

IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHRKA-E-D
PRODUCT NAME: RK8E DISKLESS CONTROL TEST
DATE RELEASED: JANUARY, 1977
MAINTAINER: DIAGNOSTIC ENGINEERING
AUTHOR: JOHN VROBEL
UPDATED BY: DON RICE

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS DOCUMENT.

THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED UNDER A LICENSE AND MAY ONLY BE USED OR COPIED IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.

COPYRIGHT (C) 1972, 1975, 1977 BY DIGITAL EQUIPMENT CORPORATION

TABLE OF CONTENTS

- 1. ABSTRACT
- 2. REQUIREMENTS
 - 2.1 HARDWARE
 - 2.2 SPECIAL
 - 2.3 STORAGE
- 3. PRELIMINARY PROGRAMS
- 4. SWITCH REGISTER SETTINGS
- 5. OPERATOR AND/OR PROGRAM ACTION
 - 5.1 STANDARD TEST PROCEDURE
 - 5.2 DISKLESS CONTROL TEST
 - 5.3 MANUAL SCOPE TEST FOR 16 BIT COUNTER
 - 5.4 CHANGE PROGRAM IOT CODES
- 6. ERRORS
 - 6.1 USEFUL ERROR INFORMATION
 - 6.2 NON-RECOVERABLE ERROR HALTS
 - 6.3 RECOVERABLE ERROR HALT
 - 6.4 ERROR TYPEOUTS
 - 6.5 SCOPE LOOPS
 - 6.6 TYPICAL ERROR TYPEOUTS
- 7. RESTRICTIONS
- 8. TROUBLE SHOOTING INFORMATION
- 9. PROGRAM DESCRIPTION
- 10. CONSOLE PACKAGE ADDENDUM
- 11. APT-8 HOOKS
- 12. PROGRAM LISTING

1. ABSTRACT

THE RK8E DISKLESS CONTROL TEST IS DESIGNED FOR THE PURPOSE OF CHECKOUT OF THE RK8E DISK CONTROL LOGIC NOT REQUIRING THE USE OF THE DISK DRIVE. THIS TEST SHOULD BE RUN WITH ALL EXISTING DRIVES SET TO THE LOAD POSITION.

2. REQUIREMENTS

2.1 HARDWARE

PDP-8/E, 8/M, OR 8/F COMPUTER OR OTHER FAMILY OF 8 COMPATIBLE COMPUTER WITH NECESSARY DW8E BUS ADAPTER.

AT LEAST 4K OF READ/WRITE MEMORY. AT LEAST 8K OF MEMORY IS NEEDED FOR OPERATION OF THE CONSOLE PACKAGE.

ASR-33 TELETYPE OR EQUIVALENT
RK8E DISK CONTROL
RK05J OR RK05F DISK DRIVE(S)

2.2 SPECIAL

THE DISKLESS TEST CAN BE RUN WITH ALL DRIVES AVAILABLE CABLED TO THE RK8E CONTROL. HOWEVER, THE POWER MUST BE SUPPLIED TO THE DRIVES, AND ALL THE DRIVES MUST BE SET TO THE LOAD POSITION.

THE DISKLESS TEST CAN ALSO BE RUN WITH THE CABLES TO THE DRIVES DISCONNECTED FROM THE RK8E CONTROL.

2.3 STORAGE

THE PROGRAM UTILIZES OR OCCUPIES LOCATIONS 0000 TO 7377 OF FIELD 0 AND LOCATIONS 0200 TO 1377 OF FIELD 1.

THE PROGRAM WILL ALSO TEST DATA BREAK TRANSFER TO ALL EXISTING EXTENDED FIELDS AS INDICATED BY SWP9-11 IF THE CONSOLE PACKAGE IS NOT ENABLED.

3. PRELIMINARY PROGRAMS

ALL BASIC AND EXTENDED MEMORY DIAGNOSTICS SHOULD BE RUN PRIOR TO THIS TEST.

4. SWITCH REGISTER SETTINGS

-
- SWR0=1 ENTER SCOPE LOOP, AFTER AN ERROR HALT AT LOCATION "ERHLT9" RAISING THIS SWITCH AND PRESSING KFY CONTINUE WILL CAUSE A SCOPE LOOP ON THE CURRENT TEST. IF SWR2=0 AND THE TEST IS STILL FAILING, THE ERROR BELL SHOULD RING INDICATING AN ERROR.
- SWR1=1 INHIBIT END OF TEST HALT. AT THE COMPLETION OF THE TEST THE PROGRAM SHOULD HALT AT LOCATION "ENDHLT". RAISING THIS SWITCH WILL INHIBIT THE END OF TEST HALT.
- SWR2=1 INHIBIT ERROR BELL ON SCOPE LOOP.
- SWR3=1 GET ALL REGISTERS AFTER "ERHLT9". AFTER AN ERROR HALT AT LOCATION "ERHLT9", RAISING THIS SWITCH AND PRESSING KEY CONTINUE WILL RESULT IN THE TYPEOUT OF THE ABSOLUTE CONTENTS OF THE STATUS, COMMAND, CPC, LOWER DATA, AND SURFACE AND SECTOR REGISTERS. ONCE THIS SWITCH IS USED IT IS NECESSARY TO RESART THA DIAGNOSTIC AT THE START (LOCATION 0200).
- SWR4=1 STOP PROGRAM OR TEST HALT. RAISING THIS SWITCH WILL HALT THE PROGRAM AT THE COMPLETION OF THE CURRENT TEST. IF POSSIBLE THIS SWITCH SHOULD ALWAYS BE USED TO STOP THE PROGRAM.
- SWR9-11 AMOUNT OF EXTENDED BANKS OF MEMORY. AT INITIAL START OF THE PROGRAM, SWR9-11 INDICATES THE AMOUNT OF EXISTING EXTENDED MEMORY FIELDS AVAILABLE TO TEST.

5. OPERATOR AND/OR PROGRAM ACTION

5.1 STANDARD TEST PROCEDURE

-
- A. START AS SPECIFIED THROUGHOUT THIS DOCUMENTATION IS KEY CLEAR AND THEN KEY CONTINUE ON A PDP8/E, PDP8/F, OR PDP8/M COMPUTER.
- B. LOAD THE PROGRAM INTO FIELD 0 USING THE STANDARD BINARY LOADER TECHNIQUE.

- C. IF IT IS DESIRED TO CHANGE THE IOT CODES WITHIN THE PROGRAM, FOLLOW THE PROCEDURE IN SECTION 5.4.
- D. RUN THE DISKLESS CONTROL TEST PORTION BY FOLLOWING THE PROCEDURE IN SECTION 5.2.
- E. RUN THE MANUAL SCOPE TEST BY FOLLOWING THE PROCEDURE IN SECTION 5.3.

5.2 DISKLESS CONTROL TEST

-
- A. SET THE SWITCH LABELED "RUN/LOAD" TO THE "LOAD" POSITION ON ALL DRIVES, OR DISCONNECT DRIVES FROM RK8E CONTROL.
 - B. IF DRIVES ARE CABLED TO THE RK8E CONTROL, VERIFY AC POWER IN THE DRIVE(S) IS ON.
 - C. SET THE SWITCH REGISTER TO 0200 AND PRESS LOAD ADDRESS.
 - D. SET THE SWITCH REGISTER TO 0000.
 - E. SET SWR9-11 TO THE AMOUNT OF AVAILABLE EXTENDED R/W MEMORY BANKS AND START THE COMPUTER RUNNING.
 - F. SET SWR1=1 IF THE OPERATOR DESIRES TO INHIBIT THE END OF TEST HALT AT LOCATION "ENDHLT".
 - G. SWR4=1 SHOULD ALWAYS BE USED TO STOP THE PROGRAM.
 - H. THE PROGRAM SHOULD PRINT THE FOLLOWING MESSAGE AT THE COMPLETION OF EACH SUCCESSFUL PASS APROX. EVERY 3.5 MINUTES.

"RK8E DISKLESS PASS COMPLETE"
 - I. ANY HALTS OR TYPEOUTS OTHER THAN THE PASS COMPLETE TYPEOUT AND THE END OF TEST HALT MENTIONED ABOVE WILL BE CONSIDERED AN ERROR CONDITION. IN ALL CASES ACCESS "ERRORS" SECTION 6 IN THIS DOCUMENTATION.
 - J. FOR ABSOLUTE LOCATIONS OF ALL KNOWN HALTS ACCESS PAGE 1 OF THE PROGRAM LISTING.

5.3 MANUAL SCOPE TEST FOR 16 BIT COUNTER

THIS TEST ENABLES THE OPERATOR TO TEST THE 16 BIT COUNTER WHICH CANNOT BE TESTED UNDER PROGRAM CONTROL IN THE REGULAR DISKLESS TEST. TO RUN THIS TEST, SIMPLY FOLLOW THE FOLLOWING INSTRUCTIONS.

- A. RUN THE DISKLESS CONTROL TEST PORTION PRIOR TO THIS MANUAL TEST.
- B. SET THE SWITCH REGISTER TO 0204 AND PRESS LOAD ADDRESS.

- C. SET THE SWITCH REGISTER TO 0000 AND PRESS START.
- D. SCOPE THE 16TH CARRY OUTPUT, TEST POINT 1 (T1), ON THE M7106 MODULE IN THE RKRE CONTROL LOGIC, FOR A POSITIVE GOING SIGNAL.
- E. THE APROX. SIGNAL SHOULD BE A GROUND TO + 3 VOLT PULSE, 9 MICRO-SECONDS WIDE, OCCURRING AT A 140 MICRO-SECOND RATE.
- F. ALL THAT THE PROGRAM DOES IN THIS SCOPE TEST IS TO CONSISTANTLY ISSUE HI MAIN SHIFT PULSES TO THE 16 BIT COUNTER ON THE M7106 MODULE.

5.4 CHANGE PROGRAM DEVICE IOT CODES

THE PROGRAM NORMALLY RECOGNIZES PROGRAM DEVICE IOT CODE X74X. TO CHANGE THE PROGRAM DEVICE IOT CODE:

- A. SET THE SWITCH REGISTER TO 0205 AND PRESS LOAD ADDRESS.
- B. SET THE SWITCH REGISTER TO 0000, SET SWITCH REGISTER BITS 3-8 TO THE DESIRED DEVICE IOT CODE, AND PRESS START.
- C. THE PROGRAM WILL CHANGE THE DEVICE IOT CODES WITHIN THE PROGRAM AND THEN HALT.
- D. PRESSING KEY CONTINUE WILL RESULT IN A START OF THE PROGRAM AT LOCATION 0200 (SEE SECTION 5.2 FOR OPERATION INSTRUCTIONS).

6. ERRORS

6.1 USEFUL ERROR INFORMATION

THE LOCATION OF ALL KNOWN HALTS CAN BE FOUND BY ACCESSING PAGE 1 OF THE PROGRAM LISTING.

ALL ERRORS FOUND WHEN RUNNING THIS TEST SHOULD BE CORRECTED BEFORE PROCEEDING ON IN THE TEST.

WHEN AN OPERATOR ENCOUNTERS AN ERROR WHEN RUNNING THIS TEST HE SHOULD, IN ALL CASES, READ THE ERROR TYPEOUT INFORMATION, NOTE THE LOCATION OF THE FAILURE, READ ALL THE INFORMATION UNDER ERRORS IN THIS DOCUMENTATION, AND THEN ACCESS THE PROGRAM LISTING FOR FURTHER INFORMATION.

6.2 NON-RECOVERABLE ERROR HALTS -----

NON-RECOVERABLE ERROR HALTS FOR WHICH THERE ARE NO
TIMEOUTS OR SCOPE LOOPS ARE LISTED AND DEFINED AS FOLLOWS:

ERHLT1	UNDEFINED INTERRUPT
ERHLT2	SKIP TRAP FOR IOT "DCLR"
ERHLT3	SKIP TRAP FOR IOT "DLAG"
ERHLT4	SKIP TRAP FOR IOT "DLCA"
ERHLT5	SKIP TRAP FOR IOT "DRST"
ERHLT6	SKIP TRAP FOR IOT "DLDC"
ERHLT7	SKIP TRAP FOR IOT "DMAN"

6.3 RECOVERABLE ERROR HALT -----

ALL RECOVERABLE ERRORS, FOR WHICH THERE ARE SCOPE LOOPS
AND ERROR TIMEOUTS, SHOULD RESULT IN AN ERROR HALT AT
"ERHLT9".

ERHLT9	RECOVERABLE ERROR HALT. READ INFORMATION TIMEOUT ON TTY AND ACCESS LISTING.
--------	--

6.4 ERROR TIMEOUTS -----

WHEN A RECOVERABLE ERROR OCCURS THE PROGRAM WILL
PRINT AN "ERROR HEADER" WHICH WILL SPECIFY THE
PARTICULAR REGISTER IN ERROR OR TYPE OF ERROR FOUND
AT THE TIME OF THE FAILURE.

POSSIBLE "ERROR HEADERS" ARE AS FOLLOWS.

- AC REGISTER ERROR
- STATUS REGISTER ERROR
- COMMAND REGISTER ERROR
- DISK ADDRESS REGISTER ERROR
- DATA BREAK ERROR
- CRC REGISTER ERROR
- DATA REGISTER ERROR
- DISK SKIP ERROR
- DISK INTERRUPT ERROR

AFTER THE "ERROR HEADER" MENTIONED ABOVE IS TYPED, THE PROGRAM WILL PRINT THE FOLLOWING ERROR INFORMATION FOUND AT THE TIME OF THE FAILURE, PERTAINING TO THE FAILURE. POSSIBLE TYPEOUTS ARE AS FOLLOWS.

PC: PROGRAM LOCATION OF THE ACTUAL FAILURE.
GD: REFERS TO THE DATA EXPECTED IN THE REGISTER OR TYPE OF TEST SPECIFIED IN THE "ERROR HEADER".
CR: CONTENTS OF THE CRC REGISTER.
ST: CONTENTS OF THE STATUS REGISTER.
DB: CONTENTS OF THE LOWER DATA REGISTER.
CM: CONTENTS OF THE COMMAND REGISTER.
DA: CONTENTS OF THE DISK ADDRESS REGISTER OF THE CYLINDER, SURFACE, AND SECTOR BITS.
AD: BREAK ADDRESS OF DATA BREAK.
DT: DATA FOUND DURING DATA BREAK.
AC: CONTENTS OF THE AC REGISTER.

THE "GD;" INFORMATION TYPED OUT POINTS TO THE DATA EXPECTED IN THE REGISTER IN ERROR OR TYPE OF ERROR TYPED OUT IN THE "ERROR HEADER".

THE ERROR INFORMATION INDICATOR SUGGESTED BY THE "ERROR HEADER" (I.E. DA; FOR DISK ADDRESS ERROR, CM; FOR COMMAND REGISTER ERROR, CR; FOR CRC REGISTER ERROR, ETC.), IS THE ACTUAL CONTENTS OF THAT PARTICULAR REGISTER. ERROR INFORMATION OTHER THAN THAT SUGGESTED BY THE "ERROR HEADER" IS THE SOFTWARE INFORMATION LOADED INTO THAT REGISTER PRIOR TO THE FAILURE. (NOTE: "ST;" STATUS ALWAYS INDICATES THE ACTUAL CONTENTS.)

TO TYPEOUT THE ACTUAL CONTENTS OF THE CRC, STATUS, LOWER DATA, COMMAND, AND SURFACE AND SECTOR REGISTERS, AFTER AN ERROR HALT AT LOCATION "ERHLT9", SET SWR3=1 AND PRESS KEY CONTINUE.

6.5 SCOPE LOOPS

THERE ARE SCOPE LOOPS AVAILABLE FOR ALL ERRORS RESULTING IN AN ERROR HALT AT "ERHLT9".

TO ENTER SCOPE LOOP, INHIBIT ERROR TYPEOUT, AND INHIBIT ERROR HALT, AFTER AN ERROR HALT AT "ERHLT9", SET SWR0=1 AND PRESS KEY CONTINUE.

IF THE SCOPE LOOP IS WORKING CORRECTLY AND IF THE TEST IS STILL FAILING THE TTY BELL SHOULD RING. SET SWR2=1 TO INHIBIT THE TTY BELL.

6.6 TYPICAL ERROR TYPEOUTS

THE FOLLOWING IS A TYPICAL EXAMPLE OF AN "ERROR HEADER" AND TYPEOUT THAT COULD HAVE OCCURRED IF A DISK IOT FAILED TO CLEAR THE AC REGISTER.

AC REGISTER ERROR
PC:1541 GD:0000 AC:0100

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND TYPEOUT THAT COULD HAVE OCCURRED WHEN READING THE COMMAND REGISTER.

COMMAND REGISTER ERROR
PC:2100 GD:0222 CM:0200

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND TYPEOUT THAT COULD HAVE OCCURRED IF THE DISK SKIP IOT FAILED TO SKIP.

DISK SKIP ERROR
PC:3332

THE FOLLOWING IS AN EXAMPLE OF AN "ERROR HEADER" AND TYPEOUT THAT COULD HAVE OCCURRED ON A WRITE DATA BREAK.

DATA BREAK ERROR
PC:4453 GD:5252 CM:4000 AD:7777 DT:5250

7. RESTRICTIONS

THE PROGRAM IS ONLY OPERATIONAL IN FIELD 0.

IF THE DRIVES ARE CABLED TO THE RK8E CONTROL LOGIC, THE AC POWER TO THE DRIVES MUST BE ON AND THE DRIVES MUST BE SET TO THE LOAD POSITION.

8. TROUBLE SHOOTING INFORMATION

IOT		FUNCTION
---		-----
6741	DSKP	"SKIP" SKIP IF TRANSFER DONE FLAG OR ERROR FLAG IS SET.
6742	DCLR	"CLEAR" FUNCTION IS REGULATED BY AC BITS 10 AND 11. THE AC IS THEN CLEARED.
AC10	AC11	
----	----	
0	0	CLEAR THE AC AND STATUS REGISTER.
0	1	CLEAR THE AC, CONTROL, AND MAJOR REGISTERS. THIS INSTRUCTION WILL STOP THE CONTROL EVEN IF IT IS WRITING A HEADER. THIS IS THE ONLY INSTRUCTION THAT WILL CLEAR MAINTENANCE MODE.
1	0	CLEAR AC, RECALIBRATE DISK DRIVE, AND CLEAR STATUS REGISTER.
6743	DLAG	"LOAD DISK ADDRESS AND GO" LOAD THE DISK CYLINDER, SURFACE, AND SECTOR FROM THE AC, CLEAR THE AC, AND DO THE COMMAND IN THE COMMAND REGISTER.
AC		
--		
0-6		CYLINDER
7		SURFACE (1= UPPER) (0= LOWER)
0-11		SECTOR
6744	DLCA	"LOAD CURRENT ADDRESS" LOAD THE CURRENT ADDRESS FROM AC. THE AC IS THEN CLEARED.
AC		
--		
0-11		CURRENT ADDRESS
6745	DRST	"READ STATUS" CLEAR THE AC AND READ THE CONTENTS OF THE STATUS REGISTER INTO THE AC.

AC
--

0	TRANSFER DONE
1	READY TO SEEK, READ, OR WRITE.
2	NOT USED
3	SEEK FAIL
4	DISK FILE READY
5	CONTROL BUSY ERROR
6	TIME OUT ERROR
7	WRITE LOCK ERROR
8	CRC ERROR
9	DATA RATE ERROR
10	DRIVE STATUS ERROR
11	CYLINDER ADDRESS ERROR

6746 DLDC

"LOAD COMMAND" LOAD THE COMMAND REGISTER FROM AC, CLEAR THE AC, AND CLEAR THE STATUS REGISTER.

AC
--

0-2=0	READ DATA
0-2=1	READ ALL
0-2=2	WRITE LOCK
0-2=3	SEEK ONLY
0-2=4	WRITE DATA
0-2=5	WRITE ALL
0-2=6	NOT USED
0-2=7	NOT USED
3	ENABLE INTERRUPT
4	ENABLE SET TRANSFER DONE ON SEEK DONE
5	HALF BLOCK 128 WORDS
6	EXTENDED MEMORY ADDRESS
7	EXTENDED MEMORY ADDRESS
8	EXTENDED MEMORY ADDRESS
9	UNIT SELECT
10	UNIT SELECT
11	EXTENDED CYLINDER ADDRESS

6747 DMAN

"MAINTENANCE IOT" LOAD THE MAINTENANCE REGISTER FROM THE AC. THE FUNCTION IS REGULATED BY THE AC BITS. MAINTENANCE MODE CAN ONLY BE CLEARED BY CLR "CLEAR CONTROL".

AC

--

0	ENTER MAINTENANCE MODE
1	ENABLE SHIFT TO LOWER BUFFER
2	AC BIT 10, CRC REGISTER, AND THE LOWER DATA BUFFER ARE CONNECTED AS A SHIFT REGISTER. AC BIT 10 DATA SHIFTS TO THE CRC, THE CRC SHIFTS TO THE LOWER DATA BUFFER.
3	SHIFT COMMAND REGISTER TO THE LOWER DATA BUFFER.
4	SHIFT THE SURFACE AND SECTOR REGISTER TO THE LOWER DATA BUFFER.
5	SHIFT AC 10 DATA TO THE UPPER DATA BUFFER. THE UPPER BUFFER SHOULD SINK IN THE SILO WHEN FULL.
6	ONE SINGLE CYCLE BREAK REQUEST. DIRECTION IS REGULATED BY FUNCTION IN THE COMMAND REGISTER.
7	CLEAR AC THEN READ THE LOWER DATA BUFFER TO THE AC.
8	NOT USED.
9	NOT USED.
10	USED AS DATA WITH OTHER BITS IN THE MAINTENANCE MODE.
11	NOT USED.

9. PROGRAM DESCRIPTION

THE RK8E DISKLESS CONTROL TEST IS BASICALLY A STATIC REGISTER AND IOT TEST ON THE RK8E DISK CONTROL LOGIC NOT REQUIRING THE USE OF THE DISK DRIVE. SINGLE CYCLE BREAKS ARE ALSO EXECUTED TO AND FROM THE CONTROL LOGIC.

THE PROGRAM IS DIVIDED INTO MANY SEPARATE INDIVIDUAL SUBTESTS, WHICH WILL TEST DIFFERENT PARTS OF THE CONTROL LOGIC. THE SUBTESTS ARE ARRANGED IN SUCH A MANNER TO TEST THE EASIEST FUNCTIONS FIRST. PRECEDING EACH SUBTEST, IN THE LISTING, IS A SHORT EXPLANATION OF THE TEST AND LOGIC TESTED.

A BRIEF EXPLANATION OF SUBTESTS AND PROGRAM FLOW IS AS FOLLOWS:

A. SETUP

SETUP POINTERS AND RETURNS FOR CURRENT FIELD, AMOUNT OF EXTENDED FIELDS, AND INTERRUPT SERVICE.

B. TST0-TST3

VERIFY REGISTERS AND CONTROL FLIP-FLOPS WERE CLEARED BY "CLR ALL" AT START OF TEST. (NOTE: "CLR ALL" GENERATED BY KEY START ON MOST PDP-8'S OR KEYS CLEAR AND THEN CONTINUE ON A PDP-8/E, 8/F OR 8/M.)

C. TST4

VERIFY ALL DRIVES ARE SET TO "LOAD" OR WERE DISCONNECTED FROM CONTROL AT START OF TEST.

D. TST5

VERIFY "DSKP" DISK SKIP IOT DOESN'T AFFECT AC REGISTER.

E. TST6-TST9

VERIFY THAT IOTS "DLCA LOAD CURRENT ADDRESS", "DLDC LOAD COMMAND", "DLAG LOAD DISK ADDRESS", AND "DCLR CLEAR CONTROL FUNCTION" DO CLEAR THE AC REGISTER AFTER THEIR EXECUTION.

F. TST10-TST14

VERIFY LOADING, CLEARING, AND READING THE COMMAND REGISTER USING VARIOUS DATA PATTERNS

G. TST15-TST28

VERIFY LOADING, CLEARING, AND READING THE DISK ADDRESS REGISTER USING VARIOUS DATA PATTERNS.

H. TST29-TST30

VERIFY LOADING, CLEARING, AND READING THE COMMAND REGISTER USING VARIOUS DATA PATTERNS

I. TST31

VERIFY LOADING, CLEARING, AND READING THE DISK ADDRESS REGISTER.

J. TST32-TST33

VERIFY "DMAN MAINTENANCE IOT" DOES NOT EFFECT AC REGISTER.

K. TST34-TST35

VERIFY MAINTENANCE MODE CAN BE SET AND CLEARED CORRECTLY.

L. TST36-TST40

VERIFY LOADING, READING, AND CLEARING THE CRC REGISTER USING VARIOUS DATA PATTERNS.

M. TST41-TST48

VERIFY LOADING, READING, AND CLEARING THE BUFFER REGISTERS USING VARIOUS DATA PATTERNS

N. TST49-TST76

VERIFY SETTING AND CLEARING VARIOUS STATUS REGISTER BITS, ERROR FLAGS, SKIP FUNCTIONS, AND INTERRUPT FUNCTIONS.

O. TST77-TST100

VERIFY READ AND WRITE MAINTENANCE DATA BREAKS TO AND FROM CONTROL USING VARIOUS DATA PATTERNS IN CURRENT FIELD.

P. TST101-TST105

VERIFY READ AND WRITE MAINTENANCE DATA BREAKS TO AND FROM CONTROL USING VARIOUS DATA PATTERNS IN ALL EXISTING EXTENDED R/W MEMORY FIELDS.

Q. TYPE PASS COMPLETE AND LOOP TO TST4.

10. CONSOLE PACKAGE ADDENDUM

10.1. DESCRIPTION

THE CONSOLE PACKAGE HAS BEEN ADDED TO THIS DIAGNOSTIC TO ALLOW THE PROGRAM TO RUN WITH NO HARDWARE SWITCH REGISTER AND TO HAVE COMMUNICATIONS WITH THE DIAGNOSTIC VIA A TEPMINAL. THE DIAGNOSTIC CAN BE RUN IN TWO MODES WITH THE CONSOLE PACKAGE . 1) RUNNING WITH THE CONSOLE PACKAGE ACTIVE - THIS ALLOWS THE OPERATOR CONTROL OF THE DIAGNOSTIC THROUGH THE TERMINAL. THE DIAGNOSTIC WILL ASK FOR THE VALUE OF THE PSEUDO SWITCH REGISTER, BEFORE CONTINUING WITH EXECUTION OF THE DIAGNOSTIC. ALL ERRORS AND PASS COMPLETES WILL BE PRINTED AT THE TERMINAL. NO HALTS WILL BE EXECUTED. 2) CONSOLE PACKAGE NOT ACTIVE-THIS WILL RESULT IN THE NORMAL STANDALONE OPERATION OF THE PROGRAM AS DISCRIBED IN SECTIONS 1 THROUGH 9 OF THIS DOCUMENT.

10.2 RESTRICTIONS

- 1) RUNNING THE CONSOLE PACKAGE REQUIRES THAT THE PSEUDO SWITCH REGISTER BE USED.
- 2) ONCE RUNNING THE CONSOLE PACKAGE NONACTIVE AND NOW DESIRE TO RUN IT ACTIVE. ONE MUST RELOAD THE DIAGNOSTIC AND INITILIZE FOR A ACTIVE CONSOLE PACKAGE.

10.3 INITIALIZATION

FOR A ACTIVE CONSOLE PACKAGE

- 1.) SET LOCATION 21 BIT0=0 TO INDICATE USE PSEUDO SWITCH REGISTER.
- 2.) SET LOCATION 22 BIT3=1 TO INDICATE CONSOLE PACKAGE ACTIVE.

FOR A NON ACTIVE CONSOLE PACKAGE

- 1.) SET LOCATION 21 BIT0=1 TO INDICATE NOT TO USE PSEUDO SWITCH REGISTER, BUT TO USE HARDWARE SWITCHES.
- 2.) SET LOCATION 22 BIT3=0 TO INDICATE CONSOLE PACKAGE NOT ACTIVE.

10.4 CONTROL CHARACTERS

CONTROL CHARACTERS ARE USED TO GIVE THE OPERATOR THE ABILITY TO PERFORM THE FOLLOWING FUNCTIONS.

NOTE: THE PROGRAM WILL RESPOND TO THE CONTROL CHARACTER IN FIVE (5) SECONDS OR LESS.

CONTROL C

THIS WILL START THE LOADER THAT IS IN LOCATION 7600.

CONTROL R

THIS WILL RESTART THE PROGRAM AND REASK THE SWITCH REGISTER QUESTION AS DESCRIBED IN SECTION 10.2.

CONTROL E

THIS WILL CONTINUE THE PROGRAM FROM AN ERROR IF ALLOWED BY THE DIAGNOSTIC OR FROM A WAITING STATEMENT.

CONTROL L

THIS WILL SWITCH THE TERMINAL MESSAGES FROM THE DISPLAY TO A LINE PRINTER. TO RESTORE THE MESSAGES ON THE TERMINAL CONTROL L MUST BE TYPED AGAIN. IF NO PRINTER IS AVAILABLE AND CONTROL L IS TYPED THE RESULT WILL BE THAT THE CONSOLE PACKAGE WILL WAIT FOR CONTROL C OR R. THE CONTROL L WILL OUTPUT TO THE LINE PRINTER AND THE PROGRAM WILL ATTEMPT TO CONTINUE AS IF A CONTROL E WAS TYPED IN.

CONTROL D

THIS WILL ALLOW THE ABILITY TO CHANGE THE SWITCH REGISTER DURING PROGRAM OPERATION. TYPING THIS CHARACTER WILL RESULT IN AN INTERIGATION OF THE SWITCH REGISTER QUESTION AS DESCRIBED IN SECTION 10.6.

CONTROL S

THIS WILL STOP PROGRAM EXECUTION AND WAIT IN A LOOP FOR A CONTINUE. THE ONLY WAY TO CONTINUE WILL BE TO TYPE A CONTROL W, R OR C. THIS IS A NONPRINTING CHARACTER.

CONTROL Q

THIS IS TO CONTINUE A PROGRAM AFTER A CONTROL S IS TYPED. THIS IS A NONPRINTING CHARACTER.

10.5 WAITING MESSAGE

THE WAITING MESSAGE IS USED TO ALLOW THE OPERATOR TIME TO MAKE A DECISION AS TO WHAT CONTROL CHARACTER TO TYPE. THIS MESSAGE MAY APPEAR AT THE END OF PASS MESSAGE IF THE HALT ON PASS BIT IS SET. THE CONTROL CHARACTERS MAY NOW BE USED TO PERFORM THE NEEDED FUNCTION.

THE WAITING MESSAGE MAY BE PRINTED AFTER A ERROR MESSAGE IF THE HALT ON ERROR BIT IS SET. HERE AGAIN THE CONTROL CHARACTERS MAY BE USED. THE WAITING MESSAGE MAY BE PRINTED IF OPERATOR INTERVENTION IS REQUIRED.

10.6 SWITCH REGISTER MESSAGE

THIS MESSAGE IS USED TO SETUP THE PSEUDO SWITCH REGISTER BEFORE PROGRAM EXECUTION TAKES PLACE. THE SWITCH REGISTER IS SETUP WHEN THE FOURTH CHARACTER IS ENTERED OR A CARRIAGE RETURN IS TYPED

SR=0000 4000

UNDER SCORING INDICATES OPERATOR RESPONSE

10.7 END OF PASS

AN INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A SUCCESSFUL PASS. THE PRINT OUT WILL INDICATE THE DIAGNOSTIC MAINDEC NUMBER THE WORD PASS AND A FOUR DIGIT PASS NUMBER. A PASS WILL BE A TIME PERIOD RATHER THAN A PROGRAM PASS OF THE DIAGNOSTIC. THE TIME PERIOD WILL BE IN THE RANGE OF ONE (1) TO FIVE (5) MINUTES. IF THE DIAGNOSTIC MAKES A PROGRAM PASS IN THE 1 TO 5 MINUTE RANGE THEN THE PASS COUNT WILL BE THE SAME AS THE NUMBER OF PROGRAM PASSES. IF THE PROGRAM MAKES A PROGRAM PASS IN LESS THEN ONE MINUTE THEN THE PASS COUNT WILL NOT BE THE SAME AS THE PASS COUNTER THE PASS COUNTER WILL REFLECT MORE THEN ON PROGRAM PASS. THE NUMBER OF PROGRAM PASSES REQUIRED FOR "A PASS MESSAGE CAN BE FOUND IN LOCATION 0246.

IF HALT AT END OF PASS IS SET THEN THE PASS MESSAGE WILL BE PRINTED AND A WAITING STATEMENT WILL ALSO BE PRINTED. A CONTROL CHARACTER IS NEEDED TO CONTINUE FROM THIS MESSAGE. THE FORMAT OF THE END OF PASS MESSAGE IS

NAME PASS 0001

10.8 ERRORS

THE STANDARD ERROR REPORTS AS DESCRIBED IN SECTION 6 OF THIS DOCUMENT WILL BE USED.

10.9 SWITCH REGISTER SETTINGS

THE STANDARD SWITCH SETTINGS AS DESCRIBED IN SECTION 4 OF THIS DOCUMENT WILL BE USED.

10.10 PARAMETER CONTROL WORDS

THE CONSOLE PACKAGE USES THE LOCATIONS 20 21 22 FOR THE FOLLOWING PURPOSES.

LOCATION 20
PSEUDO SWITCH REGISTER

LOCATION 21
HARDWARE IDENTIFIER 1

LOCATION 22
HARDWARE IDENTIFIER 2

LOCATION 0021

BIT ---	OCTAL VALUE -----	FUNCTION WHEN 0 -----	FUNCTION WHEN 1 -----
0	4000	USE PSEUDO SWITCHES	USE HARDWARE SWITCHES
1	2000	NO OPTION 1	HAS OPTION 1
2	1000	NO OPTION 2	HAS OPTION 2
3	400	NO 8A SIMULATOR	HAS 8A SIMULATOR
4	200	NO OPTION SIMULATOR	HAS OPTION SIMULATOR
5	100	NOT ON 8A XOR	ON 8A XOR
6	40	NOT PDP8-E TYPE CPU	PDP8-E TYPE CPU
7-11		8A MEMORY SIZE EX. 1K=00 2K=01 7K=06 32K=31	

LOCATION 0022

BIT ---	OCTAL VALUE -----	FUNCTION WHEN 0 -----	FUNCTION WHEN 1 -----
0	4000	NOT ON ACT8A LINE	ON ACT 8A LINE
1	2000	NOT ON ACT 8E LINE	ON ACT 8E LINE
2	1000	NOT YET DEFINED	
3	400	DEACTIVE CONSOLE PACKAGE	ACTIVE CONSOLE PACKAGE

10.11 LOCATION CHANGES

THE FOLLOWING FIELD 1 LOCATIONS CAN BE CHANGED TO MEET THE SPECIFIC NEED FOR MODIFICATION OF THE DIAGNOSTIC.

- 0246 IS THE LOCATION FOR THE VALUE OF THE NUMBER OF PROGRAM PASSES NEED TO PRINT THE END OF PASS MESSAGE.
- 1037 IS THE LOCATION SET FOR THE NUMBER OF FILLER CHARACTERS AFTER A CRLF SET TO FOUR (4)

11. APT-8 HOOKS

11.1 DESCRIPTION.

TWO INTERFACES HAVE BEEN PROVIDED WHICH ALLOW THIS DIAGNOSTIC TO RUN UNDER THE STANDARD APT-8 SYSTEM, THESE CONSIDERATIONS ARE:

1. ERROR INTERFACE
2. TIMING INTERFACE

EACH WILL BE EXPLAINED IN MORE DETAIL.

11.2 SET-UP

ONLY HARDWARE CONFIGURATION WORD 2 NEED BE ESTABLISHED AT PROGRAM START UP, BIT ZERO (0) MUST BE SET TO A ONE (1) TO INDICATE THAT THE PROGRAM IS TO RUN UNDER APT-8.

11.3 APT-8 INTERFACES

11.3.1. TIMING

APT-8 IS NOTIFIED OF PROGRAM RUN WITHIN A .2 SEC TO 2.0 SEC WINDOW WHEN USED WITH A 1.2 MICROSECOND MEMORY CYCLE TIME. THIS WINDOW WAS ESTABLISHED SO THAT IF RUN ON THE SLOWER MOS MEMORY THE DIAGNOSTIC WOULD NOT CAUSE A TIMEOUT ERROR ON THE APT-8 SYSTEM.

11.3.2 ERRORS

WHEN ON APT-8 ALL ERRORS ARE CONSIDERED FATAL. WHEN REPORTING AN ERROR ONLY THE ERROR PC IS REPORTED TO APT. ERRORS WHICH CAUSE A SYSTEM HALT ARE NOT REPORTED. THESE ERRORS ARE INDICATED BY A TIMEOUT ERROR ON APT. THE ACTUAL ERROR CAN BE DETERMINED BY EXAMINING THE AC AT THE TIME OF THE HALT.

PROGRAMED HALTS ARE EXPLAINED EARLIER IS THIS
DOCUMENT.

12.

