

Floppy Drives & Controller

PRODUCT CODE: MAINDEC-08-DIRXA-D-D

PRODUCT NAME: RX8/RX01 DIAGNOSTIC PROGRAM

DATE: JUNE, 1977

MAINTAINER: DIAGNOSTIC ENGINEERING

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1. ABSTRACT

//////////
THIS PROGRAM IS DESIGNED TO TEST THE RX01 FLEXIBLE DISKETTE SUBSYSTEM CONFIGURED AS A COMPLETE SUBSYSTEM, (RX8 INTERFACE, RX01 CONTROL, AND DISKETTE DRIVES), OR AS A PARTIAL SUBSYSTEM (INTERFACE, AND/OR CONTROL). OBVIOUSLY THE MAXIMUM RESOLUTION POSSIBLE IS ACHIEVED BY TESTING THE RX01 DISKETTE SUBSYSTEM CONFIGURED AS A COMPLETE SUBSYSTEM.

REVISION C

THE ADDITION OF THE CONSOLE PACKAGE.
THE REMOVAL OF TEST THREE (3).
SEE LISTING LOCATION FOR EXPLANATION
THE REMOVAL OF DECIMAL CONVERSION ROUTINES.
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REVISION D

THE ADDITION OF THE NEW CONSOLE PACKAGE.
COMPATABILITY FOR VT78 SYSTEMS.
ABILITY TO TEST 2 RX01 UNITS(4 DRIVES).
INTERLEAVING WAS MODIFIED FOR VT78.

2. REQUIREMENTS

//////////
2.1 EQUIPMENT

//////////

A PDP-8/E TYPE GENERATION COMPUTER WITH 4K OF CORE, CONSOLE SWITCHES, TELETYPE, AND AN RX01 DISKETTE SUBSYSTEM.

THE DIAGNOSTIC CAN RUN WITHOUT HARDWARE SWITCH IF THE CONSOLE PACKAGE IS USED. IF THE CONSOLE PACKAGE IS ACTIVE 8K OF CORE IS NEEDED.

2.2 STORAGE

//////////

THIS PROGRAM IS DESIGNED TO BE RUN STAND ALONE AND MUST OCCUPY PROGRAM LOCATIONS 0 THRU 7577 OF FIELD 0.

THE CONSOLE PACKAGE OCCUPIES FIELD 1 LOCATIONS 0 TO 1100.

FIELD 1 IS NEEDED ONLY IF THE CONSOLE PACKAGE IS BEING USED.

2.3 PRELIMINARY DIAGNOSTIC PROGRAMS

//////////

THIS PROGRAM ASSUMES THAT THE HOST PDP IS FUNCTIONING CORRECTLY.

3. LOADING PROCEDURE

THIS PROGRAM IS IN BINARY FORMAT, TO LOAD THIS PROGRAM INTO CORE,
FOLLOW THE INSTRUCTIONS PUBLISHED FOR THE PARTICULAR BINARY FORMAT
LOADER BEING USED.

4. STARTING PROCEDURE

4.1 STARTING ADDRESS LOCATIONS

THIS PROGRAM HAS 2 STARTING ADDRESS LOCATIONS:

200 * DIAGNOSTIC PROGRAM *

STARTING THIS PROGRAM AT PROGRAM LOCATION 200, AND SUCCESSFULLY SUPPLYING
THE NECESSARY TEST PARAMETERS REQUESTED, DIRECTS THIS PROGRAM TO BEGIN
TESTING THE RX01 SUBSYSTEM AS A SUBSYSTEM OR PARTIAL SUBSYSTEM.

THE ADDRESS THAT THE CONSOLE PACKAGE WILL START THE DIAGNOSTIC
AT IS LOCATION 200.

201 * RESTART OF DIAGNOSTIC PROGRAM *

STARTING THIS PROGRAM AT PROGRAM LOCATION 201 DIRECTS THE PROGRAM TO
CONTINUE TESTING THE RX01 SUBSYSTEM AS A SUBSYSTEM OR PARTIAL SUBSYSTEM
USING THE PARAMETERS SUPPLIED AT STARTING ADDRESS 200.

4.2 OPERATOR ACTION

CONFIGURE THE ACCUMULATOR SWITCHES TO REPRESENT THE OCTAL PROGRAM STARTING
ADDRESS LOCATION DESIRED, PRESS " LOAD ADDRESS ", PRESS " CLEAR ", AND
FINALLY PRESS " CONT " INUE, IF THE CONSOLE PACKAGE IS ACTIVE

THEN ISSUING THE R DIRXA COMMAND WILL LOAD THE PROGRAM FROM
A DISKETTE.

t loads and starts

4.3 PROGRAM ACTION

//////////
THE PROGRAM PRINTS THE TITLE OF THE PROGRAM AND THE PRESENT
MAINDEC REVISION. IF THE PROGRAM STARTING ADDRESS IS 200 THE
PROGRAM WILL REQUEST TEST PARAMETER INFORMATION TO BE SUPPLIED BY
BY THE OPERATOR VIA THE PDP SWITCHES.

* 201 *

THE PROGRAM HAS RECONFIRMED PREVIOUS TEST PARAMETER SELECTIONS BY PRINTING
APPROPRIATE MESSAGES ON THE TELEPRINTER, AND HAS RESUMED TESTING.

4.4 TEST PARAMETER SELECTIONS

//////////

AFTER STARTING THIS PROGRAM AT STARTING ADDRESS 200, THE PROGRAM WILL PRINT
"REMOVE DIAGNOSTIC DISKETTE" (REMOVE AND REPLACE WITH SCRATCH DISKETTE)
" SELECT PARAMETERS (INCLUDING DEVICE CODE) " ~~AND HALT OR PRINT~~
THE SWITCH REGISTER QUESTION IF THE CONSOLE PACKAGE IS ACTIVE.

blank in
each drive

THE OPERATOR WILL THEN CONFIGURE CONSOLE SWITCHES 0-2 TO REPRESENT
DISKETTE UNIT/DRIVE SELECTION, CONSOLE SWITCHES 3, 4, AND 5 TO REPRESENT
RX8 INTERFACE IOT DEVICE CODE, AND FINALLY CONSOLE SWITHCHES 7 - 11 TO
REPRESENT THE [STARTING] TEST , AND THEN PRESS " CONT " INUE.(SEE RESTRICTIONS)

"return"

Put in: 0000 for
all tests of both drives

C O N S O L E
S W I T C H E S

0	1	2	3	4	5	6	7	8	9	10	11
U	U	U/C	X	X	X	U	T	T	T	T	T

X=DEVICE CODE (0 DEFAULTS TO 75)
T=TESTS (0 FOR ALL TESTS)

C=RX01 MICROCONTROL CABLED TO RX8 INTERFACE

U=UNIT/DRIVES SELECTED FOR TEST

WHERE: UNIT DRIVE(S)

0000 = A 0,1

1000 = B 0,1

2000 = A 0

3000 = B 0

4000 = A 1

5000 = B 1

6000 = TEST CONTROL AND INTERFACE ONLY (NO DRIVES)

7000 = TEST CONTROL ONLY (NO CONTROL OR DRIVES)

0040 = TEST UNITS A AND B (ALL DRIVES)

2040 = DRIVES 0 BOTH UNITS

4040 = DRIVES 1 BOTH UNITS

THE PROGRAM WILL PRINT A CONFIRMATION MESSAGE, THEN BEGIN TESTING THE RX01 SUBSYSTEM AS A SUBSYSTEM OR PARTIAL SUBSYSTEM WITH THE FIRST TEST CONFIGURED WITHIN CONSOLE SWITCHES 7 THRU 11.

TO TEST THE RX01 DISKETTE SUBSYSTEM(RXA) AS A COMPLETE SUBSYSTEM, CONFIGURE CONSOLE SWITCHES 0, 1, AND 2 TO REPRESENT ZERO. THE PROGRAM WILL ASSUME ALL DRIVE(S) ARE READY (POWER APPLIED / DOOR CLOSED).

NOTE, HOWEVER, THAT TESTING THE RX01 DISKETTE SUBSYSTEM AS A PARTIAL SUBSYSTEM IS MORE THAN MERELY CONFIGURING CONSOLE SWITCHES 0, 1, AND 2 TO REPRESENT VALUES OTHER THAN ZERO.

IF ONLY THE CONTROL / INTERFACE PARTIAL SUBSYSTEM (NO DRIVES) IS THE THE UNIT UNDER TEST (UUT), THEN THE DISKETTE DRIVE(S) CABLE (IF ANY) MUST BE PHYSICALLY REMOVED FROM THE RX01 CONTROLLER, OR, THE DRIVES MUST BE RENDERED " NOT READY " (DOOR OPEN), THEN THE CONSOLE SWITCHES 0, AND 1 EACH MUST BE CONFIGURED TO REPRESENT A " 1 ".

IF ONLY THE INTERFACE PARTIAL SUBSYSTEM (NO DRIVES AND CONTROL) IS THE UUT THEN THE BC05-L CABLE FROM THE INTERFACE TO THE CONTROL MUST BE PHYSICALLY

REMOVED, ONLY THEN MAY CONSOLE SWITCHES 0, 1, AND 2 BE CONFIGURED TO RE-PRESENT A " 1 ".

4.4.1 RESTRICTIONS

//////////

A SELECT GROUP OF TESTS ARE DESIGNED TO CONFIRM THE RESULTS OF PREVIOUS TESTS. THE FOLLOWING IS AN OVERVIEW OF THOSE TESTS WHICH REQUIRE A PREVIOUS TESTS TO HAVE EXECUTED CORRECTLY.

...FOR THIS TEST TO FUNCTION CORRECTLY...	...THIS TEST MUST HAVE PREVIOUSLY EXECUTED CORRECTLY...
---	---

T14, T15 / T13

TEST 14, AND TEST 15 EMPTY THE SECTOR BUFFER IN 12-BIT MODE COMPARING THE CONTENTS TO THE EXPECTED DATA PATTERN FILLED BY TEST 13.

T17, T20 / T16

TEST 17, AND TEST 20 EMPTY THE SECTOR BUFFER IN 8-BIT MODE COMPARING THE CONTENTS TO THE EXPECTED DATA PATTERN FILLED WITHIN TEST 16.

T24, T25, T26 / T22

THE SECTOR BUFFER SHOULD REMAIN UNCHANGED AND CONTAIN THE DATA PATTERN FILLED WITHIN TEST 22 AFTER THE RX01 CONTROL ATTEMPTS TO SEEK SECTOR 0.

T27 / T22

THE CONTENTS OF THE SECTOR BUFFER SHOULD REMAIN UNCHANGED AND CONTAIN THE DATA PATTERN FILLED WITHIN TEST 22 AFTER THE RX01 CONTROLLER ATTEMPTS TO SEEK AN ILLEGAL TRACK GREATER THAN 114.

T32 / T31

TEST 32 ISSUES AN INITIALIZE WHICH PERFORMS AN " IMPLIED READ " OF TRACK 1 / SECTOR 1. THE PROGRAM COMPARES THE DATA FROM THE SECTOR BUFFER WHICH SHOULD BE EQUIVALENT TO THE DATA WRITTEN WITHIN TEST 31 (FIRST WRITE EVER).

TEST 33 ISSUES THE FIRST READ EVER OF THE TRACK / SECTOR WRITTEN WITHIN TEST 31 AND COMPARES THE DATA EXPECTING THE DATA PATTERN OF TEST 31.

5. OPERATING PROCEDURE

//////////

THE OPERATOR MAY CONTROL THE DYNAMIC ACTION OF THE PROGRAM BY APPROPRIATELY CONFIGURING THE ACCUMULATOR SWITCHES AS DESCRIBED BELOW.
IF THE CONSOLE PACKAGE IS ACTIVE THEN THE SETTING OF THE SWITCH REGISTER UNDER DYNAMIC CONDITIONS IS POSSIBLE BY TYPING CONTROL G THIS WILL PRINT THE SWITCH REGISTER QUESTION AND ALLOW CHANGES TO IT THEN CONTINUE RUNNING.

0 = 1 - INHIBIT ERROR HALT
1 = 1 - LOCK SCOPE LOOP ON ERROR
2 = 1 - LOCK SCOPE LOOP ON TEST (OK OR NOT)
3 = 1 - HALT AT THE END OF A TEST PASS
4 = 1 - INHIBIT ERROR PRINTOUTS
5 = 1 - (LONG) DATA COMPARISON ERROR PRINTOUT
6 = 1 - INHIBIT THE ISSUING OF [INIT] AT ERROR
11= 1 - DISABLE THE RINGING OF THE BELL AT AN ERROR

6. ERROR DETECTION

6.1 PROGRAM DEFINITIONS

THIS PROGRAM HAS DEFINED THE FOLLOWING AS ERRORS:

6.1.1 WRITE ERROR

//////////

A WRITE ERROR IS A READ ERROR IF THE DATA BEING READ IS OF UNKNOWN QUALITY (THE DATA BEING READ IS BEING READ FOR THE FIRST TIME AFTER ITS WRITING).

6.1.2 READ (CRC) ERROR = (TRANSFER REGISTER STATUS BIT 11 = 1)

//////////

A READ ERROR IS A READ ERROR WHERE THE QUALITY OF THE DATA BEING READ IS KNOWN (THE DATA BEING READ HAD BEEN READ SUCCESSFULLY SOME TIME PREVIOUSLY).

6.1.3 CRC AND DATA ERROR
//////////

6.1.4 NO CRC BUT DATA ERROR
//////////

6.1.5 CRC BUT NO DATA ERROR
//////////

THESE DATA ERRORS ARE DETECTED WHEN THE PROGRAM IS VERIFYING THE DATA THAT " SHOULD HAVE BEEN READ " WITH THE DATA THAT " ACTUALLY WAS READ " BY COMPARING THE " BAD " COLUMN TO THE " GOOD " COLUMN.

WORD# GOOD BAD

1 (TRACK IDENTIFICATION BITS 5-11)
2 (SECTOR IDENTIFICATION BITS 8-11)

WORDS 3 THRU 62 (IF 12-BIT MODE), OR
BYTES 3 THRU 126 (IF 8-BIT MODE) CONTAIN
THE OPERATORS PPP SELECTION.

63 (OR BYTE 127) = THE SUM OF ALL WORDS 1 THRU 62
OR BYTES 1 THRU 127.

64 OR (BYTE 128) = THE NEGATIVE OF 2 TIMES
THE VALUE OF WORD # 63 OR BYTE # 127.

6.1.5.1 SUMCHECK ERROR
//////////

THE PROGRAM DETECTS A " SUM-CHECK " ERROR BY SUMMING ALL THE ACTUAL (BAD) DATA COLUMN AND COMPARING THAT SUM TO 0.

THE REASON FOR THE FIRST 2 WORDS/BYTES CONTAINING TRACK / SECTOR IDENTIFICATION CODES IS TO DETECT ADDRESSING ERRORS.

THE REASON FOR THE LAST 2 WORDS/BYTES CONTAINING CHECKSUM INFORMATION IS TO DISTINGUISH BETWEEN WHAT MIGHT RESEMBLE AN ADDRESSING ERROR (IF THE PROGRAM DETECTED AN ERROR WHEN COMPARING THE FIRST 2 WORDS/BYTES) AND A CRC ERROR.

6.1.6 SEEK ERROR - (NO ALLOCATED TRANSFER REGISTER STATUS BIT)

//////////

A SEEK ERROR HAS BEEN DEFINED AS " NOT A CRC ", AND " NOT A PARITY " ERROR.

6.1.7 PARITY ERROR - (TRANSFER REGISTER STATUS BIT 10 = 1)

//////////

A PARITY ERROR IS AN ERROR WHICH RESULTS FROM AN INCORRECT TRANSFER OF THE COMMAND WORD FORM THE RX8 INTERFACE TO THE RX01 MICROPROCESSOR CONTROL.

6.2 DEFINITIVE ERROR CODES

//////////

THE RX01 MICROCONTROLLER HAS DEFINED ERROR CODES AND MEANINGS WHICH ARE AVAILABLE TO THE PROGRAM BY ISSUING COMMAND #7 TO " READ THE B-CODE ".

A DEFINITIVE ERROR CODE REPRESENTS [WHERE] WITHIN A MICRO-FUNCTION THE ERROR WAS DETECTED.

THE FOLLOWING ARE THE DEFINITIVE ERROR CODES AND MEANINGS:

0	-	NO ERROR
10	-	DRIVE 0 FAILED TO SEE HOME FROM INITIALIZE
20	-	DRIVE 1 FAILED TO SEE HOME FROM INITIZLIAE
30	-	HOME FOUND WHEN STEPPING OUT 10 TRACKS FROM INIT
40	-	TRIED TO ACCESS A TRACK GREATER THAN 77(DECIMAL)
50	-	HOME WAS FOUND BEFORE DESIRED TRACK
60	-	SELF DIAGNOSTIC ERROR
70	-	DESIRED SECTOR NOT FOUND AFTER SAMPLING 52 HEADERS
100	-	WRITE PROTECT ERROR
110	-	MORE THAN 40US AND NO SEP CLOCK DETECTED
120	-	A PREAMBLE COULD NOT BE FOUND
130	-	PREAMBLE FOUND BUT NO ID MARK FOUND IN TIME
140	-	CRC ERROR ON SUPPOSEDLY GOOD HEADER
150	-	GOOD HEADER(NO CRC ERROR) BUT TRACK COMPARE ERROR
160	-	IDAM NOT FOUND IN TIME
170	-	DATA AM NOT FOUND IN TIME
200	-	DATA CRC ERROR
210	-	ALL PARITY ERRORS

6.3 UNEXPECTED OR MISSING ERROR CONDITIONS
|||||

6.3.1 MISSING DD MARK
|||||

THIS ERROR MAY OCCUR WHEN THE PROGRAM EXPECTED A DELETED DATA MARK BUT NONE OCCURED.

6.3.2 UNEXPECTED DD MARK
|||||

THIS ERROR MAY OCCUR WHEN THE PROGRAM HAD NOT EXPECTED A DELETED DATA MARK BUT ONE OCCURED.

6.3.3 MISSING ERROR FLAG
|||||

THIS ERROR MAY OCCUR WHEN THE CONTENTS OF THE TRANSFER REGISTER AT DONE TIME ARE NOT 0, AND THE ERROR FLAG IS CLEARED.

6.3.4 UNEXPECTED RX01 IRQ
|||||

THIS ERROR MAY OCCUR WHEN THE PROGRAM HAS NOT YET ENABLED THE RX0 INTERRUPT ENABLE FLIP-FLOP BUT AN INTERRUPT OCCURED.

6.3.5 DEVICE TEST HUNG
|||||

THIS ERROR MAY OCCUR WHEN THE PROGRAM EXPECTS BUT FAILED TO RECIEVE A PROGRAM INTERRUPT REQUEST FROM THE RX01 SUBSYSTEM WITHIN AN ALLOTTED PERIOD OF TIME (APPROXIMATELY 4 SECONDS).

6.4 UNKNOWN IRQ
|||||

THIS ERROR MAY OCCUR WHEN THE PROGRAM HAS FAILED TO IDENTIFY THE DEVICE ISSUING A PROGRAM INTERRUPT REQUEST.

7. ERROR REPORTING

ALL ERRORS DETECTED WILL BE REPORTED IF AC SW 3 = 0. THE PROGRAM HAS TWO ERROR REPORTING SCHEMES.

7.1.1 EXAMPLES OF INTERFACE / CONTROL RELATED ERRORS

THE FOLLOWING INFORMATION IS PRINTED FOR ALL INTERFACE / CONTROL RELATED ERRORS.

ERR	FAT	FAST	-	EAC	GOOD	PASS
-----	-----	------	---	-----	------	------

ERR	-	PPOGRAM ADDRESS OF THE ERROR
FAT	-	FIRST ADDRESS OF THE TEST IN ERROR
FAST	-	FIRST ADDRESS OF THE SUBTEST WITHIN THE TEST
-	-	SEE ASSEMBLY LISTING FOR MAP
EAC	-	ERROR AC (ACTUAL) RESULT OF TEST
GOOD	-	EXPECTED RESULT OF TEST
PASS	-	PASS # AT ERROR

7.1.2 EXAMPLES OF DRIVE / DATA RELATED ERRORS

THE FOLLOWING INFORMATION IS PRINTED FOR ALL DRIVE / DATA RELATED ERRORS.

CMND	XDR	CODE	RSTA	START	TARGET	PASS
------	-----	------	------	-------	--------	------

CMND	-	COMMAND TO THE RX01 MICROCONTROLLER
XDR	-	CONTENTS OF THE TRANSFER REGISTER AT ERROR/DONE
CODE	-	DEFINITIVE ERROR CODE (VIA COMMAND #7)
RSTA	-	STATUS (VIA COMMAND #5)
START	-	STARTING TRACK/SECTOR ACTUATOR POSITION
TARGET	-	TARGET TRACK/SECTOR ACTUATOR POSITION
PASS	-	PASS # AT ERROR (TO 16777215 DECIMAL)

7.1.2.1 SEEK ERROR

CMND	XDR	CODE	RSTA	START	TARGET	PASS
0014	0100	0120	0300	[HOME]	1	1
INIT	0	0120	0200	[HOME]	[HOME]	

A SEEK ERROR OCCURED WHILE TRYING TO " WRITE DELETED DATA " (CMND #14) ONTO TRACK 1 SECTOR 1.

COMD	-	WRITE DELETED DATA
XDR	-	DELETED DATA MARK
CODE	-	A PREAMBLE COULD NOT BE FOUND
RSTA	-	DRIVE READY + DELETED DATA
START	-	HOME POSITION
TARGET	-	TRACK 1, SECTOR 1

THEN THE PROGRAM ISSUED AN INITIALIZE AT AN ATTEMPT TO RECOVER FROM
THE " SEEK " ERROR.

CMND	- MEANS IOT 67X7 [INIT] WAS ISSUED
XDR	- MUST BE SEEK (NOT CRC OR PARITY)
CODE	- A PREAMBLE COULD NOT BE FOUND
RSTA	- DRIVE READY
START	- HOME POSITION
TARGET	- HOME POSITION

7.1.2.2 WRITE-CRC AND DATA ERROR

CMND	XDR	CODE	RSTA	START	TARGET	PASS
0026	0001	3200	0201	100,30	100,1	
WRITE-CRC AND DATA ERROR						
WORD	GOOD	BAD				
4	5435	5473				
5	6617	5437				
6	6303	4606				
SUMCHECK IS 1253						
TOTAL BAD=60						

WHILE READING SECTOR 7 OF TRACK 100 THE PROGRAM DETECTED A CRC ERROR.
THE PROGRAM EXPANDS THE STANDARD ERROR FORMAT TO INCLUDE DATA COM-
PARISON INFORMATION IF THE TEST IS A DATA COMPARISON TEST.

IF AC SWITCH 2 =1 THEN A [LONG] DATA COMPARISON PRINTOUT WOULD
HAVE OCCURRED OF [ALL] THE WORDS/BYTES IN ERROR.

THE WORD " WRITE " WITHIN THE EXPANSION MEANS THAT THE DATA OF
SECTOR 7 HAD NEVER BEEN READ BEFORE, THEREFORE THE PROGRAM ASSUMED IT
WAS WRITTEN INCORRECTLY.

7.1.2.3 READ-CRC AND DATA ERROR

CMND	XDR	CODE	RSTA	START	TARGET	PASS
0026	0001	0200	0201	100,30	100,1	
READ-CRC AND DATA ERROR						
WORD	GOOD	BAD				
4	5435	5477				
5	6617	5437				
6	6303	5406				
SUM-CHECK IN 1257						
TOTAL BAD=60						

WHILE SEEKING SECTOR 1 OF TRACK 100 THE PROGRAM DETECTED A CRC ERROR.
THE PROGRAM EXPANDS THE STANDARD ERROR FORMAT TO INCLUDE DATA COMPARISON
INFORMATION IF THE TEST IS A DATA COMPARISON TEST.

IF AC SWITCH 2 = 1 THEN A [LONG] DATA COMPARISON ERROR PRINTOUT WOULD
HAVE OCCURRED OF [ALL] THE WORDS/BYTES IN ERROR.

THE WORD " READ " WITHIN THE EXPANSION MEANS THAT THE DATA OF
SECTOR 7 HAD BEEN READ SOME TIME PREVIOUSLY, THEREFORE THE PROGRAM
ASSUMES THAT THE DATA WAS WRITTEN CORRECTLY BUT READ INCORRECTLY.

7.1.2.4 WRITE-CRC BUT NO DATA ERROR

CMND	XDR	CODE	RSTA	START	TARGET	PASS
0020	0001	0200	0201	100,30	100,1	
WRITE - CRC BUT NO DATA ERROR						

A CPC ERROR WAS DETECTED AFTER READING SECTOR 1 OF TRACK 100.

THE WORD " WRITE " WITHIN THE DATA EXPANSION MEANS THAT THE DATA
OF SECTOR 1 TRACK 100 HAD NEVER BEEN READ BEFORE THEREFORE THE PROGRAM
ASSUMED IT WAS WRITTEN INCORRECTLY, AND BECAUSE THE PROGRAM DID NOT DETECT
A DATA COMPARISON ERROR, IT ASSUMED THAT THE 2 CRC CHARACTERS WERE WRITTEN
INCORRECTLY.

7.2 ERROR RECOVERY

//////////

THE PROGRAM WILL ATTEMPT TO RETRY ALL ERRORING FUNCTIONS 10 TIMES.
A RECOVERABLE ERROR (SOFT) IS ONE WHICH DISAPPEARS WITHIN 10 PROGRAM
RETRY'S. AN UNRECOVERABLE ERROR (HARD) IS ONE WHICH REMAINS AFTER 10
PROGRAM RETRY'S.

THE PROGRAM WILL ISSUE IOT 67X7 LINIT FOR ALL ERRORS BUT
DEFINITIVE ERROR CODES 140, 200, AND 210.

140 - CRC ERROR ON SUPPOSEIDELY GOOD HEADER
200 - DATA CRC ERROR
210 - PARITY ERROR

THESE ERRORS ARE [NOT] SEEK TYPE ACTUATOR RELATED ERRORS.
IF A HARD WRITE ERROR IS DETECTED THE PROGRAM ABORTS FURTHER TESTING
THIS PASS OF THAT TRACK/SECTOR BUT CONTINUES TESTING TRACKS. ON THE REMAINING
A SYMPATHETIC HARD READ ERROR MAY OCCUR (PATTERN DEPENDENT) IF THE
HARD WRITE ERROR HAD OCCURRED WITHIN A TEST WHICH WOULD EVENTUALLY READ
THAT SECTOR AND A SYMPATHETIC HARD DATA COMPARISON ERROR MAY OCCUR IF THAT
TEST WAS TO VERIFY THE DATA TO A KNOWN PATTERN.

7.3 FATAL ERROR RECOVERY

//////////

IF THE PROGRAM DETECTS ANY OF THE SUCCEEDING FATAL ERROR CONDITIONS,
THE PROGRAMS RECOVERY WILL BE THAT OF EXITING THE PRESENT TEST.

- (A) HARD PARITY ERROR
- (B) A SELECTED DRIVE BECOMING NOT READY
- (C) NO EXPECTED RX01 INTERRUPT REQUEST
- (D) MISSING ERROR FLAG
- (E) LOG OVERFLOW
- (F) DEVICE TEST HUNG.

8. MANUAL INTERVENTION

//////////

8.1 FIELD ENGINEERING TROUBLE SHOOTING AIDS

//////////

THE FIELD ENGINEER, BY ALTERING THE CONTENTS OF SPECIFIC PROGRAM
MAINTENANCE LOCATIONS, IS ABLE TO DIRECT THE PROGRAM TO PERFORM TESTING
UPON A PARTICULAR AREA [WINDOW] OF THE DISKETTE INSTEAD OF THE ENTIRE
SURFACE. THESE PROGRAM LOCATIONS ARE LABELED "OD", "ID", "FIRST", AND "LAST".

"OD" (OUTSIDE DIAMETER), PROGRAM LOCATION 30, IS THE INITIAL OUTERMOST
TRACK THE PROGRAM WILL ACCESS.

"ID" (INSIDE DIAMETER), PROGRAM LOCATION 31, IS THE FINAL INNERMOST
INNERMOST TRACK THE PROGRAM WILL ACCESS.

"FIRST", PROGRAM LOCATION 32, IS THE FIRST SECTOR TO BE ACCESSED
OF A TRACK.

"LAST", PROGRAM LOCATION 33, IS THE LAST SECTOR TO BE ACCESSED OF A TRACK.

THE STANDARD ASSEMBLED CONTENTS OF THESE FIELD ENGINEERING MAINTENANCE LOCATIONS ARE:

*30

OD,	52	/INITIAL TRACK TO TEST
ID,	53	/FINAL TRACK TO TEST
FIRST,	1	/FIRST SECTOR OF A TRACK
LAST,	32	/LAST SECTOR OF A TRACK

THESE ARE THE ONLY FIELD ENGINEERING MAINTENANCE PROGRAM LOCATIONS DESIGNED TO BE EXTERNALLY ALTERED.

THE PROGRAM WILL PRINT A MAINTENANCE VERIFICATION MESSAGE IF THE CONTENTS OF THE MAINTENANCE LOCATIONS ARE NOT THE ASSEMBLED STANDARDS.

THE OCTAL CONTENTS OF THESE MAINTENANCE LOCATIONS MUST BE WITHIN THE RESTRICTED LIMITS WHICH ARE:

0 <= OD <= ID
0 <= ID <= 114
1 <= FIRST <= LAST
1 <= LAST <= 32

THE PROGRAM VERIFIES THE CONTENTS OF EACH MAINTENANCE LOCATION. THE PROGRAM WILL SET INTO THE MAINTENANCE LOCATION THE STANDARD VALUE IF THE DESIRED CONTENTS WERE NOT WITHIN THE REQUIRED SPECIFIED LIMITS.

NOTE, THAT TRACK 0 IS NOT INCLUDED WITHIN THE STANDARD [WINDOW] OF TESTABLE TRACKS. THE REASONE FOR THIS IS NOT TO INADVERENTLY DESTROY THE FORMATTED CONTENTS OF TRACK 0.

TO EXPAND THE WINDOW OF TESTABLE TRACKS INCLUDING TRACK 0, THE CONTENTS OF PROGRAM LOCATIONS "OD" MUST BE ZERO.

IN SUMMARY, IF THE CONTENTS OF PROGRAM LOCATIONS OD, ID, FIRST, AND LAST WERE 30, 30, 1, 1, RESPECTIVELY, THE PROGRAM WOULD PERFORM SELECTED TESTING ONLY UPON TRACK 30, SECTOR 1.

9. DIAGNOSTIC TEST STRATEGY

//////////

THE PDP-8 DIAGNOSTIC PACKAGE, WHICH CONTAINS THE RX8/RX01 DIAGNOSTIC PROGRAM, MATNDEC-08-DIRXA-, AND THE RX8/RX01 DATA RELIABILITY/EXERCISER PROGRAM, MATNDEC-08-DIRXB-, IS DESIGNED TO COMPLETELY TEST THE RX8/RX01 SUBSYSTEM WHEN EACH PROGRAM IS RUN TO ITS NATURAL COMPLETION COMMENCING WITH THE RX8/RX01 DIAGNOSTIC PROGRAM.

THE RX8 DIAGNOSTIC PROGRAM CONTAINS EFFICIENT MAINTENANCE SCOPING LOOPS, WHILE THE RX8/RX01 DATA RELIABILITY/EXERCISER PROGRAM CONTAINS DISKETTE COMPATABILITY VERIFICATION.

10. CONSOLE PACKAGE
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- 10.8. PROGRAM DESCRIPTION
- 10.9. DIALOGUE FOR CONSOLE PACKAGE
- 10.10. LISTING

10.1. ABSTRACT

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 TERMINAL.

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 COTINUING WITH EXECUTION OF THE DIAGNOSTIC ALL ERROR WILL BE PRINTED ON THE TERMINAL AND THE NUMBER OF PASSES WILL BE PRINTED, THERE WILL BE NO HALTS EXECUTIED .

2) CONSOLE PACKAGE NOT ACTIVE-THIS WILL RESULT IN THE USE OF HALTS FOR ERROR, HALTS AT END OF PASS IF SELECTED,USE OF THE HARDWARE SWITCH REGISTER ,NOT ASKING THE SWITCH QUESTION.

VT79 MUST ALWAYS BE RUN WITH ACTIVE CONSOLE PACKAGE.

10.2. REQUIREMENTS

10.3. 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.

3.) THE CONSOLE PACKAGE IS LOCATED IN FIELD 1
THERE MUST BE 8K OF CORE TO RUN THE CONSOLE PACKAGE.

10.4. STANDARD OPERATION PROCEDURE

10.4.1 INITIALIZATION

FOR A ACTIVE CONSOLE PACKAGE

1.) LOAD ADDRESS 0021

2.) SET TO 0000 INDICATOR FOR USING THE PSEUDO SWITCH REGISTER

3.) LOAD ADDRESS 0022

- 4.) SET SR3=1 (400) INDICATOR FOR USING A ACTIVE CONSOLE PACKAGE
- 5.) LOAD STARTING ADDRESS OF PROGRAM AND BEGIN

FOR A NON ACTIVE CONSOLE PACKAGE

-
- 1.) LOAD ADDRESS 0021
 - 2.) SET SR0=1 (4000) TO INDICATE A HARDWARE SWITCH REGISTER
 - 3.) LOAD ADDRESS 0022
 - 4.) SET TO 0000 TO INDICATE A DEACTIVE CONSOLE PACKAGE
 - 5.) LOAD STARTING ADDRESS OF PROGRAM AND BEGIN

FOR VT78

- 1) LOAD PROGRAM INTO CORE.
- 2) USING ODT SET LOC 21 TO 0000
LOC 22 TO 1400.
- 3) SAVE

10.4.2 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 G	PRINT UPARROW G, DO A CARRIAGE RETURN AND LINE FEED, AND PRINT SR=XXXX, WAIT FOR INPUT FROM OPERATOR.
CONTROL C	RETURN TO MONITOR
CARRIAGE RETURN	RETURN TO PROGRAM, NO CHANGE TO PSEUDO SWITCH REGISTER.
LINE FEED	RESTART PROGRAM , NO CHANGE TO PSEUDO SWITCH REGISTER.
1 TO 4 OCTAL DIGITS AND CARRIAGE RETURN	CHANGE PSEUDO SWITCH REGISTER AND RETURN TO THE PROGRAM.
1 TO 4 OCTAL DIGITS AND A LINE FEED	CHANGE PSEUDO SWITCH REGISTER AND RESTART THE PROGRAM.

1 TO 4 OCTAL DIGITS
AND A CONTROL G

NO CHANGE TO PSEUDO SWITCH REGISTER
SAME RESPNSE AS A CONTROL G.

ALL OTHER INPUT
(ILLEGAL CHARACTERS
OR 5 DIGITS)

NO CHANGE TO PSEUDO SWITCH REGISTER.
ECHO THE CHARACTER, PRINT A QUESTION
MARK, DO A CARRIAGE RETURN LINE FEED,
PRINT SR=XXXX, WAIT FOR OPERATOR INPUT.

CONTROL S

THIS IS USED TO INHIBIT TRANSMISSION
OF DATA TO THE OPERATORS TERMINAL.
WHEN TYPED WHILE THE PROGRAM IS RUNNING
MESSAGE PRINTING IS INHIBITED, BUT THE
PROGRAM WILL CONTINUE TO RUN UNTIL A
MESSAGE IS PENDING. IF TYPED WHILE A
MESSAGE IS IN PROGRESS, THE PRINTOUT
WILL BE INTERRUPTED. A CONTROL Q OR
CONTROL C WILL RESUME PROGRAM ACTIVITY.
THIS IS A NONPRINTING CHARACTER.

CONTROL Q

THIS ENABLES DATA TRANSMISSION TO
OPERATORS TERMINAL IF A PREVIOUS
CONTROL S WAS IN EFFECT. THIS IS
A NONPRINTING CHARACTER.

10,4.4

SWITCH REGISTER MESSAGE

THIS MESSAGE IS USED TO SETUP THE PSEUDO SWITCH REGISTER
BEFORE PROGRAM EXECUTION TAKES PLACE (OR IN RESPONSE TO A "G").
THE SWITCH REGISTER IS SETUP WHEN A CARRIAGE
RETURN IS TYPED

SF=0000 4000

UNDER SCORING INDICATES OPERATOR RESPONSE

10,4.5

END OF PASS

A INDICATION WILL BE GIVEN WHEN THE DIAGNOSTIC HAS MADE A
SUCFSSFULL PASS. THE PRINT OUT WILL INDICATE THE DIAGNOSTIC
MATNDEC 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 CALLED "CNTVAL".
IF HALT AT END OF PASS IS SET THEN THE PASS MESSAGE WILL BE
PRNTED 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 (- OR I OR C OR D)
- AN ERROR OCCURED DURING I,C,D
I INTERFACE TEST OK RX8
C RX8 AND RX01 TESTED OK
D RX8 AND RX01 AND DRIVE TESTED OK

10.5. ERRORS

UPON DETECTION OF A ERROR THE DIAGNOSTIC WILL DO ONE OF
THE FOLLOWING OPERATIONS:

- 1.) PRINT THE ERROR MESSAGE FOR THE ERROR CONDITION
CHECK THE SWITCH REGISTER TO SEE IF THE PROGRAM SHOULD HALT
IF HALT ON ERROR IS SELECTED THEN THE PSR WILL BE PRINTED.
REFER TO THE LISTING AT THE LOCATION PRINTED IN THE ERROR
PC FOR THE CAUSE OF THE ERROR.

10.5.1 ERROR HALTS

CONSOLE PACKAGE DEACTIVE WILL CAUSE NO ERROR MESSAGE
TO BE PRINTED, A HALT WILL REPLACE THE ERROR CALL IN THE
CODE AND THE DIAGNOSTIC WILL THEN GO TO THAT HALT.
REFER TO THE LISTING FOR THE CAUSE OF THE ERROR, THE ERROR
LOCATION WILL BE THE SAME IF THE CONSOLE PACKAGE WAS ACTIVE.

10.6. SWITCH REGISTER SETTINGS

THE FOLLOWING SWITCH REGISTER SETTINGS ARE USED BY THE CONSOLE
PACKAGE. THESE SWITCH REGISTER SETTINGS ARE VALID WHEN USING
THE HARDWARE SWITCH REGISTER AND THE PSEUDO SWITCH REGISTER.

10.6.1 OPERATING SWITCHES

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 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 ON VT78	ON VT78
3	400	DEACTIVE CONSOLE PACKAGE	ACTIVE CONSOLE PACKAGE

6.2 ERROR RELATED SWITCHES

THESE ARE THE SWITCH REGISTER SETTING THAT THE CONSOLE PACKAGE WILL RECOGNISE.

BIT	OCTAL VALUE	FUNCTION WHEN 0	FUNCTION WHEN 1
0	4000	STOP AFTER ERROR	COUNT AFTER ERROR
1	2000	NO SCOPE LOOP ON ERROR	LOCK SCOPE LOOP ON ERROR
2	1000	NO SCOPE LOOP ON TEST	LOCK SCOPE LOOP ON TEST(OK OR NOT)
3	0400	CONTINUE AFTER END OF PASS	STOP AFTER END OF PASS
4	0200	PRINT ERROR MESSAGES	DO NOT PRINT ERRORS
5	0100	SHORT ERROR PRINTOUT	LONG DATA COMPARISON
6	0040	ISSUE[INIT]AT ERROR	DO NOT ISSUE [INIT] AT ERROR
11	0001	RING BELL ON ERROR	NO BELL RINGING

10.7. LOCATION CHANGES

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

CNTVAL IS THE LOCATION FOR THE VALUE OF THE NUMBER OF PROGRAM PASSES NEED TO PRINT THE END OF PASS MESSAGE.

FILLER IS THE LOCATION SET FOR THE NUMBER OF FILLER CHARACTERS AFTER A CRLF SET TO FOUR (4)

10.8. PROGRAM DESCRIPTION

PARAMETER SELECTIONS:
BITS 0-1
SELECT DRIVES: 0000 =SELECT DRIVES 0 AND 1(RXA)

SEE SECTION 4.4 TEST PARAMETER SELECTION

BITS 3-5
DEVICE CODE SELECTION
PUT ONE DIGITE DEVICE CODE IN HERE
THE PROGRAM ASSUMES THE FIRST DIGIT TO BE 7

EXAMPLE :IF DEVICE CODE IS 75 ENTER A 500
BITS 7-11

TEST SELECTION
PUT IN TEST YOU WISH TO RUN
A 00 TEST SELECTION IS ALL TESTS

10.9. DIALOGUE FOR CONSOLE PACKAGE

THE DIALOGUE FOR THIS DIAGNOSTIC IS:

R DTRXA (CR)

MAINDEC-08-DIRXA=D /THE -D IS THE REVISION LEVEL

REMOVE DIAGNOSTIC DISKETTE /REMOVE AND REPLACE
/WITH A SCRATCH DISKETTE

SELECT PARAMETERS(INCLUDING DEVICE CODES)
SR=0000 /DEVICE CODE SELECTED IS 75
/RXA DRIVES 0 AND 1
/AND ALL TESTS SELECTED

TEST PARAMETERS: 0000 /VERIFICATION FOR PARAMETERS

OD=0001 ID=0114 FIRST= 0001 LAST= 0032 /DISKETTE RANGE SELECTED

SP=0000 0400 /0400= SWITCH SETTING STOP ON ERROR AND
/AT END OF PASS

11. APT-8 INTERFACES

11.1 DESCRIPTION

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

1. TIMING INTERFACE

2. ERROR INTERFACE

EACH WILL BE EXPLAINED IN MORE DETAIL.

11.2 SETUP

IN ORDER TO RUN UNDER APT-8, ADDRESSES 20 AND 22 MUST BE ESTABLISHED PRIOR TO RUNNING THE PROGRAM UNDER APT-8 CONTROL. THE FOLLOWING INFORMATION MUST BE INDICATED:

1. DEVICE CODE OF RX01 CONTROLLER UNDER TEST.

2. RX01 CONTROLLER CABLED TO INTERFACE.

3. DRIVE OR DRIVES TO BE TESTED.

4. DIAGNOSTIC RUNNING UNDER THE APT-8 SYSTEM.

5. STARTING TEST NUMBER IF OTHER THAN THAT FOR ACCEPTANCE.

ADDRESS 20

ADDRESS 20 IS USED TO ESTABLISH ALL BUT ITEM 4. THE SET UP IS THE SAME FOR THAT OF THE STANDARD SWITCH REGISTER FUNCTION.

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

U U C X X X - T T T T T
(STARTING TEST)

0 = 0 - DISKETTE DRIVE(S) IS READY
1 = 0 - (POWER APPLIED / DOOR CLOSED)
2 = 0 - RX01 MICROCONTROL CABLED TO RX8 INTERFACE

3 = - FOR STANDARD DEVICE CODE
4 = - POSITION CONSOLE SWITCHES
5 = - 3-4-5 = 0

7 = - TO EXECUTE ALL TESTS
8 = - CONFIGURE CONSOLE SWITCHES
9 = - 7 THRU 11
10= - EQUIVALENT TO ZERO
11= - (THIS IS THE STARTING TEST)

NOTE: IF MORE THAN ONE DEVICE CODE IS AVAILABLE ON THE SYSTEM
THE DIAGNOSTIC WILL HAVE TO RELOADED AND THE PROPER DEVICE CODE
SELECTED.

ADDRESS 22

THIS ADDRESS IS USED TO INDICATE THAT THE PROGRAM IS RUNNING ON
APT-8, THE NUMBER OF DRIVES TO BE DONE, AND IF SINGLE DRIVE
TESTING.

BIT ZERO MUST BE A ONE (1) TO INDICATE THAT THE DIAGNOSTIC
IS RUNNING ON APT-8.

CAUTION:

WHILE UNDER APT-8 CONTROL THE HARDWARE SWITCH REGISTER IS
FUNCTIONAL, IT IS RECOMMENDED THAT THE SWITCH REGISTER BE
SET TO ZERO PRIOR TO START-UP.

11.3 APT-8 INTERFACES.

11.3.1 TIMING

APT-8 IS NOTIFIED OF PROGRAM RUN BETWEEN .2 SECONDS AND
2.0 SECONDS. THIS WILL ALLOW THE DIAGNOSTIC TO RUN
UNDER THE MUCH SLOWER MOS MEMORY WITHOUT CAUSING APT-8 TO GIVE
A TIMEOUT ERROR.

11.3.2 ERRORS

ONLY THE ERROR PC IS REPORTED TO APT-8, THE TYPE OF ERROR
CAN BE DETERMINED FROM THE CORRESPONDING ADDRESS IN THE PROGRAM
LISTING. THERE IS A POSSIBILITY THAT A TIMEOUT ERROR MAY OCCUR.
THIS IS CAUSED BY THE ERROR "HUNG DEVICE". THE PROGRAM
WILL HAVE TO BE REPUN IN DUMP MODE IF THIS SHOULD HAPPEN.

