14: 176630
TKB14: 176632
TPS14: 176634
TPB14: 176636
TKS15: 176640
TKB15: 176642
TPS15: 176644

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RS64 TESTER MONITOR AND EXERCISER

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4210 032556 176646
4211 032560 176650
4212 032562 176652
4213 032564 176654
4214 032566 176656
4215 032570 176660
4216 032572 176662
4217 032574 176664
4218 032576 176666
4219
4220 032600 000200

TPB15: 176646
TKS16: 176650
TKB16: 176652
TPS16: 176654
TPB16: 176656
TKS17: 176660
TKB17: 176662
TPS17: 176664
TPB17: 176666

END: .END LOAD

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DZRSAA.P11 CR

[illegible]

A-A RS64 TESTER MONITOR AND EXERCISER CROSS REFERENCE TABLE -- USER SYMBOLS

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2341	2521											
2342	2531											
778	2378	3132	3182	3202	3257	3282	3293	3303	3331	3340	3345	3355
3368	3377	3394	3423	3433	3446	3940	3950	3954	3957	3967	3975	3978
3986	3996	4003										
929	1000	1234	1640	1987	1991	2276	2542	3600	4051			
2279	4056											
2277	2281											
781	2369	2455	2533									
833	860	869	870	941	988	1055	1081	1231	1436	1603	1619	1671
1744	1806	1828	1896	1899	1944	1947	1950	1953	1957	1961	2002	3195
4073												
858	870	871	943	950	993	1003	1056	1074	1076	1606	1675	1700
1748	1810	1829	1848	1901	1957	1960	2395	2537	3186	4062	4090	
4094												
4122												
4126												
4130												
4134												
4138												
4142												
4146												
4150												
4098												
4102												
4106												
4110												
4114												
4118												
804	866	2211	2222	2233	3537	4010	4012					
2212	4019	4024	4029									
2223	4018	4023	4028									
2234	4017	4022	4027									
1070	1084	1089	1239	1482	1552	1553	1686	1687	1817	1818	1955	2032
2040	2145	2146	2149	2157	2158	2161	2185	2193	2196	2201	2729	2744
2749	2770	2785	2808	3231	3238	4074						
3118	3411	3550	3553	3556	3563	3573	3612	3661	3671	3688		
815	3623											
985	1005	1058	1080	1684	1815	1955	3148	3155	3158	4092		
4096												
4124												
4128												
4132												
4136												
4140												
4144												
4148												
4152												
4100												
4104												
4108												
4112												
4116												
4120												
1008	1020	1022	1028									

		2053*	2093	2096*	2097*	2100	2110	2113*	2116	2119*	2122	2124*	2125	2131*
DB0	032202	2137	2172*	2173*	2832*	3241	4075*							
DB1	032212	986*	1057*	1078	1956*	3166	4091*							
DB10	032202	4095*												
DB11	032312	4123*												
DB12	032322	4127*												
DB13	032332	4131*												
DB14	032342	4135*												
DB15	032352	4139*												
DB16	032362	4143*												
DB17	032372	4147*												
DB2	032222	4151*												
DB3	032232	4099*												
DB4	032242	4103*												
DB5	032252	4107*												
DB6	032262	4111*												
DB7	032272	4115*												
DECIM2	017006	4119*												
DEC2A	017012	3114	3117	3123	3131	3407	3410	3507*						
ECBUSY	013702	3508*	3510											
ECCR	013574	2910	2914*											
ECCRO	013554	2863	2891*											
ECHO	013654	2876	2887*											
END	032600	2397	2416	2491	2510	2615	2758	2759	2760	2834	2891	2902	2909*	
ENDAR	013762	4220*												
ENDAR1	014030	2940	2942*											
ENDIN	013404	2955	2962*											
ENTEST	013462	2335	2857*											
ERBUSY	001520	2869	2874*											
ERCONT=	030604	914	929*	933	935									
ERCOVE	001526	915*	917	997*	2846*	2897*	3325	4083*						
EREAD1	001600	916	932*											
EREAD2	001604	942	944	948*										
ERMES	001504	947	950*											
ERREAD	001546	920	927*											
ERROR	001414	924	941*	3169										
ERROR1	001460	872	911*											
EXCONA	011546	918	921*											
EXCONT	011510	2458	2536	2542*										
FEB	017202	2468	2477	2524	2533*									
FLAGS =	030004	3551	3559*											
		832*	911	919	921	1023*	1039*	1046*	1059	1063*	1073*	1674*	1703*	1709*
		1747*	1763*	1809*	1851*	1856*	1900*	1925*	1967	1976	1983	1985*	2410	2412*
		2415*	2452*	2465*	2484	2486*	2490*	2504	2506*	2509*	2590	2605	2607*	2624
		2666*	2687*	2707	2878	2880	2882*	2901*	3321	3324*	4071*			
HINUM	007470	2070*	2245	2255	2266*									
HIPAT	012440	2694	2699*											
HISCT	013134	2794	2799*											
HISEG	012622	2726	2735*											
HITRK	013024	2767	2773*											
HITST	012316	2668	2673*											
HOURL	017431	3113	3412	3544	3546*	3549*	3611*	3877*						
ILBUSY	010734	2368	2375*											
ILCRLF	010744	2377*	2402											
ILLEG	010670	2322	2328	2329	2330	2332	2333	2336	2337	2338	2339	2345	2347	2353
		2359	2366*	2390	2394	2626	2662	2781	2872					