PROGRAM LISTING

```

1 /
2 /PK0E DISKLESS CONTROL TEST
3 /
4 /MAINDEC=00-DHRKA-E-L
5 /
6 /COPYRIGHT (C) 1972, 1975 DIGITAL EQUIP, CORP.
7 /
8 /MAYNARD, MASS, 01754,
9 /
10 0001 FIELD 1
11 /
12
13 /CONSOL SRC =V2-R0= CONSOLE PACKAGE
14
15
16 /LAS= CALL C8CKSW OR JMS XC8SW
17 /THIS WILL READ THE SWITCH REGISTER FROM THE PLACE SPECIFIED
18 /BY LOCATION 20 BIT 0.
19
20
21 /THE PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE TERMINAL
22 /EVERY FIVE(5) SECONDS OR SOONER.
23
24 /LOCATIONS THAT NEED TO BE SET UP FOR USING THE CONSOLE PACKAGE.
25
26 /CNTVAL IN XC8PASS THIS LOCATION DETERMINDS THE NUMBER OF
27 /PROGRAM COMPLETIONS THAT ARE NEEDED BEFORE THE PASS MESSAGE IS TYPED
28 /THE VALUE SHOULD PUT THE PASS MESSAGE OUT IN THE RANGE OF 1 TO 5 MINUTES.
29 /THIS SHOULD BE A POSITIVE NUMBER.
30
31 /CRSTRT THIS IS FOUND IN CNTRL ROUTINE CONTROL R PART
32 /IT IS THE RETURN WHEN CONTROL R IS ENTERED (RESTART PROGRAM)
33 /THE RETURN JUMPS TO XDOSW WHICH CONTAINS CRSTRT SO PUT THE LABEL CRSTRT
34 /WHERE YOU WANT TO RESTART THE PROGRAM.
35
36
37 /SETUP1 IN XC8ERP THIS IS THE MASK BIT FOR HALT ON ERROR
38 /PLACE THE CORRECT BIT IN THIS LOCATION FOR HALTING ON ERRORS.
39
40 /SETUP2 IN XC8PASS THIS IS THE MASK FOR HALT A END OF PASS.
41
42 /THE CALL TABLE IS A CONDITIONAL ASSEMBLY.
43 /TO ASSEMBLE THE CALL REMOVE THE / BEFORE CONSOL=0.
44 /IN COMBINING THE CONSOL PACKAGE TO A DIAGNOSTIC.
45 /THE CALL TABLE IS TO BE AT THE BEGINNING OF A PROGRAM.
46
47
48 0000 CONSOL=0
49 6661 PSKF= 6661
50 6662 PCLF= 6662
51 6663 PSKE= 6663
52 6664 PSTB= 6664
53 6665 PSIE= 6665
54 6004 GTF= 6004
55 7701 ACL= 7701

```

```

56 6007 CAF= 6007
57 7321 MQL= 7421
58 7501 MOA= 7501
59 /
60 0020 *20
61 /
62 0020 0000 FISWR, 0 /PSEUDO SWITCH REGISTER
63 0021 0000 FIOPI, 0 /CONTROL 1
64 0022 0000 FIOPI2, 0 /CONTROL 2
65 /
66 /
67 IFDEF CONSOL <
68
69
70 0024 *24
71
72 4424 CRPASS= JMS I .
73 0024 0200 XC8PAS . /C8 PASS COMPLETION ROUTINE
74 4425 C8CKSW= JMS I . /CHECK SW REG SETTING
75 0025 0262 XC8SW . /CHECK SW REG SETTING
76 4426 C8TTYI= JMS I . /CHECK SW REG SETTING
77 0026 0272 XC8TTY . /CHECK SW REG SETTING
78 4427 C8CNTR= JMS I . /CHECK SW REG SETTING
79 0027 0400 XC8CNT . /CHECK SW REG SETTING
80 4430 C8PRNT= JMS I . /CHECK SW REG SETTING
81 0030 0303 XC8PNT . /CHECK SW REG SETTING
82 4431 CRSWIT= JMS I . /CHECK SW REG SETTING
83 0031 0656 XC8PSW . /CHECK SW REG SETTING
84 4432 CROCTA= JMS I . /CHECK SW REG SETTING
85 0032 1000 XC8OCT . /CHECK SW REG SETTING
86 4433 CRCRIF= JMS I . /CHECK SW REG SETTING
87 0033 1023 XC8CRL . /CHECK SW REG SETTING
88 4434 CRECHO= JMS I . /CHECK SW REG SETTING
89 0034 1063 XC8ECH . /CHECK SW REG SETTING
90 4435 CRITYPE= JMS I . /CHECK SW REG SETTING
91 0035 1077 XC8TYP . /CHECK SW REG SETTING
92 4436 CBERR= JMS I . /CHECK SW REG SETTING
93 0036 1207 XC8ERR . /CHECK SW REG SETTING
94 4437 C8INQU= JMS I . /CHECK SW REG SETTING
95 0037 0635 XC8ING . /CHECK SW REG SETTING
96 4440 CRCKPA= JMS I . /CHECK SW REG SETTING
97 0040 1041 XC8CKP . /CHECK SW REG SETTING
98 4441 C8PAUS= JMS I . /CHECK SW REG SETTING
99 0041 0337 XC8PAU . /CHECK SW REG SETTING
100
101
102
103 /*****
104 /#20 /PSEUDO SWITCH REGISTER
105
106 /#21 /HARDWARE INDICATORS
107 /4000=USE FRONT PANFL SWITCH REGISTER
108 /0000=USE THE PSEUDO SWITCH REGISTER LOC.20
109
110 /#27 /SYSTEM CONFIGURATION

```

```

111 /400=CONSOL PACKAGE SET ACTIVE
112 /000=CONSOLE PACKAGE SPT DEACTIVE
113
114 /#23 /RESERVED FOR FUTURE USE
115
116 >
117 *200
118 /*****
119 /C8PASS
120 /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
121 /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
122 /THE PROGRAM TO COMPLETE THIS MANY C8PASS TO BE IN THE 1 TO 4 MINUTE
123 /RANGE
124 / C8PASS=JMS XC8PAS
125 /EX. OF CALL C8PASS
126 /
127 JMP START1 / HLT /HALT IF NON CONSOL PACKAGE
128 /CONTINUE RUNNING THIS PROGRAM
129
130 /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
131 /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
132 /THE LOCATION SETUP2 IS THE MASK BIT FOR THE HALT AT END OF PASS
133 /CHECK THAT IT IS CORRECT FOR THE CURRENT PROGRAM
134
135 /CALLS USED BY XC8PAS ARE CHKCLA-XC8CRLF-XC8OCTA-XC8SW-XC8PNT-XC8INQ-
136
137 0200 0000 XC8PAS, 0
138 0201 7200 CLA
139 0202 4777 JMS CHKCLA /IS WORD 22 BIT 3 ACTIVE CONSOLE?
140 0203 5212 JMP DOPACK /IS CLASSIC
141 0204 4776 JMS C8GET /GET ALL REGISTERS.
142 0205 4262 JMS XC8SW /DEACTIVE CONSOL CHECK SR SETTING
143 0206 0375 AND (400 /FOR HALT ON END OF C8PASS
144 0207 7640 SZA CLA /I= HALT 0 CONTINUE
145 0210 5600 JMP I XC8PAS /GO TO HALT
146 0211 5230 JMP C8BY1 /CONTINUE ON RUNNING PROGRAM
147 0212 4232 DOPACK, JMS CKCOUT /CLASS CHECK C8PASS COUNT
148 0213 5230 JMP C8BY1 /C8PASS COUNT NOT DONE REDO PROGRAM
149 0214 2250 ISZ PASCNT /C8PASS COUNT DONE SET C8PASS COUNT
150 0215 4774 JMS XC8CRLF
151 0216 4303 JMS XC8PNT /C8PNT BUFFER
152 0217 0753 MESPAS
153 0220 1250 TAD PASCNT /GET NUMBER
154 0221 4773 JMS XC8OCTA /CONVERT IT TO ASCII
155 0222 4774 JMS XC8CRLF /DO A CARRIAGE RETURN
156 0223 4776 JMS C8GET /GET ALL REGISTERS.
157 0224 4262 JMS XC8SW /CHECK A HALT AT END OF C8PASS
158 0225 0375 AND (400 /MASK BIT
159 0226 7640 SZA CLA /HALT =1 NO SKIP CONTINUE =0
160 0227 4772 JMS XC8INO /STOP PROGRAM EXECUTION-LOOK FOR INPUT
161 0230 2200 C8BY1, ISZ XC8PAS /BUMP RETURN
162 0231 5600 JMP I XC8PAS
163 0232 0000 CKCOUT, 0
164 0233 1251 TAD DOSET /CHECK IF SET UP NEEDED
165 0234 7640 SZA CLA /0=SET UP C8PASS COUNT VALUE

```

```

166
167 0235 5242 JMP NOSET /I=C8PASS COUNT VALUE OK
168 0236 1252 TAD CNTVAL /C8PASS COUNT VALUE ON
169 0237 7040 CMA /GET COUNT VALUE FOR THIS PROG
170 0240 3247 DCA DOCNT /SET TO NEGATIVE
171 0241 2251 ISZ DOSET /STORE IN HERE
172 0242 2247 NOSET, ISZ DOCNT /INDICATE VALUE SET UP
173 0243 5230 JMP C8BY1 /COUNT THE NUMBER OF PASSES
174 0244 3251 DCA DOSET /EXIT FOR ANOTHER PASS
175 0245 2232 ISZ CKCOUT /SET TO C8PNT C8PASS
176 0246 5632 JMP I CKCOUT /BUMP RETURN FOR
177 0247 0000 DOCNT, 0 /C8PASS C8TYPE OUT
178 0250 0000 PASCNT, 0
179 0251 0000 DOSET, 0
180 0252 0000 CNTVAL, 0
181 0253 0410 MESPAS, TEXT "DHRKAE PASS "
182
183
184
185 /*****
186
187 /C8CKSW
188
189 /THIS ROUTINE CAN BE USED INPLACE OF A READ THE SWITCHES LAS.
190 /ROUTINE THAT WILL CHECK WHERE TO READ THE
191 /C8 SWITCHES FROM IE. FROM PANEL OR PSEUDO SWITCH REGISTER
192 /THE SELECTION IS DETERMINED BY THE STATE OF BIT 0 IN LOCATION 21.
193
194 /CRCKSW= JMS XC8SW
195 /EX. JMS XC8SW /READ THE C8SWIT REGISTER
196 /RETURN WITH THE CONTENTS OF SWITCH REGISTER
197
198 /RETURN TO NEXT LOCATION FOLLOWING CALL WITH THE AC= TO VALUE OF C8SWIT SETTING
199
200 /CALLS USED ARE-XC8CKPA-
201
202
203
204 0262 0000 XC8SW, 0
205 0263 4771 JMS XC8CKPA /GO CHECK THE IF ANY CONTRL
206 0264 7000 NOP
207 0265 1921 TAD 21 /GET WD FOR INDICATOR
208 0266 7710 SPA CLA /CHECK IF FROM PANEL 4000
209 0267 7614 7614 /DO LAS AND SKIP GET FROM PANFL WITH LAS
210 0270 1920 TAD 20 /PSEUDO SWITCH
211 0271 5662 JMP I XC8SW /EXIT WITH STATUS BIT IN AC.
212
213
214 /*****

```

```

215
216 /C8TTYI
217 /THIS ROUTINE WILL LOOK FOR A INPUT FROM THE TERMINAL
218 /AND REMOVE ANY PARITY BITS, THEN MAKE IT 8 BIT ASCII.
219 / C8TTYI= JMS XC8TTY
220 /EX. JMS XC8TTYI /READ CHAR FROM THE CONSOL DEVICE
221 / / /RETURN TO CALL PLUS ONE AC CONTAINS THE CHAR
222
223
224 /CALLS USED -NONE- BUT C8CHAR IS OFF PAGE AND IN ROUTINE CALLED XC8ECHO
225
226 /
227 /
228 0272 0000 XC8TTY, 0
229 0273 6031 KSF /LOOK FOR KEYBOARD FLAG
230 0274 5273 JMP .-1
231 0275 6036 KRB /GET CHAR
232 0276 0370 AND (177 /MASK FOR 7 BITS
233 0277 1367 TAD (200 /ADD THE EIGHTH BIT
234 0300 3766 DCA C8CHAR /STORE IT
235 0301 1766 TAD C8CHAR
236 0302 5672 JMP I XC8TTY /EXIT
237
238
239
240
241 /*****
242 /C8PRNT
243
244 /THIS ROUTINE WILL TYPE THE CONTENTS OF THE C8 PRINT BUFFER, THE LOCATION
245 /OF THE BUFFER WILL BE IN THE ADDR FOLLOWING THE CALL. PRINTING OF THE BUFFER
246 /WILL STOP WHEN A 00 CHAR IS DETECTED. CHARACTERS ARE PACKED 2 PER WORD.
247
248 / C8PRNT= JMS XC8PNT
249
250
251 /EX. JMS XC8PNT /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
252 / MESS77 /LOCATION OF C8PRNT BUFFER
253
254 /C8PRNT WILL USE THE LOCATION FOLLOWING THE CALL AS THE POINTER FOR THE
255 /C8PRNT ROUTINE, RETURN TO CALL PLUS TWO WITH AC= 0
256
257 /CALLS USED ARE-XC8TYPE-XC8PNT
258
259
260
261 0303 0000 XC8PNT, 0
262 0304 7300 CLA CLL
263 0305 1703 TAD I XC8PNT /GET C8PRNT BUFFERS STARTING LOCATION
264 0306 3336 DCA PTSTOP /STORE IN PTSTOP
265 0307 2303 ISZ XC8PNT /BUMP RETURN
266 0310 1736 C8D01, TAD I PTSTOP /GET DATA WORD
267 0311 0365 AND (7700 /MASK FOR LEFT BYTE
268 0312 7450 SNA /CHECK IF 00 TERMINATE
269 0313 5703 JMP I XC8PNT /EXIT

```

```

270 0314 7500 SMA /IS AC MINUS
271 0315 7020 CNL /MAKE CHAR A 300 AFTER ROTATE
272 0316 7001 IAC /MAKE CHAR A 200 AFTER ROTATE
273 0317 7012 RTR
274 0320 7012 RTR
275 0321 7012 RTR
276 0322 4764 JMS XC8TYPE /PUT CHAR IN BITS 4-11 MAKE IT 8 BIT ASCII
277 0323 1736 TAD I PTSTOP /C8PRNT IT ON CONSOLE
278 0324 0363 AND (0077 /GET DATA WORD
279 0325 7450 SNA /MASK FOR RIGHT BYTE
280 0326 5703 JMP I XC8PNT /CHECK IF 00 TERMINATOR
281 0327 1362 TAD (3740 //EXIT
282 0330 7500 SMA /ADD FUDGE FACTOR TO DETERMINE IF 200
283 0331 1361 TAD (100 /OR 300 IS TO BE ADD TO CHAR
284 0332 1360 TAD (240 /ADD 100
285 0333 4764 JMS XC8TYPE /ADD 200
286 0334 2336 ISZ PTSTOP /C8TYPE ONLY BITS 4-11
287 0335 5310 JMP C8D01 /BUMP POINTER FOR NEXT WORD
288 0336 0000 PTSTOP, 0 /DO AGAIN
289 /STOR FOR C8PRNT BUFFER
290 /*****
291
292 /C8PAUS
293 /THIS ROUTINE WILL CHFK IF THE CONSOL PACKAGE IS ACTIVE, IF ACTIVE
294 /IT WILL RETURN TO CALL PLUS ONE AC= 0, AND DO THAT INSTRUCTION.
295 /IF THE CONSOL PACKAGE IS NOT ACTIVE THE CALL WILL BE REPLACED
296 /WITH A 7402 HALT AND THEN RETURN TO THE HALT.
297
298 / C8PAUS= JMS XC8PAU
299 /
300 /
301 /EX. JMS XC8PAUS /CHECK IF ON ACTIVE CONSOL IF NOT HALT HERE
302 / ANYTHING /RETURN HERE IF ON ACTIVE CONSOL
303 /
304 /
305
306 /CALLS USFD ARE -CHKCLA-
307
308
309
310 0337 0000 XC8PAU, 0
311 0340 7300 CLA CLI
312 0341 4777 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
313 0342 5350 JMP C8D03 /GO DO CONSOL PART RETURN CALL +1
314 0343 7040 CMA /DEACTIVE CONSOLE PACKAGE PUT HLT IN CALL
315 0344 1337 TAD XC8PAU /GET CORRECT RETURN ADDFS
316 0345 3337 DCA XC8PAU /SET UP RETURN
317 0346 1357 TAD (7402 /GET CODE FOR HLT
318 0347 3737 DCA I XC8PAU /PUT HLT IN CALL LOCATION
319 0350 5737 C8D03, JMP I XC8PAU /GO TO HALT OR RETURN TO NEXT LOCATION
320
321
322 0357 7402
323 0360 0240
324 0361 0100

```

325 0362 3740
 326 0363 0077
 327 0364 1077
 328 0365 7700
 329 0366 1075
 330 0367 0200
 331 0370 0177
 332 0371 1041
 333 0372 0635
 334 0373 1000
 335 0374 1023
 336 0375 0400
 337 0376 0624
 338 0377 1200
 0400

PAGE

/*****

/CBCNTR

/THIS ROUTINE WILL CHECK FOR THE PRESENCE OF CONTROL CHARACTERS
 /IT WILL CHECK FOR THE FOLLOWING CHAR C-R-Q-L-S
 / CBCNTR= JMS XCBCNT

/EX, JMS XCBCNTR /CHECK FOR CONTROL CHARACTER
 / JMP ANYTHING /LOC FOLLOWING CALL IS FOR CONTINUING THE PROGRAM
 / JMP ANYTHING /LOC, IS FOR RETURN IF INMODE SET AND NOT CNTRL CHAR

/RETURN IS TO CALL PLUS ONE IF CONTINUE
 /RETURN IS TO CALL PLUS TWO IF INMODE SET AND NOT CONTROL CHAR
 /RETURN IS TO CALL PLUS TWO IF INMODE IS NOT SET AND NO
 /CONTROL CHAR .,THIS WILL PRINT THE CHARACTER AND A ?
 /CLEAR THE AC AND RETURN CALL+2.

/CALLS USED ARE=CHKCLA-XCBCTYPE-XCBCRLF-CBGET-UPAROW-XCBTYI-XCBPSW-
 /
 /

362 0400 0000 XCBCNT, 0
 363 0401 3777 DCA ACSAVE /SAVE THE AC
 364 0402 4776 JMS CHKCLA /CHECK LOC,22 BIT3 FOR CONSOLE BIT
 365 0403 5206 JMP +3 /ON ACTIVE CONSOLE
 366 0404 1777 TAD ACSAVE /DEACTIVE CONSOLEGET AC FOR RETURN
 367 0405 5600 JMP I XCBCNT /EXIT NOT ON ACTIVE CONSOLE
 368 0406 6004 GTF
 369 0407 3775 DCA FLSAVE
 370 0410 7501 MOA
 371 0411 3774 DCA MGSAVE /SAVE THE MO
 372 0412 3255 DCA INDEXA /SET DISPLACEMENT INTO TABLE B
 373 0413 1257 TAD XTABLA /GET ADORS OF TABLE A
 374 0414 3256 DCA GETDAT /CONTAINS POINTER TO CONTROL CHAR
 375 0415 1656 REDOA, TAD I GETDAT /GET CONTROL CHAR FROM TABLE
 376 0416 7450 SNA /CHECK FOR A 0 END OF TABLE
 377 0417 5226 JMP DONEA /END OF TABLE NO CONTROL CHAR
 378 0420 1773 TAD CBCHAR /COMPARE CHAR TO CONTROL CHAR

379 0421 7650 SNA CLA /0 IF MATCH
 380 0422 5243 JMP GOITA /MATCH
 381 0423 2255 ISZ INDEXA /NO MATCH NOT END OF TABLE REDO
 382 0424 2256 ISZ GETDAT /BUMP INDEX FOR EXIT WHEN CONTROL FOUND
 383 0425 5215 JMP REDOA /BUMP GETDAT FOR COMPARE OF NEXT CNTRL CHAR.
 384 0426 1772 DONEA, TAD INMODE /CHECK IF PROGRAM EXPECTS CHAR
 385 0427 7640 SZA CLA /1=CHAR EXPECTED 0= NO CHAR EXPECTED
 386 0430 5240 JMP EXITA /CHAR EXPECTED
 387 0431 1773 TAD CBCHAR /GET CHAR - NOT CONTROL + NOT EXPECTED
 388 0432 4771 JMS XCBCTYPE /CBPRNT CHAR
 389 0433 1370 TAD (277) /GET CODE FOR "?"
 390 0434 4771 JMS XCBCTYPE
 391 0435 4767 JMS XCBCRLF
 392 0436 2200 ISZ XCBCNT /BUMP RETURN
 393 0437 5600 JMP I XCBCNT /EXIT CALL+2
 394 0440 2200 EXITA, ISZ XCBCNT /BUMP RETURN FOR MAIN PROGRAM CHECK OF CHAR
 395 0441 1773 TAD CBCHAR /PUT CHAR IN AC.
 396 0442 5600 JMP I XCBCNT /EXIT
 397 0443 1773 GOITA, TAD CBCHAR /GET THE CONTENTS OF CHAR
 398 0444 1366 TAD (100) /ADD 100 TO FORM A GOOD ASCII CHARACTER
 399 0445 3773 DCA CBCHAR /RESTORE COFFECT CHAR
 400 0446 1260 TAD XTABLB /GET START OF TABLE B
 401 0447 1255 TAD INDEXA /GET NOW FAR INTO TABLE
 402 0450 3254 DCA GOTOA /STORE IT
 403 0451 1654 TAD I GOTOA /GET THE ROUTINE STARTING ADDRESS
 404 0452 3254 DCA GOTOA /STORE IT IN HERE
 405 0453 5654 JMP I GOTOA /GOTO CONTROL CHAR ROUTINE
 406 0454 0000 GOTOA, 0000 /ADD OF CNTRL ROUTINE TO EXECUTE
 407 0455 0000 INDEXA, 0000 /DISPLACEMENT INTO CNTRL TABLE
 408 0456 0000 GETDAT, 0000 /LOCATION OF ADORS OF CONTROL CHAR.
 409 0457 0461 XTABLA, TABLA /ADRS OF TABLEA
 410 0460 0471 XTABLB, TABLB /ADRS OF TABLEB
 411 0461 7575 TABLA, 7575 /CNTRL C BACK TO MONITOR 203
 412 0462 7564 7564 /CNTRL L SWITCH ERROR PRINTING DEVICE 214
 413 0463 7557 7557 /CNTRL O START DISPLAYING CHAR, AGAIN 221
 414 0464 7556 7556 /CNTRL P BACK TO BEGINNING OF PROGRAM 222
 415 0465 7555 7555 /CNTRL S STOP SENDING CHAR TO DISPLAY WAIT FOR CNTRL Q 223
 416 0466 7573 7573 /CNTRL E CONTINUE WITH PROGRAM 205
 417 0467 7574 7574 /CNTRL D CHANGE SWITCH REGISTER ON FLY
 418 0470 0000 0000
 419
 420 0471 0551 TABLB, CNTRL C
 421 0472 0537 CNTRL L
 422 0473 0500 CNTRL Q
 423 0474 0511 CNTRL R
 424 0475 0521 CNTRL S
 425 0476 0545 CNTRL E
 426 0477 0600 CNTRL D
 427 /
 428 /CONTROL O
 429 /START SENDING CHAR. TO THE DISPLAY
 430 /THIS WILL RETURN CONTROL TO CALL THAT WAS SET BY
 431 /THE CALL FOR CONTROL S.
 432 /
 433 0500 3772 CNTRLQ, DCA INMODF /SET SOFT FLAG FOR UNEXPECTED CHAR

```

/ PAL10 VI42A 7-MAR-77 13155 PAGE 1-8
434 0501 1335 TAD C8SETS /CHECK IF CONTROL S TYPED IN
435 0502 7640 SZA CLA
436 0503 5306 JMP BYRETR /CONTROL S TYPED IN
437 0504 4765* JMS C8GET /NO CONTROL S TYPED PREVIOUSLY
438 0505 5600 JMP I XC8CNTR /LEAVE VIA CNTR ENTRY ADDRESS
439 0506 3335 BYRETR, DCA C8SETS /CLEAR THE SOFT FLAG
440 0507 4765* JMS C8GET /RESTORE REGISTERS
441 0510 5736 JMP I C8RETR /EXIT TO ADDRESS SET BY CONTROL S
442 /
443 /
444 /CONTROL R
445 /GO TO THE QUESTION C8SWIT
446 0511 3764* CNTRLR, DCA TTYLPT /CLEAR THE TYPE FLAG SET TO TTY
447 0512 3335 DCA C8SETS /CLEAR SOFT FLAG FOR CNTRL S
448 0513 3772* DCA INMODF
449 0514 4763* JMS UPAROW /PRINT THE * AND C8CHAR
450 0515 3762* C8BY4, DCA C8SWST /CLEAR FLAG FOR CNTRL D OR R
451 0516 6203 CDF CIF
452 0517 5720 JMP I XDOSW /GO TO ADDR5 OF C8SWIT
453 0520 0200 XDOSW, BGN /DOSW IS LABEL FOR C8SWIT QUESTION
454 /
455 /
456 /CONTROL S
457 /STOP SENDING CHAR. TO DISPLAY UNTIL A ~Q IS RECEIVED
458 /
459 /
460 0521 1335 CNTRL5, TAD C8SETS /IF1 DO NOT STORE IN C8RETR
461 0522 7640 SZA CLA
462 0523 5327 JMP C8D07 /DONT SET UP C8RETR
463 0524 7001 IAC /MAKE RETURN CALL PLUS 2
464 0525 1200 TAD XC8CNT /GET RETURN FOR THIS CALL
465 0526 3336 DCA C8RETR /STORE IT HERE FOR USE RE CONTROL Q
466 0527 2335 C8D07, ISZ C8SETS /SET FLAG TO SAVE CALL
467 0530 4761* JMS XC8TTYI /LOOK FOR THE INPUT
468 0531 4765* JMS C8GET /GET REGISTERS
469 0532 4200 JMS XC8CNTR /CHECK FOR THE CONTROL CHAP
470 0533 7200 CLA
471 0534 5321 JMP CNTRL5 /IF NOT A CNTRL Q R C REASK
472 0535 0000 C8SETS, 0
473 0536 0000 C8RETR, 0
474 /
475 /SWITCH OUTPUT FROM ONE OUTPUT DEVICE TO ANOTHER - THE TWO OUTPUTS ARE THE
476 /CONSOLE AND THE PRINTER WITH DEVICE CDOE 66.
477 /
478 /
479 0537 1764* CNTRL6, TAD TTYLPT /GET PRESENT C8SWIT INDICATOR
480 0540 7040 CMA /COMPLEMENT IT
481 0541 3764* DCA TTYLPT /STORE NEW C8SWIT
482 0542 4763* JMS UPAROW /CBPRNT * AND CHAR ON NEW DEVICE
483 0543 4765* JMS C8GET /RESTORE THE REGISTERS
484 0544 5600 JMP I XC8CNT /EXIT
485 /
486 /CONTROL E
487 /CONTINUE RUNNING FROM A INQUIRE OR ERROR
488 /

```

```

/ PAL10 VI42A 7-MAR-77 13155 PAGE 1-9
489 /
490 0545 4763* CNTRLE, JMS UPAROW /PRINT THE CONTROL CHAR
491 0546 3762* DCA C8SWST /CLEAR FLAG.
492 0547 4765* JMS C8GET /GET THE REGISTERS
493 0550 5600 JMP I XC8CNT /RETURN TO CALL PLUS ONE
494 /
495 /
496 /CONTROL C
497 /RETURN TO MONITOR CONTROL C
498 0551 3764* CNTRLC, DCA TTYLPT /CLEAR THE LPT FLAG TO PRINT ON DISPLAY
499 0552 3762* DCA C8SWST /CLEAR FLAG.
500 0553 4763* JMS UPAROW /CBPRNT * AND LETTER IN CHAR
501 0554 6203 CDF CIF /GO TO 0 FLD
502 0555 6007 CAF /CLEAR THE WORLD
503 0556 5760 JMP I (7600 /GO TO DIAGNOSTIC MONITOP
504 /*****
505 /
506 /
507 /
508 0560 7600
509 0561 0272
510 0562 0745
511 0563 0615
512 0564 1121
513 0565 0624
514 0566 0100
515 0567 1023
516 0570 0277
517 0571 1077
518 0572 1076
519 0573 1075
520 0574 1346
521 0575 1347
522 0576 1200
523 0577 1345
524 0600 PAGE
525 /
526 /CONTROL D
527 /CHANGE THE SWITCH REGISTER ANYTIME CNTRL D AND RETURN TO
528 /THE PROGRAM RUNNING.
529 /
530 /
531 0600 4215 CNTRLD, JMS UPAROW
532 0601 1213 TAD C8SETD /CHECK IF THE RETURN ADDRS IS SAFE
533 0602 7640 SZA CLA
534 0603 5207 JMP C8D011 /DO NOT CHANGE THE RETURN ADDRS
535 0604 1777* TAD XC8CNT /GET THE RETURN ADDR5 AND SAVE IT
536 0605 3214 DCA C8RETR /SAVE THE RETURN HERE
537 0606 2213 ISZ C8SETD /INDICATE RETURN SAVED DONT DESTROY
538 0607 4256 C8D011, JMS XC8PSW /GO CHANGE THE SWITCH REGISTER
539 0610 3713 DCA C8SETD /CLEAR THE FLAG
540 0611 4224 JMS C8GET /RESTORE THE AC MQ LINK ETC
541 0612 5614 JMP I C8RETR /RETURN TO THE PROGRAM
542 /

```

```

543 0613 0000 CBSEID, 0
544 0614 0000 CBREID, 0
545
546
547
548 /THIS WILL TYPE A UP ARROW AND THE CHAR IN C0CHAR.
549
550 0615 0000 UPAROW, 0 /CBPRNT THE "*" AND THE CHAR CBTYPED IN
551 0616 1376 TAD (336 /CODE FOR "
552 0617 4775 JMS XC8TYPE
553 0620 1774 TAD C0CHAR /CATYPE THE CHAR
554 0621 4775 JMS XC8TYPE
555 0622 4773 JMS XC8CRLF
556 0623 5615 JMP I UPAROW /EXIT
557
558
559
560 /*****
561
562 0624 0000 C0GET, 0
563 0625 7200 CLA
564 0626 1772 TAD MQSAVE
565 0627 7421 MQL /RESTORE MQ
566 0630 1771 TAD FLSAVE
567 0631 7004 RAL /RESTORE THE LINK
568 0632 7200 CLA
569 0633 1770 TAD ACSAVE /RESTORE THE AC
570 0634 5624 JMP I C0GET /GET THE REGISTERS
571
572
573
574 /*****
575
576 /CBINQU
577 /CBINQU ROUTINE WILL PRINT A WAITING
578 /AND THE PROGRAM IS EXPECTING A CONTROL CHAR INPUT
579 /IF CONTINUE FROM CONTROL CHAR RETURN IS CALL PLUS ONE
580 /IF NO CONTROL CHAR ENTERED THEN WAITING IS REPRINTED
581 /AND PROGRAM WAITS FOR A CONTROL CHAR AGAIN.
582
583 / CBINQU = JMS XC8INO
584
585 /EX. JMS XC8INO /CS WILL PRINT A WAITINGAND WAIT FOR INPUT
586 / DO ANYTHING /RETURN IS CALL PLUS ONE AC =0 CONTINUE
587
588 /CALLS USED ARE -CHKCLA-XC8PNT-XC8TYI-C0GET-XC8CNT-
589
590
591 0635 0000 XC8INO, 0
592 0636 7300 CLA CLL
593 0637 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
594 0640 7410 SKP /ACTIVE CONSOLE PACKAGE
595 0641 5635 JMP I XC8INO /NOT CONSOLE LEAVE
596 0642 4766 JMS XC8PNT
597 0643 0651 WATMES /INQUIR WAITING

```

```

598 0644 4765 JMS XC8TYI /GET CHARACTER
599 0645 4224 JMS C0GET
600 0646 4777 JMS XC8CNT /CHECK IF CONTROL CHARACTER
601 0647 5635 JMP I XC8INO /EXIT AND CONTINUE
602 0650 5236 JMP XC8INO+1 /REASK
603 0651 2701 WATMES, TEXT "WAITING "
604
605
606
607 /*****
608
609 /C0SWIT
610
611 /ROUTINE WILL CHECK IF CONSOL IS ACTIVE IF IT IS ACTIVE DISPLAY
612 /SW QUESTION, IN NOT ACTIVE IT WILL NOT PRINT THE SW QUESTION BUT
613 /RETURN TO CALL PLUS ONE AC=0.
614 /C0SWIT WILL SET UP THE PSEUDO SWITCH
615 /REGISTER WITH THE NEW DATA ENTERED
616
617 / C0SWIT = JMS XC8PSW
618
619 /EX. JMS XC8PSW /SET UP PSEUDO C0SWIT REGISTER IF
620 /ON THE CONSOL PACKAGE. RETURN IS CALL PLUS ONE AC = 0
621
622 /CALLS USED ARE -CHKCLA-XC8PSW-XC8PNT-XC8OCTA-XC8TYPE-
623
624 0656 0000 XC8PSW, 0
625 0657 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
626 0660 7410 SKP /ACTIVE CONSOLE
627 0661 5656 JMP I XC8PSW /DEACTIVE CONSOLE PACKAGE
628
629 0662 1345 TAD C0SWST /RETURN WITHOUT ASKING PSEUDO SWITCH
630 0663 7640 SEA CLA /IS THE SOFT FLAG SET FOR SWITCH?
631 0664 5764 JMP C0BY4 /SKIP IF ONE ENTRY AT ATIME OK
632 0665 2345 ISZ C0SWST /SECOND ENTRY WITH OUT A EXIT GO TO SW QUESTION
633 0666 4766 C0RDPS, JMS XC8PNT /FIRST ENTRY SET FLAG
634 0667 0747 MESA /CBPRNT SPe
635 0670 1070 TAD 20 /GET CONTENTS OF SW
636 0671 4763 JMS XC8OCTA /CONVERT IT TO ASCII
637 0672 1362 TAD (40 /GET SPACE
638 0673 4775 JMS XC8TYPE
639 0674 2761 ISZ INMODE /SET FLAG FOR CHAR FRECTED
640 0675 4760 JMS XC8ECHO /LOOK FOR INPUT
641 0676 4315 JMS TSTCHA /NOT CONTROL TEST IT JS LEGAL
642 0677 1774 TAD CRCHAR /STORF NEW CHAR IN SW REG
643 0700 3020 DCA 20
644
645 0701 1357 TAD (-3 /GET A MINUS 3
646 0702 3346 DCA TMPCNT /STORE IN TEMP COUNT
647 0703 4760 GETCH1, JMS XC8ECHO /GET NEXT CHAR
648 0704 4315 JMS TSTCHA /CHECK IF CP + GOOD CHAR

```

```

649 0705 1020 TAD 20 /GET C8SWIT REGISTER
650 0706 7106 RTL CLL /ROTATE IT LEFT 3 PLACES
651 0707 7004 RAL
652 0710 1774 TAD C8CHAR /GET CHAR + ADD IT TO PREVIOUS CONTENTS
653 0711 3020 DCA 20 /SAVE NEW CONTENTS
654 0712 2346 ISZ IMPCNT /BUMP COUNT
655 0713 5303 JMP GETCH1 /JMP BACK + GET NEXT CHAR
656 0714 5342 JMP ENDIT /END 4 CHAR CRTYPED IN
657 0715 0000 TSTCHA, 0
658 0716 7041 CIA /CMPL CHAR IN AC
659 0717 1356 TAD (215 /TEST IF IT IS A CARRIAGE RETURN
660 0720 7650 SNA CLA /SKIP IN NOT CR,
661 0721 5342 JMP ENDIT /WAS CARRIAGE RETURN
662 0722 1774 TAD C8CHAR /NOT CR, GET CHAR
663 0723 1355 TAD (-260 /CHECK IF IT IS IN RANGE
664 0724 7710 SNA CLA /IF NOT POSITIVE CBERR CHAR SMALLER THEN 260
665 0725 5336 JMP ERR1 /CBERR - CHAR TOO SMALL
666 0726 1774 TAD C8CHAR /GET CHAR
667 0727 1354 TAD (-270 /GET a -270 + CHECK IF IT IS LARGER THEN 7
668 0730 7700 SNA CLA /SKIP IF LESS THEN 7
669 0731 5336 JMP ERR1 /CBERR ON CHAR NOT IN RANGE
670 0732 1774 TAD C8CHAR /GET CHAR
671 0733 0353 AND (7 /MASK FOR RIGHT BYTE
672 0734 3774 DCA C8CHAR /STORE IN CHAR
673 /GET CHAR IN AC
674 0735 5715 JMP I TSTCHA /EXIT
675 0736 1352 ERR1, TAD (277 /CBPRNT
676 0737 4775 JMS XC8TYPE /?
677 0740 4773 JMS XC8CRLF /
678 0741 5266 JMP C8RDPS /EXIT + ASK AGAIN
679 0742 4773 ENDIT, JMS XC8CRLF /DO A CR LF
680 0743 3345 DCA C86WST /CLEAR THE PSW ENTRY FLAG
681 0744 5656 JMP I XC8PSW /EXIT ROUTINE
682 0745 0000 C86WST, 0
683 /
684 0746 0000 IMPCNT, 0
685 0747 2322 NESA, TEXT "SR= "
686 /
687 /
688 0752 0277
689 0753 0007
690 0754 7510
691 0755 7520
692 0756 0215
693 0757 7775
694 0760 1063
695 0761 1076
696 0762 0040
697 0763 1000
698 0764 0515
699 0765 0272
700 0766 0303
701 0767 1200
    
```

```

702 0770 1345
703 0771 1347
704 0772 1346
705 0773 1023
706 0774 1075
707 0775 1077
708 0776 0336
709 0777 0400
    PAGE
710 /C8OCTA
711 /
712 /
713 /OCTAL TO ASCII CONVERSION
714 /THIS ROUTINE WILL TAKE THE OCTAL NUMBER IN THE AC AND CONVERT IT TO ASCII
715 /THE RESULT WILL BE PRINTED ON THE CONSOL TERMINAL
716 / C8OCTA= JMS XC8OCT
717 /
718 /EX. JMS XC8OCTA /AC CONTAINS NUMBER TO BE CHANGE
719 / RETURN IS TO CALL PLUS ONE AC=0
720 /
721 /CALLS USED ARE -XC8TYPE-
722 /
723 /
724 1000 0000 XC8OCT, 0
725 1001 7106 CLL RTL
726 1002 7006 RTL /POSITION THE FIRST CHAR FOR PRINTING
727 1003 3221 DCA C8TMP1 /SAVE CORRECT POSITIONED WORD HERE
728 1004 1377 TAD (-4
729 1005 3222 DCA C8CKP /STORE COUNTER IN HERE
730 1006 1221 C8D04, TAD C8TMP1 /GET FIRST NUMBFR
731 1007 0376 AND (0007 /MASK
732 1010 1375 TAD (260 /ADD THE PRINT CONSTANT
733 1011 4277 JMS XC8TYPE /TYPE THE NUMBER
734 1012 1221 TAD C8TMP1 /
735 1013 7006 RTL
736 1014 7004 RAL /PUT NEXT NUMBER IN POSITION
737 1015 3221 DCA C8TMP1 /STORE IT
738 1016 2222 ISZ C8CKP /DONE YET WITH FOUR NUMBERS
739 1017 5206 JMP C8D04 /NOT YET DO MORE
740 1020 5600 JMP I XC8OCT /DONE WITH FOUR
741 1021 0000 C8TMP1, 0
742 1022 0000 C8CKP, 0
743 /
744 /
745 /*****
746 /
747 /C8CRLF
748 /C8TYPE CR AND LF WITH FILLERS FOLLOWING EACH LF AND CR
749 /
750 / C8CRLF= JMS XC8CRLF
751 /
752 /EX. JMS XC8CRLF /CBPRNT A CR AND LF WITH FILL
753 / /RETURN TO CALL PLUS ONE AC =0
754 /CALLS USED ARE -XC8TYPE-
755 /
    
```

```

756
757 1023 0000 XC8CRLF,0
758 1024 7300 CLA CLL
759 1025 1374 TAD (215 /GET CODE FOR CR
760 1026 4277 JMS XC8TYPE
761 1027 1237 TAD FILLER
762 1030 7040 CMA
763 1031 324F DCA FILCNT /STORE FILLER IN HERE
764 1032 1373 TAD (212 /GET CODE FOR LF
765 1033 4277 C8DO2, JMS XC8TYPE
766 1034 2240 ISZ FILCNT /CHECK ON FILLER CHAR
767 1035 5233 JMP C8DO2 /TYPE A NON PRINTING CHAR
768 1036 5623 JMP I XC8CRL /EXIT
769 1037 0004 FILLER, 0004 /FILLER SET FOR 4 CHAP
770 1040 0000 FILCNT, 0 /COUNTER FOR FILL
771
772
773
774 //*****
775 /C8CKPA
776 /THIS ROUTINE WILL CHECK IF A CHARACTER WAS ENTERED FROM THE
777 /TERMINAL, IF THE FLAG IS SET AND THE CONSOLE PACKAGE IS
778 /ACTIVE A CHECK IS MADE TO DETERMINE IF IT IS A CONTROL CHAR.
779 /IF IT WAS A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
780 /IF NOT A CONTROL CHAR THEN ITS CONTROL FUNCTION IS PERFORMED.
781 /THE CONTROL FUNCTION AND RETURN TO CALL PLUS 2.
782 /A NON CONTROL CHARACTER WILL BE PRINTED AND A "?" IT WILL RETURN TO
783 /CALL PLUS 2.
784 /IF NO FLAG IS SET OR THE CONSOLE IS NOT ACTIVE THE RETURN IS TO
785 /CALL PLUS 1.
786
787
788 / C8CKPA= JMS XC8CKP
789
790
791 /EX. JMS XC8CKPA /CALL TO CHECK IF CONTROL CHAR SET
792 / ANYTHING(SKIP) /RETURN IF NOT FLAG OR NOT CONSOLE ACTIVE
793 / ANYTHING(JMP EXIT SKIP CHAIN) /RETURN IF NOT CONTROL OR CONTINUE CONTROL
794
795
796 /CALLS USED ARE -XC8TTYI-XC8CNTR-C8GET-
797
798
799 1041 0000 XC8CKP, 0
800 1042 3772 DCA ACSAVE /SAVE THE AC
801 1043 6004 GTF /SAVE THE FLAGS
802 1044 3771 DCA FLSAVE /SAVE THE FLAGS
803 1045 7501 MQA /PUT MQ IN AC
804 1046 3770 DCA MQSAVE /SAVE THE MQ
805 1047 6031 KSF /CHECK THE KEYBOARD FLAG
806 1050 5261 JMP C8BY3 /EXIT TO CALL PLUS 1
807 1051 4767 JMS CHKCLA /CHECK LOC 22 BIT 3 CONSOLE BIT
808 1052 7410 SKP /ACTIVE CONSOLE PACKAGE
809 1053 5261 JMP C8BY3 /EXIT TO CALL PLUS 1
810 1054 4766 JMS XC8TTYI /GET THE CHAR
    
```

```

811 1055 4765 JMS C8GET /GET THE FLAGS
812 1056 4764 JMS XC8CNTR /CHECK IF CONTROL CHAR,
813 1057 7000 NOP /RETURN IF A CONTINUE CHAR.
814 1060 2741 ISZ XC8CKP /BUMP RETURN FOR CALL PLUS 2
815 1061 4765 C8BY3, JMS C8GET /GET REGISTERS
816 1062 5641 JMP I XC8CKP /SAY GOOD BY
817
818 //*****
819
820 /C8ECHO
821 /THIS ROUTINE WILL LOOK FOR A CHAR FROM THE KEYBOARD, STORE IT IN LOCATION CHAR
822 /CHECK IF IT WAS A CONTROL CHARACTER - SET INMODE - PRINT CHARACTER
823
824 / C8ECHO = JMS XC8ECH
825 /EX. JMS XC8ECHO /LOOK FOR CONSOLE CHAR C8PRNT IT
826 /RETURN CALL PLUS ONE AC = CHAR C8TYPED IN
827
828 /CALLS USED ARE -XC8TTYI-XC8CNTR-C8GET-XC8ECH-XC8TTYI-
829
830
831 / XC8ECH, 0
832 1063 0000
833 1064 4766 JMS XC8TTYI /WAIT FOR CHAR FROM KEYBOARD
834 1065 4765 JMS C8GET /RESTORE THE REGISTERS
835 1066 2276 ISZ INMODE /SET INMODE IDENTIFYING THIS AS A EXPECTED CHAR
836 1067 4764 JMS XC8CNTR /GO CHECK IF IT IS A CONTROL CHAR
837 1070 5663 JMP I XC8ECH /WAS A CONTROL CHAR - CONTINUE RUNNING
838 1071 4277 JMS XC8TYPE /NOT A CONTROL CHAR C8PRNT IT
839 1072 3276 DCA INMODE /CLEAR FLAG THAT CHAR EXPECTED
840 1073 1275 TAD C8CHAR /GET CHAR IN AC
841 1074 5663 JMP I XC8ECH /EXIT
842 1075 0000 C8CHAR, 0
843 1076 0000 INMODE, 0
844
845 //*****
846
847 /C8TYPE
848 /THIS ROUTINE WILL C8PRNT ON THE CONSOLE OR THE LPT WITH DEVICE CODE 66,
849 /
850 / C8TYPE= JMS XC8TYP
851
852 /EX. JMS XC8TYPE /C8PRNT THE CHAR IN THE AC,
853 / /RETURN CALL PLUS ONE AC =0000
854 /DO NOT CLEAR THE LINK IN THIS ROUTINE NEEDED BYC8OCT
855
856 /CALLS USED ARE -C8HANG-XC8CNTR-XC8PRNT-XC8CRLF-XC8INQU-
857
858
859 1077 0000 XC8TYP, 0
860 1100 3320 DCA PNTBUF /STORE CHAR
861 1101 1321 TAD TTYLPT /CHECK 0=TTY 7777=LPT
862 1102 7640 SZA CLA
863 1103 5312 JMP XDOLPT /DO OUT PUT ON LPT
864 1104 132F TAD PNTBUF
865 1105 6046 TFS
    
```

```

866 1107 5306 JMP , -1
867 1110 6042 TCF
868 1111 5316 JMP C8BY5
869 1112 1320 XDOLPT, TAD PNTBUF /GET CHAR
870 1113 6666 PSTB PCLF /C8PRT IT
871 1114 4322 JMS C8HANG /CHECK KEYBOARD IF HUNG
872 1115 6662 PCLF /CLEAR THE FLAG
873 1116 7600 C8BY5, 7600 /CLEAR THE AC
874 1117 5677 JMP I XC8TYP /EXIT
875 1120 0000 PNTBUF, 0
876 1121 0000 TTYLPT, 0
877
878
879 1122 0000 C8HANG, 0
880 1123 7200 CLA /
881 1124 1316 TAD C8BY5 /GET CONSTANT 7600
882 1125 3320 DCA PNTBUF /PNTBUF IS NOW A COUNTER
883 1126 6661 PSKF /SKIP ON PRINTER DONE
884 1127 7410 SKP /NOT DONE YET
885 1130 5722 JMP I C8HANG /SAW FLAG DONE
886 1131 2345 ISZ C8CONT /FIRST COUNTER FAST ONE
887 1132 5326 JMP , -4 /CHECK IF FLAG SET YET
888 1133 2320 ISZ PNTBUF /MADE 4096 COUNTS ON FAST COUNTER
889 1134 5331 JMP , -3 /KEEP IT UP FOR 5 SEC
890 1135 1764 TAD XC8CNTR /GET THE RETURN ADDRESS IN CONTROL
891 1136 3322 DCA C8HANG /SAVE IT IN HANG
892 1137 3321 DCA TTYLPT /ALLOW PRINTING ON TTY
893 1140 4763 JMS XC8PNT
894 1141 1146 MESHANG /LPT ERROR
895 1142 4223 JMS XC8CRLF
896 1143 4762 JMS XC8INQU /PRINT WAITING
897 1144 5722 JMP I C8HANG /CONTINUE TO SAVE ADDRESS
898 1145 0000 C8CONT, 0 /COUNTER FOR TIMER
899 1146 1420 MESHANG,TEXT "LPT ERROR"
1147 2440
1150 0522
1151 2217
1152 2200

900
901 1162 0635
902 1163 0303
903 1164 0400
904 1165 0624
905 1166 0272
906 1167 1200
907 1170 1346
908 1171 1347
909 1172 1345
910 1173 0212
911 1174 0215
912 1175 0260
913 1176 0007
914 1177 7774

PAGE
915 /*****

