

CD11/CD20

CARD READER DIAGNOSTIC
MD-11-DZCDB-B

EP-DZCDB-B-DL-B

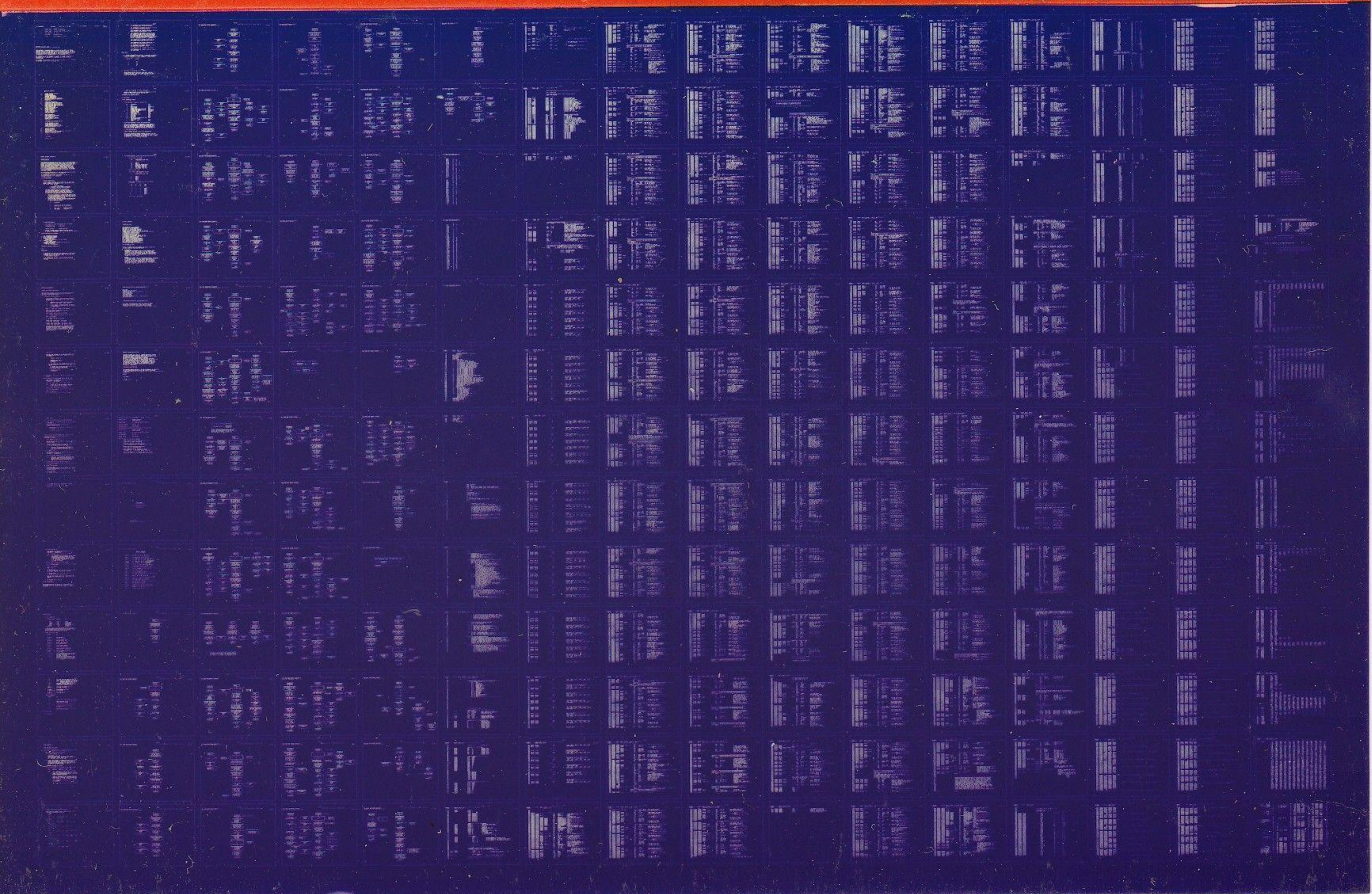
OCT 1977

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FICHE 1 OF 2

MADE IN USA



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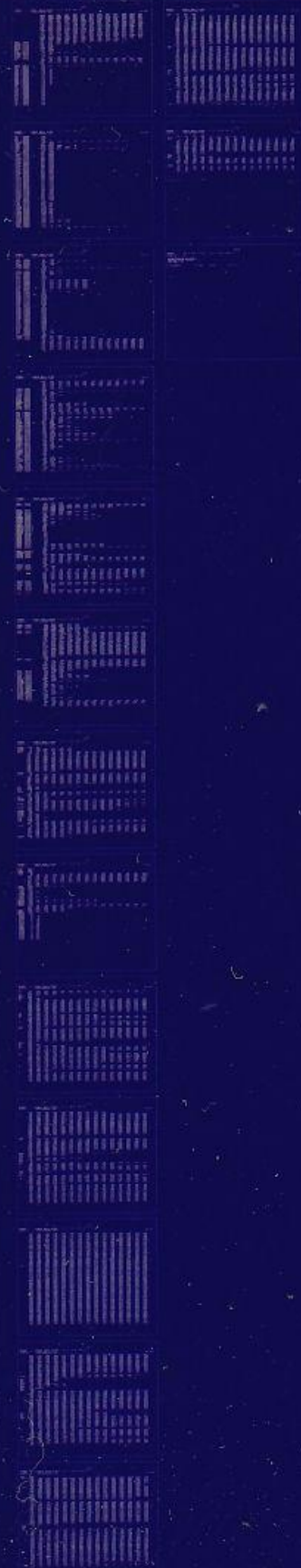
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FICHE 2 OF 2

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00010000

770920 IDENTIFICATION

IZH0R10ZC088SEQ

00010000

770920
SEQ 0001

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PRODUCT NAME: CD11/CD20 CARD READER DIAGNOSTIC
DATE CREATED: JULY 1977
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: BRUCE BURGESS / ED RYAN

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GENERAL PROGRAM INFORMATION

SEG 0003

PROGRAM PURPOSE

THIS PROGRAM CAN BE USED WITH EITHER A CD11 OR CD20 CARD READER INTERFACE TO A DOCUMENTATION M1000, M200, M1200 OR AN RS1200 MODEL CARD READER. THE PROGRAM TESTS ALL LOGIC FUNCTIONS OF THE CARD READER AS WELL AS EXERCISING ALPHANUMERIC AND BINARY CODED DATA VIA PUNCHED CARD TEST DECKS. SEPARATE STARTING ADDRESSES ALLOW TESTING OF ERROR FUNCTIONS (E.G. - HOPPER CHECK, STACK CHECK, ETC.) FOR ALL CARD READER MODELS UTILIZING MANUAL TECHNIQUES. TO AID IN DIAGNOSING SPECIAL PATTERNS A SECTION OF THE PROGRAM WILL ALLOW TESTING OF CARD DECKS WITH ALL COLUMNS OF EACH CARD IDENTICALLY PUNCHED.

THE DISTINCTION BETWEEN THE CD11 AND CD20 CARD READER INTERFACES WILL BE DESCRIBED IN SECTION 1.2, PARAGRAPH A.

THE ALPHANUMERIC AND BINARY TEST DECKS TO BE USED WILL BE DESCRIBED IN SECTION 1.2, PARAGRAPH B.

SYSTEM REQUIREMENTS

A. HARDWARE REQUIREMENTS

A PDP-11 FAMILY COMPUTER WITH EITHER A CD11 OR CD20 CARD READER INTERFACE TO A DOCUMENTATION MODEL CARD READER (MODELS M200, M1000, M1200, RS1200).

***** NOTE *****
A MINIMUM OF 12K OF MEMORY IS REQUIRED
FOR LOADING & RUNNING THIS DIAGNOSTIC!

1. THE CD20 INTERFACE IS A CD11 INTERFACE WITH ECO #CD-11-00014 INSTALLED. THE CD20 INTERFACE IS USED WITH THE DECSYSTEM 20 SERIES OF COMPUTERS. THE ECO IMPLEMENTS THE FOLLOWING ADDITIONAL SOFTWARE FEATURES INTO THE NORMAL CD11 CARD READER CONTROLLER:
 - A. DURING DATA TRANSFERS IN UNPACKED MODE BITS 15 THRU 12 IN THE DATA REGISTER (177166) HAVE BEEN REDEFINED TO INDICATE MORE THAN ONE BIT SET IN A ZONE (BIT15) AND WHICH ZONE (BITS 14 THRU 12).
 - B. DURING NON-DATA TRANSFERS PERIODS THE DATA REGISTER (177166) IS USED AS A SECOND STATUS REGISTER WITH BIT DEFINITIONS AS FOLLOWS:

BIT	DEFINITION
15	ALWAYS SET IF ECO IS INSTALLED
14	ALWAYS CLEAR IF ECO NOT INSTALLED
14	READ CHECK ! BREAKOUT OF BIT14 OF
13	PICK CHECK ! STATUS REGISTER
12	STACK CHECK ! (177160)

B SOFTWARE REQUIREMENTS

SEQ 0004

TWO MAIN CARD TEST DECKS ARE REQUIRED BY THIS PROGRAM:

ALPHANUMERIC DECKBINARY DECK

MAINDEC-89-D1B1-C

MAINDEC-89-D1B2-C

IN ADDITION TO SPARE CARDS FOR ERROR FUNCTION TESTING,
A SPECIAL MIS-REGISTERED CARD IS ALSO REQUIRED(FOR RS1200 ONLY)..

1.3 RELATED DOCUMENTS AND STANDARDS

- A. CD11 ENGINEERING DRAWINGS
- B. PDP11 PERIPHERALS HANDBOOK
- C. PDP11 PROCESSOR HANDBOOK
- D. MAINDEC-11-DZQAC-B1
SYSMAC.SML DIAGNOSTIC UTILITIES PACKAGE
- E. MAINDEC-11-DZQXA
'XXDP' USER'S GUIDE
- F. DIAGNOSTIC ENGINEERING STANDARDS AND CONVENTIONS
PROGRAMMING PRACTICES
DOC. NO. 175-003-009-00

1.4 DIAGNOSTIC HIERARCHY PREREQUISITES

NONE.

1.5 ASSUMPTIONS

- A. IT IS ASSUMED THAT BOTH CARD TEST DECKS ARE IN THEIR PROPER SEQUENCE. IT IS A GOOD IDEA UPON RECEIVING THE TEST DECKS TO NUMBER THEM IN THE TOP RIGHT CORNER IN THE EVENT THAT THEY ARE ACCIDENTLY DROPPED.
- B. IT IS ASSUMED THAT ECO #CD-11-00014 HAS BEEN INSTALLED WHEN THIS PROGRAM IS BEING RUN ON A DECSYSTEM 20 SERIES COMPUTER.

2.0 OPERATING INSTRUCTIONS

SEQ 0005

2.1 LOADING AND STARTING PROCEDURES

THERE ARE FIVE DISTINCT SECTIONS TO THE PROGRAM EACH HAVING ITS OWN STARTING ADDRESS, SWITCH SETTINGS, AND MODES OF OPERATION. THEY ARE AS FOLLOWS:

A. INSTRUCTION & DATA RELIABILITY

1. LOAD PROGRAM INTO MEMORY. ON A DECSYSTEM 20 SERIES COMPUTER THIS IS ACCOMPLISHED VIA A 'FLOPPY' DISKETTE ON UNIT 0 BY -

1ST- DEPRESSING THE 'FLOPPY' SWITCH (ON FRONT END PANEL) TO LOAD 'RXDP' (FLOPPY MONITOR)

2ND- TYPING 'DZCDB*' (CARRIAGE RETURN) ON CONSOLE TTY IN RESPONSE TO THE 'RXDP' MONITOR REQUEST FOR INPUT (A DOT.).

WHERE * = LATEST REV. LETTER OF THE PROGRAM

2. LOAD A TEST DECK (ALPHANUMERIC OR BINARY) INTO THE CARD READER INPUT HOPPER
3. PRESS 'RESET' BUTTON ON THE CARD READER
4. SET A STARTING ADDRESS OF 200 INTO SWITCH REGISTER
5. PRESS 'LOAD ADDRESS'
6. SET SWITCHES FOR MODE OF OPERATION:

'ALPHA' DECK (IMAGE MODE) - SET SW<02>
'ALPHA' DECK (PACK MODE) - SET SW<03>

'BINARY' DECK (IMAGE MODE) - SET SW<02> & SW<04>
'BINARY' DECK (PACK MODE) - SET SW<03> & SW<04>

NOTE: WITH ONLY THE ABOVE SWITCHES SET FOR MODE OF OPERATION THE PROGRAM WILL PASS THRU THE INSTRUCTION PORTION ONLY ONCE (1ST PASS). ON ALL SUBSEQUENT PASSES THE PROGRAM WILL LOOP ON THE DATA RELIABILITY PORTION. TO ALTER THIS APPROACH SET OTHER SWITCHES AS INDICATED UNDER SECTION 2.3.

7. PRESS 'START'
8. WITH ONLY THE SWITCHES SET AS INDICATED UNDER ITEM 6.,
PASS COMPLETION PRINTOUTS SHOULD APPEAR AS FOLLOWS
(AN EXAMPLE):

MAINDEC-11-D2CDB REV.B

ENTERING LOGIC TESTS
ENTERING DATA TESTS
END PASS #1

* AT THIS POINT THE INPUT HOPPER SHOULD BE EMPTY *
* AND THE PROGRAM WILL HANG WAITING, AT WHICH *
* POINT - *
* A. RELOAD TEST DECK/S INTO INPUT HOPPER, AND *
* B. PRESS 'RESET' ON CARD READER *
* PROGRAM SHOULD RESUME OPERATION WITH, *

ENTERING DATA TESTS
END PASS #2

ETC.

NOTE: THE FORM OF THE PRINTOUT WILL VARY AS OTHER SWITCHES
ARE SET.

B. ERROR FUNCTIONS FOR CARD READER MODELS M200 OR M1000

1. LOAD PROGRAM INTO MEMORY AS INDICATED BY SECTION 2.1,
PARAGRAPH A., SUBPARAGRAPH 1.
2. LOAD A FEW SPARE CARDS INTO THE INPUT HOPPER.
NOTE: DO NOT LOAD A TEST DECK HERE AS PORTIONS OF
ERROR FUNCTION TESTING DESTROYS CARDS!
3. PRESS 'RESET' BUTTON ON THE CARD READER
4. SET A STARTING ADDRESS OF 210 INTO SWITCH REGISTER.
5. PRESS 'LOAD ADDRESS'
6. SET DESIRED SWITCHES AS INDICATED BY SECTION 2.3

7. PRESS 'START'

8. FOLLOW THE INSTRUCTIONS AS THEY ARE PRINTED OUT

A FULL PASS OF THIS SECTION SHOULD APPEAR AS FOLLOWS
(AN EXAMPLE):

ENTERING M1000/M200 ERROR FUNCTION TESTS
MAINDEC-11-DZCDB REV.B

* INSTRUCTIONS FOLLOW AND UPON A COMPLETE PASS *
* WILL APPEAR, *
*

MAINDEC-11-DZCDB REV.B

ETC.