A-A RS64 TESTER MONITOR AND EXERCISER CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

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K6MA	020276
K6MY	020350
K6NOV	020506
K6OCT	020464
K6SEP	020442
LF	= 000212

A-A RS64 TESTER MONITOR AND EXERCISER CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

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**A-A RS64 TESTER MONITOR AND EXERCISER
CROSS REFERENCE TABLE -- USER SYMBOLS**

[illegible]

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BASEQ	007300	2009	2012	2016	2024*									
NBACK	012064	2582	2593	2596	2599	2609	2615*	2625	2637					
NEWCOM	011720	2552	2584*											
NEXPAT	007472	1147	1165	1190	1218	1274	1308	1341	1387	1439	1474	1518	1571	1627
		1715	1772	1863	1934	2076*								
NEXT	001176	851*	861	868	880	885	925	930	956					
NEXTAD	007164	1011	1107	1129	1145	1161	1188	1216	1272	1306	1339	1385	1437	1472
		1516	1569	1623	1998*									
NOBELL	001476	922	924*											
NOSTAT	001130	825	834*											
NOTACT	022160	4058	4064*											
NOTNEG	013252	2816	2826*											
NTEST	011762	2585	2595*											
NUMB	012074	2356	2622*											
NUMBER	000502	807*	835	852	2297	2984	3602	3635*	3650*	4065				
NUMBIN	012136	2632*	2643											
OCTAL2	016746	3153	3156	3164	3194	3198	3237	3240	3263	3274	3390	3444	3491*	
OCTAL6	016616	3167	3243	3327	3454*									
OC6A	016630	3456	3458*											
OKOUT	013332	2837	2842*											
OLDATA=	030206	1020*	1036*	1078	1265	1299	1363	1381	1420	1435	1462	1471	1506	1515
		1554	1568	2125*	2137*	2172	2833*	4076*						
OPDONE	001302	873*	912	955										
PADON	007714	2105	2134*											
PADONE	007732	2081	2103	2137*										
PANEX	007570	2082	2083	2084	2085	2094	2102*	2111	2117	2123	2129			
PARET	007664	2055	2058	2098	2114	2120	2125*	2132						
PATER	007510	2079	2081*											
PATIN	007402	1104	1126	1142	1158	1182	1210	1256	1290	1323	1357	1404	1453	1496
		1537	1594	1661	1733	1796	1885	2049*	2136					
PATTER	007444	2053	2060*											
PATUR	007416	2053*	2108											
PATO	007434	2051	2057*											
PAT10	007634	2089	2116*											
PAT11	007652	2090	2122*											
PAT12	007674	2091	2128*											
PAT5	007536	2086	2093*											
PAT5A	007554	2095	2097*											
PAT6	007562	2087	2100*											
PAT6A	007660	2101	2124*											
PAT7	007616	2088	2110*											
PBUF =	031200	2315	3002	4087*										
PHASE =	030006	877	984*	1007*	1015*	1019*	1026*	10						