```

```

916 /*****
917
918 /THIS ROUTINE WILL CHECK LOCATION 22 THE HARD WARE CONFIG WORD,
919 /TO SEE IF THE CONSOLE BIT 3 (400) IS SET IF SET THEN RETURN
920 /TO CALL PLUS TWO FO A ACTIVE CONSOLR PACKAGE AC=0
921 /IF NOT SET THEN TO CALL PLUS ONE FOR A DEACTIVE CONSOLE PACKAGE.
922
923
924 1200 0000 CHKCLA, 0
925 1201 7200 CLA
926 1202 1022 TAD 22 /GET THE COTENTA OF LOCATION 22
927 1203 0377 AND (400 /MASK FOR BIT 3 (400)
928 1204 7650 SNA CLA /
929 1205 2200 ISZ CHKCLA /ACTIVE CONSOLE PACKAGE RETURN
930 /CALL PLUS ONE (1) FOR ACTIVE
931 1206 5600 JMP I CHKCLA /DEACTIVE CONSOLE PACKAGE RETURN
932 /CALL PLUS TWO (2)
933
934 /CBERR
935 /THIS ROUTINE WILL DETERMINE WHAT TO DO WHEN A CBERR IS ENCOUNTERED
936 /WILL CHECK IF CLASSIC SYSTEM, WILL CHECK C8SWIT REGISTERS.
937 / CBERR= JMS XC8ERR
938 /EX, JMS XC8ERR /GO TO CBERR CALL IF NOT CONSOL
939 / /RETURN IS CALL PLUS ONE AC =0000
940
941 /CALLS USED ARE -CHKCLA-XC8CRLF-XC8SW-XC8INQU-XC8PNT-XC8OCTA-
942
943
944 1207 0000 XC8ERR, 0
945 1210 6002 IOF
946 1211 3345 DCA ACSAVE /SAVE AC
947 1212 6004 GTF
948 1213 3347 DCA FLSAVE /SAVE THE FLAGS
949 1214 7501 MOA
950 1215 3346 DCA MQSAVE /SAVE THE MQ
951 1216 7340 CLA CLL CMA /SUBTRACT A 1 FOR TRUE LOCATION
952 1217 1207 TAD XC8ERR /GET RETURN LOCATION
953 1220 3344 DCA PCSAVE /SAVE ADD OF CBERR CALL
954 1221 6201 CDF
955 1222 7340 CLA CLL CMA
956 1223 1776 TAD I (CLASTK)
957 1224 3316 DCA REALPC /SAVE REAL PC.
958 1225 6211 CDF 10
959 1226 4200 JMS CHKCLA /CHECK LOC,22 BIT 3 CONSOL BIT
960 1227 7410 SKP /ACTIVE CONSOLE PACKAGE
961 1230 5270 JMP NTCLAS /NOT CLASSIC SYSTEM
962 1231 4775 JMS C8GET /GET ALL REGISTERS.
963 1232 4774 JMS XC8SW /CHECK SWITCH REG FOR BIT THAT INDICATES
964 /NO ERROR MESSAGE
965 1233 0373 SETUP1, AND (0000 /MASK FOR BIT FOR NO ERROR PRINTING
966 /IF THIS EROR MESSAGE IS TO ALWAYS
967 /BE PRINTED LEAVE AND VALUE AT 0000
968 1234 7640 SZA CLA /SKIP IF BIT IS 0 PRINT ERROR MESSAGE
969 1235 5262 JMP C8D010 /DO NOT PRINT
970 1236 4772 JMS XC8CRLF

```

```

971 1237 4771' JMS XC8PNT
972 1240 1320 EPRMES /PRINT THE ERROR MESSAGE
973 1241 4771' JMS XC8PNT
974 1242 1330 MESPC /PRINT THE PC STATEMENT
975 1243 1316 TAD REALPC
976 1244 4770' JMS XC8OCTA /CONVERT 4 DIGIT PC TO ASCII
977 1245 4771' JMS XC8PNT
978 1246 1333 MESAC /PRINT THE AC MESS
979 1247 1345 TAD ACSAVE
980 1250 4770' JMS XC8OCTA
981 1251 4771' JMS XC8PNT
982 1252 1336 MESMQ /PRINT MQ
983 1253 1346 TAD MQSAVE
984 1254 4770' JMS XC8OCTA
985 1255 4771' JMS XC8PNT
986 1256 1341 MESFL /PRINT FL
987 1257 1347 TAD FLSAVE
988 1260 4770' JMS XC8OCTA
989 1261 4772' JMS XC8CRLF
990 1262 4775' C8D010, JMS C8GET /GET ALL REGISTERS,
991 1263 4774' JMS XC8SW /CHECK SWITCH REGISTER
992 1264 7610 SKP CLA /SKIP IF BIT 0 SET
993 1265 5300 JMP C8BY2 /LEAVE
994 1266 4767' JMS XC8INQ /GO TO THE INQUIRE ROUTINE
995 1267 5300 JMP C8BY2 /LEAVE
996 1270 4775' NTCLAS, JMS C8GET /GET ALL REGISTERS,
997 1271 4774' JMS XC8SW /CHECK PSEUDO SWITCH REGISTER
998 /CHECK THE C8SWIT REGISTER
999 1272 7610 SKP CLA /SKIP IF HALT
1000 1273 5607 JMP I XC8ERR /NO HALT CONTINUE
1001 1274 1366 TAD (7402 /CODE FOR HLT
1002 1275 3744 DCA I PCSAVE /PUT IT IN CALL LOC.
1003 1276 4775' JMS C8GET
1004 1277 5744 JMP I PCSAVE /EXIT TO CALL AND HALT
1005 1300 4775' C8BY2, JMS C8GET /GET THE REGISTERS
1006 1301 5607 JMP I XC8ERR
1007 /
1008 1302 7402 ROUINS, HLT /PUT INSTRUCTION TO EXECUTE HEHE!!!!
1009 1303 7000 NOP
1010 1304 3317 DCA MYAC /SAVE AC.
1011 1305 6201 CDF 0
1012 1306 1020 TAD SWR
1013 1307 3765 DCA I (SWR) /MOVE SWITCHES DOWN.
1014 1310 1776 TAD I (CLASIK)
1015 1311 3315 DCA CLRTRN
1016 1312 1317 TAD MYAC
1017 1313 6202 CIF 0
1018 1314 5715 JMP I CLRTRN /RETURN TO FIELD 0.
1019 /
1020 1315 0000 CLRTRN, 0
1021 1316 0000 REALPC, 0
1022 1317 0000 MYAC, 0
1023 /
1024 1320 0410 ERRMES, TEXT "DHRKAE FAILED "
1321 2213

```

```

1322 0105
1323 4040
1324 0601
1325 1114
1326 0504
1327 4000
1025 1330 4040 MESPC, TEXT " PC;"
1331 2003 /
1332 7200
1026 1333 4040 MESAC, TEXT " AC;"
1334 0103 /
1335 7200
1027 1336 4040 MESMQ, TEXT " MQ;"
1337 1521 /
1340 7200
1028 1341 4040 MESFL, TEXT " FL;"
1342 0614 /
1343 7200
1029 1344 7777 PCSAVE, 7777
1030 1345 7777 ACSAVE, 7777
1031 1346 7777 MQSAVE, 7777
1032 1347 7777 FLSAVE, 7777
1033 /
1034 1365 0020
1035 1366 7402
1036 1367 0635
1037 1370 1000
1038 1371 0303
1039 1372 1023
1040 1373 0000
1041 1374 0262
1042 1375 0624
1043 1376 5732
1044 1377 0400 0000

```

FIELD 0

0000	00000000	00000000	11101111	11111111	11000000	00000000	00000000	00000000
0100	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
0200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0300	11111111	11111111	11111111	11111111	11111111	10000001	11111111	11111111
0400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1000	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1100	11111111	11111111	11111111	11111111	11111111	11100000	00111111	11111111
1200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1300	11111111	11111111	11111111	11111111	11111111	00000000	00000111	11111111

1400
1500
1600
1700

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

```

1045 /
1046 /ALL KNOWN HLTS.
1047 /
1048 /
1049 1400 6031 ERHLT1 /UNDEFINED INTERRUPT
1050 1401 6142 ERHLT2 /SKIP TRAP FOR DCLR
1051 1402 6115 ERHLT3 /SKIP TRAP FOR DLAG
1052 1403 6104 ERHLT4 /SKIP TRAP FOR DLCA
1053 1404 6070 ERHLT5 /SKIP TRAP FOR DRST
1054 1405 6126 ERHLT6 /SKIP TRAP FOR DLDC
1055 1406 6151 ERHLT7 /SKIP TRAP FOR DMAN
1056 1407 6726 ERHLT9 /RECOVERABLE ERROR HALT
1057 1410 5716 ENDHLT /END OF TEST HALT
1058 1411 7014 STPHLT /HALT FROM SWR4=1
1059 1412 7126 CHNHLT /IOT CHANGE HALT
1060 /
1061 6741 DSKP=6741 /SKIP ON TRANSFER DONE OR ERPOR
1062 6742 DCLR=6742 /CLEAR DISK CONTROL LOGIC
1063 6743 DLAG=6743 /LOAD ADDRESS AND GO
1064 6744 DLCA=6744 /LOAD CURRENT ADDRESS
1065 6745 DRST=6745 /READ STATUS REGISTER
1066 6746 DLDC=6746 /LOAD COMMAND REGISTER
1067 6747 DMAN=6747 /LOAD MAINTENANCE
1068 /
1069 4405 SET=JMS I XSET
1070 4424 TICK=JMS I XTICK
1071 4425 AERRO=JMS I XAERRO
1072 4423 APT0A=JMS I XAPT0A
1073 4404 LAS=JMS I XLAS
1074 4406 CLASIC=JMS I XCLAS
    
```

```

1075 5426 IOTCHN=JMP I XCHANG
1076 5430 MANUAL=JMP I MANTST
1077 4444 ENMAN1=JMS I XMAIN1
1078 4445 ENMAN2=JMS I XMAIN2
1079 4435 NERROR=JMS I XNERRO
1080 4436 ERROR=JMS I XERRO
1081 4437 IONWAT=JMS I XIONWT
1082 4440 ACCMP1=JMS I XCOMP1
1083 4441 ACCMP2=JMS I XCOMP2
1084 4442 RDSTAT=JMS I XRDST
1085 4443 RDCMD=JMS I XRDCM
1086 4446 RDADD=JMS I XRDAD
1087 4427 LDBUF=JMS I XUPPER
1088 4452 LDADD=JMS I XLDAD
1089 4447 DSKSKP=JMS I XSDKP
1090 4450 LDCMD=JMS I XLDCM
1091 4451 LDCUR=JMS I XLDCA
1092 4453 CLRALL=JMS I XCLDR
1093 4454 RDCRC=JMS I XRDCR
1094 4455 LDMAN=JMS I XLDMN
1095 4456 RDBUF=JMS I XRDBF
1096 4457 PRNTER=JMS I XPRN
1097 4460 OCTEL=JMS I XFROCT
1098 4461 TWOC=JMS I XTOCT
1099 4434 TYPE=JMS I XPRINT
1100 4462 CRLF=JMS I XCRLF
1101 /
1102 0000 *0
1103 /
1104 0000 0305 305 /REV E
1105 0001 5001 5001
1106 0002 0002 0002
1107 0003 0003 0003
1108 /
1109 0004 5764 XLAS, MYLAS
1110 0005 7040 XSET, SETUP
1111 0006 5732 XCLAS, CLASIK
1112 0007 0000 SAVEND, 0
1113 /
1114 0010 *10
1115 /
1116 0010 0000 AUTO10, 0
1117 /
1118 0020 *20
1119 /
1120 0020 0000 SWR, 0
1121 0021 4000 OP1, 4000
1122 0022 0000 OP2, 0
1123 /
1124 0023 7200 XAPT0A, APT0
1125 0024 7220 XTICK,KTICK
1126 0025 7241 XAERRO,WAFRRO
1127 0026 7101 XCHANG, CHANG
1128 0027 7055 XUPPER, UPPER
1129 0030 5723 MANTST, MANUL
    
```

1130	0031	6011	INTRQ,	INTADD
1131	0032	5670	XEND,	ENDTST
1132	0033	0210	THSFLD,	PRSFLD
1133	0034	6463	XPRINT,	PRINT
1134	0035	7000	XNERRO,	NFRRO
1135	0036	6600	XERRO,	ERRO
1136	0037	6000	XIONWT,	IONWT
1137	0040	6033	XCOMP1,	COMP1
1138	0041	6044	XCOMP2,	COMP2
1139	0042	6063	XRDST,	RDST
1140	0043	6240	XRDCM,	RDCM
1141	0044	6256	XMAIN1,	MAIN1
1142	0045	6760	XMAIN2,	MAIN2
1143	0046	6200	XRDAD,	RDAD
1144	0047	6130	XSDKP,	SDKP
1145	0050	6117	XLDCH,	LDCH
1146	0051	6075	XLDCA,	LDCA
1147	0052	6106	XLDAD,	LDAD
1148	0053	6135	XCLDR,	CLDR
1149	0054	6263	XRDCR,	RDCR
1150	0055	6144	XLDHM,	LDHM
1151	0056	6226	XRDBF,	RDBF
1152	0057	6423	XPRN,	PRN
1153	0060	6400	XFROCT,	FROCT
1154	0061	6314	XTOCT,	TOCT
1155	0062	6331	XCRLF,	UPONE
1156	0063	0260	K0260,	0260
1157	0064	0000	K0000,	0000
1158	0065	0001	K0001,	0001
1159	0066	0002	K0002,	0002
1160	0067	0003	K0003,	0003
1161	0070	0004	K0004,	0004
1162	0071	0006	K0006,	0006
1163	0072	0007	K0007,	0007
1164	0073	0010	K0010,	0010
1165	0074	0020	K0020,	0020
1166	0075	0037	K0037,	0037
1167	0076	0040	K0040,	0040
1168	0077	0100	K0100,	0100
1169	0100	0200	K0200,	0200
1170	0101	0207	K0207,	0207
1171	0102	0400	K0400,	0400
1172	0103	1000	K1000,	1000
1173	0104	2000	K2000,	2000
1174	0105	3777	K3777,	3777
1175	0106	4000	K4000,	4000
1176	0107	7000	K7000,	7000
1177	0110	7776	K7776,	7776
1178	0111	7775	K7775,	7775
1179	0112	7700	K7700,	7700
1180	0113	7740	K7740,	7740
1181	0114	0070	K0070,	0070
1182	0115	0077	K0077,	0077
1183	0116	0377	K0377,	0377
1184	0117	0177	K0177,	0177

1185	0120	2525	K2525,	2525
1186	0121	5252	K5252,	5252
1187	0122	3737	K3737,	3737
1188	0123	7717	K7717,	7717
1189	0124	4100	K4100,	4100
1190	0125	7600	K7600,	7600
1191	0126	5000	K5000,	5000
1192	0127	5777	K5777,	5777
1193	0130	7774	K7774,	7774
1194	0131	7771	K7771,	7771
1195	0132	7777	K7777,	7777
1196			/	
1197			DECTMAL	
1198			/	
1199	0133	7774	M4,	-4
1200	0134	7773	M5,	-5
1201	0135	7771	M7,	-7
1202	0136	7764	M12,	-12
1203	0137	7760	M16,	-16
1204	0140	7720	M40,	-40
1205	0141	7600	M120,	-120
1206	0142	7501	M191,	-191
1207	0143	7401	M255,	-255
1208	0144	7324	M300,	-300
1209			/	
1210			OCTAL	
1211			/	
1212	0145	0017	K0017,	0017
1213	0146	0215	K0215,	0215
1214	0147	0212	K0212,	0212
1215	0150	6201	KCDF,	CDF
1216	0151	6244	KRMF,	RMF
1217	0152	3741	M785,	-TST85 -1
1218	0153	0000	REG1,	0
1219	0154	0000	REG2,	0
1220	0155	0000	SBCNT1,	0
1221	0156	0000	TCNTR1,	0
1222	0157	0000	TCNTR2,	0
1223	0160	0000	TCNTR3,	0
1224	0161	0000	TCNTR4,	0
1225			/	
1226	0162	0000	GDREG1,	0
1227	0163	0000	GDREG2,	0
1228	0164	0000	CRREG1,	0
1229	0165	0000	CRREG2,	0
1230	0166	0000	STREG,	0
1231	0167	0000	DBREG,	0
1232	0170	0000	CMREG,	0
1233	0171	0000	DAREG,	0
1234	0172	0000	ADREG,	0
1235	0173	0000	DTREG,	0
1236	0174	0000	ACREG,	0
1237	0175	0000	HOMEA,	0
1238	0176	0000	FLDMAX,	0
1239	0177	2200	STCON,	2200

```

1240 /
1241 0200 *200
1242 /
1243 /SETUP POINTERS FOR AMOUNT OF EXTENDED
1244 /BANKS OF MEMORY, INTERRUPT SERVICE, CURRENT
1245 /FIELD, AND TESTS FOR CLASSIC PACKAGE OR APT SYSTEM,
1246 /IF CONSOLE IS ACTIVE APT FUNCTIONS OR NOP.
1247 /
1248 /
1249 0200 5203 BGN, JMP .+3 /RUN DISKLESS.
1250 0201 5430 MANUAL /TO MANUAL SCOPE TEST
1251 0202 5426 IOTCHN /TO IOT CHANGE ROUTINE
1252 0203 6224 RIF
1253 0204 3175 DCA HOMEMA
1254 0205 1175 TAD HOMEMA
1255 0206 1150 TAD KCDF
1256 0207 3210 DCA PRSFLD /MAKE HOMEDF
1257 0210 7402 PRSFLD, HLT /MAKE DF=IF
1258 0211 4405 SET /SETUP FIELD 0
1259 0212 1176 TAD FLDMAX /GET FIRST PASS POINTER
1260 0213 7640 SEA CLA /IS IT FIRST PASS
1261 0214 5217 JMP .+3 /NO, MUST BE A RESTART
1262 0215 1532 TAD I K7777 /GET LAST LOCATION
1263 0216 3007 DCA SAVEND /SAVE IT FOR A RESTORE
1264 0217 4423 APTBA /NOP CONSOLE IF ON APTBA
1265 0220 4406 CLASSIC /CHECK FOR CONSOLE CLASSIC
1266 0221 4431 CRSMIT /CHECK FOR SWITCH SR=.
1267 0222 7000 NOP
1268 0223 4404 LAS
1269 0224 0072 AND K0007 /MASK 9-11
1270 0225 7040 CMA
1271 0226 3176 DCA FLDMAX /SAVE AMOUNT OF EXTENDED MEMORY
1272 0227 1022 TAD 22
1273 0230 0102 AND K0400
1274 0231 7640 SEA CLA /ON CLASSIC.
1275 0232 6007 6007 /YES, THEN CLEAR ALL FLAGS.
1276 /
1277 /VERIFY THAT THE DISK MOTOR IS OFF. THE
1278 /STATUS REGISTER SHOULD ONLY CONTAIN NOT READY TO
1279 /SEEK, READ, OR WRITE AND NOT DISK FILE READY.
1280 /INITIALIZE SHOULD HAVE CLEARED ALL OTHER BITS
1281 /
1282 /
1283 0233 3153 DCA REG1
1284 0234 1177 TAD STCON /GET EXPECTED STATUS
1285 0235 3163 DCA GDREG2 /SETUP TEST HANDLER
1286 /
1287 0236 1153 TST0, TAD REG1 /GET AC VALUE
1288 0237 4442 RDSTAT /READ STATUS REGISTER
1289 0240 4440 ACCMPI /CHECK RESULTS
1290 0241 4435 NERROR /AC O.K. 4096 LOOPS
1291 0242 4436 ERROR /ERROR, "INITIALIZE" CLEAR STATUS
1292 /REGISTER FAILED.
1293 0243 0236 TST0 /SCOPE LOOP POINTER
1294 0244 5000 5000 /TEXT POINTER
    
```

```

1295 /
1296 /VERIFY THAT SKIP CONDITIONS WERE CLEARED
1297 /BY "INITIALIZE" ON START OF TEST.
1298 /
1299 0245 4447 TST1, DSKSKP /ISSUE "DSKP" IOT
1300 0246 4435 NERROR /DSKP O.K. 4096 LOOPS
1301 0247 4436 ERROR /ERROR, "INITIALIZE" CLEAR
1302 /SKIP CONDITIONS
1303 0250 0245 TST1 /SCOPE LOOP POINTER
1304 0251 0006 0006 /TEXT POINTER
1305 /
1306 /VERIFY THAT INTERRUPT REQUESTS WERE
1307 /CLEARED BY "INITIALIZE" AT START OF TEST
1308 /
1309 0252 4437 TST2, IONWAT /GO WAIT FOR INT.
1310 0253 4435 NERROR /INT. O.K. 4096 LOOPS
1311 0254 4436 ERROR /ERROR, "INITIALIZE" CLEAR
1312 /INT. CONDITION
1313 0255 0252 TST2 /SCOPE LOOP POINTER
1314 0256 0007 0007 /TEXT POINTER
1315 /
1316 /VERIFY THAT COMMAND REGISTER WAS CLEARED
1317 /BY "INITIALIZE" AT START OF TEST. READ COMMAND
1318 /REGISTER WITH "DMAN" (MAINTENANCE IOT)
1319 /
1320 0257 3163 TST3, DCA GDREG2 /SETUP COMPARE REGISTER
1321 0260 4443 RDCMD /READ COMMAND REGISTER
1322 0261 7650 SNA CLA /AC SHOULD BE 0
1323 0262 4435 NERROR /AC O.K. 4096 LOOPS
1324 0263 4436 ERROR /ERROR, "INITIALIZE" CLEAR
1325 /COMMAND REGISTER
1326 0264 0260 TST3 /SCOPE LOOP POINTER
1327 0265 4201 4201 /TEXT POINTER
1328 /
1329 /VERIFY THAT ALL DRIVES ON CONTROL ARE OFF.
1330 /THE STATUS SHOULD BE 2200 WHEN DRIVES ARE SELECTED.
1331 /
1332 0266 1177 TST4, TAD STCON /EXPECTED STATUS
1333 0267 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1334 0270 7301 CLA CLL IAC /ENABLE CLEAR CONTROL
1335 0271 4453 CLRALL /CLR "CLR ALL"
1336 0272 1153 TAD REG1 /GET AC VALUE
1337 0273 4450 LDCMD /LOAD COMMAND
1338 0274 4442 RDSTAT /READ STATUS
1339 0275 4440 ACCMPI /CHECK RESULTS
1340 0276 4435 NERROR /O.K. 4096 LOOPS
1341 0277 4436 ERROR /ERROR, STATUS
1342 0300 0266 TST4 /SCOPE LOOP POINTER
1343 0301 5000 5000 /TEXT POINTER
1344 /
1345 /VERIFY THAT IOT "DSKP" DOES NOT AFFECT
1346 /AC REGISTER. TRY ALL COMBINATIONS IN AC.
1347 /
1348 0302 1153 TS15, TAD REG1 /GET AC VALUE
1349 0303 3163 DCA GDREG2 /SETUP COMPARE REGISTER
    
```

```

1350 0304 1153 TAD REG1
1351 0305 4447 DSKSKP /ISSUE "DSKP" IOT
1352 0306 7000 NOP
1353 0307 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1354 0310 4435 NERROR /AC O.K, 4096 LOOPS
1355 0311 4436 ERROR /ERROR, "DSKP" CHANGED AC.
1356 0312 0302 TST5 /SCOPE LOOP POINTER
1357 0313 4010 /TEXT POINTER
1358
1359 /
1360 /VERIFY THAT "DLCA" LOAD CURRENT ADDRESS
1361 /REGISTER CLEARS THE AC, TRY ALL COMBINATIONS IN AC
1362 /
1362 0314 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1363 0315 1153 TST6, TAD REG1 /GET AC VALUE
1364 0316 4451 LDCUR /LOAD CURRENT ADDRESS "DLCA"
1365 0317 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1366 0320 4435 NERROR /AC O.K, 4096 LOOPS
1367 0321 4436 ERROR /ERROR, DLCA CLEAR AC
1368 0322 0315 TST6 /SCOPE LOOP POINTER
1369 0323 4010 /TEXT POINTER
1370
1371 /
1372 /VERIFY THAT "DLDC" LOAD COMMAND REGISTER
1373 /CLEARS THE AC, TRY ALL COMBINATIONS IN AC.
1374 /
1374 0324 1153 TST7, TAD REG1 /GET AC VALUE
1375 0325 4450 LDCMD /"DLDC" LOAD COMMAND REGISTER
1376 0326 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1377 0327 4435 NERROR /AC O.K, 4096 LOOPS
1378 0330 4436 ERROR /ERROR, DLDC CLEAR AC
1379 0331 0324 TST7 /SCOPE LOOP POINTER
1380 0332 4010 /TEXT POINTER
1381
1382 /
1383 /VERIFY THAT "DLAG" CLEARS THE AC REGISTER.
1384 /TRY ALL COMBINATIONS IN AC.
1385 /
1385 0333 7301 TST8, CLA CLL IAC
1386 0334 4453 CLRALL /CLEAR CONTROL
1387 0335 1154 TAD REG2 /GET DATA
1388 0336 4452 LDADD /LOAD DISK ADDRESS
1389 0337 4440 ACCMP1 /CHECK RESULTS
1390 0340 4435 NERROR /O.K, 4096 LOOPS
1391 0341 4436 ERROR /ERROR, DLAG, CLEAR AC
1392 0342 0333 TST8 /SCOPE LOOP POINTER
1393 0343 4010 /TEXT POINTER
1394
1395 /
1396 /VERIFY THAT "DCLR" CLEARS THE AC.
1397 /TRY ALL COMBINATIONS IN AC
1398 /
1398 0344 1153 TST9, TAD REG1
1399 0345 4453 CLRALL /DCLR "CLR ALL"
1400 0346 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1401 0347 4435 NERROR /AC O.K, 4096 LOOPS
1402 0350 4436 ERROR /ERROR, DCLR CLEAR AC
1403 0351 0344 TST9 /SCOPE LOOP POINTER
1404 0352 4010 /TEXT POINTER

```

```

1405
1406 /
1407 /VERIFY THAT THE COMMAND REGISTER CAN BE LOADED
1408 /AND SHIFTED INTO THE LOWER DATA BUFFER WITH
1409 /THE MAINTENANCE IOT. USE DATA PATTERN 0000 + 7777.
1410 /
1410 0353 7301 TST10, CLA CLL IAC
1411 0354 4453 CLRALL /DCLR "CLR ALL"
1412 0355 1153 TAD REG1
1413 0356 7110 CLL RAR
1414 0357 7630 SZL CLA /DATA 7777 IF LINK IS SET
1415 0360 7240 CLA CMA
1416 0361 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1417 0362 1163 TAD GDREG2
1418 0363 7040 CMA
1419 0364 4450 LDCMD /SET COMMAND TO OPOSITE
1420 0365 1163 TAD GDREG2
1421 0366 4450 LDCMD /SET COMMAND TO VALUE EXPECTED
1422 0367 4443 RDCMD /READ COMMAND REGISTER
1423 0370 4440 ACCMP1 /CHECK RESULTS
1424 0371 4435 NERROR /O.K, 4096 LOOPS
1425 0372 4436 ERROR /ERROR, COMMAND REGISTER
1426 0373 0353 TST10 /SCOPE LOOP POINTER
1427 0374 4201 /TEXT POINTER
1428
1429 /
1430 /VERIFY THAT THE COMMAND REGISTER CAN BE LOADED
1431 /AND SHIFTED INTO THE LOWER DATA BUFFER WITH
1432 /THE MAINTENANCE IOT, USE DATA PATTERN 2525 + 5252
1433 /
1433 0375 7301 TST11, CLA CLL IAC
1434 0376 4453 CLRALL /DCLR "CLR ALL"
1435 0377 1153 TAD REG1
1436 0400 7110 CLL RAR
1437 0401 7630 SZL CLA /DATA 5252 IF LINK IS SET
1438 0402 1120 TAD K2525
1439 0403 1120 TAD K2525
1440 0404 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1441 0405 1163 TAD GDREG2
1442 0406 7040 CMA
1443 0407 4450 LDCMD /SET COMMAND TO OPOSITE
1444 0410 1163 TAD GDREG2
1445 0411 4450 LDCMD /SET COMMAND TO VALUE EXPECTED
1446 0412 4443 RDCMD /READ COMMAND REGISTER
1447 0413 4440 ACCMP1 /CHECK RESULTS
1448 0414 4435 NERROR /O.K, 4096 LOOPS
1449 0415 4436 ERROR /ERROR, COMMAND REGISTER
1450 0416 0375 TST11 /SCOPE LOOP POINTER
1451 0417 4201 /TEXT POINTER
1452
1453 /
1454 /VERIFY THAT THE COMMAND REGISTER
1455 /BE LOADED AND THEN SHIFTED INTO THE LOWER
1456 /DATA BUFFER, TRY ALL COMBINATIONS.
1457 /
1457 0420 1154 TST12, TAD REG2 /GET AC VALUE
1458 0421 4450 LDCMD /LOAD COMMAND REGISTER
1459 0422 1153 TAD REG1

```

```

1460 0423 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1461 0424 1153 TAD REG1
1462 0425 4450 LDCMD /LOAD COMMAND REGISTER
1463 0426 4443 RDCMD /READ COMMAND REGISTER
1464 0427 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1465 0430 4435 NERROR /AC O.K., 4096 LOOPS
1466 0431 4436 ERROR /ERROR, LOAD OR READ
1467 /COMMAND REGISTER
1468 0432 0420 TST12 /SCOPE LOOP POINTER
1469 0433 4201 /TEXT POINTER
1470 /
1471 /VERIFY THAT DCLR DOES NOT CLEAR COMMAND
1472 /REGISTER WHEN AC10=0 AND AC11=0
1473 /
1474 0434 1153 TST13, TAD REG1
1475 0435 4450 LDCMD /LOAD COMMAND REGISTER
1476 0436 1154 TAD REG2
1477 0437 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1478 0440 1154 TAD REG2
1479 0441 4450 LDCMD /LOAD COMMAND REGISTER
1480 0442 4453 CLRALL /DCLR "CLR ALL"
1481 0443 4443 RDCMD /READ COMMAND REGISTER
1482 0444 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1483 0445 4435 NERROR /AC O.K., 4096 LOOPS
1484 0446 4436 ERROR /ERROR, DCLR CLEAR COMMAND
1485 /REGISTER WHEN AC10=0 + AC11=0
1486 0447 0434 TST13 /SCOPE LOOP POINTER
1487 0450 4201
1488 /
1489 /VERIFY THAT DCLR DOES CLEAR COMMAND
1490 /REGISTER WHEN AC10=0 AND AC11=1
1491 /
1492 0451 3163 TST14, DCA GDREG2 /SETUP COMPARE REGISTER
1493 0452 1153 TAD REG1
1494 0453 4450 LDCMD /LOAD COMMAND REGISTER
1495 0454 7301 CLA CLL IAC /ENABLE CLEAR CONTROL
1496 0455 4453 CLRALL /DCLR "CLR ALL"
1497 0456 4443 RDCMD /READ COMMAND REGISTER
1498 0457 7650 SNA CLA /CHECK AC, SHOULD EQUAL 0
1499 0460 4435 NERROR /AC O.K., LOOP 4096
1500 0461 4436 ERROR /ERROR, DCLR CLEAR COMMAND
1501 /REGISTER WHEN AC10=0+AC11=1
1502 0462 0452 TST14 /SCOPE LOOP POINTER
1503 0463 4201 /TEXT POINTER
1504 /
1505 /VERIFY THAT DLAG DOES LOAD THE SURFACE AND SECTOR
1506 /REGISTER, USE DATA PATTERN 00 + 37.
1507 /
1508 0464 7301 TST15, CLA CLL IAC /ENABLE CLEAR CONTROL
1509 0465 4453 CLRALL /CLEAR CONTROL
1510 0466 1136 TAD M12
1511 0467 3156 DCA TCNTR1 /SETUP 12 BIT SHIFT COUNTER
1512 0470 1153 TAD REG1
1513 0471 7110 CLL RAR
1514 0472 7630 SZL CLA /DATA 00 + 37??

```

```

1515 0473 7340 CLA CLL CMA /37?
1516 0474 4452 LDADD /LOAD DISK ADDRESS "DLAG"
1517 0475 1171 TAD DAREG
1518 0476 0075 AND K0037 /MASK EXPECTED VALUE
1519 0477 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1520 0500 4445 ENMAN2 /ENTER MAINTENANCE
1521 0501 1100 TAD K0200 /ENABLE SHIFT LOWER BUFFER
1522 0502 4455 LDMAN /LOAD MAINTENANCE
1523 0503 2156 ISZ TCNTR1 /COUNT 12 SHIFTS
1524 0504 5302 JMP ,-2
1525 0505 7300 CLA CLL
1526 0506 1074 TAD K0020 /ENABLE READ LOWER BUFFER
1527 0507 4455 LDMAN /LOAD MAINTENANCE
1528 0510 3171 DCA DAREG /SAVE VALUE FOUND
1529 0511 1171 TAD DAREG
1530 0512 4440 ACCMP1 /CHECK RESULTS
1531 0513 4435 NERROR /O.K., 4096 LOOPS
1532 0514 4436 ERROR /ERROR, SURFACE AND SECTOR SHIFT
1533 0515 0464 TST15 /SCOPE LOOP POINTER
1534 0516 4102 /TEXT POINTER
1535 /
1536 /VERIFY THAT DLAG LOADS THE SURFACE AND
1537 /SECTOR REGISTER, USE DATA PATTERN ALL
1538 /COMBINATIONS.
1539 /
1540 0517 7301 TST16, CLA CLL IAC /ENABLE CLEAR CONTROL
1541 0520 4453 CLRALL /CLEAR CONTROL
1542 0521 1136 TAD M12
1543 0522 3156 DCA TCNTR1 /SETUP 12 BIT SHIFT COUNTER
1544 0523 1153 TAD REG1
1545 0524 0075 AND K0037 /MASK EXPECTED VALUE
1546 0525 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1547 0526 1153 TAD REG1
1548 0527 4452 LDADD /LOAD DISK ADDRESS "DLAG"
1549 0530 4445 ENMAN2 /ENTER MAINTENANCE
1550 0531 1100 TAD K0200 /ENABLE SHIFT LOWER BUFFER
1551 0532 4455 LDMAN /LOAD MAINTENANCE
1552 0533 2156 ISZ TCNTR1 /COUNT 12 SHIFTS
1553 0534 5332 JMP ,-2
1554 0535 7300 CLA CLL
1555 0536 1074 TAD K0020 /ENABLE READ LOWER BUFFER
1556 0537 4455 LDMAN /LOAD MAINTENANCE
1557 0540 3171 DCA DAREG /SAVE VALUE FOUND
1558 0541 1171 TAD DAREG
1559 0542 4440 ACCMP1 /CHECK RESULTS
1560 0543 4435 NERROR /O.K., 4096 LOOPS
1561 0544 4436 ERROR /ERROR, SURFACE AND SECTOR SHIFT
1562 0545 0517 TST16 /SCOPE LOOP POINTER
1563 0546 4102 /TEXT POINTER
1564 /
1565 /VERIFY THAT THE DISK ADDRESS REGISTER CAN BE LOADED
1566 /AND SHIFTED TO LOWER DATA BUFFER WITH THE MAINTENANCE
1567 /I/O, USE DATA PATTERN 0000 + 7777
1568 /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1569 /REGISTER, SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER.

```

```

1570
1571 0547 7301 / TST17, CLA CLL IAC
1572 0550 4453 CLRALL /DCLR "CLR ALL"
1573 0551 1153 TAD REG1
1574 0552 7110 CLL RAR
1575 0553 7630 SZL CLA /USE DATA 7777 IF LINK IS SET
1576 0554 7240 CLA CMA
1577 0555 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1578 0556 1163 TAD GDREG2
1579 0557 7040 CMA
1580 0560 4452 LDADD /SET DISK ADDRESS TO OPOSITF
1581 0561 1163 TAD GDREG2
1582 0562 4452 LDADD /SET DISK ADDRESS TO EXPECTED
1583 0563 4446 RDADD /READ DISK ADDRESS
1584 0564 4440 ACCMP1 /CHECK RESULTS
1585 0565 4435 NERROR /O.K. 4096 LOOPS
1586 0566 4436 ERROR /ERROR, DISK ADDRESS REGISTER
1587 0567 0547 TST17 /SCOPE LOOP POINTER
1588 0570 4102 /TEXT POINTER
1589
1590 /
1591 /VERIFY THAT THE DISK ADDRESS REGISTER CAN BE LOADED
1592 /AND SHIFTED TO LOWER DATA BUFFER WITH THE MAINTENANCE
1593 /IOT. USE DATA PATTERN 2525 + 5252.
1594 /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1595 /REGISTER. SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER.
1596
1596 0571 7301 / TST18, CLA CLL IAC
1597 0572 4453 CLRALL /DCLR "CLR ALL"
1598 0573 1153 TAD REG1
1599 0574 7110 CLL RAR
1600 0575 7630 SZL CLA /USE DATA 5252 IF LINK IS SET
1601 0576 1120 TAD K2525
1602 0577 1120 TAD K2525
1603 0600 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1604 0601 1163 TAD GDREG2
1605 0602 7040 CMA
1606 0603 4452 LDADD /SET DISK ADDRESS TO OPOSITE
1607 0604 1163 TAD GDREG2
1608 0605 4452 LDADD /SET DISK ADDRESS TO EXPECTED
1609 0606 4446 RDADD /READ DISK ADDRESS
1610 0607 4440 ACCMP1 /CHECK RESULTS
1611 0610 4435 NERROR /O.K. 4096 LOOPS
1612 0611 4436 ERROR /ERROR, DISK ADDRESS REGISTER
1613 0612 0571 TST18 /SCOPE LOOP POINTER
1614 0613 4102 /TEXT POINTER
1615
1616 /
1617 /VERIFY THAT THE DISK ADDRESS REGISTER
1618 /CAN BE LOADED AND SHIFTED INTO THE LOWER
1619 /DATA BUFFER. TRY ALL COMBINATIONS IN AC
1620 /SHIFT THE SURFACE AND SECTOR FROM THE SURFACE AND SECTOR
1621 /REGISTER. SHIFT THE LOWER CYLINDER BITS FROM THE CRC REGISTER.
1622
1621 0614 1153 / TST19, TAD REG1 /GET AC VALUE
1622 0615 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1624 0616 1153 TAD REG1

```

```

1625 0617 4452 LDADD /LOAD DISK ADDRESS REGISTER
1626 0620 4446 RDADD /READ DISK ADDRESS REGISTER
1627 0621 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1628 0622 4435 NERROR /AC O.K., LOOP 4096 TIMES
1629 0623 4436 ERROR /ERROR, LOAD OR READ DISK
1630
1631 0624 0614 TST19 /ADDRESS REGISTER
1632 0625 4102 /SCOPE LOOP POINTER
1633 /TEXT POINTER
1634 /
1635 /VERIFY THAT DCLR DOES NOT AFFECT THE SURFACE
1636 /AND SECTOR WHEN AC10=0 + AC11=0
1637
1637 0626 1153 / TST20, TAD REG1 /GET AC VALUE
1638 0627 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1639 0630 1154 TAD REG2 /AC VALUE, COMPLIMENT OF REG1
1640 0631 4452 LDADD /LOAD DISK ADDRESS
1641 0632 1153 TAD REG1
1642 0633 4452 LDADD /LOAD DISK ADDRESS
1643 0634 4453 CLRALL /DCLR "CLR ALL"
1644 0635 4446 RDADD /READ DISK ADDRESS
1645 0636 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1646 0637 4435 NERROR /AC O.K., LOOP 4096 TIMES
1647 0640 4436 ERROR /ERROR, LOAD OR READ DISK
1648 /ADDRESS OR DCLR CLEAR
1649 0641 0626 TST20 /SCOPE LOOP POINTER
1650 0642 4102 /TEXT POINTER
1651 /
1652 /VERIFY THAT "DCLR" DOESN'T CLEAR SURFACE AND SECTOR
1653 /REGISTER WHEN A10=0 + A11=1
1654 /
1655 0643 1153 / TST21, TAD REG1 /GET AC VALUE
1656 0644 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1657 0645 1153 TAD REG1
1658 0646 4452 LDADD /LOAD DISK ADDRESS
1659 0647 7301 CLA CLL IAC /ENABLE "CLR ALL" BIT
1660 0650 4453 CLRALL /DCLR "CLR ALL"
1661 0651 4446 RDADD /READ DISK ADDRESS
1662 0652 4440 ACCMP1 /CHECK RESULTS
1663 0653 4435 NERROR /AC O.K., LOOP 4096
1664 0654 4436 ERROR /ERROR, LOAD, READ, OR CLEAR
1665 /DISK ADDRESS
1666 0655 0643 TST21 /SCOPE LOOP POINTER
1667 0656 4102 /TEXT POINTER
1668 /
1669 /VERIFY THAT THE CRC CAN BE LOADED BY "DLAC"
1670 /AND "DLDC". USE DATA PATTERN 0000 + 7777.
1671 /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1672 /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1673 /BY THE "DLAC" IOT.
1674 /
1675 0657 7301 / TST22, CLA CLL IAC
1676 0660 4453 CLRALL /DCLR
1677 0661 1153 TAD REG1
1678 0662 7110 CLL RAR
1679 0663 7630 SZL CLA /USE DATA 7777 IF LINK IS SET

```

```

1680 0664 7240      CLA CMA
1681 0665 0113      AND K7740
1682 0666 3163      DCA GDREG2      /SETUP COMPARE # 1
1683 0667 7004      RAL              /LINK FOR EXTENDED BIT
1684 0670 3162      DCA GDREG1      /SETUP COMPARE REGISTER
1685 0671 1162      TAD GDREG1      /GET DATA
1686 0672 4450      LDCMD           /LOAD CRC
1687 0673 1163      TAD GDREG2
1688 0674 4452      LDADD          /LOAD CRC
1689 0675 4454      RDCRC         /READ CRC
1690 0676 4441      ACCMP2        /CHECK RESULTS
1691 0677 4435      NERROR        /O.K. 4096 LOOPS
1692 0700 4436      ERROR         /ERROR, CRC REGISTER
1693 0701 0657      TST22         /SCOPE LOOP POINTER
1694 0702 6004      6004         /TEXT POINTER
1695
1696 /
1697 /VERIFY THAT THE CRC CAN BE LOADED BY "DLAG"
1698 /AND "DLDC", USE DATA PATTERN 2525 + 5252.
1699 /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1700 /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1701 /BY THE "DLAG" IOT.
1702 /
1703 TST23, CLA CLL IAC
1704 0704 4453      CLRALL        /DCLR
1705 0705 1153      TAD REG1
1706 0706 7110      CLL RAR
1707 0707 7630      SZL CLA      /USE DATA 5252 IF LINK IS SET
1708 0710 1120      TAD K2525
1709 0711 1120      TAD K2525
1710 0712 0113      AND K7740
1711 0713 3163      DCA GDREG2      /SETUP COMPARE # 1
1712 0714 7004      RAL              /LINK FOR EXTENDED BIT
1713 0715 3162      DCA GDREG1      /SETUP COMPARE REGISTER
1714 0716 1162      TAD GDREG1      /GET DATA
1715 0717 4450      LDCMD           /LOAD CRC
1716 0720 1163      TAD GDREG2
1717 0721 4452      LDADD          /LOAD CRC
1718 0722 4454      RDCRC         /READ CRC
1719 0723 4441      ACCMP2        /CHECK RESULTS
1720 0724 4435      NERROR        /O.K. 4096 LOOPS
1721 0725 4436      ERROR         /ERROR, CRC REGISTER
1722 0726 0703      TST23         /SCOPE LOOP POINTER
1723 0727 6004      6004         /TEXT POINTER
1724 /
1725 /VERIFY THAT THE CRC CAN BE LOADED BY "DLAG"
1726 /AND "DLDC", USE DATA PATTERN ALL COMBINATIONS.
1727 /THIS WILL VERIFY THAT THE CRC CAN BE LOADED
1728 /BY THE EXTENDED CYLINDER BIT IN THE COMMAND REGISTER
1729 /BY THE "DLAG" IOT.
1730 /
1731 TST24, TAD REG1      /GET AC VALUE
1732 0730 1153      CLL RTL
1733 0731 7106      RTL
1734 0732 7006      RAL
1735 0733 7004      RAL
1736 0734 0113      AND K7740