11.4 LOADING PRECAUTIONS

THIS PROGRAM SHOULD BE LOADED IN SRCIPT MODE INDICATING
TO APT-8 THAT CORE SUMCHECKS ARE TO BE IGNORED.

12. PROGRAM LISTING

```

1      /RX8 RX01 DIAGNOSTIC DIRXA=D
2      0001   FIELD 1
3      /CONSOL PACKAGE
4
5
6
7
8      /PROGRAM SHOULD CHECK FOR A CONTROL CHARACTER FROM THE CONSOL
9      /EVERY FIVE SECONDS OR LESS
10
11
12
13      /SETUP CNTVAL FOR A RANGE OF 1 TO 4(8/E) MINUTES FOR C8PASS TO PRINT PASS
14      /SETUP OF CNTVAL WILL BE FOUND IN C8PASS
15      /THIS VALUE SHOULD BE A POSITIVE NUMBER.
16
17      /CHANGE 1-7 APRIL ,1975
18
19      /VT78 MODIFICATIONS JUNE ,1977
20      /     1. NEW CONSOLE PACKAGE
21      /     2. CAPABILITY OF TESTING 2 FLOPPY UNITS(4 DRIVES)
22      /     3. MODIFIED INTERLEAVING
23
24
25      6661      PSKFE= 6661
26      6662      PCLFE= 6662
27      6663      PSKE= 6663
28      6664      PSTB= 6664
29      6665      PSIE= 6665
30      6004      GTF= 6004
31      7701      ACL= 7701
32      6007      CAF= 6007
33      7421      MQL= 7421
34      4461      HLT= HALT
35
36      7501      HQA= 7501
37
38      /*LIST
39      /IFDEF CONSOL <
40      /LIST
41      0024      *24
42
43      4424      C8PASS= JMS I
44      0n24 0600      XC8PAS
45      4425      C8CKSW= JMS I
46      0n25 0673      XCBSW
47      4426      C8PRNT= JMS I
48
49      0n26 1000      XC8PNT
50      0027 1035      C8OCTA= JMS I
51
52      /*20      XC8OCT
53
54      /*20      /PSEUDO SWITCH REGISTER
55
56      /*400=DO NOT INHIBIT ERROR HALT
57
58      /*200=LOOP ON ERROR
59
60      /*1000=LOOP ON TEST IN SR 4-11

```

```

56
57
58      /*21      /400=HALT AT END OF PASS
59
60      /*22      /HARDWARE INDICATORS
61
62      /*23      /4000=USE FRONT PANEL SWITCH REGISTER
63
64      /*LIST>      /SYSTEM CONFIGURATION
65
66
67      /*IF ENTERED WITH C8CHAR=0000 THE SWITCH REGISTER
68      /*MODIFICATION ROUTINE IS ENTERED AUTOMATICALLY.
69      /*IF ENTERED WITH C8CHAR NOT EQUAL TO 0000, THE
70      /*KEYBOARD INPUT DECODER IS ENTERED AND IT IS ASSUMED
71      /*THAT THE AC CONTAINS THE ASCII CODE TO BE
72      /*CHECKED FOR A VALID CONTROL CHARACTER.
73
74
75
76
77
78      7002      BSW=7002
79
80      0n30 0000      C8TEMP, 0
81      0031 0000      C8CHAR, 0
82      0n32 6203      C8CD1, CIF CDF
83      0n33 6201      C8CDF, CDF
84      0n34 0000      C8SWR, 0
85      0n35 0000      C8MODE, 0
86      0n36 0000      C8CNTR, 0
87      0n37 7775      C8M3, -3
88      0n40 7774      C8M4, -4
89      0n41 7773      C8M5, -5
90      0n42 7770      C8M10, -10
91      0n43 7520      C8M260, -260
92      0n44 0007      C8K7, 0007
93      0n45 0240      C8K240, 0240
94      0n46 0260      C8K260, 0260
95      0n47 0275      C8K275, 0275
96      0n50 0277      C8K277, 0277
97      0n51 0322      C8K322, 0322
98      0n52 0323      C8K323, 0323
99
100
101      0200      *200
102
103      0700 0000      C8ENTR, 0
104      0201 1777      TAD I (21
105      0202 7710      SPA CLA
106      0203 7614      7614'
107      0204 1776      TAD I (20
108      0205 3034      DCA C8SWR
109      0206 1775      TAD I (INMODE
110      0207 3035      DCA C8MODE

```

/GET HCW1 FROM PROGRAM FIELD
 /SKIP IF USING PSEUDO SWR
 /GET HARDWARE SWR AND SKIP
 /GET PSEUDO SWR
 /SAVE SWITCH REGISTER
 /GET MESSAGE ACTIVE FLAG
 /SAVE IT

/RXB RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 1-2 SEQ 0032

```

111 0210 6211 CDF 10 /CHANGE DATA FIELD TO CONSOLE PACKAGE
112 0211 1200 TAD C8ENTR /GET RETURN ADDRESS
113 0212 3774* DCA C8RTN /SAVE FOR EXIT
114 0213 1031 TAD C8CHAR /GET CHARACTER SAVED IN MAIN PROGRAM
115 0214 7440 SZA /SKIP IF IT WAS ZERO
116 0215 5773* JMP C8CNTL /AC NOT ZERO, GO CHECK CTRL CHAR
117 /
118 /PRINT OUT SR=XXXX WHERE XXXX IS THE CURRENT CONTENTS
119 /OF THE SWITCH REGISTER BEING USED (EITHER PSEUDO OR HARDWARE)
120 /
121 0216 4772* C8PSW, JMS C8CRLF /DO A <CR> AND <LF>
122 0217 1052 TAD C8K323 /GET ASCII CODE FOR "S"
123 0220 4771* JMS C8TYP /PRINT "S"
124 0221 1051 TAD C8K322 /GET ASCII CODE FOR "R"
125 0222 4771* JMS C8TYP /PRINT "R"
126 0223 1047 TAD C8K275 /GET ASCII CODE FOR "="
127 0224 4771* JMS C8TYP /PRINT "="
128 0225 1040 TAD C8M4 /AC=-4
129 0226 3036 DCA C8CNTR /SET UP OCTAL DIGIT COUNTER
130 0227 1034 TAD C8SWR /GET SWITCH REGISTER
131 0230 7004 RAL /EXTRA ROTATE FOR LINK
132 0231 7004 C8LUPA, RAL
133 0232 7006 RTL /ROTATE OCTAL DIGITS FOR PRINTING
134 0233 3034 DCA C8SWR /SAVE ROTATED SWR
135 0234 1034 TAD C8SWR /GET ROTATED SWR
136 0235 0044 AND C8K7 /MASK OFF DIGIT TO PRINT
137 0236 1046 TAD C8K260 /ADD ASCII BASE CODE
138 0237 4771* JMS C8TYP /PRINT AN OCTAL DIGIT
139 0240 1034 TAD C8SWR /GET SWR
140 0241 2036 ISZ C8CNTR /INCREMENT LOOP COUNTER
141 0242 5231 JMP C8LOPA /GO PRINT NEXT DIGIT
142 /
143 /ACCEPT KEYBOARD INPUT OF OCTAL DIGITS, <CR>, <LF>
144 /CTRL/C OR CTRL/G. ALL OTHER CHARACTERS ARE INVALID
145 /AND WILL BE ECHOED, FOLLOWED BY A "?",
146 /A CARRIAGE RETURN, LINE FEED, AND A RESTART OF
147 /THE SR=XXXX ROUTINE
148 /
149 /
150 0243 7300 CLA CLL
151 0244 1041 TAD C8M5 /AC=-5
152 0245 3036 DCA C8CNTR /SET UP TO ACCEPT 5 CHARACTERS
153 0246 3770* DCA C8BLD /CLEAR SWITCH REG. BUILD AREA
154 0247 3767* DCA C8FLG /CLEAR SWR CHANGE SWITCH
155 0250 1045 TAD C8K240 /GET ASCII CODE FOR SPACE
156 0251 4771* JMS C8TYP /SPACE OVER ONE POSITION
157 0252 4766* C8SLRP, JMS C8TTY /GO WAIT FOR KEYBOARD INPUT
158 0253 3030 DCA C8TEMP /SAVE INPUT CHARACTER
159 0254 1030 TAD C8TEMP /GET CHARACTER
160 0255 1365 TAD (-203) /SKIP IF NOT CTRL/C
161 0256 7450 SNA /GO TO CTRL/C ROUTINE
162 0257 5764* JMP C8CILC /AC=-4
163 0260 1040 TAD C8M4 /SKIP IF NOT CTRL/G
164 0261 7450 SNA /GO TO CTRL/G ROUTINE
165 0262 5763* JMP C8CTLG

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/RXB RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 1-3 SEQ 0033

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166 0263 1037 TAD C8M3 /SUBTRACT 3
167 0264 7450 SNA /SKIP IF NOT LINE FEED
168 0265 5762* JMP C8EXT1 /GO TO LINE FEED EXIT
169 0266 1037 TAD C8M3 /SUBTRACT 3
170 0267 7650 SNA CLA /SKIP IF NOT CARRIAGE RETURN
171 0270 5761* JMP C8EXT2 /GO TO CARRIAGE RETURN EXIT
172 0271 1030 TAD C8TEMP /GET CHARACTER
173 0272 4771* JMS C8TYP /ECHO IT
174 0273 1030 TAD C8TEMP /GET CHARACTER
175 0274 1043 TAD C8M260
176 0275 7510 SPA /SKIP IF >= TO ASCII CODE FOR ZERO
177 0276 5316 JMP C8ERR /INVALID CHARACTER NOT OCTAL DIGIT
178 0277 1042 TAD C8M10
179 0300 7700 SMA CLA /SKIP IF <= ASCII CODE FOR SEVEN
180 0301 5316 JMP C8ERR /INVALID CHARACTER NOT OCTAL DIGIT
181 0302 7240 STA /AC=7777
182 0303 3767* DCA C8FLG /SET SWR CHANGE FLAG
183 0304 1030 TAD C8TEMP /GET CHARACTER
184 0305 0044 AND C8K7 /MASK TO 3 BITS
185 0306 3030 DCA C8TEMP /SAVE OCTAL DIGIT
186 0307 1770* TAD C8BLD /GET SWR BUILD AREA CONTENTS
187 0310 7106 CLL RTL /ROTATE TO BUILD SWR
188 0311 7004 RAL /ADD NEXT OCTAL DIGIT
189 0312 1030 TAD C8TEMP /SAVE NEW SWR
190 0313 3770* DCA C8BLD
191 0314 2036 ISZ C8CNTR /INCREMENT OCTAL DIGIT COUNTER
192 0315 5252 JMP C8SLRP /CONTINUE ACCEPTING OCTAL DIGITS
193 /
194 0316 7300 C8ERR, CLA CLL
195 0317 1050 TAD C8K277 /GET ASCII CODE FOR "?"
196 0320 4771* JMS C8TYP /PRINT "?"
197 0321 4772* JMS C8CRLF /DO A <CR> AND <LF>
198 0322 5216 JMP C8PSW /GO START OVER
199 /
200 /
201 0361 0541
202 0362 0531
203 0363 0457
204 0364 0465
205 0365 7575
206 0366 0514
207 0367 0403
208 0370 0400
209 0371 0502
210 0372 0523
211 0373 0420
212 0374 0402
213 0375 0351
214 0376 0020
215 0377 0021
216 0400 0400 PAGE
217 0400 0000 C8BLD, 0 /SWITCH REGISTER BUILD AREA
218 0401 0200 C8STR, RSTART /ADDRESS OF START OF PROGRAM
219 0402 0000 C8RTN, 0 /STORAGE FOR RETURN ADDRESS

```

/RXR RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 1=4

220 0403 0000 C8FLG, 0 /SWR CHANGE SWITCH
 221 0404 0000 C8SFLG, 0 /CTRL/S ACTIVE FLAG
 222 0405 0177 C8K177, 0177 /CONSTANT
 223 0406 0200 C8K200, 0200 /CONSTANT
 224 0407 0077 C8K77, 0077 /CONSTANT
 225 0410 7740 C8M40, -40 /CONSTANT
 226 0411 0100 C8K100, 0100 /CONSTANT
 227 0412 0215 C8K215, 0215 /CONSTANT
 228 0413 0212 C8K212, 0212 /CONSTANT
 229 0414 0303 C8K303, 0303 /CONSTANT
 230 0415 0307 C8K307, 0307 /CONSTANT
 231 0416 0336 C8K336, 0336 /CONSTANT
 232 0417 760J C87600, 7600 /
 233 / CONTROL CHARACTER
 234 / DECODE ROUTINE
 235 /
 236 /
 237 /
 238 0420 1377 C8CNTL, TAD (-203 /
 239 0421 7450 SNA /SKIP IF NOT CTRL/C
 240 0422 5265 JMP C8CTL0C /CTRL/C TYPED EXIT TO MONITOR
 241 0423 1376 TAD (-4 /
 242 0424 7450 SNA /SKIP IF NOT CTRL/G
 243 0425 5257 JMP C8CTL0G /CTRL/G TYPED GO PRINT "G"
 244 0426 1375 TAD (-12 /
 245 0427 7450 SNA /SKIP IF NOT CTRL/Q
 246 0430 5255 JMP C8CTL0Q /CTRL/Q TYPED
 247 0431 1374 TAD (-2 /
 248 0432 7450 SNA /SKIP IF NOT CTRL/S
 249 0433 5237 JMP C8CTL0S /CTRL/S TYPED
 250 0434 3035 DCA C8MODE /SET MESSAGE ACTIVE FLAG
 251 0435 2204 ISZ C8SFLG /TEST CTRL/S ACTIVE FLAG
 252 0436 5275 JMP C8ECHO /GO ECHO CHARACTER AND RETURN TO PROGRAM
 253 /
 254 /
 255 /
 256 0437 7240 C8CTL0S, STA /AC=7777
 257 0440 3204 DCA C8SFLG /SET CTRL/S ACTIVE FLAG
 258 0441 1035 TAD C8MODE /GET MESSAGE ACTIVE FLAG
 259 0442 7650 SNA CLA /SKIP IF CTRL/S TYPED WHILE MESSAGE ACTIVE
 260 0443 5342 JMP C8PFLD=1 /RETURN TO PROGRAM
 261 /
 262 0444 7240 C8WAIT, STA /AC=7777
 263 0445 3204 DCA C8SFLG /SET CTRL/S ACTIVE FLAG
 264 0446 4314 JMS CRTTY /WAIT FOR KEYBOARD INPUT
 265 0447 1377 TAD (-203 /
 266 0450 7450 SNA /SKIP IF NOT CTRL/C
 267 0451 5265 JMP C8CTL0C /CTRL/C TYPED EXIT TO MONITOR
 268 0452 1373 TAD (-16 /
 269 0453 7640 SZA CLA /SKIP IF CTRL/Q
 270 0454 5244 JMP C8WAIT /NOT CTRL/C OR CTRL/Q CONTINUE WAITING
 271 0455 3204 C8CTL0Q, DCA C8SFLG /CLEAR CTRL/S ACTIVE FLAG
 272 0456 5342 JMP C8PFLD=1 /RETURN TO MAIN PROGRAM
 273 /
 274 /CONTROL G HANDLER

SEQ 0034

/RXR RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 1=5

275 /
 276 0457 4323 C8CTL0G, JMS C8CRLF /DO A <CR> AND <LF>
 277 0460 1216 TAD C8K336 /GET ASCII CODE FOR UP ARROW
 278 0461 4302 JMS C8TYP /PRINT UP ARROW
 279 0462 1215 TAD C8K307 /GET ASCII CODE FOR "G"
 280 0463 4302 JMS C8TYP /PRINT "G"
 281 0464 5772* JMP C8PSW /GO TO "SR=XXXX" ROUTINE
 282 /
 283 /
 284 /
 285 0465 3204 C8CILC, DCA C8SFLG /CLFAR CTRL/S ACTIVE FLAG
 286 0466 1216 TAD C8K336 /GET ASCII CODE FOR UP ARROW
 287 0467 4302 JMS C8TYP /PRINT UP ARROW
 288 0470 1214 TAD C8K303 /GET ASCII CODE FOR "C"
 289 0471 4302 JMS C8TYP /PRINT "C"
 290 0472 6203 CIF CDF /CHANGE TO IF AND DF ZERO
 291 0473 6007 CAF /
 292 0474 5617 JMP I C87600 /RETURN TO MONITOR
 293 /
 294 /
 295 0475 1031 C8ECHO, TAD C8CHAR /GET CHARACTER
 296 0476 4302 JMS C8TYP /ECHO IT
 297 0477 1050 TAD C8K277 /CODE FOR ?
 298 0500 4302 JMS C8TYP /TYPE QUESTION MARK
 299 0501 5342 JMP C8PFLD=1 /RETURN TO PROGRAM
 300 /
 301 /
 302 /
 303 /
 304 /
 305 0502 0000 C8TYP, 0 /
 306 0503 2204 ISZ C8SFLG /TEST CTRL/S ACTIVE FLAG
 307 0504 7410 SKP /SKIP IF CTRL/S NOT ACTIVE
 308 0505 5244 JMP C8WAIT /GO WAIT FOR CTRL/Q OR CTRL/C
 309 0506 6046 TLS /TRANSMIT CHARACTER
 310 0507 6041 TSF /TEST TTY FLAG
 311 0510 5307 JMP .-1 /WAIT FOR TTY FLAG
 312 0511 6042 TCF /CLEAR TTY FLAG
 313 0512 7200 CLA /CLEAR AC DO NOT CLEAR LINK
 314 /
 315 0513 5702 JMP I C8TYP /RETURN
 316 /
 317 /
 318 /
 319 0514 0000 C8TTY, 0 /
 320 0515 6031 KSF /SKIP IF KEYBOARD FLAG SET
 321 0516 5315 JMP .-1 /WAIT FOR KEYBOARD INPUT
 322 0517 6036 KRB /READ KEYBOARD BUFFER CLEAR FLAG
 323 0520 0205 AND C8K177 /MASK TO 7 BITS
 324 0521 1206 TAD C8K200 /SET BIT 4
 325 0522 5714 JMP I C8TTY /RETURN
 326 /
 327 /
 328 /
 329 0523 0000 C8CRLF, 0 /

SEQ 0035

/RX8 RX01 DTAGNOSTIC DIRXA=0 PAL10 V142A 1-AUG-77 15:22 PAGE 1-6 SEQ 0036

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330 0524 1212 TAD C8K215 /GET ASCII CODE FOR CARRIAGE RETURN
331 0525 4302 JMS C8TYP /GO EXECUTE THE CARRIAGE RETURN
332 0526 1213 TAD C8K212 /GET ASCII CODE FOR LINE FEED
333 0527 4302 JMS C8TYP /GO EXECUTE THE LINE FEED
334 0530 5723 JMP I C8CRLF /RETURN

335      /CONSOLE PACKAGE EXIT IF TERMINATED WITH LINE FEED
336
337      /C8EXT1, JMS C8CRLF /DO A <CCR> AND <LF>
338 0531 4323 DCA C8CHAR /CLEAR IT
339 0532 3031 CDF CIF 00 /MODIFIED CDI TO PROGRAM FIELD
340 0533 6203 ISZ C8FLG /TEST SWR CHANGE FLAG
341 0534 2203 JMP I C8STRT /RESTART PROGRAM WITHOUT CHANGE OF SWR
342 0535 5601 TAD C8BLD /GET NEW SWITCH REGISTER
343 0536 1200 DCA I (20 /SAVE IT IN PROGRAM FIELD
344 0537 3771 JMP I C8RTN /RESTART PROGRAM WITH NEW PSEUDO SWR
345 0540 5601

346      /EXIT FROM CONSOLE PACKAGE IF TERMINATED WITH CARRIAGE RETURN
347
348
349 0541 4323 C8EXT2, JMS C8CRLF /DO A <CCR> AND <LF>
350 0542 3031 DCA C8CHAR /CLEAR IT
351 0543 6203 C8PPFLD, CDF CIF 00 /MODIFIED CDI TO PROGRAM FIELD
352 0544 7300 CLA CLL /CLEAR AC AND LINK FOR RETURN
353 0545 2203 ISZ C8FLG /TEST SWR CHANGE FLAG
354 0546 5602 JMP I C8RTN /RETURN TO PROGRAM WITHOUT CHANGE OF SWR
355 0547 1200 TAD C8BLD /GET NEW SWITCH REGISTER
356 0550 3771 DCA I (20 /SAVE IT IN PROGRAM FIELD
357 0551 5602 JMP I C8RTN /RETURN TO PROGRAM

358      /
359
360      /
361 0571 0020
362 0572 0716
363 0573 7762
364 0574 7776
365 0575 7766
366 0576 7774
367 0577 7575
368      PAGE
369
370      /*****C8PASS*****
371      /THIS IS CALLED AT THE END OF EACH PROGRAM COMPLETION
372      /THE VALUE OF** CNTVAL** WILL BE DETERMINED BY THE TIME IT TAKES
373      /THE PROGRAM TO COMPLETE THIS MANY C8PASS TO BE IN THE 1 TO 4 MINUTE
374      /RANGE
375      /      C8PASS=JMS XC8PAS
376      /      HLT          /HALT IF NON CONSOL PACKAGE
377      /      JMP START1 /CONTINUE RUNNING THIS PROGRAM
378      /RETURN TO LOCATION CALL PLUS ONE WITH THE AC=0 IF NON CONSOL PACKAGE AND HLT
379      /IF CONTINUE TO RUN THEN RETURN TO CALL PLUS2 AC=0
380
381
382 0600 0000 XC8PAS, 0 CDF 10 /CHANGE DATA FIELD TO CONSOLE PACKAGE
383 0601 6211

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/RX8 RX01 DTAGNOSTIC DIRXA=0 PAL10 V142A 1-AUG-77 15:22 PAGE 1-7 SEQ 0037

```

384 0602 4777* JMS C8CK22 /CHECK IF CONSOL IS ACTIVE
385 0603 5211 JMP DOPACK /IS CLASSIC
386 0604 4273 JMS XC8SW /CHECK SR SETTING
387 0605 0376 AND (400 /FOR HALT ON END OF C8PASS
388 0606 7640 SZA CLA /1# HALT 0 CONTINUE
389 0607 4461 HLT
390 0610 5240 JMP C8BY1 /CONTINUE ON RUNNING PROGRAM
391 0611 4242 DOPACK, JMS CKCOUT /CLASS CHECK C8PASS COUNT
392 0612 5240 JMP C8BY1 /C8PASS COUNT NOT DONE REDO PROGRAM
393 0613 2261 ISZ PASCNT /C8PASS COUNT DONE SET C8PASS COUNT
394
395 0614 4775* #2 JMS C8CRLF
396      #2 JMS XC8PNT /C8PRNT BUFFER
397 0615 4774* JMS MESPAS /
398 0616 0664 TAD PASCNT /GET NUMBER
399 0617 1261 JMS XC8COT /CONVERT IT TO ASCII
400 0620 4773* CDF 0
401 0621 6201 TAD I XMX /GET THE CHAR TO PRINT
402 0622 1657 DCA CKCOUT /STORE FOR PRINTING
403 0623 6211 JMS XC8PNT /PRINT IT
404 0624 3242 CKCOUT
405 0625 4774* JMS C8CRLF /DO A CARRIAGE RETURN
406 0626 0642 JMS XC8SW /CHECK A HALT AT END OF C8PASS
407 0627 4775* AND (400 /MASK BIT
408 0630 4273 SNA CLA /HALT =1 NO SKIP CONTINUE =0
409 0631 0376 JMP C8BY1 /NO HALT
410 0632 7650 TAD XC8PAS /GET RETURN ADDRESS
411 0633 5240 DCA C8ENTR /PLACE IT AT START OF CONSOLE PACKAGE
412 0634 1200 ISZ DOSET /ROUTINE - NEEDED FOR SETUP OF C8RTN
413 0635 3772* CDF 00
414
415 0636 6201 JMP CBENTR+1 /GO TO CONSOLE PACKAGE TO PRINT PSR
416 0637 5771* C8BY1, CDF CIF 00
417 0640 6203 JMP I XC8PAS
418 0641 5600 CKCOUT, 0
419 0642 0000 TAD DOSET /CHECK IF SET UP NEEDED
420 0643 1262 SZA CLA /0=SET UP C8PASS COUNT VALUE
421 0644 7640 NOSET /1=C8PASS COUNT VALUE OK
422
423 0645 5252 JMP NOSET /C8PASS COUNT VALUE ON
424 0646 1263 TAD CNTVAL /GET COUNT VALUE FOR THIS PROG
425 0647 7040 CMA /SET TO NEGATIVE
426 0650 3260 DCA DOCNT /STORE IN HERE
427 0651 2262 ISZ DOSET /INDICATE VALUE SET UP
428
429 0652 2260 #2 NOSET, ISZ DOCNT /COUNT THE NUMBER OF PASSES
430      #2
431 0653 5240 JMP C8BY1 /EXIT FOR ANOTHER PASS
432 0654 3262 DCA DOSET /SET TO C8PRNT C8PASS
433 0655 2242 ISZ CKCOUT /BUMP RETURN FOR
434 0656 5642 JMP I CKCOUT /C8PASS C8TYPE OUT
435 0657 0522 XM, MX /LOCATION OF CHAR TO PRINT AT PASS FROM FLD 0
436 0660 0000 DOCNT, 0
437 0661 0000 PASCNT, 0
438 0662 0000 DOSET, 0

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439 0663 0000 CNTVAL, 0
440 0664 0411 MESPAS, TEXT "DIRXA=D PASS"
441 0665 2230
442 0666 0155
443 0667 0440
444 0670 2001
445 0671 2323
446 0672 4000
447
448
449
450
451
452 0673 0000 XC8SW, 0
453 0674 7200 CLA /CLEAR AC
454 0675 6201 CDF 00
455 0676 1770 TAD I (21 /GET WD FOR INDICATOR
456 0677 6211 CDF 10
457 0700 7710 SPA CLA /CHECK IF FROM PANEL 4000
458 0701 7614 7614 /DO LAS AND SKIPGET FROM PANEL WITH LAS
459 0702 5304 JMP C8GET1 /GET CONTENTS OF LOC 20 FLD 00
460 0703 5307 JMP C8EXTB /EXIT COMMON
461 0704 6201 C8GET1, CDF 00
462 0705 1767 TAD I (20 /PSEUDO SW
463 0706 6211 CDF 10
464 0707 5673 C8EXTB, JMP I XC8SW /EXIT WITH STATUS BIT IN AC.
465
466
467 0767 0020
468 0770 0021
469 0771 0201
470 0772 0200
471 0773 1035
472 0774 1000
473 0775 0523
474 0776 0400
475 0777 1060
476 1000 PAGE
477
478
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487 / C8PRNT= JMS XC8PNT
488
489
490 /EX. C8PRNT /C8PRNT THE CONTENTS OF THE FOLLOWING BUFFER
491 / MESS77 /LOCATION OF C8PRNT BUFFER
492 /C8PRNT WILL USE THE LOCATION FOLLOWING THE CALL, C8 PRINTING OF THE BUFFER
493 /C8PRNT ROUTINE, RETURN TO CALL PLUS TWO WITH AC= 0
494
495
496
497
498 1000 0000 XC8PNT, 0
499 1001 7300 CLA CLL
500 1002 1600 TAD I XC8PNT /GET C8PRNT BUFFERS STARTING LOCATION
501 1003 3233 DCA PTSTOR /STORE IN PTSTOR
502 1004 2200 ISZ XC8PNT /BUMP RETURN
503 1005 1633 C8D01, TAD I PTSTOR /GET DATA WORD
504 1006 0377 AND (7700 /MASK FOR LEFT BYTE
505 1007 7450 SNA /CHECK IF 00 TERMINATE
506 1010 5600 JMP I XC8PNT /EXIT
507 1011 7500 SMA /IS AC MINUS
508 1012 7020 CML /MAKE CHAR A 300 AFTER ROTATE
509 1013 7901 IAC /MAKE CHAR A 200 AFTER ROTATE
510 1014 7012 RTR
511 1015 7012 RTR
512 1016 7012 RTR /PUT CHAR IN BITS 4-11 MAKE IT 8 BIT ASCII
513 1017 4776* JMS C8TYP /C8PRNT IT ON CONSOLE
514 1020 1633 TAD I PTSTOR /GET DATA WORD
515 1021 0375 AND (0077 /MASK FOR RIGHT BYTE
516 1022 7450 SNA /CHECK IF 00 TERMINATOR
517 1023 5600 JMP I XC8PNT //EXIT
518 1024 1374 TAD (3740 /ADD FUDGE FACTOR TO DETERMINE IF 200
519 1025 7500 SMA /OR 300 IS TO BE ADD TO CHAR
520 1026 1373 TAD (100 /ADD 100
521 1027 1372 TAD (240 /ADD 200
522 1030 4776* JMS C8TYP /C8TYPE ONLY BITS 4-11
523 1031 2233 ISZ PTSTOR /BUMP POINTER FOR NEXT WORD
524 1032 5205 JMP C8D01 /DO AGAIN
525 1033 0000 PTSTOR, 0 /STOR FOR C8PRNT BUFFER
526 1034 0000 STOPNT, 0 /0000 C8PRNT 7777*DO NOT C8PRNT
527
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RXB RX01 DTAGNOSTIC DIRXA=D      PAL10     V142A   1-AUG-77    15:22    PAGE 1-10

542
543 1035 0000 XC80CT, 0
544 1036 7106 CLL RTL
545 1037 7006 RTL
546 1040 3256 DCA C8TMP1 /POSITION THE FIRST CHAR FOR PRINTING
547 1041 1371 TAD (~4) /SAVE CORRECT POSITIONED WORD HERE
548 1042 3257 DCA C8CKP /STORE COUNTER IN HERE
549 1043 1256 C8D04, TAD C8TMP1 /GET FIRST NUMBER
550 1044 0370 AND (0007) /MASK
551 1045 1367 TAD (260) /ADD THE PRINT CONSTANT
552 1046 4776" JMS C8TYP /TYPE THE 'NUMBER
553 1047 1256 TAD C8TMP1 /
554 1050 7006 RTL
555 1051 7004 RAL /PUT NEXT NUMBER IN POSITION
556 1052 3256 DCA C8TMP1 /STORE IT
557 1053 2257 ISZ C8CKP /DONE YET WITH FOUR NUMBERS
558 1054 5243 JMP C8D04 /NOT YET DO MORE
559 1055 5635 JMP I XC80CT /DONE WITH FOUR
560 1056 0000 C8TMP1, 0
561 1057 0000 C8CKP, 0
562
563 ****
564
565 ****
566 /CHECK LOCATION 22 FIELD 0
567
568
569 1060 0000 C8CK22, 0
570 1061 7200 CLA
571 1062 6201 CDF 00
572 1063 1766 TAD I (22) /GET LOC 22 FIELD 0
573 1064 6211 CDF 10
574 1065 0365 AND (400)
575 1066 7650 SNA CLA
576 1067 2260 ISZ C8CK22
577 1070 5660 JMP I C8CK22 /EXIT
578
579
580
581
582
583 /
584 1165 0400
585 1166 0022
586 1167 0260
587 1170 0007
588 1171 7774
589 1172 0240
590 1173 0100
591 1174 3740
592 1175 0077
593 1176 0502
594 1177 7700
      0000 FIELD 0

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/RX8 PX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 1-11

0000 00000000 00000000 00001111 11111111 11111111 11100000 00000000 00000000 00000000
0100 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 01111111 11111111 11111111
0300 11111111 11111111 11100000 00000000 00000000 00000000 00000000 01111111 11111111 11111111

0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 11111111 11000000 00000000 01111111 11111111

0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 00000000 00000000 00000000 00000000 00000000 00000000 00000001 11111111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 10000000
1100 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000011 11111111 11111111

1200
1300

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1500

1600
1700

2000
2100

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2400
2500

2600
2700

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3100

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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

595
596
597
598
599 / RX8/RX01 DIAGNOSTIC * MAINDEC=08-DIPXA=D
600 /
601 /STARTING ADDRESS 200 - (AC) = STARTUP SWITCHES
602 /
603 /STARTING ADDRESS 201 - RESTART (PARAMETERS ALREADY SELECTED AT START 200)
604 /
605 /STARTING ADDRESS 202 - CHANGE DEVICE CODES.
606 /
607 /START-UP AC SWITCH DEFINITIONS (WHEN THE STARTING ADDRESS IS 200)
608 /
609 / AC 0 1 2 3 4 5 6 7 8 9 10 11
610 / U U U/C X X X U T T T T T
611 /
612 / X=DEVICE CODE (0 DEFAULTS TO 75)
613 / T=TESTS (0 FOR ALL TESTS)
614 / C=RX01 MICROCONTROL CABLED TO RX8 INTERFACE
615 / U=UNIT/DRIVES SELECTED FOR TEST
616 / WHERE: UNIT DRIVE(S)
617 / 0000 = A 0,1
618 / 1000 = B 0,1
619 / 2000 = A 0
620 / 3000 = B 0
621 / 4000 = A 1
622 / 5000 = B 1
623 / 6000 = TEST CONTROL AND INTERFACE ONLY (NO DRIVES)
624 / 7000 = TEST INTERFACE ONLY (NO CONTROL OR DRIVES)
625 / VT78 0040 = TEST UNITS A & B (ALL DRIVES)
626 / 4040 = DRIVES 1 BOTH UNITS
627 / 2040 = DRIVES 0 BOTH UNITS
628 /
629 /THE PRETEST IS NOT SWITCH SELECTABLE - THIS PRETEST IS ALWAYS
630 /EXECUTED PRIOR TO THE FIRST TTTT SELECTION
631 /
632 /PRETEST - VERIFICATION OF INIT [KEY]
633 / (PRETEST) I8 - INIT PART I [KEY] / FLAG DETECTION PART I
634 /
635 /INTERFACE / CONTROL TESTS
636 /
637 /NOTE: * THE KEYBOARD IS "ALIVE" DURING TESTS 6, 7, 10, AND 11, AND 12
638 /IF A CHARACTER IS STRUCK AN ERROR MAY OCCUR
639 /
640 / TTTT
641 /
642 /
643 / 0 I - FLAG DETECTION PART II / "C" LINES PART I
644 / 1 I8 - DIRECTION OF IOT XDR PART I / IOT DECODING PART I
645 /
646 / 2 I8 - FLAG DETECTION PART II / "C" LINES PART III
647 / 3 I8 - IOT DEVICE CODE VERIFICATION
648 / 4 I8 - DIRECTION OF IOT XDR PART II / "C" LINES PART IV
649 / 5 I - IOT DECODING PART II

/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-1

SEQ 0044

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650      / * 6   IB/I  = INTERRUPT TESTING PART I / IOT DECODING PART III
651      / * 7   IB    = INTERRUPT TESTING PART II
652      / * 10  IB    = INTERRUPT TESTING PART III
653      / * 11  I     = INTERRUPT TESTING PART IV
654      / * 12  IB/I  = INIT PART II [PROGRAMMED] / INTERRUPT TEST PART V
655      /      RX01 CONTROL TESTS
656      /
657      / 13   C     = FILL BUFFER 12-BIT MODE
658      / 14   C     = EMPTY BUFFER 12-BIT MODE
659      / 15   C     = VERIFICATION OF PREVIOUS TEST
660      / 16   C     = FILL BUFFER 8-BIT MODE
661      / 17   C     = EMPTY BUFFER 8-BIT MODE
662      / 20   C     = VERIFICATION OF PREVIOUS TEST
663      / 21   C     = FILL BUFFER 8-BIT MODE (ALL 0'S)
664      / 22   C     = FILL BUFFER 8-BIT MODE (ALL 1'S)
665      /
666      / DISKETTE DRIVE TESTS
667      /
668      / 23   D     = STATUS BIT "DRIVE READY"
669      / 24   D     = B-CODE VERIFICATION (70) PART I
670      / 25   D     = B-CODE VERIFICATION (70) PART II
671      / 26   D     = B-CODE VERIFICATION (70) PART III
672      / 27   D     = B-CODE VERIFICATION (40) PART IV
673      / 30   D     = SEEK AND CRC VERIFICATION
674      / 31   D     = WRITE TEST
675      / 32   D     = INIT PART III [PROGRAMMED] IMPLIED READ TRACK 1 SECTOR 1
676      / 33   D     = READ TEST
677      / 34   D     = WRITE-READ-PROGRAM VERIFY 12 BIT MODE
678      / 35   D     = WRITE-READ-PROGRAM VERIFY 8 BIT MODE
679      / 36   D     = WRITE-READ-PROGRAM VERIFY 12 BIT MODE WITH DELETED DATA
680      / 37   D     = WRITE-READ-PROGRAM VERIFY 8 BIT MODE WITH DELETED DATA
681      /
682      / I - MEANS RX8 INTERFACE TEST
683      / B - MEANS RX01 MAY BE CABLED TO RX8
684      / C - MEANS AN RX01 MUST BE CABLED TO THE RX8
685      / D - MEANS A DRIVE MUST BE READY
686      /
687      / OPERATIONAL AC SWITCH DEFINITIONS
688      /
689      / AC 0 - (1) CONTINUE ON DETECTION OF ERROR
690      / AC 1 - (1) LOCK SCOPE LOOP ON ERROR
691      / AC 2 - (1) LOCK SCOPE LOOP ON TEST
692      / AC 3 - (1) HALT AT END OF PASS
693      / AC 4 - (1) DON'T PRINT AN ERROR MESSAGE
694      / AC 5 - (1) LONG DATA COMPARISON ERROR PRINTOUT
695      / AC 6 - (1) DISABLE THE ISSUING OF [INIT]
696      / AC 7 - (1) HALT AT END OF A TEST
697      / AC 8 -
698      / AC 9 -
699      / AC 10-
700      / AC 11- (1) DISABLE RINGING OF BELL AT ERROR
701      / THE FOLLOWING MAP IS A SUMMARY OF ALL ERRORS.
702      /
703      /
704      / ERA    TEST    BLANK   EAC    GOOD   COMMENT:

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/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-2

SEQ 0045

```

705      /
706      /
707      1200 0412  E0PRE / PRETEST - - - UNEXPECTED TRANSFER REQUEST FLAG
708      1201 0415  E2PRE / - - - UNEXPECTED ERROR FLAG
709      1202 0425  E3PRE / - - - MISSING DONE FLAG
710      1203 0445  E1PRE / STATUS STATUS FROM MINUS 4, STATUS NOT = INIT DONE, OR
711      /          TR    DEL 204   DRIVE READY + INIT DONE
712      /          DATA
713      /
714      1204 0450  E4PRE / - - - UNEXPECTED DONE FLAG
715      /
716      /
717      1205 0607  E0 / T0 - X 0   IOT 67X1 DIDN'T CLEAR AC
718      1206 0613  E1 / - - - UNEXPECTED TRANSFER REQUEST FLAG
719      1207 0617  E2 / - - - UNEXPECTED ERROR FLAG
720      1210 0623  E3 / - - - UNEXPECTED DONE FLAG
721      /
722      /
723      /          E11 / T1 - X 0   IOT 67X1 FAILED TO CLEAR AC
724      1211 0647  E10 / - X 200  TR NOT = 200 (DRIVE READY)
725      /
726      /
727      /          E20 / T2 - - - MISSING DONE FLAG
728      1212 0660  E21 / - - - MISSING TR FLAG
729      1213 0663  E22 / - - - MISSING ERROR FLAG
730      1214 0666  E23 / - - - MISSING DONE FLAG
731      1215 0671  E24 / - - - MISSING TR FLAG
732      1216 0674  E25 / - - - MISSING ERROR FLAG
733      1217 0704  E26 / - X 7777  IOT 67X6 CLEARED AC
734      1220 0712  E27 / - X 7777  IOT 67X3 CLEARED AC
735      1221 0720  E28 / - X 7777  IOT 67X4 CLEARED AC
736      /
737      /
738      /          E30 / T3 - X 67X5  (EAC) = ILLEGAL DEVICE CODE
739      1222 0744  E40 / T4 7776 X 200  IOT 67X1 CLEARED AC
740      /
741      /
742      /          E42 / T4 7776 X 200  IOT 67X1 CLEARED AC
743      1223 1021  E44 / T4 7776 X 200  IOT 67X1 CLEARED AC
744      /
745      /          E40 / T0 - - - 376  DATA TO TR NOT =
746      1224 1044  E41 / - - - 375  DATA FROM TR
747      /          E40 / T0 - - - 373  OR,
748      /          E41 / 7677 - - - 367  DATA FROM TR NOT =
749      1225 1060  E42 / - - - 357  DATA FROM TR PREVIOUSLY
750      /          E41 / 7677 - - - 337
751      /
752      /
753      1226 1102  E56 / T5 - X 0   (TR) NOT = 0
754      1227 1105  E50 / - - - MISSING DONE FLAG
755      1230 1111  E53 / - - - UNEXPECTED DONE FLAG
756      1231 1114  E51 / - - - MISSING TR FLAG
757      1232 1120  E54 / - - - UNEXPECTED TR FLAG
758      1233 1123  E52 / - - - MISSING ERROR FLAG
759      1234 1127  E55 / - - - UNEXPECTED ERROR FLAG

```

760 /
 761 /
 762 /
 763 1235 1142 E60 / T6 - - - UNEXPECTED RX01 IRQ
 764 1236 1154 E61 / - - - MISSING DONE FLAG
 765 1237 1157 E62 / - - - MISSING TR FLAG
 766 1240 1162 E63 / - - - MISSING ERROR FLAG
 767 /
 768 /
 769 /
 770 1241 1212 E70 / T7 - - - MISSING RX01 IRQ
 771 /
 772 /
 773 /
 774 1242 1226 E100 / T10 - - - UNEXPECTED RX01 IRQD
 775 /
 776 /
 777 /
 778 1243 1252 E110 / T11 - - - UNXPECTED RX01 IRQ
 779 /
 780 /
 781 /
 782 1244 1276 E124 / T12 - - - UNEXPECTED RX01 IRQ
 783 1245 1311 E120 / - - - UNEXPECTED DONE FLAG
 784 1246 1315 E121 / - - - UNEXPECTED TR FLAG
 785 1247 1321 E122 / - - - UNEXPECTED ERROR FLAG
 786 1250 1326 E123 / - X 0 (TR) NOT = 0
 787 1251 1412 EA120 / ALT 12 - - - UNEXPECTED TR FLAG
 788 1252 1416 EA121 / - - - UNEXPECTED DONE FLAG
 789 1253 1440 EA122 / ACTUAL ACTUAL 4 OR STATUS MINUS 204 STATUS NOT = 4, OR 204
 790 / DEL DAT
 791 /
 792 1254 1451 EA123 / - X 0 THE B-CODE NOT = 0
 /THE " XRSTB " SUBROUTINE WHICH READS THE B-CODE STATUS BY ISSUING
 /COMMAND # 7 IS ENTERED FROM TESTS: *** ALT12, (T24, T25, T26), AND T27
 /
 /THE CONTENTS OF " BLANK " = THE CONTENTS OF GOOD FROM TEST: ALT12
 /
 798 1255 2405 E7000 / 4/204 - - UNEXPECTED TR FLAG
 799 1256 2416 E7001 / 4/204 STATUS - - UNEXPECTED ERROR FLAG
 800 1257 2432 E7002 / 4/204 X 7000 SHIFT REGISTER NOT SHIFTING
 801 /
 802 /
 803 /
 804 /THE " XRST " SUBROUTINE TO READ THE STATUS REGISTER BY ISSUING COMMAND # 5
 /IS ENTERED FROM TESTS: *** ALT12, AND T23
 /
 807 1260 2446 E7003 / 4/204 - - UNEXPECTED TR FLAG
 808 1261 2457 E7004 / 4/204 STATUS - - UNEXPECTED ERROR FLAG
 809 1262 2473 E7006 / 4/204 STATUS 5000 SHIFT REGISTER NOT SHIFTING
 810 1263 2511 E7005 / 4/204 STATUS 0/200
 811 /
 812 /
 813 /
 814 /SUBROUTINE " FBEB " TO FILL AND EMPTY THE BUFFER IS ENTERED FROM TESTS:
 /

815 / T13, T16 (FILL THE BUFFER) / T14, T17 (EMPTY THE BUFFER)
 816 /
 817 1264 1513 E130 / COMMAND - - UNEXPECTED ERROR FLAG
 818 1265 1526 E131 / COMMAND ACTUAL EXPECT # OF TR FLAGS NOT OK
 (EAC) = # OF FLAGS
 NEG, # MEANS NOT ENOUGH
>0 MEANS TO MANY
 819 /
 820 /
 821 /
 822 /
 823 /
 824 /
 825 / ERROR # 140 MAY OCCUR WITHIN TESTS T14, T17, T15, AND T20
 826 /
 827 /THE CONTENTS OF " BLANK " IS EQUIVALENT TO THE WORD/BYTE COUNT AT THE ERROR
 /
 /THE CONTENTS OF THE " EAC " IS EQUIVALENT TO THE ACTUAL DATA FROM THE SECTOR
 /BUFFER (8 OR 12-BIT MODE)
 /
 /THE CONTENTS OF " GOOD " IS EQUIVALENT TO THE EXPECTED CONTENTS OF THE
 /SECTOR BUFFER
 /
 835 1266 1661 E140 / * # ACTUAL EXPECT DATA COMPARISON ERROR
 / " FB128BITS " IS A SUBROUTINE WHICH FILLS THE SECTOR BUFFER WITH 128 BYTES
 /OF DATA (ALL 1'S OR ALL 0'S) AND IS ENTERED FROM TESTS T21, AND T22
 /
 839 1267 4557 E210 / * - - - UNEXPECTED ERROR FLAG
 /
 840 /
 842 /SUBROUTINE " TX " EMPTIES THE SECTOR BUFFER AND COMPARES THE DATA TO AN
 /EXPECTED PATTERN
 /
 845 /THIS SUBROUTINE IS ENTERED FROM TESTS: *** T21, T22, (T24, T25, T26), AND T27
 /
 847 1270 2320 E211 / * ACUAL EXPECT DATA COMPARISON ERROR
 848 1271 2332 E212 / - - - UNEXPECTED ERROR FLAG
 849 /
 850 /
 851 /
 852 /ERRORS E240, E245, E241, AND E242 MAY OCCUR WITHIN TESTS: T24, T25, T26
 /
 853 /
 854 /
 855 /
 856 1272 2030 E240 / * CMND X 2 # OF TR FLAGS NOT OK
 857 1273 2033 E245 / CMND - - MISSING ERROR FLAG
 858 1274 2070 E241 / ACTUAL X T24/200,300
 T25/200
 T26/300
 860 /
 861 1275 2101 E242 / - X 70 B-CODE NOT = 70
 862 /
 863 /
 864 /
 865 1276 2135 E270 / T27 115 # OF XFERS 2 # OF TR FLAGS NOT OK
 866 /
 867 1277 2140 E271 / - - - MISSING ERROR FLAG
 868 1300 2151 E272 / - X 40 B-CODE NOT = 40
 869 0000 *0

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2*5

SEQ 0048