C. ERROR FUNCTIONS FOR CARD READER MODEL M1200 OR RS1200

EVERYTHING APPLIES AS INDICATED UNDER SECTION 2.1,
PARAGRAPH B., EXCEPT:

1. START ADDRESS IS 250, AND
2. LEAD-IN MESSAGE UPON EXECUTION IS "ENTERING M1200 ERROR
FUNCTION TESTS"
3. ANSWER THE QUESTION "M1200 OR RS1200" BY TYPING
A Y FOR THE RS1200 OR AN N FOR THE M1200.

NOTE: SINCE ONLY THE RS1200 HAS THE CAPABILITY
TO DETECT A MIS-REGISTERED CARD, ONLY THIS
MODEL SHOULD ENTER THE MISTERED CARD TEST.

D. SINGLE SUBTEST LOOP

1. LOAD PROGRAM INTO MEMORY AS INDICATED BY SECTION 2.1,
PARAGRAPH A., SUBPARAGRAPH 1.

2. LOAD A FEW SPARE CARDS INTO THE INPUT HOPPER

NOTE: SINCE ONLY THE INSTRUCTION PORTION OF THE
PROGRAM IS MEANT TO BE SELECTED UNDER THIS
PHASE OF OPERATION A CARD TEST DECK MAY BE
SUBSTITUTED IN PLACE OF THE SPARE CARDS.

3. PRESS 'RESET' BUTTON ON THE CARD READER
4. SET A STARTING ADDRESS OF 220 INTO SWITCH REGISTER
5. PRESS 'LOAD ADDRESS'
6. AT THE 1ST 'HALT':
LOAD THE STARTING ADDRESS OF THE DESIRED TEST (ADDRESS
OF 'SCOPE' INSTRUCTION AT BEGINNING OF TEST), THEN
PRESS 'CONTINUE'.
7. AT THE 2ND 'HALT':
SET DESIRED SWITCHES AS INDICATED BY SECTION 2.3

I01

(SW<11> MUST NOT BE SET), THEN PRESS 'CONTINUE'
*** HOWEVER *** (SW<14> MUST BE SET... MUST BE SET ...)

SEQ 0008

8. PROGRAM WILL LOOP ON TEST SELECTED

E. SINGLE DATA PATTERN TEST

SEQ 0009

1. LOAD PROGRAM INTO MEMORY AS INDICATED BY SECTION 2.1, PARAGRAPH A., SUBPARAGRAPH 1.

2. LOAD A 'PREPARED' DECK INTO THE INPUT HOPPER

NOTE: THE 'PREPARED' DECK CAN CONSIST OF ONE OR MORE CARDS AND HAVE ANY DATA PATTERN BUT THIS PATTERN MUST BE IDENTICAL IN ALL 80 COLUMNS OF EACH AND EVERY CARD MAKING UP THE DECK (E.G. IF COLUMN 1 CONTAINS 1777 SO MUST ALL THE OTHER 79 COLUMNS).

3. PRESS 'RESET' BUTTON ON THE CARD READER

4. SET A STARTING ADDRESS OF 240 INTO SWITCH REGISTER

5. PRESS 'LOAD ADDRESS'

6. PRESS 'START'

7. AT THE 1ST 'HALT'
SET THE DATA PATTERN SELECTED INTO THE SWITCH REGISTER USING SWS<11 THRU 00>, THEN PRESS 'CONTINUE'

8. AT THE 2ND 'HALT'
SET DESIRED SWITCHES AS INDICATED BY SECTION 2.3

9. WHEN THE CARD READER RUNS OUT OF CARDS RELOAD THE 'PREPARED' DECK AND PRESS 'RESET' BUTTON ON THE CARD READER

10. THE PROGRAM SHOULD CONTINUE

2.2

SPECIAL ENVIRONMENTS

THE PROGRAM DOES HAVE THE CAPABILITY TO BE RUN ON THE ACT-11 MANUFACTURING LINE BUT IS NOT IDEALLY SUITED FOR THIS ENVIRONMENT DUE TO THE PROGRAM'S REQUIREMENT OF LOADING CARD TEST DECKS.

2.3 PROGRAM OPTIONS

SEQ 0010

A. DEFAULT PARAMETERS

LOCATION LABEL	CONTENTS	USE
CDST:	177160	STATUS
CDCC:	177162	COLUMN COUNT
CDBA:	177164	BUS ADDRESS
CDOB:	177166	DATA/(STATUS ON CD20)
INTVEC:	230	INTERRUPT PC
INTVEC+2:	232	INTERRUPT PS

IF THE CD11/CD20 IS EVER CONFIGURED SO THAT THE ABOVE STANDARD ADDRESSES AND VECTORS ARE NOT RELEVANT THEN JUST PATCH THE ABOVE PROGRAM LOCATIONS TO THE CORRECT VALUES BEFORE ATTEMPTING TO EXECUTE THE PROGRAM.

B. CONTROL SWITCH SETTINGS

SWITCH	USE
SW<15>=1	HALT ON ERROR
SW<15>=0	CONTINUE ON ERROR
SW<14>=1	LOOP ON CURRENT TEST
SW<14>=0	CONTINUE TO NEXT TEST
SW<13>=1	INHIBIT ERROR PRINTOUT
SW<13>=0	PRINT ERROR REPORTS
SW<12>=1	INHIBIT TRACE TRAPPING
SW<12>=0	ALLOW TRACE TRAPPING
SW<11>=1	INHIBIT SUB-TEST ITERATIONS
SW<11>=0	ALLOW SUB-TEST ITERATIONS
SW<07>=1	LOOP ON INSTRUCTION TESTS ONLY
SW<07>=0	NOT APPLICABLE
SW<06>=1	LOOP ON INSTRUCTION & DATA RELIABILITY TEST WHEN CONTINUING FROM ONE CARD TEST DECK TO ANOTHER.
SW<06>=0	INSTRUCTION & DATA RELIABILITY TEST COVERED ON 1ST CARD TEST DECK LOAD. ONLY DATA RELIABILITY TEST COVERED ON ALL SUBSEQUENT CARD TEST DECK LOADS.

L01

SW<05>=1 WHEN MORE THAN ONE CARD TEST DECK IS
LOADED 'HALT' AT COMPLETION OF EACH DECK.
NOTE: PRESSING 'CONTINUE' WILL RESUME
PROGRAM OPERATION AFTER THE 'HALT'.
SW<05>=0 WHEN MORE THAN ONE CARD TEST DECK IS
LOADED RUN THE DATA RELIABILITY TEST
AUTOMATICALLY FROM DECK TO DECK.
SW<04>=1 INDICATOR FOR BINARY TEST DECK
SW<04>=0 NOT BINARY TEST DECK
SW<03>=1 INDICATOR FOR PACK MODE
SW<03>=0 NOT PACK MODE
SW<02>=1 INDICATOR FOR IMAGE MODE
SW<02>=0 NOT IMAGE MODE

C. STARTING ADDRESSES

ADDRESS -----	USE ---
200	INSTRUCTION & DATA RELIABILITY TESTING
210	ERROR FUNCTION TESTING OF CARD READER MODELS M200 OR M1000
220	LOOPING ON A SINGLE INSTRUCTION TEST
240	READING A SINGLE DATA PATTERN CONTINUOUSLY
250	ERROR FUNCTION TESTING OF CARD READER MODEL M1200 OR RS1200

2.4

EXECUTION TIMES -----

(TO BE DETERMINED)

ERROR INFORMATION

SEQ 0012

ERROR REPORTING PROCEDURES

THREE TYPES OF ERROR REPORTING TECHNIQUES ARE USED AS FOLLOWS:

A. WHEN INPUT HOPPER GOES EMPTY DURING TESTING

THE FOLLOWING MESSAGE IS TYPED:

CARD READER IS OFF-LINE
REMEDY THE CONDITION BY RELOADING INPUT HOPPER
WITH CARD DECK - PRESS 'RESET' BUTTON ON CARD READER
AND 'CONTINUE' SWITCH ON CPU PANEL

NOTE: ALLOW A FEW SECONDS TO TRANSPIRE BETWEEN PRESSING THE
'RESET' BUTTON AND THE 'CONTINUE' SWITCH AS IF THIS
OPERATION IS DONE TOO QUICKLY THE CARD READER WILL
NOT HAVE HAD A CHANCE TO RESET ITSELF AND THE ABOVE
REPORT WILL ONLY BE REITERATED

B. DURING DATA RELIABILITY TESTING

THE FOLLOWING FORMAT IS TYPED WHEN A DATA ERROR OCCURS:

DECK CARD NUM CARD COL SHB WAS

WHERE: 'DECK' REPRESENTS EITHER 'ALPHA' OR 'BINARY'

'CARD NUM' REPRESENTS WHICH CARD OUT OF THE 80.
CARDS ON WHICH THE ERROR WAS FOUND. 'CARD NUM'
VALUE IS PRINTED IN DECIMAL.

'CARD COL' REPRESENTS THE COLUMN ON THE CARD
(SPECIFIED BY 'CARD NUM') WHICH CONTAINS THE
ERROR. 'CARD COL' VALUE IS PRINTED IN DECIMAL.

'SHB' REPRESENTS THE ENCODED VALUE THAT SHOULD
BE INTERPRETED.

'WAS' REPRESENTS THE VALUE THAT WAS INTERPRETED.

C. GENERAL ERRORS DURING PROGRAM OPERATION

SEQ 0013

THERE ARE SEVEN GENERAL TYPES OF ERROR REPORTS IN USE
THROUGHOUT THE PROGRAM AS FOLLOWS:

TYPE 1

(PC) (SP) (CDS) (CDD) (PS)

TYPE 2

(PC) (SP) (CDS) (CDD) (CDC) (PS)

TYPE 3

(PC) (SP) (CDS) (CDD) (CDA) (PS)

TYPE 4

(PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)

TYPE 5

(PC) (SP) (CDS) (CDD) (CDC) (CDA) (CDA) (PS)
WAS SHB

TYPE 6

(PC) (SP) (CDS) (CDD) (CDC) (CDA) (CDC) (PS)
WAS SHB

TYPE 7

(PC) (SP) (CDS) (CDD) (CDD) (PS)
WAS SHB

WHERE: (PC) REPRESENTS THE PROGRAM COUNTER LOCATION
IN THE PROGRAM WHERE THE ERROR OCCURRED.

(SP) REPRESENTS THE CURRENT POSITION OF THE STACK
POINTER (GENERAL PURPOSE REGISTER 6)

(CDS) REPRESENTS THE CURRENT CONTENTS OF THE CARD
READER CONTROL STATUS REGISTER (177160)

(CDO) REPRESENTS THE CURRENT CONTENTS OF THE
DATA BUFFER. INFORMATION IS ONLY VALID DURING
DATA TRANSFERS EXCEPT ON THE CD20 CARD READER
WHICH USES THE DATA BUFFER REGISTER (177166)
AS A 2ND STATUS REGISTER DURING NON-DATA TRANSFER
PERIODS. (REFERENCE SECTION 1.2, PARAGRAPH A.)

(CDC) REPRESENTS THE CURRENT CONTENTS OF THE
CARD READER COLUMN COUNT REGISTER (177162)

(CDA) REPRESENTS THE CURRENT CONTENTS OF THE
CARD READER BUS ADDRESS REGISTER (177164)

(PS) REPRESENTS THE CURRENT CONTENTS OF THE
PROCESSOR STATUS REGISTER (177776)

'WAS' REPRESENTS THE INCORRECT VALUE FOUND

'SHB' REPRESENTS THE CORRECT VALUE THAT SHOULD
HAVE BEEN FOUND

3.2 ERROR HALTS

- A. ALL UNUSED LOCATIONS FROM LOCATION 4 TO LOCATION 776 CONTAINS
A +2 HALT SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS.
LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS. I.E.,

LOCATION	CONTENTS
0	HALT
4	6
6	HALT
10	12
12	HALT
:	
ETC.	

- B. WHEN SW<15>=1 INDICATING TO HALT ON ERROR

- C. DURING ERROR FUNCTION TESTING OF READ CHECK, WHEN AN
INTERRUPT DOES NOT OCCUR AFTER CARDS HAVE BEEN RESTORED
TO THE INPUT HOPPER AND THE 'RESET' BUTTON ON THE CARD
READER HAS BEEN PRESSED.

- D. IF THERE IS NO TERMINAL TO OUTPUT INFORMATION
- E. DURING A POWER FAILURE IF THE POWER UP SEQUENCE WAS STARTED BEFORE THE POWER DOWN SEQUENCE HAD COMPLETED.

4.0 PERFORMANCE AND PROGRESS REPORTS

NOT APPLICABLE

5.0 DEVICE INFORMATION TABLES

A. STATUS REGISTER (177160) BIT DESIGNATIONS

BIT	DESIGNATION	MODE
----	-----	----
0	READ	WRITE
1	DATA PACKING	READ/WRITE
2	HOPPER EMPTY	READ
3	READER TRANSITION TO ON-LINE	READ
4	EXTENDED BUS ADDRESS (BIT16)	READ/WRITE
5	EXTENDED BUS ADDRESS (BIT17)	READ/WRITE
6	INTERRUPT ENABLE	READ/WRITE
7	CONTROLLER READY	READ
8	POWER CLEAR	WRITE
9	NON-EXISTANT MEMORY	READ
10	DATA LATE	READ
11	DATA ERROR	READ
12	OFF-LINE	READ
13	END OF FILE (M1200/RS1200 ONLY)	READ
14	CARD READER ERROR	READ
	(READ, STACK OR PICK)	READ
15	ERROR	READ

B. COLUMN COUNT REGISTER (177162) BIT DESIGNATIONS

BITS <15:0> CONTAIN THE 2'S COMPLEMENT OF THE NUMBER OF COLUMNS TO BE TRANSFERRED TO MEMORY WHEN CARDS ARE BEING READ. THE CONTENTS OF THIS REGISTER IS INCREMENTED BY 1 EACH TIME A COLUMN TRANSFER OCCURS AND ALL TRANSFERS ARE INHIBITED WHEN THE CONTENTS OF THIS REGISTER IS EQUAL TO 0.

ALL BITS ARE READ/WRITE.

C. CURRENT ADDRESS REGISTER (177164) BIT DESIGNATIONS

BITS <15:0> CONTAIN THE MEMORY ADDRESS INTO WHICH THE NEXT COLUMN OF DATA IS TO BE STORED. THIS REGISTER IS INITIALLY SET TO THE MEMORY LOCATION OF THE 1ST COLUMN TO BE READ. IT THEN INCREMENTS BY 1 FOR TRANSFERS IN PACK MODE; BY 2 FOR TRANSFERS IN NON-PACK MODE. ALL BITS ARE READ/WRITE.

D. DATA BUFFER REGISTER (177166) BIT DESIGNATIONS (READ ONLY)

SEG 0016

1. NON-PACK MODE (CD11/CD20)

BIT	CORRESPONDING CARD IMAGE
---	-----
11	ZONE 12
10	ZONE 11
9-0	ZONES 0-9, RESPECTIVELY
15	ALWAYS SET (CD20 ONLY)
14	READ CHECK (CD20 ONLY)
13	PICK CHECK (CD20 ONLY)
12	STACK CHECK (CD20 ONLY)

2. PACK MODE (CD11/CD20)

BITS 7 THRU 3 ARE ENCODED AS FOLLOWS:

BIT	CORRESPONDING CARD IMAGE
---	-----
7	ZONE 12
6	ZONE 11
5	ZONE 0
4	ZONE 9
3	ZONE 8

BITS 2 THRU 0 REPRESENT AN OCTAL CODE ENCODED AS FOLLOWS:

BIT 02	BIT 01	BIT 00	CARD ZONE
---	---	---	----
0	0	0	ZONES 1-7
0	0	1	ZONE 1
0	1	0	ZONE 2
0	1	1	ZONE 3
1	0	0	ZONE 4
1	0	1	ZONE 5
1	1	0	ZONE 6
1	1	1	ZONE 7

BITS 8 THRU 15 ARE UNUSED.