```

```

1735 0735 3163      DCA GDREG2      /SETUP COMPARE REGISTER
1736 0736 7004      RAL              /LINK FOR EXTENDED BIT
1737 0737 3162      DCA GDREG1      /SETUP COMPARE REGISTER
1738 0740 1162      TAD GDREG1      /GET DATA
1739 0741 4450      LDCMD           /LOAD COMMAND REGISTER
1740 0742 1163      TAD GDREG2
1741 0743 4452      LDADD          /LOAD DISK ADDRESS
1742 0744 4454      RDCRC         /READ CRC REGISTER
1743 0745 4441      ACCMP2        /CHECK AC, COMPARE TO GDREG1 + GDREG2
1744 0746 4435      NERROR        /AC O.K. LOOP 4096
1745 0747 4436      ERROR         /ERROR, CRC REGISTER LOAD BY
1746 /DLAG OR DLDC.
1747 0750 0730      TST24         /SCOPE LOOP POINTER
1748 0751 6004      6004         /TEXT POINTER
1749 /
1750 /
1751 /VERIFY THAT DCLR DOES NOT AFFECT CRC REGISTER.
1752 /LOAD CRC WITH DLAG + DLDC.
1753 /
1754 TST25, TAD REG2
1755 0752 1154      CLL RTL
1756 0753 7106      RTL
1757 0754 7006      RAL
1758 0755 7004      RAL
1759 0756 0113      AND K7740
1760 0757 3163      DCA GDREG2      /SETUP COMPARE REGISTER
1761 0760 7004      RAL              /LINK FOR EXTENDED BIT
1762 0761 3162      DCA GDREG1      /SETUP COMPARE REGISTER
1763 0762 1162      TAD GDREG1      /GET DATA
1764 0763 4450      LDCMD           /LOAD COMMAND REGISTER
1765 0764 1163      TAD GDREG2
1766 0765 4452      LDADD          /LOAD DISK ADDRESS
1767 0766 1154      TAD REG2
1768 0767 0111      AND K7775
1769 0770 4453      CLRALL        /DON'T DO RECAL.
1770 0771 4454      RDCRC         /DCLR "CLR ALL"
1771 0772 4441      ACCMP2        /READ CRC REGISTER
1772 0773 4435      NERROR        /CHECK RESULTS, COMPARE TO GDREG1
1773 0774 4436      ERROR         /AND GDREG2
1774 /O.K. 4096 LOOPS
1775 0775 0752      ERROR         /ERROR, LOAD, READ, CLEAR CPC
1776 0776 6004      TST25         /REGISTER
1777 6004         /SCOPE LOOP POINTER
1778 /TEXT POINTER
1779 /
1780 /VERIFY THAT THE CRC REGISTER IS NOT AFFECTED BY
1781 /"DLDC", "DSKP", "DRST", "RDBUF", OR "DLCA".
1782 /USE DATA PATTERN 2525 + 5252.
1783 /
1784 TST26, CLA CLL IAC
1785 0777 7301      CLRALL        /DCLR
1786 1000 4453      TAD REG1
1787 1001 1153      TAD REG1
1788 1002 7110      CLL RAR
1789 1003 7630      SZL CLA      /USE DATA 5252 IF LINK IS SET
1790 1004 1120      TAD K2525
1791 1005 1120      TAD K2525
1792 1006 0113      AND K7740

```

```

1790 1007 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1791 1010 7004 RAL /LINK FOR EXTENDED RIT
1792 1011 3162 DCA GDREG1 /SETUP COMPARE REGISTER
1793 1012 1162 TAD GDREG1 /GET UPPER DATA
1794 1013 4450 LDCMD /LOAD COMMAND
1795 1014 1163 TAD GDREG2
1796 1015 4452 LDADD /LOAD DISK ADDRESS
1797 1016 1154 TAD REG2
1798 1017 4442 RDSTAT /READ STATUS
1799 1020 1154 TAD REG2
1800 1021 4447 DSKSKP /"DSKP"
1801 1022 7000 NOP
1802 1023 4456 RDBUF /READ BUFFER
1803 1024 1154 TAD REG2
1804 1025 4451 LDCUR /LOAD CURRENT ADDRESS
1805 1026 1154 TAD REG2
1806 1027 4450 LDCMD /LOAD COMMAND
1807 1030 1153 TAD REG1
1808 1031 4427 LDBUF /LOAD UPPER BUFFER
1809 1032 4454 RDCRC /READ CPC REGISTER
1810 1033 4441 ACCMP2 /CHECK RESULTS
1811 1034 4435 NERROR /O.K. 4096 LOOPS
1812 1035 4436 ERROP /ERROR, CPC REGISTER
1813 1036 0777 TST26 /SCOPE LOOP POINTER
1814 1037 6004 6004 /TEXT POINTER
1815
1816 /
1817 /VERIFY THAT WRITE LOCK INHIBITS LOAD ADDRESS
1818 /WHEN IT IS SET.
1819 /
1819 1040 7301 TST27, CLA CLL IAC
1820 1041 4453 CLRALL /CLEAR CONTROL
1821 1042 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1822 1043 1153 TAD REG1 /GET AC VALUE
1823 1044 4452 LDADD /LOAD DISK ADDRESS
1824 1045 1104 TAD K2000
1825 1046 4450 LDCMD /SET WRITE LOCK
1826 1047 1154 TAD REG2 /GET AC VALUE
1827 1050 4452 LDADD /TRY TO LOAD DISK ADDRESS
1828 1051 4446 RDADD /READ DISK ADDRESS
1829 1052 4440 ACCMP1 /CHECK RESULTS
1830 1053 4435 NFPPOP /O.K. 4096 LOOPS
1831 1054 4436 ERROR /ERROR LOAD DISK ADDRESS
1832 1055 1040 TST27 /SCOPE LOOP POINTER
1833 1056 4102 4102
1834
1835 /
1836 /VERIFY THAT THE DISK ADDRESS REGISTER IS NOT
1837 /AFFECTED BY "DCLR", "DLCA", "DRST", "DLDC", "DSKP"
1838 /OR "RDBUF". USE DATA PATTERN ALL COMBINATIONS.
1839 /
1839 1057 1153 TST28, TAD REG1 /GET AC VALUE
1840 1060 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1841 1061 1153 TAD REG1
1842 1062 4452 LDADD /LOAD DISK ADDRESS
1843 1063 1154 TAD REG2
1844 1064 0127 AND K5777 /MASK OUT WRITE LOCK
    
```

```

1845 1065 4450 LDCMD /LOAD COMMAND REGISTER
1846 1066 1154 TAD REG2
1847 1067 4451 LDCUR /LOAD CURRENT ADDRESS
1848 1070 1154 TAD REG2
1849 1071 4447 DSKSKP /DSKP
1850 1072 7000 NOP
1851 1073 4442 RDSTAT /READ STATUS
1852 1074 1154 TAD REG2
1853 1075 4427 LDBUF /LOAD BUFFERS
1854 1076 4456 RDBUF /READ LOWER BUFFER
1855 1077 7300 CIA CLL
1856 1100 4453 CLRALL /CLEAR STATUS
1857 1101 4446 RDADD /READ DISK ADDRESS
1858 1102 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1859 1103 4435 NERROR /AC O.K. 4096 LOOPS
1860 1104 4436 ERROR /ERROR, DISK ADDRESS AFFECTED
1861 1105 1057 TST28 /SCOPE LOOP POINTED
1862 1106 4102 4102 /TEXT POINTER
1863
1864 /
1865 /VERIFY THAT THE COMMAND REGISTER IS NOT AFFECTED BY
1866 /"DLCR", "DLCA", "DRST", "DLDC", "DSKP", OR "RDBUF".
1867 /USE DATA PATTERN ALL COMBINATIONS.
1868 /
1868 1107 7301 TST29, CLA CLL IAC
1869 1110 4453 CLRALL /CLEAR CONTROL
1870 1111 1153 TAD REG1 /GET AC VALUE
1871 1112 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1872 1113 1153 TAD REG1
1873 1114 4450 LDCMD /LOAD COMMAND REGISTER
1874 1115 1154 TAD REG2
1875 1116 4452 LDADD /LOAD DISK ADDRESS
1876 1117 1154 TAD REG2
1877 1120 4451 LDCUR /LOAD CURRENT ADDRESS
1878 1121 1154 TAD REG2
1879 1122 4447 DSKSKP /DSKP
1880 1123 7000 NOP
1881 1124 4442 RDSTAT /READ STATUS
1882 1125 1154 TAD REG2
1883 1126 4427 LDBUF /LOAD UPPER BUFFER
1884 1127 4456 RDBUF /READ LOWER BUFFER
1885 1130 7300 CIA CLL
1886 1131 4453 CLRALL /CLEAR STATUS
1887 1132 7326 CIA CLL CML RTL
1888 1133 4453 CLRALL /RECALIBRATE
1889 1134 4443 RDCMD /READ COMMAND REGISTER
1890 1135 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1891 1136 4435 NERROR /AC O.K. 4096 LOOPS
1892 1137 4436 ERROR /ERROR, COMMAND REGISTER
1893 1140 1107 TST29 /SCOPE LOOP POINTER
1894 1141 4201 4201 /TEXT POINTER
1895
1896 /
1897 /VERIFY THAT RECALIBRATE INHIBITS LOAD COMMAND
1898 /
1898 1142 7301 TST30, CIA CLL IAC /ENABLE CLEAR CONTROL
1899 1143 4453 CLRALL /CLEAR CONTROL
    
```

```

1900 1144 4444 ENMAN1 /ENTER MAINTENANCE
1901 1145 7326 CLA CLL CML RTL /ENABLE RECALIBRATE
1902 1146 4453 CLRALL /RECALIBRATE
1903 1147 7326 CLA CLL CML RTL /ENABLE RECALIBRATE
1904 1150 4453 CLRALL /RECALIBRATE
1905 1151 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1906 1152 1153 TAD REG1
1907 1153 4450 LDCMD /TRY TO LOAD COMMAND
1908 1154 4443 RDCMD /READ COMMAND
1909 1155 4440 ACCMP1 /CHECK RESULTS
1910 1156 4435 NRRPOR /O.K. 4096 LOOPS
1911 1157 4436 ERROR /ERROR, IDLE (1)
1912 1160 1142 TST30 /SCOPE LOOP POINTER
1913 1161 4201 4201 /TEXT POINTER
1914
1915 /
1916 /VERIFY THAT RECALIBRATE INHIBITS
1917 /LOAD DISK ADDRESS DLAG
1918
1918 1162 7301 TST31, CLA CLL IAC /ENABLE CLEAR CONTROL
1919 1163 4453 CLRALL /CLEAR CONTROL
1920 1164 4444 ENMAN1 /ENTER MAINTENANCE
1921 1165 1153 TAD REG1 /GET AC VALUE
1922 1166 3163 DCA GDREG2 /SETUP COMPARE
1923 1167 1163 TAD GDREG2
1924 1170 4452 LDADD /LOAD DISK ADDRESS (DLAG)
1925 1171 7326 CLA CLL CML RTL /ENABLE RECAL.
1926 1172 4453 CLRALL /RECALIBRATE
1927 1173 1154 TAD REG2
1928 1174 4452 LDADD /LOAD DISK ADDRESS (DLAG)
1929 1175 4446 RDAOD /READ DISK ADDRESS
1930 1176 4440 ACCMP1 /CHECK RESULTS
1931 1177 4435 NRRPOR /O.K. 4096 LOOPS
1932 1200 4436 ERROR /ERROR ON INHIBIT
1933 1201 1162 TST31 /SCOPE POINTER
1934 1202 4102 4102 /TEXT POINTER
1935
1936 /
1937 /VERIFY THAT "DMAN" (MAINTENANCE) DOES NOT
1938 /AFFECT AC WHEN AC0=0 AND AC7=1 OR 0.
1939
1939 1203 7301 TST32, CLA CLL IAC /CLEAR ENABLE BIT
1940 1204 4453 CLRALL /DCLR "CLR ALL"
1941 1205 1153 TAD REG1
1942 1206 0122 AND K3737 /MASK OUT 0
1943 1207 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1944 1210 1163 TAD GDREG2
1945 1211 4455 LDMAN /LOAD MAINTENANCE "DMAN"
1946 1212 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1947 1213 4435 NRRPOR /AC O.K., 4096 LOOPS
1948 1214 4436 ERROR /ERROR, "DMAN" AFFECTED AC
1949 1215 1203 TST32 /SCOPE LOOP POINTER
1950 1216 4010 4010 /TEXT POINTER
1951
1952 /
1953 /VERIFY THAT "DMAN" DOES NOT AFFECT AC WHEN
1954 /AC7=0 AND AC0=1 OR 0.

```

```

1955 1217 7301 TST33, CLA CLL IAC /CLEAR ENABLE BIT
1956 1220 4453 CLRALL /DCLR "CLR ALL"
1957 1221 1153 TAD REG1 /GET AC VALUE
1958 1222 0123 AND K7717 /MASK OUT BIT 7
1959 1223 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1960 1224 1163 TAD GDREG2
1961 1225 4455 LDMAN /LOAD MAINTENANCE
1962 1226 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
1963 1227 4435 NRRPOR /AC O.K., 4096 LOOPS
1964 1230 4436 ERROR /ERROR, DMAN AFFECT AC
1965 1231 1217 TST33 /SCOPE LOOP POINTER
1966 1232 4010 4010 /TEXT POINTER
1967
1968 /
1969 /VERIFY THAT "DMAN" ONLY GETS CLEARED BY
1970 /DCLR NOT BY ANOTHER DMAN.
1971
1971 1233 7301 TST34, CLA CLL IAC /CLEAR ENABLE BIT
1972 1234 4453 CLRALL /DCLR "CLR ALL"
1973 1235 1153 TAD REG1
1974 1236 3163 DCA GDREG2 /SETUP COMPARE REGISTER
1975 1237 1153 TAD REG1
1976 1240 4450 LDCMD /LOAD COMMAND REGISTER
1977 1241 1136 TAD M12 /NO. OF SHIFTS
1978 1242 3156 DCA TCNTR1 /STORE IN COUNTER
1979 1243 4445 ENMAN2 /ENTER MAINTENANCE MODE + UB4=1
1980 1244 1102 TAD K0404 /GET ENABLE COMMAND REG.
1981 1245 4455 LDMAN /LOAD MAINTENANCE
1982 1246 2156 ISZ TCNTR1 /COUNT + SHIFT 12
1983 1247 5245 JMP *-2
1984 1250 7300 CLA CLL
1985 1251 4455 LDMAN /"DMAN" TRY TO CLEAR MAIN FLOP
1986 1252 1074 TAD K0020 /ENABLE BIT FOR READ BUFFER
1987 1253 4455 LDMAN /READ BUFFER
1988 1254 3167 DCA DBREG /SAVE FOR PRINTER
1989 1255 1167 TAD DRFG
1990 1256 4440 ACCMP1 /CHECK AC
1991 1257 4435 NRRPOR /AC O.K., 4096 LOOPS
1992 1260 4436 ERROR /ERROR, MAIN FLIP FLOP
1993 1261 1233 TST34 /SCOPE LOOP POINTER
1994 1262 4405 4405
1995
1996 /
1997 /VERIFY THAT "DMAN" GETS CLEARED BY DCLR
1998 /"CLR ALL"
1999
2000 1263 7301 TST35, CLA CLL IAC
2001 1264 4453 CLRALL /DCLR "CLR ALL"
2002 1265 1074 TAD K0020
2003 1266 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2004 1267 1153 TAD REG1
2005 1270 4450 LDCMD /LOAD COMMAND REGISTER
2006 1271 1136 TAD M12
2007 1272 3156 DCA TCNTR1 /SHIFT 12 COUNTER
2008 1273 4445 ENMAN2 /ENTER MAINTENANCE MODE + DM4=1
2009 1274 1122 TAD K0404

```

```

2010 1275 4455 LDMAN /LOAD MAINTENANCE "DMAN"
2011 1276 2156 ISZ TCNTR1
2012 1277 5275 JMP ,=-2 /12 COUNT
2013 1300 7301 CLA CLL IAC
2014 1301 4453 CLRALL /CLEAR ALL "DCLR"
2015 1302 1074 TAD K0020
2016 1303 4455 LDMAN /LOAD MAINTENANCE
2017 1304 4440 ACCMP1 /CHECK AC, COMPARE TO GDRFG2
2018 1305 4435 NERROR /AC O.K. 4096 LOOPS
2019 1306 4436 ERROR /ERROR, DMAN AFFECTED AC
2020 1307 1263 TST35 /SCOPE LOOP POINTER
2021 1310 4010 4010 /TEXT POINTER
2022
2023 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2024 /CRC REGISTER, THEN READ CRC REGISTER.
2025 /TRY ALL 1'S AND ALL 0'S.
2026
2027 1311 7301 TST36, CLA CLL IAC
2028 1312 4453 CLRALL /DCLR "CLR ALL"
2029 1313 1153 TAD RFG1
2030 1314 7110 CLL RAR
2031 1315 7630 SZL CLA /SKIP IF ALL 0'S DATA
2032 1316 7340 CLA CLL CMA /ALL ONE'S DATA
2033 1317 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2034 1320 1163 TAD GDREG2
2035 1321 0145 AND K0017
2036 1322 1162 DCA GDREG1 /SETUP COMPARE REGISTER
2037 1323 1137 TAD #16
2038 1324 3156 DCA TCNTR1 /SHIFTER FOR CRC
2039 1325 4444 ENMAN1 /ENTER MAINTENANCE MODE
2040 1326 1153 TAD REG1
2041 1327 7104 CLL RAL
2042 1330 0066 AND K0002
2043 1331 1103 TAD K1000 /ENABLE BITS
2044 1332 4455 LDMAN /LOAD MAINTENANCE
2045 1333 2156 ISZ TCNTR1
2046 1334 5332 JMP ,=-2 /16 COUNT
2047 1335 4454 RDCRC /READ CRC REGISTER
2048 1336 4441 ACCMP2 /COMPARE RESULTS
2049 1337 4435 NERROR /AC O.K. 4096 LOOPS
2050 1340 4436 ERROR /ERROR, CRC REGISTER
2051 1341 1311 TST36 /SCOPE LOOP POINTER
2052 1342 6004 6004 /TEXT POINTER
2053
2054
2055 /VERIFY THAT "AC 10 DATA" CAN BE SHIFTED TO
2056 /CRC REGISTER, THEN READ CRC REGISTER.
2057 /TRY PATTERN "125252"
2058
2059
2060
2061
2062
2063
2064

```

```

2065
2066
2067
2068
2069 1343 7301 TST37, CLA CLL IAC
2070 1344 4453 CLRALL /DCLR "CLR ALL"
2071 1345 1121 TAD K5252
2072 1346 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2073 1347 1163 TAD GDREG2

```

```

/ PAL10 V142A 7-MAR-77 13155 PAGE 5
2074 1350 0145 AND K0017
2075 1351 3162 DCA GDREG1 /SETUP COMPARE REGISTER
2076 1352 1137 TAD M16
2077 1353 3156 DCA TCNTR1 /SETUP 16 COUNT
2078 1354 4444 ENMAN1 /ENTER MAINTENANCE MODE
2079 1355 7300 T37R, CLA CLL
2080 1356 1156 TAD TCNTR1
2081 1357 7004 RAL
2082 1360 0066 AND K0002 /SETUP DATA BIT
2083 1361 1103 TAD K1000 /ENABLE BITS
2084 1362 4455 LDMAN /LOAD MAINTENANCE
2085 1363 2156 ISZ TCNTR1
2086 1364 5355 JMP T37R /16 COUNT
2087 1365 4454 RDCRC /READ CRC REGISTER
2088 1366 4441 ACCMP2 /CHECK RESULTS
2089
2090 1367 4435 NEPROR /AC O.K. 4096 LOOPS
2091 1370 4436 ERROR /ERROR, CRC REGISTER
2092 1371 1343 TST37 /SCOPE LOOP POINTER
2093 1372 6004 /TEXT POINTER
2094
2095 1373 5774 /
2096 1374 1400 JMP I ,+1 /TO NEXT TEST
2097
2098 1400 / PAGE
2099 /
2100 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED
2101 /TO CRC REGISTER, THEN READ CRC REGISTER.
2102
2103
2104
2105
2106 /TRY PATTERN "052525"
2107 /
2108 1400 7301 TST38, CLA CLL IAC
2109 1401 4453 CLRALL /CLEAR ALL "DCRL"
2110 1402 1120 TAD K2525
2111 1403 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2112 1404 1163 TAD GDREG2
2113 1405 0145 AND K0017
2114 1406 3162 DCA GDREG1 /SETUP COMPARE REGISTER
2115 1407 1137 TAD M16
2116 1410 3156 DCA TCNTR1 /16 COUNTER SHIFTER
2117 1411 4444 ENMAN1 /ENTER MAINTENANCE MODE
2118 1412 7300 T38R, CLA CLL
2119 1413 1156 TAD TCNTR1
2120 1414 7044 CMA RAL
2121 1415 0066 AND K0002 /SETUP "AC 10 DATA"
2122 1416 1103 TAD K1000 /ENABLE BITS
2123 1417 4455 LDMAN /LOAD MAINTENANCE
2124 1420 2156 ISZ TCNTR1
2125 1421 5212 JMP T38R /16 COUNT
2126 1422 4454 RDCRC /READ CRC REGISTER
2127 1423 4441 ACCMP2 /CHECK RESULTS
2128 1424 4435 NEPROR /O.K. 4096 LOOPS

```

```

/ PAL10 V142A 7-MAR-77 13:55 PAGE 5-1
2129 1425 4436 EROR /ERROR, CRC REGISTER
2130 1426 1400 TST38 /SCOPE LOOP POINTER
2131 1427 6004 /TEXT POINTER
2132 /
2133 /
2134 /
2135 /
2136 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO CRC
2137 /REGISTER, TRY ALL COMBINATIONS.
2138 /
2139 1430 7301 TST39, CLA CLL IAC
2140 1431 4453 CLRALL /CLR "CLR ALL"
2141 1432 1153 TAD REG1
2142 1433 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2143 1434 1153 TAD REG1
2144 1435 0145 AND K0017
2145 1436 3162 DCA GDREG1 /SETUP COMPARE REGISTER
2146 1437 7301 CLA CLL IAC
2147 1440 3156 DCA TCNTR1 /SETUP BIT MASKER
2148 1441 1137 TAD M16
2149 1442 3157 DCA TCNTR2 /SETUP FIRST SHIFT COUNTER
2150 1443 4444 ENMAN1 /ENTER MAINTENANCE MODE
2151 1444 1153 T39R, TAD REG1
2152 1445 0156 AND TCNTR1
2153 1446 7640 SZA CLA /SKIP IF 0
2154 1447 1066 TAD K0002 /WAS 1
2155 1450 1103 TAD K1000 /ENABLE BITS
2156 1451 4455 LDMAN /LOAD MAINTENANCE
2157 1452 7300 CLA CLL
2158 1453 1156 TAD TCNTR1
2159 1454 7004 RAL /ROTATE BIT MASKER
2160 1455 3156 DCA TCNTR1
2161 1456 7630 SZL CLA /WAIT FOR FIRST LINK THEN
2162 1457 5254 JMP ,=3 /RESET BIT 11 IN MASKER
2163 1460 2157 ISZ TCNTR2
2164 1461 5244 JMP T39R /LOOP BACK
2165 1462 4454 RDCRC /READ CRC REGISTER
2166 1463 4441 ACCMP2 /CHECK RESULTS
2167 1464 4435 NEPROR /O.K. 4096 LOOPS
2168 1465 4436 EROR /ERROR, CRC REGISTER
2169 1466 1430 TST39 /ERROR, CRC REGISTER
2170 1467 6004 /TEXT POINTER
2171 /
2172 /VERIFY THAT "DLAG" CLEARS ALL OF THE
2173 /CRC REGISTER, TRY ALL COMBINATIONS IN CRC.
2174 /
2175 1470 7301 TST40, CLA CLL IAC
2176 1471 4453 CLRALL /CLR "CLR ALL"
2177 1472 3163 DCA GDREG2
2178 1473 3162 DCA GDREG1 /SETUP COMPARE REGISTERS
2179 1474 7301 CLA CLL IAC
2180 1475 3156 DCA TCNTR1 /SETUP BIT MASKER
2181 1476 1137 TAD M16
2182 1477 3157 DCA TCNTR2 /SETUP FIRST SHIFT COUNTER
2183 1500 4444 ENMAN1 /ENTER MAINTENANCE MODE

```

```

/ PAL10 V142A 7-MAR-77 13:55 PAGE 5-2
2184 1501 1154 T40R, TAD REG2
2185 1502 0156 AND TCNTR1
2186 1503 7640 SZA CLA /SKIF IF 0
2187 1504 1066 TAD /WAS A 1
2188 1505 1103 TAD K1000 /ENABLE BITS
2189 1506 4455 LDMAN /LOAD MAINTENANCE
2190 1507 7300 CLA CLL
2191 1510 1156 TAD TCNTR1
2192 1511 7004 RAL /ROTATE BIT MASKER
2193 1512 3156 DCA ICNTR1
2194 1513 7630 SZL CLA /WAIT FOR FTRST LINK THEN
2195 1514 5311 JMP ,=3 /RESET BIT 11 IN MASKER
2196 1515 2157 ISZ ICNTR2
2197 1516 5301 JMP T40R /LOOP BACK
2198 1517 4452 LDADD /LOAD DISK ADDRESS AND CLEAR CRC
2199 1520 4454 RDCRC /READ CRC REGISTER
2200 1521 4441 ACCMP2 /CHECK RESULTS
2201 1522 4435 NRROR /O.K, 4096 LOOPS
2202 1523 4436 EPROP /ERROR, CRC REGISTER
2203 1524 1470 TST40 /ERROR, CRC REGISTER
2204 1525 6004 6004 /TEXT POINTER
2205
/
2206 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2207 /UPPER DATA BUFFER THEN SINK TO LOWER DATA
2208 /BUFFER, TRY ALL 1'S AND 0'S.
2209
/
2210 1526 7301 TST41, CLA CLL IAC
2211 1527 4453 CLRALL /"DCLR" "CLR ALL"
2212
2213 1530 1153 TAD REG1
2214 1531 7110 CLL RAR
2215 1532 7630 SZL CLA
2216 1533 7240 CLA CMA
2217 1534 3163 DCA GDREG2
2218 1535 1163 TAD GDREG2 /GET VALUE TO LOAD
2219 1536 4427 LDBUF /LOAD UPPER BUFFER
2220 1537 4456 RDBUF /READ LOWER BUFFER
2221 1540 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
2222 1541 4435 NRROR /AC O.K, 4096 LOOPS
2223 1542 4436 ERROR /ERROR, DATA REGISTERS
2224 1543 1526 TST41 /SCOPE LOOP POINTER
2225 1544 4405 4405 /TEXT POINTER
2226
/
2227 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2228 /UPPER DATA BUFFER THEN SINK TO LOWER DATA
2229 /BUFFER, TRY PATTERN 2525 + 5252
2230
/
2231 1545 7301 TST42, CLA CLL IAC
2232 1546 4453 CLRALL /"DCKR" "CLR ALL"
2233 1547 1153 TAD REG1
2234 1550 7110 CLL RAR
2235 1551 7630 SZL CLA /WHAT DATA???)
2236 1552 1120 TAD K2525 /DATA 5252
2237 1553 1120 TAD K2525
2238 1554 3163 DCA GDREG2 /SETUP COMPARE REGISTER

```

```

/ PAL10 V142A 7-MAR-77 13:55 PAGE 5-3
2239 1555 1163 TAD GDREG2 /GET VALUE TO LOAD
2240 1556 4427 LDBUF /LOAD UPPER BUFFER
2241 1557 4456 RDBUF /READ LOWER DATA BUFFER
2242 1560 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
2243 1561 4435 NRROR /AC O.K, 4096 LOOPS
2244 1562 4436 EPROP /ERROR, DATA BUFFERS
2245 1563 1545 TST42 /SCOPE LOOP POINTER
2246 1564 4405 4405 /TEXT POINTER
2247
/
2248
/
2249 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED TO
2250 /UPPER DATA BUFFER THEN SINK TO LOWER
2251 /DATA BUFFER, TRY PATTEPN ALL COMBINSTIONS
2252
/
2253 1565 7301 TST43, CLA CLL IAC
2254 1566 4453 CLRALL /"DCLR" "CLR ALL"
2255 1567 1154 TAD REG2 /GET VALUE TO LOAD
2256 1570 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2257 1571 1163 TAD GDREG2 /GET IT
2258 1572 4427 LDBUF /LOAD UPPER BUFFER
2259 1573 4456 RDBUF /READ LOWER DATA BUFFER
2260 1574 4440 ACCMP1 /CHECK AC
2261 1575 4435 NRROR /AC O.K, 4096 LOOPS
2262 1576 4436 ERROR /ERROR, DATA REGISTERS
2263 1577 1565 TST43 /SCOPE LOOP POINTER
2264 1600 4405 4405 /TEXT POINTER
2265
/
2266 /VERIFY THAT "AC10 DATA" CAN BE SHIFTED
2267 /TO UPPER DATA BUFFER THEN SINK TO LOWER
2268 /DATA BUFFER, TRY ALL COMBINATIONS.
2269
/
2270 1601 7301 TST44, CLA CLL IAC
2271 1602 4453 CLRALL
2272 1603 1153 TAD REG1
2273 1604 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2274 1605 1153 TAD REG1 /GET VALUE TO LOAD
2275 1606 4427 LDBUF /LOAD UPPER BUFFER
2276 1607 4456 RDBUF /READ DATA BUFFER
2277 1610 4440 ACCMP1 /CHECK AC, COMPARE TO GDREG2
2278 1611 4435 NRROR /AC O.K, 4096 LOOPS
2279 1612 4436 EPROP /ERROR, DATA REGISTERS
2280 1613 1601 TST44 /SCOPE LOOP POINTER
2281 1614 4405 4405 /TEXT POINTER
2282
/
2283 /VERIFY THAT ALL DATA BUFFERS CAN BE FULL
2284 /AT ONCE, TRY ALL COMBINATIONS
2285
/
2286 1615 7301 TST45, CLA CLL IAC
2287 1616 4453 CLRALL /"DCLR" "CLR ALL"
2288 1617 1153 TAD REG1
2289 1620 3161 DCA TCNTR4
2290 1621 1133 TAD M4
2291 1622 3160 DCA TCNTR3 /COUNTER FOR # OF BUFFERS
2292 1623 1161 T45R1, TAD TCNTR4
2293 1624 4427 LDBUF /LOAD UPPER BUFFER

```

```

2294 1625 7301          CLA CLL IAC
2295 1626 1161         TAD   TCNTR4
2296 1627 3161         DCA   TCNTR4
2297 1630 2160         ISZ   TCNTR3
2298 1631 5223         JMP   T45R1          /4 COUNT, SKIP WHEN BUFFERS FULL
2299 1632 1153         TAD   REG1
2300 1633 3163         DCA   GDREG2       /SETUP FOR FIRST CNMPARE
2301 1634 1131         TAD   M4
2302 1635 3160         DCA   TCNTR3
2303 1636 4456         T45R3, RDBUF
2304 1637 4440         ACCMP1          /READ BUFFER
2305 1640 7610         SKP CLA        /CHECK
2306 1641 5247         JMP   T45E        /O.K, CHECK NEXT
2307 1642 2163         ISZ   GDREG2       /ERROR DATA BUFFERS
2308 1643 7000         NOP
2309 1644 2160         ISZ   TCNTR3
2310 1645 5236         JMP   T45R3
2311 1646 4435         NERROR
2312 1647 4436         T45E, ERROR      /O.K, 4096 LOOPS
2313 1650 1615         TST45          /ERROR, DATA BUFFERS
2314 1651 4405         4405          /SCOPE LOOP POINTER
2315                          /TEXT POINTER
2316
2317 /VERIFY THAT THE SILO BUFFERS ARE NOT AFFECTED BY
2318 /"DCLR", "DLAG", "DLDC", "DLCA", "DSKP", OR "DRST" IOTS.
2319 /USE DATA PATTERN ALL COMBINATIONS
2320 /
2320 1652 7301         TST46, CLA CLL IAC
2321 1653 4453         CLRALL
2322 1654 1154         TAD   REG2          /DCLR
2323 1655 3163         DCA   GDREG2       /SETUP COMPARE REGISTER
2324 1656 1133         TAD   M4
2325 1657 3156         DCA   TCNTR1
2326 1660 1163         T46A1, LDBUF      /COUNTER POP AMOUNT OF BUFFERS
2327 1661 4427         TAD   GDREG2       /GET VALUE TO LOAD
2328 1662 2156         ISZ   TCNTR1       /LOAD UPPER BUFFER
2329 1663 5260         JMP   T46A1        /COUNT AMOUNT
2330 1664 1151         TAD   T46A1        /MORE TO LOAD
2331 1665 4452         LDADD REG1
2332 1666 1153         TAD   REG1          /LOAD DISK ADDRESS
2333 1667 4451         LDCUR
2334 1670 1153         TAD   REG1          /LOAD CURRENT ADDRESS
2335 1671 0105         AND   K3777
2336 1672 4454         LDCMD           /MASK OFF WRITE
2337 1673 1153         TAD   REG1          /LOAD COMMAND REGISTER
2338 1674 4447         DSKSKP         /DSKP
2339 1675 7000         NOP
2340 1676 4442         RDSTAT        /READ STATUS
2341 1677 7300         CLA CLL
2342 1700 4453         CLRALL         /CLEAR STATUS
2343 1701 1133         TAD   M4
2344 1702 3156         DCA   TCNTR1
2345 1703 7300         T46A2, CLA CLL   /SETUP COUNTER
2346 1704 1074         TAD   K0020
2347 1705 4455         LDMAN         /ENABLE READ BUFFER
2348 1706 3167         DCA   DBREG      /DMAN
                          /SAVE RESULTS

```

```

2349 1707 1167         TAD   DBREG
2350 1710 4440         ACCMP1          /CHECK RESULTS
2351 1711 7610         SKP CLA        /DATA O.K.
2352 1712 5316         JMP   T46E        /ERROR
2353 1713 2156         ISZ   TCNTR1       /READ ALL FOUR
2354 1714 5303         JMP   T46A2        /LOOP
2355 1715 4435         NERROR
2356 1716 4436         T46E, ERROR      /O.K, 4096 LOOPS
2357 1717 1652         TST46          /ERROR, BUFFER AFFECTED
2358 1720 4405         4405          /SCOPE LOOP POINTER
2359                          /TEXT POINTER
2360
2361 /VERIFY THAT THE UPPER BUFFER CAN BE LOADED
2362 /THEN SINK TO LOWER BUFFER, USE A FLOATING
2363 /1'S PATTERN.
2364 /
2364 1721 3156         TST47, DCA   TCNTR1 /START AT 0
2365 1722 7301         CLA CLL IAC      /ENABLE CLEAR CONTROL
2366 1723 4453         CLRALL          /CLEAR CONTROL
2367 1724 1156         TAD   TCNTR1       /GET VALUE TO LOAD
2368 1725 3163         DCA   GDREG2       /SETUP COMPARE REGISTER
2369 1726 1156         TAD   TCNTR1       /GET VALUE TO LOAD
2370 1727 4427         LDBUF          /LOAD UPPER BUFFER
2371 1730 4456         RDBUF          /READ LOWER BUFFER
2372 1731 4440         ACCMP1          /CHECK RESULTS
2373 1732 7610         SKP CLA        /DATA O.K.
2374 1733 5342         JMP   T47E        /ERROR
2375 1734 1156         TAD   TCNTR1
2376 1735 7104         CLL RAL
2377 1736 7450         SNA
2378 1737 7001         IAC
2379 1740 3156         DCA   TCNTR1       /SET ONE TO LEFT
2380 1741 4435         NERROR
2381 1742 4436         T47E, ERROR      /LOOP 4096 TIMES
2382 1743 1722         TST47          /RPROP SILO BUFFERS
2383 1744 4405         4405          /SCOPE LOOP POINTER
2384                          /TEXT POINTER
2385
2386 /VERIFY THAT THE UPPER RUFFER CAN BE LOADED
2387 /THEN SINK TO LOWER BUFFER, USE A FLOATING
2388 /0'S PATTERN.
2389 /
2389 1745 3156         TST48, DCA   TCNTR1 /START AT 7777
2390 1746 7301         CLA CLL IAC      /ENABLE CLEAR CONTROL
2391 1747 4453         CLRALL          /CLEAR CONTROL
2392 1750 1156         TAD   TCNTR1       /GET VALUE TO LOAD
2393 1751 7040         CMA           /INVERT FOR 0'S
2394 1752 3163         DCA   GDREG2       /SETUP COMPARE REGISTER
2395 1753 1163         TAD   GDREG2       /GET VALUF TO LOAD
2396 1754 4427         LDBUF          /LOAD UPPER BUFFER
2397 1755 4456         RDBUF          /READ LOWER BUFFER
2398 1756 4440         ACCMP1          /CHECK RESULTS
2399 1757 7610         SKP CLA        /DATA O.K.
2400 1760 5367         JMP   T48E        /ERROP
2401 1761 1156         TAD   TCNTR1
2402 1762 7104         CLL RAL
2403 1763 7450         SNA

```

```

2404 1764 7001 IAC
2405 1765 3156 DCA TCNTR1 /SET ONE TO LEFT
2406 1766 4435 NERROR /LOOP 4096 TIMES
2407 1767 4436 T48E, ERROR /ERROR SLO BUFFERS
2408 1770 1746 TST48 /SCOPE LOOP POINTER
2409 1771 4405 4405 /TEXT POINTER
2410 /
2411 1772 5773 JMP I ,+1 /TO NFXT TEST
2412 1773 2000 TST49
2413 /
2414 2000 PAGE
2415 /
2416 /VERIFY THAT "DRL" OCCURES WHEN BUFFER
2417 /EMPTY.
2418 /
2419 2000 7301 TST49, CLA CLL IAC
2420 2001 4453 CLRALL /"DCLR" CLEAR ALL
2421 2002 1177 TAD STCON /GET EXPECTED BITS
2422 2003 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2423 2004 1153 TAD REG1
2424 2005 4442 RDSTAT /READ STATUS REGISTER
2425 2006 4440 ACCMP1 /CHECK RESULTS
2426 2007 7610 SKP CLA /O.K.
2427 2010 5232 JMP T49E /ERROR, STATUS REGISTER
2428 2011 1177 TAD STCON
2429 2012 1070 TAD K0004 /GET EXPECTED BITS
2430 2013 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2431 2014 4444 ENMAN1 /ENTER MAINTENANCE MODE
2432 2015 1103 TAD K1000
2433 2016 4455 LDMAN /LOAD MAINTENANCE
2434 2017 7240 CLA CMA
2435 2020 4442 RDSTAT /READ STATUS REGISTER
2436 2021 4440 ACCMP1 /CHECK RESULTS
2437 2022 7610 SKP CLA /O.K.
2438 2023 5232 JMP T49E /ERROR, STATUS REGISTER
2439 2024 1177 TAD STCON
2440 2025 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2441 2026 4453 CLRALL /DCLR "CLR STATUS"
2442 2027 4442 RDSTAT /READ STATUS REGISTER
2443 2030 4440 ACCMP1 /CHECK RESULTS
2444 2031 4435 NERROR /STATUS O.K., 4096 LOOPS
2445 2032 4436 T49E, ERROR /ERROR, STATUS REGISTER
2446 2033 2000 TST49 /SCOPE LOOP POINTER
2447 2034 5000 5000 /TEXT POINTER
2448 /
2449 /VERIFY THAT BUFFER FULL CAUSES "DRL".
2450 /
2451 2035 7301 TST50, CLA CLL IAC
2452 2036 4453 CLRALL /DCLR "CLR ALL"
2453 2037 1177 TAD STCON
2454 2040 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2455 2041 1154 TAD REG2
2456 2042 4442 RDSTAT /READ STATUS REGISTER
2457 2043 4440 ACCMP1 /CHECK RESULTS
2458 2044 7610 SKP CLA /O.K.