```

870 0000 0303      303      / C IS THE REVISION
871          0001      *1
872 0001 5402      JMP I IPI
873      /
874      /PROGRAM LOCATION 2 CONTAINS THE INTERRUPT RETURN ADDRESS
875      /
876      /PROGRAM LOCATION 2 IS MODIFIED WITHIN CERTAIN TESTS
877      /
878 0002 5417      IPI,    PI
879      /
880      /
881      /AUTO INDEX REGISTER DEFINITION,
882      /
883 0010 0010      *10
884 0010 0000      A10,    0
885 0011 0000      A11,    0
886 0012 0000      A12,    0
887 0013 0000      A13,    0
888 0020           *20
889      /
890      /THE FOLLOWING PROGRAM LOCATIONS (20, 21, AND 22, 23) ARE RESERVED FOR ACT8/A
891      /
892 0020 0000      0000      /SET FOR DRIVES 0 AND 1 DEVICE CODE 75
893 0021 4000      4000      /0000=PSUEDO SWITCH REGISTER IF ON ACTIVE CONSOLE
894          4000      /0000=VT78
895          4000      /4000=USE HARDWARE SWITCH REGISTER
896
897
898 0022 0000      0000      /0000=N0T ACTIVE CONSOLE PACKAGE
899          0000      /0400= ACTIVE CONSOLE PACKAGE
900          0000      /1400= VT78
901 0024           *24
902
903 ****
904
905      /THE FOLLOWING CALLS ARE USED FOR THE CONSOLE PACKAGE
906
907 0024 4424      CHECKC8=   JMS I   *
908 0024 4516      XCHECK     *
909          4516      /USED TO CHECK IF THE CONSOLE IS ACTIVE
910
911 0025 4425      XC8ENTR=  JMS I   *
912 0025 0200      CBENTP     *
913 0026 4426      C8PASS=   JMS I   *
914 0026 0600      XC8PASS    *
915 0200           PSTART=200
916          0200      /RESTART ADDRESS FOR CONSOLE PACKAGE
****

917      /
918      /THE FOLLOWING PROGRAM LOCATIONS "OD", "ID", "FIRST", AND "LAST" MAY BE
919      /CHANGED BY THE OPERATOR MANUALLY HOWEVER FOLLOWING THESE RESTRICTIONS.
920      /
921      / 1. THE CONTENTS OF " OD " (MIN VAL 0) MUST BE <= THE
922      /      CONTENTS OF " ID " (MAX VAL 114).
923      /
924      / 2. THE CONTENTS OF "FIRST" (MIN VAL 1) MUST BE <= THE

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2*6

SEQ 0049

```

925      /
926      /CONTENTS OF "LAST" (MAX VAL 32)
927      /THE PROGRAM INITIALLY SETS THESE VALUES AT PROGRAM LOAD TIME
928      /
929      /(OD) = 52, AND (ID) = 53
930
931      /BECAUSE TRACK 53 IS THE TRACK AT WHICH THE RX01 MICROCONTROLLER WILL
932      /DECREASE THE WRITE CURRENT IN HALF
933
934 0027 0001      OD,    1      /OUTSIDE DIAMETER (MIN VALUE 0)
935 0030 0114      ID,    114    /INSIDE DIAMETER (MAX VALUE 114)
936 0031 0001      FIRST, 1      /FIRST SECTOR TO ACCESS (MIN VAL 1)
937 0032 0032      LAST,   32    /LAST SECTOR TO ACCESS (MAX VAL 32)
938
939      /PDP-8/E AUGMENTED INSTRUCTIONS
940
941 0033 4433      BSW=JMS I   *
942 0033 2600      XBSW     /BYTE SWAP
943 6001           ION=6001
944 6002           IOF=6002
945 4572           LAS=CKSWIT
946 7501           MGA=7501
947 7421           MOL=7421
948
949      /DISKETTE IOT SUBROUTINES
950
951 0034 4434      TY8OCT=JMS I, XT8OCT
952 0034 5200      XT8OCT
953 4435           SEL=JMS I, XSEL
954 0035 6200      LCD=JMS I, XLCD
955 4436           LCD=JMS I, XLCD
956 0036 6203      LCD=JMS I, XLCD
957 4437           LCD=JMS I, XLCD
958 0037 6210      LCD=JMS I, XLCD
959 4440           LCD=JMS I, XLCD
960 0040 6235      XDRIN=JMS I, XDRIN
961 4441           XDRIN=JMS I, XDRIN
962 0041 6400      XDROUT=JMS I, XDROUT
963 4442           XDROUT=JMS I, XDROUT
964 0042 6403      XDROUT
965 4443           STR=JMS I, XSTR
966 0043 6407      SER=JMS I, XSER
967 4444           SDN=JMS I, XSDN
968 0044 6414      INTR=JMS I, XINTR
969 4445           INTR=JMS I, XINTR
970 0045 6421      INITB=JMS I, XINITB
971 4446           INITB=JMS I, XINITB
972 0046 6426      CKUNIT=JMS I, XCKUNIT
973 4447           CKUNIT=JMS I, XCKUNIT
974 0047 6434      XINIT
975 4450           XINIT
976 0050 6450      XINITB
977 4451           XINITB
978 0051 2335      XCKUNIT
979          2335      /OPERATING SYSTEM SUBROUTINES

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```

980
981      / ERROR=JMS I .
982 0052 2625      XERROR
983      EXIT=JMP I .
984 0053 0452      MORETESTS           /EXIT FROM A TEST (IF RX8 ONLY )
985      DONE=JMS I .
986 0054 4243      XDONE             / FORM: "DONE; NO; YES"
987      GETAPATTERN=JMS I .
988 0055 3035      XGETAPATTERN
989      4456      GETASECTOR=JMS I .
990 0056 4607      XGETASECTOR
991      4457      GETATRACK=JMS I .
992 0057 4261      XGETATRACK        /GET A TRACK FOR IOT LCD-B (TRACK #)
993      4460      GETUNIT=JMS I .
994 0060 4200      XGETUNIT          /SELECT A DISKETTE DRIVE
995      4461      HALT=HALT
996      4461      HALT=JMS I .
997 0061 4121      XHALT
998      4462      INITSECTOR$=JMS I .
999 0062 4600      XINITSECTORS
1000 0063 4463      INITTRACKS=JMS I .
1001 0063 4250      XINITTRACKS
1002 0064 4464      LOCKUP=JMS I .
1003 0064 2545      XLOCKUP
1004      4453      NOTEST=EXIT
1005      4465      OK=JMS I .
1006 0065 6123      XOK
1007 0066 4466      TICK=JMS I .
1008 0066 4133      XTICK
1009 0067 4467      AERROR=JMS I .
1010 0067 4346      XAERRO
1011 0068 4470      API8=JMS I .
1012 0070 1545      XAPI8
1013 0071 4471      WAIT=JMS I .
1014 0071 1722      XWAIT
1015 0072 4472      CHXK22=JMS I .
1016 0072 5144      XCHK22
1017 0073 4473      PRINT=JMS I .
1018 0073 5244      XPRINT           /PRINT A MESSAGE; FORM: "PRINT; MESSAGE"
1019 0074 4474      READ=JMS I .
1020 0074 3416      XREAD
1021 0075 4475      READCOMPPAPER=JMS I .
1022 0075 3412      XREADCOMPARE
1023 0076 4476      RST=JMS I .
1024 0076 2441      XRST            /STATUS AFTER "RST" COMMAND (12) / 5 TIMES 2
1025 0077 4477      RSTB=JMS I .
1026 0077 2400      XRSTB           /STATUS AFTER READ B-CODES COMMAND (16) 7 X 2
1027
1028 0100 4500      SETUP=JMS I .
1029 0100 4103      XSETUP
1030 0101 4501      SPECIALTYPE=JMS I .
1031 0101 5352      XSPECIALTYPE
1032 0102 1333      SCOPE=JMS I .
1033 0103 4503      XSCOPE
1034 0103 1344      SUBSCOPE=JMS I .
1034

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```

1035 0104 4504      TAB=JMS I .
1036 0104 5215      XTAB             / FORM: " TAB; N "
1037 0105 4505      TY4OCT=JMS I .
1038 0105 5000      XTY4OCT          /TYPE (4) OCTAL ; FORM: " TY4OCT; OCTAL "
1039 0106 4506      TYPEIT=JMS I .
1040 0106 5305      XTYPEIT
1041 0107 4507      WAITTY=JMS I .
1042 0107 5412      XWAITTY
1043 0110 3200      WRITE=JMS I .
1044 0110 3200      XWRITE
1045
1046      /ACCUMULATOR SWITCH REGISTER DEFINITIONS
1047
1048 0000 4000      SW0=4000
1049 0000 2000      SW1=2000
1050 0000 1000      SW2=1000
1051 0000 0400      SW3=400
1052 0000 0200      SW4=200
1053 0000 0100      SW5=100
1054 0000 0040      SW6=40
1055 0000 0020      SW7=20
1056 0000 0010      SW8=10
1057 0000 0004      SW9=4
1058 0000 0002      SW10=2
1059 0001 0001      SW11=1
1060
1061      /OPERATING SYSTEM ALLOCATED STORAGE REFERENCES
1062 0111 0000      BUSY,          0      / = 1 - PROCESSING AN RX01 PROGRAM INTERRUPT
1063 0112 0000      COMMAND,        0      /DISKETTE COMMAND ; (AC) AT LCD
1064 0113 0000      COMPERROR,     0      /PROGRAM DATA COMPARE ERRORS
1065 0114 0000      DTESTP,        0      /DIAGNOSTIC TEST PARAMETERS (SELECTED AT L/S )
1066 0115 7777      FIRSTERROR,    7777    / (7777) IF 1ST ERROR ; (0) IF NOT
1067 0116 0000      HANGER,        0      /COUNTER TO DETECT DEVICE TEST HUNG
1068 0117 7777      K7777,        -1     /
1069 0120 0000      RDC,           0      / = 0 IF A RDC TEST, = 7777 IF NOT
1070 0121 7765      KRETRY,        -13    / 1 ORIGINAL TRY + 10 RETRYS
1071 0122 7746      SECTORS,       -32    /NEGATIVE # OF SECTORS PER TRACK (1-32 OCTAL)
1072 0123 0000      SSTART,        0      /SECTOR LAST ACCESSED ( 0 = "HOME" )
1073 0124 0000      STARGET,       0      /TARGET SECTOR OF (UNITX)
1074 0125 0000      START,         0      /TRACK LAST ACCESSED
1075 0126 0000      ASTATUS,       0      /DISKETTE STATUS AT ERROR OR DONE
1076 0127 0000      BSTATUS,       0      /RX01 DEFINITIVE ERROR CODE REGISTER
1077 0130 0000      CSTATUS,        0      /STATUS FROM THE "READ STATUS" COMMAND
1078 0131 0000      TARGET,         0      /TARGET TRACK OF (UNITX)
1079 0132 0000      TESTP,         0      /TEST PARAMETERS (DYNAMIC BY PROGRAM)
1080 0133 0000      XA10,          0
1081 0134 0000      XA11,          0
1082 0135 0000      UNITCK,        0      /VT78/AC11 (0)=RXA (1)=RXB
1083 0136 7677      MASK,          7677    /VT78/ 7677 FOR STANDARD 8 - 277 FOR VT78
1084
1085
1086      /PROGRAM LOCATION XXX IS A TEMPORARY STORAGE REGISTER FOR DATA
1087      /OR ADDRESSES OF DATA WHICH ARE CALLED WITHIN SUBROUTINES WHICH
1088      /DO NOT CALL SUBROUTINES WHICH CALL THESE STORAGE REGISTERS
1089      /XXX IS CALLED WITHIN THE FOLLOWING SUBROUTINES

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-9

SEQ 0052

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1090          /
1091          /DxD/RX=ERROR (2)
1092          /COMPARE (2)
1093          /XGETAPATTERN (6)
1094          /RDORWR (2)
1095          /
1096 0137 0000 XXX,      0
1097          /
1098 0140 7765 R1RETRY,   -13  /WERRORS      /WRITE ERROR RECOVERY
1099 0141 7765 R2RETRY,   -13  /RERRORS      /READ ERROR RECOVERY
1100 0142 0000 DWSLOG,    0     /DATAERRORS   /DATA ERROR WITH CRC STATUS ERROR
1101 0143 0000 DNSLOG,    0     /DNSERRORS   /DATA ERROR BUT NO CRC STATUS ERROR
1102 0144 0000 SNDLOG,    0     /SNDERRORS   /CRC STATUS ERROR BUT NO DATA ERROR
1103 0145 7765 SRETRY,   -13  /SERRORS      /SEEK ERROR RECOVERY
1104 0146 7765 PRETRY,   -13  /PERRORS      /PARITY ERROR RECOVERY
1105          / (TRACKS) ARE SET TO THE NEGATIVE DIFFERENCE BETWEEN (OD), AND (ID)
1106          / IN THE SUBROUTINE "INITTRACKS "
1107          /
1108 0147 7663 TRACKS,   -115  /-* OF TRACKS PER DISKETTE (-115 TO -1 DYNAMIC DECREMENT)
1109 0150 0115 TTRACKS,   115  / # OF TRACKS PER DISKETTE (115 TO 1 STATIC)
1110 0151 0000 XTARGET,   0     / ; (AC) = TRACK+SECTOR AT IOT LCD=8 ; DESTINATION
1111 0152 0000 ECOMMAND,  0
1112 0153 0000 H1,        0
1113 0154 0000 GOBIT,    0     / > 0 MEANS EXPECTING AN RX01 PI, <= 0 MEANS NOT EXPECTING
1114
1115          /
1116          / (PAT=SUMCHECK) IS A NUMBER GENERATED WITHIN SUBROUTINE " XGETAPATTERN"
1117          / EQUIVALENT TO SUMCHECK OF 60/124 [ 12/8 BIT MODE] DATA WORDS
1118
1119 0155 0000 PATSUMCHECK, 0
1120
1121          / (WORDX) IS AN ADDRESS WHOSE CONTENTS = : (PAT=SUMCHECK) + (WBUFFER) + (WBUFFER+1)
1122
1123          / (WORDY) IS AN ADDRESS FOR WHICH THE CONTENTS REPRESENT THE NEGATIVE-1
1124          / OF 2 TIMES THE CONTENTS OF THE ADDRESS WITHIN PROGRAM LOCATION " WORDX "
1125
1126          / THE CONTENTS OF BOTH WORDX AND WORDY ARE GENERATED WITHIN SUBROUTINE " XGETASECTOR "
1127
1128 0156 0000 WORDX,    0
1129 0157 0000 WORDY,    0
1130 0160 0000 LSB,      0
1131 0161 0000 MSB,      0
1132 0162 0000 TTYBUSY,  0
1133 0163 0000 PASS,    0
1134 0164 0000          0     /PASS COUNT TO A MAGNITUDE OF 16777215(10)
1135 0165 0000 RXHERE,   0     / = 7000 IF AN RX01 IS NOT CABLED TO THE RX8
1136 0166 0000 GOOD,    0     /EXPECTED RESULT
1137 0167 0000 EAC,      0     / (AC) AT ERROR "BAD" (ACTUAL RESULT)
1138 0170 0000 BLANK,   0
1139 0171 0600 TEST,    TO     /ADDRESS OF STARTING ADDRESS OF TEST
1140
1141          ****
1142
1143
1144 4572 CKSWIT= JMS I .

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-10

SEQ 0053

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1145 0172 3400 XCKSWIT           /CHECK IF LAS TO USE LOC 22 OR HARDWARE
1146 0173 7000 K7000, 7000
1147 0174 0007 K0007, 0007
1148 0175 7777 XCNT, -1
1149 4576 FORCE=JMS I ,
1150 0176 5525 XXFORCE
1151          /STARTING ADDRESS 200 - (AC) = STARTUP SWITCHES
1152
1153          /STARTING ADDRESS 201 - RESTART (PARAMETERS ALREADY SELECTED AT START 200)
1154
1155
1156 0200 *200
1157
1158          ****
1159          /CONSOLE
1160          ****
1161 0200 5202 C8START,   JMP .+2           /NORMAL PROGRAM ACTIVITY,
1162 0201 5203           JMP .+2           /RESTART WITH SAME PARAMETERS.
1163          /THIS SECTION IS NORMAL PROGRAM ACTIVITY,
1164          /DEVICE CODE 75 IS ASSUMED, ANY OTHER WILL CAUSE ERRORS.
1165 0202 7240 STA
1166 0203 3010 DCA A10
1167 0204 3162 DCA TTYBUSY
1168 0205 3111 DCA BUSY
1169 0206 3154 DCA GOBIT
1170 0207 3163 DCA PASS
1171 0210 3164 DCA PASS+1
1172 0211 6211 CDF 10           /CHANGE TO DATA FIELD OF CONSOLE PACKAGE
1173 0212 3777* DCA PASCNT   /CLEAR CONSOLE PASS COUNTER
1174 0213 6201 CDF 0           /CHANGE BACK TO PROGRAM DATA FIELD
1175 0214 1376 TAD (-40)
1176 0215 3116 DCA HANGER
1177 0216 3123 DCA SSTART
1178 0217 3131 DCA TARGET
1179 0220 1010 TAD A10
1180 0221 7650 SNA CLA
1181 0222 5233 JMP AROUND           /USE EXISTING PARAMETERS,
1182
1183          ****
1184 0223 4775* JMS PNTID           /PRINT ID AND REMOVE DIAGNOSTIC
1185          ****
1186 0224 4424 CHECKCS
1187 0225 4425 XC8ENTR           /CONSOLE ACTIVE
1188 0226 5230 JMP .+2           /ASK SR QUESTION,
1189 0227 4461 HLT
1190 0230 4572 LAS               /GET PARAMETERS.
1191 0231 3114 DCA DTESTP
1192 0232 4774* JMS CHNDEV           /CHANGE DEVICE CODES.
1193 0233 1114 AROUND, TAD DTESTP   /GET PARAMETERS
1194 0234 7040 CMA
1195 0235 0373 AND (7000           /MASK BITS 0-2
1196 0236 7650 SNA CLA
1197 0237 1373 TAD (7000
1198 0240 3165 DCA RXHERE/ = 0 IF RX01 CABLED TO RX8
1199 0241 1114 TAD DTESTP

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-11

SEQ 0054

```

1200 0942 7040 CMA
1201 0943 0372 AND (SW0+SW1)
1202 0944 3771* DCA UNITS /* = UNITS(DRIVES) TO TEST
1203 0945 4770* JMS SELUNT /VT78/SELECT WHICH FLOPPY TO TEST
1204 0946 4473 PRINT
1205 0947 6533 MDTESTP /TEST PARAMETER CONFIRMATION MESSAGE
1206 0950 4505 TY4OCT
1207 0951 0114 DTESTP

1208 /THE PROGRAM WILL VERIFY THAT THE CONTENTS OF PROGRAM LOCATIONS:
1209 /
1210 /
1211 /
1212 /WHICH ARE VARIABLE BY THE USER ARE WITHIN SELECTABLE LIMITS
1213 /
1214 / 0 <= DD <= 114
1215 /
1216 0952 1027 TAD DD
1217 0953 7700 SMA CLA
1218 0954 5257 JMP .+3
1219 0955 1367 TAD (52)
1220 0956 3027 DCA DD
1221 0957 1366 TAD (-114)
1222 0960 1027 TAD DD
1223 0961 7740 SMA SZA CLA
1224 0962 5255 JMP .-5
1225 0963 4473 PRINT
1226 0964 6674 MOD
1227 0965 4505 TY4OCT
1228 0966 0027 DD
1229 /
1230 / 0 <= ID <= DD
1231 0967 1030 TAD 1D
1232 0970 7700 SMA CLA
1233 0971 5274 JMP .+3
1234 0972 1365 TAD (53)
1235 0973 3030 DCA ID
1236 0974 1030 TAD ID
1237 0975 7041 CIA
1238 0976 1027 TAD DD
1239 0977 7740 SMA SZA CLA
1240 0100 5272 JMP .-6
1241 0301 4473 PRINT
1242 0302 6700 MID
1243 0303 4505 TY4OCT
1244 0304 0030 ID
1245 /
1246 / 0 < (FIRST) <= 32
1247 0105 1031 TAD FIRST
1248 0306 7740 SMA SZA CLA
1249 0307 5312 JMP .+3
1250 0310 7301 CLL CLA IAC
1251 0311 3031 DCA FIRST
1252 0312 1031 TAD FIRST
1253 0313 1364 TAD (-32)
1254 0314 7740 SMA SZA CLA

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SEQ 0055

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1255 0315 5310 JMP .-5
1256 0316 4473 PRINT
1257 0317 6704 MFIRST
1258 0320 4505 TY4OCT
1259 0321 0031 FIRST
1260 0322 5763* JMP TADLAST
1261 /IF THE TELEPRINTER IS BUSY (TTYBUSY = X), AND
1262 /
1263 /IF A KEYBOARD FLAG HAS OCCURED,
1264 /
1265 /THEN STOP TELEPRINTER OUTPUTS (IF A KRB = <CTRL>S ), OR
1266 /
1267 /THEN RESUME TELEPRINTER OUTPUTS (IF A KRB = <CTRL>Q
1268 /AND A PREVIOUS <CTRL> Q HAD OCCURED)
1269 /
1270 0323 6036 XKCC, KPB /READ THE KEYBOARD BUFFER STATIC
1271 0324 0362 AND (177
1272 0325 1361 TAD (200 /MAKE IT 8 BIT CODE
1273 0326 6211 CDF 10
1274 0327 3750 DCA I XC8CHAR /STORE IN FIELD ONE CHAR
1275 0328 6201 CDF 0
1276 0331 1162 TAD TTYBUSY /#1 IF BUSY
1277 0332 7012 RTR
1278 0333 7710 SPA CLA /WAS TELEPRINTER BUSY?
1279 0334 7040 CMA /YES
1280 0335 3351 DCA INMODE /0=NOT BUSY 7777=BUSY
1281 0336 3162 DCA TTYBUSY /CLEAR FLAG
1282 ****
1283 /CONSOLE
1284 /*****
1285
1286 0337 4424 C8TEST, CHECKC8 /CONSOLE ACTIVE.
1287 0340 4425 XC8ENTR /CHECK CONSOLE CONTROL CHARACTERS
1288 0341 7000 NOP
1289 0342 7200 CLA
1290 0343 1351 TAD INMODE
1291 0344 7650 SNA CLA /SKIP TO RESUME TYPEOUT
1292 0345 5760* JMP PIEXIT /EXIT
1293 0346 3351 DCA INMODE /CLEAR ACTIVE MESSAGE FLAG
1294 0347 5757* JMP XTCF /RESUME TYPEOUT
1295 0350 0031 XC8CHAR, C8CHAR /LOC IN FIELD 1
1296 0351 0000 INMODE, 0 /MESSAGE ACTIVE FLAG
1297
1298 ****
1299 /CONSOLE
1300 /*****
1301 0357 5344
1302 0360 5510
1303 0361 0200
1304 0362 0177
1305 0363 3273
1306 0364 7746
1307 0365 0053
1308 0366 7664
1309 0367 0052

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1310 0370 6127
1311 0371 4235
1312 0372 6000
1313 0373 7000
1314 0374 5067
1315 0375 1531
1316 0376 7740
1317 0377 0661
1318 0400 PAGE
1319 //PRETEST - INITIALIZE [KEY] PART I / FLAG DETECTION PART I
1320 // (A) IF AN RX01 MICROCONTROLLER IS [NOT] CABLED TO THE RX8 INTERFACE,
1321 // THEN ALL FLAGS (DONE, TRANSFER REQUEST, AND ERROR) , AND THE RX8
1322 // INTERFACE TRANSFER REGISTER SHOULD HAVE BEEN CLEARED BY "KEY"
1323 // INITIALIZE (IF THEY WERE EVER SET).
1324 //
1325 // (B) IF AN RX01 MICROCONTROLLER [IS] CABLED TO THE RX8 INTERFACE,
1326 // THEN "KEY" INITIALIZE SHOULD HAVE [SET] THE DONE FLAG BECAUSE
1327 // ANY [INIT] OF THE RX01 MICROCONTROLLER IS AN IMPLIED (READ SECTOR)
1328 // OF TRACK 0 SECTOR 1 (FOR SYSTEMS PROGRAMMING BOOTSTRAP APPLICATIONS).
1329 //
1330 // THEREFORE, ANY ERROR (EXCEPT PARITY) THAT MAY OCCUR FROM A NORMAL
1331 // "READ SECTOR" COMMAND MAY OCCUR HERE CAUSING THE ERROR FLAG TO SET, AND
1332 // DISPLAYING THE ERROR STATUS WITHIN THE TRANSFER REGISTER AT "DONE".
1333 //
1334 // THE TRANSFER REQUEST FLAG SHOULD BE CLEARED.
1335 //
1336 //NOTE:
1337 //SCOPE LOOPING IS NOT OFFERED BECAUSE THE "INIT" FUNCTION
1338 //
1339 //PRETEST, STA
1340 0400 7240 DCA FIRSTERROR //FOR FIRST ERROR EVER THIS PASS
1341 0401 3115 DCA ERRORS //CLEAR "ERRORS" FOR FIRST "SCOPE" EVER
1342 0402 3777* SCOPE //THIS "SCOPE" TO REFRESH "FAT" IF ERROR
1343 0403 4502 TAD PCSCOPE
1344 0404 1776* DCA TEST //TO REFRESH "FAT" FOR "ERROR"
1345 0405 3171 CAF //VT78/ //VT78/SETUP FOR UNIT A OR B
1346 0406 6007 CKUNIT
1347 0407 4451 STR
1348 0410 4443 OK
1349 0411 4465 EOPRE, ERROR //UNEXPECTED TRANSFER REQUEST FLAG
1350 0412 4452 SER
1351 0413 4444 OK
1352 0414 4465 E2PRE, ERROR //UNEXPECTED ERROR FLAG
1353 0415 4452 /
1354 //
1355 //*****
1356 //*****
1357 //IF AN RX01 MICROCONTROLLER [IS] CABLED TO THE RX8 INTERFACE
1358 //THEN THE DONE FLAG SHOULD BE SET
1359 //
1360 //TAD RXHERE
1361 0416 1165 SZA CLA
1362 0417 7640 JMP NORX01
1363 0420 5231 /

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1364 0421 4471 WAIT
1365 0422 4445 SDN
1366 0423 5221 JMP .-2 //WAIT FOR DONE FLAG
1367 0424 7410 SKP
1368 0425 4452 EOPRE, ERROR //MISSING DONE FLAG
1369 //
1370 //*****
1371 //THE ENTIRE STATUS WORD IS DISPLAYED IN THE TRANSFER REGISTER AT ERROR/DONE TIME,
1372 //
1373 //IF AN RX01 CONTROLLER IS CABLED TO THE RX8 INTERFACE
1374 // (AND DRIVE 0 IS READY THEN THE STATUS SHOULD INDICATE " SEL DRV RDY" ), ALSO
1375 // (DELETED DATA [MAX] = 1 IF TRACK 0/SECTOR 1 WAS WRITTEN WITH DELETED DATA
1376 // AND "INIT DONE" SHOULD BE SET.
1377 //
1378 0426 5775* JMP TSTUNT //OFF PAGE BECAUSE OF ROOM.
1379 //
1380 //
1381 0427 1374 TAD (40) //PROGRAM EXPECTS DRIVE 0 TO BE READY
1382 //
1383 //
1384 //
1385 //
1386 //
1387 // 4 5 - - 8 9 10 11 /
1388 // SEL WRITE INIT PAR //CRC /
1389 // DRIVE DD PROTECT [DONE] // (N/A) /
1390 // RDY //
1391 //
1392 //
1393 //
1394 //
1395 //
1396 0430 7107 CLL IAC RTL // 4 [INIT] DONE OR 204
1397 0431 3166 NORX01, DCA GOOD
1398 0432 4441 XDRIN
1399 0433 3170 DCA BLANK //ACTUAL STATUS FROM [INIT]
1400 0434 1170 TAD BLANK
1401 0435 0773* AND CUMP
1402 0436 3167 DCA EAC //STATUS MINUS DELETED DATA (BIT 5)
1403 0437 1167 TAD EAC
1404 0440 7041 CIA
1405 0441 1166 TAD GOOD //EXPECTED
1406 0442 7650 SNA CLA
1407 0443 5246 JMP .+3 //OK
1408 0444 1167 TAD EAC
1409 0445 4452 E1PRE, ERROR // [INIT] STATUS NOT = EXPECTED
1410 //
1411 //IF AN RX01 MICROCONTROLLER [IS] CABLED TO THE RX8 INTERFACE
1412 //THEN THE PREVIOUS "SDN" SHOULD HAVE CLEARED THE DONE FLAG, BUT
1413 //
1414 //IF AN RX01 MICROCONTROLLER IS [NOT] CABLED TO THE RX8 INTERFACE
1415 //THEN "KEY" INITIALIZE SHOULD HAVE CLEARED THE DONE FLAG
1416 //
1417 //TECHNICAL NOTE:
1418 //

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-15

1419 /IF THE DONE FLAG IS SET, AND IF THE INTERRUPT ENABLE FLIP-FLOP IS SET ILLEGALLY,
 1420 /THEN AN "UNEXPECTED RX01 INTERRUPT" WILL OCCUR IN TO (IF AN RX01 CONTROLLER
 1421 / [ISJ CABLED TO THE RX8 INTERFACE) OR IN T1 WHEN THE MAINTENANCE FLIP-
 1422 /FLOP "SETS ALL FLAGS"
 1423 /
 1424 0446 4445 SDN
 1425 0447 4465 OK
 1426 0450 4452 E4PRE, ERROR /UNEXPECTED DONE FLAG
 1427 /
 1428 /END OF PRE-TEST /END OF PRETEST
 1429 /
 1430 0451 5311 JMP REBEGIN
 1431 /
 1432 0452 4464 MORETESTS, LOCKUP
 1433 0453 3777* FIRSTTEST, DCA ERRORS
 1434 0454 1413 TAD I A13
 1435 0455 3171 DCA TEST /* FAT (FIRST ADDRESS OF TEST)
 1436 0456 1171 TAD TEST
 1437 0457 3776* DCA PCSCOPE / EQUIVALENT TO "SCOPE"
 1438 0460 3772* DCA WUNITS /FOR FIRST ENTRY INTO XGETUNIT THIS TEST
 1439 0461 5571 JMP I TEST
 1440 /
 1441 /THERE ARE NO MORE TESTS
 1442 /
 1443 /PRINT AN END OF PASS INDICATOR
 1444 /
 1445 / A - INTERFACE TEST OK (ONLY RX8 TO TEST)
 1446 / C - RX8 AND RX01 TEST OK
 1447 / D - RX8 AND RX01 AND DRIVE TESTING OK
 1448 /
 1449 / - - AN ERROR OCCURED (DURING A, B, OR D)
 1450 /
 1451 0400 XD=0400
 1452 0462 2771* ISZ CHECKU /VT78/ARE WE DONE ALL SELECTED UNITS?
 1453 0463 5323 JMP NXUNT /VT78/NO - DO NEXT UNIT(RXB)
 1454 0464 1370 TAD (XD)
 1455 0465 3322 NOMORETESTS, DCA MX / (XI), (XC), (XD), OR 0
 1456 0466 4767* JMS SELUNT /RESET UNIT COUNTER(CHECKU)
 1457 /
 1458 /NOTE: IF THE CONTENTS OF PROGRAM LOCATION FIRSTERROR = 0
 1459 /THEN AN ERROR HAS OCCURED FOR THIS PASS
 1460 /
 1461 0467 1115 TAD FIRSTERROR
 1462 0470 7640 S2A CLA
 1463 0471 5274 JMP +3
 1464 0472 1366 TAD (5500)
 1465 0473 3322 DCA MX / -
 1466 /*****
 1467 /CONSOLE
 1468 /*****
 1469 0474 4424 CHECKC8
 1470 0475 4426 C8PASS
 1471 0476 5326 JMP C8RET2 /
 1472 /*****
 1473 0477 4473 PRINT

SEQ 0058

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-16

1474 0500 0522 MX
 1475 0501 2163 ISZ PASS
 1476 0502 5305 JMP +3
 1477 0503 2164 ISZ PASS+1
 1478 0504 7000 NOP
 1479 0505 4572 LAS
 1480 0506 0370 AND (SW3)
 1481 0507 7640 S2A CLA
 1482 0510 4461 HLT
 1483 0511 1114 REBEGIN, TAD DTESTP
 1484 0512 0365 AND (37)
 1485 0513 1364 TAD (TESTS-1)
 1486 0514 3013 DCA A13
 1487 0515 7240 STA
 1488 0516 3115 DCA FIRSTERROR /FIRST ERROR SWITCH FOR EACH PASS
 1489 0517 7340 CLL CLA CMA
 1490 0520 3763* DCA CLKCNT /FOR APT TIMING
 1491 0521 5253 JMP FIRSTTEST
 1492 0522 1100 MX, TEXT "I" / I, C, OR D
 1493 0523 7201 NXUNT, CLA IAC
 1494 0524 3135 DCA UNITCK /SET UP TO TEST UNIT B
 1495 0525 5200 JMP PRETEST /START OVER
 1496 /*****
 1497 /ROUTINE FOR CONSOLE PASS
 1501 1502 0526 6001 C8RET2, ION /CONSOLE PASS
 1503 0527 2163 ISZ PASS
 1504 0530 5333 JMP +3
 1505 0531 2164 ISZ PASS+1
 1506 1507 0532 7000 NOP
 1508 0533 5311 JMP REBEGIN /CONTINUE WITH PROGRAM RETURN
 1509 /*****
 1510 0563 4151
 1511 0564 4727
 1512 0565 0037
 1513 0566 5500
 1514 0567 6127
 1515 0570 0400
 1516 0571 6151
 1517 0572 4236
 1518 0573 2746
 1519 0574 0040
 1520 0575 2732
 1521 0576 1366
 1522 0577 1365
 1523 0600 PAGE /TEST 0 - FLAG DETECTION PART II / "C" LINES VERIFICATION PART I
 1524 /
 1525 /*****
 1526 /*****
 1527 /*****

SEQ 0059

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1528      /IF AN RX01 MICROCONTROLLER IS CABLED TO THE RX8 INTERFACE
1529      /THEN DON'T EXECUTE THIS TEST
1530      /BECAUSE ISSUING THE IOT LCD WITH THE AC = 177
1531      /RESEMBLED A COMMAND TO THE RX01
1532      /
1533      0600 1165   TO,     TAD RXHERE
1534      0601 7650   SNA CLA
1535      0602 5453   NOTESET
1536      0603 3166   DCA GOOD
1537      ****
1538      ****
1539      /
1540      /THE PURPOSE OF THIS TEST IS TO VERIFY THAT THE LCD (LOAD COMMAND REGISTER)
1541      /IOT 67X1 DOES [NOT] SET THE MAINTENANCE FLIP-FLOP WHEN THE CONTENTS
1542      /OF THE AC = 177 AT THE TIME THE LCD IOT IS ISSUED,
1543      /
1544      /
1545      /TECHNICAL NOTE:
1546      /
1547      /IF AN ERROR OCCURS, THEN IT IS ASSUMED [KEY] INIT FAILED TO CLEAR THE
1548      /MAINTENANCE FLIP-FLOP, OR, THAT THE ISSUING OF THE LCD IOT REALLY
1549      / [SET] THE MAINTENANCE FLIP-FLOP INSTEAD OF [CLEARING].
1550      /
1551      / " C " LINES VERIFICATION PART I
1552      /
1553      0604 1377   TAD (177)
1554      0605 4436   LCD          /MAINTENANCE MODE <OFF>
1555      /THE (AC) SHOULD = 0 BECAUSE IOT LCD 67X1 SHOULD CLEAR THE AC
1556      /
1557      0606 7440   SZA
1558      0607 4452   E0,     ERROR           / IOT 67X1 DID NOT CLEAR THE AC
1559      0610 4503   SUBSCOPE
1560      /
1561      /FLAG DETECTION PART II
1562      /
1563      /THE PURPOSE OF THIS TEST IS TO VERIFY THAT ISSUING IOT LCD 67X1 WITH
1564      /THE AC = 177 DOES NOT SET THE MAINTENANCE FLIP-FLOP
1565      /WHICH IN TURN WOULD SET ALL FLAGS
1566      /
1567      /THEREFORE ALL FLAGS SHOULD BE CLEARED
1568      /
1569      0611 4443   STR
1570      0612 4465   OK
1571      0613 4452   E1,     ERROR           /UNEXPECTED TRANSFER REQUEST FLAG
1572      0614 4503   SUBSCOPE
1573      0615 4444   SER
1574      0616 4465   UK
1575      0617 4452   E2,     ERROR           /UNEXPECTED ERROR FLAG
1576      0620 4503   SUBSCOPE
1577      0621 4445   SDN
1578      0622 4465   OK
1579      0623 4452   E3,     ERROR           /UNEXPECTED DONE FLAG
1580      0624 4502   SCOPE
1581      0625 5453   EXIT           / END OF TEST 0
1582      /

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1583      /TEST 1 - DIRECTION OF IOT XDR (67X2) PART I / IOT DECODING PART I
1584      /
1585      /      - " C " LINES VERIFICATION PART II
1586      /
1587      /THE PURPOSE OF THIS TEST IS TO VERIFY THAT
1588      /ISSUING THE IOT XDR (TRANSFER DATA REGISTER) 67X2 DOES [NOT] CLEAR
1589      /THE MAINTENANCE FLIP-FLOP
1590      /
1591      /TECHNICAL NOTE:
1592      /
1593      /THE IOT'S SDN (67X5), AND SER (67X4) ARE NOT TESTED HERE
1594      /BECAUSE IF AN RX01 MICROCONTROLLER IS CABLED TO THE RX8 INTERFACE
1595      /AND IF THE IOT LCD IS ISSUED WITH THE AC = 200
1596      /REALLY CLEARS THE MAINTENANCE FLIP-FLOP
1597      /THEN THE DONE FLAG, AND THE ERROR FLAG SHOULD BE CLEARED, AND
1598      /TRANSFER REQUEST MAY BE SET
1599      /BECAUSE THE CLEARING OF THE MAINTENANCE FLIP-FLOP WOULD HAVE
1600      /RESEMBLED A COMMAND TO THE RX01 MICROCONTROLLER
1601      /
1602      /TECHNICAL NOTE:
1603      /
1604      /IF THE CONTENTS OF THE TRANSFER REGISTER IS NOT = 200, THEN IS MUST
1605      /BE ASSUMED THAT THE SECOND LCD IOT CLEARED THE MAINTENANCE FLIP-FLOP
1606      /OR THAT IOT XDR CLEARED THE MAINTENANCE FLIP-FLOP
1607      /
1608      0626 3166   T1,     DCA GOOD
1609      0627 1376   TAD (200)
1610      0630 4436   LCD          / MAINTENANCE MODE <ON>
1611      /THE (AC) SHOULD = 0 AFTER ISSUING IOT LCD 67X1
1612      /
1613      0631 7440   SZA
1614      0632 4452   E11,    ERROR           / IOT LCD 67X1 FAILED TO CLEAR AC
1615      0633 4503   SUBSCOPE
1616      /
1617      0634 1376   TAD (200)
1618      0635 4436   LCD          / MAINTENANCE MODE <ON>, AGAIN
1619      0636 4441   XDRIN        /CONTENTS OF TRANSFER REGISTER
1620      0637 3167   DCA EAC      /SAVE
1621      0640 1167   TAD EAC
1622      0641 1375   TAD (-200)    /COMPARE WITH "EXPECTED"
1623      0642 7650   SNA CLA
1624      0643 5250   JMP +5        / OK
1625      0644 1376   TAD (200)
1626      0645 3166   DCA GOOD
1627      0646 1167   TAD EAC      / "EXPECTED" RESULT
1628      0647 4452   E10,    ERROR           / "ACTUAL" RESULT
1629      0650 4502   SCOPE
1630      0651 5453   EXIT           /TRANSFER REGISTER NOT =200
1631      /END OF TEST 1
1632      /
1633      / (A) THE SETTING OF THE MAINTENANCE FLIP-FLOP SHOULD "DIRECT SET" ALL
1634      / FLAGS (DONE, TRANSFER REQUEST, AND ERROR).
1635      /
1636      / (B) IF AN RX01 MICROCONTROLLER [IS] CABLED TO THE RX8 INTERFACE,
1637      / THEN THE SETTING OF THE MAINTENANCE FLIP-FLOP WILL ASSERT THE "RUN"

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1638      / LINE (RESEMBLING A FILL BUFFER COMMAND) THUS CAUSING THE RX01
1639      / CONTROLLER TO SETUP FOR A "FILL BUFFER", BUT, HOWEVER, BECAUSE THE
1640      / MAINTENANCE FLIP-FLOP [IS] SET, THE RX8 INTERFACE RECIEVERS
1641      / SHOULD BE DISABLED AND NOT REACTIVE TO THE RX01 MICROCONTROLLER.
1642      /
1643      /WITH ALL FLAGS SET, THE RX8 INTERFACE IOT'S;
1644      /
1645      / SDN = "SKIP ON DONE" (67X5), AND
1646      / SER = "SKIP ON ERROR" (67X4), AND
1647      / STR = "SKIP ON TRANSFER REQUEST" (67X3) SHOULD SKIP
1648      /
1649      /TECHNICAL NOTE:
1650      /
1651      /IF FLAGS ARE "MISSING", IS THE MAINTENANCE MODE FLIP-FLOP REALLY SET ?
1652      /
1653      0652 1375 T2,     TAD (200)
1654      0653 4436 LCD           /* MAINTENANCE <ON>
1655      0654 4445 SDN
1656      0655 4452 E20,    ERROR          /MISSING DONE FLAG
1657      0656 4503 SUBSCOPE
1658      0657 4443 STR
1659      0660 4452 E21,    ERROR          /MISSING TRANSFER REQUEST FLAG
1660      0661 4503 SUBSCOPE
1661      0662 4444 SER
1662      0663 4452 E22,    ERROR          /MISSING ERROR FLAG
1663      0664 4503 SUBSCOPE
1664      /
1665      /ALL FLAGS SHOULD REMAIN " DIRECT SET "
1666      /BECAUSE THE MAINTENANCE FLIP-FLOP SHOULD STILL BE SET.
1667      /
1668      /TECHNICAL NOTE:
1669      /
1670      /IF THE FLAGS ARE "MISSING" THEN IT IS ASSUMED THAT THE PREVIOUS
1671      /FLAG TESTING ACTUALLY [Cleared] THE FLAGS.
1672      /
1673      0665 4445 SDN
1674      0666 4452 E23,    ERROR          /MISSING DONE FLAG
1675      0667 4503 SUBSCOPE
1676      0670 4443 STR
1677      0671 4452 E24,    ERROR          /MISSING TRANSFER REQUEST FLAG
1678      0672 4503 SUBSCOPE
1679      0673 4444 SER
1680      0674 4452 E25,    ERROR          /MISSING ERROR FLAG
1681      0675 4503 SUBSCOPE
1682      /
1683      / " C " LINES VERIFICATION PART III
1684      /
1685      /THE FOLLOWING RX8 INTERFACE IOT'S SHOULD NOT CLEAR THE AC:
1686      /
1687      /IOT'S: SDN(67X5), SER(67X4), OR STR(67X3)
1688      0676 7240 STA
1689      0677 3166 DCA GOOD
1690      0700 1166 TAD GOOD
1691      0701 6755 K67X5B, 6755
1692      0702 7000 NOP