6.0 SUB-TEST SUMMARIES

6.1 INSTRUCTION TESTS

INITIALIZATION OF ALL REGISTERS
 READ/WRITE OF STATUS REGISTER
 READ/WRITE OF COLUMN COUNT REGISTER
 READ/WRITE OF BUS ADDRESS REGISTER
 CONTROLLER READY TO CLEAR BIT00 OF CDS (177160)
 'HOPPER EMPTY' (BIT02 OF CDS) TO BE CLEAR AFTER CARD READ
 INTERRUPT FROM CONTROLLER READY
 NO INTERRUPT WITH CPU AT LEVEL 7
 INTERRUPTS ON LEVELS 7 THRU 1
 NO INTERRUPT WITH INTERRUPT ENABLE SET ONLY
 SIMULTANEOUS INTERRUPTS AT MORE THAN 1 LEVEL
 NON-EXISTANT MEMORY DETECTION
 BYTE LOADING OF COLUMN COUNT REGISTER
 BYTE LOADING OF BUS ADDRESS REGISTER
 DATIP LOADING OF COLUMN COUNT REGISTER
 DATIP LOADING OF BUS ADDRESS REGISTER
 WORD COUNT OVERFLOW TO 2ND CARD
 NON-PACK MODE TRANSFER TO ODD ADDRESS

6.2 DATA RELIABILITY TEST

TESTING IS DONE ON BOTH ALPHANUMERIC AND BINARY (PACKED AND UNPACKED) DATA UTILIZING 80. CARD DECKS.

- A. ALPHANUMERIC
 REFERENCE THE ALPHANUMERIC TABLE IN THE PROGRAM LISTING (BEGINNING AT THE LABEL 'ALPCD:') FOR THE IMAGE CODES PUNCHED IN THE 80. COLUMNS OF THE 1ST CARD. EACH SUCCESSIVE CARD IN THE DECK USES THE SAME SEQUENCE OF CODES ROTATED ONE COLUMN TO THE LEFT. THE PACKED FORM OF THE IMAGE CODES FOLLOWS THE 'ALPCD:' TABLE.
- B. BINARY
 REFERENCE THE BINARY TABLE IN THE PROGRAM LISTING, (BEGINNING AT THE LABEL 'BINCD:') FOR THE BINARY CODES PUNCHED IN THE 80. COLUMNS OF THE 1ST CARD. KEEP IN MIND THE ZONE ENCODING DISCUSSED IN SECTION 5, PARAGRAPH D). EACH SUCCESSIVE CARD IN THE DECK USES THE SAME SEQUENCE OF CODES ROTATED ONE COLUMN TO THE LEFT. THE PACKED FORM OF THE BINARY CODES FOLLOWS THE 'BINCD:' TABLE.

ERROR FUNCTION TESTS FOR M1000/M200/M1200/RS1200

SEQ 0018

DATA LATE
ERROR AND OFF-LINE BITS
INTERRUPT ON OFF TO ON-LINE TRANSITION
INPUT HOPPER EMPTY
OUTPUT STACKER FULL
PICK CHECK ERROR
STACK CHECK ERROR
END OF FILE AND HOPPER CHECK (M1200/RS1200 ONLY)
READ CHECK ERROR

INSTRUCTIONS FOR MAKING A MIS-REGISTERED CARD

CUT A SMALL RECTANGULAR HOLE ABOUT THE SIZE OF A NORMAL
PUNCHED HOLE IN A BLANK CARD. MAKE SURE THE LEADING
EDGE OF THE HOLE FALLS IN A POSITION WHICH IS NORMALLY
CONSIDERED TO BE OUT OF REGISTRATION. (BETWEEN MARKED COLUMNS)

READING A SINGLE DATA PATTERN

SEQ 0019

CHECKING OF CARDS WHICH HAVE ALL COLUMNS IDENTICALLY PUNCHED IS DONE, THUS ALLOWING SPECIFIC TYPES OF DATA FAILURES TO BE MORE EASILY STUDIED. THE PATTERN INPUT FROM THE USER IS STORED AND THEN EACH COLUMN OF EACH CARD IS COMPARED AGAINST IT. IF A DISCREPANCY OCCURS, THE ERROR IS PRINTED OUT, ALONG WITH THE TOTAL NO. OF CARDS READ AS WELL AS THE TOTAL NO. OF DATA ERRORS DISCOVERED UP TO THAT POINT. (NOTE: ALL PRINTOUTS ARE IN OCTAL). WHEN THE INPUT HOPPER BECOMES EMPTY, THE TERMINAL WILL ECHO A 'BELL'. THE PROGRAM WILL THEN WAIT FOR MORE CARDS TO BE LOADED AND THE CARD READER TO BE PUT BACK ON-LINE (I.E., PRESSING 'RESET' BUTTON). (REFERENCE SECTION 2.1, PARAGRAPH E.)

6.5 LOOPING ON A SELECTED TEST

THIS ALLOWS A SINGLE SUB-TEST TO BE RUN CONTINUOUSLY BY SELECTING THE TEST (INSTRUCTION PORTION ONLY) AND LOADING THE ADDRESS OF THE SCOPE INSTRUCTION AT THE BEGINNING OF THE TEST. (REFERENCE SECTION 2.1, PARAGRAPH D.)

7.0 HISTORY

8.0 FLOW CHARTS

9.0 PROGRAM LISTING

H02

THIS IS A HISTORY OF THE DEVELOPMENT OF MAINDEC-11-DZCDB

SEQ 0020

PRODUCT CODE: MAINDEC-11-DZCDB-A
VERSION 000.001

PRODUCT NAME: CD11/CD20 CARD READER DIAGNOSTIC

ORIGINAL RELEASE: MARCH 21 1976

ORIGINAL AUTHOR: BRUCE BURGESS

PRODUCT CODE: MAINDEC-11-DZCDB-B
VERSION 000.002

PRODUCT NAME: CD11/CD20 CARD READER DIAGNOSTIC

DATE RELEASED: MAY 1977

UPDATE AUTHOR: GREG GLEZMAN

UPDATES:

1. ADDED TEST FOR MONITOR PRESENCE.
2. ADDED A HALT TO ALLOW THE OPERATOR TO SET THE SR SWITCHES IN THE CASE OF NO MONITOR.
3. FIXED THE (LOW BYTE) LOAD TESTS FOR THE CDC AND CDA REGISTERS SO THEY FUNCTION WITHOUT ERROR.
4. ADDED A TSET FOR THE RS1200 CARD READER TO TEST FOR A MIS-REGISTERED CARD.
5. ADDED A QUESTION FOR THE OPERATOR TO INFORM THE PROGRAM IF IT IS TESTING AN RS1200 CARD READER.
6. CHANGE THE MESSAGE TO THE OPERATOR PERTAINING TO THE STACK CHECK ERROR TEST. THE CHANGE MAKES THE PROCEDURE

FLOW CHART

CD11/CD20 CARD READER DIAGNOSTIC

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```
*****
*BEGIN      * START ADDRESS = 200
*****
I
*****
* VECTOR SETUPS AND *
* HARDWARE/SOFTWARE *
* "SWR" DETERMINATION *
*****
I
I
*****
* INITIALIZE *
* POINTERS AND *
* FLAGS *
*****
I
I
*****
* TYPE MAINDEC *
* TITLE AND *
* REV. LEVEL *
*****
I
I
*****
*TST1(02) *
```

```

*****  

*TST1(01) *  

*****  

I  

*****  

*****  

** CKOFFL(45)*--> ** CKOFFL **  

*****  

*****  

I  

I  

*****  

* SEND OUT AN *  

* INITIALIZATION *  

* PULSE (RESET) *  

*****  

I  

I  

*****  

REPORT ERROR / NO / IS BIT7 SET IN /  

ERROR / STATUS REGISTER? /  

*****  

I I YES  

-----> I  

*****  

REPORT ERROR / NO / IS COLUMN COUNT /  

ERROR / REGISTER /  

CLEARED? /  

*****  

I I YES  

-----> I  

*****  

REPORT ERROR / NO / IS BUS ADDRESS /  

ERROR / REGISTER CLEARED? /  

*****  

I I YES  

-----> I  

*****  

*TST2(03) *

```

```
*****
*TST2(02) *
*****
I
*****
* SET ALL BITS IN *
* STATUS REGISTER EX- *
* CEPT FOR BITS 0 & 8 *
*****
I
I
*****
/ REPORT / NO / ARE ONLY BITS /
/ ERROR /-----> / 1, 4, 5, 6 & 7 /
/-----> / NOW SET? /
*****
I
I
*****
*TST3(04) *
*****
I
I
*****
/ REPORT / NO / ARE ALL BITS /
/ ERROR /-----> / CLEAR IN STATUS /
/-----> / REG. EXCEPT FOR 7? /
*****
I
I
I
*****
* SET ALL BITS IN *
* STATUS REGISTER *
*****
I
I
*****
/ REPORT / NO / ARE ALL BITS /
/ ERROR /-----> / CLEAR IN STATUS /
/-----> / REG. EXCEPT FOR 7? /
*****
I
I
I
*****
*TST3(04) *
*****
```

NO2

DECFL0 VER 00.12 01-JUL-77 08:45 PAGE 04

SEQ 0026

CD11/CD20 CARD READER DIAGNOSTIC
TEST READ/WRITE OF COLUMN COUNT REGISTER

```

*****
*TST3(03) *
*****
I
*****
* LOAD ALL BITS OF *
* THE COLUMN COUNT *
* REGISTER          *
*****
I
I
*****
/ REPORT ERROR / NO / IS THE CONTENTS \
/-----> / OF THE COLUMN \
/-----> / COUNT REG.=17777? \
*****
I I YES
-----> I
*****
/ REPORT ERROR / NO / IS BIT 7 SET IN \
/-----> / THE STATUS \
/-----> / REGISTER \
*****
I I YES
-----> I
*****
* ISSUE A POWER CLEAR *
* VIA THE STATUS      *
* REGISTER            *
*****
I
I
*****
/ REPORT ERROR / NO / IS THE CONTENTS \
/-----> / OF THE COLUMN \
/-----> / COUNT REG. NOW 0? \
*****
I I YES
-----> I
*****
/ REPORT ERROR / NO / IS BIT 7 STILL \
/-----> / SET IN THE STATUS \
/-----> / REGISTER? \
*****
I I YES
-----> I
*****
*TST4(05) *

```

```
*****
*TST4(04) *
*****
I
*****
* LOAD ALL BITS OF *
* THE BUS ADDRESS *
* REGISTER          *
*****
I
I
*****
/ REPORT ERROR / NO / IS THE CONTENTS \
/-----> / OF THE BUS ADDR. \
/-----> / REGISTER=177777? \
*****
I I YES
I
*****
/ REPORT ERROR / NO / IS BIT 7 SET \
/-----> / IN THE STATUS \
/-----> / REGISTER? \
*****
I I YES
I
*****
* ISSUE A POWER CLEAR *
* VIA THE STATUS      *
* REGISTER             *
*****
I
I
*****
/ REPORT ERROR / NO / IS THE CONTENTS \
/-----> / OF THE BUS ADDR. \
/-----> / REGISTER NOW 0? \
*****
I I YES
I
*****
/ REPORT ERROR / NO / IS BIT 7 STILL \
/-----> / SET IN THE \
/-----> / STATUS REGISTER? \
*****
I I YES
I
*****
*TST5(06) *
```

*TST5(03) *

I

** CKOFFL **

---->*CKOFFL(45)*

*TST5A(06) *

I

IS CONTROLLER
READY CLEARED?

NO

REPORT
ERROR

I YES

IS BIT 0 SET
IN STATUS
REGISTER?

YES

REPORT
ERROR

I NO

*INCREMENT THE COUNT- *
* ER USED TO WAIT FOR *
* CONTROLLER READY *

I

HAS THE COUNTER
OVERFLOWED TO
0?

I YES

* RESTORE PROCESSOR *
* STATUS TO WHAT IT WAS *
* BEFORE READING CARD *

I

IS CONTROLLER
READY SET?

NO

REPORT
ERROR

I YES

*TST5B(06) *

* SET UP COLUMN COUNT *
* REGISTER TO READ *
* 1 COLUMN *

I

* SET UP MEMORY ADDR. *
* FOR COLUMN CONTENTS *
* TRANSFER *

I

COUNT
* INITIALIZE A COUNTER *
* TO WAIT FOR *
* CONTROLLER READY *

I

* START READING *
* A CARD *

I

*TST5A(06) *

*TST5B(06) *

I

IS ERROR BIT
(BIT15) SET IN
STATUS REGISTER?

YES

REPORT
ERROR

I NO

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

I

ANY OTHER ERROR
BITS SET IN
STATUS REGISTER?

YES

REPORT
ERROR

I NO

I

*TST6(07) *

*TST6(06) *

I

** ** CKOFFL **----->*CKOFFL(45)*
** ** *****

I

* CLEAR THE STATUS *
* REGISTER *
* *****

I

* SET UP COLUMN COUNT *
* REGISTER TO READ *
* 20 COLUMNS *
* *****

I

* SET UP MEMORY ADDR. *
* FOR COLUMN CONTENTS *
* TRANSFER *
* *****

I

* START READING *
* A CARD *
* *****

I

* IS CONTROLLER *
* BUSY? *
* YES *
* NO *
* *****

I

* IS CONTROLLER *
* READY? *
* YES *
* NO *
* *****

I

* TST6A(07) *
* *****

I

* TST7(08) *
* *****

I

* TST6A(07) *
* *****

I

* TST7(08) *
* *****

I

*TST6A(07) *

I COUNT

* INITIALIZE A COUNTER *
* TO WAIT FOR CON- *
* TROLLER READY *
* *****

I

* STORE CURRENT PROC- *
* ESSOR STATUS & CLEAR *
* THE TRACE BIT (BIT4) *
* *****

I

* IS CONTROLLER *
* READY? *
* YES *
* NO *
* *****

I

* DECREMENT THE COUNTER *
* USED TO WAIT FOR *
* CONTROLLER READY *
* *****

I

* HAS THE COUNTER *
* OVERFLOWED TO 0? *
* YES *
* NO *
* *****

I

* REPORT *
* ERROR *
* *****

I

* TST7(08) *
* *****

I

* TST6A(07) *
* *****

I

* TST7(08) *
* *****

I

* TST6A(07) *
* *****

I

* TST7(08) *
* *****

E03

CD11/CD20 CARD READER DIAGNOSTIC
TEST INTERRUPT FROM CONTROLLER READY

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SEQ 0030