```

```

2459 2045 5274 JMP T50E /ERROR, STATUS REGISTER
2460 2046 1140 TAD M48
2461 2047 3156 DCA TCNTR1 /48 COUNTER
2462 2050 4444 ENMAN1 /ENTER MAINTENANCE MODE
2463 2051 1077 TAD K0100 /ENABLE BITS
2464 2052 4455 LDMAN /LOAD MAINTENANCE
2465 2053 2156 ISZ TCNTR1
2466 2054 5252 JMP ,.-2 /SKIP WHEN BUFFERS ARE FULL
2467 2055 7300 CLA CLL
2468 2056 4442 RDSTAT /READ STATUS REGISTER
2469 2057 4440 ACCMP1 /CHECK RESULTS
2470 2060 7610 SKP CLA
2471 2061 5274 JMP T50E /ERROR, STATUS REGISTER
2472 2062 1077 TAD K0100
2473 2063 4455 LDMAN /CAUSE "DRL" DMAN
2474 2064 7300 CLA CLL
2475 2065 1177 TAD STCON
2476 2066 1070 TAD K0004 /BIT EXPECTED
2477 2067 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2478 /
2479 2070 1153 TAD REG1
2480 2071 4442 RDSTAT /READ STATUS REGISTER
2481 2072 4440 ACCMP1 /CHECK RESULTS
2482 2073 4435 NERROR /STATUS O.K., 4096 LOOPS
2483 2074 4436 T50E, ERROR /ERROR, STATUS REGISTER
2484 2075 2035 TST50 /SCOPE LOOP POINTER
2485 2076 5000 5000 /TEXT POINTER
2486 /
2487 /VERIFY THAT "DSKP" SKIPS ON "DPL" ERROR
2488 /
2489 2077 7301 TST51, CLA CLL IAC
2490 2100 4453 CLRALL /DCLR "CLR ALL"
2491 2101 4444 ENMAN1 /ENTER MAINTENANCE MODE
2492 2102 1103 TAD K1000
2493 2103 4455 LDMAN /SET "DRL" "DMAN"
2494 2104 7300 CLA CLL
2495 2105 4447 DSKSKP /"DSKP"
2496 2106 5314 JMP T51E /ERROR, "DSKP"
2497 2107 4447 DSKSKP /"DSKP"
2498 2110 5314 JMP T51E /ERROR, "DSKP"
2499 2111 4453 CLRALL /CLEAR STATUS "DCLR"
2500 2112 4447 DSKSKP /"DSKP" SKIP
2501 2113 4435 NERROR /SKIP O.K., 4096 LOOPS
2502 2114 4436 T51E, ERROR /ERROR, "DSKP" SKIP ON "DRL"
2503 2115 2077 TST51 /SCOPE LOOP POINTER
2504 2116 0006 0006 /TEXT POINTER
2505 /
2506 /VERIFY THAT "DRL" DOES CAUSE DISK "INTERRUPT" IF
2507 /ENABLED BY "ENABLE INTERRUPT" BIT IN COMMAND REGISTER.
2508 /
2509 2117 7301 TST52, CLA CLL IAC
2510 2120 4453 CLRALL /"DCRL" "CLR ALL"
2511 2121 1102 TAD K0400
2512 2122 4450 LD CMD /SET INT, ENABLE "LOAD COMMAND REG."
2513 2123 4444 ENMAN1 /ENTER MAINTENANCE MODE

```

```

2514 2124 1103 TAD K1000
2515 2125 4455 LDMAN /"SET DRL" "DMAN"
2516 2126 4437 IONWAT /WAIT FOR INTERRUPT
2517 2127 7610 SKP CLA /ERROR, NO INT, RQ.
2518 2130 4435 NERROR /O.K, INT, OCCURRED
2519 2131 4436 ERROR /ERROR, INT, REQUEST
2520 2132 2117 TST52 /SCOPE LOOP POINTER
2521 2133 0007 0007 /TEXT POINTER
2522
2523 /
2524 /VERIFY THAT "DRL" SHOULD CAUSE INT, RQ, ONLY
2525 /WHEN "INT, ENABLE BIT IS SET, DOES LDCMD CLEAR INT,
2526 /
2527
2528 2134 7301 TST53, CLA CLL IAC
2529 2135 4453 CLRALL /DCLR "CLR ALL"
2530 2136 4444 ENMAN1 /ENTER MAINTENANCE MODE
2531 2137 1103 TAD K1000
2532 2140 4455 LDMAN /SET "DRL" DMAN
2533 2141 4437 IONWAT /WAIT FOR INT.
2534 2142 7610 SKP CLA /O.K, NO INT.
2535 2143 5356 JMP T53E /ERROR, INT, OCCURRED
2536 2144 1102 TAD K0400
2537 2145 4450 LDCMD /SET INT, ENABLE AND CLEAR INT.
2538 2146 4437 IONWAT /WAIT FOR INT.
2539 2147 7610 SKP CLA /O.K, NO INT, RQ.
2540 2150 5356 JMP T53E /ERROR, INT, OCCURED
2541 2151 1103 TAD K1000
2542 2152 4455 LDMAN /SET "DRL" "DMAN"
2543 2153 4437 IONWAT /WAIT INT,, SHOULD INT.
2544 2154 7610 SKP CLA /ERROR, NO INT.
2545 2155 4435 NERROR /O.K, INT, OCCURRED
2546 2156 4436 ERROR /ERROR,, INT, RQ
2547 2157 2134 TST53 /SCOPE LOOP POINTER
2548 2160 0007 0007 /TEXT POINTER
2549 /
2550 2161 5762 JMP I ,+1 /TO NEXT TEST
2551 2162 2200 TST54
2552 /
2553 2200 PAGE
2554 /
2555 /VERIFY THAT "LDCMD" CLEARS STATUS REGISTER
2556 /
2557 2200 7301 TST54, CLA CLL IAC
2558 2201 4453 CLRALL /DCLR "CLR ALL"
2559 2202 1177 TAD STCON
2560 2203 1070 TAD K0004
2561 2204 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2562 2205 4444 ENMAN1 /ENTER MAINTENANCE MODE
2563 2206 1103 TAD K1000 /ENABLE
2564 2207 4455 LDMAN /SET "DRL" DMAN
2565 2210 7300 CLA CLL
2566 2211 1154 TAD REG2
2567 2212 4442 RDSTAT /READ STATUS REGISTER
2568 2213 4440 ACCMP1 /CHECK RESULTS
    
```

```

2569 2214 7610 SKP CLA /O.K, CHECK CLEAR
2570 2215 5225 JMP T54E /STATUS REGISTER ERROR
2571 2216 4450 LDCMD /CLEAR STATUS, "LOAD COMMAND"
2572 2217 1177 TAD STCON
2573 2220 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2574 2221 1153 TAD REG1
2575 2222 4442 RDSTAT /READ STATUS REGISTER
2576 2223 4440 ACCMP1 /CHECK RESULTS
2577 2224 4435 NERROR /STATUS O.K, 4096 LOOPS
2578 2225 4436 ERROR /ERROR, STATUS REGISTER
2579 2226 2200 TST54 /SCOPE LOOP POINTER
2580 2227 5000 5000 /TEXT POINTER
2581 /
2582 /VERIFY THAT RECALIBRATE DOES SET DRIVE STATUS
2583 /ERROR IN THE STATUS REGISTER,
2584 /
2585 2230 7301 TST55, CLA CLL IAC /ENABLE CLEAR CONTROL
2586 2231 4453 CLRALL /CLEAR CONTROL
2587 2232 7301 CLA CLL IAC /ENABLE CLEAR CONTROL
2588 2233 4453 CLRALL /ENABLE CLEAR CONTROL
2589 2234 1177 TAD STCON
2590 2235 3163 DCA GDREG2 /SETUP EXPECTED COMPARE
2591 2236 4442 RDSTAT /READ STATUS REGISTER
2592 2237 4440 ACCMP1 /CHECK RESULTS
2593 2240 7610 SKP CLA /STATUS O.K.
2594 2241 5252 JMP T55E /ERROR, STATUS
2595 2242 7326 CLA CLL CML RTL
2596 2243 1177 TAD STCON
2597 2244 3163 DCA GDREG2 /SETUP EXPECTED COMPARE
2598 2245 7326 CLA CLL CML RTL /ENABLE RECALIBRATE
2599 2246 4453 CLRALL /RECALIBRATE
2600 2247 4442 RDSTAT /READ STATUS
2601 2250 4440 ACCMP1 /CHECK RESULTS
2602 2251 4435 NERROR /O.K, 4096 LOOPS
2603 2252 4436 ERROR /ERROR, STATUS REGISTER
2604 2253 2230 TST55 /SCOPE LOOP POINTER
2605 2254 5000 5000 /TEXT POINTER
2606 /
2607 /VERIFY THAT "LOAD DISK ADDRESS CAUSES" "DRIVE STATUS ERROR"
2608 /
2609 2255 7301 TST56, CLA CLL IAC /ENABLE CLEAR CONTROL
2610 2256 4453 CLRALL
2611 2257 4452 LDADD
2612 2260 1177 TAD STCON
2613 2261 1066 TAD K0002
2614 2262 3163 DCA GDREG2
2615 2263 1153 TAD REG1
2616 /
2617 2264 4442 RDSTAT /READ STATUS REGISTER
2618 2265 4440 ACCMP1 /CHECK RESULTS
2619 2266 4435 NERROR /STATUS O.K, 4096 LOOPS
2620 2267 4436 ERROR /ERROR, STATUS REGISTER
2621 2270 2255 TST56 /SCOPE LOOP POINTER
2622 2271 5000 5000 /TEXT POINTER
2623 /
    
```

```

/ PAL10 V142A 7-MAR-77 13:55 PAGE 5-10
2624 /VERIFY THAT "DRIVE STATUS ERROR" CAUSES INT. RG.
2625 / "DOES LDCMD CLEAR INT."
2626 /
2627 2272 7301 TST57, CLA CLL IAC
2628 CLRALL /DCLR "CLR ALL"
2629 2274 1102 TAD K0400
2630 2275 4450 LDCMD /SET INT, ENABLE "LOAD COMMAND"
2631 2276 4452 LDADD /SET "SELECT", LOAD DISK ADDRESS
2632 2277 4437 IONWAT /WAIT FOR EXPECTED INT.
2633 2300 5305 JMP T57E /ERROR, NO INT.
2634 2301 1102 TAD K0400
2635 2302 4450 LDCMD /CLEAR INT, "LOAD COMMAND"
2636 2303 4437 IONWAT
2637 2304 4435 NERROR /O.K, INT, WORKED
2638 2305 4436 T57E, ERROR /ERROR, SELECT ERROR INT.
2639 2306 2272 TST57 /SCOPE LOOP POINTER
2640 2307 0007 0007 /TEXT POINTER
2641 /
2642 /VERIFY THAT "LOAD DISK ADDRESS" CAUSES
2643 /"DRIVE STATUS ERROR", TEST WITH DISK SKIP
2644 /
2645 2310 7301 TST58, CLA CLL IAC
2646 2311 4453 CLRALL /DCLR "CLR ALL"
2647 2312 4452 LDADD /LOAD DISK AND GO
2648 2313 4447 DSKSKP /DSKP DISK SKIP IOT
2649 2314 5320 JMP T58E /ERROR, NO SKIP
2650 2315 4447 DSKSKP /DSKP DISK SKIP IOT
2651 2316 5320 JMP T58F /ERROR, NO SKIP
2652 2317 4435 NERROR /STATUS O.K.
2653 2320 4436 T58E, ERROR /ERROR, STATUS REGISTER
2654 2321 2310 TST58 /SCOPE LOOP POINTER
2655 2322 0006 0006 /TEXT POINTER
2656 /
2657 /VERIFY THAT SELECT ERROR CAUSES "DSKP" TO SKIP ON ERPOP
2658 /
2659 /
2660 2323 7301 TST59, CLA CLL IAC
2661 2324 4453 CLRALL /DCLR "CLR ALL"
2662 2325 4452 LDADD /LOAD DISK ADDRESS AND GO
2663 2326 4447 DSKSKP /DSKP "SKIP ON ERROR"
2664 2327 5333 JMP T59E /ERROR, NO SKIP
2665 2330 4453 CLRALL /CLEAR SKIP
2666 2331 4447 DSKSKP /DSKP
2667 2332 4435 NERROR /O.K, 4996 LOOPS
2668 2333 4436 T59E, ERROR /ERROR, "DSKP SKIP"
2669 2334 2323 TST59 /SCOPE LOOP POINTER
2670 2335 0006 0006 /TEXT POINTER
2671 /
2672 /
2673 /
2674 /VERIFY THAT SELECT ERROR CAUSES "DSKP" TO SKIP ON ERROR
2675 /THEN INTERRUPT
2676 /
2677 /
2678 2336 7301 TST60, CLA CLL IAC

```

```

/ PAL10 V142A 7-MAR-77 13:55 PAGE 5-11
2679 2337 4453 CLRALL /DCLR "CLR ALL"
2680 2340 1071 TAD K0006
2681 2341 3356 DCA T60E+2 /SETUP TEXT POINTER
2682 2342 1102 TAD K0400
2683 2343 4450 LDCMD /SET INT, ENABLE
2684 2344 4452 LDADD /LOAD DISK AND GO
2685 2345 4447 DSKSKP /DSKP DISK SKIP
2686 2346 5354 JMP T60E /ERROR, NO SKIP
2687 2347 1072 TAD K0007
2688 2350 3356 DCA T60E+2 /SETUP TEXT POINTER
2689 2351 4437 IONWAT /WAIT FOR INT.
2690 2352 7610 SKP CLA /ERROR, NO INT, OCCURRED
2691 2353 4435 NERROR /SKIP AND INT, O.K.
2692 2354 4436 T60E, ERROR /ERROR, DSKP OR INT.
2693 2355 2336 TST60 /SCOPE LOOP POINTER
2694 2356 0006 0006 /MODIFIED TEXT POINTER
2695 /
2696 2357 5760 JMP I .+1 /TO NEXT TEST
2697 2360 2400 TST61
2698 2400 /
2699 /
2700 /VERIFY THAT "DRL" CAUSES AN INT, THEN SKIP
2701 /
2702 2400 7301 TST61, CLA CLL IAC
2703 2401 4453 CLRALL /DCLR "CLR ALL"
2704 2402 1072 TAD K0007
2705 2403 3222 DCA T61E+2 /SETUP TEXT POINTER
2706 2404 1102 TAD K0400
2707 2405 4450 LDCMD /SETUP INT, ENABLE
2708 2406 4444 ENMAN1 /ENTER MAINTENANCE MODE
2709 2407 1103 TAD K1000
2710 2410 4455 LDMAN /SET "DRL" DMAN
2711 2411 4437 IONWAT /WAIT FOR INT.
2712 2412 5220 JMP T61E /ERROR, NO INT.
2713 2413 1071 TAD K0006
2714 2414 3222 DCA T61E+2 /SETUP TEXT POINTER
2715 2415 4447 DSKSKP /"DSKP" SHOULD SKIP
2716 2416 7610 SKP CLA /ERROR, NO SKIP
2717 2417 4435 NERROR /O.K, 4096 LOOPS
2718 2420 4436 T61E, ERROR /ERROR, SKIP OR INT.
2719 2421 2400 TST61 /SCOPE LOOP POINTER
2720 2422 0007 0007 /MODIFIED TEXT POINTER
2721 /
2722 /VERIFY THAT MAINTENANCE DOES INHIBIT
2723 /DRIVE STATUS ERROR SKIP
2724 /
2725 2423 7301 TST62, CLA CLL IAC
2726 2424 4453 CLRALL /CLEAR CONTROL
2727 2425 4447 DSKSKP /DISK SKIP
2728 2426 7610 SKP CLA /O.K, NO SKIP
2729 2427 5244 JMP T62E /ERROR, SKIP
2730 2430 7126 CLA CLL CML RTL
2731 2431 4453 CLRALL /RECALIBRATE
2732 2432 4447 DSKSKP /DISK SKIP
2733 2433 5244 JMP T62E /ERROR, NO SKIP

```

```

2734 2434 4444 ENMAN1 /SET MAIN
2735 2435 4447 DSKSKP /DISK SKIP
2736 2436 7610 SKP CLA /O.K, NO SKIP
2737 2437 5244 JMP T62E /ERROR, SKIP
2738 2440 7326 CLA CLL CML RTL
2739 2441 4453 CLRALL /RECALIBRATE
2740 2442 4447 DSKSKP /DISK SKIP
2741 2443 4435 NERROR /O.K, 4096 LOOPS
2742 2444 4436 T62E, ERROR /ERROR, DISK SKIP
2743 2445 2423 TST62 /SCOPE LOOP POINTER
2744 2446 0006 0006 /TEXT POINTER
2745 /
2746 /VERIFY THAT "RECALIBRATE" THEN DCLR DOES SET BUSY
2747 /AND DRIVE STATUS ERROR
2748 /
2749 2447 7301 TST63, CLA CLL IAC
2750 2450 4453 CLRALL /CLEAR CONTROL
2751 2451 1177 TAD STCON /EXPECTED STATUS
2752 2452 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2753 2453 4442 RDSTAT /READ STATUS
2754 2454 4440 ACCMP1 /CHECK RESULTS
2755 2455 7610 SKP CLA /STATUS O.K,
2756 2456 5304 JMP T63E /ERROR, STATUS
2757 2457 4444 ENMAN1 /ENTER MAINTENANCE
2758 2460 7326 CLA CLL CML RTL
2759 2461 1177 TAD STCON /EXPECTED STATUS
2760 2462 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2761 2463 7326 CLA CLL CML RTL
2762 2464 4453 CLRALL /"RECALIBRATE" DCLR
2763 2465 4442 RDSTAT /READ STATUS
2764 2466 4440 ACCMP1 /CHECK RESULTS
2765 2467 7610 SKP CLA /STATUS O.K,
2766 2470 5304 JMP T63E /ERROR, STATUS
2767 2471 1153 TAD REG1
2768 2472 0110 AND K7776 /MASK OUT CLEAR CONTROL
2769 2473 4453 CLRALL /DCLR
2770 2474 7326 CLA CLL CML RTL
2771 2475 1177 TAD STCON
2772 2476 1077 TAD K0100 /BUSY BIT
2773 2477 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2774 2500 1154 TAD REG2
2775 2501 4442 RDSTAT /READ STATUS REGISTER
2776 2502 4440 ACCMP1 /CHECK RESULTS
2777 2503 4435 NERROR /STATUS, O.K, 4096 LOOPS
2778 2504 4436 T63E, ERROR /ERROR, RECALIBRATE
2779 2505 2447 TST63 /SCOPE LOOP POINTER
2780 2506 5000 5000 /TEXT POINTER
2781 /
2782 /VERIFY THAT "RECALIBRATE" THEN "DRL" RESULTS IN DRL,
2783 /DRIVE STATUS, AND TRANSFER DONE
2784 /
2785 2507 7301 TST64, CLA CLL IAC
2786 2510 4453 CLRALL /CLEAR CONTROL
2787 2511 1177 TAD STCON
2788 2512 3163 DCA GDREG2 /SETUP COMPARE REGISTER

```

```

2789 2513 4442 RDSTAT /READ STATUS
2790 2514 4440 ACCMP1 /CHECK RESULTS
2791 2515 7610 SKP CLA /STATUS O.K,
2792 2516 5344 JMP T64E /ERROR, STATUS
2793 2517 4444 ENMAN1 /ENTER MAINTENANCE
2794 2520 7326 CLA CLL CML RTL
2795 2521 1177 TAD STCON /EXPECTED STATUS
2796 2522 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2797 2523 7326 CLA CLL CML RTL
2798 2524 4453 CLRALL /DCLR
2799 2525 4442 RDSTAT /READ STATUS
2800 2526 4440 ACCMP1 /CHECK RESULTS
2801 2527 7610 SKP CLA /STATUS O.K,
2802 2530 5344 JMP T64E /ERROR, STATUS
2803 2531 7326 CLA CLL CML RTL
2804 2532 1177 TAD STCON
2805 2533 1106 TAD K4000
2806 2534 1070 TAD K0004 /EXPECTED STATUS
2807 2535 3163 DCA GDREG2
2808 2536 1103 TAD K1000 /ENABLE SHIFT
2809 2537 4455 LDMAN /LOAD MAINTENANCE SET DRL
2810 2540 1153 TAD REG1
2811 2541 4442 RDSTAT /READ STATUS REGISTER
2812 2542 4440 ACCMP1 /CHECK RESULTS
2813 2543 4435 NERROR /O.K, 4096 LOOPS
2814 2544 4436 T64E, ERROR /ERROR, STATUS REGISTER
2815 2545 2507 TST64 /SCOPE LOOP POINTER
2816 2546 5000 5000 /TEXT POINTER
2817 /
2818 2547 5750 JMP I .+1 /TO NEXT TEST
2819 2550 2000 TST65
2820 /
2821 2600 PAGE
2822 /
2823 /VERIFY THAT "RECALIBRATE" THEN "DLCA" SETS
2824 /DRIVE STATUS AND BUSY ERROR IN STATUS REGISTER
2825 /
2826 2600 7301 TST65, CLA CLL IAC
2827 2601 4453 CLRALL /CLEAR CONTROL
2828 2602 1177 TAD STCON /EXPECTED STATUS
2829 2603 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2830 2604 4442 RDSTAT /READ STATUS
2831 2605 4440 ACCMP1 /CHECK RESULTS
2832 2606 7610 SKP CLA /STATUS O.K,
2833 2607 5233 JMP T65E /ERROR, STATUS
2834 2610 4444 ENMAN1 /ENTER MAINTENANCE
2835 2611 7326 CLA CLL CML RTL
2836 2612 1177 TAD STCON /EXPECTED STATUS
2837 2613 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2838 2614 7326 CLA CLL CML RTL
2839 2615 4453 CLRALL
2840 2616 4442 RDSTAT /READ STATUS
2841 2617 4440 ACCMP1 /CHECK RESULTS
2842 2620 7610 SKP CLA /STATUS O.K,
2843 2621 5233 JMP T65E /ERROR, STATUS

```

```

2844 2622 7326 CIA CLL CML RTL
2845 2623 1077 TAD K0100
2846 2624 1177 TAD STCON /EXPECTED STATUS
2847 2625 3163 DCA GDREG2
2848 2626 4451 LDCUR /LOAD CURRENT ADDRESS
2849 2627 1154 TAD REG2
2850 2630 4442 RDSTAT /READ STATUS REGISTER
2851 2631 4440 ACCMP1 /CHECK RESULTS
2852 2632 4435 NERROR /O.K. 4096 LOOPS
2853 2633 4436 ERROR /ERROR, STATUS REGISTER
2854 2634 2600 TST65 /SCOPE LOOP POINTER
2855 2635 5000 /TEXT POINTER
2856
2857 /
2858 /VERIFY THAT "RECALIBRATE" THEN "DLDC"
2859 /DOES SET BUSY ERROR IN STATUS
2860
2860 2636 7301 TST66, CLA CLL IAC
2861 2637 4453 CLRALL /CLEAR CONTROL
2862 2640 4444 ENMAN1 /ENTER MAINTENANCE
2863 2641 7326 CLA CLL CML RTL
2864 2642 4453 CLRALL
2865 2643 7326 CLA CLL CML RTL
2866 2644 1077 TAD K0100
2867 2645 1177 TAD STCON /EXPECTED STATUS
2868 2646 3163 DCA GDREG2
2869 2647 4450 LDCMD /LOAD COMMAND REGISTER
2870 2650 1154 TAD REG2
2871 2651 4442 RDSTAT /READ STATUS REGISTER
2872 2652 4440 ACCMP1 /CHECK RESULTS
2873 2653 4435 NERROR /O.K. 4096 LOOPS
2874 2654 4436 ERROR /ERROR, STATUS REGISTER
2875 2655 2636 TST66 /SCOPE LOOP POINTER
2876 2656 5000 /TEXT POINTER
2877
2878 /
2879 /VERIFY THAT RECALIBRATE THEN DLG RESULTS IN
2880 /BUSY AND DRIVE STATUS ERROR.
2881
2881 2657 7301 TST67, CLA CLL IAC
2882 2660 4453 CLRALL /CLEAR CONTROL
2883 2661 4444 ENMAN1 /ENTER MAINTENANCE
2884 2662 7326 CLA CLL CML RTL
2885 2663 1077 TAD K0100
2886 2664 1177 TAD STCON /EXPECTED STATUS
2887 2665 3163 DCA GDREG2 /SETUP EXPECTED COMPARE
2888 2666 7326 CLA CLL CML RTL /ENABLE RECALIBRATE
2889 2667 4453 CLRALL
2890 2670 4452 LDADD /LOAD DISK ADDRESS
2891 2671 4442 RDSTAT /READ STATUS
2892 2672 4440 ACCMP1 /CHECK RESULTS
2893 2673 4435 NERROR /O.K. 4096 LOOPS
2894 2674 4436 ERROR /ERROR, BUSY OR DRIVE STATUS
2895 2675 2657 TST67 /SCOPE LOOP POINTER
2896 2676 5000 /TEXT POINTER
2897
2898 /
2899 /VERIFY THAT SKIP OCCURES ON BUSY ERROR

```

```

2899
2900 2677 7301 TST68, CLA CLL IAC
2901 2700 4453 CLRALL /CLEAR CONTROL
2902 2701 4447 DSXSKP /DSKP
2903 2702 7610 SKP CLA /SKIP O.K.
2904 2703 5315 JMP T68E /ERROR, DISK SKIP
2905 2704 4444 ENMAN1 /ENTER MAINTENANCE
2906 2705 7326 CLA CLL CML RTL
2907 2706 4453 CLRALL /DCLR
2908 2707 4451 LDCUR /LOAD CURRENT ADDRESS
2909 2710 4447 DSXSKP /DSKP DISK SKIP
2910 2711 5315 JMP T68E /ERROR, NO SKIP
2911 2712 4447 DSXSKP /DSKP DISK SKIP
2912 2713 5315 JMP T68E /ERROR
2913 2714 4435 NERROR /O.K. 4096 LOOPS
2914 2715 4436 ERROR /ERROR, DSXSKP
2915 2716 2677 TST68 /SCOPE LOOP POINTER
2916 2717 0000 /TEXT POINTER
2917
2918 /
2919 /VERIFY THAT DCLR CLEARS ALL OF STATUS REGISTER
2920
2920 2720 7301 TST69, CLA CLL IAC
2921 2721 4453 CLRALL /CLEAR CONTROL
2922 2722 4444 ENMAN1 /ENTER MAINTENANCE
2923 2723 7326 CLA CLL CML RTL
2924 2724 4453 CLRALL /DCLR
2925 2725 7326 CLA CLL CML RTL
2926 2726 1177 TAD STCON
2927 2727 1106 TAD K4000
2928 2730 1070 TAD K0004 /EXPECTED STATUS
2929 2731 3163 DCA GDREG2
2930 2732 1103 TAD K1000 /ENABLE SHIFT
2931 2733 4455 LDMAN /LOAD MAINTENANCE SET DRL
2932 2734 1153 TAD REG1
2933 2735 4442 RDSTAT /READ STATUS REGISTER
2934 2736 4440 ACCMP1 /CHECK RESULTS
2935 2737 7610 SKP CLA /O.K
2936 2740 5350 JMP T69E /ERROR
2937 2741 4453 CLRALL /DCLR
2938 2742 1177 TAD STCON
2939 2743 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2940 2744 1154 TAD REG2
2941 2745 4442 RDSTAT /READ STATUS
2942 2746 4440 ACCMP1 /CHECK RESULTS
2943 2747 4435 NERROR /O.K. 4096 LOOPS
2944 2750 4436 ERROR /ERROR, STATUS REGISTER
2945 2751 2720 TST69 /SCOPE LOOP POINTER
2946 2752 5000 /TEXT POINTER
2947
2948 /
2949 /VERIFY THAT INTERRUPT OCCURES ON BUSY ERROR
2950
2950 2753 7301 TST70, CLA CLL IAC
2951 2754 4453 CLRALL /CLEAR CONTROL
2952 2755 1102 TAD K0400 /ENABLE INT. BIT
2953 2756 4450 LDCMD /LOAD COMMAND

```

```

2954 2757 4444 ENMAN1 /ENTER MAINTENANCE
2955 2760 7326 CLA CLL CML RTL
2956 2761 4453 CLRALL /DCLR
2957 2762 4437 IONWAT /WAIT FOR INT,
2958 2763 7610 SKP CLA /INT, O.K.
2959 2764 5374 JMP T70E /ERROR, DISK INT,
2960 2765 4453 CLRALL /CLEAR STATUS
2961 2766 4437 IONWAT /WAIT FOR INTERRUPT
2962 2767 5374 JMP T70E /ERROR, NO INT,
2963 2770 4453 CLRALL /DCLR
2964 2771 4437 IONWAT /WAIT FOR INT,
2965 2772 7610 SKP CLA /INT, O.K.
2966 2773 4435 NERROR /O.K, 4096 LOOPS
2967 2774 4436 T70E, ERROR /ERROR, INT.
2968 2775 2753 TST70 /SCOPE LOOP POINTER
2969 2776 0007 0007 /TEXT POINTER
2970 /
2971 /VERIFY THAT "RDBUF", "DLCA", "DRST", "DLAG"
2972 /OR "DSKP" DOES NOT AFFECT STATUS REGISTER.
2973 /
2974 2777 7301 TST71, CLA CLL IAC
2975 3000 4453 CLRALL /CLEAR CONTROL
2976 3001 4444 ENMAN1 /ENTER MAINTENANCE
2977 3002 7326 CLA CLL CML RTL
2978 3003 4453 CLRALL /DCLR
2979 3004 1103 TAD K1000 /ENABLE SHIFT
2980 3005 4455 LDMAN /LOAD MAINTENANCE
2981 3006 7326 CLA CLL CML RTL
2982 3007 1177 TAD STCON
2983 3010 1070 TAD K0004
2984 3011 1106 TAD K4000 /EXPECTED STATUS
2985 3012 3163 DCA GDREG2 /SETUP COMPARE REGISTER
2986 3013 4456 RDBUF /READ BUFFER
2987 3014 1153 TAD REG1
2988 3015 4442 RDSTAT /READ STATUS
2989 3016 1154 TAD REG2
2990 3017 4451 LD CUR /LOAD CURRENT ADDRESS
2991 3020 1153 TAD REG1
2992 3021 4447 DSKSKP /DSKP
2993 3022 7000 NOP
2994 3023 4452 LDADD /LOAD DISK ADDRESS
2995 3024 1153 TAD REG1
2996 3025 4427 LDBUF /LOAD BUFFER REGISTER
2997 3026 1154 TAD REG2
2998 3027 4442 RDSTAT /READ STATUS
2999 3030 4440 ACCMP1 /CHECK RESULTS
3000 3031 7610 SKP CLA /STATUS O.K.
3001 3032 5241 JMP T71E /ERROR, STATUS
3002 3033 4453 CLRALL /CLEAR STATUS
3003 3034 1177 TAD STCON /EXPECTED STATUS
3004 3035 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3005 3036 4442 RDSTAT /READ STATUS
3006 3037 4440 ACCMP1 /CHECK RESULTS
3007 3040 4435 NERROR /O.K, 4096 LOOPS
3008 3041 4436 T71E, ERROR /ERROR, STATUS REGISTER
    
```

```

3009 3042 2777 TST71 /SCOPE LOOP POINTER
3010 3043 5000 5000 /TEXT POINTER
3011 /
3012 /VERIFY THAT "WORD COUNT" OVERFLOWS AND SETS
3013 /TRANSFER DONE ONLY AFTER 256 (12 BIT COUNTS),
3014 /TRANSFER DONE SHOULD SET ON THE 11 TH, SHIFT
3015 /OF THE 256 TH, WORD.
3016 /
3017 3044 7240 TST72, CLA CMA
3018 3045 3153 DCA REG1 /SET FOR 1 PASS PER TEST
3019 3046 7301 CLA CLL IAC
3020 3047 4453 CLRALL /DCLR "CLR ALL"
3021 3050 1177 TAD STCON
3022 3051 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3023 3052 7326 CLA CLL CML RTL /TWO
3024 3053 1136 TAD M12
3025 3054 3156 DCA TCNTR1 /FOR FINAL WORD!
3026 3055 1143 TAD M255
3027 3056 3157 DCA TCNTR2 /FOR ONE LESS THAN "LAST WORD"
3028 3057 4444 ENMAN1 /ENTER MAINTENANCE MODE
3029 3060 1136 T72R, TAD M12
3030 3061 3160 DCA TCNTR3 /FOR EACH 12 BIT WORD
3031 3062 1077 TAD K0100 /ENABLE BITS TOSHIFT SILO
3032 3063 4455 LDMAN /LOAD MAINTENANCE
3033 3064 2160 ISZ TCNTR1 /SKIP ON EVERY "12 BIT WORD"
3034 3065 5263 JMP .-2
3035 3066 4456 RDBUF /THIS SHOULD PREVENT A "DRL"
3036 3067 4442 RDSTAT /GET STATUS
3037 3070 4440 ACCMP1 /CHECK RESULTS
3038 3071 7610 SKP CLA
3039 3072 5315 JMP T72E /STATUS ERROR
3040 3073 2157 ISZ TCNTR2
3041 3074 5260 JMP T72R /COUNT 255 "12 BIT WORDS"
3042 3075 1077 TAD K0100 /ENABLE SHIFT SILO
3043 3076 4455 LDMAN /LOAD MAINTENANCE
3044 3077 2156 ISZ TCNTR1 /BIT COUNTER
3045 3100 5276 JMP .-2 /COUNT 11 BITS
3046 3101 4442 RDSTAT /READ STATUS
3047 3102 4440 ACCMP1 /CHECK RESULTS
3048 3103 7610 SKP CLA /STATUS O.K.
3049 3104 5315 JMP T72E /ERROR, STATUS
3050 3105 7330 CLA CLL CML RAR
3051 3106 1177 TAD STCON
3052 3107 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3053 3110 1077 TAD K0100
3054 3111 4455 LDMAN /SHIFT IN LAST WORD
3055 3112 4442 RDSTAT /READ STATUS
3056 3113 4440 ACCMP1 /ONLY TRANSFER DONE
3057 3114 4435 NERROR /STATUS OK
3058 3115 4436 T72E, ERROR /ERROR, 12 BIT COUNTER
3059 3116 3044 TST72 /SCOP LOOP
3060 3117 5000 5000 /TEXT POINTER
3061 /
3062 3120 5721 JMP I .+1 /TO NFXI TEST
3063 3121 3200 TST73
    
```

```

3064 /
3065 PAGE
3066 /
3067 /VERIFY THAT DCLR DOES CLEAR 12 BIT COUNTER
3068 /
3069 3200 7240 TST73, CLA CMA
3070 3201 3153 DCA REG1 /SET FOR 1 PASS PER TEST
3071 3202 1143 TAD M255
3072 3203 3161 DCA TCNTR4 /SETUP COUNTER
    
```

```

3073 3204 7301 T73R1, CLA CLL IAC
3074 3205 4453 CLRALL /DCLR "CLR ALL"
3075 3206 1161 TAD TCNTR4
3076 3207 3156 DCA TCNTR1
3077 3210 1136 T73R2, TAD M12
3078 3211 3157 DCA TCNTR2 /12 BIT WORD COUNTER
3079 3212 4444 ENMAN1 /ENTER MAINTENANCE MODE
3080 3213 1077 TAD K0100 /ENABLE SHIFT
3081 3214 4455 LDMAN /LOAD MAINTENANCE
3082 3215 2157 ISZ TCNTR2 /COUNT SHIFTS
3083 3216 5214 JMP *-2 /MORE TO GO
3084 3217 4456 RDBUF /PREVENT DRL
3085 3220 2156 ISZ TCNTR1 /DO IT 12 TIMES
3086 3221 5210 JMP T73R2 /MORE 12 BIT COUNTS
3087 3222 7301 CLA CLL IAC /ENABLE CLEAR CONTROL
3088 3223 4453 CLRALL /AND CLEAR THE COUNTER
3089 3224 1177 TAD STCON
3090 3225 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3091 3226 1136 TAD M12
3092 3227 3156 DCA TCNTR1 /FOR FINAL WORD1
3093 3230 1143 TAD M255
3094 3231 3157 DCA TCNTR2 /FOR ONE LESS THAN "LAST WORD"
3095 3232 4444 ENMAN1 /ENTER "MAINTENANCE MODE"
3096 3233 1136 T73R3, TAD M12
3097 3234 3160 DCA TCNTR3 /FOR EACH 12 BIT WORD
3098 3235 1077 TAD K0100 /ENABLE BITS TOSHIFT SILO
3099 3236 4455 LDMAN /LOAD MAINTENANCE
3100 3237 2160 ISZ TCNTR3 /SKIP ON EVERY "12 BIT WORD"
3101 3240 5236 JMP *-2
3102 3241 4456 RDBUF /THIS SHOULD PREVENT A "DRL"
3103 3242 4442 RDSTAT /GET STATUS
3104 3243 4440 ACCMP1 /CHECK RESULTS
3105 3244 7610 SKP CLA
3106 3245 5266 JMP T73E /STATUS ERROR
3107 3246 2157 ISZ TCNTR2
3108 3247 5233 JMP T73R3 /COUNT 255 "12 BIT WORDS"
3109 3250 7330 CLA CLL CML RAR
3110 3251 1177 TAD STCON
3111 3252 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3112 3253 1077 TAD K0100
3113 3254 4455 LDMAN /SHIFT IN LAST WORD
3114 3255 2156 ISZ TCNTR1
3115 3256 5254 JMP *-2
3116 3257 4442 RDSTAT /READ STATUS
3117 3260 4440 ACCMP1 /ONLY TRANSFER DONE
3118 3261 7610 SKP CLA /STATUS O.K.
3119 3262 5266 JMP T73E /ERROR, STATUS
3120 3263 2161 ISZ TCNTR4 /UPDATE SPECIAL COUNTER
3121 3264 5204 JMP T73R1 /MORE TO TEST
3122 3265 4435 NERROR /STATUS OK
3123 3266 4436 T73E, ERROR /ERROR, 12 BIT COUNTER
3124 3267 3200 TST73 /SCOP LOOP
3125 3270 5000 5000 /TEXT POINTER
3126 /
3127 /
    
```

```

3128 /VERIFY THAT 12TH BIT O.K. H DOES INHTBIT
3129 /SETTING DB CONTI=1. THIS IS WHAT STOPS
3130 /HALF BLOCK DATA BREAKS ON A READ BREAK.
3131 /
3132 3271 7301 TST74, CLA CLL IAC
3133 3272 4453 CLRALL /CLEAR CONTROL
3134 3273 1077 TAD K0100 /HALF BLOCK TRANSFERS
3135 3274 4450 LDCMD /LOAD COMMAND
3136 3275 7340 CLA CLL CMA
3137 3276 3153 DCA REG1 /SETUP FOR 1 PASS
3138 3277 1141 TAD M128
3139 3300 3156 DCA TCNTR1 /COUNTER FOR 128 WORDS
3140 3301 4444 ENMAN1 /ENTER MAINTENANCE MODE
3141 3302 3163 T74R1, DCA GDREG2 /SETUP COMPARE REGISTER
3142 3303 1136 T74R1A, TAD M12
3143 3304 3157 DCA TCNTR2 /12 BIT WORD COUNTER
3144 3305 7300 T74R2, CLA CLL
3145 3306 1077 TAD K0100 /ENABLE SHIFT
3146 3307 4455 LDMAN /LOAD MAINTENANCE
3147 3310 2157 ISZ TCNTR2
3148 3311 5307 JMP .-2
3149 3312 4456 RDBUF /READ LOWER BUFFER
3150 3313 4440 ACCMP1 /CHECK RESULTS
3151 3314 7610 SKP CLA /DATA O.K.
3152 3315 5340 JMP T74E /ERROR
3153 3316 2156 ISZ TCNTR1 /COUNT 128 WORDS
3154 3317 5302 JMP T74R1 /MORE TO GO
3155 3320 1141 TAD M128
3156 3321 3156 DCA TCNTR1 /SETUP COUNTER
3157 3322 1136 TAD M12
3158 3323 3157 DCA TCNTR2 /SETUP BIT COUNTER
3159 3324 7326 CLA CLL CML RTL
3160 3325 1077 TAD K0100 /ENABLE SHIFT
3161 3326 4455 LDMAN /LOAD MAINTENANCE
3162 3327 2157 ISZ TCNTR2 /COUNT BITS
3163 3330 5326 JMP .-2 /MORE TO GO
3164 3331 4456 RDBUF /READ LOWER BUFFER
3165 3332 4440 ACCMP1 /CHECK RESULTS
3166 3333 7610 SKP CLA /DATA O.K.
3167 3334 5340 JMP T74E /ERROR
3168 3335 2156 ISZ TCNTR1 /UPDATE COUNTER
3169 3336 5322 JMP T74R3 /TEST 128 TIMES
3170 3337 4435 NERROR /TO NEXT TEST
3171 3340 4436 T74E, ERROR /ERROR, 128 WORD
3172 3341 3271 TST74 /SCOPE LOOP POINTER
3173 3342 4405 4405 /TEXT POINTER
3174 /
3175 3343 5744 JMP I .+1 /TO NEXT TEST
3176 3344 3400 TST75
3177 /
3178 /VERIFY THAT TRANSFER DONE "ALONE" CAUSES
3179 /DSKP TO SKIP.
3180 /
3181 PAGE 3400
3182 3400 7340 TST75, CLA CLL CMA
    
```

```

3183 3401 3153 DCA REG1 /SET FOR 1 PASS PER TEST
3184 3402 7301 CLA CLL IAC
3185 3403 4453 CLRALL /DCLR "CLR ALL"
3186 3404 1143 TAD M255
3187 3405 3156 DCA TCNTR1 /ONE LESS THAN "LAST WORD"
3188 3406 1136 TAD M12
3189 3407 3157 DCA TCNTR2 /FINAL WORD
3190 3410 4444 ENMAN1 /ENTER MAINTENANCE MODE
3191 3411 1136 T75R, TAD M12
3192 3412 3160 DCA TCNTR3
3193 3413 1077 TAD K0100 /"12 BIT" WORD COUNTER
3194 3414 4455 LDMAN /LOAD MAINTENANCE
3195 3415 2160 ISZ TCNTR3
3196 3416 5214 JMP .-2 /COUNT 12 BIT WORDS
3197 3417 4456 RDBUF /PREVENT "DRL"
3198 3420 4447 DSKSKP /SHOULD NOT SKIP HERE
3199 3421 7610 SKP CLA /O.K.
3200 3422 5234 JMP T75E /ERROR, DSKP
3201 3423 2156 ISZ TCNTR1
3202 3424 5211 JMP T75R /COUNT 255 WORDS
3203 3425 1077 TAD K0100
3204 3426 4455 LDMAN /LOAD MAINTENANCE
3205 3427 2157 ISZ TCNTR2
3206 3430 5226 JMP .-2 /DO ONE MORE WORD
3207 3431 4447 DSKSKP /DSKP "SKIP"
3208 3432 7610 SKP CLA /ERROR, DSKP DID NOT SKIP
3209 3433 4435 NERROR /O.K. 4096 LOOPS
3210 3434 4436 T75E, ERROR /ERROR, DSKP
3211 3435 3400 TST75 /SCOPE LOOP POINTER
3212 3436 0006 0006 /TEXT POINTER
3213 /
3214 /VERIFY THAT TRANSFER DONE CAUSES "INT. RQ."
3215 /
3216 3437 7340 TST76, CLA CLL CMA
3217 3440 3153 DCA REG1 /SETUP FOR 1 PASS PER TEST
3218 3441 7301 CLA CLL IAC
3219 3442 4453 CLRALL /DCLR "CLR ALL"
3220 3443 1143 TAD M255
3221 3444 3156 DCA TCNTR1 /ONE LESS THAN "LAST WORD"
3222 3445 1136 TAD M12
3223 3446 3157 DCA TCNTR2 /FINAL WORD
3224 3447 1102 TAD K0400 /ENABLE INT. BIT
3225 3450 4450 LDCMD /LOAD COMMAND REGISTER
3226 3451 4444 ENMAN1 /ENTER MAINTENANCE MODE
3227 3452 1136 T76R, TAD M12
3228 3453 3160 DCA TCNTR3 /"12 BIT" WORD COUNTER
3229 3454 1077 TAD K0100 /ENABLE SHIFT SILO
3230 3455 4455 LDMAN /LOAD MAINTENANCE
3231 3456 2160 ISZ TCNTR3
3232 3457 5255 JMP .-2 /COUNT "12 BIT" WOPDS
3233 3460 4456 RDBUF /PREVENT "DRL"
3234 3461 4437 IONWAT /WAIT FOR INT.
3235 3462 7610 SKP CLA /O.K. NO INT.
3236 3463 5275 JMP T76E /FROR, INT. OCCURED
3237 3464 2156 ISZ TCNTR1
    
```

```

PAL10 V142A 7-MAR-77 13155 PAGE 7-3
3238 3465 5252 JMP T76R /COUNT 255 WORDS
3239 3466 1077 TAD K0100
3240 3467 4455 LDMAN /LOAD MAINTENANCE
3241 3470 2157 ISZ TCNTR2
3242 3471 5267 JMP *-2 /DO ONE MORE WORD
3243 3472 4437 IONWAT /WAIT FOR EXPECTED INT.
3244 3473 7610 SKP CLA /ERROR, INT, DIDN'T OCCUR
3245 3474 4435 NRROR /O.K. 4096 LOOPS
3246 3475 4436 T76E, ERROR /ERROR, INT.
3247 3476 3437 TST76 /SCOPE LOOP POINTER
3248 3477 0007 0007 /TEXT POINTER
3249 //
3250 //
3251 //
3252 //
3253 /VERIFY "DATA BREAK" FROM CURRENT FIELD LOCATION 0
3254 /USE DATA PATTERN 0000 AND 7777, "DO A WRITE"
3255 /
3256 3500 7301 TST77, CLA CLL IAC
3257 3501 4453 CLRALL /DCLR
3258 3502 4444 ENMAN1 /ENTER MAINTENANCE MODE
3259 3503 1175 TAD HOMEMA /CURRENT FIELD BITS
3260 3504 1106 TAD K4000 /ENABLE "WRITE"
3261 3505 4450 LDCMD /LOAD COMMAND REGISTER
3262 3506 1153 TAD REG1
3263 3507 7110 CLL RAR
3264 3510 7630 SZL CLA /MAKE "DATA WORD"
3265 3511 7340 CLA CLL CMA /SETUP COMPARE REGISTER
3266 3512 3163 DCA GDREG2
3267 3513 1163 TAD GDREG2
3268 3514 3000 DCA /STORE OUT BOUND DATA
3269 3515 7340 CLA CLL CMA
3270 3516 4451 LDCUR /SET CURRENT ADDRESS TO 7777
3271 3517 4451 LDCUR /LOAD CURRENT ADDRESS TO 0
3272 3520 1076 TAD K0040 /ENABLE "BREAK"
3273 3521 4455 LDMAN /LOAD AND GO
3274 3522 4456 RDBUF /READ DATA BUFFER
3275 3523 4440 ACCMP1 /CHECK RESULTS
3276 3524 4435 NRROR /O.K. 4096 LOOPS
3277
3278 3525 4436 T77E, ERROR /ERROR, DATA BREAK
3279 3526 3500 TST77 /SCOPE LOOP POINTER
3280 3527 4263 4263 /TEXT POINTER
3281 //
3282 /VERIFY THAT "DATA BREAK" WORKS FROM LOCATION 0
3283 /OF CURRENT FIELD, DO "A WRITE" AND USE DATA
3284 /PATTERN "2525 AND 5252"
3285 /
3286 3530 7301 TST78, CLA CLL IAC
3287 3531 4453 CLRALL /DCLR "CLR ALL"
3288 3532 4444 ENMAN1 /ENTER MAINTENANCE MODE
3289 3533 1153 TAD REG1
3290 3534 7110 CLL RAR
3291 3535 7630 SZL CLA