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1693      0703 7650 SNA CLA
1694      0704 4452 E26,    ERROR          / IOT SDN (67X5) CLEARED THE AC
1695      0705 4503 SUBSCOPE
1696      0706 1166 TAD GOOD
1697      0707 6753 K67X3B, 6753
1698      0710 7000 NOP
1699      0711 7650 SNA CLA
1700      0712 4452 E27,    ERROR          / IOT STR (67X3) CLEARED THE AC
1701      0713 4503 SUBSCOPE
1702      0714 1166 TAD GOOD
1703      0715 6754 K67X4B, 6754
1704      0716 7000 NOP
1705      0717 7650 SNA CLA
1706      0720 4452 E28,    ERROR          / IOT SER (67X4) CLEARED THE AC
1707      0721 4502 SCOPE
1708      0722 5453 EXIT          / END OF TEST 2
1709      /TEST 3
1710      /
1711      /RX8 IOT DEVICE CODE VERIFICATION
1712      /
1713      /THE PURPOSE OF THIS TEST IS TO VERIFY THAT ONLY THE DEVICE CODE SELECTED
1714      /BY THE OPERATOR (AC SWITCHES 3-4-5 AT THE START OF THIS PROGRAM) IS ACTIVE.
1715      /
1716      /FIRST SET THE MAINTENANCE FLIP-FLOP, WHICH HAS PREVIOUSLY BEEN VERIFIED TO
1717      /DIRECT SET ALL FLAGS, THEN SEQUENCE THROUGH ALL DEVICE CODES (EXPECT THE
1718      /DEVICE CODE SELECTED AT THE START OF THIS PROGRAM) BY ISSUING IOT SDN 67X5
1719      /(SKIP ON DONE FLAG), WHICH HAS ALSO PREVIOUSLY BEEN VERIFIED TO "SKIP AND
1720      /CLEAR" SUCCESSFULLY.
1721      /
1722      /NOTE:
1723      /
1724      /THE PROGRAM DOES NOT ISSUE THE DEVICE CODE 67X5 WHERE X = POSITION OF AC
1725      /SWITCHES 3-4-5 AT THE START 200 OF THIS PROGRAM,
1726      /***** ****
1727      /***** ****
1728      /THIS TEST HAS BEEN REMOVED
1729      /THIS TEST IS NOT NEEDED IN A SYSTEM ENVIRONMENT.
1730      /TO REPLACE TEST T3 CHANGE LOCATIONS:
1731      /   LOCATION FROM   TO
1732      /   -----   --
1733      /   734      5464  1367
1734      /
1735      /   767      XXXX  0200
1736      /REMOVED MAY 16,1975
1737      /**
1738      /
1739      0723 5453 T3,    EXIT
1740      0724 4436 LCD           / MAINTENANCE <ON>
1741      0725 1774 TAD K67X5A
1742      0726 3166 DCA GOOD
1743      0727 1373 TAD (-7)
1744      0730 3010 DCA A10
1745      0731 1372 TAD (6705)
1746      0732 3341 DCACTIVE, DCA ACTIVE
1747      0733 4502 SCOPE          /REFRESH PROGRAM LOCATION PCSCOPE

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-21

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1748 0734 1166 TAD GOOD
1749 0735 7041 CIA
1750 0736 1341 TAD ACTIVE
1751 0737 7650 SNA CLA
1752 0740 5346 JMP NEXTACTIVE
1753 0741 6775 ACTIVE, 6775
1754 0742 5346 JMP NEXTACTIVE
1755 0743 1341 TAD ACTIVE
1756 0744 4452 E30, ERROR
1757 0745 4502 SCOPE / (AC) = ILLEGAL DEVICE CODE
1758 0746 1371 NEXTACTIVE, TAD (10)
1759 0747 1341 TAD ACTIVE
1760 0750 2010 ISZ A10
1761 0751 5332 JMP DACTIVE
1762 0752 5453 EXIT / END OF TEST 3
1763 0771 0010
1764 0772 6705
1765 0773 7771
1766 0774 6422
1767 0775 7600
1768 0776 0200
1769 0777 0177
1000 PAGE
1770 /TEST 4 - TRANSFER REGISTER DIRECTION TESTING (PART II)
1771 /
1772 / - "C" LINES VERIFICATION PART IV
1773 /
1774 /WITH THE MAINTENANCE FLIP-FLOP SET THE PROGRAM WILL VERIFY THE DIRECTION
1775 /AND TRANSFER MODE (8-BIT MODE INCLUSIVE "OR", AND 12-BIT MODE "JAM")
1776 /TRANSFERS INTO THE ACCUMULATOR FROM THE RX8 TRANSFER REGISTER BY ISSUING
1777 /IOT "XOR" (TRANSFER DATA REGISTER) 67X2 AFTER PREVIOUSLY [LOADING] THE
1778 /THE TRANSFER REGISTER WITH THE CONTENTS OF THE ACCUMULATOR REPRESENT-
1779 /ATIVE OF THE FOLLOWING PATTERNS WHEN THE "LCD" IOT 67X1 IS ISSUED.
1780 /
1781 / (1) 200 - MAINTENANCE MODE <ON>
1782 / (2) 376 -
1783 / (3) 375 -
1784 / (4) 373 - (BYTES 2 THRU 7)
1785 / (5) 367 - (INCLUSIVE "OR" )
1786 / (6) 357 -
1787 / (7) 337 -
1788 / (8) 7677 - (WORD 8 = "JAM" )
1789 /
1790 /THE LCD IOT WILL BE ISSUED A TOTAL OF 8 TIMES.
1791 /
1792 /THE 1ST LCD IOT WILL BE ISSUED WITH THE AC = 200 WHICH INITIALLY SETS THE
1793 /MAINTENANCE FLIP-FLOP THEREBY GUARANTEEING THE CONTENTS OF THE TRANSFER
1794 /REGISTER [ADTER] EACH SUCCEEDING LCD IOT.
1795 /
1796 /LCD IOT'S 2 THUR 8 ARE ISSUED WITH THE ACCUMULATOR CONTAINING THE PATTERNS
1797 /DESCRIBED ABOVE.
1798 /
1799 /ALL PATTERNS EXCEPT WORD 8 (7677) TEST THE INCLUSIVE "OR" TRANSFER OF
1800 /THE RX8 INTERFACE TRANSFER REGISTER. WORD 8 TESTS THE 12-BIT "JAM" TRANSFER.
1801 /

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-22

SEQ 0065

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1802 1000 1377 T4, TAD (200) /MAINTENANCE MODE <UN>
1803 1001 4436 LCD / 3777
1804 1002 7350 CLL STA RAK
1805 1003 3170 DCA BLANK
1806 1004 1170 T4B, TAD BLANK
1807 1005 7120 STL
1808 1006 7500 SMA
1809 1007 7100 CLL
1810 1010 7004 RAL
1811 1011 3170 DCA BLANK
1812 1012 4502 SCOPE / REFRESH PROGRAM LOCATION PCSCOPE
1813 1013 1170 TAD BLANK / (BLANK) = (AC) BEFORE LCD IOT 67X1
1814 1014 4436 LCD / TO
1815 /
1816 / "C" LINES VERIFICATION PART IV
1817 /
1818 /THE PURPOSE OF THIS TEST IS TO VERIFY THAT SUCCEEDING LCD IOT'S(67X1)
1819 /TRANSFER THE (AC) INTO THE DATA REGISTER CLEARING THE ACCUMULATOR
1820 /
1821 1015 3167 DCA EAC / (AC) AFTER ISSUING IOT LCD (67X1)
1822 1016 3166 DCA GOOD / PROGRAM EXPECTS AC = 0
1823 1017 1167 TAD EAC
1824 1020 7440 SZA
1825 1021 4452 E42, ERROR / IOT LCD (67X1) DIDN'T CLEAR THE AC
1826 1022 4503 SUBSCOPE
1827 /
1828 /TRANSFER DIRECTION PART II
1829 /
1830 1023 4441 XDRIN / FROM
1831 1024 3167 DCA EAC
1832 1025 1376 TAD (100)
1833 1026 0170 AND BLANK
1834 1027 7106 RTL
1835 1030 7006 RTL / LINK = 1 FOR 8-BIT MODE
1836 1031 7006 RTL
1837 1032 1170 TAD BLANK
1838 1033 7430 S2L
1839 1034 0375 AND (377) / 8-BIT BYTE "GOOD" MASK
1840 1035 3166 DCA GOOD
1841 1036 1166 TAD GOOD /EXPECTED RESULT
1842 1037 7041 CIA
1843 1040 1167 TAD EAC /ACTUAL RESULT
1844 1041 7650 SNA CLA
1845 1042 5245 JMP .+3 /COMPARED OK
1846 1043 1167 TAD EAC
1847 1044 4452 E40, ERROR / TRANSFER REGISTER NOT = "GOOD"
1848 /CHECK TO SEE IF RUNNING ON A VT78 SYSTEM
1849 1045 4365 JMS VT78CK /VT78/ RETURN +1 IF NOT VT78
1850 1046 5261 JMP E41+1 /VT78 - SKIP FOLLOWING SUBTEST
1851 /
1852 1047 4503 SUBSCOPE
1853 /
1854 /THE TRANSFER REGISTER SHOULD REMAIN UNCHANGED
1855 /FROM THE PREVIOUS XDR IOT (NOT SO ON VT78)
1856 /

```

/RX6 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-23 SEQ 0066

1857 1050 4441 XDRIN / FROM
1858 1051 3167 DCA EAC
1859 1052 1167 TAD EAC /ACTUAL
1860 1053 7041 CIA
1861 1054 1166 TAD GOOD /EXPECTED
1862 1055 7650 SNA CLA
1863 1056 5261 JMP .+3 /COMPARED OK
1864 1057 1167 TAD EAC
1865 1060 4452 E41, ERROR / TRANSFER REGISTER NOT = "GOOD"
1866 1061 4502 SCOPE
1867 1062 1170 TAD BLANK
1868 1063 0376 AND (100)
1869 1064 7640 SZA CLA
1870 1065 5204 JMP 148 /UNTIL (BLANK) = 7677
1871 1066 5453 EXIT / END OF TEST 4
1872 /TEST 5
1873 //
1874 /RX8 IOT DECODING VERIFICATION PART II
1875 //
1876 //*****
1877 //*****
1878 //
1879 //IF AN RX01 CONTROL IS CABLED TO THE RX8 INTERFACE
1880 //THEN DON'T EXECUTE THIS TEST
1881 //BECAUSE THE CLEARING OF THE MAINTENANCE F/F
1882 //RESEMBLES A FILL BUFFER COMMAND (NOT SO ON VT78)
1883 //
1884 //CHECK TO SEE IF RUNNING ON A VT78 SYSTEM
1885 1067 4365 JMS VT78CK /VT78/ RETURN +1 IF NOT VT78
1886 1070 5274 JMP .+4 /VT78 -ALWAYS EXECUTE TEST
1887
1888 1071 1165 T5, TAD RXHERE
1889 1072 7650 SNA CLA
1890 1073 5453 NOTEST
1891 1074 3166 DCA GOOD
1892 //*****
1893 //*****
1894 //
1895 //THE MAINTENANCE FLIP-FLOP HAS PREVIOUSLY BEEN VERIFIED TO SET AND CLEAR.
1896 //THE IOT UNDER TEST SHOULD "SKIP AND CLEAR" (ONLY) ITS RESPECTIVE FLAG.
1897 //ALL OTHER FLAGS SHOULD REMAIN UNCHANGED
1898 //
1899 // (I.E., THE SDN IUI 67X5 SHOULD SKIP AND CLEAR ONLY THE DONE FLAG, ALL
1900 //OTHER FLAGS SHOULD REMAIN SET)
1901 //
1902 1075 1377 TAD (200)
1903 1076 4436 LCD
1904 1077 4436 LCD / MAINTENANCE <ON> / <OFF>
1905 1100 4441 XDRIN
1906 1101 7440 SZA
1907 1102 4452 E56, ERROR /TRANSFER REGISTER NOT = 0
1908 1103 4503 SUBSCOPE
1909 1104 4445 SDN
1910 1105 4452 E50, ERROR /DONE FLAG WASN'T SET, OR
1911 1106 4503 SUBSCOPE /IOT LCD OR XDR CLEARED THE DONE FLAG

/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-24 SEQ 0067

1912 1107 4445 SDN
1913 1110 4465 OK
1914 1111 4452 E53, ERROR /IOT SDN DIDN'T "SKIP AND CLEAR"
1915 1112 4503 SUBSCOPE
1916 1113 4443 STR
1917 1114 4452 E51, ERROR /TRANSFER REQUEST FLAG WASN'T EVER SET, OR
1918 1115 4503 SUBSCOPE /IOT LCD, OR SDN OR XDR CLEARED THE TR FLAG
1919 1116 4443 STR
1920 1117 4465 OK
1921 1120 4452 E54, ERROR /IOT STR DIDN'T "SKIP AND CLEAR"
1922 1121 4503 SUBSCOPE SER
1923 1122 4444 E52, ERROR /ERROR FLAG WASN'T EVER SET, OR
1924 1123 4452 SUBSCOPE /IOTS LCD OR SDN OR XDR OR STR CLEARED THE ERROR FLAG
1925 1124 4503 SER
1926 1125 4444 SER
1927 1126 4465 OK
1928 1127 4452 E55, ERROR /IOT SER DIDN'T "SKIP AND CLEAR"
1929 1130 4502 SCOPE /END OF TEST 5
1930 1131 5453 EXIT / END OF TEST 4
1931 /TEST 6 - INTERRUPT TEST PART I / IOT DECODING VERIFICATION PART III
1932 //
1933 /INTERRUPT TEST PART I
1934 //
1935 //THE MAINTENANCE FLIP-FLOP HAS PREVIOUSLY BEEN VERIFIED TO DIRECT
1936 // [SET] ALL FLAGS AND THE INTERFACE IOT -SKIP ON DONE- "SDN" 67X5 WAS
1937 //FOUND TO "SKIP AND CLEAR" SUCCESSFULLY,
1938 //
1939 //FIRST SET THE MAINTENANCE FLIP-FLOP WHICH IN TURN SETS ALL FLAGS.
1940 //
1941 //THEN ISSUE IOT INTR 67X6 WITH THE AC = 0 [CLEARING] THE RX8 INTERRUPT ENABLE
1942 //NO INTERRUPTS SHOULD OCCUR
1943 //
1944 1132 4507 T6, WAITTY
1945 1133 1374 TAD (E60)
1946 1134 3002 DCA IPI
1947 1135 1377 TAD (200)
1948 1136 4436 LCD
1949 1137 4446 INTR /INTERRUPT ENABLE FLIP-FLOP <OFF>
1950 1140 7000 NOP /...WAIT
1951 / NOP /...PLenty
1952 1141 7410 SKP /...OF TIME
1953 1142 4452 E60, ERROR /UNEXPECTED INTERRUPT
1954 1143 4503 SUBSCOPE
1955 //*****
1956 //*****
1957 //*****
1958 //
1959 //IF AN RX01 MICRO-CONTROLLER IS CABLED TO THE RX8 INTERFACE
1960 //THEN DON'T EXECUTE THE REMAINING PORTION OF THIS TEST
1961 //BECAUSE THE CLEARING OF THE MAINTENANCE FLIP-FLOP RESEMBLES A FILL BUFFER COMMAND
1962 //TO THE RX01 MICROCONTROLLER (NOT SO ON VT78)
1963 //
1964 //CHECK TO SEE IF RUNNING ON A VT78 SYSTEM
1965 1144 4365 JMS VT78CK /VT78/ RETURN +1 IF NOT VT78
1966 1145 5351 JMP .+4 /VT78 -ALWAYS EXECUTE TEST

```

1967
1968 1146 1165 TAD RXHERE
1969 1147 7650 SNA CLA
1970 1150 5453 NOTET
1971 /
1972 ****
1973 ****
1974 /
1975 /IOT DECODING PART III- IOT INTR 67X6 DECODING VERIFICATION
1976 /
1977 /TECHNICAL NOTE:
1978 /
1979 /ALL FLAGS SHOULD REMAIN SET
1980 /IF ANY FLAG IS MISSING,
1981 /THEN IT IS ASSUMED THAT IOT "INTR" 67X6 CLEARED THE FLAG(S)
1982 /
1983 1151 4436 LCD /MAINTENANCE MODE <OFF>
1984 1152 4446 INTR /DISABLE THE INTERRUPT ENABLE F/F
1985 1153 4445 SDN
1986 1154 4452 E61, ERROR /MISSING DONE FLAG
1987 1155 4503 SUBSCOPE
1988 1156 4443 STR
1989 1157 4452 E62, ERROR /MISSING TRANSFER REQUEST FLAG
1990 1160 4503 SUBSCOPE
1991 1161 4444 SER
1992 1162 4452 E63, ERROR /MISSING ERROR FLAG
1993 1163 4502 SCOPE
1994 1164 5453 EXIT / END OF TEST 6
1995 /ROUTINE TO CHECK IF RUNNING ON A VT78 SYSTEM
1996 /
1997 1165 0000 VT78CK, 0
1998 1166 1022 TAD 22 /GET LOC 22 (HCW2)
1999 1167 0373 AND (1000 /TEST BIT 2
2000 1170 7650 SNA CLA /IS THIS A VT78 SYSTEM?
2001 1171 2365 ISZ VT78CK /NO - BUMP RETURN
2002 1172 5765 JMP I VT78CK /RETURN
2003
2004 1173 1000
2005 1174 1142
2006 1175 0377
2007 1176 0100
2008 1177 0200
2009 1200 PAGE
2010 /
2011 /TEST 7 - INTERRUPT TEST PART II
2012 /
2013 /INTERRUPT TEST PART II
2014 /
2015 /THE MAINTENANCE FLIP-FLOP HAS PREVIOUSLY BEEN VERIFIED TO DIRECT
2016 /ISET1 ALL FLAGS AND THE INTERFACE IOT "SKIP ON DONE" "SDN" 67X5 WAS
2017 /FOUND TO "SKIP AND CLEAR" SUCCESSFULLY,
2018 /
2019 /FIRST SET THE MAINTENANCE FLIP-FLOP
2020 /WHICH SHOULD DIRECT SET THE DONE FLAG,
2021 /THEN BY SETTING THE RX01 INTERRUPT ENABLE

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2021 /BY ISSUING THE IOT "INTR" 67X6 WITH THE AC = 1,
2022 /
2023 /AN INTERRUPT REQUEST SHOULD BE ASSERTED.
2024 /
2025 /THE PROGRAM IS EXPECTING AN INTERRUPT.
2026 /
2027 /TECHNICAL NOTE:
2028 /
2029 /IF AN INTERRUPT DOES NOT OCCUR, THEN IT IS ASSUMED THAT ISSUING THE IOT
2030 /"INTR" 67X6 DID NOT SET THE RX8 INTERRUPT ENABLE, OR INTERRUPT REQUEST
2031 /
2032 1200 4507 T7, WAITTY
2033 1201 1377 TAD (200) /MAINTENANCE <ON>
2034 1202 4436 LCD
2035 1203 1376 TAD (T7OK)
2036 1204 3002 DCA IPI
2037 1205 6001 ION /*SEE FOOTNOTE NEXT PAGE
2038 1206 7201 CLA IAC
2039 1207 4446 INTR /RX01 INTERRUPT ENABLE <ON>
2040 1210 7000 NOP
2041 NOP
2042 /
2043 /PROGRAM NOTE:
2044 /
2045 /CLEAR PROGRAM LOCATION "GOBIT" BECAUSE THE TIME FOR THE INTERRUPT
2046 /TO OCCUR HAS EXPIRED (IF IT WAS EVER GOING TO OCCUR THAT IS)
2047 1211 3154 DCA GOBIT
2048 1212 4452 E70, ERROR /MISSING INTERRUPT
2049 1213 4502 T7OK, SCOPE
2050 1214 5453 EXIT / END OF TEST 7
2051 /TEST 10
2052 /
2053 /INTERRUPT TEST (PART III)
2054 /
2055 /IOT INTR 67X6 SHOULD CLEAR THE INTERRUPT ENABLE FLIP-FLOP, THEN
2056 /
2057 /WITH ALL FLAGS SET, NO INTERRUPTS SHOULD OCCUR
2058 /
2059 /TECHNICAL NOTE:
2060 /
2061 /IF AN UNEXPECTED PROGRAM INTERRUPT OCCURS FROM APPROXIMATELY THIS PC
2062 /THEN THE RX PROGRAM INTERRUPT REQUEST TOOK TO LONG TO SET
2063 /FROM THE PREVIOUS TEST.
2064 /
2065 /* FOOTNOTE:
2066 /
2067 /THIS IOT "ION" IS ISSUED HERE BECAUSE - IF AN UNEXPECTED PROGRAM
2068 /INTERRUPT HAD OCCURRED IN THE PREVIOUS TEST AND AC SW3 = 1 DIRECTING
2069 /THE PROGRAM NOT TO PRINT AN ERROR - THEN THE PDP'S INTERRUPT FACILITY
2070 /WOULD BE <OFF> - THEREFORE NEVER EXECUTING THIS TEST PROPERLY
2071 /
2072 1215 4507 T10, WAITTY
2073 1216 4446 INTR /DISABLE RX8 INTERRUPT ENABLE
2074 1217 1375 TAD (E100)
2075 1220 3002 DCA IPI

```

```

2076 1221 6001 ION /* SEE FOOTNOTE ABOVE
2077 1222 1377 TAD (200)
2078 1223 4436 LCD
2079 1224 7000 NOP
2080 1225 7410 SKP
2081 1226 4452 E100, ERROR /UNEXPECTED INTERRUPT
2082 1227 4502 SCOPE
2083 1230 5453 EXIT / END OF TEST 10
2084 /TEST 11
2085 /
2086 /INTERRUPT TEST (PART IV)
2087 /
2088 ****
2089 ****
2090 /
2091 /IF AN RX01 CONTROL IS CABLED TO THE RX8 INTERFACE
2092 /THEN DON'T EXECUTE THIS TEST
2093 /BECAUSE THE CLEARING OF THE MAINTENANCE F/F
2094 /RESEMBLES A FILL BUFFER COMMAND
2095 /
2096 /CHECK TO SEE IF RUNNING ON A VT78 SYSTEM
2097 1231 4774* JMS VT8CK /VT78/ RETURN +1 IF NOT VT78
2098 1232 5236 JMP .+4 /VT78 -ALWAYS EXECUTE TEST
2100 1233 1165 T11, TAD RXHERE
2101 1234 7650 SNA CLA
2102 1235 5453 NOTE1
2103 ****
2104 ****
2105 /
2106 /TOGLGING THE MAINTENANCE MODE <ON> / <OFF> SETS ALL FLAGS AND
2107 /
2108 /PERMITS IOT SDN TO CLEAR THE DONE FLAG
2109 /
2110 /THEREFORE NO INTERRUPTS SHOULD OCCUR (ONLY DONE FLAG RAISES AN INTERRUPT REQUEST)
2111 /
2112 / (EVEN THOUGH THE RX01 INTERRUPT ENABLE IS ! )
2113 /
2114 1236 4507 WAIT1
2115 /
2116 1237 1377 TAD (200)
2117 1240 4436 LCD
2118 1241 4436 LCD /MAINTENANCE <ON> / <OFF>
2119 1242 4445 SDN
2120 1243 7000 NOP
2121 1244 1373 NOP /CLEAR THE DONE FLAG
2122 /
2123 1245 3002 DCA IPI
2124 1246 7201 CLA IAC
2125 1247 4446 INTR /RX01 INTERRUPT ENABLE <ON>
2126 1250 7000 NOP
2127 /
2128 1251 7330 STL CLA RAR
2129 1252 4446 E110, INTR /RX01 INTERRUPT ENABLE <OFF>
2130 1253 1154 TAD GOBIT

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2131 1254 7700 SMA CLA
2132 1255 4452 ERROR /UNEXPECTED INTERRUPT
2133 1256 4502 SCOPE
2134 1257 5453 EXIT / END OF TEST 11
2135 /TEST 12 - INITIALIZE TEST PART II [PROGRAMMED] / INTERRUPT TEST PART V
2136 /
2137 ****
2138 ****
2139 /
2140 /IF AN RX01 IS CABLED TO THE RX8 THEN DON'T EXECUTE T12
2141 /
2142 /BUT EXECUTE ALT12 (THE ALTERNATIVE TEST)
2143 /
2144 1260 1165 T12, TAD RXHERE
2145 1261 7650 SNA CLA
2146 1262 5772* JMP ALT12
2147 ****
2148 ****
2149 /
2150 /INTERRUPT TEST PART V / INITIALIZE TEST PART II [PROGRAMMED]
2151 /
2152 /THE PURPOSE OF THIS TEST IS TO VERIFY THAT IOT INIT CLEARS THE INTERRUPT
2153 /ENABLE FLIP-FLOP WHEN SET
2154 /
2155 1263 1371 TAD (E124)
2156 1264 3002 DCA IPI
2157 1265 7201 CLA IAC
2158 1266 4446 INTR / SET THE RX8 INTERRUPT ENABLE F/F
2159 1267 4450 INITB
2160 1270 4451 CKUNIT /VT78/SETUP FOR UNIT A OR B
2161 1271 3154 DCA GOBIT / ISSUE INIT IOT 67X7
2162 /...BUT AN INTERRUPT SHOULD NOT OCCUR
2163 /
2164 /IF AN INTERRUPT OCCURS THEN IOT INIT FAILED TO CLEAR
2165 /
2166 /THE RX8 INTERRUPT ENABLE FLIP-FLOP
2167 /
2168 1272 1377 TAD (200)
2169 1273 4436 LCD
2170 1274 4436 LCD / MAINTENANCE MODE <ON> / <OFF>
2171 /
2172 /THE DONE FLAG SHOULD BE SET, BUT NO INTERRUPTS SHOULD OCCUR
2173 /
2174 1275 7330 STL CLA RAR
2175 /
2176 /RETURN TO HERE IF AN INTERRUPT OCCURED
2177 /
2178 1276 4446 E124, INTR / RX8 INTERRUPT ENABLE <OFF>
2179 1277 1154 TAD GOBIT
2180 1300 7700 SMA CLA
2181 1301 4452 ERROR / IOT INIT 67X7 DID NOT CLEAR THE IE F/F
2182 1302 4503 SUBSCOPE
2183 /
2184 /IOT "INIT" 67X7 SHOULD CLEAR THE RX8 INTERFACE TRANSFER REGISTER, THE
2185 /MAINTENANCE FLIP-FLOP, AND ALL FLAGS (DONE, TRANSFER REQUEST, AND 'ERROR').
```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-29 SEQ 0072

```

2186
2187 1303 7240 STA
2188 1304 4436 LCD /ALL 1'S TO TRANSFER REGISTER
2189 1305 4450 INITB / IOT 67X7
2190 1306 4451 CKUNIT /VT78/SETUP FOR UNIT A OR B
2191 1307 4445 SDN
2192 1310 4465 OK
2193 1311 4452 E120, ERROR /UNEXPECTED DONE FLAG
2194 1312 4503 SUBSCOPE
2195 1313 4443 STR
2196 1314 4465 OK
2197 1315 4452 E121, ERROR /UNEXPECTED TRANSFER REQUEST FLAG
2198 1316 4503 SUBSCOPE
2199 1317 4444 SER
2200 1320 4465 OK
2201 1321 4452 E122, ERROR /UNEXPECTED ERROR FLAG
2202 1322 4503 SUBSCOPE
2203 1323 3166 DCA GOOD / PROGRAM EXPECTS TRANSFER REGISTER = 0
2204 1324 4441 XDIN
2205 1325 7440 SZA
2206 1326 4452 E123, ERROR /TRANSFER REGISTER NOT = 0
2207 1327 4502 SCOPE
2208 /
2209 /****** */
2210 /****** */
2211 /
2212 /*NO MORE RX8 INTERFACE TESTS EXIST
2213 /
2214 /*IF AN RX01 CONTROL IS CABLED TO THE RX8 INTERFACE
2215 /
2216 /*THEN CONTINUE WITH THE NORMAL FLOW OF TESTING
2217 /
2218 1100 XI=1100
2219 /
2220 /* END OF PASS " I "
2221 /
2222 1330 4464 LOCKUP
2223 1331 1370 TAD (XI)
2224 1332 5767* JMP NOMORETESTS
2225 /****** */
2226 /****** */
2227 1333 1333 XSCOPE, .
2228 1334 7300 CLA CLL
2229 1335 1365 TAD ERRORS
2230 1336 7640 SZA CLA
2231 1337 5357 JMP SCOPING
2232 /*NO ERROR HAS BEEN DETECTED HERE
2233 /
2234 /*JUST SET (PCSCOPE)=THE FIRST ADDRESS OF THE SCOPE LOOP
2235 /
2236 /* (IN CASE ANY ERRORS ARE EVER DETECTED LATER)
2237 /
2238 1340 3365 NOSCOPE, DCA ERRORS
2239 1341 1333 TAD XSCOPE
2240 1342 3366 DCA PCSCOPE

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-30 SEQ 0073

```

2241 1343 5733 JMP I XSCOPE
2242 / " SUBSCOPE "
2243 /
2244 1344 1344 XSSCOPE, .
2245 1345 1344 TAD XSSCOPE
2246 1346 3333 DCA XSSCOPE
2247 1347 1365 TAD ERRORS
2248 1350 7650 SNA CLA
2249 1351 5733 JMP I XSCAPE
2250 /*ERRORS DO EXIST
2251 /
2252 /*IF THIS ERROR IS THE SAME AS THE ADDRESS WITHIN THE PROGRAM LOCATION
2253 /*PCSSCOPE, THEN THIS IS A SCOPE LOOP
2254 /
2255 /*IF NOT, THEN EXIT
2256 /
2257 1352 1333 TAD XSCOPE
2258 1353 7041 CIA
2259 1354 1364 TAD EPSCOPE
2260 1355 7640 SZA CLA
2261 1356 5733 JMP I XSCOPE
2262 /*THIS IS A SCOPING LOOP
2263 /
2264 1357 4572 SCOPING, LAS /TEST BIT 1
2265 1360 7004 RAL
2266 1361 7700 SMA CLA CLL
2267 1362 5340 JMP NOSCOPE
2268 1363 5766 JMP I PCSCOPE
2269 1364 0000 EPSCOPE, 0 /ADDRESS +1 OF "SCOPE" OR "SUBSCOPE"
2270 1365 0000 ERRORS, 0 / > 0 IF AN ERROR HAS BEEN DETECTED (FOR THIS TEST)
2271 1366 0000 PCSCOPE, 0 / FIRST ADDRESS OF SCOPE LOOP
2272 1367 0465
2273 1370 1100
2274 1371 1276
2275 1372 1400
2276 1373 1252
2277 1374 1165
2278 1375 1226
2279 1376 1213
2280 1377 0200
2281 1400 PAGE
2282 /ALTERNATE TEST 12 - VERIFICATION OF [INIT]
2283 /INITIALIZE TEST PART II
2284 /
2285 /*THIS TEST IS EXECUTED IN PLACE OF T12
2286 /
2287 /*BECAUSE AN RX01 CONTROLLER IS CABLED TO THE RX8 INTERFACE
2288 /
2289 /*IOT "INIT" 67X7 WILL PERFORM AN IMPLIED READ OF TRACK 0 SECTOR 1
2290 /
2291 /*(IF DRIVE 0 IS READY)
2292 /
2293 /*THEREFORE THE DONE FLAG SHOULD SET AT THE END OF THAT IMPLIED READ.
2294 /

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-31

SEQ 0074

```

2295      /TECHNICAL NOTE:
2296      /
2297      /IF AN ERROR FLAG IS SET (AND DRIVE 0 IS READY) THEN THE ERROR MAY HAVE
2298      /BEEN THE RESULT FROM THE [IMPLIED READ SECTOR 0]
2299      /
2300      1400 4502 ALT12, SCOPE
2301      1401 4450 INITB
2302      1402 4451 CKUNIT           /VT78/SETUP FOR UNIT A OR B
2303      1403 4443 ALT12LOOP, STR
2304      1404 7410 SKP
2305      1405 5212 JMP EA120      /UNEXPECTED TRANSFER REQUEST FLAG
2306      1406 4445 SDN
2307      1407 5203 JMP ALT12LOOP   /WAIT FOR THE DONE FLAG
2308      1410 4443 STR
2309      1411 4465 OK
2310      1412 4452 EA120, ERROR    /UNEXPECTED TRANSFER REQUEST
2311      1413 4503 SUBSCOPE
2312      1414 4444 SER
2313      1415 4465 OK
2314      1416 4452 EA121, ERROR    /UNEXPECTED ERROR FLAG
2315      1417 4503 SUBSCOPE
2316      1420 1777* TAD UNITS     /UNITS SELECTED BY OPERATOR
2317      1421 7710 SPA CLA
2318      1422 1376 TAD (40)       /PROGRAM EXPECTS DRIVE 0 TO BE READY
2319      /
2320      /
2321      /////////////////////////////////
2322      /
2323      / 4      5      -      -      8      9      10     11      /
2324      /
2325      / SEL          WRITE INIT PAR
2326      / DRIVE DD      PROTECT [DONE] CRC
2327      / RDY          (N/A)
2328      /
2329      /////////////////////////////////
2330      /
2331      /
2332      1423 7107 CLL IAC RTL      / 4 [INIT] DONE, OR 204
2333      1424 3166 DCA GOOD
2334      1425 4441 XDRIN          / "ACTUAL" STATUS AT DONE
2335      1426 3170 DCA BLANK
2336      1427 1170 TAD BLANK
2337      1430 0136 AND MASK        /7677 FOR STANDARD 8 - 277 FOR VT78
2338      1431 3167 DCA EAC          / "ACTUAL" MINUS DELETED DATA (IF ANY)
2339      1432 1167 TAD EAC
2340      1433 7041 CIA
2341      1434 1166 TAD GOOD         /EXPECTED STATUS
2342      1435 7650 SNA CLA
2343      1436 5241 JMP *+3          /COMPARED OK
2344      1437 1167 TAD EAC
2345      1440 4452 EA122, ERROR    /TRANSFER REGISTER NOT = "GOOD"
2346      1441 4503 SUBSCOPE        /NOTE: DRIVES NOT UNDER TEST MUST HAVE DOORS OPEN
2347      /
2348      /READ THE B-CODE STATUS AND EXPECT = 0
2349      /

```

/RX8 RX01 DTAGNOSIIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-32

SEQ 0075

```

2350      /PROGRAMMING NOTE:
2351      /
2352      /THE PROGRAM SAVES THE CONTENTS OF "GOOD" FOR REFERENCES WITHIN SUBROUTINE "XRST"
2353      /
2354      /BECAUSE "GOOD" IS REFRESHED WITHIN PROGRAM SUBROUTINE "XRSTB"
2355      /
2356      1442 1166 TAD GOOD
2357      1443 3170 DCA BLANK
2358      1444 4477 RS1B
2359      1445 7650 SNA CLA
2360      1446 5252 JMP *+4
2361      1447 3166 DCA GOOD         /PROGRAM EXPECTS 0
2362      1450 1167 TAD EAC
2363      1451 4452 EA123, ERROR    /B-CODE NOT = 0
2364      1452 4503 SUBSCOPE
2365      /
2366      /READ THE CONTENTS OF THE RX01 STATUS REGISTER USING THE COMMAND # 5
2367      /
2368      /THIS STATUS SHOULD = THE STATUS IN THE TRANSFER REGISTER AT ERROR/DONE
2369      /
2370      1453 4476 RST             / "READ STATUS" (COMMAND # 5)
2371      /
2372      1454 5453 EXIT            / END OF TEST ALT12 (TEST 12)
2373      /THE PURPOSE OF THESE TESTS IS TO VERIFY THE TRANSFER LENGTH OF THE FUNCTION
2374      / "FILL BUFFER" AND "EMPTY BUFFER" OF THE RX01 MICROCONTROLLER
2375      /
2376      /64' TRANSFERS SHOULD OCCUR FOR 12-BIT MODE, AND
2377      /128 TRANSFERS SHOULD OCCUR FOR 8-BIT MODE
2378      /
2379      /THE SECTOR BUFFER IS FILLED WITH A COUNT PATTERN
2380      /
2381      / WORD/BYTE 0 = 0
2382      /
2383      / WORD 2 = 0202
2384      / BYTE 2 = 2
2385      /
2386      / WORD 77 = 7777
2387      / BYTE 177 = 177
2388      /
2389      /FILL BUFFER 8-BIT MODE
2390      /
2391      1455 1375 T16, TAD (100)
2392      /
2393      /FILL BUFFER 12-BIT MODE
2394      /
2395      1456 4436 T13, LCD          /ISSUE THE COMMAND
2396      1457 1375 TAD (100)
2397      1460 0112 AND COMMAND
2398      1461 7640 SZA CLA
2399      1462 7307 CLL CLA IAC RTL   / 4
2400      1463 1374 TAD (6000)
2401      1464 3132 DCA TESTP
2402      1465 4455 GETAPATTERN
2403      1466 1373 TAD (WBUFFER=1)
2404      1467 3010 DCA A10         /PROGRAMS "WRITE" BUFFER