```

*****
*TINT7(08) *
*****
I
-----
/ WAS CONTROLLER \ NO \ REPORT
/ READY? \---> / ERROR \
-----
I YES
I<-----
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ DID ANY KIND \ YES \ REPORT
/ OF ERROR SHOW \---> / ERROR \
/ UP? \
-----
I NO
I<-----
*****
* DISABLE *
* INTERRUPTS *
*****
I
I<-----*CONT7 *
*****
*****
* RESET TRAPCATCHER *
* VECTOR LOCATIONS 230 *
* AND 232 *
*****
I
*****
*TST10(09) *
*****

```

```

*****
*TST7(07) *
*****
I
*****
** INIT **----->*INIT(45) *
**
*****
I
*****
* SET RETURN POINT *
* AND PS FOR WHEN AN *
* INTERRUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY *
* LEVEL 0 *
*****
I
*****
* SET COLUMN COUNT TO *
* 31(10) AND BUS ADDR. *
* TO "BUFBEG" *
*****
I
*****
* SET INTERRUPT *
* ENABLE AND *
* READ *
*****
I
*****
* WAIT FOR *
* CONTROLLER *
* READY *
*****
I
-----
/ DID AN INTER- \ NO \
/ RUPT OCCUR? \--->*INTN(08) *
/ \
-----
I YES
*****
*TINT7(08) *

```

```

*****
*INTN(08) *
*****
I
*****
*GIVE CONTROL BACK TO *
* CPU AND DISABLE *
* INTERRUPTS *
*****
I
*****
/ REPORT
/ ERROR \
-----
*****
I
*****
*CONT7 *
*****

```

```

*****
*TINT10(09)*
*****
I
*****
/ REPORT
  ERROR \
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I<-----*T10GO *
I
*****
* DISABLE *
* INTERRUPTS *
*****
I
*****
* RESET TRAPCATCHER *
* VECTOR LOCATIONS 230 *
* AND 232 *
*****
I
*****
*TST11(10)*
*****

```

```

*****
*TST10(08)*
*****
I
*****
**          **
**   INIT   **
**          **
*****
I
*****
* SET RETURN POINT *
* AND PS FOR WHEN AN *
* INTERRUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY LEVEL *
* 7 *
*****
I
*****
* SET COLUMN COUNT TO *
* 6(10) AND BUS ADDR. *
* TO "BUFBEG" *
*****
I
*****
* SET INTERRUPT *
* ENABLE AND *
* READ *
*****
I
*****
* WAIT FOR *
* CONTROLLER *
* READY *
*****
I
-----
/ DID AN \ NO
  INTERRUPT \----->*T10GO *
  OCCUR ? \
-----
I YES
*****
*TINT10(09)*

```

```

*****
*(INT11(10))*
*****
I
-----
/ IS CONTROLLER \ NO
/ READY SET? \----->
-----
I YES
I<-----
*****
* DISABLE *
* INTERRUPTS *
* *
*****
I
*****
* RESET TRAPCATCHER *
* VECTORS 230 & 232 *
* *
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ HAVE WE INTER- \ YES
/ RUPTED BEFORE AT \--> / ANOTHER LEVEL? \
-----
I NO
*****
* SET PREVIOUS INTER- *
* RUPT FLAG (INTFLG) & *
* STORE CURRENT LEVEL *
*****
I
*****
* TYPE MSG. INDICATING *
* WHAT THE INTERRUPT *
* LEVEL WAS *
*****
I
*****
* GO TO NEXT *
* TEST *
* *
*****

*****
* TST11(09) *
*****
I
*****
** INIT **
*****
I
*****
* SET RETURN POINT *
* AND PS FOR WHEN AN *
* INTERRUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY *
* LEVEL 6 *
*****
I
*****
* SET COLUMN COUNT TO *
* 80(10) AND BUS ADDR. *
* TO "BUFEG" *
*****
I
*****
* SET INTERRUPT *
* ENABLE AND *
* READ *
*****
I
*****
* WAIT FOR *
* CONTROLLER *
* READY *
*****
I
-----
/ DID AN INTER- \ YES
/ RUPT OCCUR? \--> * TINT11(10) *
-----
I NO
-----
/ IS CONTROLLER \ NO
/ READY SET? \-->
-----
I YES
*****
* PR70K(10) *

*****
* PR70K(10) *
*****
I
*****
* GIVE FULL *
* CONTROL BACK *
* TO CPU *
*****
I
*****
* DISABLE *
* INTERRUPTS *
* *
*****
I
*****
* RESET TRAPCATCHER *
* VECTOR LOCATIONS 230 *
* AND 232 *
*****
I
-----
/ HAVE WE INTER-? \ NO * GO ON TO NEXT *
/ RUPTED BEFORE AT \--> * TEST *
/ ANOTHER LEVEL? \ *
-----
I YES
-----
/ WAS THE OTHER \ YES * REPORT INTER- *
/ LEVEL HIGHER? \--> * RUPT OCCURED *
/ * AT HIGHER LVL. *
-----
I NO
I<-----
*****
* GO ON TO NEXT *
* TEST *
* *
*****

*****
* HANG IN *
* LOOP *
* WAITING *
*****
* NOTE: TST12, AND TST13 *
* ARE STRUCTURED SIMILARY *
* AND WILL TEST CPU LEVELS *
* 5 AND 4, RESPECTIVELY *

```

TO THAT SHOWN FOR TEST 11 *****
*TST11(10) *

TESTS 14 THRU 17 COVER CPU LEVELS 3,2,1 AND 0;
THE ONLY DIFFERENCE BEING THAT WE ARE NOW
LOOKING FOR AN INTERRUPT TO OCCUR SINCE THE CPU
LEVELS ARE BELOW THE DEVICE LEVEL OF 4.

```

*****
*TST20 *
*****
I
*****
**                               ** *****
**                               **----->*INIT(45) *
**      INIT                     **
**                               ** *****
*****
I
*****
*SET RETURN POINT AND *
*  PS FOR WHEN AN    *
* INTERRUPT OCCURS   *
*****
I
*****
* SET CPU TO *
*PRIORITY LEVEL *
*      0      *
*****
I
*****
* SET COLUMN COUNT TO *
* 1(10) AND BUS ADDR. *
* TO "BUFBEG"        *
*****
I
*****
*  ENABLE *
* INTERRUPTS *
*          *
*****
I
*****
* WAIT AWHILE TO *
* SEE IF AN INTERRUPT *----->*TST20A(11)*
* OCCURS          *
*****

```

```

*****
*TINT21(12)*
*****
I
-----
/ DID WE RECEIVE \ YES * RESET STACK *
/ A 2ND INTERRUPT \ --> * POINTER FROM *
? * INTERRUPT *
-----
I NO
*****
* GIVE CONTROL *
* BACK TO CPU *
*****
I <-----I
*****
* DISABLE *
* INTERRUPTS *
*****
I
*****
* RESTORE TRAPCATCHER *
* VECTOR LOCATIONS 230 *
* AND 232 *
*****
I
*****
*TST22(13) *
*****

*****
*TST21(11) *
*****
I
*****
* INIT *
*****
*****
* INIT(45) *
*****

I
*****
* SET RETURN POINT *
* AND PS FOR WHEN AN *
* INTERRUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY *
* LEVEL 0 *
*****
I
*****
* SET COLUMN COUNT TO *
* 1(10) AND BUS ADDR. *
* TO "BUFBEQ" *
*****
I
*****
* SET INTERRUPT *
* ENABLE AND *
* READ *
*****
I
-----
/ DID AN INTER- \ NO * HANG IN LOOP *
/ RUPT OCCUR \ --> * WAITING *
-----
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
* SET RETURN *
* ADDR. FOR NEXT *
* POSSIBLE INTER.*
*****
*****
* SET CPU BACK *
* TO PRIORITY *
* LEVEL 0 *
*****
*****
*TINT21(12)*
*****

```

```

*****
*TINT22(13)*
*****
I
*****
* RESTORE TRAPCATCHER *
* VECTOR LOCATIONS 230 *
*      & 232      *
*****
I
-----
/ IS CONTROLLER \ NO \
/ READY?      \-----> / REPORT
                        / ERROR
-----
I YES
I<-----
/ IS ERROR BIT15 \ NO \
/ SET?          \-----> / REPORT
                        / ERROR
-----
I YES
I<-----
/ IS NXM BIT09 \ NO \
/ SET?        \-----> / REPORT
                        / ERROR
-----
I YES
I<-----
/ IS EXTENDED \ NO \
/ MEMORY BIT 17 \-----> / REPORT
                        / ERROR
-----
I YES
I<-----
/ IS EXTENDED \ NO \
/ MEMORY BIT16 \-----> / REPORT
                        / ERROR
-----
I YES
I<-----
*****
*T22A(13) *
*****

```

```

*****
*TST22(12) *
*****
I
*****
**
**      INIT      **
**
*****
I
*****
*SET RETURN POINT AND *
* PS FOR WHEN AN *
* INTERRUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY LEVEL *
*      0      *
*****
I
*****
* SET COLUMN *
* COUNT TO READ *
* 5(10) COLUMNS *
*****
I
*****
* SET BUS ADDRESS TO *
* NON-EXISTANT MEMORY *
* I.E. LOC. 160000 *
*****
I
*****
* SET INTERRUPT *
* ENABLE, READ & *
* EXT. MEM. BITS *
*****
I
-----
/ DID AN \ NO \
/ INTERRUPT OCCUR? \----->
-----
I YES
*****
* RESTORE STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
*TINT22(13)*

```

```

*****
*T22A(13) *
*****
I
-----
/ ANY OTHER ERROR \ YES *
/ BITS SET ? E.G. \--> *
/ BITS 2,10,11,ETC. \ *
-----
I NO
I<-----
/ DOES BUS ADDR. \ NO *
/ REGISTER CONTENTS \--> *
/ =160002 ? \ *
-----
I YES
I<-----
/ DOES COLUMN CNT \ NO *
/ REGISTER SHOW 4 \--> *
/ COLUMNS LEFT ? \ *
-----
I YES
I<-----
*****
*TST23(14) *
*****

```

```

*****
* HANG IN LOOP *
* WAITING *
*
*****

```

CD11/CD20 CARD READER DIAGNOSTIC
 BYTE & DATIP LOAD OF COLUMN COUNT REGISTER

***** *TST23(13) * *****	***** *TST24(14) * *****	***** *TST25(14) * *****
I	I	I
***** * INITIALIZE * * COLUMN COUNT * * REGISTER TO 0 * *****	***** * INITIALIZE * * COLUMN COUNT * * REGISTER TO 0 * *****	***** * INITIALIZE * * COLUMN COUNT * * REGISTER TO 0 * *****
I	I	I
***** * LOAD LOWER BYTE OF * * COLUMN COUNT REG. * * WITH THE VALUE 252 * *****	***** * LOAD HIGH BYTE OF * * COLUMN COUNT REG. * * WITH THE VALUE 252 * *****	***** * LOAD COLUMN COUNT * * REGISTER WITH 100000 * * AND NEGATE IT * *****
I	I	I
----- / DID UPPER BYTE \ NO * / GET LOADED WITH \--> * / THE VALUE 252 ALSO? \ * -----	----- / DID LOWER BYTE \ * / GET LOADED WITH \--> * / THE VALUE 252 ALSO? \ * -----	----- / DID CONTENTS OF \ YES * / COLUMN COUNT REG. \--> * / CHANGE ? \ * -----
***** * REPORT * * ERROR * *****	***** * REPORT * * ERROR * *****	***** * REPORT * * ERROR * *****
I YES	I<-----I	I NO
I<-----I	I<-----I	I<-----I
***** *TST24(14) * *****	***** *TST25(14) * *****	***** *TST26 * *****

NOTE: TESTS 26, 27 AND 30 ARE CARBON COPIES OF TESTS 23,
 24, AND 25, RESPECTIVELY. ONLY DIFFERENCE BEING
 THAT TESTS 23 - 25 OPERATE ON COLUMN COUNT REGISTER,
 AND TESTS 26 - 30 OPERATE ON BUS ADDRESS REGISTER.

```

*****
*TINT31(15)*
*****
I
-----
/ IS CONTROLLER \ NO
/ READY SET? \---->
\-----/
I YES I
I<-----I
*****
* DISABLE *
* FURTHER *
* INTERRUPTS *
*****
I
*****
* RESTORE TRAPCATCHER *
* VECTOR LOCATIONS 230 *
* AND 232 *
*****
I
*****
* RESET STACK *
* FROM *
* INTERRUPT *
*****
I
-----
/ HERE 2 \ NO
/ CARDS READ? \---->
\-----/
I REPORT
I ERROR
I<-----I
*****
*****
*TST32(16)*
*****

*****
*TST31 *
*****
I
*****
INIT *****
*****
I
*****
* SET UP RETURN *
* ADDR. AND PS *
* FOR INTERRUPT *
*****
I
*****
* SET PROCESSOR *
* TO LEVEL *
* 0 *
*****
I
*****
* SET COLUMN COUNT TO *
* 81(10) I.E.-WRAP *
* AROUND TO 2ND CARD *
*****
I
*****
* SET A START ADDRESS *
* FOR DUMP OF CARD *
* CONTENTS *
*****
I
*****
* SET INTERRUPT *
* ENABLE AND *
* READ *
*****
I
-----
/ DID WE GET AN \ YES
/ INTERRUPT? \---->
\-----/
I NO
*****
*TINT31(15)*

*****
*T23G0 *
*****
I
*****
* GIVE CONTROL *
* BACK TO *
* CPU *
*****
I
*****
* DISABLE *
* INTERRUPTS *
*****
I
*****
* RESTORE TRAPCATCHER *
* VECTOR LOCATIONS 230 *
* &232 *
*****
I
*****
REPORT
ERROR
I
*****
*****
*TST32(16)*
*****