```

```

PAL10 V142A 7-MAR-77 13155 PAGE 7-4
3293 3536 1120 TAD K2525
3294 3537 1120 TAD K2525 /TAKE DATA WORD
3295 3540 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3296 3541 1163 TAD GDREG2
3297 3542 3000 DCA /STORE OUTBOUND DATA
3298 3543 1175 TAD HOMEMA /GET CURRENT FIELD BITS
3299 3544 1126 TAD K5000 /GET "WRITE ENABLE BIT"
3300 3545 4450 LDCMD /LOAD COMMAND REGISTER
3301 3546 1154 TAD REG2
3302 3547 4451 LDCUR /SET CURRENT ADDRESS TO 7777
3303 3550 4451 LDCUR /LOAD CURRENT ADDRESS TO 0
3304 3551 1076 TAD K0040 /DATA BREAK ENABLE BIT
3305 3552 4455 LDMAN /LOAD AND GO
3306 3553 4456 RDBUF /READ DATA BUFFER
3307 3554 4440 ACCMP1 /CHECK RESULTS
3308 3555 4435 NRROR /O.K. 4096 LOOPS
3309 3556 4436 T78E, ERROR /ERROR, DATA BREAK
3310 3557 3530 TST78 /SCOPE LOOP POINTER
3311 3560 4263 4263 /TEXT POINTER
3312 //
3313 /VERIFY THAT "DATA BREAK" WORK FROM LOCATION 7777
3314 /OF CURRENT FIELD, DO A WRITE AND USE DATA PATTERN
3315 /0000 AND 7777.
3316 /
3317 3561 7301 TST79, CLA CLL IAC
3318 3562 4453 CLRALL /DCLR "CLR ALL"
3319 3563 4444 ENMAN1 /ENTER MAINTENANCE MODE
3320 3564 1153 TAD REG1
3321 3565 7110 CLL RAR
3322 3566 7630 SZL CLA /MAKE DATA WORD
3323 3567 7340 CLA CLL CMA /SETUP COMPARE REGISTER
3324 3570 3163 DCA GDREG2
3325 3571 1163 TAD GDREG2
3326 3572 3532 DCA I K7777 /STORE OUTBOUND DATA
3327 3573 1153 TAD REG1
3328 3574 4451 LDCUR /SET CURRENT ADDRESS
3329 3575 7340 CLA CLL CMA
3330 3576 4451 LDCUR /LOAD CURRENT ADDRESS TO 7777
3331 3577 1175 TAD HOMEMA /CURRENT FIELD BITS
3332 3600 1106 TAD K4000 /WRITE ENABLE
3333 3601 4450 LDCMD /LOAD COMMAND REGISTER
3334 3602 1076 TAD K0040 /BREAK ENABLE BIT
3335 3603 4455 LDMAN /LOAD AND GO
3336 3604 4456 RDBUF /READ DATA BUFFER
3337 3605 4440 ACCMP1 /CHECK RESULTS
3338 3606 4435 NRROR /O.K. 4096 LOOPS
3339 3607 4436 T79E, ERROR /ERROR, DATA BREAK
3340 3610 3561 TST79 /SCOPE LOOP POINTER
3341 3611 4263 4263 /TEXT POINTER
3342 //
3343 //
3344 /VERIFY "DATA BREAK" FROM LOCATION 7777 OF
3345 /CURRENT FIELD, DO A "WRITE" AND USE DATA
3346 /PATTERN 2525 AND 5252.
3347 /

```

```

3340 3612 7301 TST80, CLA CLL IAC
3349 3613 4453 CLRALL /DCLR "CLR ALL"
3350 3614 4444 ENMAN1 /ENTER MAINTENANCE MODE
3351 3615 1153 TAD REG1
3352 3616 7110 CLL RAR
3353 3617 7630 SZL CLA
3354 3620 1120 TAD K2525
3355 3621 1120 DCA K2525 /MAKE DATA WORD
3356 3622 3163 TAD GDREG2 /SETUP COMPARE REGISTER
3357 3623 1163 TAD GDREG2
3358 3624 3532 DCA I K7777 /STORE OUTBOUND DATA
3359 3625 1175 TAD HOMEMA /CURRENT FIELD BITS
3360 3626 1126 TAD K5000 /FUNCTION "WRITE"
3361 3627 4450 LDCMD /LOAD COMMAND
3362 3630 1154 TAD REG2
3363 3631 4451 LDCUR /SET CURRENT ADDRESS
3364 3632 7340 CLA CLL CMA
3365 3633 4451 LDCUR /LOAD CURRENT ADDRESS TO 7777
3366 3634 1076 TAD K0040 /BREAK ENABLE BIT
3367 3635 4455 LDMAN /LOAD MAINTENANCE AND GO
3368 3636 4456 RDBUF /READ BUFFER
3369 3637 4440 ACCMP1 /CHECK RESULTS
3370 3640 4435 NERROR /O.K. 4096 LOOPS
3371 3641 4436 T80E, ERROR /ERROR, DATA BREAK
3372 3642 3612 TST80 /SCOPE LOOP POINTER
3373 3643 4263 4263 /TEXT POINTER
3374
3375 /
3376 /VERIFY THAT "DATA BREAK" WORKS FROM CURRENT FIELD
3377 /LOCATION 0, DO A "WRITE" AND USE ALL COMBINATION PATTERN
3378 /ALSO VERIFY THAT DATA IN LOCATION 0 DOESN'T CHANGE
3379 /ON A WRITE BREAK, (NOTE: DATA FROM LOCATION 0 PUT
3380 /IN INDICATOR "DTI:")
3381 3644 7301 TST81, CLA CLL IAC
3382 3645 4453 CLRALL /DCLR "CLR ALL"
3383 3646 4444 ENMAN1 /ENTER MAINTENANCE MODE
3384 3647 1154 TAD REG2
3385 3650 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3386 3651 1163 TAD GDREG2
3387 3652 3000 DCA 0 /STORE OUTBOUND DATA
3388 3653 4451 LDCUR /SET CURRENT ADDRESS TO 0
3389 3654 1175 TAD HOMEMA /CURRENT FIELD BITS
3390 3655 1106 TAD K4000 /WRITE FUNCTION
3391 3656 4450 LDCMD /LOAD COMMAND
3392 3657 1076 TAD K0040 /DATA BREAK ENABLE BIT
3393 3660 4455 LDMAN /LOAD AND GO
3394 3661 4456 RDBUF /READ BUFFER
3395 3662 4440 ACCMP1 /CHECK RESULTS
3396 3663 7610 SKP CLA
3397 3664 5272 JMP T81E /ERROR
3398 3665 1000 TAD 0
3399 3666 3173 DCA DTREG /SAVE IN CASE OF ERROR
3400 3667 1173 TAD DTREG
3401 3670 4440 ACCMP1 /CHECK RESULTS
3402 3671 4435 NERROR /O.K. 4096 LOOPS

```

```

3403 3672 4436 T81E, ERROR /ERROR, DATA BREAK
3404 3673 3644 TSTR1 /SCOPE LOOP POINTER
3405 3674 4263 4263 /TEXT POINTER
3406
3407 /
3408 /VERIFY "DATA BREAK" FROM LOCATION 7777 OF
3409 /CURRENT FIELD, DO A "WRITE" AND USE ALL COMBINATIONS.
3410 /ALSO VERIFY THAT OUTBOUND DATA IN LOCATION 7777
3411 /DOESN'T CHANGE WHEN DOING A WRITE BREAK. (NOTE: DATA FROM
3412 /LOCATION 7777 PUT IN INDICATOR "DTI:")
3413
3414 3675 7301 TST82, CLA CLL IAC
3415 3676 4453 CLRALL /DCLR "CLR ALL"
3416 3677 4444 ENMAN1 /ENTER MAINTENANCE MODE
3417
3418 3700 1153 TAD REG1
3419 3701 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3420 3702 1163 TAD GDREG2
3421 3703 3532 DCA I K7777 /STORE OUTBOUND DATA
3422 3704 7340 CLA CLL CMA
3423 3705 4451 LDCUR /SET CURRENT ADDRESS TO 7777
3424 3706 1175 TAD HOMEMA /CURRENT FIELD BITS
3425 3707 1126 TAD K5000 /WRITE FUNCTION
3426 3710 4450 LDCMD /LOAD COMMAND
3427 3711 1076 TAD K0040 /BREAK ENABLE BIT
3428 3712 4455 LDMAN /LOAD AND GO
3429 3713 4456 RDBUF /READ BUFFER
3430 3714 4440 ACCMP1 /CHECK RESULTS
3431 3715 7610 SKP CLA
3432 3716 5324 JMP T82E /ERROR
3433 3717 1532 TAD I K7777
3434 3720 3173 DCA DTREG /SAVE IN CASE OF ERROR
3435 3721 1173 TAD DTREG
3436 3722 4440 ACCMP1 /CHECK RESULTS
3437 3723 4435 NERROR /O.K. 4096 LOOPS
3438 3724 4436 T82E, ERROR /ERROR, DATA BREAK
3439 3725 3675 TST82 /SCOPE LOOP POINTER
3440 3726 4263 4263 /TEXT POINTER
3441
3442 /
3443 /VERIFY THAT "DCLR" CLEARS CURRENT ADDRESS
3444 /FIRST DO A DATA BREAK FROM LOCATION 7776
3445 /THEN "DCLR" FROM LOCATION 0000, DO "A WRITE"
3446 /AND USE DATA PATTERN ALL COMBINATIONS.
3447
3447 3727 7301 TST83, CLA CLL IAC
3448 3730 4453 CLRALL /DCLR "CLR ALL"
3449 3731 4444 ENMAN1 /ENTER MAINTENANCE MODE
3450 3732 1153 TAD REG1
3451 3733 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3452 3734 1163 TAD GDREG2
3453 3735 3510 DCA I K7776 /STORE OUTBOUND DATA BREAK 1
3454 3736 1154 TAD REG2
3455 3737 3000 DCA 0 /STORE OUTBOUND DATA BREAK 2
3456 3740 1175 TAD HOMEMA /CURRENT FIELD BITS
3457 3741 1106 TAD K4000 /WRITE FUNCTION

```

```

3458 3742 4450 LDCMD /LOAD COMMAND
3459 3743 7344 CLA CLL CMA RAL
3460 3744 4451 LDCUR /LOAD CURRENT ADDRESS TO 7776
3461 3745 1076 TAD K0040 /BREAK ENABLE BIT
3462 3746 4455 LDMAN /LOAD AND GO
3463 3747 4456 RDBUF /READ BUFFER
3464 3750 4440 ACCMP1 /CHECK RESULTS
3465 3751 7610 SKP CLA /O.K. TPY LOCATION 0
3466 3752 5371 JMP T03E /ERROR, DATA BREAK
3467 3753 7301 CLA CLL IAC
3468 3754 4453 CLRALL /CLR "CLEAR CURRENT ADDRESS"
3469 3755 4444 ENMAN1 /ENTER MAINTENANCE MODE
3470 3756 3172 DCA ADREG /SETUP FOR ERROR PRINTER
3471 3757 1175 TAD HOMEBA /CURRENT FIELD BITS
3472 3760 1126 TAD K5000 /FUNCTION WRITE
3473 3761 4450 LDCMD /LOAD COMMAND
3474 3762 1154 TAD REG2
3475 3763 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3476 3764 1076 TAD K0040 /BREAK ENABLE BIT
3477 3765 4455 LDMAN /LOAD AND GO
3478 3766 4456 RDBUF /READ BUFFER
3479
3480 3767 4440 ACCMP1 /CHECK RESULTS
3481 3770 4435 NERROR /ALL WORKFD 4096 LOOPS
3482 3771 4436 ERROR /ERROR, DATA BREAK
3483 3772 3727 TST03 /SCOPE LOOP POINTER
3484 3773 4263 4263 /TEXT POINTER
3485
3486 /
3487 /VERIFY THAT CURRENT ADDRESS DOES INCREMENT FROM 7777
3488 /TO 0000, DO A WRITE DATA BREAK AND USE DATA PATTERN
3489 /ALL COMBINATION.
3490 /
3490 3774 7301 TST04, CLA CLL IAC
3491 3775 4453 CLRALL /CLEAR CONTROL
3492 3776 1153 TAD REG1
3493 3777 3000 DCA 0 /STORE OUTBOUND DATA
3494 4000 1154 TAD REG2
3495 4001 3532 DCA I K7777 /STORE OUTBOUND DATA
3496 4002 7340 CLA CLL CMA
3497 4003 4451 LDCUR /LOAD CURRENT ADDRESS
3498 4004 4444 ENMAN1 /ENTER MAINTENANCE MODE
3499 4005 1126 TAD K5000 /WRITE FUNCTION
3500 4006 1175 TAD HOMEBA /CURRENT FIELD
3501 4007 4450 LDCMD /LOAD COMMAND
3502 4010 7344 CLA CLL CMA RAL
3503 4011 3156 DCA TCNTR1 /2 BREAK COUNTER
3504 4012 1076 TAD K0040 /ENABLE BREAK BIT
3505 4013 4455 LDMAN /LOAD MAINTENANCE
3506 4014 2156 ISZ /COUNT BREAKS
3507 4015 5213 JMP TCNTR1 /DO 2
3508 4016 7300 CLA CLL
3509 4017 1154 TAD REG2
3510 4020 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3511 4021 4456 RDBUF /GET FIRST WORD
3512 4022 4440 ACCMP1 /CHECK IT

```

```

3513 4023 7610 SKP CLA /FIRST O.K.
3514 4024 5233 JMP T04E /ERROR, FIRST WORD
3515 4025 3172 DCA ADREG /SETUP ERROR PRINTER
3516 4026 1153 TAD REG1
3517 4027 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3518 4030 4456 RDBUF /GET SECOND WORD
3519 4031 4440 ACCMP1 /CHECK IT
3520 4032 4435 NERROR /O.K. 4096 LOOPS
3521 4033 4436 ERROR /DATA BREAK
3522 4034 3774 TST04 /SCOPE LOOP POINTER
3523 4035 4263 4263 /TEXT POINTER
3524
3525 /
3526 /VERIFY THAT CURRENT ADDRESS DOES INCREMENT
3527 /ADDRESS TEST FROM 0200 TO TST05 OF CURRENT
3528 /FIELD, DO A WRITE DATA BREAK.
3529 /
3530 4036 7301 TST05, CLA CLL IAC
3531 4037 4453 CLRALL /CLR "CLR ALL"
3532 4040 7340 CLA CLL CMA
3533 4041 3153 DCA REG1 /SETUP FOR 1 PASS PER TEST
3534 4042 1100 TAD K0200
3535 4043 3157 DCA TCNTR2 /START AT ADDRESS 0200
3536 4044 1100 TAD K0200
3537 4045 4451 LDCUR /LOAD CURRENT ADDRESS
3538 4046 4444 ENMAN1 /ENTER MAINTENANCE MODE
3539 4047 4452 LDADD /KEEP WRITE INHIBIT CLEAR
3540 4050 1557 TAD I TCNTR2 /GET INSTRUCTION
3541 4051 3156 DCA TCNTR1 /SAVE INSTRUCTION
3542 4052 1157 TAD TCNTR2
3543 4053 7110 CLL RAR
3544 4054 7630 SZL CLA
3545 4055 7240 CLA CMA /USE DATA 7777
3546 4056 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3547 4057 1163 TAD GDREG2
3548 4060 3557 DCA I TCNTR2 /STORE OUTBOUND DATA
3549 4061 1175 TAD HOMEBA /CURRENT FIELD BITS
3550 4062 1106 TAD K4000 /WRITE FUNCTION
3551 4063 4450 LDCMD /LOAD COMMAND REGISTER
3552 4064 1076 TAD K0040 /BREAK ENABLE BIT
3553 4065 4455 LDMAN /LOAD AND GO
3554 4066 7300 CLA CLL
3555 4067 1156 TAD TCNTR1 /GET INSTRUCTION
3556 4070 3557 DCA I TCNTR2 /REPLACE INSTRUCTION
3557 4071 1157 TAD TCNTR2
3558 4072 3172 DCA ADREG /ADDRESS OF BREAK
3559 4073 4456 RDBUF /GET DATA
3560 4074 4440 ACCMP1 /CHECK RESULTS
3561 4075 7610 SKP CLA
3562 4076 5306 JMP T05E /ERROR, DATA BREAK
3563 4077 1157 TAD TCNTR2
3564 4100 1157 TAD MTS05 /SPECIAL POINTER FOR START OF
3565 4101 7650 SNA CLA /THIS TEST.
3566 4102 5305 JMP T050K /TEST O.K.
3567 4103 2157 ISZ TCNTR2

```

```

PAL10 V142A 7-MAR-77 13:55 PAGE 7-9
3568 4104 5246 JMP T85R1 /LOOP DO 0200 TO T8T60
3569 4105 4435 T85OK, NERROR /THIS ADDRESS WORKED TRY NEXT
3570 4106 4436 T85E, ERROR /ERROR, DATA BREAK
3571 4107 4036 T8T85 /SCOPE LOOP POINTER
3572 4110 4263 4263 /TEXT POINTER
3573 /
3574 4111 5712 JMP I .+1 /TO NEXT TEST
3575 4112 4200 T8T86
3576 /
3577 /VERIFY THAT B LAST BREAK SETS AFTER 256 WRITE DATA BREAKS
3578 /AND VERIFY THAT DCLR CLEARS WRITE INHIBIT COUNTER.
3579 /
3580 PAGE
3581 4200 7340 T8T86, CLA CLL CMA
3582 4201 3153 DCA REG1 /SETUP FOR 1 PASS PER TEST
3583 4202 1143 TAD M255
3584 4203 3156 DCA TCNTR1 /SPECIAL COUNTER
3585 4204 7301 T86R1, CLA CLL IAC
3586 4205 4453 CLRALL /CLEAR CONTROL
3587 4206 1156 TAD TCNTR1
3588 4207 3157 DCA TCNTR2 /AMOUNT OF BREAKS TO DO
3589 4210 4444 ENMAN1 /ENTER MAINTENANCE MODE
3590 4211 1175 TAD HOMEWA /CURRENT FIELD BITS
3591 4212 1106 TAD K4000 /WRITE FUNCTION
3592 4213 4450 LDCMD /LOAD COMMAND
3593 4214 4451 T86R2, LDCUR /LOAD CURRENT ADDRESS
3594 4215 7340 CLA CLL CMA
3595 4216 3000 DCA 0 /STORE OUTBOUND DATA
3596 4217 7340 CLA CLL CMA
3597 4220 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3598 4221 1076 TAD K0040 /BREAK ENABLE BIT
3599 4222 4455 LDMAN /LOAD AND GO
3600 4223 4456 RDBUF /GET WORD
3601 4224 4440 ACCMP1 /CHECK RESULTS
3602 4225 7610 SKP CLA
3603 4226 5276 JMP T86E /DATA EPROR
3604 4227 2157 ISZ TCNTR2
3605 4230 5214 JMP T86R2 /DO 0-255 BREAKS
3606 4231 7301 CLA CLL IAC
3607 4232 4453 CLRALL /CLEAR CONTROL AND COUNTER
3608 4233 7340 CLA CLL CMA
3609 4234 1143 TAD M255
3610 4235 3157 DCA TCNTR2 /256 BREAK COUNTER
3611 4236 7300 T86R3, CLA CLL
3612 /
3613 4237 3000 DCA 0 /MAKE DATA PATTERN
3614 4240 3163 DCA GDREG2 /STORE OUTBOUND DATA
3615 4241 4444 ENMAN1 /SETUP COMPARE REGISTER
3616 4242 4451 LDCUR /ENTER MAINTENANCE MODE
3617 4243 1126 TAD K5000 /LOAD CURRENT ADDRESS
3618 4244 1175 TAD HOMEWA /WRITE FUNCTION
3619 4245 4450 LDCMD /CURRENT FIELD
3620 4246 1076 TAD K0040 /LOAD COMMAND
3621 4247 4455 LDMAN /ENABLE BREAK BIT
3622 4250 4456 RDBUF /LOAD MAINTENANCE
 /GET WORD

```

```

PAL10 V142A 7-MAR-77 13:55 PAGE 7-10
3623 4251 4440 ACCMP1 /CHECK RESULTS
3624 4252 7610 SKP CLA /WORD O.K.
3625 4253 5276 JMP T86E /DATA ERROR
3626 4254 2157 ISZ TCNTR2
3627 4255 5236 JMP T86R3 /DO 256 WRITE BREAKS
3628 4256 1107 TAD K7000
3629 4257 3160 DCA TCNTR3 /CLEAR COUNTER
3630 4260 7340 T86R4, CLA CLL CMA
3631 4261 3000 DCA 0 /STORE NOT OUTBOUND DATA
3632 4262 4451 LDCUR /LOAD CURRENT ADDRESS
3633 4263 1076 TAD K0040 /ENABLE BREAK BIT
3634 4264 4455 LDMAN /LOAD "SHOULD NOT BREAK"
3635 4265 4456 RDBUF /GET DATA
3636 4266 4440 ACCMP1 /CHECK IT
3637 4267 7610 SKP CLA /DATA O.K.
3638 4270 5276 JMP T86E /ERROR, DATA BREAK INHIBIT
3639 4271 2160 ISZ TCNTR3
3640 4272 5260 JMP T86R4 /DO "1000 FAKE" BREAKS
3641 4273 2156 ISZ TCNTR1
3642 4274 5204 JMP T86R1 /START ALL OVER WITH ONE LESS
3643 4275 4435 NERROR /TO NEXT TEST
3644 4276 4436 T86E, ERROR /ERROR, DATA BREAK
3645 4277 4200 T8T86 /SCOPE LOOP POINTER
3646 4300 4263 4263 /TEXT POINTER
3647 /
3648 4301 5702 JMP I .+1 /TO NEXT TEST
3649 4302 4303 T8T87
3650 /
3651 /
3652 /VERIFY THAT B LAST BREAK SETS AFTER 128 BREAKS IF
3653 /HALF BIT IS SET, ALSO MAKE SURE LOAD DISK ADDRESS LOADS
3654 /THE INHIBIT COUNTER CORRECTLY.
3655 /
3656 4303 7340 T8T87, CLA CLL CMA
3657 4304 3153 DCA REG1 /SETUP FOR 1 PASS PER TEST
3658 4305 1143 TAD M255
3659 4306 3156 DCA TCNTR1 /SPECIAL COUNTER
3660 4307 7301 T87R1, CLA CLL IAC
3661 4310 4453 CLRALL /CLEAR CONTROL
3662 4311 1156 TAD TCNTR1
3663 4312 3157 DCA TCNTR2 /AMOUNT OF BREAKS TO DO
3664 4313 4444 ENMAN1 /ENTER MAINTENANCE MODE
3665 4314 1077 TAD K0100 /HALF BIT
3666 4315 1175 TAD HOMEWA /CURRENT FIELD BITS
3667 4316 1106 TAD K4000 /WRITE FUNCTION
3668 4317 4450 LDCMD /LOAD COMMAND
3669 4320 4451 T87R2, LDCUR /LOAD CURRENT ADDRESS
3670 4321 7340 CLA CLL CMA
3671 4322 3000 DCA 0 /STORE OUTBOUND DATA
3672 4323 7340 CLA CLL CMA
3673 4324 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3674 4325 1076 TAD K0040 /BREAK ENABLE BIT
3675 4326 4455 LDMAN /LOAD AND GO
3676 4327 4456 RDBUF /GET WORD
3677 4330 4440 ACCMP1 /CHECK RESULTS

```

```

3678 4331 7610 SKP CLA
3679 4332 5374 JMP T87E /DATA ERROR
3680 4333 2157 ISZ TCNTR2
3681 4334 5320 JMP T87R2 /DO SO MANY BREAKS
3682 4335 4452 L0ADD /LOAD ADDRESS AND INHIBIT COUNT
3683 4336 1141 TAD M128
3684 4337 3157 DCA TCNTR2 /128 BREAK COUNTER
3685 4340 7300 T87R3, CLA CLL
3686
3687 4341 3000 DCA 0 /MAKE DATA WORD
3688 4342 3163 DCA GDREG2 /STORE OUTBOUND DATA
3689 4343 4451 LDCUR /SETUP COMPARE REGISTER
3690 4344 1076 TAD K0040 /LOAD CURRENT ADDRESS
3691 4345 4455 LDMAN /ENABLE BREAK BIT
3692 4346 4456 ROBUF /LOAD MAINTENANCE
3693 4347 4440 ACCMP1 /GET WORD
3694 4350 7610 SKP CLA /CHECK RESULTS
3695 4351 5374 JMP T87E /WORD O.K.
3696 4352 2157 ISZ TCNTR2 /DATA ERROR
3697 4353 5340 JMP T87R3 /DO 128 WRITE BREAKS
3698 4354 1107 TAD K7000
3699 4355 3160 DCA TCNTR3 /CLEAR COUNTER
3700 4356 7340 T87R4, CLA CLL CMA
3701 4357 3000 DCA 0 /STORE NOT OUTBOUND DATA
3702 4360 4451 LDCUR /LOAD CURRENT ADDRESS
3703 4361 1076 TAD K0040 /ENABLE BREAK BIT
3704 4362 4455 LDMAN /LOAD "SHOULD NOT BREAK"
3705 4363 4456 ROBUF /GET DATA
3706 4364 4440 ACCMP1 /CHECK IT
3707 4365 7610 SKP CLA /DATA O.K.
3708 4366 5374 JMP T87E /ERROR, DATA BREAK INHIBIT
3709 4367 2160 ISZ TCNTR3
3710 4370 5356 JMP T87R4 /DO "1000 FAKE" BREAKS
3711 4371 2156 ISZ TCNTR1
3712 4372 5307 JMP T87R1 /START ALL OVER WITH ONE LESS
3713 4373 4435 NERROR /TO NEXT TEST
3714 4374 4436 ERROR /ERROR, DATA BREAK
3715 4375 4303 T87E, TST07 /SCOPE LOOP POINTER
3716 4376 4263 4263 /TEXT POINTER
3717
3718 /VERIFY THAT "DATA BREAK" WORKS WITH A "READ"
3719 /TO LOCATION 0 OF CURRENT FIELD, USE DATA
3720 /PATTERN 0000 AND 7777.
3721
3722 4377 7301 TST08, CLA CLL IAC
3723 4400 4453 CLRALL /DCLR "CLR ALL"
3724 4401 1175 TAD HOMEMA /CURRENT FIELD
3725 4402 4450 LDCMD /LOAD COMMAND TO 0
3726 4403 1153 TAD REG1
3727 4404 7110 CLL RAR
3728 4405 7630 SZL CLA
3729 4406 7240 CLA CMA
3730 4407 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3731 4410 1163 TAD GDREG2 /GET VALUE TO LOAD
3732 4411 4427 LDBUF /LOAD UPPER BUFFER

```

```

3733 4412 1076 TAD K0040
3734 4413 4455 LDMAN /LOAD AND GO
3735 4414 7300 CLA CLL
3736 4415 3172 DCA ADREG /ADDRESS FOR PRINTER
3737 4416 1000 TAD 0 /GET INBOUND WORD
3738 4417 3173 DCA DTREG /SAVE IT
3739 4420 1173 TAD DTREG
3740 4421 4440 ACCMP1 /CHECK
3741 4422 4435 NERROR /O.K. 4096 LOOPS
3742 4423 4436 ERROR /ERROR, DATA BREAK
3743 4424 4377 TST08 /SCOPE LOOP POINTER
3744 4425 4263 4263 /TEXT POINTER
3745
3746
3747
3748 /VERIFY WITH A "READ" THAT "DATA BREAK" WORKS
3749 /FROM LOCATION "7777" OF CURRENT FIELD USE
3750 /DATA PATTERN 0000 AND 7777.
3751
3752 4426 7301 TST09, CLA CLL IAC
3753 4427 4453 CLRALL
3754 4430 1103 TAD X1000
3755 4431 1175 TAD HOMEMA /CURRENT FIELD
3756 4432 4450 LDCMD /LOAD COMMAND FOR READ
3757 4433 1153 TAD REG1
3758 4434 7110 CLL RAR
3759 4435 7630 SZL CLA
3760 4436 7240 CLA CMA
3761 4437 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3762 4440 7240 CLA CMA
3763 4441 4451 LDCUR /LOAD CURRENT ADDRESS
3764 4442 1163 TAD GDREG2 /GET VALUE TO LOAD
3765 4443 4427 LDBUF /LOAD UPPER BUFFER
3766 4444 1076 TAD K0040 /ENABLE BREAK BIT
3767 4445 4455 LDMAN /LOAD AND GO
3768 4446 7300 CLA CLL
3769 4447 1532 TAD I K7777 /GET "WORD"
3770 4450 3173 DCA DTREG /SAVE INBOUND WORD
3771 4451 1173 TAD DTREG
3772 4452 4440 ACCMP1 /CHECK IT
3773 4453 4435 NERROR /O.K. 4096 LOOPS
3774 4454 4436 ERROR /ERROR, DATA BREAK
3775 4455 4426 TST09 /SCOPE LOOP POINTER
3776 4456 4263 4263 /TEXT POINTER
3777
3778 /VERIFY THAT "DATA BREAK" WITH A "READ" TO
3779 /CURRENT FIELD LOCATION 0 USE DATA PATTERN
3780 /5252 + 2525
3781
3782 4457 7301 TST00, CLA CLL IAC
3783 4460 4453 CLRALL /DCLR
3784 4461 1175 TAD HOMEMA /CURRENT FIELD
3785 4462 4450 LDCMD /LOAD COMMAND TO READ
3786 4463 1153 TAD REG1
3787 4464 7110 CLL RAR

```

```

3788 4465 7630 SZL CLA /WHAT DDATA
3789 4466 1120 TAD K2525 /DATA 5252
3790 4467 1120 TAD K2525
3791 4470 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3792 4471 1163 TAD GDREG2
3793 4472 4427 LDBUF /GET VALUE TO LOAD
3794 4473 4451 LDCUR /LOAD UPPER BUFFER
3795 4474 1076 TAD K0040 /LOAD CURRENT ADDRESS TO 0
3796 4475 4455 LDMAN /ENABLE BREAK
3797 4476 7300 CLA CLL /LOAD AND GO
3798 4477 1000 TAD 0
3799 4500 3173 DCA DTREG /SAVE DATA
3800 4501 1000 TAD 0
3801 4502 4440 ACCMP1 /CHECK
3802 4503 4435 NERROR /O.K, 4096 LOOPS
3803 4504 4436 ERROR /ERROR, DATA BREAK
3804 4505 4457 TST90 /SCOPE LOOP POINTER
3805 4506 4263 /TEXT POINTER
3806
3807 /VERIFY THAT "DATA BREAK" WORD WITH A "READ"
3808 /TO CURRENT FIELD LOCATION WITH LOCATION 7777.
3809 /USE DATA PATTERN 5252 + 2525
3810
3811 4507 7301 TST91, CLA CLL IAC
3812 4510 4453 CLRALL
3813 4511 1175 TAD HOME MA /CURRENT FIELD
3814 4512 4450 LDCMD /LOAD COMMAND
3815 4513 7240 CLA CMA
3816 4514 4451 LDCUR /LOAD CURRENT ADDRESS
3817 4515 1153 TAD REG1
3818 4516 7110 CLL RAR
3819 4517 7630 SZL CLA /WHAT DATA TO USE
3820 4520 1120 TAD K2525 /DATA 5252
3821 4521 1120 TAD K2525
3822 4522 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3823 4523 1163 TAD GDREG2
3824 4524 4427 LDBUF /GET VALUE TO LOAD
3825 4525 1076 TAD K0040 /LOAD UPPER BUFFER
3826 4526 4455 LDMAN /ENABLE BREAK BIT
3827 4527 7300 CLA CLL /LOAD MAINTENANCE
3828 4530 1532 TAD I K7777 /GET BREAK WORD
3829 4531 3173 DCA DTREG /SAVE FOR ERROR PRINTER
3830 4532 1173 TAD DTREG
3831 4533 4440 ACCMP1 /CHECK
3832 4534 4435 NERROR /O.K, 4096 LOOPS
3833 4535 4436 ERROR /ERROR, DATA BREAK
3834 4536 4507 TST91 /SCOPE LOOP POINTER
3835 4537 4263 /TEXT POINTER
3836
3837 4540 5741 JMP I ,+1 /TO NEXT TEST
3838 4541 4600 TST92
3839
3840
3841 /VERIFY THAT "DATA BUFFERS" CAN BE FILLED
3842 /ON A WRITE DATA BREAK FROM LOCATION

```

```

3843 /0 OF CURRENT FIELD, USE ALL COMBINATIONS,
3844 /
3845 PAGE
3846 4600 7301 TST92, CLA CLL IAC
3847 4601 4453 CLRALL /DCLR "CLR ALL"
3848 4602 4444 ENMAN1 /ENTER MAINTENANCE MODE
3849 4603 1133 TAD M4
3850 4604 3156 DCA TCNTR1 /FOR FOUR WORDS
3851 4605 1153 TAD REG1
3852 4606 3157 DCA TCNTR2 /DATA START
3853 4607 1175 TAD HOME MA /CURRENT FIELD
3854 4610 1106 TAD K4000 /WRITE FUNCTION
3855 4611 4450 LDCMD /LOAD COMMAND
3856 4612 4451 T92R1, LDCUR /LOAD CURRENT ADDRESS TO 0
3857 4613 1157 TAD TCNTR2
3858 4614 3000 DCA 0 /STORE OUT BOUND DATA
3859 4615 1076 TAD K0040 /ENABLE BREAK BIT
3860 4616 4455 LDMAN /LOAD AND GO
3861 4617 7300 CLA CLL
3862 4620 2157 ISZ TCNTR2 /UPDATE DATA WORD
3863 4621 7000 NOP
3864 4622 2156 ISZ TCNTR1
3865 4623 5212 JMP T92R1 /FILL BUFFER
3866 4624 1133 TAD M4
3867 4625 3156 DCA TCNTR1
3868 4626 1153 TAD REG1
3869 4627 3163 DCA GDREG2
3870 4630 4456 T92R2, RDBUF
3871 4631 4440 ACCMP1
3872 4632 7610 SKP CLA
3873 4633 5241 JMP T92E
3874 4634 2163 ISZ GDREG2
3875 4635 7000 NOP
3876 4636 2156 ISZ TCNTR1
3877 4637 5230 JMP T92R2
3878 4640 4435 NERROR
3879 4641 4436 T92E, ERROR /O.K, 4096 LOOPS
3880 4642 4600 TST92 /ERROR, DATA BREAK
3881 4643 4263 /SCOPE LOOP POINTER
3882 /TEXT POINTER
3883
3884 4644 5645 JMP I ,+1 /TO NEXT TEST
3885 4645 4646 TST93
3886
3887 /VERIFY THAT "DATA BREAK" WORKS WITH
3888 /A "READ" TO CURRENT FIELD LOCATION 0
3889 /TRY ALL COMBINATIONS
3890
3891 4646 7301 TST93, CLA CLL IAC
3892 4647 4453 CLRALL /DCLR "CLR ALL"
3893 4650 1175 TAD HOME MA /CURRENT FIELD
3894 4651 4450 LDCMD /LOAD COMMAND FOR READ
3895 4652 3172 DCA ADREG /SAVE ADDRESS
3896 4653 1154 TAD REG2
3897 4654 3163 DCA GDREG2 /SETUP COMPARE REGISTER

```

```

3898 4655 1163 TAD GDREG2 /GET VALUE TO LOAD
3899 4656 4427 LDBUF /LOAD UPPER BUFFER
3900 4657 1076 TAD K0040 /BREAK ENABLE BIT
3901 4660 4455 LDMAN /LOAD AND GO
3902 4661 7300 CLA CLL
3903 4662 1000 TAD 0 /GET DATA WORD
3904 4663 3173 DCA DTREG /SAVE FOR ERROR PRINTER
3905 4664 1173 TAD DTREG
3906 4665 4440 ACCMP1 /CHECK
3907 4666 4435 NERROR /O.K. 4096 LOOPS
3908 4667 4436 ERROR /ERROR, DATA BREAK
3909 4670 4646 TST93 /SCOPE LOOP POINTER
3910 4671 4263 TAD 4263 /TEXT POINTER
3911
3912 /VERIFY THAT A READ DATA BREAK DOES OCCUR
3913 /WHEN FUNCTION = 2
3914 /
3915 4672 7301 TST94, CLA CLL IAC
3916 4673 4453 CLRALL /DCLR
3917 4674 1153 TAD REG1 /GET VALUE TO LOAD
3918 4675 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3919 4676 1163 TAD GDREG2
3920 4677 4427 LDBUF /LOAD UPPER BUFFER
3921 4700 1163 TAD GDREG2
3922 4701 7040 CMA
3923 4702 3000 DCA 0
3924 4703 4451 LDCUR /SET CURRENT ADDRESS TO 0
3925 4704 1175 TAD HOMEMA /CURRENT FIELD
3926 4705 1104 TAD K2000
3927 4706 4450 LDCMD /LOAD COMMAND REGISTER
3928 4707 1076 TAD K0040 /ENABLE BREAK
3929 4710 4455 LDMAN /GO
3930 4711 7300 CLA CLL
3931 4712 1000 TAD 0
3932 4713 3173 DCA DTREG /SAVE FOR ERROR PRINTER
3933 4714 1173 TAD DTREG
3934 4715 4440 ACCMP1 /DID 0 CHANGE
3935 4716 4435 NERROR /ALL O.K.
3936 4717 4436 ERROR /ERROR, DATA BREAK
3937 4720 4672 TST94 /SCOPE LOOP POINTER
3938 4721 4263 TAD 4263 /TEXT POINTER
3939
3940 /VERIFY THAT A READ DATA BREAK DOES OCCUR
3941 /WHEN FUNCTION = 3
3942 /
3943 4722 7301 TST95, CLA CLL IAC
3944 4723 4453 CLRALL /DCLR
3945 4724 1154 TAD REG2 /SETUP COMPARE REGISTER
3946 4725 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3947 4726 1163 TAD GDREG2
3948 4727 4427 LDBUF /LOAD UPPER BUFFER
3949 4730 1163 TAD GDREG2
3950 4731 7040 CMA
3951 4732 3000 DCA 0
3952 4733 4451 LDCUR /SET CURRENT ADDRESS TO 0

```

```

3953 4734 1175 TAD HOMEMA /CURRENT FIELD
3954 4735 1103 TAD K1000
3955 4736 1104 TAD K2000
3956 4737 4450 LDCMD /LOAD COMMAND REGISTER
3957 4740 1076 TAD K0040 /ENABLE BREAK
3958 4741 4455 LDMAN /GO
3959 4742 7300 CLA CLL
3960 4743 1000 TAD 0
3961 4744 3173 DCA DTREG /SAVE FOR ERROR PRINTER
3962 4745 1173 TAD DTREG
3963 4746 4440 ACCMP1 /DID 0 CHANGE
3964 4747 4435 NERROR /ALL O.K.
3965 4750 4436 ERROR /ERROR, DATA BREAK
3966 4751 4722 TST95 /SCOPE LOOP POINTER
3967 4752 4263 TAD 4263 /TEXT POINTER
3968
3969 4753 5754 JMP I ,+1 /TO NEXT TEST
3970 4754 5000 TST97
3971 5000
3972 PAGE
3973 /
3974 /VERIFY THAT A READ DATA BREAK DOES OCCUR
3975 /WHEN FUNCTION = 6
3976 /
3977 5000 7301 TST97, CLA CLL IAC
3978 5001 4453 CLRALL /DCLR
3979 5002 1153 TAD REG1
3980 5003 3163 DCA GDREG2 /SETUP COMPARE REGISTER
3981 5004 1163 TAD GDREG2
3982 5005 4427 LDBUF /LOAD UPPER BUFFER
3983 5006 1163 TAD GDREG2
3984 5007 7040 CMA
3985 5010 3000 DCA 0
3986 5011 4451 LDCUR /SET CURRENT ADDRESS TO 0
3987 5012 1175 TAD HOMEMA /CURRENT FIELD
3988 5013 1106 TAD K4000
3989 5014 1104 TAD K2000
3990 5015 4450 LDCMD /LOAD COMMAND REGISTER
3991 5016 1076 TAD K0040 /ENABLE BREAK
3992 5017 4455 LDMAN /GO
3993 5020 7300 CLA CLL
3994 5021 1000 TAD 0
3995 5022 3173 DCA DTREG /SAVE FOR ERROR PRINTER
3996 5023 1173 TAD DTREG
3997 5024 4440 ACCMP1 /DID 0 CHANGE
3998 5025 4435 NERROR /ALL O.K.
3999 5026 4436 ERROR /ERROR, DATA BREAK
4000 5027 5000 TST97 /SCOPE LOOP POINTER
4001 5030 4263 TAD 4263 /TEXT POINTER
4002
4003 /VERIFY THAT A READ DATA BREAK DOES OCCUR
4004 /WHEN FUNCTION = 7
4005 /
4006 5031 7301 TST98, CLA CLL IAC
4007 5032 4453 CLRALL /DCLR