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-33

SEQ 0076

```

2405 1470 1372 TAD (-WBUFFER+1)
2406 1471 3133 DCA XA10 / -STARTING ADDRESS OF WRITE BUFFER
2407 1472 4277 FB, JMS FBEB
2408 1473 5453 EXIT / ** END OF TESTS 13, OR 16
2409 1474 1410 TAD I A10
2410 1475 4442 XOROUT
2411 1476 5272 JMP FB / AND "FILL THE BUFFER"
2412 / FILL / EMPTY BUFFER SUBROUTINE FOR TESTS: *** 13, 16 / 14, 17 ***
2413 /
2414 1477 1477 FBEB, .
2415 1490 4443 STR
2416 1501 5304 JMP +3 /WAIT FOR TRANSFER REQUEST FLAG
2417 1502 2277 ISZ FBEB
2418 1503 5677 JMP I FBEB
2419 1504 4445 SDN
2420 1505 5300 JMP FBEB+1 /WAIT FOR THE DONE FLAG
2421 1506 3006 DCA 6 /FIRST TIME FOR WAIT,
2422 1507 1112 TAD COMMAND
2423 1510 3170 DCA BLANK
2424 1511 4444 SER
2425 1512 4465 OK
2426 1513 4452 E130, ERROR /UNEXPECTED ERROR FLAG
2427 1514 4503 SUBSCOPE
2428 /
2429 / 64 OR 128 BYTES SHOULD HAVE BEEN TRANSFERRED IN OR OUT
2430 /
2431 1515 1375 TAD (100)
2432 1516 0112 AND COMMAND / 200 FOR 8-BIT MODE
2433 1517 1375 TAD (100)
2434 1520 3166 DCA GOOD
2435 1521 1166 TAD GOOD
2436 1522 7041 CIA / 100 FOR 12-BIT MODE
2437 1523 1010 TAD A10
2438 1524 1133 TAD XA10
2439 1525 7440 SZA /SKIP IF TRANSFERS OK
2440 1526 4452 E131, ERROR / (AC) = -# MEANS NOT ENOUGH TRANSFERS
2441 1527 4502 SCOPE / (AC) > 0 MEANS TOO MANY TRANSFERS
2442 1530 5677 JMP I FBEB /RETURN IS TO EXIT
2443
2444
2445 /*****
2446 /CONSOLE PACKAGE
2447 /*****
2448 /*****
2449 /CONSOL
2450 /*****
2451

2452 1531 0000 PNTID, 0 /PRINT BEGIN MESSAGES
2453 1532 6007 CAF /TO REPLACE A CLEAR SWITCH
2454 1533 4470 APT8 /TEST FOR APT SYSTEM,
2455 1534 4473 PRINT
2456 1535 6472 MIDENTIFICATION /ID MESSAGE
2457 1536 4473 PRINT
2458 1537 6453 REMOVE /REMOVE DIAGNOSTIC DISKETTE
2459 1540 4473 PRINT

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-34

SEQ 0077

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2460 1541 6505 MSELECT /SELECT PARAMETERS
2461 1542 7200 CLA
2462 1543 3135 DCA UNITCK /CLEAR IT
2463 1544 5731 JMP I PNTID /EXIT PNTID
2464 /*****
2465 /
2466 /
2467 /
2468 /
2469 /
2470 /ROUTINE TO DETERMINE IF ON APT=8. IF APT=8 IS SELECTED
2471 /THEN CONSOLE AND TEST PARAMETER SELECTION FUNCTIONS ARE NOP,
2472 /IF NOT ROUTINE IS NOP.
2473 /
2474 1545 0000 XAPT8, 0
2475 1546 7300 CLA CLL
2476 1547 4472 CHEK22
2477 1550 7410 SKP /ON APT=8
2478 1551 5745 JMP I XAPT8
2479 1552 1022 TAD 22
2480 1553 0361 AND K7377 /NOP CONSOLE PACKAGE
2481 1554 3022 DCA 22 /RESTORE 22
2482 1555 1173 TAD K7000
2483 1556 3762 DCA 1 HLTNOP
2484 1557 1020 TAD 20 /GET TEST PARAMETERS,
2485 1560 5771 JMP AROUND=2 /MAIN FLOWUF PROGRAM,
2486 1561 7377 K7377, 7377
2487 1562 3316 HLTNOP, C8RET4=1
2488 1571 0231
2489 1572 0665
2490 1573 7113
2491 1574 6000
2492 1575 0100
2493 1576 0040
2494 1577 4235
2495 1600 PAGE
2496 /SECTOR BUFFER ADDRESSING VERIFICATION TESTS
2497 /
2498 /OPERATIONAL NOTE:
2499 / (1). FOR TEST 14 TO EMPTY THE BUFFER IN 12-BIT MODE SUCCESSFULLY, TEST 13
2500 / MUST HAVE FILLED THE BUFFER IN 12-BIT MODE SUCCESSFULLY.
2501 /
2502 / (2). FOR TEST 17 TO EMPTY THE BUFFER IN 8-BIT MODE SUCCESSFULLY, TEST 16
2503 / MUST HAVE FILLED THE BUFFER IN 8-BIT MODE SUCCESSFULLY
2504 /
2505 /THE PURPOSE OF THESE TESTS IS TO VERIFY THAT THE CONTENTS OF THE SECTOR
2506 /BUFFER REMAIN UNCHANGED AFTER THE PREVIOUS EMPTY BUFFER 8-BIT MODE TEST, AND
2507 /AFTER THE PREVIOUS EMPTY BUFFER 12-BIT MODE TEST
2508 /
2509 1600 7410 T20, SKP /VERIFY EMPTY BUFFER 8-BIT MODE
2510 /
2511 1601 7410 T15, SKP /VERIFY EMPTY BUFFER 12-BIT MODE
2512 /
2513 /THE PURPOSE OF THESE TESTS IS TO VERIFY THE CONTENTS OF THE SECTOR BUFFER AFTER

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2514          /THE PREVIOUS FILL BUFFER 8-BIT MODE TEST, AND THE PREVIOUS FILL BUFFER
2515          /12-BIT MODE TEST.
2516          /
2517          /EMPTY BUFFER 8-BIT MODE
2518          /
2519  1602  1377  T17,    TAD (40
2520          /
2521          /EMPTY BUFFER 12-BIT MODE
2522          /
2523  1603  7105  T14,    CLL IAC RAL
2524  1604  4436  LCD           /ISSUE THE COMMAND 2 OR 102
2525  1605  1376  TAD (100)
2526  1606  0112  AND COMMAND
2527  1607  7640  SZA CLA
2528  1610  7307  CLL CLA IAC RTL
2529  1611  1375  TAD (6000)
2530  1612  3132  DCA TESTP
2531  1613  4455  GETAPATTERN / COUNT PATTERN ( PATTERN #6)
2532  1614  1374  TAD (RBUFFER=1)
2533  1615  3010  DCA A10   /PROGRAMS "READ" BUFFER
2534  1616  1373  TAD (=RBUFFER+1)
2535  1617  3133  DCA XA10  / =STARTING ADDRESS OF READ BUFFER
2536  1620  1010  TAD A10
2537  1621  3011  DCA A11  /
2538  1622  4772*  EB,    JMS F6EB
2539  1623  5230  JMP EBCOMPARE
2540  1624  3410  DCA 1 A10
2541  1625  4441  XDRIN
2542  1626  3411  DCA 1 A11  / AND "EMPTY THE BUFFER"
2543  1627  5222  JMP E8  /
2544          /COMPARE THE CONTENTS OF THE SECTOR BUFFER
2545          /
2546          /WITH THE GOOD DATA IN "WBUFFER"
2547          /
2548  1630  1371  ERCOMPARE, TAD (WBUFFER=1)
2549  1631  3133  DCA XA10  /EXPECTED
2550  1632  1374  TAD (RBUFFER=1)
2551  1633  3134  DCA XA11  /ACTUAL
2552  1634  3113  DCA COMPERROR  / = 1 IF COMPARE ERROR
2553          /
2554  1635  2133  EBLOOP, ISZ XA10
2555  1636  2134  ISZ XA11
2556  1637  7100  CLL
2557  1640  1376  TAD (100)
2558  1641  0112  AND COMMAND
2559  1642  7640  SZA CLA
2560  1643  7120  STL           /SET LINK IF 8-BIT MODE
2561  1644  1533  TAD I XA10
2562  1645  7430  SZL
2563  1646  0370  AND (377)
2564  1647  3166  DCA GOOD
2565  1650  1166  TAD GOOD
2566  1651  7041  CIA
2567  1652  1534  TAD I XA11
2568  1653  7650  SNA CLA

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2569  1654  5263  JMP EBUK
2570          /A COMPARE ERROR HAS OCCURED
2571          /
2572          /INCORRECT DATA WAS TRANSFERRED FROM THE RX01 CONTROL SECTOR BUFFER
2573          /TO THE RX8 INTERFACE AND SAVED WITHIN PROGRAM LOCATIONS BEGINNING WITH "RBUFFER"
2574          /
2575          /THAT DATA, HOWEVER, MAY HAVE BEEN TRANSFERRED INCORRECTLY *TOP*
2576          /THE RX01 CONTROL FROM THE RX8 INTERFACE PREVIOUSLY WITHIN T12, OR T15
2577          /
2578  1655  1367  TAD (-WBUFFER)
2579  1656  1133  TAD XA10
2580  1657  3170  DCA BLANK
2581  1660  1534  TAD I XA11
2582  1661  4452  E140,  ERROR           /ACTUAL WORD/BYTE FROM SECTOR BUFFER
2583  1662  4502  SCOPE
2584  1663  1376  EBOK,   TAD (100)  /IS NOT = EXPECTED
2585  1664  0112  AND COMMAND
2586  1665  1376  TAD (100)
2587  1666  7041  CIA
2588  1667  1133  TAD XA10
2589  1670  1366  TAD (-WBUFFER+1)
2590  1671  7640  SZA CLA
2591  1672  5235  JMP EBSLOOP
2592          /END OF TESTS 14, 15, 17, OR 20
2593          /
2594          /...ALSO
2595          /
2596          /END OF TESTS 31, 32, OR 33
2597          /
2598  1673  5453  EXIT
2599          /
2600          /SECTOR BUFFER DATA TESTING
2601          /
2602          /THE PURPOSE OF THESE TESTS IS TO VERIFY THAT ALL 1'S AND ALL 0'S CAN BE
2603          /SET INTO THE SECTOR BUFFER
2604          /
2605          /SECTOR BUFFER DATA TESTING
2606          /
2607          /FILL THE SECTOR BUFFER WITH ALL 1'S
2608          /
2609  1674  1370  T22,    TAD (377)  / " GOOD " = ALL 1'S
2610          /
2611          /FILL THE SECTOR BUFFER WITH ALL 0'S
2612          /
2613          /FILL THE SECTOR BUFFER WITH 128 BYTES OF "GOOD"
2614          /
2615  1675  4765*  T21,    JMS FB128BYTES
2616  1676  4764*  JMS TX           / "GOOD" = ALL 0'S
2617          ****
2618          ****
2619          /
2620          /IF THIS IS TEST #22
2621          /
2622          /THEN TEST FOR A DRIVE SELECTION
2623          /

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/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-37

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2624      /IF NO DRIVES ARE ENABLED WITHIN PROGRAM LOCATION " DTESTP "
2625      /
2626      /THEN THERE ARE NO MORE RX01 CONTROL TESTS TO EXECUTE
2627      /
2628      1677 1171      TAD TEST
2629      1700 1363      TAD (-T22)
2630      1701 7640      SZA CLA
2631      1702 5453      EXIT / END OF TEST 21
2632      1703 1762*     TAD UNITS
2633      1704 7640      SZA CLA
2634      1705 5453      EXIT / END OF TEST 22
2635      0300 XC=0300
2636      /
2637      / END OF PASS " C "
2638      /
2639      1706 7340      CLL CLA CMA
2640      1707 3761*     DCA COUNT           /INIT TIMING FOR APT IF ONLY
2641                  /INTERFACE IS TO BE TESTED.
2642      1710 4760*     JMS XTICK
2643      1711 4464      LOCKUP
2644      1712 1357      TAD (XC)
2645      1713 5773*     JMP NOMORETESTS
2646      ****
2647      ****
2648      1714 7327      T24, CLA STL IAC RTL
2649      1715 5756*     JMP IRDWR / 6 (READ)
2650      1716 7307      T25, CLL CLA IAC RTL
2651      1717 5756*     JMP IRDWR / 4 (WRITE)
2652      1720 1355      T26, TAD (14)
2653      1721 5756*     JMP IRDWR / 14 (WRITE DELETED DATA)
2654      /
2655      /THE PURPOSE OF THESE TESTS IS TO VERIFY
2656      /THE RX01 CONTROL CLOCK SET OF THE ERROR FLAG
2657      /
2658      /BY FORCING A SEEK ERROR TO OCCUR
2659      / (ATTEMPTING TO PERFORM A FUNCTION ON A NON-EXISTANT SECTOR #0 )
2660      /
2661      /NOTE: THE CONTENTS OF THE SECTOR BUFFER SHOULD REMAIN UNCHANGED AND CONTAIN
2662      / THE PATTERN OF ALL 1'S AS FILLED WITHIN TEST 22 BECAUSE THE READ SHOULD
2663      / HAVE NEVER OCCURRED.
2664      /
2665      / 1. THE STATUS WITHIN THE TRANSFER REGISTER AT ERROR SHOULD = 0
2666      / 2. THE B-CODE STATUS SHOULD = 70 (UNABLE TO FIND SECTOR)
2667      / 3. THE STATUS FROM THE RST COMMAND (12) SHOULD = DRIVE READY (200)
2668      /
2669      /THE LENGTH ( * OF TRANSFERS TO THE RX01 CONTROL) SHOULD BE TWO
2670      / (ONE EACH FOR THE SECTOR AND FOR THE TRACK)
2671      /
2672      /GET ONE UNIT ONLY (UNIT 1 IF UNIT 0 IS NOT READY)
2673      /
2674      /ROUTINE TO WAIT FOR SKIP ON AN IOT. IF SKIP DOES NOT OCCUR
2675      /THE ROUTINE WILL PRINT FC POINT IN ERROR AND GO BACK ABOUT ITS
2676      /BUSINESS.
2677      /
2678      1722 0000 XWAIT, 0

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/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-38

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2679      1723 1006      TAD 6
2680      1724 7650      SNA CLA
2681      1725 5330      JMP .+3
2682      1726 7240      STA
2683      1727 3006      DCA 6
2684      1730 2153      ISZ H1
2685      1731 5722      JMP I XWAIT
2686      1732 2116      ISZ HANGER
2687      1733 5722      JMP I XWAIT
2688      1734 1322      TAD XWAIT           /GET ERROR PC
2689      1735 1354      TAD (=E3PRE
2690      1736 7710      SPA CLA           /DID CALL COME FROM PRETEST.
2691      1737 5753*     JMP E3PRE          /YES, REPORT ERROR.
2692      1740 1322      TAD XWAIT           /GET BACK ERROR
2693      1741 5752*     JMP HUNGUP
2694      /
2695      1752 3341
2696      1753 0425
2697      1754 7353
2698      1755 0014
2699      1756 2000
2700      1757 0300
2701      1760 4133
2702      1761 4152
2703      1762 4235
2704      1763 6104
2705      1764 2303
2706      1765 4541
2707      1766 0665
2708      1767 0664
2709      1770 0377
2710      1771 7113
2711      1772 1477
2712      1773 0465
2713      1774 7313
2714      1775 6000
2715      1776 0100
2716      1777 0040
2717      2000 3112      PAGE
2718      2001 3777*     IRDWR, DCA COMMAND
2719      2002 4460      DCA WUNITS
2720      2003 1112      GETUNIT
2721      2004 1776*     TAD COMMAND
2722      2005 3170      TAD UNIT
2723      2006 1170      DCA BLANK
2724      2007 4436      TAD BLANK
2725      2010 3167      LCD / 6, 4, OR 14
2726      2011 5214      DCA EAC
2727      2012 2167      JMP .+3
2728      2013 4442      ISZ EAC
2729      2014 4443      XDRROUT
2730      2015 7410      STR
2731      2016 5212      SKP
2732      2017 4445      JMP .+4           /SECTOR 0 - TRACK 0
SDN

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-39

2733 2020 5214 JMP .+4 /WAIT FOR DONE FLAG
 2734 2021 7344 CLL STA RAL
 2735 2022 1167 TAD EAC
 2736 2023 7650 SNA CLA
 2737 2024 5231 JMP .+5
 2738 2025 7305 CLL CLA IAC RAL
 2739 2026 3166 DCA GOOD / 2 TRANSFERS WERE EXPECTED
 2740 2027 1167 TAD EAC
 2741 2030 4452 E240, ERROR / # OF TRANSFER REQUEST FLAGS NOT OK
 2742 2031 4503 SUBSCOPE / (AC) = # OF TRANSFERS OCCURED
 2743 /
 2744 /THE ERROR FLAG SHOULD = 1
 2745 /
 2746 2032 4444 SER
 2747 2033 4452 E245, ERROR / MISSING ERROR FLAG
 2748 2034 4503 SUBSCOPE
 2749 /IF THIS IS T24, THEN DELETED DATA [MAY] BE SET (BUT THAT'S OK FOR NOW),
 /THE STATUS AT ERROR SHOULD = X (100 MAYBE DELETED DATA)+200 DRIVE READY
 2750 /
 2751 /IF THIS IS T25, THEN DELETED DATA [SHOULD NOT] BE SET, THEREFORE
 /THE CONTENTS OF THE TRANSFER REGISTER (THE STATUS AT THE ERROR) SHOULD = 200
 2752 /
 2753 /IF THIS IS T26, THEN DELETED DATA [MUST] BE SET, THEREFORE
 /THE STATUS SHOULD = 300 (200 DRIVE READY)+(100 (DELETED DATA))
 2754 /
 2755 /
 2756 /
 2757 /
 2758 2035 1171 TAD TEST /FOR T #
 2759 2036 1375 TAD (-T25)
 2760 2037 7650 SNA CLA
 2761 2040 5245 JMP .+5 / T25 THEN "JMP .+5"
 2762 2041 1171 TAD TEST
 2763 2042 1374 TAD (-T26)
 2764 2043 7650 SNA CLA
 2765 2044 1373 TAD (100) / T26 MEANS EXPECT DELETED DATA
 2766 2045 3166 DCA GOOD / T24
 2767 2046 4441 XORIN /ACTUAL STATUS
 2768 2047 3170 DCA BLANK
 2769 2050 1170 TAD BLANK
 2770 2051 0372 AND (377) /VT78/
 2771 2052 3167 DCA EAC
 2772 /
 2773 /IF THIS IS T24, THEN DELETED DATA [MAY] BE SET, (BUT THAT'S OK FOR NOW)
 2774 /
 2775 2053 1171 TAD TEST / FOR T #
 2776 2054 1371 TAD (-T24)
 2777 2055 7640 S2A CLA / T24 ?
 2778 2056 5262 JMP .+4
 2779 2057 1136 TAD MASK / YES
 2780 2060 0170 AND BLANK /ACTUAL STATUS MINUS DELETED DATA
 2781 2061 3167 DCA EAC
 2782 2062 1167 TAD EAC
 2783 2063 7041 CIA
 2784 2064 1166 TAD GOOD /EXPECTED
 2785 2065 7650 SNA CLA
 2786 2066 5271 JMP .+3
 2787 2067 1167 TAD EAC

SEQ 0082

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-40

2788 2070 4452 E241, ERROR /STATUS NOT = "GOOD"
 2789 2071 4503 SUBSCOPE
 2790 /
 2791 /THE B-CODE SHOULD = 70 (UNABLE TO FIND SECTOR)
 2792 /
 2793 2072 4477 RSTB /RETURN WITH AC = CODE
 2794 2073 1370 TAD (-70)
 2795 2074 7650 SNA CLA
 2796 2075 5302 JMP .+5
 2797 2076 1367 TAD (70)
 2798 2077 3166 DCA GOOD
 2799 2100 1167 TAD EAC
 2800 2101 4452 E242, ERROR /B-CODE STATUS NOT = CODE # 70
 2801 2102 4502 SCOPE
 2802 /THE CONTENTS TO THE SECTOR BUFFER SHOULD REMAIN UNCHANGED
 2803 /
 2804 /THE CONTENTS OF THE SECTOR BUFFER SHOULD = ALL BYTES OF 1'S
 2805 /
 2806 2103 1372 TAD (377) /EXPECT ALL 1'S
 2807 2104 3166 DCA GOOD /VERIFY SECTOR BUFFER SUBROUTINE
 2808 2105 4766' JMS TX / END OF TEST 24, 25, 26
 2809 2106 5453 EXIT
 2810 /
 2811 / TEST 27 - SEEK AND CRC VERIFICATION (FIRST PROGRAMMED HEAD MOVEMENT)
 2812 /
 2813 /THE PURPOSE OF THIS TEST IS TO VERIFY THAT SUPPLYING THE RX01 WITH A TRACK
 /WHOSE VALUE IS GREATER THAN 114 (OCTAL) EXPECTS A B-CODE ERROR OF 40
 2814 /
 2815 2107 1365 T27, TAD (115)
 2816 2110 3170 DCA BLANK
 2817 2111 7327 STL CLA IAC RTL
 2818 2112 4436 LCD / ISSUE READ COMMAND
 2819 2113 3167 DCA EAC
 2820 2114 7410 SKP
 2821 2115 2167 ISZ EAC / + TO TRANSFER COUNT
 2822 2116 1170 TAD BLANK / SECTOR TRACK
 2823 2117 4442 XDROUT /TO RX01 CONTROL
 2824 2120 4443 STR / WAIT FOR TRANSFER REQUEST FLAG
 2825 2121 7410 SKP
 2826 2122 5315 JMP .+5
 2827 2123 4445 SDN / WAIT FOR DONE FLAG
 2828 2124 5320 JMP .+4
 2829 2125 3006 DCA 6 /WAIT POINTER
 2830 2126 7344 CLL STA RAL / ONLY 2 TRANSFER REQUESTS WERE EXPECTED
 2831 2127 1167 TAD EAC / ACTUAL # OF TRANSFER REQUEST OCCURED
 2832 2130 7650 SNA CLA
 2833 2131 5336 JMP .+5
 2834 2132 7305 CLL CLA IAC RAL
 2835 2133 3166 DCA GOOD
 2836 2134 1167 TAD EAC
 2837 2135 4452 E270, ERROR / # OF TRANSFER REQUEST FLAGS NOT OK
 2838 2136 4503 SUBSCOPE / (AC) CONTAINS THE # OF REQUEST OCCURED
 2839 /
 2840 /THE ERROR FLAG SHOULD = 1
 2841 /

SEQ 0083

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-41

SEQ 0084

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2843 2137 4444      SER
2844 2140 4452      E271,   ERROR
2845 2141 4503      SUBSCOPE
2846           /THE B-CODE SHOULD = 40
2847           /
2848 2142 4477      RSTB
2849 2143 1364      TAD (-40)
2850 2144 7650      SNA CLA
2851 2145 5352      JMP .+5
2852 2146 1363      TAD (40
2853 2147 3166      DCA GOOD
2854 2150 1167      TAD EAC
2855 2151 4452      E272,   ERROR
2856 2152 4502      SCOPE
2857           / B-CODE NOT = 40
2858           /THE CONTENTS OF THE SECTOR BUFFER SHOULD REMAIN UNCHANGED
2859           /
2860 2153 1372      TAD (377)
2861 2154 3166      DCA GOOD
2862 2155 4766*     JMS TX
2863           /
2864 2156 5453      EXIT
2865 2163 0040      / END OF TEST 27
2866 2164 7740
2867 2165 0115
2868 2166 2303
2869 2167 0070
2870 2170 7710
2871 2171 6064
2872 2172 0377
2873 2173 0100
2874 2174 6060
2875 2175 6062
2876 2176 4242
2877 2177 4236
2200           PAGE
2878           /TEST 30 - SEEK AND CRC VERIFICATION
2879           /
2880           /READ ALL SECTORS OF ALL TRACKS
2881           /
2882           /IF THE DATA IS OF KNOWN QUALITY THEN MONITOR FOR CRC ERRORS
2883           /
2884 2200 3132      T30,   DCA TESTP
2885 2201 5777*     JMP TEST4
2886           /TEST 31 - FIRST WRITE EVER
2887           /
2888           /WRITING TO THE DISK SHOULD NOT DESTROY THE CONTENTS OF THE SECTOR BUFFER
2889           /
2890           /TECHNICAL NOTE:
2891           /
2892           /THIS TEST WRITES ON ONE UNIT ONLY - UNIT 0, BUT IF UNIT 0 WAS
2893           /NOT SELECTED BY THE OPERATOR AT THE START OF THIS PROGRAM
2894           /THEN THIS TEST WRITES ON UNIT 1
2895           /
2896           /PROGRAMMING NOTE:

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SEQ 0085

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2897           /
2898           /THIS "DCA WUNITS" IS NECESSARY IF THIS TEST IS LOCKED WITH SW5
2899           /
2900 2202 3776*     T31,   DCA WUNITS
2901           /
2902 2203 7307      CLL CLA IAC RTL
2903 2204 3375      TAD (6000)          / 4 (WRITE 8-BIT MODE)
2904 2205 3132      DCA TESTP
2905 2206 7240      STA
2906 2207 3120      DCA RDC
2907           / "GETATRACK"
2908           /
2909 2210 1927      TAD DD
2910 2211 3131      DCA TARGET          / TRACK # (OD)
2911           / "GETASECTOR"
2912           /
2913 2212 1031      TAD FIRST
2914 2213 3124      DCA STARGET          / SECTOR = (FIRST)
2915           /GET UNIT 0 (OR UNIT 1 IF UNIT 0 NOT SELECTED)
2916           /
2917 2214 4460      GETUNIT
2918           /
2919           / "INITSECTOR"
2920           /
2921 2215 7240      STA
2922 2216 3122      DCA SECTORS          / 1 SECTOR (FIRST) TO WRITE
2923 2217 1374      TAD (.+3)
2924 2220 3773*     DCA XWRITE          / RETURN ADDRESS FROM WRITE SUBROUTINE
2925 2221 5772*     JMP REWRITE+1          / JMP TO WRITE SUBROUTINE
2926           /RETURN HERE FROM SUBROUTINE " XWRITE "
2927           /
2928           / JMP TO T17 TO VERIFY THE CONTENTS OF THE SECTOR BUFFER
2929           /
2930           /
2931 2222 5771*     JMP T17
2932           /TEST 32 - INIT [PROGRAMMED] PART III / IMPLIED READ OF TRACK 1 SECTOR 1
2933           /
2934           /***** *****
2935           /***** *****
2936           /
2937           /IF THE CONTENTS OF PROGRAM LOCATIONS:
2938           /
2939           // " OD " = 1, AND
2940           // " FIRST " = 1,
2941           /
2942           /AND IF UNIT 0 WAS SELECTED BY THE OPERATOR AT THE START OF THIS PROGRAM
2943           /
2944           /THEN EXECUTE THIS TEST
2945           /
2946 2223 1031      T32,   TAD FIRST
2947 2224 7110      CLL RAR
2948 2225 7640      SZA CLA
2949 2226 5453      NOTESET
2950 2227 1027      TAD OD
2951 2230 7110      CLL RAR

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2952 2231 7640      SZA CLA
2953 2232 5453      NOTESI
2954 2233 1770*     TAD UNITS
2955 2234 7700      SMA CLA
2956 2235 5453      NOTEST
2957 ****
2958 ****
2959 /
2960 /
2961 /THE PURPOSE OF THIS TEST IS TO VERIFY THE "IMPLIED READ" OF TRACK 1 SECTOR 1
2962 /AS PART OF THE INITIALIZE FUNCTION
2963 /
2964 /FIRST FILL THE SECTOR BUFFER WITH ALL 0'S, THEN ISSUE IOT INIT 67X7
2965 /
2966 /INIT SHOULD READ THE CONTENTS OF TRACK 1 SECTOR 1 OF UNIT 0
2967 /
2968 /INTO THE SECTOR BUFFER
2969 /
2970 2236 4767*     JMS FB128BYTES      / FILL THE SECTOR BUFFER
2971 2237 4447      INIT          /OF UNIT 0
2972 /
2973 /JMP TO TEST 17 TO VERIFY THE CONTENTS OF THE SECTOR BUFFER
2974 /
2975 2240 5771*     JMP T17          / TO TEST 17
2976 /TEST 33 - FIRST READ [PROGRAMMED] EVER
2977 /
2978 /FIRST FILL THE SECTOR BUFFER WITH ALL 0'S
2979 /
2980 /THEN READ FROM THE DISK TRACK # (OD), SECTOR # (FIRST)
2981 /
2982 /THE CONTENTS OF THE SECTOR BUFFER SHOULD BE THAT OF THE PREVIOUS TEST
2983 /
2984 /PROGRAMMING NOTE:
2985 /
2986 /THIS "DCA WUNITS" IMPERATIVE IF T27 WAS EXECUTED PREVIOUSLY THIS PASS
2987 /
2988 2241 3776*     T33, DCA WUNITS
2989 2242 4767*     JMS FB128BYTES      / FILL THE SECTOR BUFFER
2990 2243 7307      CLL CLA IAC RTL
2991 2244 3132      DCA TESTP        / 4 (READ 8-BIT MODE)
2992 /PROGRAMMING NOTE:
2993 /
2994 /THE FOLLOWING CODE TO " JMP T17 " IS IMPERATIVE HOUSEKEEPING PRIMING THE
2995 / " READ " SUBROUTINE
2996 /
2997 2245 7240      STA
2998 2246 3120      DCA RDC
2999 /
3000 /"GETATRACK"
3001 2247 1027      TAD OD
3002 2250 3131      DCA TARGET
3003 /"GETASECTOR"
3004 /
3005 2251 1031      TAD FIRST
3006 2252 3124      DCA STARGET

```

```

3007 /GET ONE UNIT ONLY (UNIT 1 IF UNIT 0 IS NOT READY)
3008 /
3009 2253 4460      GETUNIT           / SELECT A UNIT
3010 2254 7240      STA
3011 2255 3140      DCA R1RETRY       /SO NO "PREWRITES" OCCUR
3012 /"INITSECTOR"
3013 /
3014 2256 7240      STA
3015 2257 3122      DCA SECTORS       / 1 SECTOR TO READ (#FIRST)
3016 2260 1365      TAD (,+4)
3017 2261 3765*     DCA XREAD         /RETURN ADDRESS FROM " READ " SUBROUTINE
3018 2262 5764*     JMP READRETRY      / JMP TO READ SUBROUTINE
3019 /THIS "WRITE" IS IMPERATIVE FOR REFERENCES WITHIN "XREAD"
3020 /
3021 2263 4510      WRITE             / "WRITE" FOR PROGRAM REFERENCES ONLY
3022 /
3023 /RETURN HERE FROM SUBROUTINE " XREAD "
3024 /
3025 /
3026 /JMP TO TEST 17 TO VERIFY THE CONTENTS OF THE SECTOR BUFFER
3027 /
3028 2264 5771*     JMP T17          / TO TEST 17
3029 /TEST 23 - DRIVE READY SELECTION (ALL UNITS SELECTED BY OPERATOR)
3030 /
3031 /THE PURPOSE OF THIS TEST IS TO VERIFY THE "SEL DRV RDY" STATUS BIT 4
3032 /
3033 2265 1363      T23, TAD (200)
3034 2266 3170      DCA BLANK
3035 2267 4460      GETUNIT
3036 2270 1762*     TAD UNIT
3037 2271 4476      RST
3038 2272 4454      DONE
3039 2273 5265      JMP T23
3040 2274 5453      EXIT             / END OF TEST 27
3041 /
3042 /THE PURPOSE OF THESE TESTS IS TO WRITE-READ-AND PROGRAM VERIFY THE DATA
3043 /ON ALL TRACKS FROM (OD) TO (ID), AND ALL SECTORS FROM (FIRST) TO (LAST),
3044 /EXERCISING 8-BIT MODE, 12-BIT MODE, AND DELETED DATA
3045 /
3046 /A PATTERN OF ALL 1'S ARE WRITTEN ON THE DISK
3047 /
3048 /WORD/BYTE 1 IS THE TRACK ID (BITS 5 THRU 11)
3049 /WORD/BYTE 2 IS THE SECTOR ID (BITS 7 THRU 11)
3050 /
3051 /
3052 /
3053 /
3054 /
3055 /
3056 /
3057 /
3058 /
3059 /TEST 37 - 8 BIT MODE WITH DELETED DATA
3060 /
3061 2275 7305      T37, CLL CLA IAC RAL      / 6 (DELETED DATA - 8/BIT MODE)

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-45

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```

3062      /
3063      /TEST 35 = 8 BIT MODE
3064      /
3065  2276 1361 T35,   TAD (2)          / 4 (8/BIT MODE)
3066      /
3067      /TEST 36 = 12 BIT MODE WITH DELETED DATA
3068      /
3069  2277 1361 T36,   TAD (2)          / 2 (DELETED DATA = 12/BIT MODE)
3070      /
3071      /TEST 34 = 12 BIT MODE
3072      /
3073  2300 1360 T34,   TAD (1000)        /ALL 1'S PATTERN
3074  2301 3132 DCA TESTP               / (12/BIT MODE)
3075  2302 5757* JMP THETEST
3076      /THIS SUBROUTINE IS ENTERED FROM TESTS: *** T21, T22, (T24, T25, T26), T27
3077      /
3078      /EMPTY THE BUFFER TO VERIFY THE CONTENTS = ALL 1'S OR ALL 0'S
3079      /
3080  2303 2303 TX,   .                  / BYTE # 1 TO 128
3081  2304 3170 DCA BLANK
3082  2305 1356 TAD (102)             /EMPTY BUFFER 8-BIT MODE
3083  2306 4436 LCD
3084  2307 5322 JMP T20STR=1
3085  2310 4441 T20XDRIN, XDRIN
3086  2311 3167 DCA EAC               /DATA FROM SECTOR BUFFER
3087  2312 1167 TAD EAC
3088  2313 7041 CIA
3089  2314 1166 TAD GOOD              /COMPARED WITH EXPECTED DATA
3090  2315 7650 SNA CLA
3091  2316 5321 JMP ,+3
3092  2317 1167 TAD EAC
3093  2320 4452 E211,  ERROR          /DATA "TO" NOT = DATA "FROM"
3094  2321 4503 SUBSCOPE
3095  2322 2170 ISZ BLANK            / 1 TO 128
3096  2323 4443 T20STR, STR
3097  2324 7410 SKP
3098  2325 5310 JMP T20XDRIN
3099  2326 4445 SDN
3100  2327 5323 JMP T20STR
3101  2330 4444 SER
3102  2331 4465 OK
3103  2332 4452 E212,  ERROR          /UNEXPECTED ERROR FLAG
3104  2333 4502 SCOPE
3105  2334 5703 JMP I TX
3106      /VT78/ ROUTINE TO RESELECT UNIT UNDER TEST,
3107      /ON VT78 A CAF OR INIT INSTRUCTION AUTOMATICALLY
3108      /RESELECTS UNIT A(RXA).

3109      /THE FLAGS ARE CLEARED AT THIS TIME DUE TO POSSIBLE
3110      /GLITCHES IN THE RX8 INTERFACE.
3111  2335 0000 XCKUNT, 0
3112  2336 7300 CLA CLL
3113  2337 1135 TAD UNITCK            /0=UNIT A 1=UNIT B
3114  2340 4435 SEL                /RESETS UNIT SELECT TO UNIT UNDER TEST
3115  2341 4445 SDN                /CLEAR FLAGS
3116  2342 7000 NOP

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-46

SEQ 0089

```

3117  2343 4444 SER
3118  2344 7000 NOP
3119  2345 4443 STR
3120  2346 7300 CLA CLL
3121  2347 5735 JMP I XCKUNT
3122  2356 0102
3123  2357 3000
3124  2360 1000
3125  2361 0002
3126  2362 4242
3127  2363 0200
3128  2364 3425
3129  2365 3416
3130  2366 2264
3131  2367 4541
3132  2370 4235
3133  2371 1602
3134  2372 3207
3135  2373 3200
3136  2374 2222
3137  2375 6000
3138  2376 4236
3139  2377 2514
3140      PAGE
3141      /READ THE B-CODE STATUS
3142      /
3143      /THIS SUBROUTINE IS ENTERED FROM TESTS: *** ALT12, (T24, T25, T26), T27
3144      /
3145  2400 2400 XRSTB, .
3146  2401 1377 TAD (16)
3147  2402 4436 LCD               /ISSUE COMMAND # 7
3148  2403 4443 STR
3149  2404 4465 OK
3149  2405 4452 E7000,  ERROR          /UNEXPECTED TRANSFER REQUEST FLAG
3150  2406 4503 SUBSCOPE
3151  2407 4445 SDN
3152  2410 5203 JMP ,+5
3153  2411 4441 XDRIN
3154  2412 3167 DCA EAC              /ACTUAL STATUS
3155  2413 4444 SER
3156  2414 5217 JMP ,+3
3157  2415 1167 TAD EAC
3158  2416 4452 E7001,  ERROR          /UNEXPECTED ERROR FLAG
3159  2417 4776* JMS VT78CK           /GO CHECK IF ON VT78 SYSTEM
3160  2420 5233 JMP E7002+1          /VT78 - SKIP THIS SUBTEST
3161  2421 4503 SUBSCOPE
3162  2422 1167 TAD EAC
3163  2423 0375 AND (7000)           /BITS 0,1,2 ARE RESIDUAL FROM COMMAND SHIFT
3164  2424 1374 TAD (1000)
3165  2425 7650 SNA CLA
3166  2426 5233 JMP ,+5
3167  2427 1375 TAD (7000)
3168  2430 3166 DCA GOOD
3169  2431 1167 TAD EAC
3170  2432 4452 E7002,  ERROR          / SHIFT REGISTER NOT SHIFTING OK

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-47

SEQ 0090

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3171 2433 4503 SUBSCOPE
3172 2434 1167 TAD EAC
3173 2435 0373 AND (377)
3174 2436 3167 DCA EAC
3175 2437 1167 TAD EAC
3176 2440 5600 JMP I XRSTB
3177
3178     /READ STATUS SUBROUTINE
3179     /
3180     /THE CONTENTS OF THE AC AT ENTRY = BIT 7 (UNIT SELECT)
3181     /
3182     /READ THE STATUS AT DONE BY ISSUING COMMAND # 5
3183     /
3184     /THIS SUBROUTINE IS ENTERED FROM TESTS: *** ALT12, AND T27
3185
3186 2441 2441 XRST, .
3187 2442 1372 TAD (12)
3188 2443 4436 LCD      / ISSUE COMMAND # 5 (AC AT ENTRY = UNIT)
3189 2444 4443 STR
3190 2445 4465 OK
3191 2446 4452 E7003, ERROR           /UNEXPECTED TRANSFER REQUEST FLAG
3192 2447 4503 SUBSCOPE
3193 2450 4445 SDN
3194 2451 5244 JMP ,+5           /WAIT FOR DONE FLAG
3195 2452 4441 XDRIN
3196 2453 3167 DCA EAC           /ACTUAL STATUS
3197 2454 4444 SER
3198 2455 5260 JMP ,+3
3199 2456 1167 TAD EAC
3200 2457 4452 E7004, ERROR           /UNEXPECTED ERROR FLAG
3201 2460 4776 JMS VT78CK           /GO CHECK IF ON VT78 SYSTEM
3202 2461 5274 JMP E7006+1           /VT78 - SKIP THIS SUBTEST
3203 2462 4503 SUBSCOPE
3204
3205     /THE PURPOSE OF THIS SUBTEST IS TO VERIFY THE SHIFTING OF THE RX8 INTERFACE
3206     /
3207     /TRANSFER REGISTER BY THE RX01 MICROCONTROLLET
3208     /
3209     /BITS 0, 1, AND 2 OF THE RX8 INTERFACE TRANSFER REGISTER SHOULD BE REMNANTS
3210     /
3211     /OF THE PREVIOUS COMMAND (COMMAND # 5), THEREFORE BITS 0, 1, AND 2 SHOULD = 101 (BINARY)
3212     /(NOT TRUE ON VT78)
3213 2463 1167 TAD EAC
3214 2464 0375 AND (7000)
3215 2465 1371 TAD (3000)
3216 2466 7650 SNA CLA
3217 2467 5274 JMP ,+5
3218 2470 1370 TAD (5000)
3219 2471 3166 DCA GOOD
3220 2472 1167 TAD EAC
3221 2473 4452 E7006, EPROK
3222 2474 4503 SUBSCOPE
3223
3224     /THE CONTENTS OF THE RST STATUS SHOULD = DRIVE READY (200)
3225     /

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-48

SEQ 0091

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3226     / (IF UNIT=S WERE SELECTED AT L/S 200 OTHERWISE THE STATUS SHOULD = 0 )
3227
3228 2475 1170 TAD BLANK           / (GOOD) SAVED PRIOR TO ENTRY INTO " XRST "
3229 2476 0367 AND (*4-1)          / MINUS " INIT DONE " BIT
3230 2477 3166 DCA GOOD
3231 2500 1167 TAD EAC           / ACTUAL STATUS MINUS " DELETED DATA "
3232 2501 0366 AND (277)
3233 2502 3170 DCA BLANK
3234 2503 1166 TAD GOOD
3235 2504 7041 CIA
3236 2505 1170 TAD BLANK           /EXPECTED
3237 2506 7650 SNA CLA
3238 2507 5312 JMP ,+3
3239 2510 1167 TAD EAC
3240 2511 4452 E7005, ERROR           / ACTUAL ACTUAL STATUS
3241 2512 4502 SCOPE           /EXPECTED STATUS NOT = (GOOD)
3242 2513 5641 JMP I XRST
3243     /SUB-TEST SELECTIONS
3244
3245
3246     / TEST 0 = " THE TEST "
3247     / TEST 001 = WRITE - READ (PARITY CHECK)
3248     / TEST 010 = WRITE - READ - READ CHECK (PROGRAM VERIFY)
3249     / TEST 011 = READ - READ CHECK (COMPATABILITY)
3250     / TEST 100 = READ (PARITY CHECK)
3251     / TEST 5 = WRITE ONLY
3252     / TEST 110 = EMPTY BUFFER
3253     / TEST 111 =
3254
3255
3256 2514 1365 TEST4, TAD (READ)
3257 2515 7410 SKP
3258 2516 1364 TEST3, TAD (READCOMPARE)
3259 2517 3337 DCA DOB
3260 2520 1375 TAD (NOP)
3261 2521 5331 JMP DCADOA
3262 2522 1364 TEST2, TAD (READCOMPARE)
3263 2523 7410 SKP
3264 2524 1365 TEST1, TAD (READ)
3265 2525 7410 SKP
3266 2526 1375 TEST5, TAD (NOP)
3267 2527 3337 DCA DOB
3268 2530 1363 TAD (WRITE)
3269 2531 3336 DCADOA, DCA DOA
3270
3271 2532 4455 TESTX, GETAPATTERN
3272 2533 4463 INITTRACKS
3273 2534 4460 GETUNIT
3274 2535 4457 TESTXL, GETATRACK
3275 2536 4510 DOA, WRITE
3276 2537 4474 DOB, READ
3277 2540 2147 ISZ TRACKS
3278 2541 5335 JMP TESTXL
3279 2542 4454 DONE
3280 2543 5332 JMP TESTX

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/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-49

SEQ 0092

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3281 2544 5453      EXIT
3282          /AC SW 7 = 1 TO HALT AT END OF TEST
3283          /
3284 2545 2545      XLOCKUP, *
3285 2546 4572      LAS
3286 2547 0362      AND (SW7)
3287 2550 7640      SZA CLA
3288 2551 4461      HLT
3289          /AC SW 2 = 1 TO LOCK SCOPE LOOP ON TEST
3290          /
3291 2552 4572      LAS
3292 2553 0374      AND (SW2)
3293 2554 7640      SZA CLA
3294 2555 5571      JMP I TEST
3295 2556 5745      JMP I XLOCKUP
3296 2562 0020
3297 2563 4510
3298 2564 4475
3299 2565 4474
3300 2566 0277
3301 2567 7773
3302 2570 5000
3303 2571 3000
3304 2572 0012
3305 2573 0377
3306 2574 1000
3307 2575 7000
3308 2576 1185
3309 2577 0016
3310          2600      PAGE
3311          /
3312          /BYTE SWAP SUBROUTINE
3313          /
3314          /THE CONTENTS OF THE AC AT ENTRY WILL BE SWAPPED
3315 2600 2600      XBSW, *
3316 2601 3223      DCA BSWAC
3317 2602 7010      RAR
3318 2603 3224      DCA BSWLINK
3319 2604 1377      TAD (-6)
3320 2605 3222      DCA BSWRAL
3321 2606 1223      TAD BSWAC
3322 2607 7100      CLL
3323 2610 7510      SPA
3324 2611 7120      STL
3325 2612 7004      RAL
3326 2613 2222      ISZ BSWRAL
3327 2614 5207      JMP .+5
3328 2615 3223      DCA BSWAC
3329 2616 1224      TAD BSWLINK
3330 2617 7104      CLL RAL
3331 2620 1223      TAD BSWAC
3332 2621 5600      JMP I XBSW
3333 2622 7772      BSWRAL, -6
3334 2623 0000      BSWAC, 0

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/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-50

SEQ 0093

```

3335 2624 0000      BSWLINK, 0
3336 2625 2625      XERROR, *
3337 2626 3167      DCA EAC
3338 2627 1167      TAD EAC      /GET ERROR PC.
3339 2630 4467      AERROR
3340 2631 2111      ISZ BUSY
3341 2632 1225      TAD XERROR
3342 2633 7001      IAC
3343 2634 3776*     DCA EPSCOPE / ERROR RETURN ADDRESS + 1
3344 2635 7301      CLL CLA IAC
3345 2636 3775*     DCA ERRORS
3346          /IF AC SW 4 = 0 THEN PRINT AN ERROR MESSAGE
3347          /
3348 2637 4572      LAS
3349 2640 0374      AND (SW4)
3350 2641 7640      SZA CLA
3351 2642 5315      JMP XNPRINT
3352          /IF THIS IS THE FIRST ERROR FOR THIS PASS THEN PRINT THE HEADER LINE
3353          /
3354 2643 2115      ISZ FIRSTERROR
3355 2644 5247      JMP .+3
3356 2645 4473      PRINT
3357 2646 6545      MXHEADER
3358 2647 4473      PPINT
3359 2650 6602      MCRLF
3360          /      ERR FAT FAST      EAC GOOD PASS
3361          /
3362          /      ERR = ERROR ADDRESS ( E # )
3363          /      FAT = FIRST ADDRESS OF TEST
3364          /      FAST = FIRST ADDRESS OF SUB-TEST
3365          /      *SEE MAP
3366          /      EAC = CONTENTS OF THE ACCUMULATOR AT THE ERROR
3367          /      PASS = PASS IN WHICH ERROR OCCURED
3368          /
3369 2651 7240      STA
3370 2652 1225      TAD XERROR
3371 2653 3160      DCA LSB
3372 2654 4505      TY4OCT
3373 2655 0160      LSB
3374 2656 4504      TAB
3375 2657 0005      5
3376 2660 1171      TAD TEST
3377 2661 3160      DCA LSB
3378 2662 4505      TY4OCT
3379 2663 0160      LSB
3380 2664 4504      TAB
3381 2665 0012      12
3382 2666 4505      TY4OCT
3383 2667 1366      PCSCOPE
3384 2670 4504      TAB
3385 2671 0017      17
3386 2672 4505      TY4OCT
3387 2673 0170      BLANK
3388 2674 4504      TAB
3389 2675 0024      24

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3390 2676 4505    TY40CT
3391 2677 0167    FAC
3392 2700 4504    TAB
3393 2701 0031    31
3394 2702 4505    TY40CT
3395 2703 0166    GOOD
3396 2704 4504    TAB
3397 2705 0036    36
3398 2706 4434    TY80CT
3399 2707 0163    PASS
3400 2710 4572    LAS
3401 2711 7700    SMA CLA
3402 2712 5315    JMP +3
3403 2713 4504    TAB
3404 2714 0043    43
3405          0207  BELL=207
3406          /
3407 2715 4572    XNOPRINT, LAS
3408 2716 0373    AND (SW11)
3409 2717 7640    SZA CLA
3410 2720 5323    JMP +3
3411 2721 4501    SPECIALTYEIT
3412 2722 0207    BELL
3413 2723 3115    DCA FIRSTERROR
3414 2724 4572    LAS
3415 2725 7700    SMA CLA
3416 2726 4461    HLT
3417          /
3418 2727 3111    DCA BUSY
3419 2730 6001    ION
3420 2731 5625    JMP I XERROR
3421          /
3422          /
3423          /ROUTINE TO DETERMINE WHETHER TO TEST DRIVE ZERO
3424          /OR IF NO DRIVES ARE TO BE TESTED,
3425          /
3426 2732 4772*   TSTUNT, JMS VT78CK      /GO CHECK IF ON VT78 SYSTEM
3427 2733 4350    JMS CHGMSK     /VT78/ GO CHANGE MASKING CONSTANT
3428 2734 1771*   TAD UNITS      /UNITS SELECTED BY OPERATOR
3429 2735 0370    AND (4000)    /ISOLATE DRIVE ZERO,
3430 2736 7640    SZA CLA      /IS DRIVE ZERO THERE.
3431 2737 5343    JMP DRVZRO     /YES,
3432 2740 1347    TAD MASK1     /DON'T TEST DRIVE ZERO,
3433 2741 3346    DCA COMP      /IT IS NOT AN ERROR IF DRIVE
3434          /
3435 2742 5767*   JMP NORX01-1  /ZERO IS OPERATIONAL.
3436 2743 1136    DRVZRO, TAD  MASK
3437 2744 3346    DCA CUMP     NORX01-2
3438 2745 5766*   JMP          /DRIVE ZERO THERE SO INDICATE IT,
3439          /
3440 2746 0000    COMP, 0
3441 2747 7477    MASK1, 7477
3442          /
3443          /ROUTINE TO CHANGE MASKING CONSTANT FOR USE ON VT78
3444          /BITS 0-2 ARE NOT RESIDUAL ON VT78

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3445          /
3446 2750 0000    CHGMSK, 0
3447 2751 1365    TAD (277
3448 2752 3136    UCA MASK
3449 2753 1364    TAD (77
3450 2754 3347    DCA MASK1
3451 2755 5750    JMP I CHGMSK
3452          /
3453 2764 0077
3454 2765 0277
3455 2766 0427
3456 2767 0430
3457 2770 4000
3458 2771 4235
3459 2772 1165
3460 2773 0001
3461 2774 0200
3462 2775 1365
3463 2776 1364
3464 2777 7772 3000 PAGE
3465          /
3466 3000 4455    THETEST, GETAPATTERN
3467 3001 4463    INITTRACKS
3468 3002 4460    GETUNIT
3469          /
3470          /FORCE THE ACTUATOR SEQUENCE = 0 (INCREMENTAL 0-114)
3471          /
3472 3003 1377    THEL, TAD (XTHEL)
3473 3004 3776*   DCA XGETATRACK
3474 3005 1131    TAD TARGET
3475 3006 3125    DCA START
3476 3007 1150    TAD TTRACKS
3477 3010 1147    TAD TRACKS
3478 3011 7640    SZA CLA
3479 3012 5775*   JMP SEQ000
3480 3013 1027    TAD DD
3481 3014 3131    DCA TARGET
3482 3015 5775*   JMP SEQ000
3483 3016 4510    XTHEL, WRITE
3484 3017 4475    READCOMPARE
3485 3020 2147    ISZ TRACKS
3486 3021 5203    JMP THEL
3487 3022 4454    DONE
3488 3023 5201    JMP THETEST+1
3489          /ACTUATOR MOVEMENT IS THAT SELECTED OF BITS 6,7,8 OF (TESTP)
3490          /
3491 3024 4463    XTHEL, INITTRACKS
3492 3025 4460    GETUNIT
3493 3026 4457    XYTHEL, GETATRACK
3494 3027 4475    READCOMPARE
3495 3030 2147    ISZ XTRACKS
3496 3031 5226    JMP XYTHEL
3497 3032 4454    DONE
3498 3033 5224    JMP XXTHEL

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3499 3034 5453      EXIT
3500          /GET A PATTERN
3501          /
3502 3035 3035      XGETAPATTERN, .
3503          /
3504          /ONLY GENERATE A PATTERN, HOWEVER, IF THE CONTENTS OF PROGRAM LOCATIONS
3505          /ERRORS = 0 (MEANS NO ERRORS),
3506          /
3507          /AND AC SW2 = 0 (NOT TO LOCK ON TEST OK)
3508          /
3509          /AND TEST = T13, T16, T34, T35, T36, T37
3510          /
3511          /
3512 3036 4572      LAS
3513 3037 0374      AND (SW2)
3514 3040 1773*     TAD ERRORS
3515 3041 7640      SZA CLA
3516 3042 5635      JMP I XGETAPATTERN
3517 3043 1372      TAD (GENTESTS=1)
3518 3044 3012      DCA A12
3519 3045 1412      TAD I A12
3520 3046 7450      SNA
3521 3047 5635      JMP I XGETAPATTERN
3522 3050 1171      TAD TEST
3523 3051 7640      SZA CLA
3524 3052 5245      JMP .+5
3525 3053 1371      TAD (WBUFFER+1)
3526 3054 3010      DCA A10
3527 3055 3155      DCA PATSUMCHECK
3528 3056 7307      CLL CLA IAC RTL
3529 3057 0132      AND TESTP / 8/12 MODE MASK
3530 3060 7640      SZA CLA
3531 3061 1370      TAD {-100} /124 DATA WORDS
3532 3062 1367      TAD {-74}
3533 3063 3011      DCA A11 / 60 DATA WORDS
3534          /WORD X AND WORD Y CONTAIN THE ADDRESSES OF THE LAST 2 SUMCHECK WORDS
3535          /
3536 3064 1011      TAD A11
3537 3065 7041      CIA
3538 3066 1366      TAD (WBUFFER+2)
3539 3067 3156      DCA WORDX
3540 3070 7301      CIL CLA IAC
3541 3071 1156      TAD WORDX
3542 3072 3157      DCA WORDY
3543 3073 1365      TAD (7000)
3544 3074 0132      AND TESTP
3545 3075 7106      CLL RTL
3546 3076 7006      RTL
3547 3077 1364      TAD (TAD PATTERNS)
3548 3100 3301      DCA .+1
3549 3101 1315      TAD PATTERNS
3550 3102 3303      DCA XPATTERNS
3551 3103 4763*    XPATTERNS, JMS RANGEN
3552 3104 3137      DCA XXX
3553          /DEVELOP A 12 BIT SUMCHECK FOR THE 60/124 DATA WORDS

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3554          /
3555          /NOTE:
3556          /
3557          /THE SUMCHECK WRITTEN IS THIS DEVELOPED SUMCHECK WITH THE FIRST 2 ID WORDS, AND
3558          /THE LAST 2 OVERALL SUMCHECK WORDS APPENDED WITHIN SUBROUTINE XGETASECTOR
3559          /
3560 3105 1155      TAD PATSUMCHECK
3561 3106 1137      TAD XXX
3562 3107 3155      DCA PATSUMCHECK
3563 3110 1137      TAD XXX
3564 3111 3410      DCA I A10
3565 3112 2011      ISZ A11
3566 3113 5303      JMP XPATTERNS
3567 3114 5635      JMP I XGETAPATTERN
3568          /THE FOLLOWING ARE THE ALLOCATED PATTERN POINTERS
3569          /
3570 3115 4763*    PATTERNS,      JMS RANGEN
3571 3116 7240      STA           / 1
3572 3117 1325      TAD PAT2
3573 3120 1326      TAD PAT3
3574 3121 1327      TAD PAT4
3575 3122 1330      TAD PAT5
3576 3123 5340      TAD PAT6
3577 3124 7200      CLA
3578          /
3579          / 12 BIT MODE   8 BIT MODE
3580          /
3581 3125 1463      PAT2, 1463  / 63   / 0011 00110011
3582 3126 6314      PAT3, 6314  / 314  / 1100 11001100
3583 3127 5252      PAT4, 5252  / 252  / 1010 10101010
3584 3130 2525      PAT5, 2525  / 125  / 0101 01010101
3585          /
3586 3131 6322      GENTESTS, -T13
3587 3132 6323      -T16
3588 3133 5500      -T34
3589 3134 5502      -T35
3590 3135 5501      -T36
3591 3136 5503      -T37; 0
3137 0000          /PROGRAMMING NOTE:
3592          /
3593          /PATTERN 6 IS A COUNT PATTERN FROM 0 TO 7777, OR FROM 0 TO 177
3594          /
3595          /THIS COUNT PATTERN IS A " PURE " PATTERN
3596          /
3597          /A CHECKSUM IS NOT GENERATED FOR THIS PATTERN AS FOR ALL OTHER PATTERNS
3598          /
3599          /
3600          /  WORD/BYTE 0 = 1
3601          /  WORD/BYTE 1 = 1
3602          /
3603          /  WORD 2 = 0202
3604          /  BYTE 2 = 2
3605          /
3606          /  WORD 77 = 7777
3607          /  BYTE 177 = 177