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A-A RS64 TESTER MONITOR AND EXERCISER
CROSS REFERENCE TABLE -- USER SYMBOLS

1595*	2054*	2128*	4078#									
2983#	3013	3015	3059	3136	3419	3523						
3018	3056#											
3170	3199	3212	3244	3279	3292	3302	3313	3328	3337	3344	3354	3364
3376	3391	3399	3422	3432	3445	3519#						

3520*	3521	839*										
775*	814*											
2879	2900*											
2898	2901*											
913	923*	928*	932	934*	999*	1228	1235*	1634	1639*	1978	1986*	1990*
2278*	2370*	2453*	2466*	2475*	2521*	2531*	2761*	2875*	2886*	2897*	2900*	2932
3004	3323*	3599*	4060*	4077*								

3004	3329*	3333*	4080*	4077*									
3008	3016#												
1021	1037	1044	1067	1237	2030	2130	2241*	2747					
863#													
876*	945*	946	4084#										
865	867#												
838#	4067												
776#	867												
1024	1047	1105	1109	1186	1262	1269	1332	1336	1377	1382	1421	1426	

1463	1468	1698	1706	1846	1854	1947#							
863	954	990*	1669*	1681*	1760*	1804*	1834*	1914*	1954*	4081#			
1040	1127	1131	1214	1296	1303	1432	1507	1512	1555	1560	1565	1602	
1712	1743	1765	1769	1860	1895	1927	1931	1953#					

1712	1749	1783	1809	1830	1839	1827	1881	1886				
849#	853											
2660	2791#											
2797	2809#											
2658	2721#											
2730	2745	2752#										
2740	2747#											
816	4010#	4015										
2248#	2252											
3558	3567#											
777#	3119	3172	3175	3178	3204	3207	3245	3247	3250	3253	3284	3287

3350	3360	3371	3381	3402								
2331	2360	2650#										
2838	2922#											
2655	2656#											
2026*	2028*	2722*	4079#									
848#	854											
818	830*	849	873	927*	998*	1061*	1102	1112	1114*	1124	1224	1236*
1476	1480*	1573	1577*	1608	1625	1629	1641*	1936	1938*	1969	1971*	1988*
2049	2057	2076	2102	2106*	2134*	2135*	2344	2389	2391	2430	2433	2451*
2539*	2549	2622	2650	2670*	2681*	2690*	2696*	2715*	2718*	2753	2809	2857
2862*	2874*	2883*	3168*	3261	3269	3585	3587	4057	4059*	4069#	4070	4071
4072	4073	4074	4075	4076	4077	4078	4079	4080	4081	4082	4083	4084

4085	4086	4087	4088								
2885*	3406	3409	3412	3589	4082*						
2671	2688	2697	2716	2719	2733	2754	2771	2788	2810	2812	2834*
2837*	2940										
1060	1113	1134*	1225								
879	1937	1970	1978*								
1134	1150	1170	1196	1276	1310	1343	1389	1441	1478	1520	1575
1717	1774	1865	1967*								