*****
*****
*T31G0 *
*****

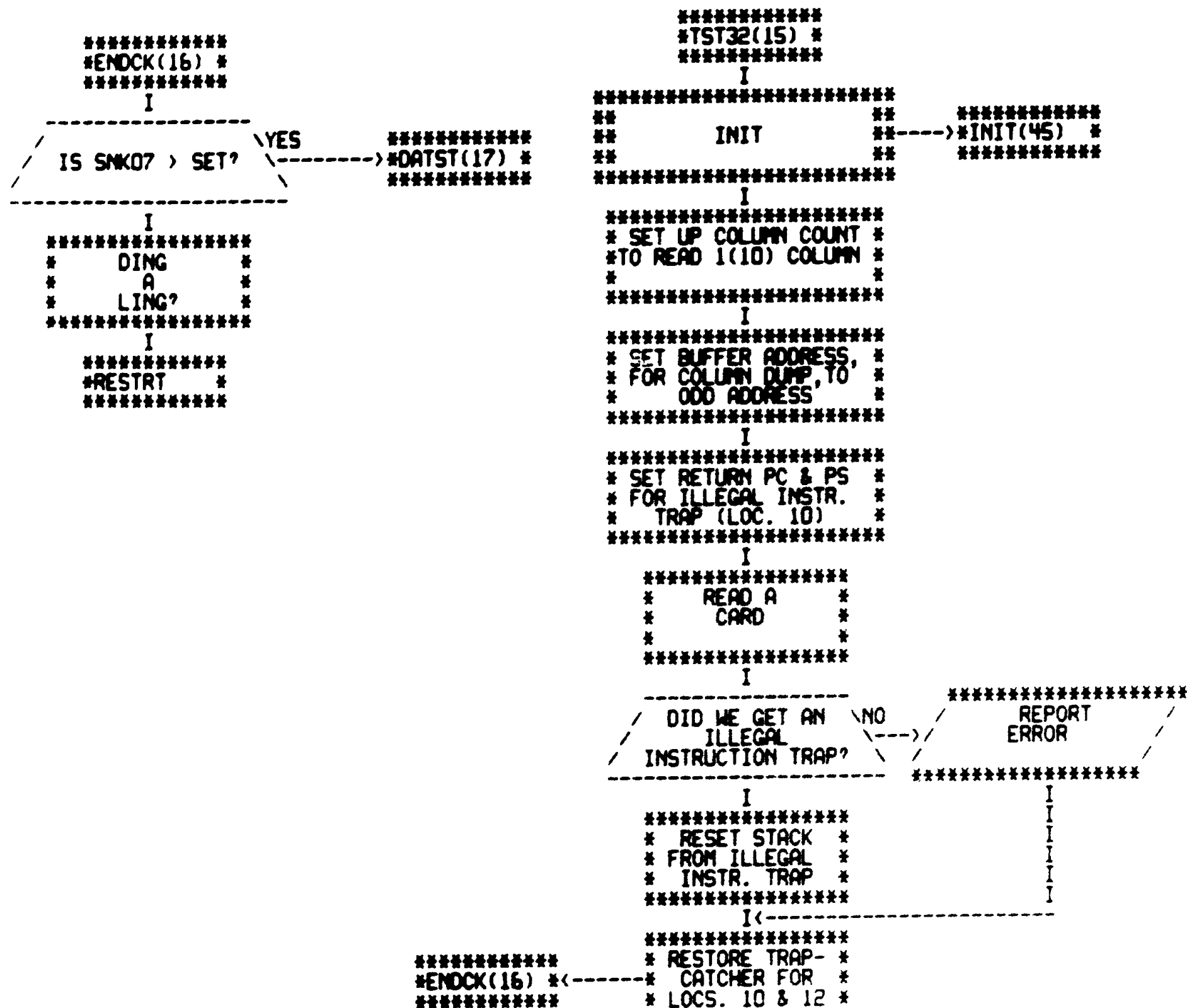
```

MO3

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SEQ 0038

CD11/CD20 CARD READER DIAGNOSTIC
BUS ADDRESS 000 & TRANSFER IN NON-PACK MODE



```

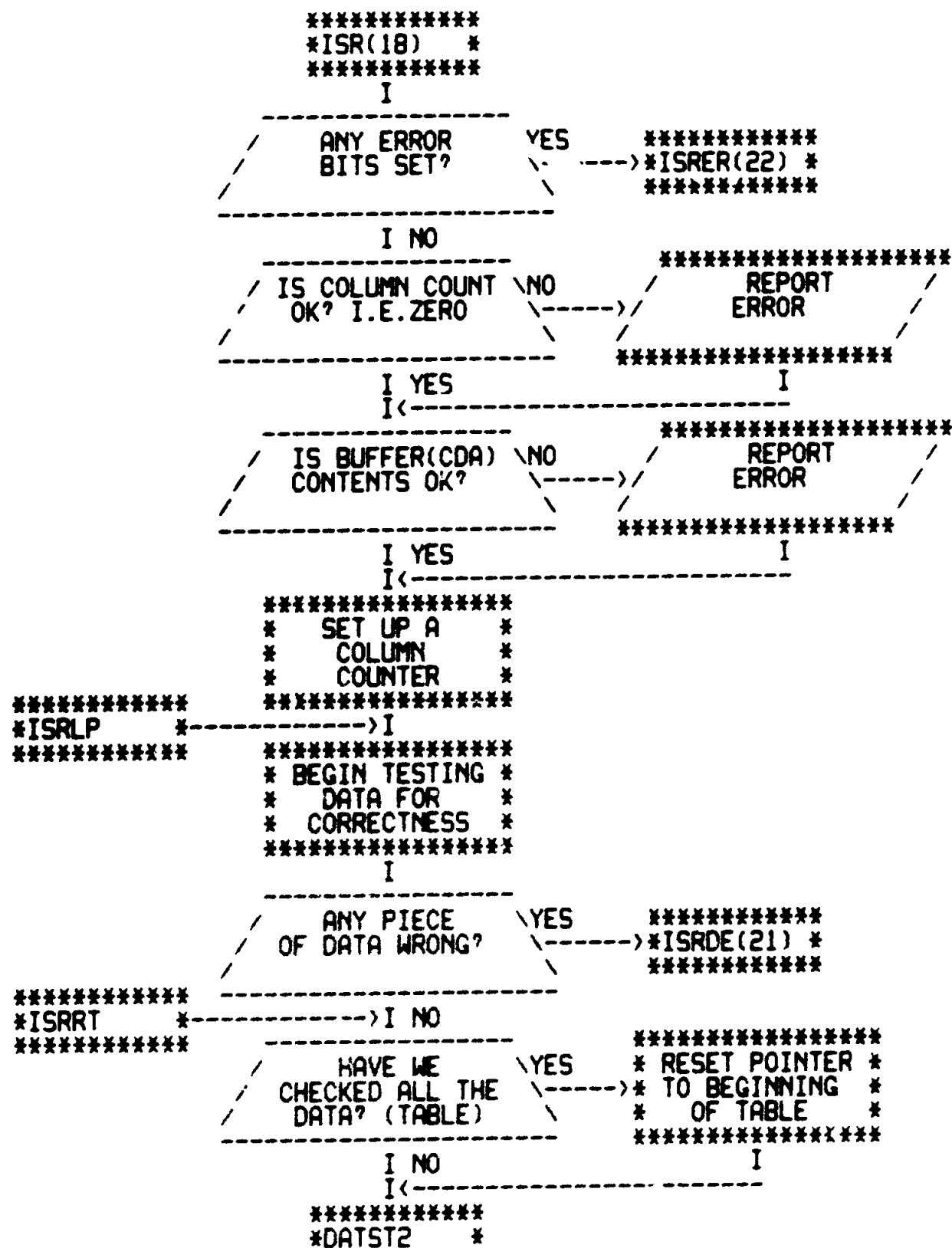
*****
*DATST(16) * UNPACKED MODE EXAMPLE
*****
I
*****
/ TYPE LEAD-IN /
/ POSITIONAL /
/ MESSAGES /
*****
I
*****
* INITIALIZE CARD *
* COUNT AND COLUMN *
* COUNT TO ZERO *
*****
I
-----
/ ARE WE TESTING \ YES *
/ A / -----> * LOAD BINARY DATA *
/ BINARY DECK ? \ * TABLE POINTERS *
-----
I NO
*****
* LOAD ALPHANUMERIC *
* DATA TABLE *
* POINTERS *
*****
I
-----
*****
** ** *****
** INIT **--> *INIT(45) *
** ** *****
*****
I
*****
* SET UP RETURN ADDR. *
* FOR INTERRUPT *
* SERVICING *
*****
I
*****
* SET CARD *
* SIZE AND WORK- *
* ING OFFSET *
*****
I
*****
*DATST1(18)*

```

```

*****
*DATST1(17)*
*****
I
*****
*SET COL. COUNT = 80. *
* SET GPR = R0 FOR *
* ADDR. SELECTION *
*****
I
*****
* ENABLE *
* INTERRUPTS *
* *
*****
I
-----
/ DO WE WANT PACK \ NO
/ MODE? \-----I
-----
I YES
-----
*****
* SET UP FOR * NO / WAS IMAGE MODE \
* ACCEPTANCE OF * <----- / SELECTED ALSO? \
* PACK MODE * /
*****
I I YES
----->I<-----
*****
* READ *
* A *
* CARD *
*****
*****
*BKGND *----->I<-----
*****
-----
/ HAVE WE \ NO
/ FINISHED READING \-----I
/ A CARD YET ? \
-----
I YES
-----
/ IS CONTROLLER \ NO / REPORT
/ READY ? \-----> / ERROR
-----
I YES I
I<-----
-----
*****NO / HAD WE SELECTED \ YES *****
*ISR(19) * <----- / DATA PACK MODE? \-----> *PSR *
***** / *****

```



004

CD11/CD20 CARD READER DIAGNOSTIC
DATA RELIABILITY TESTING

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SEQ 0042

```

*****
*SRETRN(20)*
*****
I
*****
* CALCULATE NEW SIZE *
* OF COLUMNS TO BE *
* READ *
*****
I
*****
* RESET CARD READER *
* BUFFERS AS PER *
* PRESENT POSITION *
*****
I
*****
* READ NEXT *
* CARD *
*****
I
*****
*BKGN0 *
*****

```

```

*****
*DATST2 *
*****
/ HAVE WE REACHED \ YES
/ THE END OF THE \-----> * STEP UP TO *
/ MEMORY BUFFER ? \ * NEXT CARD *
/
I NO
*****
* UPDATE *
* COLUMN *
* COUNT *
*****
I
*****
* UPDATE TABLE *
* OFFSET FOR *
* CARD #1 IN DECK *
*****
I
/ HAVE WE LOOKED \ NO
/ AT LAST COLUMN OF \-----> * ISRLP *
/ DECK ? \
/
I YES
*****
* STEP UP TO *
* NEXT *
* CARD *
*****
I
*****
* UPDATE TABLE *
* POINTER FOR *
* NEXT CARD *
*****
I
*****
*ISRLP *
*****

```

```

*****
I
/ IMAGE MODE \ NO
/ SELECTED ? \-----> * SET UP FOR *
/ * PACKING MODE *
/
I YES
I<-----
*****
*SRETRN(20)*
*****

```

I

I

ik

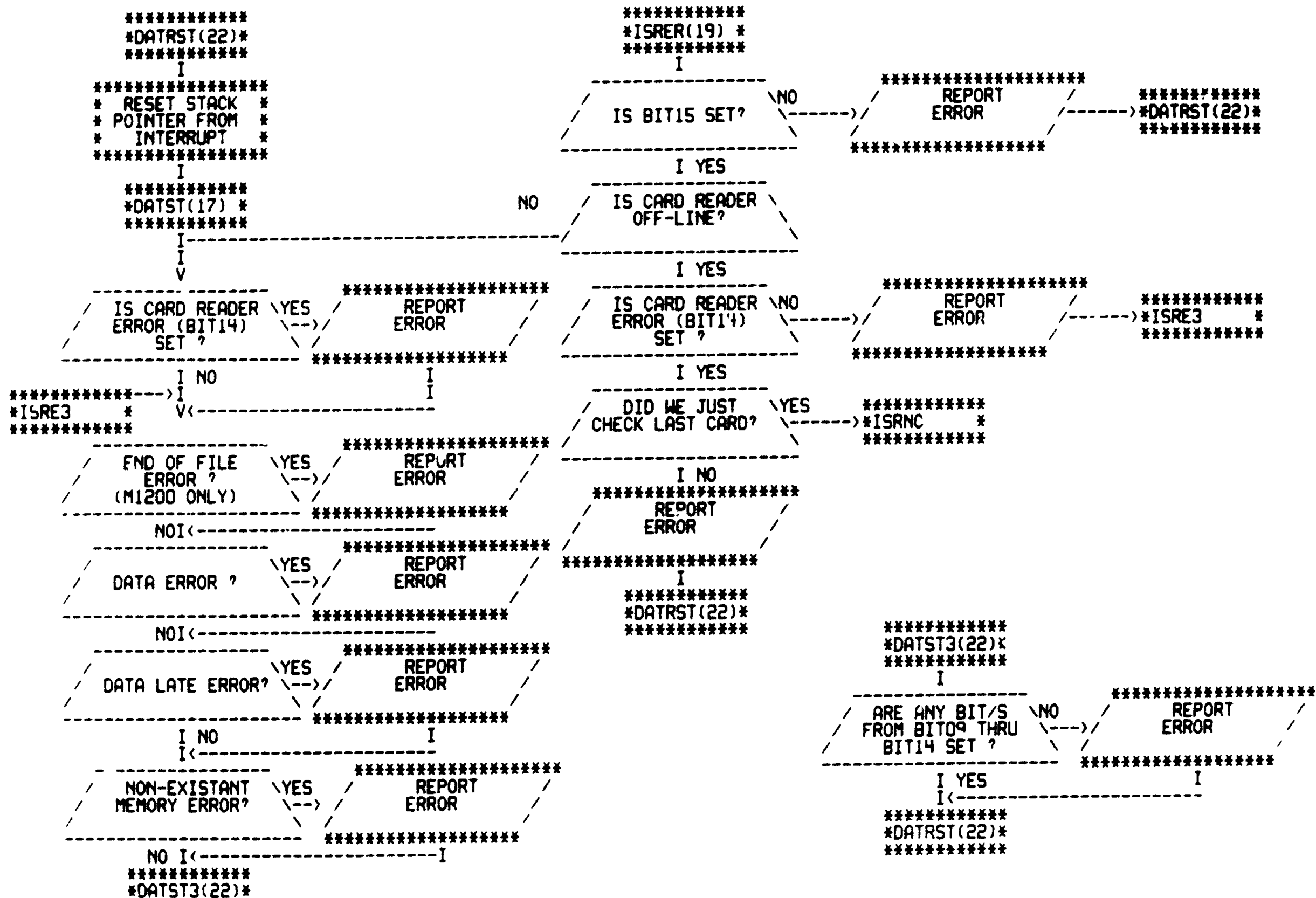
—

I

14

I NO

ISRT



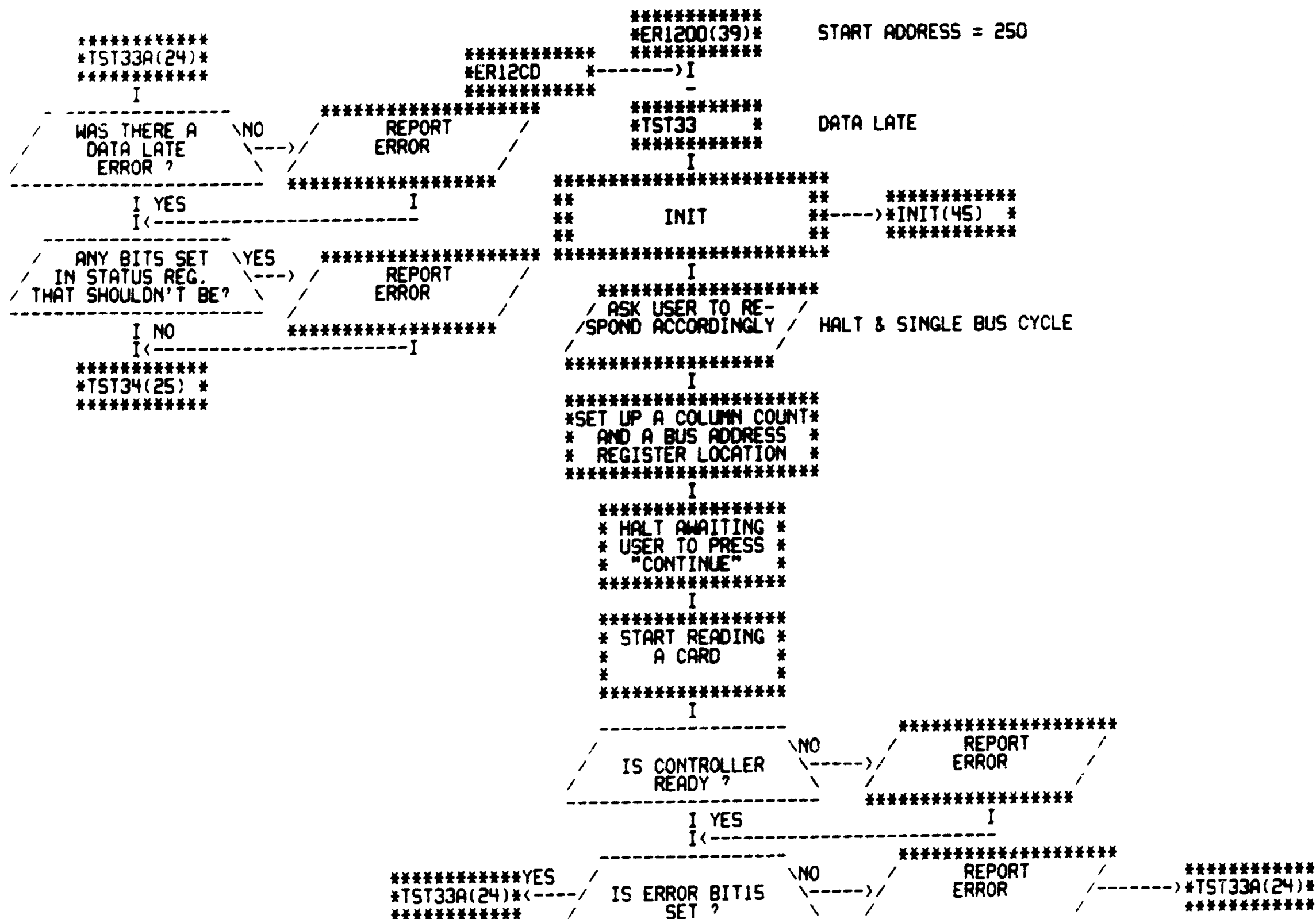
DATA RELIABILITY TESTING FOR PACKED MODE WILL

START AT *DATST(17) * & BRANCH OFF TO*PSR *

WHERE DATA WILL BE HANDLED AS OUTLINED IN

SECTION STARTING AT *ISR(19) *WITH ONLY ONE

EXCEPTION: DATA IS HANDLED USING BYTE CONSTRUCTION