```

/RXB RX01 DTAGNOSTIC DIRXA-D PAL10 V142A 1-AUG-77 15:22 PAGE 2-55

SEQ 0098

```

3608      /
3609  3140  7307  PAT6,  CLL CLA IAC RTL          / 4
3610  3141  0132  AND TESTP
3611  3142  7440  SZA
3612  3143  7120  STL
3613  3144  5351  JMP .+5
3614  3145  7001  XPAT6,  IAC
3615  3146  7420  SNL
3616  3147  1362  TAD (100)
3617  3150  1137  TAD XXX
3618  3151  3137  DCA XXX
3619  3152  1137  TAD XXX
3620  3153  3410  DCA I A10
3621  3154  2011  ISZ A11
3622  3155  5345  JMP XPAT6
3623  3156  5635  JMP I XGETAPATTERN
3624  3162  0100
3625  3163  4712
3626  3164  1315
3627  3165  7000
3628  3166  7116
3629  3167  7704
3630  3170  7700
3631  3171  7115
3632  3172  3130
3633  3173  1365
3634  3174  1000
3635  3175  4306
3636  3176  4261
3637  3177  3016
3200      PAGE
3638      /WRITE ONLY
3639      /
3640      /WRITE ALL SELECTED SECTORS OF THAT TRACK
3641      /
3642  3200  3200  XWRITE, .
3643  3201  7330  STL CDA RAR
3644  3202  3120  UCA RUC      / THIS IS A WRITE (RDC = 4000)
3645      /
3646  3203  4462  INITSECTORS
3647  3204  4456  WHITEL, GETASECTOR
3648  3205  7410  SKP
3649  3206  1377  REWRITE, TAD (JMP WHICHREAD)
3650  3207  3263  DCA JMPWHICHREAD
3651      /THE PROGRAM WILL ISSUE AN INIT FOR ALL SEEK ERRORS
3652      /
3653      /NOTE:
3654      /
3655      /THE FUNCTION OF THE INIT IS TO SEEK TRACK 0/SECTOR 1, AND
3656      /TRANSFER INTO THE SECTOR BUFFER THE CONTENTS OF SECTOR 1, THEREFORE
3657      /TO RECOVER FROM A SEEK ERROR, THE PROGRAM MUST RE-FILL THE SECTOR BUFFER
3658      /THEN RE-SEEK
3659      /
3660  3210  1121  TAD KRETRY
3661  3211  3145  DCA SRTRY

```

/RXB RX01 DTAGNOSTIC DIRXA-D PAL10 V142A 1-AUG-77 15:22 PAGE 2-56

SEQ 0099

```

3662  3212  1121  WRESEEK, TAD KRETRY
3663  3213  3146  DCA PRTRY      /PARITY RETRY COUNTER
3664      /FILL RX01 SECTOR BUFFER
3665      /
3666  3214  1376  REFILL, TAD (WBUFFER=1)
3667  3215  3010  DCA A10
3668  3216  4437  LCD
3669  3217  5237  JMP FILLOK
3670  3220  5226  JMP FILLERROR
3671      /RETURN TO HERE IS FROM SUBROUTINE XLCD
3672      /
3673  3221  4443  FILL, STR
3674  3222  5221  JMP FILL
3675  3223  1410  TAD I A10
3676  3224  4442  XDRROUT
3677  3225  5221  JMP FILL
3678      /AC SW (4) = 0 ; INHIBIT INTERFACE PARITY RECOVERY
3679      /
3680  3226  2146  FILLERROR, ISZ PRTRY
3681  3227  7410  SKP
3682  3230  5600  JMP I XWRITE
3683  3231  4572  LAS
3684  3232  0375  AND (SW1)
3685  3233  7640  SZA CLA
3686  3234  5214  JMP REFILL
3687  3235  3146  DCA PRTRY
3688  3236  5600  JMP I XWRITE
3689      /THE SECTOR BUFFER HAS SUCCESSFULLY BEEN FILLED AND CONTAINS THE
3690      /PATTERN SELECTED - ALL SOFT PARITY ERRORS HAVE BEEN LOGGED
3691      /
3692  3237  1121  FILLOK, TAD KRETRY
3693  3240  3146  DCA PRTRY
3694  3241  7305  CLL CLA IAC RAL      / 2
3695  3242  0132  AND TESTP      /TESTP FOR DELETED DATA SELECTION
3696  3243  7007  IAC RTL      / 4 IF WRITE OR 14 IF WRITE DELETED DATA
3697  3244  4440  LCD
3698  3245  5257  JMP WRITEOK
3699      /RETURN TO HERE IS FROM A PI (IF AN RX01 ERROR FLAG)
3700      /
3701      /AC SW (1) = 0 ; INHIBIT WRITE RETRY
3702      /
3703  3246  2145  WRITEROR, ISZ SRTRY
3704  3247  7410  SKP
3705  3250  5264  JMP WNOTOK
3706  3251  4572  LAS
3707  3252  0375  AND (SW1)
3708  3253  7640  SZA CLA
3709  3254  5212  JMP WRESEEK
3710  3255  3145  DCA SRTRY
3711  3256  5264  JMP WNOTOK
3712      /NOTE: THE ONLY ERROR EXPECTED HERE EVER IS A "SEEK" ERROR
3713      /
3714      /RETURN TO HERE IS FROM A PI (IF ONLY AN RX01 DONE FLAG)
3715      /
3716  3257  1131  WRITEOK, TAD TARGET

```

/RXB RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-57

SEQ 0100

```

3717 3260 3125 DCA START
3718 3261 1124 TAD STARGET
3719 3262 3123 DCA SSTART
3720 3263 5267 JMPWHICHREAD, JMP WHICHREAD /CONTAINS 0 OR MODIFIED TO JMP WHICHREAD
3721 /
3722 3264 2122 WNOTOK, ISZ SECTORS
3723 3265 5204 JMP WRITEL
3724 3266 5600 JMP I XWRITE
3725 /IF THIS IS A WRITE AFTER READ, "JMP READRETRY", BUT
3726 /
3727 /IF A HARD SEEK ERROR, "JMP NUREAD"
3728 /
3729 3267 1145 WHICHREAD, TAD SRTRY
3730 3270 7650 SNA CLA
3731 3271 5774* JMP NUREAD /HARD SEEK ERROR
3732 3272 5773* JMP READRETRY /SOFT
3733 /
3734 / 0 < (LAST) => (FIRST)
3735 /
3736 3273 1032 TADLAST, TAD LAST
3737 3274 7740 SMA SZA CLA
3738 3275 5300 JMP +3
3739 3276 1372 TAD (32)
3740 3277 3032 DCA LAST
3741 3300 1032 TAD LAST
3742 3301 7041 CIA
3743 3302 1031 TAD FIRST
3744 3303 7740 SMA SZA CLA
3745 3304 5276 JMP -6
3746 3305 4473 PRINT
3747 3306 6711 MLASI
3748 3307 4505 TY40CT
3749 3310 0032 LAST
3750 3311 4504 TAB
3751 3312 0005 5 /TAB TO MOVE TELEPRINTER HEAD
3752 /*****
3753 /CONSOLE
3754 /*****
3755
3756
3757 3313 4424 CHECKCB /IS CONSOLE ACTIVE
3758 3314 4425 XC8ENTR /YES PRINT SWITCH REGISTER QUESTION
3759 /FOR RUNNING SWITCHES
3760 3315 5317 JMP C8RET4
3761 3316 4461 HLT
3762 3317 5771* C8RET4,JMP PRETEST
3763 /ENTRY TO HERE IS FROM RX01 PI ERROR SERVICE ROUTINE

3764 /
3765 /CONTROLLER FAILURES
3766 /
3767 3320 1370 SDNUEXPECTED, TAD (MSDNUNEXPECTED)
3768 3321 7410 SKP
3769 3322 1367 NOSER, TAD (MNOSER)
3770 3323 3334 DCA XMESSAGE
3771 3324 4572 LAS

```

/RXB RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-58

SEQ 0101

```

3772 3125 0366 AND (SW4)
3773 3126 7640 SZA CLA
3774 3127 5335 JMP QUIET
3775 3130 4576 FORCE
3776 3131 1334 TAD XMESSAGE /POINTS TO ERROR MESSAGE THAT WOULD HAVE BEEN PRINTED.
3777 3132 4467 AERROR /REPORT ERROR TO APT IF REQUIRED.
3778 3133 4473 PRINT
3779 3134 0000 XMESSAGE, 0
3780 3135 4572 QUIET, LAS
3781 3136 7710 SPA CLA
3782 3137 4461 HLT
3783 3140 5765* JMP ERETURN
3784 /
3785 /ENTRY TO HERE FROM SUBROUTINES XSER, OR XSDN
3786 /
3787 3141 2111 HUNGUP, ISZ BUSY
3788 3142 3353 DCA HUNGPC
3789 3143 4576 FORCE
3790 /
3791 /THE LABLE "XHUNG" MUST RESIDE HERE BECAUSE OF REFERENCES MADE WITHIN "FORCE"
3792 /
3793 3144 4473 XHUNG, PRINT
3794 3145 6612 MHUNGPC
3795 3146 4505 TY40CT
3796 3147 3353 HUNGPC
3797 3150 1364 TAD (+40)
3798 3151 3116 DCA HANGER
3799 3152 5453 NOTEST
3800 3153 0000 HUNGPC, 0
3801 /
3802 3164 7740
3803 3165 5520
3804 3166 0200
3805 3167 7056
3806 3170 7043
3807 3171 0400
3808 3172 0032
3809 3173 3425
3810 3174 3521
3811 3175 2000
3812 3176 7113
3813 3177 5267
3814 3400 3400 PAGE
3815 /ROUTINE IS USED INPLACE OF THE LAS INSTRUCTION WILL READ CORRECT SWITCHES
3816 /
3817 /
3818 3400 0000 XC8SWIT, 0
3819 3401 7200 CLA
3820 3402 1022 TAD 22 /CHECK BIT 0 FOR APT
3821 3403 7710 SPA CLA /ON APT?
3822 3404 5600 JMP I XC8SWIT /YES RETURN WITH CLEARED AC
3823 3405 1021 TAD 21 /CHECK STATUS WORD
3824 3406 7710 SPA CLA /0=ACTIVE CONSOLE
3825 3407 7614 7614 /LAS AND SKIP

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15122 PAGE 2-59

SEQ 0102

```

3826 3410 1020 TAD 20 /GET PSEUDO SW REG
3827 3411 5600 JMP I XCKSWIT /EXIT XCKSWIT
3828 /READ VERIFY
3829 /
3830 3412 3412 XREADCOMPARE, .
3831 3413 1212 TAD XREADCOMPARE
3832 3414 3216 DCA XPSAD
3833 3415 5220 JMP XRDC
3834 /READ AND READ AFTER WRITE SUBROUTINE
3835 /
3836 ****
3837 /
3838 /IF THIS IS A READ AFTER WRITE, THEN 1 PROGRAM LOCATION PRECEEDING
3839 /THE PROGRAM LOCATION CONTAINING THE "READ" WILL CONTAIN "WRITE"
3840 /
3841 ****
3842 /
3843 /IF THIS IS A READ ONLY, THEN THE CONTENTS OF "RDC" WILL = 1
3844 /
3845 /IF THIS IS A READ VERIFY, THEN THE CONTENTS OF "RDC" WILL = 0
3846 /
3847 /READ ALL SELECTED SECTORS OF THAT TRACK
3848 /
3849 3416 3416 XREAD,
3850 3417 7301 CLL CLA IAC
3851 3420 3120 XRDC, DCA RDC
3852 3421 4462 INITSECTORS
3853 3422 1121 READL, TAD KRETRY
3854 3423 3140 DCA RI_RETRY
3855 3424 4456 GETASECTOR
3856 3425 1121 READRETRY, TAD KRETRY
3857 3426 3141 DCA R2KRETRY
3858 /REFRESH PROGRAM LOCATION SNDLOG BECAUSE THE CONTENTS MIGHT BE RESIDUAL
3859 /IF A PREVIOUS SND (STATUS NO DATA) ERROR EVER OCCURED
3860 /
3861 3427 3144 DCA SNDLOG
3862 3430 3142 DCA DWSDLOG
3863 3431 3143 DCA DNSLOG
3864 /
3865 3432 1121 REREAD, TAD KRETRY
3866 3433 3145 DCA SRTRY
3867 3434 1121 RESEEK, TAD KRETRY
3868 3435 3146 DCA PRTRY
3869 3436 7327 CLA STL IAC RTL
3870 3437 4440 LCDR
3871 3438 5331 JMP READOK
3872 3440 5331

3873 /RETURN TO HERE IS FROM A PI (IF AN RX01 ERROR FLAG)
3874 /
3875 /AN ERROR HAS BEEN DETECTED
3876 /
3877 /IF NOT A CRC ERROR THEN ASSUME A SEEK ERROR
3878 /
3879 3441 7301 READERRO, CLL CLA IAC
3880 3442 0126 AND ASTATUS /CRC MASK

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15122 PAGE 2-60

SEQ 0103

```

3881 3443 7640 SZA CLA
3882 3444 5256 JMP CRCERROR
3883 3445 2145 ISZ SRTRY
3884 3446 7410 SKP
3885 3447 5347 JMP RLUGGED
3886 3450 4572 LAS
3887 3451 0377 AND (SW1)
3888 3452 7640 SZA CLA
3889 3453 5234 JMP RESEEK
3890 3454 3145 DCA SRTRY
3891 3455 5347 JMP RLUGGED
3892 /
3893 /PROGRAMMING NOTE:
3894 /
3895 /ANY RECOVERABLE SEEK ERRORS ARE NOTED AT PROGRAM LOCATION "DNS"
3896 /
3897 /AN ERROR HAS OCCURED
3898 /
3899 3510 SND=DNS
3900 3510 DWS=SND
3901 /
3902 /THE SECTOR BUFFER CONTAINS THE DATA READ
3903 /
3904 /ANY PARITY ERRORS WOULD HAVE PREVIOUSLY BEEN DETECTED AND LOGGED
3905 /
3906 /THIS ERROR IS NOT A SEEK ERROR, THEREFORE IT IS ASSUMED TO BE A
3907 /
3908 / CRC ERROR
3909 /
3910 /COMPARE THE DATA WITHIN THE SECTOR BUFFER TO DETECT CRC STATUS
3911 /WITHOUT DATA ERRORS (SND)
3912 /
3913 /IF AT THE END OF THE COMPARE, STATUS NO DATA ERRORS HAVE BEEN DETECTED
3914 /THEN PRINT AN APPROPRIATE MESSAGE
3915 /
3916 3456 1120 CRCERROR, TAD RDC
3917 3457 7640 SZA CLA
3918 3460 5305 JMP XCRCERROR
3919 3461 4776* JMS COMPARE
3920 3462 1113 TAD COMPRError
3921 3463 7450 SNA
3922 3464 1775* TAD INSUMCHECK
3923 3465 7640 SZA CLA
3924 3466 5310 JMP DWS
3925 3467 2144 ISZ SNDLOG
3926 /
3927 /IF AC SW (4) = 1 THEN DO NOT PRINT THE ERROR INFORMATION
3928 /
3929 3470 4572 LAS
3930 3471 0374 AND (SW4)
3931 3472 7640 SZA CLA
3932 3473 5305 JMP XCRCERROR
3933 3474 4352 JMS RDORWR
3934 3475 5301 JMP .+4
3935 3476 4473 PRINT

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-61

SEQ 0104

```

3936 3477 6716      MWRITE
3937 3500 5303      JMP .+3
3938 3501 4473      PRINT
3939 3502 6722      MREAD
3940 3503 4473      PRINT
3941 3504 6740      MSNDError
3942 3505 4572      XCRCCERROR, LAS
3943 3506 7700      SMA CLA
3944 3507 4461      HLT7, HLT
3945 3510 1121      /
3946 3510 1121      DNS, TAD KRETRY
3947 3511 3145      DCA SRETRY
3948 3512 2141      ISZ R2RETRY
3949 3513 7410      SKP
3950 3514 5324      JMP UREAD
3951 3515 4572      /AC SW (1) = 0 ; INHIBIT READ RETRY
3952 3516 0377      /
3953 3516 0377      LAS
3954 3517 7640      AND (SW1)
3955 3517 5232      SZA CLA
3956 3520 5232      JMP REREAD
3957 3521 3140      /A HARD FILL BUFFER PARITY ERROR OR A HARD PARITY ERROR ON THE COMMAND/
3958 3521 3140      /SECTOR/TRACK WORDS, OR
3959 3521 3140      /A HARD SEEK ERROR WHICH HAS BEEN LOGGED WITHIN THE WRITE SUBROUTINE, OR
3960 3521 3140      /A HARD CRC ERROR WHICH OCCURED WHILE WITHIN THE READ SUBROUTINE
3961 3521 3140      /
3962 3521 3140      NUREAD, DCA R1RETRY
3963 3522 3141      DCA R2RETRY
3964 3523 5347      JMP RLOGGED
3965 3524 4352      /IF THIS IS A READ AFTER WRITE THEN RE-WRITE THE SECTOR IN ERROR
3966 3524 4352      /
3967 3524 4352      /BECAUSE THIS IS A HARD PROGRAM COMPARE DATA ERROR
3968 3524 4352      /
3969 3525 4352      UREAD, JMS HDORWR
3970 3525 5321      JMP NUREAD
3971 3526 2140      ISZ R1RETRY
3972 3527 5773*     JMP REWRITE
3973 3530 5347      JMP RLOGGED
3974 3530 5347      /IF THIS IS A READ COMPARE TEST
3975 3530 5347      /
3976 3530 5347      /THEN " JMS COMPARE ", BUT ...
3977 3530 5347      /
3978 3530 5347      /IF A STATUS ERROR WITH NO DATA ERROR HAS PREVIOUSLY BEEN DETECTED
3979 3530 5347      /
3980 3530 5347      /THEN DO NOT RE= " JMS COMPARE ", AND
3981 3530 5347      /
3982 3530 5347      /DO NOT RESET PROGRAM LOCATION " START " WITH " TARGET "
3983 3531 1144      /
3984 3531 1144      /PROGRAMMING NOTE:
3985 3531 1144      /
3986 3531 1144      /ANY RECOVERABLE SEEK ERRORS WHICH OCCURED PRIUR TO CRC OR DATA ERRORS
3987 3531 1144      /
3988 3531 1144      /ARE LOGGED AT PROGRAM LOCATION " DNS "
3989 3531 1144      /
3990 3531 1144      READOK, TAD SNDLOG

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-62

SEQ 0105

```

3991 3432 1120      TAD RDC
3992 3433 7640      SZA CLA
3993 3434 5343      JMP ROK
3994 3435 4775*     JMS COMPARE
3995 3436 1113      TAD COMPRERROR
3996 3437 7450      SNA
3997 3440 1775*     TAD INSUMCHECK
3998 3441 7640      SZA CLA
3999 3442 5310      JMP DNS
4000 3443 1131      ROK, TAD TARGET
4001 3444 3125      DCA START
4002 3445 1124      TAD STARGET
4003 3446 3123      DCA SSTART
4004 3447 2122      RLOGGED, ISZ SECTORS
4005 3450 5222      JMP READL
4006 3451 5616      JMP I XREAD
4007 3452 3552      /IF THE PROGRAMMED INSTRUCTION IMMEDIATELY BEFORE " READ "
4008 3452 3552      /IS A " WRITE ", THEN THIS IS A WRITE DATA ERROR, IF NOT,
4009 3452 3552      /THEN THIS IS A READ DATA ERROR
4010 3452 3552      /
4011 3452 3552      /FORM: JMS RDORWR; (READ RETURN); (WRITE RETURN)
4012 3452 3552      /
4013 3452 3552      RDORWR, .
4014 3453 7344      CLL STA RAL
4015 3454 1216      TAD XREAD
4016 3455 3137      DCA XXX
4017 3456 1537      TAD I XXX
4018 3457 1372      TAD (-WRITE)
4019 3458 7650      SNA CLA
4020 3461 2352      ISZ RDORWR
4021 3462 5752      JMP I RDORWR
4022 3472 3270      /
4023 3473 3206      /
4024 3474 0200      /
4025 3475 3762      /
4026 3476 3601      /
4027 3477 2000      3600
4028 3477 2000      PAGE
4029 3477 2000      JMPICOMPARE, JMP I COMPARE
4030 3477 2000      /
4031 3477 2000      /THE FOLLOWING INFORMATION IS ALWAYS PRINTED IF A PROGRAM COMPARE DATA ERROR
4032 3477 2000      /
4033 3477 2000      DATA ERROR
4034 3477 2000      WORD GOOD BAD
4035 3477 2000      /
4036 3477 2000      WHERE " WORD " IS THE WORD NUMBER (0-127),
4037 3477 2000      AND " GOOD " IS THE DATA WORD WRITTEN,
4038 3477 2000      AND " BAD " IS THE DATA WORD READ (IN ERROR)
4039 3477 2000      /
4040 3477 2000      /WORDS 0 AND 1 ARE HEADER WORDS (8 BIT BYTES)
4041 3477 2000      /
4042 3477 2000      WORD 0 = TRACK # (BITS 5-11)
4043 3477 2000      WORD 1 = SECTOR (BITS 7-11)
4044 3477 2000      /

```

```

4045          /AC SW (4) = 1 ; INHIBIT READ DATA ERROR TYPEOUT
4046          /
4047          /
4048  3601  3601  COMPARE, .
4049          /
4050          /EMPTY BUFFER
4051          /
4052          /SAVE THE PREVIOUS READ'S A=STATUS REGISTER
4053          /
4054  3602  7301  CLL CLA IAC
4055  3K03  0126  AND ASTATUS
4056  3604  3361  DCA XASTATUS
4057  3605  1121  TAD KRETRY
4058  3606  3146  DCA PRETRY
4059  3607  3362  DCA INSUMCHECK
4060          JMS EMPTYL
4061  3K11  1132  TAD TESTP
4062  3K12  0376  AND (4
4063  3613  7640  SZA CLA    /IS IT 12 BIT MODE?
4064  3614  1375  TAD (7400  /NO (-377)
4065  3615  7040  CMA      /YES
4066  3616  3363  DCA BITMODE   /SAVE MASK
4067          /
4068          /AC SW (4) = 1 ; INHIBIT FURTHER READ DATA ERROR TYPEOUTS
4069          /
4070          /...BUT STAY IN THIS LOOP UNTIL THE RX01 SECTOR BUFFER IS EMPTIED
4071          /
4072  3617  4443  EMPTY, STR
4073  3620  5217  JMP EMPTY
4074          /
4075          /DISABLE THE RX01 INTERRUPT
4076          /
4077  3621  7300  CLA CLL
4078  3622  6756  K67X6B, 6756
4079          /
4080          /TRANSFER DATA FROM THE SECTOR BUFFER INTO THE ACCUMULATOR
4081          /
4082  3623  6752  K67X2C, 6752  / "ACTUAL" (BAD) DATA
4083  3624  3133  DCA XA10
4084          /
4085          /ASSUME A 12 BIT SUMCHECK EVEN IF 8 BIT MODE FOR NOW
4086          /
4087          /NOTE: THE CONTENTS OF PROGRAM LOCATION "INSUMCHECK" SHOULD = 0
4088          / (AFTER ALL WORDS HAVE COME IN)
4089          /
4090  3625  1133  TAD XA10
4091  3626  1362  TAD INSUMCHECK
4092  3627  3362  DCA INSUMCHECK
4093  3630  1534  TAD I XA11
4094  3631  0363  AND BITMODE   /377 FOR 8 BIT    7777 FOR 12 BIT
4095  3632  7041  CIA
4096  3633  1133  TAD XA10
4097  3634  7640  SZA CLA
4098  3635  5243  JMP DATAERR
4099  3636  7301  ENDCOMPARE, CLL CLL IAC

```

```

4100  3637  6756  K67X6C, 6756
4101  3640  2134  ISZ XA11
4102  3641  6001  ION
4103  3642  5217  JMP EMPTY
4104          /
4105          /A PROGRAM COMPARE DATA ERROR HAS BEEN DETECTED
4106          /
4107          /NOTATION:
4108          /
4109          /THE CONTENTS OF PROGRAM LOCATION XASTATUS REFLECTS THE STATUS OF THE
4110          /RX01 AT THE COMPLETION OF THE PREVIOUS "READ SECTOR"
4111          /
4112          /IF A CRC ERROR EXISTS THEN THIS IS A DATA ERROR WITH STATUS ERROR
4113          /
4114          /IF A CRC ERROR DOESN'T EXIST THEN THIS IS A DATA ERROR WITH NO ERROR STATUS
4115          /
4116  3643  1361  DATAERR,     TAD XASTATUS   / A=STATUS OF PREVIOUS READ
4117  3644  7450  SNA
4118  3645  2143  ISZ DNSLOG   /NO CRC STATUS
4119  3646  7640  SZA CLA
4120  3647  2142  ISZ DNSLOG   /CRC STATUS
4121          /
4122          /AC SW (4) TO INHIBIT ERROR PRINTOUT
4123          /
4124          /IF THIS IS A READ ONLY TEST (NOT READ COMPARE) OR IF AC SW 4 = 1
4125          /THEN DO NOT PRINT ERROR INFORMATION
4126          /
4127          /BUT,
4128          /
4129          /IF THIS IS A READ COMPARE TEST AND AC SW 4 = 0
4130          /THEN PRINT ERROR INFORMATION
4131          /
4132  3650  4572  LAS
4133  3651  0374  AND (SW4)
4134  3652  1120  TAD RDC
4135  3653  7640  SZA CLA
4136  3654  5357  JMP ISZCOMPERROR
4137          /IF THIS IS THE FIRST COMPARE ERROR THEN PRINT HEADER INFORMATION
4138          /
4139  3655  1113  TAD COMPERROR
4140  3656  7640  SZA CLA
4141  3657  5320  JMP CNOTFIRST
4142          /
4143          /IF A DATA NO CRC STATUS ERROR (DNS) THEN PRINT ENTIRE ERROR INFORMATION
4144          /
4145  3660  1143  TAD DNSLOG
4146  3661  7640  SZA CLA
4147  3662  4576  FORCE
4148          /IF THE PROGRAMMED INSTRUCTION IMMEDIATELY BEFORE "READ"
4149          /IS A "WRITE", THEN THIS IS A WRITE DATA ERROR, IF NOT,
4150          /THEN THIS IS A READ DATA ERROR
4151          /
4152  3663  4773* XCMPARE, JMS RDORWR
4153  3664  5270  JMP .+4
4154  3665  4473  PRINT

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-65

4155 3666 6716 MWRITE
 4156 3667 5272 JMP ,+3
 4157 3670 4473 PRINT
 4158 3671 6722 MREAD
 4159 /NOTATION:
 4160 /THE CONTENTS OF PROGRAM LOCATION XASTATUS REFLECTS THE STATUS OF THE
 4161 /RX01 AT THE COMPLETION OF THE PREVIOUS " READ SECTOR "
 4162 /
 4163 /IF A CRC ERROR EXISTS THEN THIS IS A DATA ERROR WITH STATUS ERROR
 4164 /
 4165 /IF A CRC ERROR DOESN'T EXIST THEN THIS IS A DATA ERROR WITH NO ERROR STATUS
 4166 /
 4167 /
 4168 3672 1361 TAD XASTATUS
 4169 3673 7640 SZA CLA
 4170 3674 5300 JMP DWESERROR
 4171 3675 4473 PRINT
 4172 3676 6726 MDNSERROR
 4173 3677 5302 JMP ,+3
 4174 3700 4473 DWESERROR, PHINT
 4175 3701 6734 MDWESERROR
 4176 3702 4473 PRINT
 4177 3703 6753 MDATAERROR
 4178 /PRINT " WORD " IF 12-BIT MODE, OR PRINT " BYTE " IF 8-BIT MODE
 4179 /
 4180 3704 1372 TAD (MWORD)
 4181 3705 3315 DCA XLENGTH
 4182 3706 7307 CLL CLA IAC RTL
 4183 3707 0132 AND TESTP
 4184 3710 7650 SNA CLA
 4185 3711 5314 JMP ,+3
 4186 3712 1371 TAD (MBYTE)
 4187 3713 3315 DCA XLENGTH
 4188 3714 4473 PRINT
 4189 3715 6762 XLENGTH, MWORD
 4190 3716 4473 PRINT
 4191 3717 6770 MGB
 / AC 5 = 0 - PRINT ONLY FIRST 3 COMPARE ERRORS
 / AC 5 = 1 - PRINT ALL COMPARE ERRORS
 4192 /
 4193 /
 4194 /
 4195 3720 4572 CNOTFIRST, LAS
 4196 3721 0370 AND (SW5)
 4197 3722 7640 SZA CLA
 4198 3723 5330 JMP ,+5
 4199 3724 7346 CLL STA RTL
 4200 3725 1113 TAD COMPRERROR
 4201 3726 7700 SMA CLA
 4202 3727 5357 JMP ISZCOMPREPROR
 4203 3730 4473 PRINT
 4204 3731 6602 MCRLF
 4205 3732 1367 TAD (-WBUFFER)
 4206 3733 1134 TAD XA11
 4207 3734 3160 DCA LSB
 4208 3735 4505 TY4OCT
 4209 3736 0160 LSB
 /

SEQ 0108

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-66

4210 3737 4504 TAB
 4211 3740 0005 5
 4212 /IF 8-BIT MODE THEN MASK THE 12-BIT "GOOD" WORDS (377)
 4213 /
 4214 3741 7307 CLL CLA IAC RTL
 4215 3742 0132 AND TESTP
 4216 3743 7112 CLL RTR
 4217 3744 7010 RAR
 4218 3745 1534 TAD I XA11
 4219 3746 7430 SZL
 4220 3747 0366 AND (377)
 4221 3750 3160 DCA LSB
 4222 3751 4505 TY4OCT
 4223 3752 0160 LSB
 4224 3753 4504 TAB
 4225 3754 0012 12
 4226 3755 4505 TY4OCT
 4227 3756 0133 XA10
 4228 3757 2113 ISZCOMPRERROR, ISZ COMPRERROR
 4229 3760 5236 JMP ENDCOMPARE
 4230 /THE CONTENTS OF THE XASTATUS PROGRAM LOCATION REFLECTS THE STATUS AT THE
 4231 /COMPLETION OF THE PREVIOUS READ FUNCTION
 4232 /
 4233 /THE PREVIOUS STATUS IS SAVED BECAUSE A SUCCEEDING ERROR
 4234 / (PARITY ERROR ON THE COMMAND WORD) MAY OCCUR
 4235 /
 4236 3761 0000 XASTATUS, 0
 4237 /
 4238 /THE CONTENTS OF " INSUMCHECK " IS THE SUMCHECK DERIVED FROM THE SUM OF ALL
 4239 /DATA WORDS COMING IN (THE SUM OF ALL " BAD "), AND
 4240 /SHOULD BE EQUIVALENT TO 0 AT THE END OF THE EMPTY BUFFER
 4241 /
 4242 3762 0000 INSUMCHECK, 0
 4243 3763 0000 BITMODE, 0
 4244 3766 0377
 4245 3767 0664
 4246 3770 0100
 4247 3771 6765
 4248 3772 6762
 4249 3773 3552
 4250 3774 0200
 4251 3775 7400
 4252 3776 0004
 4253 3777 4000
 4000 PAGE
 4254 /
 4255 4000 0000 EMPTYL, 0
 4256 4001 1377 TAD (-WBUFFER)
 4257 4002 3134 DCA XA11
 4258 4003 7305 CLL CLA IAC RAL
 4259 4004 4437 LCDA
 4260 4005 5222 JMP EMPTIYOK
 4261 4006 5211 JMP EMPTYERROR
 4262 /RETURN TO HERE FROM SUBROUTINE XLCDA
 4263 /

SEQ 0109

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-67

```

4264 4007 3113 DCA COMPRERROR
4265 4010 5600 JMP I EMPTYL /RETURN
4266 /
4267 //THIS INTERFACE PARITY ERROR MUST BE ON THE COMMAND WORD TO "EMPTY BUFFER"
4268 /
4269 //NOTE: IT CAN'T BE ANY OTHER ERROR
4270 /
4271 4011 2146 EMPTYERROR, ISZ PRETRY
4272 4012 7410 SKP
4273 4013 5272 JMP XEMPTYOKNOTOK
4274 4014 4572 LAS
4275 4015 0376 AND (SW1)
4276 4016 7640 SZA CLA
4277 4017 5200 JMP EMPTYL
4278 4020 3146 DCA PRETRY
4279 4021 5272 JMP XEMPTYOKNOTOK
4280 /
4281 //IF AC SW (4) = 0
4282 //PRINT A VALUE SYMBOLIC OF THE TOTAL # OF COMPARE ERRORS DETECTED
4283 /
4284 //IF 8-BIT MODE THEN THE "SUMCHECK" WILL OVERFLOW INTO BITS 0 TO 3
4285 /
4286 //THEREFORE MASK THE CONTENTS OF " INSUMCHECK "
4287 /
4288 //THE RESULT OF THE SUBTRACTION SHOULD = 0
4289 /
4290 //NO MASK IS NEEDED FOR 12-BIT MODE
4291 /
4292 4022 7307 EMPTYOK, CLL CLA IAC RTL
4293 4023 0132 AND TESTP
4294 4024 7112 CLL RTR
4295 4025 7010 RAR
4296 4026 1775* TAD INSUMCHECK
4297 4027 7430 S2L
4298 4030 0374 AND (377)
4299 4031 3775* DCA INSUMCHECK
4300 4032 4572 LAS
4301 4033 0373 AND (SW4)
4302 4034 7640 SZA CLA
4303 4035 5272 JMP XEMPTYOK
4304 //IF A SUMCHECK ERROR EXISTS WITHOUT A "COMPRERROR" THEN "FORCE" A TYPEOUT
4305 /
4306 4036 1113 TAD COMPRERROR
4307 4037 7640 SZA CLA
4308 4040 5245 JMP ,+5
4309 4041 1775* TAD INSUMCHECK
4310 4042 7650 SNA CLA
4311 4043 5272 JMP XEMPTYOK
4312 4044 4576 FORCE
4313 4045 4473 PRINT
4314 4046 6775 MSUMCHECK
4315 4047 1775* TAD INSUMCHECK
4316 4050 7640 SZA CLA
4317 4051 5255 JMP ,+4
4318 4052 4473 PRINT

```

SEQ 0110

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-68