1717	1774	1865	1967#
2623	2628#		
1972#	1977	1989	1992

TEST	001342	894	897#																	
TESTS	001334	878	894#																	
TEST0	001632	987	959#																	
TEST1	001634	988	971#																	
TEST10	003234	895	1248#																	
TEST11	003356	896	1282#																	
TEST12	003500	897	1317#																	
TEST13	003610	898	1350#																	
TEST14	003770	899	1396#																	
TEST15	004202	900	1447#																	
TEST16	004366	901	1490#																	
TEST17	004522	902	1527#																	
TEST2	002464	899	1100#																	
TEST20	004766	903	1595#																	
TEST21	005264	904	1650#																	
TEST22	005606	905	1723#																	
TEST23	006040	906	1791#																	
TEST24	006422	907	1871#																	
TEST3	002552	890	1122#																	
TEST4	002622	891	1140#																	
TEST5	002664	892	1156#																	
TEST6	002736	893	1176#																	
TEST7	003026	894	1202#																	
TIDA	017162	3553#	3560	3564	3572															
TIL00P	017314	3595#	3603																	
TIMDAT	017170	3552	3556#																	
TIMDAY	017144	3545	3549#																	
TIME	017426	864	954	990	1669	1676	1681	1689	1749	1754	1760	1904	1920	193						
		1902	1908	1914	1954	2209	2220	2231	3530*	3537*	3609#									
TIMIN	017070	3531	3534#																	
TIMONT	017256	3557	3562	3565	3573#															
TIMOT1	017354	3593	3595#																	
TIMOT2	017404	3586	3588	3596	3598	3601#														
TIMOUR	017122	3539	3543#																	
TIMOUT	017312	3541	3547	3554	3576	3584#														
TIMTYF	017362	3592	3597#																	
TKB0	032402	2316	2613	2912	2915	3919	4156#													
TKB1	032412	4160#																		
TKB10	032502	4188#																		
TKB11	032512	4192#																		
TKB12	032522	4196#																		
TKB13	032532	4200#																		
TKB14	032542	4204#																		
TKB15	032552	4208#																		
TKB16	032562	4212#																		
TKB17	032572	4216#																		
TKB2	032422	4164#																		
TKB3	032432	4168#																		
TKB4	032442	4172#																		
TKB5	032452	4176#																		
TKB6	032462	4180#																		
TKB7	032472	4184#																		
TKCONT	010536	2321	2322#																	
TKSERV	010474	2295	2311#																	
TKSO	032400	828#	2294	3917	4055#	4155#														
TKS1	032410	4159#																		

MAINDEC-11-DZRSA-A
DZRSAA.P11 CR

A-A RS64 TESTER MONITOR AND EXERCISER CROSS REFERENCE TABLE -- USER SYMBOLS

TKS	TPB	TPS	TRANS	2344	2352	2358	1975	1983	1986	2372	2912	3009	3135	3418	3519	3923	3928	4158
TKS10	032500			4187														
TKS11	032510			4191														
TKS12	032520			4195														
TKS13	032530			4199														
TKS14	032540			4203														
TKS15	032550			4207														
TKS16	032560			4211														
TKS17	032570			4215														
TKS2	032420			4163														
TKS3	032430			4167														
TKS4	032440			4171														
TKS5	032450			4175														
TKS6	032460			4179														
TKS7	032470			4183														
TK0	010610			2319	2344													
TK1	010636			2349	2352													
TK2	010656			2355	2358													
TL00P	007054			1968	1975													
TCUT	007110			1979	1983													
TCUT1	007126			1064	1986													
TPB0	032406			2280	2372						2912	3009	3135	3418	3519	3923	3928	4158
TPB1	032416			4162														
TPB10	032506			4190														
TPB11	032516			4194														
TPB12	032526			4198														
TPB13	032536			4202														
TPB14	032546			4206														
TPB15	032556			4210														
TPB16	032566			4214														
TPB17	032576			4218														
TPB2	032426			4166														
TPB3	032436			4170														
TPB4	032446			4174														
TPB5	032456			4178														
TPB6	032466			4182														
TPB7	032476			4186														
TPSERV	014132			2982	2998													
TPS0	032404			1226	2276						2279	2367	2371	2457	2535	2909	2911	2991
				3921	3926													