```

*****
*TST34A *
*****

/ DID TRANSITION \ NO
/ TO ON-LINE OCCUR? \
/
/
I YES
I<-----
/ IS OFF-LINE \ YES
/ CONDITION \
/ PRESENT ? \
/
/
I NO
I<-----
/ IS ERROR BIT15 \ NO
/ SET ? \
/
/
I YES
I<-----
/ ANY BITS SET IN \ YES
/ STATUS REG. THAT \
/ SHOULDN'T BE ? \
/
/
I NO
I<-----
*****
*TST35(26) *
*****

*****
*TST34(24) * ERROR + OFF-LINE
*****
I
*****
**
** INIT
**
*****
*****
I
*****
/ ASK USER TO RE- / STOP & CONTINUE
/ SPOND ACCORDINGLY /
/
/
I
*****
* HALT AWAITING *
* USER TO PRESS *
* "CONTINUE" *
*****
I
/ IS OFF-LINE \ NO
/ CONDITION \
/ PRESENT ? \
/
/
I YES
I<-----
/ IS ERROR BIT15 \ NO
/ SET ? \
/
/
I YES
I<-----
/ ANY BITS SET IN \ YES
/ STATUS REG. THAT \
/ SHOULDN'T BE ? \
/
/
I NO
I<-----
*****
RESET & CONTINUE / ASK USER TO RE- /
/ SPOND ACCORDINGLY /
/
/
I
*****
* HALT AWAITING *
* USER TO PRESS *
* "CONTINUE" *
*****
*****
*TST34A *
*****

```

```

*****
*TST35A(26)*
*****
I
-----
ARE ANY BITS SET \ YES /
THAT SHOULDN'T \----> / REPORT ERROR /
BE ? \ /
-----
I NO
I<-----
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTER- *
* RUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY LEVEL *
* 0 *
*****
I
-----
DID AN INTER- \ NO /
RUPT OCCUR ON \----> * HANG AWAITING *
READING A CARD ? \ * AN *
\ * INTERRUPT *
-----
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
IS CONTROLLER \ NO /
READY ? \----> / REPORT ERROR /
\ /
-----
I YES
I<-----
*****
*TST35B(27)*
*****

*****
*TST35(25) *
*****
I
*****
INIT *****
*****
I
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTER- *
* RUPT OCCURS *
*****
I
*****
* SET CPU TO *
* PRIORITY LEVEL *
* 0 *
*****
I
*****
ASK USER TO RE- / PRESS STOP
SPOND ACCORDINGLY /
*****
I
-----
DID AN INTER- \ YES /
RUPT OCCUR ? \----> / REPORT ERROR /
\ /
-----
I NO
-----
IS OFF-LINE \ NO /
CONDITION \----> * HANG HERE *
PRESENT ? \ * WAITING FOR *
\ * OFF-LINE *
-----
I YES
-----
IS CONTROLLER \ NO /
READY ? \----> / REPORT ERROR /
\ /
-----
I YES
I<-----
*****
IS ERROR BIT15 \ NO /
SET ? \----> / REPORT ERROR /
\ /
-----
YES *****
*TST35A(26)*<----- *TST35A(26)*
*****

```

```

*****
*TST35C(27)*
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ DID TRANSITION \ NO
/ TO ON-LINE OCCUR? \-----> / REPORT
/                               / ERROR
/                               /
/ I YES                         /
/ I<-----                     /
/ IS OFF-LINE \ YES
/ CONDITION STILL \-----> / REPORT
/ PRESENT        \          / ERROR
/                               /
/ I NO            /
/ I<-----       /
/ IS ERROR BIT15 \ NO
/ SET ?          \-----> / REPORT
/                               / ERROR
/                               /
/ I YES           /
/ I<-----       /
/ ARE ANY BITS SET \ YES
/ THAT SHOULDN'T \-----> / REPORT
/ BE              \          / ERROR
/                               /
/ I NO            /
/ I<-----       /
*****
*TST36(28)*
*****

```

```

*****
*TST35B(26)*
*****
I
-----
/ OFF-LINE \ NO
/ CONDITION \-----> / REPORT
/ PRESENT ? \          / ERROR
/                               /
/ I YES                         /
/ I<-----                     /
/ IS ERROR BIT15 \ NO
/ SET ?          \-----> / REPORT
/                               / ERROR
/                               /
/ I YES           /
/ I<-----       /
/ ARE ANY BITS SET \ YES
/ THAT SHOULDN'T \-----> / REPORT
/ BE              \          / ERROR
/                               /
/ I NO            /
/ I<-----       /
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTER- *
* RUPT OCCURS        *
*****
I
*****
* SET CPU TO *
* PRIORITY LEVEL *
* 0           *
*****
I
*****
/ ASK USER TO RE- / PRESS RESET
/ SPOND ACCORDINGLY /
*****
I
-----
/ DID AN INTER- \ NO
/ RUPT OCCUR ? \-----> * HANG AWAITING *
/                               * INTERRUPT *
/                               *

```

```

*****
*TST36A(28)*
*****
I
*****
* SET RETURN PC & PS *
*FOR WHEN AN INTERRUPT*
* OCCURS *
*****
I
*****
* SET CPU TO *
*PRIORITY LEVEL *
* 0 & SET "IE" *
*****
I
*****
/ ASK USER TO / RESTORE CARDS
RESPOND ACCORDING- / & RESET
LY /
*****
I
/ DID AN INTERRUPT \ NO
OCCUR ? \ ----> * HANG AWAITING *
* INTERRUPT *
*****
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
* SET RETURN PC & PS *
*FOR WHEN AN INTERRUPT*
* OCCURS *
*****
I
*****
* SET CPU LEVEL *
* TO 0 & INIT. *
*COL.CNT & ADDR.*
*****
I
/ DID AN INTERRUPT \ NO
OCCUR ON ATTEMPT \ ----> * HANG AWAITING *
TO READ A CARD ? \ * INTERRUPT *
*****
I YES
*****
*TST36B(28)*

```

```

*****
*TST36(27)* INPUT HOPPER EMPTY
*****
I
*****
** **
** INIT **-->*INIT(45)*
** **
*****
I
*****
/ ASK USER TO RE- / REMOVE CARDS
SPOND ACCORDINGLY / & CONTINUE
*****
I
*****
* HANG AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
/ IS OFF-LINE \ NO
CONDITION PRESENT? \ ----> * REPORT
* ERROR *
*****
I YES
I<-----
/ IS ERROR BIT15 \ NO
SET ? \ ----> * REPORT
* ERROR *
*****
I YES
I<-----
/ IS CARD READER \ NO
ERROR BIT14 SET? \ ----> * REPORT
* ERROR *
*****
I YES
I<-----
/ ANY BITS SET \ YES
THAT SHOULDN'T \ ----> * REPORT
BE ? \ * ERROR *
*****
I NO
I<-----
*****
*TST36A(28)*
*****
*****
*TST36B(28)*
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
/ IS CARD READER \ NO
STATUS = 300 ? \ ----> * REPORT
* ERROR *
*****
I YES
I<-----
*****
*TST37(29)*
*****

```

```

*****
*TST37A(29)*
*****
I
*****
* SET RETURN PC & PS *
* FOR AN INTERRUPT *
* OCCURRENCE *
*****
I
*****
*SET CPU LEVEL= *
*0 AND SET "IE" *
* BIT *
*****
I
*****
/ ASK USER TO RE-
SPOND ACCORDINGLY /
*****
I
*****
/ DID INTERRUPT \ NO * HANG AWAITING *
OCCUR ? \--> * INTERRUPT *
*****
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
* SET RETURN PC & PS *
* FOR AN INTERRUPT *
* OCCURRENCE *
*****
I
*****
* SET CPU LEVEL TO 0 *
* AND INIT. COL. COUNT *
* & BUS ADDR. REGS. *
*****
I
*****
/ DID INTERRUPT \ NO * HANG AWAITING *
OCCUR ON READING \--> * INTERRUPT *
A CARD ? \ *
*****
I YES
*****
*TST37B(29)*
*****

```

```

*****
*TST37(28) *
*****
I
*****
INIT
*****
I
*****
/ ASK USER TO RE-
SPOND ACCORDINGLY /
*****
I
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
*****
/ IS OFF-LINE \ NO
CONDITION \--> / REPORT
PRESENT ? \ ERROR
*****
I YES
I<-----
*****
/ IS ERROR BIT15 \ NO
SET ? \--> / REPORT
ERROR
*****
I YES
I<-----
*****
/ IS CARD READER \ NO
ERROR BIT14 SET? \--> / REPORT
ERROR
*****
I YES
I<-----
*****
/ ARE ANY EXTRA \ YES
BITS SET THAT \--> / REPORT
SHOULDN'T BE ? \ ERROR
*****
I NO
I<-----
*****
*TST37A(29)*
*****

```

OUTPUT STACKER FULL

```

*****
*TST37B(29)*
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
/ IS CONTENTS OF \ NO * REPORT
STATUS REGISTER \ * ERROR
= 300 ? \ *
*****
YESI<-----I
*****
*TST40(30) *
*****

```

N04

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SEQ 0052

CD11/CD20 CARD READER DIAGNOSTIC
ERROR FUNCTION TESTING OF MODEL M1200

```

*****
*TST40A(30)*
*****
I
/ IS OFF-LINE \ NO
/ CONDITION PRESENT? \
/
I YES
I<
/ IS ERROR BIT15 \ NO
/ SET ? \
/
I YES
I<
/ IS CARD READER \ NO
/ ERROR BIT14 SET? \
/
I YES
I<
/ HAS ECO #14 \ NO
/ BEEN INSTALLED ON \
/ THIS CARD READER? \
/
I YES
/ HAS A PICK CHECK \ NO
/ ERROR BEEN \
/ DETECTED ? \
/
I YES
I<
/ ARE ANY BITS SET \ YES
/ IN STATUS REGISTER \
/ THAT SHOULDN'T BE? \
/
I NO
I<
*****
*TST40C(31)*
*****

*****
*TST40(29) * PICK CHECK
*****
I
*****
** INIT **
**----->*INIT(45) *
**
*****
I
*****
/ ASK USER TO RE- / HOLD CAP UNDER SWITCH
/ SPOND ACCORDINGLY / DOWN & CONTINUE
/
I
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
/ IS OFF-LINE \ NO
/ CONDITION NOW \
/ PRESENT ? \
/
I YES
I<
/ DID WE GET A \ NO
/ TRANSITION TO \
/ ON-LINE ? \
/
I YES
I<
/ IS CONTENTS OF \ NO
/ STATUS REGISTER = \
/ 140210 ? \
/
I YES
I<
*****
* SET COLUMN COUNT *
* BUS ADDR. AND READ *
* A CARD *
*****
I
*****
*TST40A(30)*
*****

```

```
*****
*TST400(31)*
*****
I
-----
/ DID AN INTERRUPT \ NO
/ OCCUR ?          \-----> * HANG AWAITING *
                        * INTERRUPT *
                        *
*****
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ IS CONTENTS OF \ NO
/ STATUS REGISTER = \---> / REPORT
300 ?                  / ERROR
                        /
*****
I YES
I<-----I
*****
*TST41(32) *
*****
```

```
*****
*TST40C(30)*
*****
I
*****
*SET RETURN TO PC & PS*
* FOR WHEN AN INTER- *
* RUPT OCCURS *
*****
I
*****
* SET CPU TO LEVEL 0 *
* AND SET "IE" BIT *
*
*****
I
*****
/ ASK USER TO RE- / RESTORE CARDS
/ SPOND ACCORDINGLY / AND RESET
*****
I
-----
/ DID INTERRUPT \ NO
/ OCCUR ?      \-----> * HANG AWAITING *
                        * INTERRUPT *
                        *
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTERRUPT*
* OCCURS *
*****
I
*****
* SET CPU LEVEL TO 0 *
* AND INIT. COL. COUNT *
* & BUS ADDR. REGS. *
*****
I
*****
* READ A *
* CARD *
*
*****
I
*****
*TST40D(31)*
*****
```

0011/0120 CARD READER DIAGNOSTIC
ERROR FUNCTION TESTING OF MODEL M1200

```

*****
*TST41A(32)*
*****
I
-----
/ IS OFF-LINE \ NO
/ CONDITION PRESENT \ ----> / REPORT
                          / ERROR
-----
I YES
I<-----
/ IS ERROR BIT15 \ NO
/ SET ? \ ----> / REPORT
                          / ERROR
-----
I YES
I<-----
/ IS CARD READER \ NO
/ ERROR BIT14 SET ? \ ----> / REPORT
                          / ERROR
-----
I YES
I<-----
/ HAS ECO #14 BEEN \ NO
/ INSTALLED ON THIS \ ----> *TST41B *
/ CARD READER ? \
-----
I YES
/ DID WE DETECT A \ NO
/ STACK CHECK ERROR \ ----> / REPORT
                          / ERROR
-----
I YES *****
I<-----*TST41B *-----
*****
/ ARE ANY BITS SET \ YES
/ IN STATUS REGISTER \ ----> / REPORT
/ THAT SHOULDN'T BE? \ / ERROR
-----
I NO
I<-----
*****
*TST41C(33)*

```