```

4319 4053 7005 MOK
4320 4054 5260 JMP ,+4
4321 4055 4505 TY40CT
4322 4056 3762 INSUMCHECK
4323 4057 5263 JMP ,+4
4324 4060 1113 TAD COMPRERROR
4325 4061 7650 SNA CLA
4326 4062 5272 JMP XEMPTYOK
4327 4063 4473 PRINT
4328 4064 7007 MDESUMMARY
4329 4065 4505 TY40CT
4330 4066 0113 COMPRERROR
4331 4067 4504 TAB
4332 4070 0005 5
4333 4071 5272 JMP XEMPTYOK
4334 /
4335 //AC SW 0 = 1 ; HALT ON ERROR
4336 /
4337 4072 1113 XEMPTYOK, TAD COMPRERROR
4338 4073 7450 SNA
4339 4074 1775* TAD INSUMCHECK
4340 4075 7650 SNA CLA
4341 4076 5772* JMP JMPICCOMPARE
4342 4077 4572 LAS
4343 4100 7710 SPA CLA
4344 4101 4461 HLT6, HLT
4345 4102 5772* JMP JMPICCOMPARE
4346 4103 4103 XSETUP, *
4347 4104 4507 WAITTY
4348 4105 1371 TAD (ANDRETURN)
4349 4106 3770* DCA XPRINT
4350 4107 1703 TAD I XSETUP
4351 4110 3320 DCA XANDRETURN
4352 4111 2303 ISZ XSETUP
4353 4112 5703 JMP I XSETUP
4354 /
4355 //AND RETURN TO HERE WAITING FOR ENTIRE NUMERICAL OUTPUT
4356 /
4357 4113 4507 ANDRETURN, WAITTY
4358 /
4359 //THEN EXIT FROM HERE FOR MAIN LINE CODE
4360 /
4361 4114 1720 THENEXIT, TAD I XANDRETURN
4362 4115 3320 DCA XANDRETURN
4363 4116 3162 DCA TTYBUSY
4364 4117 5720 JMP I XANDRETURN
4365 4120 4120 XANDRETURN, *
4366 /
4367 4121 4121 XHALT, *
4368 4122 4507 WAITTY
4369 ****
4370 /CONSOLE
4371 ****
4372 4123 4424 CHECKCB
4373 4124 4425 XC8ENTR

```

SEQ 0111

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-69

4374 4125 5331 JMP CBRET3 /
 4375 ****
 4376 4126 7240 STA
 4377 4127 1321 TAD XHALT
 4378 4130 7402 7402
 4379 4131 7200 CBRET3,CLA
 4380 4132 5721 JMP I XHALT
 4381 /
 4382 //ROUTINE TO NOTIFY OF OF RUNNING IF NEED BE DONE
 4383 /
 4384 4133 0000 XTICK, 0
 4385 4134 4472 CHEK22
 4386 4135 7410 SKP /ON APT,
 4387 4136 5733 JMP I XTICK
 4388 4137 2351 ISZ CLKCNT
 4389 4140 5733 JMP I XTICK
 4390 4141 1352 TAD COUNT
 4391 4142 3351 DCA CLKCNT /INIT CLOCK COUNTER
 4392 4143 6002 IOF
 4393 4144 6201 CDF 00
 4394 4145 6272 CIF 70
 4395 4146 4750 JMS I K6500 /NOTIFY API-8
 4396 4147 5733 JMP I XTICK /EXIT.
 4397 /
 4398 4150 6500 K6500, 6500
 4399 4151 7777 CLKCNT, -1
 4400 4152 7763 COUNT, -15
 4401 4170 5244
 4402 4171 4113
 4403 4172 3600
 4404 4173 0200
 4405 4174 0377
 4406 4175 3762
 4407 4176 2000
 4408 4177 7114
 4200 PAGE
 4409 //SEQUENCE TO THE NEXT AVAILABLE DISKETTE
 4410 /
 4411 4200 4200 XGETUNIT,
 4412 4201 3240 DCA UNITZ /CLEAR FOR A NEW DISKETTE
 4413 4202 1236 TAD WUNITS /WORKING UNIT COUNTER
 4414 4203 7450 SNA
 4415 4204 1235 TAD UNITS /EXHAUSTED ALL DISKETTES ; RESET
 4416 4205 3236 DCA WUNITS
 4417 4206 3237 DCA POLL /CLEAR POLLER
 4418 4207 7120 STL /START
 4419 4210 1237 NEXT, TAD POLL
 4420 4211 7010 RAR /NEXT
 4421 4212 3237 DCA POLL
 4422 4213 1237 TAD POLL
 4423 4214 7430 SZL /DISKETTE
 4424 4215 4461 HLT /NO UNITS AVAILABLE ; CATASTROPHIC
 4425 4216 0236 AND WUNITS
 4426 4217 7450 SNA
 4427 4220 2240 ISZ UNITZ /ACTIVE DISKETTE

SEQ 0112

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-70

4428 4221 7450 SNA
 4429 4222 5210 JMP NEXT /TRY AGAIN
 4430 //A DISKETTE IS AVAILABLE AND SELECTED FOR OPERATIONS
 4431 4223 3241 DCA UNITX /A CODED VERSION OF UNIT
 4432 4224 1241 TAD UNITX
 4433 4225 7040 CMA /...DELETE FROM
 4434 4226 0236 AND WUNITS /...AVAILABLE UNIT LIST (WUNITS)
 4435 4227 3236 DCA WUNITS /...AND CREATE NEW LIST
 4436 4230 1240 TAD UNITZ
 4437 4231 7106 CLL RTL
 4438 4232 7006 RTL /BIT 7 OF COMMAND REGISTER
 4439 4233 3242 DCA UNIT /FOR COMMAND REGISTER LOAD LATER
 4440 4234 5600 JMP I XGETUNIT
 4441 4235 6000 UNITS, 6000 /AVAILABLE UNIT LIST (MAX SYS CONFIGURATION)
 4442 4236 0000 WUNITS, 0 /CODED WORKING UNIT LIST (UNITS YET TO BE EXERCISED)
 4443 4237 0000 POLL, 0 /DISKETTE POLL
 4444 /
 4445 /UNITZ ; UNIT 1 LOOKS LIKE 0001
 4446 /UNITX ; UNIT 1 LOOKS LIKE 2000
 4447 /UNIT ; UNIT 1 LOOKS LIKE 0020 (RX01 COMMAND WORD BIT 7)
 4448 /
 4449 4240 0000 UNITZ, 0 /ACTIVE DISKETTE
 4450 4241 0000 UNITX, 0 /ACTIVE DISKETTE IN CODED FORM
 4451 4242 0000 UNIT, 0 /A CODED VERSION OF UNIT Z (FOR COMMAND REGISTER LOAD)
 4452 /
 4453 //IF (WUNITS) = 0 ; ALL SELECTED DISKETTE DRIVES HAVE SEQUENCED
 4454 /
 4455 4243 4243 XDONE, .
 4456 4244 1236 TAD WUNITS
 4457 4245 7650 SNA CLA
 4458 4246 2243 ISZ XDONE / DONE ; (WUNITS) = 0
 4459 4247 5643 JMP I XDONE
 4460 //INITIALIZE THE NUMBER OF TRACKS ACCESSED VIA THE DIFFERENCE BETWEEN
 4461 //THE CONTENTS OF PROGRAM LOCATIONS "OD" AND "ID".
 4462 /
 4463 4250 4250 XINITTRACKS, .
 4464 4251 1030 TAD ID
 4465 4252 7040 CMA
 4466 4253 1027 TAD OD
 4467 4254 3147 DCA TRACKS
 4468 4255 1147 TAD TRACKS
 4469 4256 7041 CIA
 4470 4257 3150 DCA ITTRACKS
 4471 4260 5650 JMP I XINITTRACKS
 4472 // OD (OUTSIDE DIAMETER) ACTUATOR POSITION INITIALIZED TO {0}
 4473 // ID (INSIDE DIAMETER) ACTUATOR POSITION INITIALIZED TO 114 (76 DECIMAL)
 4474 //
 4475 // " XGETATRACK " WILL GET A TRACK VALUE BETWEEN THE LIMITS OF THE CONTENTS OF
 4476 //PROGRAM LOCATION OD (MIN 0), AND THE CONTENTS OF ID (MAX 114).
 4477 //
 4478 //GET A DISKETTE TRACK TO BE (AC) WITHIN IOT LCD=B
 4479 //
 4480 // IF THIS IS THE " FIRSTMOVE ", (START) IS NOT APPLICABLE HERE, BUT
 4481 // WILL BECOME APPLICABLE WITHIN SUBROUTINE " XGETASECTOR ".
 4482

SEQ 0113

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-71

4483 /
4484 4261 4261 XGETATRACK,
4485 4262 1131 TAD TARGET /PRESENT ACTUATOR POSITION (FROM PREVIOUS LCD-B)
4486 4263 3125 DCA START /BECOMES STARTING ACTUATOR POSITION
4487 4264 1377 TAD (70)
4488 4265 0132 AND TESTP
4489 4266 7110 CLL RAR
4490 4267 7012 RTR
4491 4270 1376 TAD (TAD SEQ)
4492 4271 3272 DCA +1
4493 4272 1276 TAD SEQ
4494 4273 3275 DCA +2
4495 4274 5675 RESEQUENCE, JMP I ,+1
4496 4275 4306 SEQ000
4497 //TRACK ACCESS SEQUENCE IS SELECTED VIA AC SWITCHES 6,7,8 AT L/S 200
4498 /
4499 // 0 = INCREMENTAL (1=114=0)
4500 // 1 = DECREMENTAL (114=0)
4501 // 2 = 1=114, 113=0
4502 // 3 = BOUNCE ID TO OD ONLY
4503 // 4 = BOUNCE: (114, 0 ; 113, 1 ; 112, 2 ; ...ETC TO 47, 45)
4504 // 5 =
4505 // 6 = STROBE: (77, 0 ; 76, 0 ; 75, 0 ; ...ETC TO 1, 0)
4506 // 7 = RANDOM
4507 /
4508 4276 4306 SEQ, SEQ000
4509 4277 4317 SEQ001
4510 4300 4400 SEQ010
4511 4301 4422 SEQ3
4512 4302 4444 SEQ100
4513 4303 5453 NOTEST
4514 4304 4465 SEQ6
4515 4305 4330 SEQ111
4516 /
4517 //INCREMENTAL ACTUATOR ACCESS (OD INCREMENTALLY TO ID)
4518 /
4519 4306 1150 SEQ000, TAD TTRACKS
4520 4307 1147 TAD TTRACKS
4521 4310 7640 SZA CLA
4522 4311 5314 JMP +3
4523 4312 1027 TAD OD
4524 4313 5332 JMP DCATARGET
4525 4314 1131 TAD TARGET
4526 4315 7001 IAC
4527 4316 5332 JMP DCATARGET
4528 //DECREMENTAL ACTUATOR ACCESS (ID TO OD)
4529 /
4530 4317 1150 SEQ001, TAD TTRACKS
4531 4320 1147 TAD TTRACKS
4532 4321 7640 SZA CLA
4533 4322 5325 JMP +3
4534 4323 1030 TAD ID
4535 4324 5332 JMP DCATARGET
4536 4325 1131 TAD TARGET
4537 4326 1117 TAD K7777

SEQ 0114

/RX8 RX01 DTAGNOSTIC DIPXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-72

4538 4327 5332 JMP DCATARGET
4539 //RANDOM ACTUATOR ACCESS
4540 /
4541 4330 4775 // SEQ111, JMS RANGEN
4542 4331 0374 AND (177)
4543 4332 3131 DCATARGET, DCA TARGET
4544 //PREVIOUSLY AT L/S THE FOLLOWING CONDITION WAS TRUE
4545 /
4546 // 0 <= (OD) <= (ID) <= 32
4547 /
4548 //THEREFORE TEST FOR THE CONDITION
4549 /
4550 // (TARGET) <= (ID)
4551 /
4552 4333 1030 XSEQ, TAD ID
4553 4334 7041 CIA
4554 4335 1131 TAD TARGET
4555 4336 7740 SMA SZA CLA
4556 4337 5274 JMP RESEQUENCE
4557 //AND TEST FOR THE CONDITION
4558 /
4559 // (OD) <= (TARGET)
4560 /
4561 4340 1131 TAD TARGET
4562 4341 7041 CIA
4563 4342 1027 TAD OD
4564 4343 7740 SMA SZA CLA
4565 4344 5274 JMP RESEQUENCE
4566 4345 5661 JMP I XGETATRACK
4567 /
4568 //ERROR REPORTER FOR APT. INDICATES TEST PC IN ERROR. THE ONLY EXCEPTIONS
4569 //ARE FOR AN UNEXPECTED RX01 INTERRUPT.
4570 //AND A MISSING ERROR FLAG.
4571 /
4572 4346 0000 XAERRO, 0
4573 4347 3137 DCA XXX /STORE ERROR PC.
4574 4350 4472 CHEK22
4575 4351 7410 SKP
4576 4352 5746 JMP I XAERRO
4577 4353 6002 IOF
4578 4354 1137 TAD XXX /GET BACK ERROR PC.
4579 4355 6201 CDF 00
4580 4356 6272 CIF 70
4581 4357 5761 JMP I K6520
4582 4360 4461 HLT /SOMETHING WENT WRONG ON
4583 4361 6520 K6520, 6520 /ON REPORTING ERROR TO APT
4584 4362 6520
4585 4374 0177
4586 4375 4712
4587 4376 1276
4588 4377 0070
4400 PAGE
4589 // OD+1 INCREMENTALLY TO ID; ID-1 DECREMENTALLY TO OD
4590 /
4591 4400 1150 SEQ010, TAD TTRACKS

SEQ 0115

/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15122 PAGE 2-73

4592 4401 1147 TAD TRACKS
 4593 4402 7640 SZA CLA
 4594 4403 5213 JMP XSEQ2
 4595 4404 1147 TAD TRACKS
 4596 4405 7104 CLL RAL
 4597 4406 1377 TAD (2)
 4598 4407 3147 DCA TTRACKS / (TRACKS X 2)=2 = 152(MAX VAL)
 4599 4410 1147 TAD TRACKS
 4600 4411 7041 CIA
 4601 4412 3150 DCA TTRACKS
 4602 /INCREMENT IF (TRACKS) < [(ID)-(OD)]
 4603 /DECREMENT IF (TRACKS) => [(ID)-(OD)]
 4604 4413 1027 XSEQ2, TAD OD
 4605 4414 7041 CIA
 4606 4415 1030 TAD ID
 4607 4416 1147 TAD TRACKS
 4608 4417 7700 SMA CLA
 4609 4420 5776* JMP SEQ001 / ID=1 TO OD
 4610 4421 5775* JMP SEQ000 / OD+1 TO ID
 4611 /
 4612 /BOUNCE; ID,OD ONLY
 4613 /
 4614 4422 1150 SEQ3, TAD TTRACKS
 4615 4423 1147 TAD TRACKS
 4616 4424 7640 SZA CLA
 4617 4425 5233 JMP XSEQ3
 4618 4426 7344 CLL STA RAL
 4619 4427 3147 DCA TRACKS
 4620 4430 1147 TAD TRACKS
 4621 4431 7041 CIA
 4622 4432 3150 DCA TTTRACKS
 4623 4433 1131 XSEQ3, TAD TARGET
 4624 4434 7041 CIA
 4625 4435 1027 TAD OD
 4626 4436 7650 SNA CLA
 4627 4437 1030 TAD ID
 4628 4440 7450 SNA
 4629 4441 1027 TAD OD
 4630 4442 3131 DCA TARGET
 4631 4443 5774* JMP XSEQ
 4632 /BOUNCE ; ID TO OD
 4633 /
 4634 /THEREFORE 76 (NOT 77) TRACKS ARE TESTED
 4635 /
 4636 4444 1150 SEQ100, TAD TTRACKS
 4637 4445 1147 TAD TRACKS
 4638 4446 7640 SZA CLA
 4639 4447 5254 JMP Q4UD
 4640 /FIRST ENTRY INTO SEQUENCE # 4
 4641 /
 4642 /IF (TRACKS) = [(ID)-(OD)] IS A NEGATIVE ODD THEN INCREMENT (TRACKS)
 4643 /
 4644 4450 7201 CLA IAC
 4645 4451 0147 AND TRACKS
 4646 4452 7640 SZA CLA

SEQ 0116

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15122 PAGE 2-74

4647 4453 2147 ISZ TRACKS
 4648 /IF (TRACKS) = -ODD ; BOUNCE TO OUTSIDE DIAMETER, BUT
 4649 /
 4650 /IF (TRACKS) = -EVEN ; BOUNCE TO INSIDE DIAMETER
 4651 /
 4652 4454 7201 Q40D, CLA IAC
 4653 4455 0147 AND TRACKS
 4654 4456 7650 SNA CLA
 4655 4457 5305 JMP Q461D
 4656 4460 7240 STA
 4657 4461 1150 TAD TTRACKS
 4658 4462 1147 TAD TRACKS
 4659 4463 7110 CLL RAR
 4660 4464 5313 JMP Q460D
 4661 // (TRACKS) = -EVEN ; THEREFORE THE BOUNCE IS TO THE INSIDE DIAMETER
 4662 //
 4663 /Q4ID, TAD TTRACKS; TAD TRACKS; CLL RAR; CIA; TAD ID; DCA TARGET; JMP XSEQ
 4664 /STROBE ID, OD ; ID-1, OD ; ID-2, OD ; ...ETC...
 4665 /
 4666 4465 1150 SEQ6, TAD TTRACKS
 4667 4466 1147 TAD TRACKS
 4668 4467 7640 SZA CLA
 4669 4470 5300 JMP Q60D
 4670 /FIRST ENTRY INTO SEQUENCE # 6
 4671 /
 4672 4471 1147 TAD TRACKS
 4673 4472 7105 CLL IAC RAL
 4674 4473 3147 DCA TRACKS
 4675 4474 1147 TAD TRACKS
 4676 4475 7041 CIA
 4677 4476 3150 DCA TTRACKS
 4678 4477 5305 JMP Q461D
 4679 / IF (TARGET) = (OD), THEN STROBE TO INSIDE DIAMETER
 4680 /
 4681 Q60D, TAD TARGET
 4682 4500 1131 CIA
 4683 4501 7041 TAD OD
 4684 4502 1027 SZA CLA
 4685 4503 7640 JMP Q460D
 4686 4504 5313
 4687 /
 4688 /
 4689 /
 4690 4505 1150 Q461D, TAD TTRACKS
 4691 4506 1147 TAD TRACKS
 4692 4507 7110 CLL RAR
 4693 4510 7041 CIA
 4694 4511 1030 TAD ID
 4695 4512 7410 SKP
 4696 4513 1027 Q460D, TAD OD
 4697 4514 3131 DCA TARGET
 4698 4515 5774* JMP XSEQ
 4699 /*****
 4700 /CONSOLE
 4701 /*****

SEQ 0117

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4702
4703
4704 4516 0000 XCHECKCB, 0
4705 4517 7200 CLA /CHECK IF CONSOL IS ACTIVE
4706 4520 1022 TAD .22
4707 4521 0373 AND (400
4708 4522 7650 SNA CLA
4709 4523 5337 JMP NOTCL8 /NOT ON ACTIVE CONSOLE
4710 4524 1716 TAD I XCHECKCB /GET CONSOLE CALL
4711 4525 3331 DCA PACKDO /STORE IT IN THIS LOC
4712 4526 4507 WAITTY /WAIT FOR PRINTING TO FONISH
4713 4527 6002 IOF /KILL INTERRUPT
4714 4530 6212 CIF 10 /CHANGE INST FIELD TO FIELD ONE
4715 4531 0000 PACKDO, 0000 /DO CONSOLE CALL
4716 4532 7000 NOP
4717 4533 6001 ION /RETURN FROM CALL
4718 4534 2316 EXITCK, ISZ XCHECKCB /BUMP RETURN
4719 4535 7200 CLA
4720 4536 5716 JMP I XCHECKCB /EXIT XCHECK
4721 4537 2316 NOTCL8, ISZ XCHECKCB /BUMP FOR NOT CONSOL CALL +2
4722 4540 5334 JMP EXITCK /LEAVE BY THIS MEANS
4723
4724
4725 ****
4726 /CONSOLE
4727 ****
4728 /THIS SUBROUTINE IS ENTERED FROM TESTS: T21, T22, T32, T33
4729 /
4730 /THE CONTENTS OF THE AC AT ENTRY IS THE PATTERN TO FILL THE BUFFER WITH
4731 /
4732 4541 4541 FB128BYTES, .
4733 4542 3166 DCA GOOD /THE CONTENTS OF GOOD IS THE PURE PATTERN
4734 4543 1372 TAD (100)
4735 4544 4436 LCD /FILL BUFFER (8-BIT MODE)
4736 4545 5350 JMP .+3 /START BY WAITING FOR TRANSFER REQUEST
4737 4546 1166 TAD GOOD
4738 4547 4442 XROUT /TRANSFER OUT TO SECTOR BUFFER
4739 4550 4443 STR
4740 4551 7410 SKP
4741 4552 5346 JMP .+4 /WAIT FOR TRANSFER REQUEST FLAG
4742 4553 4445 SDN
4743 4554 5350 JMP .+4 /WAIT FOR DONE FLAG
4744 4555 4444 SER
4745 4556 4465 OK
4746 4557 4452 E210, ERROR /UNEXPECTED ERROR FLAG
4747 4560 4502 SCOPE
4748 4561 5741 JMP 1 FB128BYTES

4749 4572 0100
4750 4573 0400
4751 4574 4333
4752 4575 4306
4753 4576 4317
4754 4577 0002
4600 PAGE
4755 4600 /INITIALIZE THE NUMBER OF SECTORS AVAILABLE TO ACCESS (PER TRACK) VIA THE

```

```

4756 /DIFFERENCE BETWEEN THE CONTENTS OF PROGRAM LOCATIONS " FIRST " AND " LAST "
4757 /
4758 4600 4600 XINITSECTORS, .
4759 4601 1032 TAD LAST
4760 4602 7040 CMA
4761 4603 1031 TAD FIRST
4762 4604 3122 DCA SECTORS
4763 4605 3311 DCA XTARGET
4764 4606 5600 JMP I XINITSECTORS
4765 /
4766 /GET A SECTOR
4767 /
4768 /SECTOR ACCESS 1-32 (OCTAL)
4769 /
4770 4607 4607 XGETASECTOR, .
4771 /
4772 /SET (SSSTART)
4773 /
4774 4610 7301 XXGETASECTOR, CLL CLA IAC / 1
4775 4611 3310 DCA IF
4776 4612 1120 TAD RDC
4777 4613 7450 SNA
4778 4614 2310 ISZ IF / + 1 RDC
4779 4615 7710 SPA CLA
4780 4616 5222 JMP .+4 / + 1 WRITE
4781 4617 7307 CLL CLA IAC RTL
4782 4620 0132 AND TESTP
4783 4621 7640 SZA CLA
4784 4622 2310 ISZ IF / + 1 8-BIT MODE
4785 4623 4777* JMS VT78CK /GO CHECK IF ON VT78 SYSTEM
4786 4624 2310 ISZ IF /INCREASE (IF) FOR VT78
4787 /
4788 / (IF) IS:
4789 /
4790 / 1 IF READ
4791 / 2 IF WRITE
4792 / 2 IF WRITE 8-BIT MODE
4793 / 2 IF READ AND PROGRAM VERIFY
4794 / 3 IF READ AND PROGRAM VERIFY 8-BIT MODE
4795 /
4796 /
4797 4625 1311 NEXTSECTOR, TAD XTARGET
4798 4626 7440 SZA
4799 4627 1310 TAD IF /INTERLEAVE FACTOR 1, 2, 3
4800 4630 7001 IAC /NOW INTERLEAVE FACTOR IS 2, 3, 4
4801 4631 3311 DCA XTARGET
4802 4632 1311 TAD XTARGET
4803 4633 1376 TAD (-33)
4804 4634 7510 SPA
4805 4635 5243 JMP OKTARGET / < 33
4806 4636 7640 SZA CLA /SKIP IF = 33
4807 4637 7240 STA
4808 4640 1375 TAD (-31)
4809 4641 1311 TAD XTARGET
4810 4642 3311 DCA XTARGET

```

/RXB RX01 DTGNOSTIC DIRXA-D PAL10 V142A 1-AUG-77 15:22 PAGE 2-77

SEQ 0120

```

4811 4643 7200 OK$TARGET, CLA
4812 4644 1311 TAD X$TARGET
4813 4645 3124 DCA STARGET
4814 /
4815 //PREVIOUSLY AT L/S THE FOLLOWING CONDITION WAS TRUE
4816 //
4817 // 0 < (FIRST) <= (LAST)
4818 //
4819 // THEREFORE TEST FOR THE CONDITION
4820 //
4821 // (STARGET) <= (LAST)
4822 //
4823 4646 1032 TAD LAST
4824 4647 7041 CIA
4825 4650 1124 TAD STARGET
4826 4651 7740 SMA SZA CLA
4827 4652 5225 JMP NEXTSECTOR
4828 //
4829 //AND FOR THE CONDITION
4830 //
4831 // (FIRST) <= (STARGET)
4832 //
4833 4653 1124 TAD STARGET
4834 4654 7041 CIA
4835 4655 1031 TAD FIRST
4836 4656 7740 SMA SZA CLA
4837 4657 5225 JMP NEXTSECTOR
4838 //FORMAT (XTARGET) BITS 0-6 TRACK ; AND BITS 7-11 SECTOR
4839 //
4840 4660 1131 TAD TARGET
4841 4661 7104 CLL RAL
4842 4662 7006 RTL
4843 4663 7006 RTL
4844 4664 1124 TAD STARGET
4845 4665 3151 DCA XTARGET
4846 //AND SET THE HEADER WORDS 0, AND 1 OF THE WRITE BUFFER FOR RDC I,D,
4847 //
4848 //WORD 0 IS THE TRACK
4849 //WORD 1 IS THE UNIT (BIT 4) AND THE SECTOR (BITS 7-11)
4850 //
4851 4666 1131 TAD TARGET
4852 4667 3774* DCA WBUFFER
4853 4670 1773* TAD UNITZ
4854 4671 7106 CLL RTL
4855 4672 7006 RTL
4856 4673 7006 RTL
4857 4674 7004 RAL
4858 4675 1124 TAD STARGET
4859 4676 3772* DCA WBUFFER+1
4860 //WORDS 63 AND 64 OR 127 AND 128 ARE OUT-SUMCHECK WORDS
4861 //
4862 4677 1155 TAD PATSUMCHECK
4863 4700 1774* TAD WBUFFER
4864 4701 1772* TAD WBUFFER+1
4865 4702 3556 DCA I WORDX

```

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SEQ 0121

```

4866 4703 1556 TAD I WORDX
4867 4704 1556 TAD I WORDX
4868 4705 7041 CIA
4869 4706 3557 DCA I WORDY
4870 4707 5607 JMP I XGETASECTOR
4871 //
4872 4710 0000 IF, 0
4873 4711 0000 X$TARGET, 0 / 1 TO 32
4874 //
4875 //RANDOM NUMBER GENERATOR
4876 // (EXIT IS WITH THE RANDOM # IN THE ACCUMULATOR)
4877 4712 4712 RANGEN, *
4878 4713 7301 CLL CLA IAC
4879 4714 1326 TAD R1
4880 4715 1327 TAD R2
4881 4716 7106 CLL RTL
4882 4717 3326 DCA R1
4883 4720 1327 TAD R2
4884 4721 7012 RTR
4885 4722 1326 TAD R1
4886 4723 3327 DCA R2
4887 4724 1327 TAD R2
4888 4725 5712 JMP I RANGEN
4889 4726 1234 R1, 1234
4890 4727 0765 R2, 0765
4891 //
4892 //TESTS
4893 //
4894 4730 0600 TESTS, T0
4895 4731 0626 T1
4896 4732 0652 T2
4897 4733 0723 T3
4898 4734 1000 T4
4899 4735 1071 T5
4900 4736 1132 T6
4901 4737 1200 T7
4902 4740 1215 T10
4903 4741 1233 T11
4904 4742 1260 T12
4905 4743 1456 T13
4906 4744 1603 T14
4907 4745 1601 T15
4908 4746 1455 T16
4909 4747 1602 T17
4910 4750 1600 T20
4911 4751 1675 T21
4912 4752 1674 T22
4913 4753 2265 T23
4914 4754 1714 T24
4915 4755 1716 T25
4916 4756 1720 T26
4917 4757 2107 T27
4918 4760 2200 T30
4919 4761 2202 T31
4920 4762 2223 T32

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-79

```

4921 4763 2241 T33
4922 4764 2300 T34
4923 4765 2276 T35
4924 4766 2277 T36
4925 4767 2275 T37
4926 4770 0462 NOMORE=3
4927 4772 7115
4928 4773 4240
4929 4774 7114
4930 4775 7747
4931 4776 7745
4932 4777 1165
      5000 PAGE

```

SEQ 0122

```

4933 /TYPE 4 OCTAL
4934 /
4935 XTY4OCT, .
4936 5n00 5000 SKP
4937 5n01 7410 DCA TTYBUSY /INITIALIZE TTYBUSY INDICAOR,
4938 5n02 3162 SETUP
4939 5n03 4500 XTY4OCT
4940 5n04 5000 TAD I XTY4OCT
4941 5n05 1600 ISZ XTY4OCT
4942 5n06 2200 DCA XOCtal /FOR " OCTAL " ADDRESS
4943 5n07 3262 TAD I XOCtal
4944 5n10 1662 DCA XOCtal /OCTAL
4945 5n11 3262 CLL STA RTL / -3
4946 5n12 7346 TAD K7777 / -1
4947 5n13 1117 DCA DIGITS
4948 5n14 3263 SHIFT, CLL STA RTL / -3
4949 5n15 7346 DCA SHIFTS
4950 5n16 3265 TAD XOCtal
4951 5n17 1262 XSHIFT, CLL
4952 5n20 7100 SPA
4953 5n21 7510 CML
4954 5n22 7020 RAL
4955 5n23 7004 ISZ SHIFTS
4956 5n24 2265 JMP XSHIFT
4957 5n25 5220 DCA XOCtal /NEW
4958 5n26 3262 TAD XOCtal
4959 5n27 1262 AND K0007 /OCTAL MASK
4960 5n30 0174 SVA
4961 5n31 7450 JMPDIG, JMP ISZDIG /DO NOT PRINT LEADING ZEROS,
4962 5n32 5242 DCA XXDMP /STORE NUMBER TO BE PRINTED
4963 5n33 3264 TAD K7000
4964 5n34 1173 DCA .-3 /NOP JMP ISZDIG, LEADING ZEROS WILL NOT BE PRINTED
4965 5n35 3232 TAD XXDMP /RETURN VALUE TO BE PRINTED.
4966 5n36 1264

```

/FOR ASCII COMPONENT

```

4967 5n37 1377 TAD (260)
4968 5n40 4506 TYPEIT
4969 5n41 2266 ISZ CCNT /INDICATES A CHARACTER HAS BEEN PRINTED
4970 5n42 2263 ISZ DIGITS /INDEX DIGIT COUNT
4971 5n43 5215 JMP SHIFT
4972 5n44 2175 ISZ XCNT /TYBOCT?
4973 5n45 5202 JMP XTY4OCT+2 /YES
4974 5n46 1266 TAD CCNT

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-80

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4975 5n47 7650 SVA CLA /PRINT ONLY A ZERO??
4976 5n50 5257 JMP ZERO /YES
4977 5n51 7340 CLL CLA CMA
4978 5n52 3175 DCA XCNT /INIT COUNTER
4979 5n53 3266 DCA CCNT
4980 5n54 1376 TAD (JMP ISZDIG) /ESTABLISH FIRST TIME SWITCH,
4981 5n55 3232 DCA JMPDIG
4982 5n56 5775* JMP THENEXT
4983 5n57 1377 ZERO, TAD (260)
4984 5n60 4506 TYPEIT
4985 5n61 5251 JMP .-10
4986 5n62 0000 XOCtal, 0 / " OCTAL " FOR TYPEOUT
4987 5n63 7775 DIGITS, -3
4988 5n64 0000 XXDMP, 0
4989 5n65 7775 SHIFTS, -3
4990 5n66 0000 CCNT, 0
4991 /THIS ROUTINE WILL DETERMINE DEVICE CODE TO USE IN PLACE
4992 /OF THE STANDARD 75 CODE,
4993 /
4994 ****
4995 5n67 0000 CHNDEV, 0 TAD DTESTP /GET TESTING PARAMETERS.
4996 5n70 1114 AND (700) /ISOLATE DEVICE CODE TO USE.
4997 5n71 0374 SNA /USE 75??
4998 5n72 7450 JMP I CHNDEV /YES,
4999 5n73 5667 CLL RTR
5000 5n74 7112 RAR /MOVE TO BIT POSITION 6-8,
5001 5n75 7010 TAD (6700)
5002 5n76 1373 /PROPER DEVICE CODE SHOULD NOW BE ESTABLISHED,
5003 /IF THE OPERATOR HAS MADE AN ERROR THE PROGRAM HAS NO WAY
5004 /OF KNOWING IT,
5005 /
5006 /
5007 5n77 3010 DCA A10 /SET DEVICE CODE = 67X-
5008 5n00 1372 TAD (XDEVIC-1)
5009 5n01 3011 DCA A11 /INTO APPLICABLE PROGRAM
5010 5n02 1411 TAD I A11
5011 5n03 7450 SNA
5012 5n04 5312 JMP .+6 /DEVICE CODE LOCATIONS
5013 5n05 3166 DCA GOOD
5014 5n06 1010 TAD A10
5015 5n07 3566 DCA I GOOD /SPECIFIED AT
5016 5n10 2010 ISZ A10
5017 5n11 5302 JMP .-7 /PROGRAM LOCATION "DEVICE"
5018 5n12 1735 TAD I XK67X2A
5019 5n13 3771* DCA K67X2B /DUPLICATE IOT CODE 67X2
5020 5n14 1735 TAD I XK67X2A /DUPLICATE IOT CODE 67X2
5021 5n15 3770* DCA K67X2C /DUPLICATE IOT CODE 67X2
5022 5n16 1736 TAD I XK67X3A
5023 5n17 3767* DCA K67X3B /DUPLICATE IOT CODE 67X3
5024 5n20 1737 TAD I XK67X4A /DUPLICATE IOT CODE 67X4
5025 5n21 3766* DCA K67X4B /DUPLICATE IOT CODE 67X4
5026 5n22 1740 TAD I XK67X5A
5027 5n23 3765* DCA K67X5B /DUPLICATE IOT CODE 67X5
5028 5n24 1741 TAD I XK67X6A
5029 5n25 3764* DCA K67X6B /DUPLICATE IOT CODE 67X6

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SEQ 0123

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5030 5126 1741      TAD I XH67X6A
5031 5127 3763*     DCA K673C          /DUPLICATE IOT CODE 67X6
5032 5130 1742      TAD I XH67X7A
5033 5131 3762*     DCA K67X7B          /DUPLICATE IOT CODE 67X7
5034 5132 5667      JMP I CHNDEV        /EXIT AND RUN PROGRAM.
5035           /PROGRAM DEVICE CODE TABLE
5036           /
5037 5133 6201      XDEVICE,          K67X0          /VT78/SEL = SELECT UNIT A OR UNIT B
5038 5134 6206      K67X1
5039 5135 6401      XK67X2A,          K67X2A
5040 5136 6410      XK67X3A,          K67X3A
5041 5137 6415      XK67X4A,          K67X4A
5042 5140 6422      XK67X5A,          K67X5A
5043 5141 6431      XK67X6A,          K67X6
5044 5142 6435      XK67X7A,          K67X7A
5045 5143 0000      0
5046           /
5047           /
5048           /
5049           /
5050           /
5051           /
5052           /ROUTINE TO DETERMINE IF ON APT.
5053           /
5054 5144 0000      XCHK22, 0
5055 5145 1022      TAD    22
5056 5146 0361      AND   (4000
5057 5147 7640      SZA CLA
5058 5150 5744      JMP I XCHK22
5059 5151 2344      ISZ   XCHK22
5060 5152 5744      JMP I XCHK22
5061
5062 5161 4000
5063 5162 6451
5064 5163 3637
5065 5164 3622
5066 5165 0701
5067 5166 0715
5068 5167 0707
5069 5170 3623
5070 5171 6404
5071 5172 5132
5072 5173 6700
5073 5174 0700
5074 5175 4114
5075 5176 5242
5076 5177 0260

5200          PAGE
5077           /
5078           /ROUTINE TO TYPE 8 OCTAL DIGITS.
5079           /FORMAT TY8OCT; MSB(STARTING ADDRESS OF DOUBLE LOG TO BE PRINTED).
5080           /
5081 5200 0000      XTY8OCT, 0
5082 5201 1600      TAD I XTY8OCT
5083 5202 3212      DCA   .+10          /GET STARTING ADDRESS

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5084 5203 1600      TAD I XTY8OCT
5085 5204 7001      IAC
5086 5205 3211      DCA   .+4
5087 5206 7344      CLL CLA CMA RAL
5088 5207 3175      DCA   XCNT
5089 5210 4505      TY4OCT
5090 5211 7000      NOP
5091 5212 7000      NOP
5092 5213 2200      ISZ   XTY8OCT
5093 5214 5600      JMP I XTY8OCT
5094           /SUBROUTINE ; TAB
5095           /ENTRY ; TAB; +N
5096           /COMMENT ; PRINT " N " SPACES WHERE N IS VIA INDEXED XTAB
5097           /
5098 5215 5215      XTAB, .
5099 5216 4500      SETUP
5100 5217 5215      XTAB
5101 5220 3243      DCA XXTAB      /FOR COUNT
5102 5221 7200      XTABL, CLA
5103 5222 1243      TAD XXTAB
5104 5223 1615      TAD I XTAB      /FOR " N "
5105 5224 3243      DCA XXTAB
5106 5225 1320      TAD CHARLINE / # OF CHARACTERS ALREADY TYPED ON THIS LINE
5107 5226 1377      TAD (110) / 72 CHARACTER LINE STANDARD
5108 5227 7041      CIA
5109 5230 1243      TAD XXTAB
5110 5231 7550      SPA SNA
5111 5232 5221      JMP XTABL
5112 5233 7041      CIA
5113 5234 3243      DCA XXTAB
5114 5235 2215      ISZ XTAB
5115 5236 1376      TAD (240)
5116 5237 4506      TYPEIT
5117 5240 2243      ISZ XXTAB
5118 5241 5236      JMP .-3
5119 5242 5775*     JMP THENEXIT
5120 5243 0000      XXTAB, 0
5121           /
5122           /SUBROUTINE ; PRINT
5123           /ENTRY ;
5124           /COMMENT ; PRINT A " MESSAGE ", AND A <CR><LF> AT EACH -
5125           /
5126           / CALL SYNTAX FOR PRINT
5127           /
5128           / 1. PRINT; MTEXT
5129           /
5130 5244 5244      XPRINT, .
5131 5245 4472      CHEK22
5132 5246 5341      JMP PNTEXT
5133 5247 4507      WAITTY
5134 5250 1644      TAD I XPRINT / " TEXT"
5135 5251 2244      ISZ   XPRINT
5136 5252 3262      DCA MESSAGE /ADDRESS
5137 5253 1662      NUWORD, TAD I MESSAGE
5138 5254 4263      OUTPUT      /LEFT BYTE

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-83

SEQ 0126

5139 5255 1662 TAD I MESSAGE
5140 5256 2262 ISZ MESSAGE
5141 5257 4433 BSW
5142 5260 4263 OUTPUT /RIGHT BYTE
5143 5261 5253 JMP NUWORD
5144 5262 0000 MESSAGE,0
5145 5263 4263 OUTPUT=JMS .
5146 5263 5263 XOUTPUT,
5147 5264 0374 AND (-100) /MASK MS BITS 0-5
5148 5265 7440 SZA
5149 5266 5271 JMP ,+3
5150 5267 3162 DCA TTYBUSY
5151 5270 5773* JMP PIXEXIT
5152 5271 1372 TAD (4100)
5153 5272 7450 SNA
5154 5273 5302 JMP NULINE /
5155 5274 1371 TAD (-4100+2) /CODE 200
5156 5275 7500 SMA
5157 5276 7001 IAC /CODE 300
5158 5277 4433 BSW
5159 5300 4506 TYPEIT
5160 5301 5663 JMP I XOUTPUT
5161 5302 1263 NULINE, TAD XOUTPUT
5162 5303 3305 DCA XTYPEIT
5163 5304 5311 JMP XNULINE
5164 5305 5305 XTYPEIT,
5165 5306 4321 JMS TY1ASC
5166 5307 2320 ISZ CHARLINE
5167 5310 5705 JMP I XTYPEIT
5168 5311 1370 XNULINE,TAD (15) / <CR>
5169 5312 4321 JMS TY1ASC
5170 5313 1367 TAD (12) / <LF>
5171 5314 4321 JMS TY1ASC
5172 5315 1366 TAD (-110)
5173 5316 3320 DCA CHARLINE / 72 CHARACTER LINE (NEGATIVE NOTATION)
5174 5317 5705 JMP I XTYPEIT
5175 5320 7670 CHARLINE, -110 / # CHARACTERS PER LINE ARE COUNTED HERE
5176 /
5177 0014 A14=14 /
5178 /
5179 5321 5321 TY1ASC,
5180 5322 6002 IOF
5181 5323 3014 DCA A14
5182 5324 4472 CHEK22
5183 5325 5341 JMP PNTXT
5184 5326 4765* JMS CKSFLG /GO CHECK IF "S IS ACTIVE
5185 5327 1014 TAD A14

5186 5330 6046 TLS
5187 5331 7200 CLA
5188 5332 1162 TAD ITYBUSY
5189 5333 7640 SZA CLA
5190 5334 5773* JMP PIXEXIT
5191 5335 2162 ISZ TTYBUSY
5192 5336 1384 TAD (PI)
5193 5337 3002 DCA IPI

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-84

SEQ 0127

5194 5140 7410 SKP
5195 5141 2244 PNTXT, ISZ XPRINT /UPDATE RETURN.
5196 5142 6001 ION
5197 5143 5641 JMP I XPRINT
5198 /
5200 5144 6042 XTCF, TCF
5201 5145 1014 TAD A14
5202 5146 1363 TAD (-207)
5203 5147 7650 SNA CLA
5204 5150 5705 JMP I XTYPEIT
5205 5151 5721 JMP I TY1ASC
5206 /
5207 /
5208 /
5209 5152 5352 XSPECIALTYPEIT, .
5210 5153 4500 SETUP
5211 5154 5352 XSPECIALTYPEIT
5212 5155 1752 TAD I XSPECIALTYPEIT
5213 5156 2352 ISZ XSPECIALTYPEIT
5214 5157 4506 TYPEIT
5215 5160 5775* JMP THENEXIT
5216 5163 7571
5217 5164 5417
5218 5165 5400
5219 5166 7670
5220 5167 0012
5221 5170 0015
5222 5171 3702
5223 5172 4100
5224 5173 5510
5225 5174 7700
5226 5175 4114
5227 5176 0240
5228 5177 0110
5229 5400 0000 PAGE
/ROUTINE TO CHECK IF "S IS ACTIVE
5230 /
5231 5400 0000 CKSFLG, 0
5232 5401 7001 IAC /AC=1
5233 5402 6211 CDF 10
5234 5403 1777* TAD C8SFLG /GO GET FLAG (7777 IF SET)
5235 5404 6201 CDF 0
5236 5405 7640 S7A CLA /IS FLAG SET?
5237 5406 5600 JMP I CKSFLG /NO - RETURN
5238 5407 6212 CIF 10 /CHANGE INSTR FIELD TO CONSOLE PACKAGE
5239 5410 4776* JMS C8ENTR /GO TO CONSOLE PACKAGE
5240 5411 5600 JMP I CKSFLG /RETURN
5241 /
5242 /
5243 /
5244 /
5245 5412 5412 XWAITYY, .
5246 5413 1162 TAD TTYBUSY
5247 5414 7640 SZA CLA

/RXB RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-85

SEQ 0128

```

5248 5415 5213      JMP #-2
5249 5416 5612      JMP I XWAHTTY
5250          /* ENTRY TO THIS POINT WAS CAUSED BY A PROGRAM INTERRUPT REQUEST
5251          /
5252 5417 3315      PI,   DCA XAC
5253 5420 7010      RAR
5254 5421 3316      DCA XLINK /SAVE (AC) AND (LINK)
5255 5422 6031      KSF
5256 5423 7410      SKP
5257 5424 5775*     JMP XKCC /IGNORE KEYBOARD IRQ
5258 5425 6041      TSF
5259 5426 5234      JMP PISON
5260          /* IF THIS TELEPRINTER FLAG IS EXPECTED (TTYBUSY) = 1
5261          /* THEN "JMP XTCF"
5262          /* IF NOT THEN "JMP PIEXIT"
5263          /
5264 5427 1162      TAD TTIBUSY
5265 5430 7740      SZA SZA CLA
5266 5431 5774*     JMP XTCF
5267 5432 6042      TCF
5268 5433 5310      JMP PIEXIT
5269          /* IF (BUSY) = 1, THEN AN RX01 PI IS ALREADY BEING PROCESSED
5270          /
5271          /* IF (GOBIT) = 0, THEN THIS DISKETTE IRQ IS UNEXPECTED
5272          /
5273          /* DISABLE RX01 INTERRUPT
5274          /
5275          /* READ RX01 STATUS REGISTER
5276          /
5277 5434 1162      PISON, TAD TTIBUSY
5278 5435 1111      TAD BUSY
5279 5436 7640      SZA CLA
5280 5437 5310      JMP PIEXIT
5281 5440 2111      ISZ BUSY
5282          /* REFRESH PROGRAM LOCATION " FORCE "
5283          /
5284 5441 3325      DCA XXFORCE
5285          /
5286 5442 4445      SDN
5287 5443 5305      JMP UNKNOWN
5288 5444 1154      TAD GOBIT
5289 5445 7750      SPA SNA CLA
5290 5446 5773*     JMP SDUNEXPECTED
5291 5447 4446      INIR
5292 5450 4441      XDIN
5293 5451 0372      AND (377)
5294 5452 3126      DCA ASTATUS

5295          /* IF THIS IS TEST # 30 THEN IGNORE DELETED DATA MARKS (IF ANY)
5296          /
5297 5453 1171      TAD TEST
5298 5454 1371      TAD (*T30)
5299 5455 7650      SNA CLA
5300 5456 5275      JMP DDIGNORE
5301          /* TECHNICAL NOTE:
5302          /

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/RXB RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-86

SEQ 0129

```

5303          /* THE COMMANDS "FILL BUFFER" (0), AND "EMPTY BUFFER" (2)
5304          /* NEVER SHOULD ATTRACT THE "DELETED DATA" STATUS (100)
5305          /
5306 5457 1370      TAD (16)           /* COMMAND MASK
5307 5460 0112      AND COMMAND        /FB (0), OR EB (2)
5308 5461 7440      SZA               /* SKIP IF FILL BUFFER COMMAND (0)
5309 5462 7112      CLL RTR
5310 5463 7640      SZA CLA           /* SKIP IF EMPTY BUFFER COMMAND (2)
5311 5464 7305      CLL CLA IAC RAL / 2
5312 5465 0132      AND TESTP
5313 5466 7112      CLL RTR           /PUT TO LINK
5314 5467 1367      TAD (100)         / 100
5315 5470 0126      AND ASTATUS        / A STATUS D,D. MASK