MAINDEC-11-DZRSA-A RS64 TESTER MONITOR AND EXERCISER
DZRSAA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

MAINDEC-11-DZSA-A RS64 TESTER MONITOR AND EXERCISER
 DZSAA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

T1302	003744	1380	1384#	
T132	003626	1352	1357#	
T1321	003632	1358#	1386	
T1322	003636	1359#	1369	1388
T14	003776	1397	1398#	
T14a	004024	1399	1408#	
T14A1	004042	1409	1413#	
T14B	004046	1400	1414#	
T14B2	004064	1415	1419#	
T14C	004102	1401	1423#	
T14C1	004120	1424	1428#	
T14D	004124	1402	1429#	
T14D1	004142	1430	1434#	
T14Z	004010	1398	1404#	
T14Z1	004014	1405#	1438	1440
T15	004210	1448	1449#	
T15A	004232	1450	1457#	
T15A1	004250	1458	1461#	
T15B	004266	1451	1465#	
T15B1	004304	1466	1470#	
T15B2	004346	1477	1480#	
T15Z	004216	1449	1453#	1939
T15Z1	004222	1454#	1473	1475
T16	004374	1491	1492#	
T16A	004416	1493	1500#	
T16A1	004434	1501	1505#	
T16B	004452	1494	1509#	
T16B1	004470	1510	1514#	
T16Z	004402	1483	1492	1496#
T16Z1	004406	1497#	1517	1519
T17	004530	1528	1529#	
T17A	004562	1530	1541#	
T17B	004602	1531	1546#	
T17C	004622	1532	1551#	
T17D	004654	1533	1557#	
T17E	004674	1534	1562#	
T17F	004714	1535	1567#	
T17F1	004756	1574	1577#	
T17Z	004546	1529	1537#	
T17Z1	004552	1538#	1570	1572
T2A	002512	1100	1107#	
T2A1	002524	1108	1111#	
T2Z	002466	1101#		
T2Z1	002506	1103	1105#	
T20	004774	1586	1587#	
T20A	005032	1588	1599#	
T20A1	005050	1602#	1609	
T20B	005064	1589	1606#	
T20B1	005104	1607	1612#	
T20B2	005122	1614	1616#	
T20C	005130	1590	1618#	
T20C1	005142	1617	1620#	
T20D	005144	1591	1610	1622#
T20D1	005166	1624	1627#	
T20E	005174	1592	1629#	
T20E1	005210	1630	1633#	

MAINDEC-11-DZSA-A RS64 TESTER MONITOR AND EXERCISER
 DZSAA.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

T20E2	005234	1635	1639#	
T20Z	005010	1578	1587	1594#
T20Z1	005022	1596#	1626	1628
T21	005272	1651	1652#	
T21A	005326	1653	1665#	
T21A1	005340	1666	1669#	
T21B	005362	1654	1674#	
T21C	005406	1655	1679#	
T21C1	005424	1680	1684#	
T21C2	005460	1672	1677	1690#
T21D	005466	1656	1693#	
T21D1	005500	1694	1697#	
T21E	005510	1657	1700#	
T21F	005532	1658	1701	1704#
T21F1	005544	1705	1708#	
T21G	005556	1659	1710#	
T21G1	005570	1711	1714#	
T21Z	005312	1242	1652	1661#
T21Z1	005316	1662#	1716	
T22	005614	1724	1725#	
T22A	005646	1726	1737#	
T22B	005660	1727	1741#	
T22C	005702	1728	1747#	
T22D	005726	1729	1751#	
T22D1	005746	1745	1750	1755#
T22E	005754	1730	1758#	
T22E1	005762	1752	1760#	
T22E2	005772	1759	1763#	
T22E3	006000	1738	1764#	
T22F	006010	1731	1767#	
T22F1	006016	1742	1769#	
T22F2	006022	1768	1771#	
T22Z	005632	1725	1733#	
T22Z1	005636	1734#	1773	
T23	006046	1782	1783#	
T23A	006112	1784	1800#	
T23A1	006124	1801	1804#	
T23B	006146	1785	1809#	
T23C	006164	1786	1813#	
T23C1	006214	1819#	1833	
T23C2	006220	1811	1820#	1830
T23C3	006226	1807	1821#	
T23D	006234	1787	1824#	1837
T23D1	006246	1825	1828#	
T23E	006264	1788	1832#	1839
T23E1	006272	1814	1834#	
T23F =	006234	1789	1837#	
T23G =	006264	1790	1839#	
T23H	006302	1791	1841#	
T23H1	006314	1842	1845#	
T23I	006324	1792	1848#	
T23J	006346	1793	1849	1852#
T23J1	006360	1853	1856#	
T23K	006372	1794	1858#	
T23K1	006404	1859	1862#	
T23Z	006076	1783	1796#	