```

*****
*TST41(31) *
*****
I
*****
**
** INIT **-----> *INIT(45) *
**
*****
I
*****
/ ASK USER TO RES- / BLOCK PHOTOCELL
/ POND ACCORDINGLY / AND RESET
-----
I
/ HAS OFF-LINE \ NO
/ OCCURRED YET? \ ----> *
                          * AWAIT *
                          * OFF-LINE *
                          * CONDITION *
-----
I YES
/ HAS TRANSITION \ NO
/ TO ON-LINE OCCUR- /
/ ED YET ? \ ----> *
                          * AWAIT *
                          * TRANSITION TO *
                          * ON-LINE *
-----
I YES
/ IS CONTENTS OF \ NO
/ STATUS REGISTER \ ----> / REPORT
/ = 100210 ? \ / ERROR
-----
I YES
I<-----
*****
* SET UP COL. COUNT & *
* BUS ADDR. REG. THEN *
* READ A CARD *
*****
I
/ HAS CONTROLLER \ NO
/ READY SET YET ? \ ----> *
                          * WAIT *
                          * FOR *
                          * IT *
-----
I YES
*****
*TST41A(32)*

```

```

*****
*TST41D(33)*
*****
I
*****
* READ A *
* CARD *
*
*****
I
-----
/ DID AN \ NO * HANG AWAITING *
/ INTERRUPT OCCUR? \-----> INTERRUPT *
-----
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ IS CONTENTS OF \ NO * HANG AWAITING *
/ STATUS REGISTER = \-----> REPORT *
/ 300 ? \ ERROR *
-----
I YES
I<-----
*****
*TST42(34) *
*****

```

```

*****
*TST41C(32)*
*****
I
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTERRUPT *
* OCCURS *
*****
I
*****
* SET CPU TO LEVEL 0 & *
* SET "IE" BIT *
*
*****
I
*****
/ ASK USER TO RE- / REMOVE JAMMED CARD
/ SPOND ACCORDINGLY / AND RESET
*****
I
-----
/ DID WE GET AN \ NO * HANG AWAITING *
/ INTERRUPT ? \-----> INTERRUPT *
-----
I YES
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTERRUPT *
* OCCURS *
*****
I
*****
* SET CPU TO LEVEL 0 & *
* INIT. COLUMN COUNT *
* & BUS ADDR. REGS. *
*****
I
*****
*TST41D(33)*

```

```

*****
*TST42A(34)*
*****
I
-----
/ IS END OF FILE \ YES
/ CONDITION PRESENT? \ ---->
-----
I NO
I<-----
-----
/ IS CARD READER \ YES
/ ERROR BIT14 SET? \ ---->
-----
I NO
I<-----
-----
/ IS HOPPER CHECK \ YES
/ CONDITION PRESENT? \ ---->
-----
I NO
I<-----
-----
/ IS ERROR BIT15 \ YES
/ SET ? \ ---->
-----
I NO
I<-----
-----
*****
* SET RETURN PC & PS *
* FOR WHEN AN INTERRUPT *
* OCCURS *
*****
*****
I
*****
* SET CPU TO LEVEL 0 *
* & INIT. COLUMN COUNT *
* AND BUS ADDR. REGS. *
*****
*****
I
*****
* SET "IE" AND *
* READ A CARD *
*****
I
*****
*TST42B(35)*
*****

*****
*TST42(33)*
*****
I
*****
**
** INIT **
**
*****
*****
I
*****
/ ASK USER TO RES-
/ POND ACCORDINGLY /
*****
*****
I
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
-----
/ HAS TRANSITION \ NO
/ TO ON-LINE OCCUR- \ ---->
/ ED ? /
-----
*****
*****
I
*****
/ ASK USER TO RE-
/ SPOND ACCORDINGLY /
*****
*****
I
*****
**
** INIT **
**
*****
*****
I
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
*****
*TST42A(34)*
*****

```

END OF FILE & HOPPER CHECK

2 CARDS IN HOPPER
RESET & CONTINUE

* HANG AWAITING *
* TRANSITION *
*

END OF FILE
& CONTINUE

```

*****
*TINTIA(35)*
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ IS END OF FILE \ NO
/ CONDITION PRESENT? \----->
-----
I YES
I<-----
-----
/ IS CARD READER \ NO
/ ERROR BIT14 SET ? \----->
-----
I YES
I<-----
-----
/ IS HOPPER EMPTY -----
/ CONDITION PRESENT? \----->
-----
I YES
I<-----
-----
/ IS ERROR BIT15 \ NO
/ SET ? \----->
-----
I YES
I<-----
*****
/ ASK USER TO RESP-
/ OND ACCORDINGLY /
*****
I
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
*****
REPORT
ERROR
*****
I
*****
REPORT
ERROR
*****
I
*****
REPORT
ERROR
*****
I
*****
REPORT
ERROR
*****
I
*****
RESTORE CARDS
RESET & CONTINUE
*****
*TST42C(36)*
*****

```

```

*****
*TST42B(34)*
*****
I
-----
/ DID WE GET AN \ NO
/ INTERPUPT ? \----->
-----
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
-----
/ IS END OF FILE \ YES
/ CONDITION PRESENT \----->
-----
I NO
I<-----
-----
/ IS CARD READER \ YES
/ ERROR BIT14 SET? \----->
-----
I NO
I<-----
-----
/ IS ERROR BIT15 \ YES
/ SET \----->
-----
I NO
I<-----
*****
* SET UP RETURN *
* ADDR. TO TINTIA*
* ON NEXT INTER. *
*****
I
*****
*SECN *
*****
*****
* HANG AWAITING *
* INTERRUPT ? *
*****
*****
REPORT
ERROR
*****
I
*****
REPORT
ERROR
*****
I
*****
REPORT
ERROR
*****
I
*****
AN INTERRUPT (2ND) FROM
"SECN" AREA WILL GO TO
"TINTIA"
*****

```

TST42C(35)

I

```
-----
/ HAS TRANSITION \ NO      *****
/ TO ON-LINE OCCUR- \-----> * HANG AWAITING *
/ RED ? \              * TRANSITION *
/              \              *
/              \ *****
```

I YES

```
-----
/ IS END OF FILE \ YES      *****
/ CONDITION PRESENT \-----> * REPORT
/ ? \              * ERROR
/              \
/              \ *****
```

I<

I

*TST43(37) *

```
*****
*TST43A(37)*
*****
I
/ IS CONTROLLER READY ? \ NO
/-----> * WAIT FOR IT *
/-----> *
/-----> *****
I YES
/ IS ERROR BIT15 SET ? \ NO
/-----> / REPORT ERROR /
/-----> /
/-----> *****
I YES
I<-----
/ IS CARD READER BIT14 SET ? \ NO
/-----> / REPORT ERROR /
/-----> /
/-----> *****
I YES
I<-----
/ IS OFF-LINE CONDITION PRESENT ? \ NO
/-----> / REPORT ERROR /
/-----> /
/-----> *****
I YES
I<-----
/ HAS ECO #14 BEEN INSTALLED ON THIS CARD READER ? \ NO
/-----> * TST43B *
/-----> *
/-----> *****
I YES
/ IS READ CHECK INDICATOR PRESENT IN DATA BUFFER ? \ NO
/-----> / REPORT ERROR /
/-----> /
/-----> *****
I YES *****
I<----- * TST43B *
/-----> *****
```

```
*****
*TST43C(38)*
*****
```

```
*****
*TST43(36)*
*****
I
/ ASK USER TO RESPOND ACCORDINGLY /
/-----> / RIP CORNER OFF CARD AND RESET /
/-----> /
/-----> *****
I
/ IS OFF-LINE CONDITION PRESENT ? \ NO
/-----> * HANG AWAITING OFF-LINE *
/-----> *
/-----> *****
I YES
/ HAS TRANSITION TO ON-LINE OCCURRED ? \ NO
/-----> * WAIT FOR IT *
/-----> *
/-----> *****
I YES
/ IS CONTENTS OF STATUS REGISTER = 100210 ? \ NO
/-----> / REPORT ERROR /
/-----> /
/-----> *****
I YES
I<-----
/ SET UP COLUMN COUNT AND BUS ADDRESS REGISTER *
/-----> *
/-----> *****
I
/ READ A CARD *
/-----> *
/-----> *****
I
*****
*TST43A(37)*
```

```
*****
*TST43C(37)*
*****
I
-----
/ ARE ANY EXTRA \ YES / REPORT
/ BITS SET IN "CDS" \----> ERROR
/ THAT SHOULDN'T BE? \
-----
I NO I
I<-----
*****
* SET UP RETURN PC & *
* PS FOR WHEN AN INTER-*
* RUPT OCCURS *
*****
I
*****
* SET CPU TO LEVEL 0 & *
* ENABLE INTERRUPTS *
* *
*****
I
*****
/ ASK USER TO RESP- / RESTORE CARDS
/ OND ACCORDINGLY / & RESET
*****
I
-----
/ HAS THE INTER- \ NO * WAIT FOR *
/ RUPT OCCURRED? \----> * IT *
/ * *
/ * *
-----
I YES
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
*****
* RESET STACK *
* POINTER FROM *
* INTERRUPT *
*****
I
*****
*ER12CD *
```

ERROR FUNCTION TESTING OF CARD READER MODELS M1000 OR
M200 IS IDENTICAL TO THAT OF AN M1200 AS OUTLINED

STARTING AT*ER1200(24)* WITH ONLY ONE EXCEPTION:

*TST42(34) * IS NOT EXECUTED (START ADDRESS - 210)

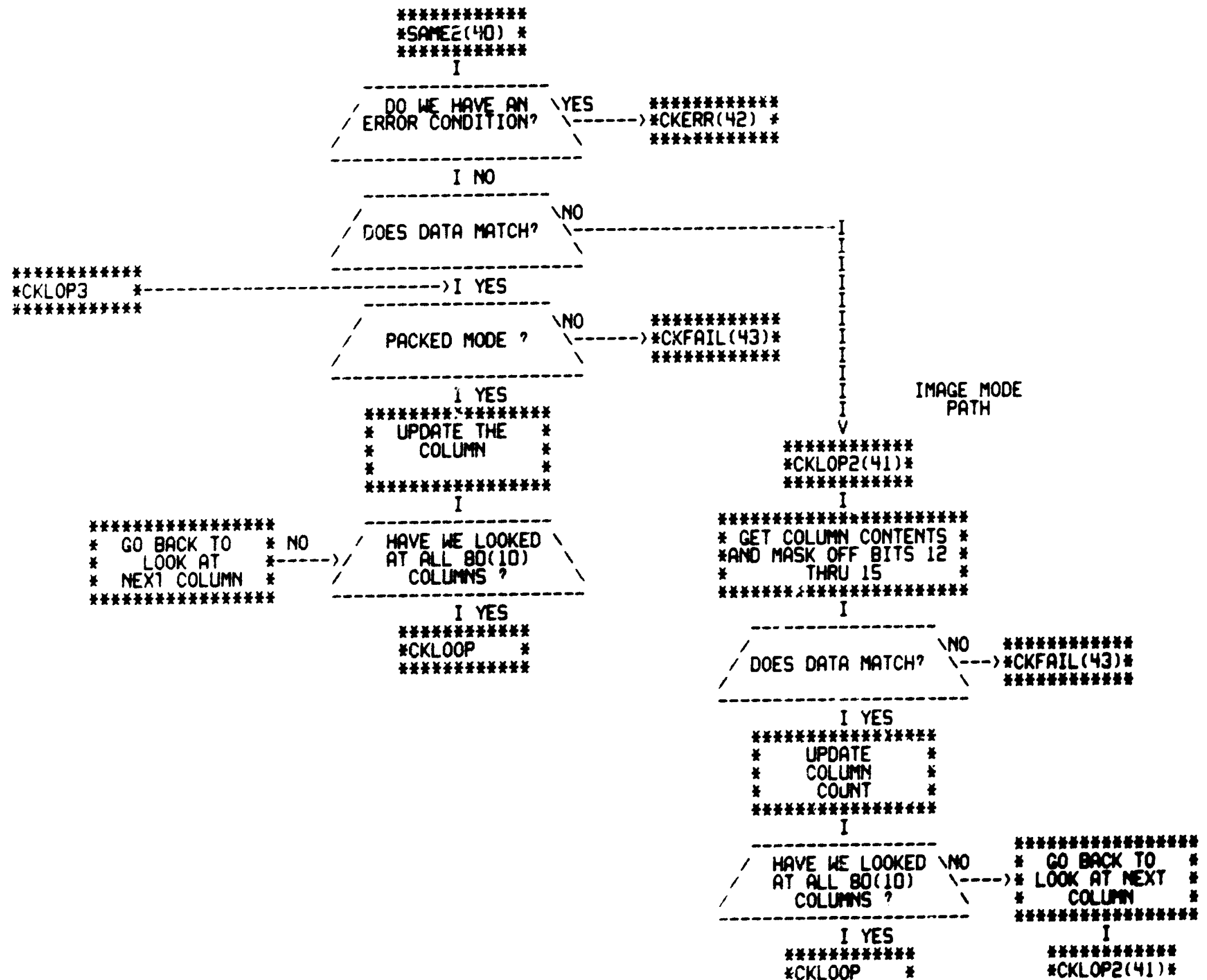
```

*****
*SAME1(40) *
*****
I
-----
/ WAS IMAGE MODE \ YES
/ BEEN SELECTED \-----
/ ALSO ? \
-----
I NO
*****
*SET PACKING MODE IN- *
* DICATOR IN STATUS *
* REGISTER *
*****
I
I<-----*CKREAD *
*****
* INITIALIZE *
* COLUMN COUNT *
* TO ZERO *
*****
I
*****
* SET UP BUFFER ADDR. *
* TO "BUFBEG" & COLUMN *
* COUNT TO 120(8) COLS.*
*****
I
*****
* START READING *
* A CARD *
*****
I
*****
* UPDATE THE *
* CARD COUNT *
*****
I
-----
/ IS CONTROLLER \ NO
/ READY \-----
-----
I YES
*****
*SAME2(41) *
*****

*****
*CKSAME *
*****
I
/ ASK USER TO LOAD /
/ PATTERN INTO SWR /
/ <11:0> /
*****
I
*****
* HALT AWAITING *
* USER TO PRESS *
* "CONTINUE" *
*****
I
*****
*STORE PATTERN SELECT-*
*ED AND MASK OFF BITS *
* 12 THRU 15 *
*****
I
/ ASK USER TO SET /
/ DESIRED SWITCH /
/ REGISTER OPTIONS /
*****
I
*****
* HALT AWAITING *
* USER TO PRESS *
* CONTINUE *
*****
I
*****
*CKSTRT *----->I
*****
** **
** INIT **----->*INIT(45) *
** **
*****
I
*****
* CLEAR CARD COUNT *
* (TOTCRD) & ERROR *
* COUNT (TOTERR) *
*****
I<-----*CKLOOP *
*****
/ HAS PACK MODE \ NO
/ BEEN SELECTED \----->*CKREAD *
*****
I YES
*****
*SAME1(40) *

```

START ADDRESS = 240



CD11 CD20 CARD READER DIAGNOSTIC
PROGRAM TO LOOP ON SINGLE DATA PATTERN

CD11/CD20 CARD READER DIAGNOSTIC
PROGRAM TO LOOP ON SINGLE DATA PATTERN