5316          /* IF (L) = 0 AND (AC) = 0, O.K. - NO D,D. MARK
5317          /
5318          /* IF (L) = 0 AND (AC) > 0 (=100), UNEXPECTED D,D.
5319          /
5320          /* IF (L) = 1 AND (AC) = 0, D,D. MARK EXPECTED DIDN'T OCCUR
5321          /
5322          /* IF (L) = 1 AND (AC) > 0 (=100), O.K. - D,D. MARK OCCURED
5323          /
5324          /* VERIFY THAT THE CONTENTS OF THE A-STATUS REGISTER = 0
5325 5471 7430      S2L
5326 5472 7640      SZA CLA           / (L) = 1
5327 5473 7440      SZA               / (L) = 0, OR (L) = 1 AND (AC) > 0
5328 5474 5337      JMP DDERROR        / (L) = 0 AND (AC) > 0 (=100) , OR (L) = 1 AND (AC) = 0
5329 5475 4444      DDIGNORE, SER
5330 5476 5300      JMP VERIFY        /RX01 OK = RETURN TO INLINE CODE
5331 5477 5771*     JMP RXERROR
5332          /* VERIFY THAT THE CONTENTS OF THE A-STATUS REGISTER = 0
5333          /
5334          /* WHEN NO RX01 ERROR FLAG EXISTS
5335          /
5336          /* MASK BITS 4 (DRIVE READY), AND 5 (DELETED DATA)
5337          /
5338          /* VERIFY, TAD ASTATUS
5339 5500 1126      VERIFY, TAD ASTATUS
5340 5501 0366      AND (73)
5341 5502 7640      SZA CLA
5342 5503 5765*     JMP NOSER
5343 5504 5321      JMP XRETURN
5344          /* AN UNKNOWN PROGRAM INTERRUPT OCCURED
5345          /
5346          /* UNKNOWN, PRINT
5347 5505 4473      UNKNOWN, PRINT
5348 5506 7070      MUNKNOWN
5349 5507 3111      DCA BUSY
5350          /
5351 5510 1316      PIEXIT, TAD XLINK
5352 5511 7104      CLL RAL
5353 5512 1315      TAD XAC
5354 5513 6001      ION
5355 5514 5400      JMP I 0
5356 5515 0000      XAC, 0
5357 5516 0000      XLINK, 0

```

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-87

5358 /THE CONTENTS OF RETURN ARE SETUP WITHIN THE SUBROUTINES "LCD-A" AND "LCD-B"
 5359 /TO REPRESENT THE RETURN ADDRESS OF THE INLINE TESTING
 5360 /
 5361 5517 0000 RETURN, 0
 5362 5520 2317 ERETURN, ISZ RETURN /INCREMENT FOR ERROR RETURN ADDRESS
 5364 /
 5365 /ENTRY TO HERE FROM PI SERVICE
 5366 /
 5367 /NO RX01 ERROR FLAG EXISTS
 5368 /
 5369 5521 3111 XRETURN, DCA BUSY
 5370 5522 4466 TICK /TIMING FOR APT IF NEEDED.
 5371 5523 6001 ION
 5372 5524 5717 JMP I RETURN
 5373 /...ENTRY TO THIS POINT MAY HAVE BEEN FROM WITHIN THE SUBROUTINE "COMPARE"
 5374 //WHICH DETECTED A DATA NO STATUS ERROR (DNS) , OR
 5375 /...ENTRY TO THIS POINT MAY HAVE BEEN FROM ROUTINES "XHUNGUP" OR "HUNGUP"
 5376 //THEREBY FORCING AN ERROR INFORMATION PRINTOUT
 5377 /
 5378 5525 0000 XXFORCE, 0
 5379 5526 2111 ISZ BUSY
 5380 5527 5771* JMP RXERROR
 5381 5530 7240 XFORCE, STA
 5382 5531 1111 TAD BUSY
 5383 5532 3111 DCA BUSY
 5384 5533 6001 ION
 5385 5534 5725 JMP I XXFORCE
 5386 5535 7020 DTTYPE, MEDDIDNOT
 5387 5536 7031 MUDDID
 5388 /A DISKETTE DELETED DATA MALFUNCTION HAS BEEN DETECTED
 5389 /
 5390 // IF (AC) = 0 - EXPECTED D,D. DIDN'T OCCUR
 5391 // IF (AC) = 100 - UNEXPECTED D,D. OCCURED
 5392 /
 5393 5537 7640 DDERROR, SZA CLA / 0 OR 1
 5394 5540 7001 IAC
 5395 5541 1364 TAD (DTTYPE)
 5396 5542 3137 DCA XXX
 5397 //PROGRAMMING NOTE: "SER" TO CLEAR ACCOMPANYING ERROR FLAG (IF ANY)
 5398 /
 5399 5543 4444 SER
 5400 5544 7000 NOP
 5401 5545 1537 TAD I XXX
 5402 5546 5771* JMP RXERROR
 5403 5564 5535
 5404 5565 3322
 5405 5566 0073
 5406 5567 0100
 5407 5570 0016
 5408 5571 5000
 5409 5572 0377
 5410 5573 3320
 5411 5574 5344
 5412 5575 0323

SEQ 0130

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-88

5413 5576 0200
 5414 5577 0404
 5600 PAGE
 5415 /A DISKETTE ERROR HAS BEEN DETECTED
 5416 /
 5417 // (DMTYPE) NOT = 0 IF A D,D. ERROR EXISTS
 5418 // (DMTYPE) = 0 IF NO D,D. ERROR EXISTS
 5419 /
 5420 5600 3777* RXERROR, DCA DMTYPE
 5421 /
 5422 5601 1112 TAD COMMAND
 5423 5602 3154 DCA ECOMMAND
 5424 5603 1776* TAD XXFORCE
 5425 5604 1375 TAD (-XHUNG)
 5426 5605 7650 SNA CLA
 5427 5606 5246 JMP ERROR
 5428 5607 1776* TAD XXFORCE
 5429 5610 1374 TAD (-XCOMPARE)
 5430 5611 7650 SNA CLA
 5431 5612 5246 JMP ERROR
 5432 5613 1373 SAVEBSTATUS, TAD (16)
 5433 5614 4436 LCD
 5434 5615 4471 WAIT
 5435 5616 4445 SDN
 5436 5617 5215 JMP .-2
 5437 5620 3006 DCA 6 /WAIT POINTER
 5438 5621 4444 SER
 5439 5622 7000 NOP
 5440 5623 4441 XDRIN
 5441 5624 0372 AND (377)
 5442 5625 3127 DCA BSTATUS
 5443 5626 1771* SAVECSTATUS, TAD UNIT
 5444 5627 1370 TAD (12)
 5445 5630 4436 LCD
 5446 5631 4471 WAIT
 5447 5632 4445 SDN
 5448 5633 5231 JMP .-2
 5449 5634 3006 DCA 6 /WAIT POINTER
 5450 5635 4444 SER
 5451 5636 7000 NOP
 5452 5637 4441 XDRIN
 5453 5640 0372 AND (377)
 5454 5641 3130 DCA CSTATUS
 5455 /PRINT AN ERROR MESSAGE IF AC SW 4 = 0
 5456 /
 5457 5642 4572 LASSW4, LAS
 5458 5643 0367 AND (SW4)
 5459 5644 7640 SZA CLA
 5460 5645 5766* JMP NOPRINT
 5461 //THE FOLLOWING INFORMATION IS PRINTED FOR ALL ERRORS DETECTED
 5462 //
 5463 //THE ERROR HEADER TEXT IS INHIBITED IF THE ERROR IS NOT THE FIRST ERROR EVER
 5464 //
 5465 //
 5466 //

SEQ 0131

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-89

SEQ 0132

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5467      /      FAT CMND XDR CODE RST START TARGET XXXX PASS
5468      /
5469      /
5470      /
5471 5646 1171  ERROR, TAD TEST           /GET TEST IN ERROR
5472 5647 4467  AERRUR
5473 5650 2115  ISZ FIRSTERROR
5474 5651 5255  JMP NOHEADER
5475 5652 4473  PRINT
5476 5653 6627  MEHEADER
5477 5654 5271  JMP ONECRLF
5478 /IF THIS IS -NOT- A FORCED TYPEOUT, AND IF THERE ARE NO DATA COMPARE
5479 /ERRORS (COMPRERROR=0), THEN PRINT ONLY 1-CRLF
5480 /BECAUSE
5481 /
5482 /THIS ERROR MUST BE AN ERROR AT THE END OF THE EMPTY BUFFER DONE FLAG
5483 /WHICH WOULD BE ASSOCIATED TO ANY PREVIOUS FORCED TYPEOUT OF DATA ERRORS
5484 /
5485 5655 1776* NOHEADER, TAD XXFORCE
5486 5656 7650  SNA CLA
5487 5657 5267  JMP TWOCLRF
5488 5660 1113  TAD COMPRERROR
5489 5661 7640  SZA CLA
5490 5662 5271  JMP ONECRLF
5491 /IF THIS IS A FORCED TYPEOUT FROM "XXINIT" THEN PRINT 1 CRLF
5492 /
5493 5663 1776* TAD XXFORCE
5494 5664 1365  TAD (-XXINIT)
5495 5665 7650  SNA CLA
5496 5666 5271  JMP ONECRLF
5497 5667 4473  TWOCLRF, PRINT
5498 5670 6602  MCRLF
5499 5671 4473  ONECRLF, PRINT
5500 5672 6602  MCRLF
5501 5673 4505  TY4OCT
5502 5674 0171  TEST
5503 5675 4504  TAB
5504 5676 0005  5
5505 5677 4764* JMS INITSWITCH
5506 5700 5305  JMP .+5
5507 /IF AN ERROR FROM THE RECAL THEN PRINT [INIT] FOR THE COMMAND
5508 /
5509 5701 1776* TAD XXFORCE
5510 5702 1365  TAD (-XXINIT)
5511 5703 7640  SZA CLA
5512 5704 5310  JMP .+4
5513 5705 4473  PRINT
5514 5706 6671  MINIT
5515 5707 5312  JMP TAB12
5516 5710 4505  TY4OCT
5517 5711 0152  ECOMMAND
5518 5712 4504  TAB12, TAB
5519 5713 0012  12
5520 /
5521 /IF THE DEVICE TEST IS HUNG, THEN THE A-, B-, AND C- STATUS IS NOT APPLICABLE

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-90

SEQ 0133

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5522      /
5523 5714 1776* TAD XXFORCE
5524 5715 1375  TAD (-XHUNG)
5525 5716 7650  SNA CLA
5526 5717 5325  JMP DASHALL
5527 /IF THIS IS A "FORCED" TYPEOUT THEN THE B- AND C-STATUS REGISTERS
5528 /ARE NOT APPLICABLE TO THIS TYPEOUT BECAUSE THEY ARE RESIDUAL FROM THE
5529 /PREVIOUS COMMAND WHICH WOULD HAVE HAD A PREVIOUS ERROR TYPE OUT
5530 /RELATING TO THE B- AND C-STATUS REGISTERS IF AN ERROR HAD OCCURED
5531 /
5532 /A DATA NO ERROR STATUS HAS BEEN DETECTED PRIOR TO THE COMPLETION OF
5533 /THE EMPTY BUFFER FUNCTION
5534 /
5535 5720 1776* TAD XXFORCE
5536 5721 1374  TAD (-XCCOMPARE)
5537 5722 7640  SZA CLA
5538 5723 5340  JMP TYASTATUS
5539 5724 5331  JMP DASHBC
5540 5725 4473  DASHALL, PRINT
5541 5726 7017  MDASH
5542 5727 4504  TAB
5543 5730 0017  17
5544 5731 4473  DASHBC, PRINT
5545 5732 7017  MDASH
5546 5733 4504  TAB
5547 5734 0024  24
5548 5735 4473  PRINT
5549 5736 7017  MDASH; JMP TAB31
5550 5737 5763* TYASTATUS, TY4OCT
5551 5740 4505  ASTATUS
5552 5741 0126  TAB
5553 5742 4504  17
5554 5743 0017  TY4OCT
5555 5744 4505  BSTATUS
5556 5745 0127  TAB
5557 5746 4504  24
5558 5747 0024  JMP TYCSTATUS
5559 5750 5762* 6000
5560 5762 6000
5561 5763 6002
5562 5764 6115
5563 5765 1332
5564 5766 6061
5565 5767 0200
5566 5770 0012
5567 5771 4242
5568 5772 0377
5569 5773 0016
5570 5774 4115
5571 5775 4434
5572 5776 5525
5573 5777 6060
5574 6000 4505  6000
5575 6001 0130  PAGE

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5576 6002 4504 TAB31, TAB
5577 6003 0031 31
5578 6004 4315 JMS INITSWITCH
5579 6005 5211 JMP ,+4
5580 /IF (SSTART) = 0 THEN PRINT "HOME" BECAUSE A RECAL HAS TAKEN PLACE
5581 /THEREFORE THE ACTUATOR IS AT TRACK 0 (HOME)
5582 /
5583 6006 1123 TAD SSTART
5584 6007 7640 SZA CLA
5585 6010 5214 JMP ,+4
5586 6011 4473 PRINT
5587 6012 6665 MHOME
5588 6013 5222 JMP TAB43
5589 6014 4505 TY40CT
5590 6015 0125 START
5591 6016 4504 TAB
5592 6017 0036 36
5593 6020 4505 TY40CT
5594 6021 0123 SSTART
5595 6022 4504 TAB43, TAB
5596 6023 0043 43
5597 6024 4315 JMS INITSWITCH
5598 6025 5232 JMP PHOME
5599 /IF (FORCE) = THE ADDRESS OF "XXINIT" THEN ALSO PRINT [HOME] FOR THE TARGET
5600 /
5601 6026 1777* TAD XXFORCE
5602 6027 1376 TAD (-XXINIT)
5603 6030 7640 SZA CLA
5604 6031 5235 JMP ,+4
5605 6032 4473 PHOME, PRINT
5606 6033 6665 MHOME
5607 6034 5243 JMP ,+7
5608 6035 4505 TY40CT
5609 6036 0131 TARGET
5610 6037 4504 TAB
5611 6040 0050 50
5612 6041 4505 TY40CT
5613 6042 0124 STARGET
5614 6043 4504 TAB
5615 6044 0055 55
5616 6045 4505 TY40CT
5617 6046 0132 TESTP
5618 6047 4504 TAB
5619 6050 0002 2
5620 6051 4434 TY80CT
5621 6052 0163 PASS
5622 6053 0164 PASS+1

5623 6054 1260 TAD DMTYPE
5624 6055 7650 SNA CLA
5625 6056 5261 JMP ,+3
5626 6057 4473 PRINT
5627 6060 0000 DMTYPE, 0
5628 /
5629 /AC SW 11 TO INHIBIT RINGING OF BELL AT ERROR
5630 /

```

```

5631 6061 3115 NOPRINT, DCA FIRSTERROR
5632 6062 4572 LAS
5633 6063 0375 AND (SW11)
5634 6064 7640 SZA CLA
5635 6065 5270 JMP ,+3
5636 6066 4501 SPECIALTYPEIT
5637 6067 0207 BELL
5638 /IF ENTRY WAS FROM A "JMS FORCE" THEN EXIT BY A "JMP I FORCE"
5639 /
5640 6070 1777* TAD XXFORCE
5641 6071 7640 SZA CLA
5642 6072 5774* JMP XFORCE
5643 /
5644 /DEFINITIVE ERROR CODES AND MEANINGS
5645 /
5646 / 0 /NO ERROR
5647 / 10 /DRIVE 0 FAILED TO SEE HOME ON INITIALIZE
5648 / 20 /DRIVE 1 FAILED TO SEE HOME ON INITIALIZE
5649 / 30 /FOUND HOME WHEN STEPPING OUT 10 TRACKS FOR INIT
5650 / 40 /TRYED TO ACCESS A TRACK GREATER THAN 77
5651 / 50 /HOME WAS FOUND BEFORE DESIRED TRACK WAS REACHED
5652 / 60 /SELF DIAGNOSTIC ERROR
5653 / 70 /DESIRED SECTOR COULD NOT BE FOUND AFTER LOOKING AT 52 HEADERS
5654 / 100 /WRITE PROTECT ERROR
5655 / 110 /MORE THAN 40US AND NO SEP CLOCK SEEN
5656 / 120 /A PREAMBLE COULD NOT BE FOUND
5657 / 130 /PREAMBLE FOUND BUT NO ID MARD FOUND WITHIN ALLOWABLE TIME
5658 / 140 /HEADER CRC ERROR
5659 / 150 /THE HEADER TRACK ADDRESS OF A GOOD HEADER DOES NOT COMPARE
5660 / /WITH THE DESIRED TRACK
5661 / 160 /TO MANY TRIES FOR A IDAM
5662 / 170 /DATA AM NOT FOUNT WITHIN ALLOTTED TIME
5663 / 200 /DATA CRC ERROR
5664 / 210 /ALL PARITY ERRORS
5665 /
5666 /RECAL IF DEFINITIVE ERROR CODE IS A SEEK ERROR
5667 /
5668 / (NOT CODES 140, 200, OR 210)
5669 /
5670 6073 4572 RECALIF, LAS
5671 6074 0373 AND (SW6)
5672 6075 7640 SZA CLA
5673 6076 5311 JMP LASSWO
5674 6077 1127 TAD BSTATUS
5675 6100 1372 TAD (-140)
5676 6101 7450 SNA
5677 6102 5311 JMP LASSWO
5678 6103 1371 TAD (-40)
5679 6104 7450 SNA
5680 6105 5311 JMP LASSWO
5681 6106 1370 TAD (-10)
5682 6107 7640 SZA CLA
5683 6110 4447 INIT
5684 6111 4572 LASSWO, LAS
5685 6112 7700 SMA CLA

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/RX8 RX01 DIAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-93

SEQ 0136

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5686 6113 4461 HLT16, HLT /AC SW 0 = 1 (HALT ON ERROR)
5687 6114 5767* JMP 1 RETURN
5688 /
5689 6115 6115 INITSWITCH, .
5690 6116 1766* TAD XWAIT
5691 6117 1365 TAD (=SDNSECOND)
5692 6120 7640 SZA CLA
5693 6121 2315 ISZ INITSWITCH
5694 6122 5715 JMP I INITSWITCH
5695 /
5696 //GENERATES TIMING FOR APT IF NEEDED.
5697 /
5698 6123 0000 XOK, 0
5699 6124 7000 NOP
5700 6125 2323 ISZ XOK
5701 6126 5723 JMP I XOK
5702 /
5703 //VT78/ROUTINE TO SELECT WHICH FLOPPY UNITS TO TEST
5704 /
5705 6127 0000 SELUNT, 0
5706 6130 1114 TAD DTESTP /GET TEST PAPAMETERS
5707 6131 0373 AND (40) /TEST BIT 6
5708 6132 7640 SZA CLA /DO ONE OR BOTH UNITS?
5709 6133 7001 IAC /BOTH
5710 6134 7040 CMA /EITHER A OR B
5711 6135 3351 DCA CHECKU /7777=EITHER , 7776=BOTH
5712 6136 1351 TAD CHECKU
5713 6137 7001 IAC
5714 6140 7640 SZA CLA
5715 6141 5346 JMP SETUNT /BOTH UNITS SELECTED- DO A THEN B
5716 6142 1114 TAD DTESTP
5717 6143 0364 AND (1000) /TEST BIT 2
5718 6144 7640 SZA CLA /A OR B?
5719 6145 7001 IAC /B ONLY
5720 6146 3135 SETUNT, DCA UNITCK /UNIT A=0 UNIT B=1
5721 6147 4451 CKUNIT /SET UP FOR UNIT A OR UNIT B
5722 6150 5727 JMP I SELUNT /RETURN
5723 6151 0000 CHECKU, 0
5724 6164 1000
5725 6165 1340
5726 6166 1722
5727 6167 5520
5728 6170 7770
5729 6171 7740
5730 6172 7640
5731 6173 0040
5732 6174 5530
5733 6175 0001
5734 6176 1332
5735 6177 5525
5736 6200 PAGE
//VT78/ SELECT IOT TO SELECT EITHER UNIT A OR UNIT B
//IF AC11 (0) SELECT UNITA, IF AC11 (1) SELECT UNIT B
5737 /
5738 /
5739 6200 0000 XSEL, 0

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/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-94

SEQ 0137

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5740 6201 6750 K67X0, 6750
5741 6202 5600 JMP 1 XSEL
5742 //THE CONTENTS OF THE AC AT ENTRY ARE THE CONTENTS OF PROGRAM LOCATION "TCOMMAND"
5743 /
5744 6203 6203 XLCD, .
5745 6204 3112 DCA COMMAND
5746 6205 1112 TAD COMMAND
5747 6206 6751 K67X1, 6751
5748 6207 5603 JMP 1 XLCD
5749 //LOAD THE COMMAND FOR: FILL BUFFER, AND EMPTY BUFFER
//WITH THE RX01 INTERRUPT ENABLED
5750 /
5751 //FORM: (AC) IS COMMAND; LCDA; NORMAL RETURN; ERROR RETURN
5752 /
5753 /
5754 6210 6210 XLCDA, .
5755 6211 1777* TAD UNIT
5756 6212 3112 DCA COMMAND
5757 //THE CONTENTS OF THE AC WILL = 100 IF 8 BIT MODE
5758 /
5759 6213 7307 CLL CLA IAC RTL
5760 6214 0132 AND TESTP
5761 6215 7640 SZA CLA
5762 6216 1376 TAD (100)
5763 6217 1112 TAD COMMAND
5764 6220 3112 DCA COMMAND
5765 6221 1112 TAD COMMAND
5766 6222 4436 LCD
5767 6223 1210 TAD XLCDA
5768 6224 3775* DCA RETURN
5769 6225 2210 ISZ XLCDA
5770 6226 2210 ISZ XLCDA
5771 6227 1374 TAD (PI)
5772 6230 3002 DCA IPI
5773 6231 7201 CLA IAC
5774 6232 4446 INTR
5775 6233 6001 LDN
5776 6234 5610 JMP I XLCDA
5777 /
//LOAD THE COMMAND AND THE TRACK AND SECTOR ADDRESSES AND GO WITH INTERRUPT ENABLE !
5778 /
5779 //FORM: (AC) IS COMMAND; LCDB; NORMAL RETURN; ERROR
5780 /
5781 /
5782 6235 6235 XLCDB, .
5783 6236 1777* TAD UNIT / 0 OR 20
5784 6237 3112 DCA COMMAND /TEMPORARY STORAGE
5785 /
5786 //WHEN THE CONTENTS OF " GOBIT " ARE = 0 ; NO PROGRAM IRQ IS EXPECTED FROM THE DISK
5787 /
5788 6240 7307 CLL CLA IAC RTL / 4
5789 6241 0132 AND TESTP /TESTP FOR 8/12 BIT MODE SELECTION
5790 6242 7640 SZA CLA
5791 6243 1376 TAD (100) / 100 FOR 8 BIT MODE SELECTION
5792 6244 1112 TAD COMMAND / 4, 14 OR 6
5793 6245 3112 DCA COMMAND
5794 6246 1112 LCDL, TAD COMMAND

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5795 6247 4436      LCD
5796          /
5797          /LOAD THE TRACK AND SECTOR ADDRESSES FOR THE COMMANDS:
5798          /
5799          /WRITE, OR WRITE DELETED DATA, OR READ SECTOR
5800          /
5801 6250 1373      TAD (LCDBRETURN)
5802 6251 3775*     DCA RETURN
5803 6252 1372      TAD (NOP)
5804 6253 3315      DCA XLCDBRETURN
5805 6254 7201      CLA IAC
5806 6255 4446      INTR           /ENABLE RX01 INTERRUPT
5807 6256 4443      STR
5808 6257 5256      JMP , -1    /SKIP ON TRANSFER REQUEST FLAG
5809 6260 1124      TAD STARGET
5810 6261 4442      XDROUT        / SECTOR
5811 6262 4443      STR
5812 6263 5262      JMP , -1    /SKIP ON TRANSFER REQUEST FLAG
5813 6264 1131      TAD TARGET
5814 6265 4442      XDROUT        / TRACK
5815 6266 1374      TAD (PI)
5816 6267 3002      DCA IPI
5817          /
5818          /WAIT FOR A PROGRAM INTERRUPT REQUEST
5819          /
5820          /, BUT WHILE WAITING, DISPLAY IN THE MQ THE CODED INFORMATION
5821          /AS INDICATED BY ACCUMULATOR SWITCHES 9, 10, AND 11 AT RUN-TIME
5822          /
5823          /          0 = TARGET TRACK AND SECTOR
5824          /          1 = TEST PARAMETERS (SELECTED FROM SA 200)
5825          /          2 = " A " STATUS
5826          /          3 = " COMMAND " WORD TO RX01
5827          /
5828 6270 6001      XPI,   ION
5829 6271 1371      TAD (-40)
5830 6272 3116      DCA HANGER
5831 6273 4572      LAS
5832 6274 0370      AND (SW10+SW11)
5833 6275 1367      TAD (TAD I DISPLAY)
5834 6276 3277      DCA , +1
5835 6277 1710      TAD I DISPLAY
5836 6300 7421      MOL
5837 6301 2153      ISZ H1
5838 6302 5273      JMP XPI+3
5839 6303 2116      ISZ HANGER
5840 6304 5273      JMP XPI+3
5841 6305 7200      CIA
5842 6306 1366      IAD (XPI)
5843 6307 5765*     JMP HUNGUP
5844 6310 0151      DISPLAY, XTARGET
5845 6311 0132      TESTP
5846 6312 0126      ASTATUS
5847 6313 0112      COMMAND
5848          /RETURN TO HERE IF ANY ERROR OCCURS (OF IF "DONE" FLAG OCCURS)
5849          /

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5850          /IF A PARITY ERROR OCCURS THEN RETRY TO LOAD THE COMMAND
5851          /
5852          /IF NOT A PARITY ERROR THEN THIS MUST BE THAT "DONE" FLAG I MENTIONED
5853          /
5854 6314 5326      LCDBRETURN, JMP OTHERERRORS          / "JMP OTHERERRORS" IF RETURN IS OK
5855 6315 7000      XLCDBRETURN, NOP
5856 6316 7305      CLL CLA IAC RAL
5857 6317 0126      AND ASTATUS
5858 6320 7650      SNA CLA
5859 6321 5326      JMP OTHERERRORS
5860          /PARITY ERROR - RETRY
5861          /
5862 6322 2146      ISZ PRETRY
5863 6323 5246      JMP LCDBL
5864 6324 4502      SCOPE
5865 6325 5453      EXIT
5866          /
5867          /THESE ARE ALL OTHER ERRORS WHICH MAY OCCUR
5868
5869 6326 1364      OTHERERRORS, TAD (JMP OTHERERRORS)
5870 6327 3315      DCA XLCDBRETURN
5871          /
5872 6330 1373      TAD (LCDBRETURN)
5873 6331 7041      CIA
5874 6332 1775*     TAD RETURN
5875 6333 1235      TAD XLCDB
5876 6334 3235      DCA XLCDB
5877 6335 5635      JMP I XLCDB
5878          /TRANSFER DATA REGISTER (FROM) THE RX01 CONTROL
5879          /
5880 6364 5326
5881 6365 3341
5882 6366 6270
5883 6367 1710
5884 6370 0003
5885 6371 7740
5886 6372 7000
5887 6373 6314
5888 6374 5417
5889 6375 5517
5890 6376 0100
5891 6377 4242
5892 6378 6400      PAGE
5893 6401 6752      XXDRIN, K67X2A, 6752
5894 6402 5600      JMP I XXDRIN
5895          /TRANSFER DATA REGISTER (TO) THE RX01 CONTROL
5896          /
5897 6403 6403      XXDROUT, .
5898 6404 6752      K67X2B, 6752
5899 6405 7200      CLA
5900 6406 5603      JMP I XXDROUT
5901          /SKIP ON TRANSFER REQUEST
5902          /
5903 6407 6407      XSTR, .

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5904 6410 6753 K67X3A, 6753
5905 6411 5607 JMP I XSTR
5906 6412 2207 ISZ XSTR
5907 6413 5607 JMP I XSTR
5908 /
5909 6414 6414 XSER,
5910 6415 6754 K67X4A, 6754
5911 6416 5614 JMP I XSER
5912 6417 2214 ISZ XSER
5913 6420 5614 JMP I XSER
5914 /SKIP ON RX01 DONE FLAG
5915 /
5916 6421 6421 XSDN,
5917 6422 6755 K67X5A, 6755
5918 6423 5621 JMP I XSDN
5919 6424 2221 ISZ XSDN
5920 6425 5621 JMP I XSDN
5921 /ENABLE / DISABLE RX01 INTERRUPT ENABLE
5922 /
5923 / AC = 1 AT ENTRY TO ENABLE INTERRUPT
5924 /
5925 /FORM: (AC = 0, OR 1); INTR
5926 /
5927 / (GOBIT) = 0, NO RX01 PI IS EXPECTED
5928 /
5929 / (GOBIT) = 1, AN RX01 PI IS EXPECTED
5930 /
5931 6426 6426 XINTR, .
5932 6427 3154 DCA GOBIT
5933 6430 1154 TAD GOBIT
5934 6431 6756 K67X6, 6756
5935 6432 7200 CLA
5936 6433 5626 JMP I XINTR
5937 /INITIALIZE (POWER CLEAR) THE RX01 SUBSYSTEM
5938 /
5939 6434 6434 XINTT, .
5940 6435 6757 K67X7A, 6757
5941 /THE LABEL " SDNSECOND " MUST RESIDE HERE BECAUSE OF REFERENCES WITHIN " ERROR "
5942 /
5943 6436 4451 CKUNIT /GO CHECK IF ON UNIT A(RXA) OR UNIT B
5944 6437 4471 WAIT
5945 6440 4445 SDNSECOND, SDN
5946 6441 5237 JMP .-2
5947 6442 3006 DCA 6 /WAIT POINTER
5948 6443 4444 SER
5949 6444 5246 JMP XXINIT
5950 /AN ERROR HAS OCCURED FROM THE "INIT"

5951 /
5952 / [HOME] WAS THE TARGET
5953 /
5954 6445 4576 FORCE
5955 6446 3123 XXINIT, DCA SSTART
5956 6447 5634 JMP I XINIT
5957 /
5958 /

```

```

5959 /
5960 6450 6450 XINITB, .
5961 6451 6757 K67X7B, 6757
5962 6452 5650 JMP I XINITB
5963 6453 3737 REMOVE, TEXT "REMOVE DIAGNOSTIC DISKETTE"
6454 2205
6455 1517
6456 2605
6457 4004
6460 1101
6461 0716
6462 1723
6463 2411
6464 0340
6465 0411
6466 2313
6467 0524
6470 2405
6471 0000
5964 6472 3737 MIDENTIFICATION,TEXT "MAINDEC=08-DIRXA=D"
6473 1501
6474 1116
6475 0405
6476 0355
6477 6070
6500 5504
6501 1122
6502 3001
6503 5504
6504 0000
5965 6505 3737 MSELECT, TEXT "--SELECT PARAMETERS (INCLUDING DEVICE CODE)"
6506 2305
6507 1405
6510 0324
6511 4020
6512 0122
6513 0115
6514 0524
6515 0522
6516 2340
6517 5011
6520 1603
6521 1425
6522 0411
6523 1607
6524 4004
6525 0526
6526 1103
6527 0540
6530 0317
6531 0405
6532 5100
5966 6533 3737 MDTESTP, TEXT "--TEST PARAMETERS: "
6534 2405
6535 2324

```

/RXR RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-99

SEQ 0142

6536 4020
6537 0122
6540 0115
6541 0524
6542 0522
6543 2372
6544 4000
5967 3737 MXEHEADER, TEXT "—ERR FAT FAST EAC GOOD PASS"
6546 0522
6547 2240
6550 4006
6551 0124
6552 4040
6553 0601
6554 2324
6555 4040
6556 4040
6557 4040
6560 0501
6561 0340
6562 4007
6563 1717
6564 0440
6565 2001
6566 2323
6567 0000
5968 3727 MX2HEADER, TEXT "—WORD GOOD BAD"
6571 1722
6572 0440
6573 0717
6574 1704
6575 4002
6576 0104
6577 0000
5969 6600 5440 MCOMMA, TEXT ", "
6601 0000
5970 6602 3700 MCRLF, TEXT "
5971 6603 3705 MEOT, TEXT "—END OF TEST "
6604 1604
6605 4017
6606 0640
6607 2405
6610 2324
6611 4000
5972 6612 3704 MHUNGPC, TEXT "—DEVICE TEST HUNG AT PC "
6613 0526
6614 1103
6615 0540
6616 2405
6617 2324
6620 4010
6621 2516
6622 0740
6623 0124
6624 4020

/RXR RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-100

SEQ 0143

6625 0340
6626 0000
5973 6627 3737 MEHEADER, TEXT "—FAT CMND XDR CODE RSTA START TARGET TEST PASS"
6630 0601
6631 2440
6632 4003
6633 1516
6634 0440
6635 3004
6636 2240
6637 4003
6640 1704
6641 0540
6642 4022
6643 2324
6644 0140
6645 4023
6646 2401
6647 2224
6650 4040
6651 4040
6652 4024
6653 0122
6654 0705
6655 2440
6656 4040
6657 4024
6660 0523
6661 2440
6662 2001
6663 2323
6664 0000
5974 6665 3310 MHOME, TEXT "[HOME]"
6666 1715
6667 0535
6670 0000
5975 6671 1116 MINIT, TEXT "INIT"
6672 1124
6673 0000
5976 6674 3737 MOD, TEXT "—OD = "
6675 1704
6676 4075
6677 4000
5977 6700 4011 MID, TEXT " ID = "
6701 0440
6702 7540
6703 0000
5978 6704 4006 MFIRST, TEXT " FIRST = "
6705 1122
6706 2324
6707 4075
6710 4000
5979 6711 4014 MLAST, TEXT " LAST = "
6712 0123
6713 2440

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2=101

SEQ 0144

6714 7540
6715 0000
5980 6716 3727 MWRITE, TEXT "—WRITE—" 6717 2211
6720 2405
6721 5500
5981 6722 3722 MREAD, TEXT "—READ—" 6723 0501
6724 0455
6725 0000
5982 6726 1617 MDNSError, TEXT "NO CRC BUT" 6727 4003
6730 2203
6731 4002
6732 2524
6733 0000
5983 6734 0322 MDWESError, TEXT "CRC AND" 6735 0340
6736 0116
6737 0400
5984 6740 0322 MSNDError, TEXT "CRC BUT NO DATA ERROR" 6741 0340
6742 0225
6743 2440
6744 1617
6745 4004
6746 0124
6747 0140
6750 0522
6751 2217
6752 2200
5985 6753 4004 MDATAError, TEXT " DATA ERROR—" 6754 0124
6755 0140
6756 0522
6757 2217
6760 2237
6761 0000
5986 6762 2717 MWORD, TEXT "WORD" 6763 2204
6764 0000
5987 6765 0231 MBYTE, TEXT "BYTE" 6766 2405
6767 0000
5988 6770 4007 MGB, TEXT " GOOD BAD" 6771 1717
6772 0440
6773 0201
6774 0400
5989 6775 3723 MSUMCHECK, TEXT "—SUM-CHECK IS" 6776 2515
6777 5503
7000 1005
7001 0313
7002 4011

/RX8 PX01 DTAGNOSTIC DIPXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2=102

SEQ 0145

7003 2340
7004 0000
5990 7005 1713 MOK, TEXT "OK" 7006 0000
5991 7007 3724 MDESUMMARY, TEXT "—TOTAL BAD = " 7010 1724
7011 0114
7012 4002
7013 0104
7014 4075
7015 4000
5992 7016 7200 MCOLON, TEXT ":" 7017 5500 MDASH, TEXT "="
5993 7020 3715 MEDDDIDNOT, TEXT "—MISSING DD MARK" 7021 1123
7022 2311
7023 1607
7024 4004
7025 0440
7026 1501
7027 2213
7030 0000
5995 7031 3725 MUDDID, TEXT "—UNEXPECTED DD MARK" 7032 1605
7033 3020
7034 0503
7035 2405
7036 0440
7037 0404
7040 4015
7041 0122
7042 1300
5996 7043 3725 MSDNUNEPECTED, TEXT "—UNEXPECTED RX01 IRQ" 7044 1605
7045 3020
7046 0503
7047 2405
7050 0440
7051 2230
7052 6061
7053 4011
7054 2221
7055 0000
5997 7056 3715 MNOSER, TEXT "—MISSING ERROR FLAG" 7057 1123
7060 2311
7061 1607
7062 4005
7063 2222
7064 1722
7065 4006
7066 1401
7067 0700
5998 7070 3737 MUNKNOWN, TEXT "—UNKNOWN IRQ" 7071 2516

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-103

SEQ 0146

7072 1316
7073 1727
7074 1640
7075 1122
7076 2100
5999 7077 3704 NDEV, TEXT "-DEVICE CODE TO BE USED"
7100 0526
7101 1103
7102 0540
7103 0317
7104 0405
7105 4024
7106 1740
7107 0205
7110 4025
7111 2305
7112 0440
7113 4000
6000 /THE FOLLOWING IS THE WRITE BUFFER ALLOCATED STORAGE
6001 /
6002 7114 WBUFFER=,
6003 7314 RBUFFER=WBUFFER+200
6004 7514 *RBUFFER+200
6005
6006
6007
6008
6009 0200 *200 /AUTO START BINARY
6010
6011 \$\$\$

/RX8 FX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2-104

SEQ 0147

0000 11100000 11110000 11101111 11111111 11111111 11111111 11111111 11111111
0100 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 111111110
0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11000001 11111111 11111111 11111111
0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11110000 00000000 00000000 00011111 11111111 11111111
0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 11111111 11111111 11111111 11111111 11100000 00000000 01111111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1100 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1500 11111111 11111111 11111111 11111111 11111111 11111111 11110000 01111111 11111111
1600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1700 11111111 11111111 11111111 11111111 11111111 11100000 00111111 11111111 11111111

2000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2100 11111111 11111111 11111111 11111111 11111111 11111110 00011111 11111111
2200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2300 11111111 11111111 11111111 11111111 11111111 00000011 11111111 11111111 11111111
2400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2500 11111111 11111111 11111111 11111111 11111111 11111110 00111111 11111111 11111111
2600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2700 11111111 11111111 11111111 11111111 11111111 11111100 00001111 11111111 11111111

3000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3100 11111111 11111111 11111111 11111111 11111111 11111110 00111111 11111111 11111111
3200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3300 11111111 11111111 11111111 11111111 11111111 11110000 00001111 11111111 11111111
3400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3500 11111111 11111111 11111111 11111111 11111111 11111111 11110000 00111111 11111111
3600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3700 11111111 11111111 11111111 11111111 11111111 11111111 11110011 11111111 11111111

4000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 4100 11111111 11111111 11111111 11111111 11111111 11100000 00000000 11111111
 4200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 4300 11111111 11111111 11111111 11111111 11111111 11111111 11000000 00001111
 4400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 4500 11111111 11111111 11111111 11111111 11111111 11111111 11000000 00111111
 4600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 4700 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 10111111
 5000 11111111 11111111 11111111 11111111 11111111 11111111 11100000 01111111 11111111
 5100 11111111 11111111 11111111 11111111 11111111 11100000 01111111 11111111
 5200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 5300 11111111 11111111 11111111 11111111 11111111 11111111 10011111 11111111
 5400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 5500 11111111 11111111 11111111 11111111 11111111 11111110 00000000 00001111 11111111
 5600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 5700 11111111 11111111 11111111 11111111 11111111 11111111 10000000 00111111 11111111
 6000 11111111 11111111 11111111 11111111 11111111 11111111 11100000 00001111 11111111
 6100 11111111 11111111 11111111 11111111 11111111 11100000 00001111 11111111
 6200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 6300 11111111 11111111 11111111 11111110 00000000 00000000 00001111 11111111
 6400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 6500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 6600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 6700 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 7000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
 7100 11111111 11111111 11111111 11111111 11111111 11111111 00000000 00000000 00000000
 7200
 7300

7400
 7500

7600
 7700

A10	0010	C8K212	0413	CKUNIT	4451	E2	0617
A11	0011	C8K215	0412	CLKCNT	4151	E20	0655
A12	0012	C8K240	0045	CNTDFI	3720	E21	0660
A13	0013	CRK260	0046	CNTVAL	0663	E210	4557
A14	0014	C8K275	0047	COMMAN	0112	E211	2320
ACL	7701	C8K277	0050	COMP	2746	E212	2332
ACTIVE	0741	C8K303	0414	COMPAR	3601	E22	0663
AERROR	4467	C8K307	0415	COMPRE	0113	E23	0666
ALT12	1400	CRK322	0051	COUNT	4152	E24	0671
ALT12L	1403	C8K323	0052	CRCERR	3456	E240	2030
ANDRET	4113	CRK336	0416	CSTATU	0130	E241	2070
APTA	4470	C8K7	0044	DASHAL	5725	E242	2101
APOUND	0233	C8K77	0407	DASHBC	5731	E245	2033
ASTATU	0126	C8LOPA	0231	DATAER	3643	E25	0674
BELL	0207	C8M10	0042	DCACTII	0732	E26	0704
BITMOD	3763	C8M260	0043	DCADOA	2531	E27	0712
BLANK	0170	C8M3	0037	DCATAR	4332	E270	2135
BSTATU	0127	C8M4	0040	DDERO	5537	E271	2140
BSW	4433	C8M40	0410	DDERRO	5537	E272	2151
BSWAC	2623	C8M5	0041	DIGITS	5063	E28	0720
BSWIN	2624	C8M6	0035	DISPLA	6310	E2PRE	0415
BSWRAL	2622	C8OCTA	4427	DMTYPE	6060	E3	0623
BUSY	0111	C8PASS	4426	DNS	3510	E30	0744
C87600	0417	C8PFLD	0543	DNSLOG	0143	E3PRE	0425
C8BT,D	0400	C8PRNT	4426	DOA	2536	E40	1044
C8BY1	0640	C8PSW	0216	DOB	2537	E41	1060
C8CND	0033	C8RET2	0526	DOCNT	0660	E42	1021
C8CnJ	0032	C8RET3	4131	DONE	4454	E4PRE	0450
C8CHAR	0031	C8RET4	3317	DOPACK	0611	E50	1105
C8CK22	1060	C8RTN	0402	DOSET	0662	E51	1114
C8CYP	1057	C8SFUG	0404	DRVZRO	2743	E52	1123
C8CKSW	4425	C8SRUP	0252	DTESTP	0114	E53	1111
C8CNTL	0420	C8STAR	0200	DTYPE	5535	E54	1120
C8CMT	0036	C8STRT	0401	DWESEN	3700	E55	1127
C8CRLF	0523	C8SWR	0034	DWS	3510	E56	1102
C8CTL,C	0465	C8TEMP	0030	DWSLOG	0142	E60	1142
C8CTLG	0457	C8TEST	0337	E0	0607	E61	1154
C8CTLQ	0455	C8TMP1	1056	EOPRE	0412	E62	1157
C8CTLs	0437	C8TTY	0514	E1	0613	E63	1162
C8Dn1	1005	C8TYP	0502	E10	0647	E70	1212
C8Dn4	1043	C8WAIT	0444	E100	1226	E7000	2405
C8ECHO	0475	CAF	6007	E11	0632	E7001	2416
C8ENTR	0200	CCNT	5066	E110	1252	E7002	2432
C8EP,R	0316	CHARLI	5320	E120	1311	E7003	2446
C8EXT1	0531	CHECKC	4424	E121	1315	E7004	2457
C8EXT2	0541	CHECKU	6151	E122	1321	E7005	2511
C8EXTB	0707	CHEK22	4472	E123	1326	E7006	2473
C8FL,G	0403	CHGM8K	2750	E124	1276	EA120	1412
C8GET1	0704	CHNDEV	5067	E130	1513	EA121	1416
C8K100	0411	CKCOUT	0642	E131	1526	EA122	1440
C8K177	0405	CKSFLG	5400	E140	1661	EA123	1451
C8K200	0406	CKSWIT	4572	E1PRE	0445	EAC	0167

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2=109

XLINK	5516	XXX	0137
XLOCKU	2545	XYTHEL	3026
XMESSA	3334	ZERO	5057
XMX	0657		
XNOPRI	2715		
XNUIN	5311		
XOC7AL	5062		
XOK	6123		
XOUTPU	5263		
XPAT6	3145		
XPATTE	3103		
XPI	6270		
XPRNTT	5244		
XPDG	3420		
XREAD	3416		
XREADC	3412		
XRETUR	5521		
XRST	2441		
XRSTB	2400		
XSCnPE	1333		
XSDN	6421		
XSEL	6200		
XSEQ	4333		
XSEN2	4413		
XSEN3	4433		
XSER	6414		
XSETUP	4103		
XSHFTF	5020		
XSPFCI	5352		
XSSnDP	1344		
XSTARG	4711		
XSTR	6407		
XTAB	5215		
XTABL	5221		
XTARGE	0151		
XTCF	5344		
XTHFL	3016		
XTIcK	4133		
XTILOC	5000		
XTYRUC	5200		
XTYPEI	5305		
XWATI	1722		
XWATT	5412		
XWRTIE	3200		
XXDMP	5064		
XXDPIN	6400		
XXDPU	6403		
XXFRC	5525		
XXGFTA	4610		
XXIN1T	6446		
XXTnB	5243		
XXTnEL	3024		

SEQ 0152

/RX8 RX01 DTAGNOSTIC DIRXA=D PAL10 V142A 1-AUG-77 15:22 PAGE 2=110

SEQ 0153

ERRORS DETECTED: 0
LINKS GENERATED: 179
RUN-TIME: 10 SECONDS
3K CORE USED

Q46ID	4655	4678	4690*
Q46DD	4660	4686	4696*
Q4DD	4639	4652*	
Q6DD	4669	4682*	
QUIET	3774	3780#	
R1	4879	4882	4885
R1RETR	1098*	3011	3854
R2	4880	4883	4886
R2RETR	1099*	3857	3948
RANGEN	3551	3570	4541
RBUFFER	2532	2534	2550
RDC	1069*	2906	2998
RDRWR	3933	3969	4013*
READ	1019*	3256	3264
READCO	1021*	3258	3262
READER	3979*		
READL	3853*	4005	
READOK	3872	3990*	
READRE	3118	3732	3856*
REBEGI	1430	1483*	1508
RECALL	5670#		
REFILL	3666*	3686	
REMOVE	2458	5963#	
REREAD	3866*	3956	
RESEEK	3888*	3889	
RESEQU	4495*	4556	4565
RETURN	5161*	5363	5372
REWPIT	2925	3649*	3972
RLOGGE	3885	3891	3964
ROK	3093	4000#	
_RST	1023*	2370	3037
RSTART	718	915*	
RSTB	1025*	2358	2793
RXERRO	5131	5380	5402
RXHERE	1135*	1198	1361
SAVEBS	5432*		
SAVECS	5443*		
SCOPE	1031*	1343	1580
	2707	2300	2441
SCOPIN	2731	2264#	
SON	696*	1365	1424
	2828	3099	3115
SONSEC	5691	5945*	
SONUNE	3767*	5290	
SECTOR	1071*	2922	3015
SEL	053*	3114	
SELUNT	1703	1456	5705*
SEQ	4491	4493	4508*
SEQ0000	3479	3482	4496
		4508	4519*
			4610
SEQ001	4509	4530*	4609
SEQ010	4510	4591*	
SEQ100	4512	4636*	
SEQ111	4515	4541*	

SEQ3	4511	4614#	
SEQ6	4514	4666*	
SER	067*	1351	1573
	3117	3155	3197
SETUNT	5715	5720#	
SETUP	1027*	4939	5099
SHIFI	4019*	4971	
SHIFTS	4050	4956	4989*
SND	3899*	3900	
SNDLOG	1102*	3861	3925
SPECIA	1029*	3411	5636
SRETRY	1103*	3661	3703
SSTART	1072*	1177	3719
STARFE	1073*	2914	3006
START	1074*	3475	3717
STOPNT	526*		
STR	965*	1348	1569
	3096	3119	3147
SUBSCO	1033*	1559	1572
	1852	1908	1911
	2111	2315	2346
	3192	3203	3222
SW0	1048*	1201	
SW1	1049*	1201	3684
SW10	1058*	5832	
SW11	1059*	3409	5633
SW2	1050*	3292	3513
SW3	1051*	1480	
SW4	1052*	3349	3772
SW5	1053*	4196	
SW6	1054*	5671	
SW7	1055*	3286	
SW8	1056*		
SW9	1057*		
T0	1139	1533#	4894
T1	1608*	4895	
T10	2072*	4902	
T11	2100*	4903	
T12	2144*	4904	
T13	2395*	3586	4905
T14	2523*	4906	
T15	2511*	4907	
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T17	2519*	2931	2975
T2	1653*	4896	
T20	2509*	4910	
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T24	2648*	2776	4914
T25	2650*	2759	4915

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XI	2918#	2223						
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SEQ 0167

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SEQ 0171

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