T23Z1	006102
T24	006430
T24A	006472
T24B	006504
T24C	006526
T24D	006560
T24D1	006600
T24E	006606
T24E1	006614
T24F	= 006560
T24G	= 006606
T24H	= 006560
T24I	006624
T24I1	006640
T24I2	006644
T24J	006650
T24J1	006662
T24Z	006456
T24Z1	006462
T3A	002600
T3A1	002612
T3Z	002554
T3Z1	002574
T4A	002640
T4Z	002624
T4Z1	002634
T5A	002702
T5A1	002714
T5A2	002726
T5Z	002666
T6A	002762
T6A1	002756
T6B	002772
T6B1	002766
T6B2	003006
T6B3	003016
T6Z	002746
T7	003034
T7A	003060
T7A1	003054
T7B	003070
T7B1	003064
T7B2	003104
T7B3	003114
T7C	003130
T7C1	003164
T7C2	003170
T7Z	003044
WAIT	001616
WAITER=	030406
WLOOP	013240
WORIN	012164
WRDIN	013212
WSTC	006716

RS64 TESTER MONITOR AND EXERCISER REFERENCE TABLE -- USER SYMBOLS			
1797#	1864		
1872	1873#		
1874	1889#		
1875	1893#		
1876	1899#	1913	
1877	1905#	1917	1921
1897	1903	1909#	
1878	1912#	1919	
1906	1914#	1924	
1879	1917#		
1880	1919#		
1881	1921#		
1882	1923#		
1890	1926#		
1894	1927#		
1883	1929#		
1930	1933#		
1873	1885#		
1886#	1935		
1122	1129#		
1130	1133#		
1123#			
1125	1127#		
1140	1145#		
1141#			
1143#	1146	1148	
1156	1161#		
1162	1165#		
1166	1169#		
1157#			
1178	1185#		
1183#			
1179	1188#		
1186#			
1189	1192#		
1191	1195#		
1176	1181#		
1203	1204#		
1205	1213#		
1211#			
1206	1216#		
1214#			
1217	1220#		
1219	1223#		
1207	1226#		
1227	1234#		
1229	1235#		
1115	1204	1209#	
862	954#		
989#	995#	1600#	1601#
2219	2230	4080#	
2821#	2828		
2631	2639#		
2661	2813#		
1017	1029	1143	1183
1460	1944#		

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MAINDEC-11-DZRSA-A
DZRSAA.P11 CRO

[illegible]