```

```

4008 5033 1154 TAD REG2
4009 5034 3163 DCA GDREG2 /SETUP COMPARE REGISTER
4010 5035 1163 TAD GDREG2
4011 5036 4427 LDBUF /LOAD UPPER BUFFER
4012 5037 1163 TAD GDREG2
4013 5040 7040 CMA
4014 5041 3000 DCA 0
4015 5042 4451 LDCUR /SET CURRENT ADDRESS TO 0
4016 5043 1175 TAD HOMEMA /CURRENT FIELD
4017 5044 1106 TAD K4000
4018 5045 1103 TAD K1000
4019 5046 1104 TAD K2000
4020 5047 4450 LDCMD /LOAD COMMAND REGISTER
4021 5050 1076 TAD K0040 /ENABLE BREAK
4022 5051 4455 LDMAN /GO
4023 5052 7300 CLA CLL
4024 5053 1000 TAD 0
4025 5054 3173 DCA DTREG /SAVE FOR ERROR PRINTER
4026 5055 1173 TAD DTREG
4027 5056 4440 ACCMP1 /DID 0 CHANGE
4028 5057 4435 NERROR /ALL O.K.
4029 5060 4436 T98E, ERROR /ERROR, DATA BREAK
4030 5061 5031 TST98 /SCOPE LOOP POINTER
4031 5062 4263 /TEXT POINTER
4032 /
4033 /VERIFY THAT ALL DATA BUFFERS CAN BE FULL
4034 /AT ONCE, USE A READ BREAK AND PATTERN
4035 /ALL COMBINATIONS.
4036 /
4037 5063 7301 TST99, CLA CLL IAC
4038 5064 4453 CLRALL /DCLR "CLR ALL"
4039 5065 1154 TAD REG2
4040 5066 3161 DCA TCNTR4
4041 5067 1133 TAD M4
4042 5070 3160 DCA TCNTR3 /COUNTER FOR # OF BUFFERS
4043 5071 1161 TAD TCNTR4
4044 5072 4427 T99R1, LDBUF /LOAD UPPER BUFFER
4045 5073 7340 CLA CLL CMA
4046 5074 1161 TAD TCNTR4
4047 5075 3161 DCA TCNTR4
4048 5076 2160 ISZ TCNTR3
4049 5077 5271 JMP T99R1 /4 COUNT, SKIP WHEN BUFFERS FULL
4050 5100 1154 TAD REG2
4051 5101 3163 DCA GDREG2 /SETUP FOR FIRST CNMPARE
4052 5102 1133 TAD M4
4053 5103 3160 DCA TCNTR3
4054 5104 1175 TAD HOMEMA /CURRENT FIELD
4055 5105 4450 LDCMD /LOAD COMMAND
4056 5106 4451 T99R2, LDCUR /LOAD CURRENT ADDRESS
4057 5107 1076 TAD K0040 /GET ENABLE BREAK
4058 5110 4455 LDMAN /LOAD MAINTENANCE
4059 5111 7300 CLA CLL
4060 5112 1000 TAD 0 /GET DATA
4061 5113 3173 DCA DTREG /SAVE FOR PRINTER
4062 5114 1173 TAD DTREG
    
```

```

4063 5115 4440 ACCMP1 /CHECK
4064 5116 7610 SKP CLA /O.K. CHECK NEXT
4065 5117 5326 JMP T99E /ERROR DATA BUFFERS
4066 5120 7340 CLA CLL CMA
4067 5121 1163 TAD GDREG2
4068 5122 3163 DCA GDREG2 /SETUP FOR NEXT
4069 5123 2160 ISZ TCNTR3
4070 5124 5306 JMP T99R2
4071 5125 4435 NERROR /O.K. 4096 LOOPS
    
```

```

4072 5126 4436 T99E, ERROR /ERROR, DAT BUFFERS
4073 5127 5063 TST99 /SCOFF LOOP JINTER
4074 5130 4263 4263 /TEXT POINTER
4075 /
4076 /
4077 /VERIFY A WRITE THEN READ BREAK FROM
4078 /LOCATIONS 7777 THEN 0000 OF THE
4079 /CURRENT FIELD, USE PATTERS 0-7777.
4080 /
4081 5131 7301 TST100, CLA CLL IAC
4082 5132 4453 CLRALL /CLEAR CONTROL
4083 5133 4444 ENMAN1 /ENTER MAINTENANCE
4084 5134 7340 CLA CLL CMA
4085 5135 4451 LDCUR /LOAD CURRENT ADDRESS
4086 5136 1154 TAD REG2
4087 5137 3532 DCA I K7777 /STORE OUT BOUND DATA
4088 5140 1175 TAD HOMEMA /CURRENT FIELD
4089 /
4090 /
4091 5141 1106 TAD K4000 /WRITE FUNCTION
4092 5142 4450 LDCMD /LOAD COMMAND REGISTER
4093 5143 1076 TAD K0040 /ENABLE BREAK
4094 5144 4455 LDMAN /ISSUE MAINTENANCE IOT
4095 5145 7300 CLA CLL /READ FUNCTION
4096 5146 1175 TAD HOMEMA /CURRENT FIELD
4097 5147 4450 LDCMD /LOAD COMMAND REGISTER
4098 5150 1076 TAD K0040 /ENABLE BREAK
4099 5151 4455 LDMAN /ISSUE MAINTENANCE IOT
4100 5152 7300 CLA CLL
4101 5153 2172 ISZ ADREG
4102 5154 7000 NOP
4103 5155 1154 TAD REG2
4104 5156 3163 DCA GDREG2 /SETUP COMPARE
4105 5157 1000 TAD 0
4106 5160 3173 DCA DIREG /STORE DATA READ FOR PRINTER
4107 5161 1000 TAD 0
4108 5162 4440 ACCMP1 /CHECK RESULTS
4109 5163 4435 NERROR /O.K. 4096 LOOPS
4110 5164 4436 ERROR /ERROR, WRITE OR READ
4111 5165 5131 TST100 /SCOPE POINTER
4112 5166 4263 4263
4113 5167 7301 CLA CLL IAC
4114 5170 1176 TAD FLDMAX
4115 5171 7650 SNA CLA /IS IT TEST EXTENDED MEM.
4116 5172 5432 JMP I XEND /NO, END OF TEST
4117 /
4118 5173 5774 JMP I +1 /TO NEXT TEST
4119 5174 5201 EXTFLD
4120 /
4121 5200 PAGE
4122 /
4123 /ROUTINE TO CHECK IF CONSOLE PACKAGE ACTIVE.
4124 /IF SO, THEN INHIBIT EXTENDED MEMORY TESTS.
4125 /
4126 5200 5670 TSTLAS, ENDTST
    
```

```

4127 5201 1022 EXTFLD, TAD 22
4128 5202 0102 AND K0400 /MASK CLASSIC BIT
4129 5203 7640 SZA CLA /ON CLASSIC SYSTEM?
4130 5204 5600 JMP I TSTLAS /BY-PASS EXT. TESTS.
4131 /
4132 /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4133 /LOCATION 0000 IN ALL EXISTING EXTENDED FIELDS.
4134 /USE DATA PATTERN 0000 + 7777.
4135 /
4136 5205 7301 TST101, CLA CLL IAC
4137 /
4138 /
4139 /
4140 /
4141 /
4142 /
4143 5206 4453 CLRALL /DCLR
4144 5207 4444 ENMAN1 /ENTER MAINTENANCE MODE
4145 5210 1150 TAD KCDF
4146 5211 3232 DCA TOFLD2 /START FIELD 0
4147 5212 1176 TAD FLDMAX
4148 5213 3156 DCA TCNTR1 /FIELDS TO TEST -1
4149 5214 1433 TAD I THSFLD
4150 5215 3234 DCA RTFLD2 /RETURN FIELD CDF
4151 5216 1153 TAD REG1
4152 5217 7110 CLL RAR
4153 5220 7630 SEL CLA /USE DATA 7777 IF LINK IS SET
4154 5221 7240 CLA CMA
4155 5222 3163 DCA GDREG2 /SETUP COMPARE REGISTER
4156 5223 4451 T101R, LDCUR /SET CURRENT ADDRESS TO 0000
4157 5224 1232 TAD TOFLD2
4158 5225 7041 CTA
4159 5226 1234 TAD RTFLD2
4160 5227 7650 SNA CLA /CURRENT FIELD
4161 5230 5247 JMP NEXFL2 /YES, NOT THIS ONE
4162 5231 1163 TAD GDREG2 /OUTBOUND DATA
4163 5232 7402 TOFLD2, HLT /MODIFIED CDF
4164 5233 3464 DCA I K0000 /STORE DATA
4165 5234 7402 RTFLD2, HLT /HOME CDF
4166 5235 1232 TAD TOFLD2
4167 5236 0114 AND K0070
4168 5237 1106 TAD K4000 /WRITE
4169 5240 4450 LDCMD /LOAD COMMAND REGISTER
4170 5241 1076 TAD K0040 /ENABLE WRITE BREAK
4171 5242 4455 LDMAN /GO
4172 5243 4456 RDBUF /GET RESULTS
4173 5244 4440 ACCMP1 /CHECK RESULTS
4174 5245 7610 SKP CLA /O.K. TRY NEXT
4175 5246 5257 JMP T101E /ERROR
4176 5247 2156 NEXFL2, ISZ TCNTR1
4177 5250 7610 SKP CLA
4178 5251 5256 JMP T101D /DONE WITH ALL
4179 5252 1232 TAD TOFLD2
4180 5253 1073 TAD K0010
4181 5254 3232 DCA TOFLD2 /SET TO NEXT FIELD
    
```

```

4182 5255 5223 JMP T101R /TRY IT
4183 5256 4435 T101D, NERROR /O.K 4096 LOOPS
4184 5257 4436 T101E, ERROR /ERROR, DATA BREAK
4185 5260 5205 TST101 /SCOPE LOOP POINTER
4186 5261 4263 4263 /TEXT POINTER
/
/
/
4190 /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4191 /LOCATION 0000 IN ALL EXISTING EXTENDED FIELDS,
4192 /USE DATA PATTERN 2525 + 5252.
4193 /
4194 5262 7301 TST102, CIA CLL IAC
4195 5263 4453 CLRALL /DCLR
4196 5264 4444 ENMAN1 /ENTER MAINTENANCE MODE
4197 5265 1150 TAD KCDF
4198 5266 3310 DCA TOFLD3 /START FIELD 0
4199 5267 1176 TAD FLDMAX
4200 5270 3156 DCA TCNTR1 /FIELDS TO TEST -1
4201 5271 1433 TAD I THSFLD
4202 5272 3312 DCA RTFLD3 /RETURN FIELD CDF
4203 5273 1153 TAD REG1
4204 5274 7110 CLL RAR
4205 5275 7630 SZL CLA /USE DATA 5252 IF LINK IS SET
4206 5276 1120 TAD K2525
4207 5277 1120 TAD K2525
4208 5300 3163 DCA GDREG2 /SETUP COMPARE REGISTER
4209 5301 4451 T102R, LDCUR /SET CURRENT ADDRESS TO 0000
4210 5302 1310 TAD TOFLD3
4211 5303 7041 CIA
4212 5304 1312 TAD RTFLD3
4213 5305 7650 SNA CLA /CURRENT FIELD
4214 5306 5325 JMP NEXFL3 /YES, NOT THIS ONE
4215 5307 1163 TAD GDREG2 /OUTBOUND DATA
4216 5310 7402 TOFLD3, HLT /MODIFIED CDF
4217 5311 3464 DCA I K0000 /STORE DATA
4218 5312 7402 RTFLD3, HLT /HOME CDF
4219 5313 1310 TAD TOFLD3
4220 5314 0114 AND K0070
4221 5315 1106 TAD K4000 /WRITE
4222 5316 4450 LDCMD /LOAD COMMAND REGISTER
4223 5317 1076 TAD K0040 /ENABLE WRITE BREAK
4224 5320 4455 LDMAN /GO
4225 5321 4456 RDBUF /GET RESULTS
4226 5322 4440 ACCMP1 /CHECK RESULTS
4227 5323 7610 SKP CLA /O.K. TRY NEXT
4228 5324 5335 JMP T102E /ERROR
4229 5325 2156 NEXFL3, ISZ TCNTR1
4230 5326 7610 SKP CLA
4231 5327 5334 JMP T102D /DONE WITH ALL
4232 5330 1310 TAD TOFLD3
4233 5331 1073 TAD K0010
4234 5332 3310 DCA TOFLD3 /SET TO NEXT FIELD
4235 5333 5301 JMP T102R /TRY IT
4236 5334 4435 T102D, NERROR /O.K 4096 LOOPS
    
```

```

4237 5335 4436 T102E, ERROR /ERROR, DATA BREAK
4238 5336 5262 TST102 /SCOPE LOOP POINTER
4239 5337 4263 4263 /TEXT POINTER
4240 5340 5741 JMP I .+1
4241 5341 5400 TST103
4242 PAGE
4243 /
4244 /VERIFY THAT DATA BREAK WORKS WITH A WRITE FROM
4245 /LOCATION 7777 IN ALL EXISTING EXTENDED FIELDS,
4246 /USE DATA PATTERN 0000 + 7777.
4247 /
4248 5400 7301 TST103, CIA CLL IAC
4249 5401 4453 CLRALL /DCLR
4250 5402 4444 ENMAN1 /ENTER MAINTENANCE MODE
4251 5403 1150 TAD KCDF
4252 5404 3226 DCA TOFLD4 /START FIELD 0
4253 5405 1176 TAD FLDMAX
4254 5406 3156 DCA TCNTR1 /FIELDS TO TEST -1
4255 5407 1433 TAD I THSFLD
4256 5410 3230 DCA RTFLD4 /RETURN FIELD CDF
4257 5411 1153 TAD REG1
4258 5412 7110 CLL RAR
4259 5413 7630 SZL CLA /USE DATA 7777 IF LINK IS SET
4260 5414 7240 CIA CMA
4261 5415 3163 DCA GDREG2 /SETUP COMPARE REGISTER
4262 5416 7240 T103R, CLA CMA /SET CURRENT ADDRESS TO 7777
4263 5417 4451 LDCUR
4264 5420 1226 TAD TOFLD4
4265 5421 7041 CIA
4266 5422 1230 TAD RTFLD4
4267 5423 7650 SNA CLA /CURRENT FIELD
4268 5424 5243 JMP NEXFL4 /YES, NOT THIS ONE
4269 5425 1163 TAD GDREG2 /OUTBOUND DATA
4270 5426 7402 TOFLD4, HLT /MODIFIED CDF
4271 5427 3532 DCA I K7777 /STORE DATA
4272 5430 7402 RTFLD4, HLT /HOME CDF
4273 5431 1226 TAD TOFLD4
4274 5432 0114 AND K0070
4275 5433 1106 TAD K4000 /WRITE
4276 5434 4450 LDCMD /LOAD COMMAND REGISTER
4277 5435 1076 TAD K0040 /ENABLE WRITE BREAK
4278 5436 4455 LDMAN /GO
4279 5437 4456 RDBUF /GET RESULTS
4280 5440 4440 ACCMP1 /CHECK RESULTS
4281 5441 7610 SKP CLA /O.K. TRY NEXT
4282 5442 5253 JMP T103E /ERROR
4283 5443 2156 NEXFL4, ISZ TCNTR1
4284 5444 7610 SKP CLA
4285 5445 5252 JMP T103D /DONE WITH ALL
4286 5446 1226 TAD TOFLD4
4287 5447 1073 TAD K0010
4288 5450 3226 DCA TOFLD4 /SET TO NEXT FIELD
4289 5451 5216 JMP T103R /TRY IT
4290 5452 4435 T103D, NERROR /O.K 4096 LOOPS
4291 5453 4436 T103E, ERROR /ERROR, DATA BREAK
    
```

```

/ PAL10 V142A 7-MAR-77 13155 PAGE 9-4
4292 5454 5400 TST103 /SCOPE LOOP POINTER
4293 5455 4263 4263 /TEXT POINTER
4294 /
4295 /
4296 /
4297 /VERIFY THAT DATA BREAK WORKS WITH A WRITF FROM
4298 /LOCATION 7777 IN ALL EXISTING EXTENDED FIELDS.
4299 /USE DATA PATTERN 2525 + 5252.
4300 /
4301 5456 7301 TST104, CLA CLL IAC
4302 5457 4453 CLRALL /DCLR
4303 5460 4444 ENMAN1 /ENTER MAINTENANCE MODE
4304 5461 1150 TAD KCDF
4305 5462 3305 DCA TOFLD5 /START FIELD 0
4306 5463 1176 TAD FLDMAX
4307 5464 3156 DCA TCNTR1 /FIELDS TO TEST =1
4308 5465 1433 TAD I THSFLD
4309 5466 3307 DCA RTFLD5 /RETURN FIELD CDF
4310 5467 1153 TAD REG1
4311 5470 7110 CLL RAR
4312 5471 7630 SZL CLA /USE DATA 5252 IF LINK IS SET
4313 5472 1120 TAD K2525
4314 5473 1120 TAD K2525
4315 5474 3163 DCA GDREG2 /SETUP COMPARE REGISTER
4316 5475 7240 T104R, CLA CMA
4317 5476 4451 LDCUR /SET CURRENT ADDRESS TO 7777
4318 5477 1305 TAD TOFLD5
4319 5500 7041 CTA
4320 5501 1307 TAD RTFLD5
4321 5502 7650 SNA CLA /CURRENT FIELD
4322 5503 5322 JMP NEXFL5 /YES, NOT THIS ONE
4323 5504 1163 TAD GDREG2 /OUTBOUND DATA
4324 5505 7402 TOFLD5, HLT /MODIFIED CDF
4325 5506 3532 DCA I K7777 /STORE DATA
4326 5507 7402 RTFLD5, HLT /HOME CDF
4327 5510 1305 TAD TOFLD5
4328 5511 0114 AND K0070
4329 5512 1106 TAD K4000 /WRITE
4330 5513 4450 LDCMD /LOAD COMMAND REGISTER
4331 5514 1076 TAD K0040 /ENABLE WRITE BREAK
4332 5515 4455 LDMAN /GO
4333 5516 4456 ROBUF /GET RESULTS
4334 5517 4440 ACCMP1 /CHECK RESULTS
4335 5520 7610 SKP CLA /O.K. TRY NEXT
4336 5521 5332 JMP T104E /ERROR
4337 5522 2156 NEXFL5, ISZ TCNTR1
4338 5523 7610 SKP CLA
4339 5524 5331 JMP T104D /DONE WITH ALL
4340 5525 1305 TAD TOFLD5
4341 5526 1073 TAD K0010
4342 5527 3305 DCA TOFLD5 /SET TO NEXT FIELD
4343 5530 5275 JMP T104R /TRY IT
4344 5531 4435 T104D, NERROR /O.K 4096 LOOPS
4345 5532 4436 T104E, ERROR /ERROR, DATA BREAK
4346 5533 5456 TST104 /SCOPE LOOP POINTER

```

```

/ PAL10 V142A 7-MAR-77 13155 PAGE 9-5
4347 5534 4263 4263 /TEXT POINTER
4348 5535 5736 JMP I ,+1
4349 5536 5600 TST105
4350 5600 PAGE
4351 /
4352 /VERIFY THAT DATA BREAK WORKS FROM ALL LOCATIONS
4353 /IN ALL EXISTING EXTENDED FIELDS.
4354 /USE DATA PATTERN ALL COMBINATIONS
4355 /
4356 5600 1150 TST105, TAD KCDF
4357 5601 3221 DCA TOFLD1
4358 5602 1176 TAD FLDMAX
4359 5603 3156 DCA TCNTR1
4360 5604 1433 TAD I THSFLD
4361 5605 3245 DCA RTFLD1
4362 5606 1153 TAD REG1
4363 5607 3163 DCA GDREG2 /SETUP COMPARE REGISTER
4364 5610 7301 T105R, CLA CLL IAC
4365 5611 4453 CLRALL /DCLR
4366 5612 4444 ENMAN1 /ENTER MAINTENANCE MODE
4367 5613 1221 TAD TOFLD1
4368 5614 7041 CIA
4369 5615 1245 TAD RTFLD1
4370 5616 7650 SNA CLA /IS IT CURRENT FIELD
4371 5617 5255 JMP NEXFL1 /YES, BYPASS
4372 5620 1163 TAD GDREG2
4373 5621 0000 TOFLD1, 0 /MODIFIED CDF
4374 5622 3554 DCA I REG2 /STORE DATA WORD
4375 5623 1221 TAD TOFLD1
4376 5624 0114 AND K0070 /MASK DF BITS
4377 5625 1106 TAD K4000
4378 5626 4450 LDCMD /LOAD COMMAND REGISTER
4379 5627 1154 TAD REG2
4380 5630 4451 LDCUR /LOAD CURRENT ADDRESS
4381 5631 1076 TAD K0040 /ENABLE BREAK
4382 5632 4455 LDMAN /GO
4383 5633 7301 CLA CLL IAC
4384 5634 1154 TAD REG2
4385 5635 3172 DCA ADREG /SETUP BREAK TO ADDRESS
4386 5636 1221 TAD TOFLD1
4387 5637 0114 AND K0070 /MASK FIELD BITS
4388 5640 4450 LDCMD /LOAD COMMAND
4389 5641 1076 TAD K0040
4390 5642 4455 LDMAN /LOAD MAINTENANCE
4391 5643 7300 CLA CLL
4392 5644 1572 TAD I ADREG /GET DATA READ
4393 5645 0000 RTFLD1, 0 /CURRENT FIELD CDF
4394 5646 3173 DCA DTREG /STORE FOR PRINTER
4395 5647 1173 TAD DTREG
4396 5650 4440 ACCMP1 /CHECK RESULTS
4397 5651 7610 SKP CLA /THIS FIELD O.K.
4398 5652 5265 JMP T105E /ERROR
4399 5653 2163 ISZ GDREG2 /UPDATE WORD
4400 5654 7000 NOP
4401 5655 2156 NEXFL1, ISZ TCNTR1

```

```

4402 5656 7610 SKP CLA
4403 5657 5264 JMP T105D /ALL DONE
4404 5660 1221 TAD TOFLD1
4405 5661 1873 TAD K0010
4406 5662 3221 DCA TOFLD1
4407 5663 5210 JMP T105R /TRY NEXT FIELD
4408 5664 4435 T105D, NERROR /O.K. NEXT ADDRESS
4409 5665 4436 T105E, ERROR /ERROR, DATA BREAK
4410 5666 5600 TST105 /SCOPE LOOP POINTER
4411 5667 4263 4263 /TEXT POINTER
4412 /
4413 5670 4405 ENDTST, SET /SETUP FIELD 0
4414 5671 1007 TAD SAVEND
4415 5672 3532 DCA I K7777 /REPLACE BINARY
4416 5673 1022 TAD 22
4417 5674 0106 AND K4000 /TEST FOR APT
4418 5675 7650 SNA CLA /APT??
4419 5676 5301 JMP ,+3 /NO, NORMAL RUN
4420 5677 2371 ISZ PCOUNT
4421 5700 5317 JMP ENDHLT+1 /LOOP PROGRAM
4422 5701 4406 CLASIC /CHECK FOR CONSOLE CLASSIC
4423 5702 4424 CPASS /CHECK FOR PASS COMPLETE TYPEOUT.
4424 5703 7610 SKP CLA
4425 5704 5310 JMP ,+4 /BYPASS NORMAL TYPEOUT.
4426 5705 4462 CRLF
4427 5706 4457 PRNTER /PRINT END OF TEST MESSAGE
4428 5707 7562 TEXEND /POINTER
4429 5710 4404 LAS
4430 5711 7004 RAL
4431 5712 7710 SPA CLA
4432 5713 5317 JMP ,+4 /NO STOP.
4433 5714 4406 CLASIC /CHECK FOR CLASSIC.
4434 5715 4437 CRINGU /ROUTINE TO EXECUTE.
4435 5716 7402 ENDHLT, HLT /END OF TEST
4436 5717 7301 CLA CLL IAC
4437 5720 4453 CLRALL /DCLR
4438 5721 5722 JMP I ,+1 /LOOP ON PROGRAM
4439 5722 0766 TST4
4440 /
4441 /
4442 /MANUAL TEST FOR 16 BIT COUNTER.
4443 /SET SWITCH REGISTER TO 0201 AND PRESS
4444 /LOAD ADDRESS, SET THE SWITCH REGISTER TO 0000.
4445 /THEN PRESS CLEAR AND CONTINUE.
4446 /SCOPE THE 16TH CARRY OUTPUT TEST POINT
4447 /FOR A GROUND TO +3 VOLT SIGNAL.
4448 /
4449 5723 7301 MANUL, CLA CLL IAC
4450 5724 4453 CLRALL /FIRST, CLEAR CONTROL
4451 5725 4444 ENMANI /ENTER MAINTENANCE MODE
4452 5726 1077 TAD K0100 /ENABLE SHIFT PULSES
4453 5727 4455 LDMAN /ISSUE MAINTENANCE IOT AND
4454 5730 5327 JMP ,=-1 /CAUSE HI MAIN SHIFTS TO THE
4455 5731 5327 JMP ,=-2 /INPUT OF THE 16 BIT COUNTER.
4456 /
    
```

```

4457 /THIS ROUTINE WILL BE A SKIP INSTRUCTION FOR SYSTEMS WITHOUT CLASSIC
4458 /OTHERWISE IT WILL EXECUTE THE NEXT INSTRUCTION IN FIELD 0 AND THEN
4459 /SKIP THE INSTRUCTION AFTER THAT ONE.
4460 /
4461 5732 0000 CLASIK, 0
4462 5733 3363 DCA SAVAC /SAVE CURRENT AC.
4463 5734 1732 TAD I CLASIK /GET INSTRUCTION
4464 5735 3362 DCA ROUTMP /SAVE THE CLASSIC ROUTINE.
4465 5736 2332 ISZ CLASIK /BUMP AFTER THE CALL.
4466 5737 1022 TAD OP2
4467 5740 0377 AND (400)
4468 5741 7640 SZA CLA /IS THIS A CLASSIC SYSTEM?
4469 5742 5345 JMP ,+3 /YES.
4470 5743 1363 TAD SAVAC /NO THEN RETURN TO PROGRAM.
4471 5744 5732 JMP I CLASIK
4472 5745 2332 ISZ CLASIK
4473 5746 6211 CDF 10
4474 5747 1020 TAD SWR
4475 5750 3776 DCA I (SWR) /MOVE POINTERS TO FIELD 1.
4476 5751 1021 TAD OP1
4477 5752 3775 DCA I (OP1)
4478 5753 1022 TAD OP2
4479 5754 3774 DCA I (OP2)
4480 5755 1362 TAD ROUTMP
4481 5756 3773 DCA I (ROUTMP) /SAVE ROUTINE IN FIELD 1.
4482 5757 1363 TAD SAVAC
4483 5760 6212 CDF 10
4484 5761 5773 JMP I (ROUTNS) /GO EXECUTE ROUTINE.
4485 /
4486 5762 0000 ROUTMP, 0
4487 5763 0000 SAVAC, 0
4488 /
4489 /ROUTINE TO GET SWITCHES.
4490 /
4491 5764 0000 MYLAS, 0
4492 5765 4406 CLASIC /CHECK IF CLASSIC.
4493 5766 4425 C9CKSW /GET SWITCHES.
4494 5767 7604 7604 /NOP IF ON APT
4495 5770 5764 JMP I MYLAS /EXIT
4496 /
4497 5771 0000 PCOUNT, 0
4498 /
4499 5773 1302 /
4500 5774 0022 /
4501 5775 0021 /
4502 5776 0020 /
4503 5777 0400 /
4504 6000 PAGE
4505 /SUBROUTINE TO WAIT FOR INTERRUPTS
4506 /IF INTERRUPT OCCURS GO BACK +1
4507 /
4508 6000 0000 IONWT, 0
4509 6001 7300 CLA CLL
4510 6002 1112 TAD K7700
    
```

```

4511 6003 3233 DCA COMP1
4512 6004 6001 ION /TURN IT ON
4513 6005 2233 ISZ COMP1
4514 6006 5205 JMP ,=1
4515 6007 6002 IOF /TURN IT OFF
4516 6010 5600 JMP I IONWT /NO INT OCCURED
4517 6011 2200 INTADD, ISZ IONWT
4518 6012 4447 DSKSKP /DISK SKIP IOT
4519 6013 7410 SKP /ERPOR
4520 6014 5600 JMP I IONWT /EXIT.
4521 6015 7240 CLA CMA
4522 6016 1200 TAD IONWT
4523 6017 3200 DCA IONWT /RESET RETURN ADDRESS.
4524 6020 1022 TAD 22
4525 6021 0102 AND K0400 /MASK CLASSIC.
4526 6022 7640 SZA CLA /ON CLASSIC?
4527 6023 6031 KSF /IF SO ALLOW KEY FLAG.
4528 6024 5227 JMP ,+3 /NO KEY!
4529 6025 6032 KCC /WAS CLEAR FLAG.
4530 6026 5201 JMP IONWT +1 /RETURN AND WAIT.
4531 6027 4406 CLASIC /CHECK FOR CLASSIC.
4532 6030 4436 CRERR /ROUTINE TO EXECUTE.
4533 6031 7402 ERHLT1, HLT /ERROR, ILLEGAL INTERRUPT
4534 6032 5227 JMP ,=3 /NON-RECOVERABLE ERROR.
4535
4536 /
4537 /ROUTINE TO COMPARE AC TO GDREG2
4538 /
4539 6033 0000 COMP1, 0
4539 6034 3174 DCA ACREG
4540 6035 1174 TAD ACREG /SAVE AC
4541 6036 7041 CIA
4542 6037 1163 TAD GDREG2
4543 6040 7640 SZA CLA /SKIP IF O.K.
4544 6041 2233 ISZ COMP1 /ERROR, DON'T COMPARE
4545 6042 4424 TICK /GENERATE TIMING IF NEEDED
4546 6043 5633 JMP I COMP1
4547
4548 /ROUTINE TO COMPARE CRREG1 AND CRREG2 TO
4549 /GDREG1 AND GDREG2.
4550 /
4551 6044 0000 COMP2, 0
4552 6045 7300 CLA CLL
4553 6046 1162 TAD GDREG1
4554 6047 0145 AND K0017
4555 6050 7041 CIA
4556 6051 1164 TAD CRREG1
4557 6052 7640 SZA CLA
4558 6053 5260 JMP CRERR /NOT THE SAME
4559 6054 1165 TAD CRREG2
4560 6055 7041 CIA
4561 6056 1163 TAD GDREG2
4562 6057 7640 SZA CLA
4563 6060 2244 CRERR, ISZ COMP2 /ERROR, NOT THE SAME
4564 6061 4424 TICK /TIMING FOR APT IF NEEDED
4565 6062 5644 JMP I COMP2

```

```

4566 /
4567 /SUBROUTINE TO READ STATUS REGISTER
4568 /
4569 6063 0000 RDST, 0
4570 6064 6745 IOT5, DRST /READ STATUS IOT
4571 6065 5272 JMP ,+5 /O.K. NO SKIP.
4572 6066 4406 CLASIC /CHECK FOR CLASSIC.
4573 6067 4436 CRERR /ROUTINE TO EXECUTE.
4574 6070 7402 ERHLT5, HLT /SKIP TRAP
4575 6071 5266 JMP ,=3 /NON-RECOVERABLE ERROR.
4576 6072 3166 DCA STREG /SAVE RESULTS
4577 6073 1166 TAD STREG
4578 6074 5663 JMP I RDST /EXIT
4579
4580 /SUBROUTINE TO LOAD CURRENT ADDRESS REGISTER
4581 /
4582 6075 0000 LDCA, 0
4583 6076 3172 DCA ADREG /SAVE IN ADDRESS
4584 6077 1172 TAD ADREG
4585 6100 6744 IOT4, DLCA /LOAD CURRENT ADDRESS IOT
4586 6101 5675 JMP I LDCA /EXIT
4587 6102 4406 CLASIC /CHECK FOR CLASSIC.
4588 6103 4436 CRERR /ROUTINE TO EXECUTE.
4589 6104 7402 ERHLT4, HLT /SKIP TRAP ERROR
4590 6105 5302 JMP ,=3 /NON-RECOVERABLE ERROR.
4591
4592 /
4593 /SUBROUTINE TO LOAD DISK ADDRESS REGISTER
4594 /
4595 6106 0000 LDAD, 0
4596 6107 3171 DCA DAREG /SAVE OUTBOUND DATA
4597 6110 1171 TAD DAREG
4598 6111 6743 IOT3, DLAG /LOAD DISK ADDRESS REGISTER
4599 6112 5706 JMP I LDAD /EXIT
4600 6113 4406 CLASIC /CHECK FOR CLASSIC.
4601 6114 4436 CRERR /ROUTINE TO EXECUTE.
4602 6115 7402 ERHLT3, HLT /SKIP TRAP ERROR
4603 6116 5313 JMP ,=3 /NON-RECOVERABLE ERPOP.
4604
4605 /
4606 /SUBROUTINE TO LOAD COMMAND REGISTER
4607 /
4608 6117 0000 LDCM, 0
4609 6120 3170 DCA CMREG /SAVE OUTBOUND DATA
4610 6121 1170 TAD CMREG
4611 6122 6746 IOT6, DLDC /LOAD COMMAND REGISTER
4612 6123 5717 JMP I LDCM /EXIT
4613 6124 4406 CLASIC /CHECK FOR CLASSIC.
4614 6125 4436 CRERR /ROUTINE TO EXECUTE.
4615 6126 7402 ERHLT6, HLT /SKIP TRAP ERROR.
4616 6127 5324 JMP ,=3 /NON-RECOVERABLE ERPOP.
4617
4618 /SUBROUTINE TO ISSUE "DSKP" DISK SKIP IOT
4619 /
4620 6130 0000 SDKP, 0

```

```

4621 6131 6741 IOT1, DSKP /DISK SKIP IOT
4622 6132 7410 SKP /DID NOT SKIP
4623 6133 2330 ISZ SDKP
4624 6134 5730 JMP I SDKP /EXIT
4625
4626 /SUBROUTINE TO ISSUE "DCLR" CLEAR IOT
4627 /
4628 6135 0000 CLDR, 0
4629 6136 6742 IOT2, DCLR /DCLR "CLEAR IOT"
4630 6137 5735 JMP I CLDR /EXIT
4631 6140 4406 CLASIC /CHECK FOR CLASSIC.
4632 6141 4436 CERR /ROUTINE TO EXECUTE.
4633 6142 7402 ERHLT2, HLT /SKIP TRAP ERROR
4634 6143 5340 JMP ,=3 /NON-RECOVERABLE ERROR.
4635
4636 /SUBROUTINE TO ISSUE "DMAN" MAINTENANCE IOT
4637 /
4638 6144 0000 LDMN, 0
4639 6145 6747 IOT7, DMAN /"DMAN" MAINTENANCE IOT
4640 6146 5744 JMP I LDMN /EXIT
4641 6147 4406 CLASIC /CHECK FOR CLASSIC.
4642 6150 4436 CERR /ROUTINE TO EXECUTE.
4643 6151 7402 ERHLT7, HLT /SKIP TRAP ERROR.
4644 6152 5347 JMP ,=3 /NON-RECOVERABLE ERROR.
4645
4646 PAGE 6200
4647 /SUBROUTINE TO SHIFT, THEN READ DISK
4648 /ADDRESS INTO DATA BUFFER, 12 SHIFTS
4649 /
4650 ROAD, 0
4651 6200 0000 ENMAN2 /ENTER MAINTENANCE MODE + DB4=1
4652 6201 4445 TAD M5
4653 6202 1134 DCA SBCNT1 /SETUP COUNTER
4654 6203 3155 TAD K1000 /ENABLE SHIFT CRC
4655 6204 1103 TAD K0200 /ENABLE SHIFT SURFACE AND SECTOR
4656 6205 1100 LDMAN /LOAD MAINTENANCE
4657 6206 4455 ISZ SBCNT1 /FOUR SHIFTS
4658 6207 2155 JMP ,=2 /MORE TO GO
4659 6210 5206 CLA CLL
4660 6211 7300 TAD M7
4661 6212 1135 DCA SBCNT1
4662 6213 3155 TAD K1000 /SHIFT CRC
4663 6214 1103 LDMAN /LOAD MAINTENANCE IOT
4664 6215 4455 ISZ SBCNT1
4665 6216 2155 JMP ,=2 /SHIFT 12 BITS
4666 6217 5215 CLA CLL
4667 6220 7300 TAD K0020
4668 6221 1074 LDMAN /READ DATA BUFFER
4669 6222 4455 DCA DAREG /SAVE RESULTS
4670 6223 3171
4671
4672 6224 1171 TAD DAREG
4673 6225 5600 JMP I RDAD /EXIT
4674
4675

```

```

4676 /SUBROUTINE TO READ DATA BUFFER TO AC
4677 /
4678 6226 0000 RDBF, 0
4679 6227 7330 CLA CLL CML RAR
4680 6230 4455 LDMAN /ENTER MAINTENANCE MODE
4681 6231 1074 TAD K0020 /LOAD MAINTENANCE
4682 6232 4455 LDMAN
4683 6233 3167 DCA DBREG
4684 6234 1167 TAD DBREG
4685 6235 3173 DCA DTREG
4686 6236 1173 TAD DTREG
4687 6237 5626 JMP I RDBF /EXIT
4688
4689 /SUBROUTINE TO SHIFT COMMAND REGISTER TO
4690 /DATA BUFFER THEN READ DATA BUFFER
4691 /
4692 6240 0000 RDCM, 0
4693 6241 4445 ENMAN2 /ENTER MAINTENANCE MODE + DB4=1
4694 6242 1136 TAD M12
4695 6243 3155 DCA SBCNT1 /12 BIT SHIFT
4696 6244 1102 TAD K0400 /ENABLE BIT FOR SHIFT COMMAND
4697 6245 4455 LDMAN /LOAD AND GO
4698 6246 2155 ISZ SBCNT1
4699 6247 5245 JMP ,=2 /SHIFT 12
4700 6250 7300 CLA CLL
4701 6251 1074 TAD K0020 /ENABLE READ BUFFER
4702 6252 4455 LDMAN /LOAD AND GO
4703 6253 3170 DCA CMREG /SAVE IT
4704 6254 1170 TAD CMREG
4705 6255 5640 JMP I RDCM /EXIT
4706
4707 /ROUTINE TO ENTER MAINTENANCE MODE
4708 /
4709 6256 0000 MAIN1, 0
4710 6257 7330 CLA CLL CML RAR /ENABLE MAINTENANCE BIT
4711 6260 4455 LDMAN /ENTER MAINTENANCE MODE
4712 6261 7300 CLA CLL
4713 6262 5656 JMP I MAIN1
4714
4715 /
4716 /
4717 /
4718 /SUBROUTINE TO SHIFT CRC REGISTER TO DATA
4719 /BUFFER THEN READ IT.
4720 /
4721 6263 0000 RDCR, 0
4722 6264 4445 ENMAN2 /ENTER MAINTENANCE MODE + DB4=1
4723 6265 1136 TAD M12
4724 6266 3155 DCA SRCNT1 /12 SHIFTER
4725 6267 1103 TAD K1000 /ENABLE SHIFT CRC
4726 6270 4455 LDMAN /LOAD AND GO
4727 6271 2155 ISZ SBCNT1
4728 6272 5270 JMP ,=2 /12 BIT SHIFT
4729 6273 7300 CLA CLL
4730 6274 1074 TAD K0020 /ENABLE READ BUFFER

```

```

4731 6275 4455 LDMAN
4732 6276 3165 DCA CRREG2
4733 6277 4445 ENMAN2 /SAVE IT
4734 6300 1136 TAD M12 /ENTER MAINTENANCE MODE + DB4=1
4735 6301 3155 DCA SBCNT1 /12 BIT SHIFTER
4736 6302 1103 TAD K1000 /ENABLE SHIFT CRC
4737 6303 4455 LDMAN /LOAD AND GO
4738 6304 2155 ISZ SBCNT1
4739 6305 5303 JMP .-2 /12 BIT SHIFT
4740
4741 6306 7300 CLA CLL
4742 6307 1074 TAD K0020 /ENABLE READ BUFFER
4743 6310 4455 LDMAN
4744 6311 0145 AND K0017
4745 6312 3164 DCA CRREG1 /SAVE OTHER HALF
4746 6313 5663 JMP I RDCR /EXIT
4747
4748
4749 /SUBROUTINE TO PRINT TWO OCTAL
4750 /
4751 6314 0000 TOCT, 0
4752 6315 3155 DCA SBCNT1 /SAVE AC
4753 6316 1155 TAD SBCNT1
4754 6317 7010 RAR
4755 6320 7012 RTR
4756 6321 0072 AND K0007
4757 6322 1063 TAD K0260
4758 6323 4434 TYPE /PRINT FIRST BYTE
4759 6324 1155 TAD SBCNT1
4760 6325 0072 AND K0007
4761 6326 1063 TAD K0260
4762 6327 4434 TYPE /PRINT SECOND BIT
4763 6330 5714 JMP I TOCT /EXIT
4764
4765 /
4766 /
4767 /ROUTINE TO DO CRLF
4768 /
4769 6331 0000 UPONE, 0
4770 6332 7300 CLA CLL
4771 6333 1146 TAD K0215
4772 6334 4434 TYPE
4773 6335 1147 TAD K0212
4774 6336 4434 TYPE
4775 6337 4434 TYPE /TYPE ONE NULL
4776 6340 5731 JMP I UPONE
4777 6400 PAGE
4778 /
4779 /ROUTINE TO PRINT FOUR OCTAL
4780 /
4781 6400 0000 FROCT, 0
4782 6401 7006 RTL
4783 6402 7006 RTL
4784 6403 3777 DCA UPONE
4785 6404 1130 TAD K7774

```

```

4786 6405 3776 DCA TOCT
4787 6406 1777 TAD UPONE
4788 6407 0072 AND K0007
4789 6410 1063 TAD K0260
4790 6411 4434 TYPE
4791 6412 1777 TAD UPONE
4792 6413 7006 RTL
4793 6414 7004 RAL
4794 6415 3776 DCA UPONE
4795 6416 2776 ISZ TOCT
4796 6417 5206 JMP .-11
4797 6420 1261 TAD K0240
4798 6421 4434 TYPE
4799 6422 5600 JMP I FROCT
4800
4801 /SUBROUTINE TO PRINT TEXT
4802 /
4803 6423 0000 PRN, 0
4804 6424 7300 CLA CLL
4805 6425 1623 TAD I PRN /GET POINTER
4806
4807 6426 2723 ISZ PRN
4808 6427 3200 DCA FROCT
4809 6430 1600 TAD I FROCT
4810 6431 0112 AND K7700
4811 6432 7450 SMA
4812 6433 5257 JMP EXIT
4813 6434 7500 SMA
4814 6435 7020 CML
4815 6436 7001 IAC
4816 6437 7012 RTR
4817 6440 7012 RTR
4818 6441 7012 RTR
4819 6442 4434 TYPE
4820 6443 1600 TAD I FROCT
4821 6444 0115 AND K0077
4822 6445 7450 SMA
4823 6446 5257 JMP EXIT
4824 6447 1262 TAD K3740
4825 6450 7500 SMA
4826 6451 1124 TAD K4100
4827 6452 1261 TAD K0240
4828 6453 4434 TYPE
4829 6454 2200 ISZ FROCT
4830 6455 7300 CLA CLL
4831 6456 5230 JMP PRN+5
4832 6457 7300 EXIT, CLA CLL
4833 6460 5623 JMP I PRN
4834
4835 6461 0240 K0240, 0240
4836 6462 3740 K3740, 3740
4837 /
4838 /ROUTINE TO TYPE
4839 /
4840 6463 0000 PRINT, 0