ADC	2254	2256	2258	2259	2261	2264									
ADD	834	851	867	1615	2013	2145	2192	2199	2212	2223	2234	2253	2255	2257	2260
	2262	2263	2296	2315	2434	2439	2442	2443	2444	2465	2633	2678	2704	2715	2752
	2778	2804	2814	2825	2842	2901	2933	2936	2983	3002	3004	3006	3267	3512	3594
	3601	3644	3681	3684	3833	3841	3866	3869	3895	3898	4064				
ASL	875	971	1202	1248	1282	1317	1350	1396	1447	1490	1527	1595	1650	1723	1781
	1871	2052	2078	2124	2248	2313	2314	2320	2654	2673	2674	2675	2699	2700	2701
	2773	2774	2775	2799	2800	2801	2821	2822	2823	3000	3001	3125	3126	3150	3151
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	3894	3896	3897												
ASR	2096	2783	2784	3160	3161	3162	3189	3190	3191	3386	3387	3388	3467	3468	3469
	3496	3497	3498												
BEQ	861	916	922	942	1060	1092	1176	1178	1227	1229	1328	1335	1367	1375	1380
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	1711	1738	1768	1801	1849	1853	1859	1890	1930	1970	1979	2029	2051	2094	2103
	2105	2129	2187	2189	2198	2411	2458	2485	2505	2536	2538	2552	2555	2558	2561
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	2956	2958	2963	2982	3008	3013	3015	3018	3020	3023	3026	3029	3032	3035	3038
	3041	3044	3047	3050	3053	3067	3070	3073	3078	3085	3088	3225	3322	3531	3539
	3545	3551	3558	3564	3569	3592	3638	3670	3674	3685	3695	3697	3699	3701	3703
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	3860	3888	4011	4013											
BGE	2353	2629	2631	2642	3413	3510									
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	2726	2739	2756	2767	2794	2828	3552	3876	3905						
BHI	2706	2806	3077	3557	3649	3861									
BHIS	3630	3642	3668	3678	3827	3839	3855	3883	3892						
BIC	874	927	998	1069	1073	1083	1088	1090	1238	1436	1553	1619	1685	1686	1703
	1708	1763	1816	1817	1851	1856	1925	1961	1988	1999	2031	2038	2039	2050	2077
	2134	2146	2148	2159	2163	2317	2392	2412	2451	2486	2506	2607	2666	2690	2721
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BICB	2635	3014													
BIS	828	832	833	869	988	1023	1039	1046	1114	1240	1603	1671	1674	1687	1744
	1747	1806	1809	1818	1828	1896	1899	1900	2027	2033	2041	2371	2415	2452	2490
	2509	2539	2687	2696	2718	2732	2750	2786	2807	2808	2862	2874	2911	3168	3459
	3471	3483	3494	3499	4059										
BIT	860	871	911	913	917	921	932	941	1003	1059	1074	1081	1102	1112	1124
	1224	1226	1228	1476	1573	1608	1625	1629	1634	1700	1848	1936	1967	1969	1976
	1978	1983	2000	2002	2004	2007	2011	2014	2018	2021	2057	2102	2186	2188	2197
	2276	2367	2410	2457	2484	2504	2535	2537	2549	2590	2605	2622	2624	2707	2710
	2753	2809	2878	2880	2909	3012	3220	3224	3271	3321	3568	3571	3587	3597	3686
BITB	2650	2857	3017	3561											
BLE	865	2210	2221	2232	2349	2651									
BLO	947	3022	3025	3028	3031	3034	3037	3040	3043	3046	3049	3052	3066	3069	3072
	3084	3087	3628	3640	3666	3676	3825	3837	3853	3863	3881	3890			
BLOS	3576														
BLT	2355	2780													
BMI	850	859	862	994	1617	1680	1694	1759	1825	1833	1842	1913	2117	2295	2345
	2431	2858													
BNE	822	836	853	872	912	914	918	933	955	996	1004	1006	1075	1079	1082
	1085	1103	1113	1125	1225	1609	1626	1742	1894	1937	1968	1977	1984	2001	2003
	2005	2008	2012	2015	2019	2022	2058	2160	2252	2277	2298	2359	2368	2394	2441
	2448	2550	2580	2589	2602	2604	2612	2623	2625	2640	2711	2736	2810	2816	2830
	2845	2861	2879	2910	2940	2943	2945	2949	2985	3221	3265	3272	3521	3560	3562

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BPL	3797	3803	3809	3817	3821	3846	3873	3902	3929	4048	4050	4066			
	868	878	920	944	1077	1607	1614	1752	1814	1906	1924	2025	2037	2101	2111
BR	2123	2390	2837	3456	3586	3593	3910	3918	3922	3927	4058				
	854	880	885	925	930	935	1179	1369	1372	1483	1578	1610	1672	1677	1745
	1750	1807	1811	1830	1897	1903	1945	1948	1951	1989	1992	2009	2016	2055	2098
	2108	2114	2120	2132	2402	2413	2449	2459	2468	2477	2487	2507	2524	2540	2563
	2566	2569	2572	2582	2593	2596	2599	2609	2637	2730	2745	2771	2788	2797	2812
	2840	2863	2876	2898	2953	2960	3059	3074	3079	3089	3227	3275	3541	3547	3554
	3565	3654	3712	3718	3722	3726	3732	3736	3740	3744	3748	3753	3759	3767	3773
BVC	3776	3784	3787	3793	3799	3805	3811	3915	4015						
	1146	1148	1189	1217	1273	1275	1307	1309	1340	1342	1386	1388	1438	1440	1473
BVS	1475	1517	1519	1570	1572	1628	1716	1773	1864	1935					
CLR	1012	1108	1130	1162	1166	1191	1219	1624							
	820	827	838	848	985	986	1008	1028	1051	1055	1056	1057	1058	1061	1062
	1063	1111	1133	1149	1169	1195	1223	1231	1258	1271	1292	1305	1359	1376	1384
	1434	1470	1482	1514	1567	1600	1622	1641	1642	1643	1714	1771	1862	1933	1960
	2247	2280	2292	2299	2311	2366	2370	2435	2436	2437	2438	2446	2453	2456	2466
	2489	2523	2534	2664	2665	2729	2744	2770	2817	2846	2884	2887	2888	2894	2979
CLRB	2986	2998	3056	3058	3135	3324	3584	3660	3661	4046	4054				
	876	1054	1338	1972	2278	2676	2702	2762	2776	2802	2843	2889	2947	2959	2964
CMP	3010	3016	3134	3461	3473	3543	3549	3662							
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	2354	2358	2393	2562	2565	2568	2571	2579	2584	2586	2588	2603	2611	2628	2679
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CMPB	3904	4010	4012	4065											
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DEC	2097	2173	3570												
	821	995	1177	1192	1220	2028	2128	2440	2447	2683	2709	2866	2868	2870	2965
DECB	3057	3414	4047	4049											
HALT	1368	2818	2827	3019											
INC	788	801	959	3081	4014	4039									
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INCB	2952	3011	3511	3530											
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	1419	1428	1454	1461	1480	1497	1505	1538	1551	1557	1562	1618	1662	1697	1702
	1734	1764	1797	1845	1850	1886	1971	2396	2811	3226	3457	3508	3540	3546	3553
JMP	3574	3578													
	800	948	951	956	972	1009	1013	1017	1024	1029	1033	1040	1047	1052	1064
	1094	1105	1109	1115	1127	1131	1134	1143	1150	1159	1163	1167	1170	1183	1196
	1193	1196	1203	1211	1214	1221	1242	1249	1259	1262	1266	1269	1276	1283	1293
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	1389	1397	1406	1411	1417	1421	1426	1432	1441	1448	1455	1460	1463	1468	1478
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	MOV	3169	3170	3194	3198	3199	3212	3237	3240	3243	3244	3263	3274	3279	3292
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MOVB	873	877	923	928	934	999	1230	1235	1601	1612	1636	1639	1980	1986	1990
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	813	4043													
	2113	2119	2249	2250	3233	3234	3479	3480							
	3188														
	3464	3476													
	2305	2992	3532	3607											
	991	1001	1071	1086	1232	1604	1620	1637	1644	1682	1691	1756	1761	1822	1835
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SEC	2112	2118	3463	3475											
SEV	2042	2138													
SUB	864	866	1613	1616	2023	2161	2190	2191	2200	2209	2211	2220	2222	2231	2233
SWAB	2685	2836	3266	3509	3537	3591	3595								
TST	2677	2703	2777	2782	2803	3152	3163	3192	3235	3462	3474	3481			
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TSTB	2741	3522													
	858	993	1606	2294	2344	2389	2430	2601	2735	2937	3007	3585	3909	3917	3921
	3926	4057													
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	3960	3967	3975	3978	3986	3996	4003								
.ENABL	769														
.END	4220														
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.REM	1														
.REPT	784														
.TITLE	768														

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

*DZRSAA.DZRSAA.SEO/SOL/CRF/DS:ERFZ/EN:ABS=DSKM:DZRSAA.P11
RUN-TIME: 11 24 6 SECONDS
RUN-TIME RATIO: 76/42=1.7
CORE USED: 14K (28 PAGES)

[illegible]