```

```

4841 6464 4406 CLASSIC /CHECK FOR CLASSIC,
4842 6465 4435 CRTYPE /ROUTINE TO EXECUTE,
4843 6466 7410 SKP
4844 6467 5663 JMP I PRINT /INHIBIT TYPE,
4845 6470 6846 TUS
4846 6471 6841 TSF
4847 6472 5271 JMP *-1
4848 6473 6842 TCF
4849 6474 7200 CLA
4850 6475 5663 JMP I PRINT
4851
4852 /ROUTINE TO GET ALL REGISTERS AFTER "ERHLT9"
4853
4854 DUMP, 0
4855 LAS
4856 AND K0400 /MASK SWITCH 3
4857 SNA CLA /WAS IT GFT ALL
4858 JMP I DUMP /NO
4859 RDSTAT /GET STATUS
4860 RDBUF /READ BUFFER
4861 CLA CLL
4862 TAD M12
4863 DCA PRINT /12 BIT COUNTER
4864 TAD K0200 /ENABLE SHIFT SECTOR AND SURFACE
4865 LDMAN /LOAD MAINTENANCE
4866 ISZ PRINT /12 BIT SHIFT
4867 JMP *-2
4868 CLA CLL
4869 TAD K0020 /ENABLE READ BUFFER
4870 LDMAN /LOAD MAINTENANCE
4871 DCA DAREG /SAVE SURFACE AND SECTOR
4872 RDCRC /READ CRC
4873 RDCMD /READ COMMAND
4874 CRLF
4875 TAD K7600
4876 ISZ DUMP
4877 JMP I DUMP /REPORT
4878
4879 PAGE
4880 6577 6331
4881 6577 6600
4882 /SUBROUTINE FOR "ERRORS," SCOPE LOOPS, AND
4883 /ERROR TYPEOUTS.
4884
4885 ERRO, 0
4886 CLA CLL
4887 AERRO /REPORT ERROR TO APT IF NEED BE,
4888 TAD I ERRO /GET SCOPE LOOP POINTER
4889 DCA SERRO /SAVE FOR RETURN
4890 LAS /GET SWR0
4891 SMA CLA /IS IT SCOPE LOOP
4892 JMP *-10 /NO SCOPE
4893 LAS /GET SWITCH 2
4894 RTL

```

```

4895 6612 7710 SPA CLA /INHIBIT ERROR BELL
4896 6613 5740 JMP I SERRO /YES
4897 6614 1101 TAD K0207
4898 6615 4434 TYPE
4899 6616 5740 JMP I SERRO /NO
4900 6617 2200 ISZ ERRO
4901 6620 4462 CRLF
4902 6621 4462 CRLF
4903 6622 1600 TAD I ERRO /GET TEXT POINTER
4904 6623 8145 AND K0017 /MASK 8-11
4905 6624 1346 TAD HEDTAD /MAKE ERROR HEADER TAD
4906 6625 3226 DCA *-1
4907 6626 7402 HLT /MODIFIED HEADER TAD
4908 6627 3231 DCA *-2
4909 6630 4457 PRNTER /MODIFIED HEADER POINTER
4910 6631 7402 HLT
4911 6632 4462 CRLF
4912 6633 4457 PRNTER /PRINT PC:
4913 6634 7400 TEXPC
4914 6635 7340 CLA CLL CMA
4915 6636 1200 TAD ERRO /GET PC POINTER
4916 6637 4460 OCTEL /PRINT PC STORED
4917 6640 1600 TAD I ERRO /GET TEXT POINTER
4918 6641 7104 CLL RAL
4919 6642 7420 SNL
4920 6643 5257 JMP NTGD /NOT GD: REGISTER
4921
4922
4923 6644 3200 DCA ERRO
4924 6645 4457 PRNTER /PRINT GD:
4925 6646 7402 TEXGD
4926 6647 1200 TAD ERRO
4927 6650 7700 SMA CLA /WAS IT A 6 BIT OCTAL BYTE
4928 6651 5254 JMP *-3 /NO
4929 6652 1162 TAD GDREG1 /GET DATA
4930 6653 4461 TMOCT /PRINT TWO OCTAL
4931 6654 1163 TAD GDREG2
4932 6655 4460 OCTEL /PRINT FOUR OCTAL
4933 6656 7610 SKP CLA
4934 6657 3200 NTGD, DCA ERRO
4935 6658 1200 TAD ERRO /GET TEXT POINTER
4936 6661 7104 CLL RAL
4937 6662 7420 SNL
4938 6663 5274 JMP NTCRC
4939 6664 3200 DCA ERRO
4940 6665 4457 PRNTER /PRINT CP:
4941 6666 7404 TEXCR
4942 6667 1164 TAD CRREG1
4943 6670 4461 TMOCT /PRINT
4944 6671 1165 TAD CRREG2
4945 6672 4460 OCTEL /PRINT FOUR OCTAL
4946 6673 7610 SKP CLA
4947 6674 3200 NTCPC, DCA ERRO
4948 6675 1342 TAD XTEXT
4949 6676 3345 DCA PCNTR2

```

```

4950 6677 1343 TAD XPEG
4951 6700 3010 DCA AUTO10
4952 6701 1131 TAD K7771
4953 6702 3344 DCA PCNTR1 /COUNTER FOR # OF HEADS
4954 6703 1200 STRAUT, TAD ERRO /GET TEXT POINTER
4955 6704 7500 SMA
4956 6705 5332 JMP NOTEX /NOT THIS ONE
4957 6706 7104 CLL RAL
4958 6707 3200 DCA ERRO
4959 6710 1345 TAD PCNTR2 /GFT TEXT MESSAGE POINTER
4960 6711 2345 ISZ PCNTR2
4961 6712 2345 ISZ PCNTR2
4962 6713 3315 DCA ,+2
4963 6714 4457 PRNTER /STORE FOR PRNTER
4964 6715 7402 HLT /PRINT XX:
4965 6716 1410 TAD I AUTO10 /MODIFIED TEXT POINTER
4966 6717 4460 OCTEL /PRINT FOUR OCTAL
4967 6720 2344 BAKPNT, ISZ PCNTR1
4968 6721 5303 JMP STRAUT /CHECK FOR NEXT XX:
4969 6722 1007 TAD SAVEND /GET CONSTANT SAVED
4970 6723 3532 DCA I K7777 /REPLACE LAST LOCATION
4971 6724 4406 CLASIC /CHECK FOR CLASSIC.
4972 6725 4436 CBERR /ROUTINE TO EXECUTE!!!!
4973 6726 7402 ERHLT9, HLT /ALL RECOVERABLE ERROR HALTS
4974 6727 4741 JMS I XDUMP /CHECK FOR GET ALL REGISTERS
4975 6730 5740 JMP I SERRO /TRY SAME TEST AGAIN
4976 6731 5257 JMP NTGD /GET ALL REGISTERS
4977 6732 7104 NOTEX, CLL RAL
4978 6733 3200 DCA ERRO
4979 6734 2345 ISZ PCNTR2
4980 6735 2345 ISZ PCNTR2
4981 6736 2010 ISZ AUTO10
4982 6737 5320 JMP BAKPNT
4983 /
4984 6740 0000 SERRO, 0
4985 6741 6476 XDUMP, DUMP
4986 6742 7406 XTEXT, TEXT
4987 6743 0165 XPEG, CPREG2
4988 6744 0000 PCNTR1, 0
4989 6745 0000 PCNTR2, 0
4990 6746 1347 HEDTAD, TAD HEDLST
4991 6747 7424 HEDLST,
4992 6750 7437 ERTX1
4993 6751 7453 ERTX2
4994 6752 7471 ERTX3
4995 6753 7502 ERTX4
4996 6754 7514 ERTX5
4997 6755 7526 ERTX6
4998 6756 7536 ERTX7
4999 6757 7551 ERTX8
5000 ERTX9
5001 /
5002 /
5003 /ROUTINE TO ENTER MAINTENANCE MODE AND
5004 /SET DB4=1 TO ENABLE SHIFT TO LOWER SILO

```

```

5005 6760 0000 MAIN2, 0
5006 6761 7330 CLA CLL CML RAR /ENABLE SET MAINTENANCE MODE
5007 6762 4455 LDMAN /LOAD MAINTENANCE
5008 6763 7010 RAR /ENABLE SET DB4=1
5009 6764 4455 LDMAN /LOAD MAINTENANCE
5010 6765 7300 CIA CLL
5011 6766 5760 JMP I MAIN2
5012 PAGE
5013 /
5014 /SUBROUTINE FOR "NO ERRORS" AND SCOPE
5015 /LOOPS, UPDATE UP COUNTER "REG1" AND
5016 /DOWN COUNT "REG2" ON EVERY ENTRY.
5017 /
5018 7000 0000 NERRO, 0
5019 7001 4406 CLASIC /CHECK FOR CLASSIC.
5020 7002 4440 CRCKPA /ROUTINE TO EXECUTE.
5021 7003 7000 NOP
5022 7004 4404 LAS /GET SWITCH 4
5023 7005 0100 AND K0200 /MASK
5024 7006 7650 SMA CLA /WAS IT SET
5025 7007 5215 JMP STPHLT +1 /NO DON'T HALT
5026 7010 1007 TAD SAVEND /GET BINARY END
5027 7011 3532 DCA I K7777 /REPLACE IT
5028 7012 4406 CLASIC /CHECK FOR CLASSIC.
5029 7013 4437 CRINQU /WAIT FOR OPERATOR.
5030 7014 7402 STPHLT, HLT /STOP PROGRAM HALT
5031 7015 2200 ISZ NERRO /UPDATE PC STORE
5032 7016 1600 TAD I NERRO /GFT SCOPE LOOP POINTER
5033 7017 3237 DCA SNERRO /STORE FOR RETURN
5034 7020 4404 LAS /GET SWITCH 0
5035 7021 7710 SPA CLA /ENTER SCOPE LOOP
5036 7022 5637 JMP I SNERRO /YES
5037 7023 2153 ISZ REG1 /UPDATE UPCOUNTER
5038 7024 7610 SKP CLA
5039 7025 5233 JMP NEXTST /END OF PARTICULAR TEST
5040 7026 1153 TAD REG1
5041 7027 7140 CLL CMA
5042 7030 3154 DCA REG2 /SETUP DOWN COUNTER
5043 7031 4424 NEXT, TCK /REPLACED WITH TIMING IF ON APT
5044 7032 5637 JMP I SNERRO /BACK TO SAME TEST
5045 7033 2200 NEXTST, ISZ NERRO /UPDATE PC STORE
5046 7034 2200 ISZ NERRO /UPDATE PC STORE
5047 7035 5600 JMP I NERRO /TO NEXT SEQUENTIAL TEST
5048 /
5049 7036 0000 TOTST, 0
5050 7037 0000 SNERRO, 0
5051 /
5052 /SUBROUTINE TO SETUP FIELD 0
5053 /
5054 7040 0000 SETUP, 0
5055 7041 1433 TAD I THSFLD /GET HOME DF
5056 7042 3752 DCA BAKFLD
5057 7043 1151 TAD KRMF /GET RMF FOR INT. RETURN
5058 7044 6701 CDF 0 /SWITCH FIELD 0
5059 7045 3465 DCA I K0001

```

```

5060 7046 1254 TAD K5403 /JMP I 3 FOR LOC. 2
5061 7047 3466 DCA I K0002
5062 7050 1031 TAD INTRQ /GET ADDRESS RETURN
5063 7051 3467 DCA I K0003
5064 7052 7402 BAKFLD, HLT /HOME DF
5065 7053 5640 JMP I SETUP
5066
5067 7054 5403 /
K5403, 5403
5068 /
5069 /ROUTINE TO LOAD UPPER BUFFER
5070 /
5071 7055 0000 UPPER, 0
5072 7056 1216 DCA TOTST /SAVE DATA
5073 7057 7301 CLA CLL IAC
5074 7060 3237 DCA SNERRO /SETUP SHIFTER MASKER
5075 7061 1136 TAD M12

```

```

5076 7062 3200 DCA NERRO /SETUP COUNTER
5077 7063 4444 ENMAN1 /ENTER MAINTENANCE MODE
5078 7064 1236 UPPI1, TAD TOTST /GET DATA
5079 7065 0237 AND SNERRO /MASK
5080 7066 7640 SZA CLA /A ONE OR ZERO????
5081 7067 1066 TAD K0002 /A ONE!!!!
5082 7070 1077 TAD K0100 /ENABLE SHIFTER
5083 7071 4455 LDMAN /LOAD MAINTENANCE
5084 7072 7300 CLA CLL
5085 7073 1237 TAD SNERRO
5086 7074 7104 CLL RAL
5087 7075 3237 DCA SNERRO
5088 7076 2200 ISZ NERRO /COUNT BITS
5089 7077 5264 JMP UPPI1 /MORE TO GO
5090 7100 5655 JMP I UPPEP /UPPER BUFFER LOADED
5091 /
5092 /ROUTINE TO CHANGE PROGRAM DEVICE CODES
5093 /
5094 7101 4406 CHANG, CLASIC /CHECK FOR CLASSIC.
5095 7102 4431 CBSWIT /ROUTINE TO EXECUTE.
5096 7103 7000 NOP
5097 7104 4404 LAS
5098 7105 0332 AND A0770
5099 7106 3236 DCA TOTST /SAVE DESIRED
5100 7107 1334 TAD CHNPOT
5101 7110 3255 DCA UPPER
5102 7111 1333 TAD CCNTR1
5103 7112 3237 DCA SNERRO /A FEW POINTERS
5104 7113 1655 CHANGR, TAD I UPPER /GET ADDRESS POINTER
5105 7114 3240 DCA SETUP /SAVE IT
5106 7115 1640 TAD I SETUP /GET OLD IOT CODE
5107 7116 0331 AND A7007
5108 7117 1236 TAD TOTST /ADD IN DESIRED
5109 7120 3640 DCA I SETUP /CHANGE CODE
5110 7121 2255 ISZ UPPER /UPDATE POINTER
5111 7122 2237 ISZ SNERRO /UPDATE CHANGE COUNTER
5112 7123 5313 JMP CHANGR
5113 7124 4406 CLASIC /CHECK FOR CLASSIC.
5114 7125 4436 CREPR /ROUTINE TO EXECUTE.
5115 7126 7402 CHNHILT, HLT /DEVICE CODES CHANGED, PRESS
5116 7127 5730 JMP I XRGV /CONTINUE OR IF ON CONSOLE
5117 /
5118 /PACKAGE HIT CONTROL F.
5119 7130 0200 XBGN, BGN
5120 /
5121 7131 7007 A7007, 7007
5122 7132 0770 A0770, 0770
5123 7133 7771 CCNTR1, 7771
5124 7134 7135 CHNPOT, CHNPOT +1
5125 7135 6131 IOT1
5126 7136 6136 IOT2
5127 7137 6111 IOT3
5128 7140 6100 IOT4
5129 7141 6964 IOT5
5130 7142 6122 IOT6

```

```

5131 7143 6145 IOT7
5132 /
5133 PAGE
5134 /THIS ROUTINE TEST FOR BEING ON THE APT OR ACT SYSTEMS.
5135 /IF ON APT CONSOLE PACKAGE AND SWITCH REGISTER FUNCTIONS
5136 /ARE NOP'S.
5137 /
5138 /
5139 7200 0000 APT8, 0
5140 7201 1022 TAD 22 /HARWARE CONFIGURATION
5141 7202 0106 AND K4000
5142 7203 7650 SNA CLA /SKIP IF ON ACT OR APT
5143 7204 5600 JMP I APT8 /RETURN TO MAIN PROGRAM
5144 7205 1022 TAD 22
5145 7206 0264 AND K7377 /MAKE SURE CONSOLE DISABLED
5146 7207 3022 DCA 22
5147 7210 1107 TAD K7000
5148 7211 3663 DCA I XMYLAS /NOP SWITCH REGISTER FUNCTIONS
5149 7212 1200 TAD APT8
5150 7213 1070 TAD K0004
5151 7214 3200 DCA APT8
5152 7215 1021 TAD 21 /GET MEMORY SIZE
5153 7216 7012 RTR /SET UP MEMORY SIZE
5154 7217 5600 JMP I APT8 /NOW ON APT. RETURN IS PLUS 4.
5155 /
5156 /THIS ROUTINE WILL GENERATE THE TIMING REQUIRED BY
5157 /APT OR ACT.
5158 /
5159 7220 0000 KTICK, 0
5160 7221 1022 TAD 22
5161 7222 0106 AND K4000 /SEE IF ON APT
5162 7223 7650 SNA CLA
5163 7224 5620 JMP I KTICK /NOT ON APT
5164 7225 2266 ISZ CLKCNT /INCREMENT COUNTER
5165 7226 5620 JMP I KTICK /NO
5166 7227 6002 IOF /DISABLE INTERRUPTS
5167 7230 6214 RDF /GET PRESENT DATA FIELD
5168 7231 1150 TAD KCDF
5169 7232 3233 DCA .+1 /ESTABLISHES CURRENT DATA FIELD
5170 7233 7402 HLT /REPLACED WITH CURRENT DATA FIELD
5171 7234 6272 CIF 70 /FIELD 7. LOCATION OF UV PROM
5172 7235 4777 JMS I (6500
5173 7236 1376 TAD (=2777 /ABOUT 1.5 SEC ON MOST TESTS
5174 7237 3266 DCA CLKCNT
5175 7240 5620 JMP I KTICK
5176 /
5177 /THIS ROUTINE WILL NOTIFY APT OF AN ERROR AND SEND PC TO
5178 /APT SYSTFM
5179 /
5180 7241 0000 WAERRO, 0
5181 7242 1022 TAD 22
5182 7243 0106 AND K4000 /SEE IF ON APT
5183 7244 7650 SNA CLA
5184 7245 5641 JMP I WAERRO /NO
5185 7246 6002 IOF /DISABLE INTERRUPTS

```

```

5186 7247 7200 CLA
5187 7250 1775 TAD I (ERRO /GET PC
5188 7251 3265 DCA SAVPC
5189 7252 6214 RDF /GET CURRENT DATA FIELD
5190 7253 1774 TAD I (KCDF
5191 7254 3256 DCA .+2
5192 7255 1265 TAD SAVPC
5193 7256 7402 HLT /REPLACED WILL CURRENT DATA FIELD
5194 7257 6272 CIF 70 /FIELD OF UVPROM
5195 7260 5773 JMP I (6520 /NOTIFIES APT OF ERROR
5196 7261 7200 CLA
5197 7262 5641 JMP I WAERRO
5198 /
5199 7263 5767 XMYLAS, MYLAS+3
5200 7264 7377 K7377, 7377
5201 7265 0000 SAVPC, 0
5202 7266 5001 CLKCNT, =2777
5203 7373 6520
5204 7374 0150
5205 7375 6600
5206 7376 5001
5207 7377 6500
5208 7400 2003 PAGE
5209 7401 7200 TEXPC, TEXT "PC;"
5209 7402 0704 TEXGD, TEXT "GD;"
5210 7403 7200
5210 7404 0322 TEXCR, TEXT "CR;"
5211 7405 7200
5211 7406 2324 TEXST, TEXT "ST;"
5212 7407 7200
5212 7410 0402 TEXDB, TEXT "DB;"
5213 7411 7200
5213 7412 0315 TEXCM, TEXT "CM;"
5214 7413 7200
5214 7414 0401 TEXDA, TEXT "DA;"
5215 7415 7200
5215 7416 0104 TEXAD, TEXT "AD;"
5216 7417 7200
5216 7420 0424 TEXDT, TEXT "DT;"
5217 7421 7200
5217 7422 0103 TEXAC, TEXT "AC;"
5218 7423 7200
5219 7424 2324 /
5219 7425 0124 FR1X1, TEXT "STATUS REGISTEF ERROR"
5219 7426 2523
5219 7427 4022
5219 7430 0507
5219 7431 1123
5219 7432 2405
5219 7433 2246
5219 7434 0522
5219 7435 2217
5219 7436 2200

```

5220	7437 0317	ERTX2, TEXT	"COMMAND REGISTER ERROR"
	7440 1515		
	7441 0116		
	7442 0440		
	7443 2205		
	7444 0711		
	7445 2324		
	7446 0522		
	7447 4005		
	7450 2222		
	7451 1722		
	7452 0000		
5221	7453 0411	ERTX3, TEXT	"DISK ADDRESS REGISTER ERROR"
	7454 2313		
	7455 4001		
	7456 0404		
	7457 2205		
	7460 2323		
	7461 4022		
	7462 0507		
	7463 1123		
	7464 2405		
	7465 2240		
	7466 0522		
	7467 2217		
	7470 2200		
5222	7471 0401	ERTX4, TEXT	"DATA BREAK ERROR"
	7472 2401		
	7473 4002		
	7474 2205		
	7475 0113		
	7476 4005		
	7477 2222		
	7500 1722		
	7501 0000		
5223	7502 0322	ERTX5, TEXT	"CRC REGISTER ERROR"
	7503 0340		
	7504 2205		
	7505 0711		
	7506 2324		
	7507 0522		
	7510 4005		
	7511 2222		
	7512 1722		
	7513 0000		
5224	7514 0401	ERTX6, TEXT	"DATA REGISTER ERROR"
	7515 2401		
	7516 4022		
	7517 0507		
	7520 1123		
	7521 2405		
	7522 2240		
	7523 0522		
	7524 2217		
	7525 2200		

5225	7526 0411	ERTX7, TEXT	"DISK SKIP ERROR"
	7527 2313		
	7530 4023		
	7531 1311		
	7532 2040		
	7533 0522		
	7534 2217		
	7535 2200		
5226	7536 0411	ERTX8, TEXT	"DISK INTERRUPT ERROR"
	7537 2313		
	7540 4011		
	7541 1624		
	7542 0522		
	7543 2225		
	7544 2024		
	7545 4005		
	7546 2222		
	7547 1722		
	7550 0000		
5227	7551 0103	ERTX9, TEXT	"AC REGISTER ERROR"
	7552 4022		
	7553 0507		
	7554 1123		
	7555 2405		
	7556 2240		
	7557 0522		
	7560 2217		
	7561 2200		
5228	7562 2213	/	
5229	7563 7005	TEXEND, TEXT	"RK0E DISKLESS PASS COMPLETE"
	7564 4004		
	7565 1123		
	7566 1314		
	7567 0523		
	7570 2340		
	7571 2001		
	7572 2323		
	7573 4003		
	7574 1715		
	7575 2014		
	7576 0524		
	7577 0500		

5230
5231

A0770	7132	CRTTYI	4426	ENMAN2	4445	IOT4	6100
A7007	7131	CBTYPE	4435	ERHLT1	6031	IOT5	6064
ACCOMP1	4440	CAF	6007	ERHLT2	6142	IOT6	6122
ACCOMP2	4441	CCNTR1	7133	ERHLT3	6115	IOT7	6145
ACL	7701	CHANG	7101	ERHLT4	6104	IOTCHN	5426
ACREG	0174	CHANGR	7113	FRHLT5	6070	K0000	0064
ACSAVE	1345	CHKCLA	1200	ERHLT6	6126	K0001	0065
ADREG	0172	CHNHLT	7126	ERHLT7	6151	K0002	0066
AERRO	4425	CHNPOT	7134	ERHLT9	6726	K0003	0067
APT8	7200	CKCOUT	0232	EPR1	0736	K0004	0070
APTRA	4423	CLASIC	4406	EPRMES	1320	K0006	0071
AUTO10	0010	CLASIK	5732	ERRO	6600	K0007	0072
BAKFLD	7052	CLDR	6135	ERROR	4436	K0010	0073
BAKPNT	6720	CLKCNT	7266	ERTX1	7424	K0017	0145
BGN	0200	CLRALL	4453	ERTX2	7437	K0020	0074
BYRETR	0506	CLRTRN	1315	ERTX3	7453	K0037	0075
CBY1	0230	CMREG	0170	ERTX4	7471	K0040	0076
CBY2	1300	CNTRLC	0551	ERTX5	7502	K0070	0114
CBY3	1061	CNTRLO	0600	ERTX6	7514	K0077	0115
CBY4	0515	CNTRLE	0545	ERTX7	7526	K0100	0077
CBY5	1116	CNTRLL	0537	ERTX8	7536	K0177	0117
CCHAR	1075	CNTRLO	0500	ERTX9	7551	K0200	0100
CCKP	1022	CNTRLR	0511	EXIT	6457	K0207	0101
CCKPA	4440	CNTRLS	0521	EXITA	0440	K0212	0147
CCKSW	4425	CNTVAL	0252	EXTFLD	5201	K0215	0146
COCNTR	4427	COMP1	6033	F10P1	0021	K0240	6461
COCNT	1145	COMP2	6044	F10P2	0022	K0260	0063
COCRLF	4433	CONSOL	0000	F1SWR	0020	K0377	0116
CDD01	0310	CRERR	6060	FILCNT	1040	K0400	0102
CDD010	1262	CRLF	4462	FILLER	1037	K1000	0103
CDD011	0607	CRREG1	0164	FLDMAX	0176	K2000	0104
CDD02	1033	CRREG2	0165	FLSAVE	1347	K2525	0120
CDD03	0350	DAREG	0171	FROCT	6400	K3737	0122
CDD04	1006	DBREG	0167	GDREG1	0162	K3740	6462
CDD07	0527	DCLR	6742	GDREG2	0163	K3777	0105
CBECHO	4434	DLAG	6743	GETCHI	0703	K4000	0106
CBERP	4436	DLCA	6744	GETDAT	0456	K4100	0124
CGET	0624	DLDC	6746	GOITA	0443	K5000	0126
CHANG	1122	DMAN	6747	GOTOA	0454	K5252	0121
CHINQU	4437	DOCNT	0247	GTF	6004	K5403	7054
COCTA	4432	DONEA	0426	HEDLST	6747	K5777	0127
CBPASS	4424	DOPACK	0212	HEDTAD	6746	K7000	0107
C8PAUS	4441	DOSET	0251	HOMEMA	0175	K7377	7264
C8PRNT	4430	DRST	6745	INDEXA	0455	K7600	0125
C8RDP5	0666	DSKP	6741	INMODE	1076	K7700	0112
C8RETD	0614	DSKSKP	4447	INTADD	6011	K7717	0123
C8RETR	0536	DTREG	0173	INTRQ	0031	K7740	0113
C8SETD	0613	DUMP	6476	IONHAT	4437	K7771	0131
C8SETS	0535	ENDHLT	5716	IONWT	6000	K7774	0130
C8SWIT	4431	ENDIT	0742	IOT1	6131	K7775	0111
C8SWST	0745	ENDTST	5670	IOT2	6136	K7776	0110
C8TMP1	1021	ENMAN1	4444	IOT3	6111	K7777	0132

KCDF	0150	NTCLAS	1270	SETUP2	0225	T71E	3041
KRMP	0151	NTCRC	6674	SNERRO	7037	T72E	3115
KTICK	7220	NTGD	6657	STCON	0177	T72P	3060
LAS	4404	OCTEL	4460	STPHLT	7014	T73E	3266
L0AD	6106	OP1	0021	STRAUT	6703	T73R1	3204
L0ADD	4452	OP2	0022	STREG	0166	T73R2	3210
L0BUF	4427	PASCNT	0250	SWR	0020	T73R3	3233
L0CA	6075	PCLF	6662	T101D	5256	T74E	3340
L0CM	6117	PCNTR1	6744	T101E	5257	T74R1	3302
L0CMD	4450	PCNTR2	6745	T101R	5223	T74R1A	3303
L0CUR	4451	PCOUNT	5771	T102D	5334	T74R2	3305
L0MAN	4455	PCSAYE	1344	T102E	5335	T74R3	3322
L0MN	6144	PNTBUF	1120	T102R	5301	T75E	3434
M12	0136	PRINT	6463	T103D	5452	T75R	3411
M120	0141	PRN	6423	T103E	5453	T76E	3475
M16	0137	PRNTR	4457	T103R	5416	T76R	3452
M191	0142	PRFLD	0210	T104D	5531	T77E	3525
M255	0143	PSIE	6665	T104E	5532	T78E	3556
M300	0144	PSKE	6663	T104R	5475	T79E	3607
M4	0133	PSKF	6661	T105D	5664	T80E	3641
M40	0140	PSIB	6664	T105E	5665	T81E	3672
M5	0134	PSIOR	0336	T105R	5610	T82E	3724
M7	0135	ROAD	6200	T37R	1355	T83E	3771
MAIN1	6256	ROADD	4446	T38R	1412	T84E	4033
MAIN2	6760	RDBF	6226	T39R	1444	T85E	4106
MANTST	0030	RDBUF	4456	T40R	1501	T85OK	4105
MANUAL	5430	RDCM	6240	T45E	1647	T85R1	4046
MANUL	5723	RDCMD	4443	T45R1	1623	T86E	4276
MESA	0747	RDCR	6263	T45R3	1636	T86R1	4204
MESAC	1333	PDRC	4454	T46A1	1660	T86R2	4214
MESFL	1341	RDST	6063	T46A2	1703	T86R3	4236
MESHAN	1146	RPSTAT	4442	T46E	1716	T86R4	4260
MESMQ	1336	REALPC	1316	T47E	1742	T87E	4374
MESPAS	0253	REDOA	0415	T48E	1767	T87R1	4307
MESPC	1330	REG1	0153	T49E	2032	T87R2	4320
MOA	7501	REG2	0154	T50E	2074	T87R3	4340
MOQ	7421	POUINS	1302	T51E	2114	T87R4	4356
MQSAVE	1346	ROUTMP	5762	T53E	2156	T92E	4641
MTS05	0152	RTFLD1	5645	T54F	2225	T92R1	4612
MYAC	1317	RTFLD2	5234	T55E	2252	T92R2	4630
MYLAS	5764	RTFLD3	5312	T57E	2305	T94E	4717
NERRO	7000	RTFLD4	5430	T58E	2320	T95E	4750
NERROR	4435	RTFLD5	5507	T59E	2333	T97E	5026
NEXFL1	5655	SAVAC	5763	T60E	2354	T98E	5060
NEXFL2	5247	SAVEND	0007	T61E	2420	T99E	5126
NEXFL3	5325	SAVPC	7265	T62E	2444	T99R1	5071
NEXFL4	5443	SRCNT1	0155	T63E	2504	T99R2	5106
NEXFL5	5522	SDKP	6130	T64F	2544	TABLA	0461
NEXT	7031	SERRO	6740	T65E	2633	TABLR	0471
NEXTST	7033	SFT	4405	T68E	2715	TCNTR1	0156
NOSET	0242	SETUP	7040	T69E	2750	TCNTR2	0157
NOTEX	6732	SETUP1	1233	T70E	2774	TCNTR3	0160

TENR4	0161	TST30	1142	TST78	3530	XCLAS	0006
TEXAC	7422	TST31	1162	TST79	3561	XCLDR	0053
TEXAD	7416	TST32	1203	TSTR	0333	XCOMP1	0040
TEXCH	7412	TST33	1217	TST80	3612	XCOMP2	0041
TEXCR	7404	TST34	1233	TST81	3644	XCRLF	0062
TEXDA	7414	TST35	1263	TST82	3675	XDOLPT	1112
TEXDB	7410	TST36	1311	TST83	3727	XDOSW	0520
TEXDT	7420	TST37	1343	TST84	3774	XDUMP	6741
TEXEND	7562	TST38	1400	TST85	4036	XEND	0032
TEXGD	7402	TST39	1430	TST86	4200	XERRO	0036
TEXPC	7400	TST4	0266	TST87	4303	XFROCT	0060
TEXST	7406	TST40	1470	TST88	4377	XIONWT	0037
THSFLD	0033	TST41	1526	TST89	4426	XLAS	0004
TICK	4424	TST42	1545	TST9	0344	XLAD	0052
TPCNT	0746	TST43	1565	TST90	4457	XLDC	0051
TOCT	6314	TST44	1601	TST91	4507	XLDCM	0050
TOFLD1	5621	TST45	1615	TST92	4600	XLDMN	0055
TOFLD2	5232	TST46	1652	TST93	4646	XMAIN1	0044
TOFLD3	5310	TST47	1722	TST94	4672	XMAIN2	0045
TOFLD4	5426	TST48	1746	TST95	4722	XMYLAS	7263
TOFLD5	5505	TST49	2000	TST97	5000	XNERR	0035
TOTST	7036	TST5	0302	TST98	5031	XPRINT	0034
TST0	0236	TST50	2035	TST99	5063	XPRN	0057
TST1	0245	TST51	2077	TSTCHA	0715	XRDAD	0046
TST10	0353	TST52	2117	TSTLAS	5200	XRDBF	0056
TST100	5131	TST53	2134	TTYLPT	1121	XRDCM	0043
TST101	5205	TST54	2200	TWOCT	4461	XRDCR	0054
TST102	5262	TST55	2230	TYPE	4434	XRDST	0042
TST103	5400	TST56	2255	UPAROW	0615	XREG	6743
TST104	5456	TST57	2272	UPONE	6331	XSDKP	0047
TST105	5600	TST58	2310	UPPER	7055	XSET	0005
TST11	0375	TST59	2323	UPPR1	7064	XTABLA	0457
TST12	0420	TST6	0315	WAERRO	7241	XTABLB	0460
TST13	0434	TST60	2336	WAMES	0651	XTEXT	6742
TST14	0452	TST61	2400	XAERRO	0025	XTICK	0024
TST15	0464	TST62	2423	XAPTRA	0023	XTOCT	0061
TST16	0517	TST63	2447	XBGN	7130	XUPPER	0027
TST17	0547	TST64	2507	XCCKP	1041		
TST18	0571	TST65	2600	XCNCNT	0400		
TST19	0614	TST66	2636	XCNCRL	1023		
TST2	0252	TST67	2657	XCNCCH	1063		
TST20	0626	TST68	2677	XCNCRR	1207		
TST21	0643	TST69	2720	XCNCINQ	0635		
TST22	0657	TST7	0324	XCNCCT	1000		
TST23	0703	TST70	2753	XCNCPAS	0200		
TST24	0730	TST71	2777	XCNCPAU	0337		
TST25	0752	TST72	3044	XCNCPT	0303		
TST26	0777	TST73	3200	XCNCPSW	0656		
TST27	1040	TST74	3271	XCNCB	0262		
TST28	1057	TST75	3400	XCNCB	0272		
TST29	1107	TST76	3437	XCNCB	1077		
TST3	0260	TST77	3500	XCHANG	0026		

ERRORS DETECTED: 0
 LINKS GENERATED: 115
 RUN-TIME: 11 SECONDS
 3K CORE USED

T104D 4339 4344#
T104E 4336 4345#
T104F 4316# 4343
T105D 4403 4408#
T105E 4398 4409#
T105R 4364# 4407
T37R 2079# 2086
T38R 2118# 2125
T39R 2151# 2164
T40R 2184# 2197
T45E 2306 2312#
T45R1 2292# 2298
T45R3 2303# 2310
T46A1 2326# 2329
T46A2 2345# 2354
T46E 2352 2356#
T47E 2374 2381#
T48E 2408 2407#
T49E 2427 243# 2445#
T50E 2459 2471 2483#
T51E 2496 2498 2502#
T53E 2535 2540 2546#
T54E 2570 257#
T55E 2594 2603#
T57E 2633 2638#
T58E 2649 2651 2653#
T59E 2664 2668#
T60E 2681 2686 2688 2692#
T61E 2705 2712 2714 2718#
T62E 2729 2733 2737 2742#
T63E 2756 2766 2778#
T64E 2792 2802 2814#
T65E 2833 2843 2853#
T68F 2904 2910 2912 2914#
T69E 2936 2944#
T70E 2959 2962 2967#
T71E 3001 3008#
T72E 3039 3049 3058#
T72R 3029# 3041
T73E 3106 3119 3123#
T73R1 3073# 3121
T73R2 3077# 3086
T73R3 3096# 3108
T74E 3152 3167 3171#
T74R1 3141# 3154
T74R1A 3142#
T74R2 3144#
T74R3 3157# 3169
T75E 3200 3210#
T75R 3191# 3202
T76E 3236 3246#
T76R 3227# 3238
T77E 3278#

T78E 3389#
T79E 3339#
T80E 3371#
T81E 3397 3403#
T82E 3432 3438#
T83E 3466 3482#
T84E 3514 3521#
T85E 3562 3570#
T85OK 3566 3569#
T85R1 3538# 3568
T86E 3603 3625 3638 3644#
T86R1 3585# 3642
T86R2 3593# 3605
T86R3 3611# 3627
T86R4 3630# 3640
T87E 3679 3695 3708 3714#
T87R1 3660# 3712
T87R2 3669# 3681
T87R3 3685# 3697
T87R4 3700# 3710
T92E 3873 3879#
T92R1 3856# 3865
T92R2 3870# 3877
T94E 3936#
T95E 3965#
T97E 3999#
T98E 4029#
T99E 4065 4072#
T99R1 4043# 4049
T99R2 4056# 4070
TABLA 409 411#
TABLB 410 420#
TCNTR1 1221# 1511 1523 1543 1552 197# 1982 2007 2011 2030 2045 2077 2080 2085
2116 2119 2124 2147 2152 2158 2160 2180 2185 2191 2193 2325 2328 2344
2353 2364 2367 2369 2375 2379 2380 2392 2401 2405 2461 2465 3025 3044
3076 3085 3092 3114 3139 3153 3168 3187 3201 3221 3237 3503 3506
3541 3555 3584 3587 3641 3659 3662 3711 3850 3864 3867 3876 4148 4176
4200 4229 4254 4283 4307 4337 4359 4401
TCNTR2 1222# 2149 2163 2182 2196 3027 3040 3078 3082 3094 3107 3143 3147 3158
3162 3189 3205 3223 3241 3535 3540 3542 3548 3556 3557 3563 3567 3588
3604 3610 3626 3663 3680 3684 3696 3852 3857 3862
TCNTR3 1223# 2291 2297 2302 2300 3030 3033 3097 3100 3192 3195 3228 3231 3629
3639 3699 3709 4042 4048 4053 4069
TCNTR4 1224# 2289 2292 2295 2296 3072 3075 3120 4040 4043 4046 4047
TEXAC 5217#
TEXAD 5215#
TEXCM 5213#
TEXCR 4941 5210#
TEXDA 5214#
TEXDB 5212#
TEXDT 5216#
TEXEND 442# 5229#
TEXGD 4925 5209#

TEXPC	4913	5208*						
TEXT	4986	5211*						
THSFLD	1132*	4149	4201	4255	430R	4360	5055	
TICK	1070*	4545	4564	5043				
TMPCNT	646	654	684*					
TOCT	1154	4751*	4763	4786	4795			
TOFLD1	4357	4367	4373*	4375	4386	4404	4406	
TOFLD2	4146	4157	4163*	4166	4179	4181		
TOFLD3	4198	4210	4216*	4219	4232	4234		
TOFLD4	4252	4264	4270*	4273	4286	4288		
TOFLD5	4305	4318	4324*	4327	4340	4342		
TOTST	5049*	5072	5078	5099	510R			
TST0	1287*	1293						
TST1	1299*	1303						
TST10	1410*	1426						
TST100	4081*	4111						
TST101	4136*	4185						
TST102	4194*	4238						
TST103	4241	4248*	4292					
TST104	4301*	4346						
TST105	4349	4356*	4410					
TST11	1433*	1450						
TST12	1457*	1460						
TST13	1474*	1486						
TST14	1493*	1502						
TST15	1508*	1533						
TST16	1540*	1562						
TST17	1571*	1587						
TST18	1596*	1613						
TST19	1622*	1631						
TST2	1309*	1313						
TST20	1637*	1649						
TST21	1655*	1666						
TST22	1675*	1693						
TST23	1702*	1721						
TST24	1730*	1747						
TST25	1754*	1775						
TST26	1782*	1813						
TST27	1819*	1832						
TST28	1839*	1861						
TST29	1868*	1893						
TST3	1321*	1326						
TST30	1898*	1912						
TST31	1918*	1933						
TST32	1939*	1949						
TST33	1955*	1965						
TST34	1971*	1993						
TST35	2000*	2020						
TST36	2027*	2051						
TST37	2069*	2092						
TST38	2096	2108*	2130					
TST39	2139*	2169						
TST4	1332*	1342	4439					

TST40	2175*	2203						
TST41	2210*	2224						
TST42	2231*	2245						
TST43	2253*	2263						
TST44	2270*	2280						
TST45	2286*	2313						
TST46	2320*	2357						
TST47	2365*	2382						
TST48	2390*	2408						
TST49	2412	2419*	2446					
TST5	1348*	1356						
TST50	2451*	2484						
TST51	2489*	2503						
TST52	2509*	2520						
TST53	2528*	2547						
TST54	2551	2557*	2579					
TST55	2585*	2604						
TST56	2600*	2621						
TST57	2627*	2639						
TST58	2645*	2654						
TST59	2660*	2669						
TST6	1363*	1368						
TST60	2670*	2693						
TST61	2697	2702*	2719					
TST62	2725*	2743						
TST63	2749*	2779						
TST64	2785*	2815						
TST65	2819	2826*	2854					
TST66	2860*	2875						
TST67	2881*	2895						
TST68	2900*	2915						
TST69	2920*	2945						
TST7	1374*	1379						
TST70	2950*	2968						
TST71	2974*	3009						
TST72	3017*	3059						
TST73	3063	3069*	3124					
TST74	3132*	3172						
TST75	3176	3182*	3211					
TST76	3216*	3247						
TST77	3256*	3279						
TST78	3287*	3310						
TST79	3317*	3340						
TST8	1385*	1392						
TST80	3348*	3372						
TST81	3381*	3404						
TST82	3414*	3439						
TST83	3447*	3483						
TST84	3490*	3522						
TST85	1217	3530*	3571					
TST86	3575	3581*	3645					
TST87	3649	3656*	3715					
TST88	3722*	3743						

.V1347	369	521*	566	703*	802	908*
.V3740	281	325*				
.V5001	5173	5206*				
.V5732	956	1014	1043*			
.V6314	4786	4795	4879*			
.V6331	4784	4787	4791	4794	4880*	
.V6500	5172	5207*				
.V6520	5195	5203*				
.V6600	5187	5205*				
.V7402	317	322*	1001	1035*		
.V7510	667	690*				
.V7520	663	691*				
.V7600	503	508*				
.V7700	267	320*				
.V7774	728	914*				