```

*****
*FAIL1(43) *
*****
I
-----
/  HALT ON ERROR ? \YES*      *****
\  \-->*      HALT      *
\  \      *
-----
I NO
*****
* UPDATE COLUMN *
* COUNT FOR NEXT *
* COLUMN LOOKUP *
*****
I
-----
/  HAVE WE LOOKED \YES *****
AT ALL 80(10) \-->*CKLOOP *
COLS. ? \      *****
-----
I NO
-----
/  ARE WE DOING \NO *****
PACKED MODE ? \-->*CKLOP2(41)*
\      *****
-----
I YES
*****
*CKLOP3 *
*****

```

```

*****
*CKFAIL(41)*
*****
I
*****
*UPDATE TOTAL *
*OF ERRORS FOUND*
* (TOTERR) *
*****
I
-----
/  INHIBIT ERROR \YES *****
PRINTOUT ? \-->*FAIL1(43) *
\      *****
-----
I NO
*****
* TYPE COLUMN *
* HEADINGS *
-----
I
*****
*STEP UP COLUMN *
* COUNT FOR *
* ERROR REPORT *
*****
I
*****
* TYPE COLUMN IN *
* WHICH ERROR WAS *
* DETECTED *
-----
I
*****
* DROP COLUMN *
* COUNT BACK TO *
* ORIGINAL VALUE *
*****
I
-----
/  ARE WE DOING \YES *****
PACKED MODE ? \-->* TYPE INCORRECT BYTE *
\      * VALUE, CARD NO. & *
* TOTAL NO. OF ERRORS *
*****
I NO
*****
* TYPE INCORRECT WORD *
* VALUE, CARD NO. & *
* TOTAL NO. OF ERRORS *
*****
I<-----
*****
*FAIL1(43) *

```

```
*****  
*TESTX * START ADDRESS = 220  
*****  
I  
*****  
/ ASK USER TO LOAD /  
/ "SCOPE" ADDR. OF /  
/ DESIRED TEST /  
*****  
I  
*****  
* HALT AWAITING *  
* USER TO PRESS *  
* CONTINUE *  
*****  
I  
*****  
* STORE ADDRESS & *  
* CHANGE IT TO ADDR. OF *  
* 1ST INSR. AFTER SCOPE *  
*****  
I  
*****  
/ ASK USER TO SET /  
/ DESIRED SWITCH /  
/ REGISTER OPTIONS /  
*****  
I  
*****  
* HANG AWAITING *  
* USER TO PRESS *  
* CONTINUE *  
*****  
I  
*****  
* STORE ADDR. LOADED BY *  
* USER IN "SLPADR" TO *  
* BE PICKED UP BY SCOPE *  
*****  
I  
*****  
* JUMP TO TEST *  
* SELECTED ! *
```

CD11/CD20 CARD READER DIAGNOSTIC
INITIALIZATION ROUTINES

```

*****
*CKOFFL(02)*
*****
I
-----
/ IS OFF-LINE COM- \ NO
/ DITION PRESENT ? \ ---->
*****
I YES
*****
/ TELL USER HE IS
/ OFF-LINE ! PRESS
/ RESET & CONTINUE /
*****
I
*****
* HANG AWAITING *
* USER TO PRESS *
* CONTINUE      *
*****
I
*****
*CKOFFL(45)*
*****

*****
*INIT(08) *
*****
I
*****
*RETURN TO WHERE ROU- * **
* TIME "CKOFFL" WAS  * **
* LAST CALLED       * **
*****
*****
I
-----
/ IS CONTROLLER \ NO
/ READY ?      \ ---->
*****
I YES
*****
* ISSUE A *
* POWER CLEAR *
*          *
*****
I
-----
/ IS STATUS REGIS- \ NO
/ TER NOW ALL      \ ---->
/ CLEARED OUT ?   \
*****
I YES
I<-----
*****
*RETURN TO WHERE ROU- *
* TIME "INIT" WAS LAST *
* CALLED              *
*****
*****
* HANG AWAITING *
* CONTROLLER    *
* READY         *
*****
*****
REPORT
ERROR
*****

```

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CD11/CD20 CARD READER DIAGNOSTIC
FLOW CHART CROSS REFERENCE LIST

[illegible]

E06

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SEQ 0069

CD11/CD20 CARD READER DIAGNOSTIC
FLOW CHART CROSS REFERENCE LIST

TST11	09			
TST2	09	10	11	
TST20	02	03		
TST20A	11			
TST21	11	11		
TST22	11	12		
TST23	12	13		
TST24	13	14		
TST25	14	14		
TST26	14	14		
TST3	03	03	04	
TST31	15			
TST32	15	15	16	
TST33	24			
TST33A	24	24	24	
TST34	24	25		
TST34A	25	25		
TST35	25	26		
TST35A	26	26	26	
TST35B	26	27		
TST35C	27	27		
TST36	27	28	28	
TST36A	28	28		
TST36B	28	28		
TST37	28	29		
TST37A	29	29		
TST37B	29	29		
TST4	04	05		
TST40	29	30		
TST40A	30	30		
TST40B	30	30		
TST40C	30	31		
TST40D	31	31		
TST41	31	32		
TST41A	32	32		
TST41B	32	32		
TST41C	32	33		
TST41D	33	33		
TST42	33	34	39	
TST42A	34	34		
TST42B	34	35		
TST42C	35	36		
TST43	36	37		
TST43A	37	37		
TST43B	37	37		
TST43C	37	38		
TST5	05	06		
TST5A	06	06		
TST5B	06	06		
TST6	06	06	06	
TST6A	07	07		07

CD11/CD20 CARD READER DIAGNOSTIC
FLOW CHART CROSS REFERENCE LIST

F06

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SEQ 0070

07

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1376	T12 TEST FOR AN INTERRUPT ON LEVEL 6
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1668	T15 TEST FOR AN INTERRUPT ON LEVEL 3
1767	T16 TEST FOR AN INTERRUPT ON LEVEL 2
1866	T17 TEST FOR AN INTERRUPT ON LEVEL 1
1962	T20 TEST NO INTERRUPT WITH IE SET & REST CLEARED
2017	T21 SIMULTANEOUS INTERRUPTS AT MORE THAN 1 LEVEL
2087	T22 NON-EXISTANT MEMORY DETECTION
2176	T23 EXECUTE DATI,DATOB(LOW BYTE) LOAD ON COLUMN COUNT
2195	T24 EXECUTE DATI,DATOB(HIGH BYTE) LOAD ON COLUMN COUNT
2213	T25 EXECUTE DATI,DATIP ON COLUMN COUNT REGISTER
2231	T26 EXECUTE DATI,DATOB(LOW BYTE) LOAD ON BUS ADDRESS
2250	T27 EXECUTE DATI,DATOB(HIGH BYTE) LOAD ON BUS ADDRESS
2268	T30 EXECUTE DATI,DATIP ON BUS ADDRESS REGISTER
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4101	T43 TEST READ CHECK ERROR
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4664	SCOPE HANDLER ROUTINE
4713	TYPE ROUTINE
4787	BINARY TO OCTAL (ASCII) AND TYPE

H06

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DZCDB.P.1

SEQ 0072

4866	CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
4935	TRAP DECODER
4951	TRAP TABLE
4967	POWER DOWN AND UP ROUTINES
5017	DATA TABLES

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DZCDB.P11

SEQ 0073

.NLIST MC,MD,CND
.LIST ME
.ENABL ABS,AMA
.MCALL .HEADER,STARS,.SCMTAG,.SCATCH,.SERROR,.SERRTYP,SETPRI
.MCALL .EQUAT,.SETUP,.STYPOCT,.STYPE,.STRAP,.SPOWER,GETPRI
.MCALL NEWTST,.SSCOPE,.SEOP,.SACT11,.STYPDEC,COMMENT,ENDCOMMENT

176000

SSWR=176000

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;*MAYNARD, MASS. 01754
;*:
;*PROGRAM BY E. RYAN
;*:
;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
;*PACKAGE (MAINDEC-11-DZQAC-B1), AUG 29, 1975.
;*:
\$TN=1

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J06

SEQ 0074

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.SBTTL OPERATOR PROCEDURES

: STARTING ADDRESSES ARE:

200=INSTRUCTION AND DATA TEST FOR THE CD11
210=ERROR FUNCTION TEST OF CD11 (M-1000/M-200)
220=SINGLE TEST LOOP
240=READ SINGLE DATA PATTERN TEST
250=ERROR FUNCTION TEST FOR CD11 (M-1200)

: SWITCH REGISTER SETTINGS FOR THE INSTRUCTION AND DATA TEST ARE:

SW02=1 RUN IN DATA IMAGE MODE ONLY
SW03=1 RUN IN DATA PACKING MODE ONLY (IGNORED IF SW02=1)
SW04=1 FOR THE BINARY TEST DECK
SW05=1 TO HALT AT THE END OF A STANDARD 80 CARD
TEST DECK. (HITTING CONTINUE WILL START TESTING
OF THE NEXT DECK IN ACCORDANCE WITH CURRENT
SWR SETTINGS).
=0 TO CONTINUE FROM ONE DECK TO THE NEXT.
AFTER THE LAST DECK IN THE HOPPER IS
RUN, THE PROGRAM WAITS FOR THE CARD READER
TO COME BACK ON-LINE AND RUNS THRU
A SERIES OF CHECKS OF OFF-LINE AND
COMING ON-LINE OPERATIONS OF THE READER.
WHEN THE READER IS BACK ON-LINE AND THE
CHECKS ARE COMPLETE, THE DATA TEST IS RESUMED.
SW06=1 TO RUN THE COMBINED INSTRUCTION AND DATA TEST
WHEN CONTINUING FROM ONE DECK TO THE NEXT
=0 TO RUN ONLY THE DATA TEST ON EVERY DECK AFTER THE FIRST
SW07=1 TO RUN ONLY THE INSTRUCTION TEST CONTINUALLY.
SETTING SW06 AND SW07 AT THE END OF A DECK WILL
CAUSE THE INSTRUCTION TEST TO BE RUN CONTINUOUSLY FROM THEN ON
(NOTE THAT IF SW7 IS SET, THE PROGRAM MAY HANG WHEN THE
CARD READER RUNS OUT OF CARDS)
SW11=1 TO INHIBIT SUBPROGRAM ITERATION
(NOTE THAT IF PROGRAM FLOW IS ALLOWED TO ENTER THE
DATA SUBTEST WHEN SW11 IS SET, DATA ERRORS WILL
OCCUR SINCE THE CARD COUNT WILL BE INCORRECT.)
SW12=1 TO INHIBIT TRACE TRAPPING
SW13=1 TO INHIBIT PRINTOUT
SW14=1 FOR SCOPE LOOP & LOOP ON TEST
SW15=1 TO HALT ON ERROR

: OPERATING PROCEDURE FOR THE INSTRUCTION AND DATA TEST:

1. LOAD TEST DECK IN CARD READER AND PRESS "START" ON THE CARD
READER. IF THE DECK BEING USED IS NOT A STANDARD TEST
DECK, ONLY THE INSTRUCTION PORTION OF THE TEST CAN BE RUN.
(SW7 MUST BE SET TO ONE TO INDICATE THIS).
2. LOAD SA 200, THEN SET THE SWITCH REGISTER SWITCHES TO THE DESIRED
COMBINATION
3. PRESS "START" ON THE CONSOLE
4. NOTE THAT RUNNING THE COMPLETE INSTRUCTION TEST
REQUIRES THAT THE INPUT HOPPER MUST RUN OUT OF CARDS

K06

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 DZCDB.P11 OPERATOR PROCEDURES

SEQ 0075

AT THE END OF A TEST DECK AT LEAST ONCE. WHEN THIS OCCURS, THE PROCESSOR SHOULD CONTINUE TO RUN. LOADING A DECK INTO THE INPUT HOPPER AND PRESSING "RESET" ON THE CARD READER SHOULD CAUSE THE BELL TO RING AND THE CARD READER TO RESUME READING CARDS. IF THIS DOES NOT OCCUR, IT IS A FAULT AND SHOULD BE FIXED.

SPECIAL SWITCH REGISTER SETTINGS FOR THE ERROR FUNCTION TEST:
 SW14=1 TO LOOP THRU THE CURRENT SUBTEST
 SW15=1 TO HALT ON ERROR

OPERATING PROCEDURE FOR THE ERROR FUNCTION TEST:
 1. LOAD A FEW SPARE CARDS INTO THE INPUT HOPPER.
 2. PRESS "RESET" ON THE CARD READER.
 3. LOAD THE SA, THEN SET THE DESIRED SWITCH OPTIONS.
 4. PRESS "START" ON THE CONSOLE.
 5. FOLLOW THE INSTRUCTIONS AS THEY ARE PRINTED OUT.

SINGLE TEST LOOP (SA 220) HALTS TWICE!
 1ST HALT - LOAD STARTING ADDRESS OF DESIRED TEST (TEST1 TO TEST 22)
 2ND HALT - SET SWR OPTIONS (BIT 11 MUST = 0)
 THIS TEST USES TRACE TRAPPING WHERE APPLICABLE IF SW12 IS NOT SET

DESCRIPTION OF SINGLE DATA PATTERN TEST
 THIS TEST IS DESIGNED TO AID IN THE LOCATION OF DIFFICULT DATA ERROR PROBLEMS AND PERHAPS HELP IN SOME CARD READER ADJUSTMENTS. IT CONTINUOUSLY READS CARDS WHICH HAVE ALL COLUMNS PUNCHED OR MARKED IDENTICALLY, CHECKING THE DATA AGAINST A PATTERN SET UP ON THE SWITCHES INITIALLY. ANY ERRORS ARE PRINTED OUT, ALONG WITH A COUNT OF THE TOTAL NUMBER OF CARDS READ AND THE TOTAL NUMBER OF DATA ERRORS WHICH HAVE OCCURRED SINCE THE TEST WAS STARTED.

OPERATING PROCEDURE FOR SINGLE DATA PATTERN TEST:
 1. LOAD TEST DECK OF IDENTICAL CARDS IN THE INPUT HOPPER, AND PUT THE CARD READER ON-LINE (I.E. - PRESS "RESET" ON CARD READER).
 2. LOAD SA 240, THEN PRESS "START" ON THE CONSOLE.
 3. AT THE INITIAL HALT SET THE CORRECT CARD-IMAGE DATA PATTERN IN SW11-SW00, THEN PRESS CONTINUE.
 4. WHEN THE READER RUNS OUT OF CARDS IT WILL RING THE BELL. RELOADING THE DECK AND PRESSING "RESET" ON THE CARD READER WILL CONTINUE THE TEST.

```

*****
STATUS AND CONTROL REGISTER (CDST) BIT DESIGNATIONS
BIT 0  READ
BIT 1  DATA PACKING
BIT 2  HOPPER EMPTY
BIT 3  READER TRANSITION TO ON LINE
BIT 4  ADDRESS BIT 16
BIT 5  ADDRESS BIT 17
BIT 6  INTERRUPT ENABLE
BIT 7  CONTROLLER READY
BIT 8  POWER CLEAR
BIT 9  NON-EXISTENT MEMORY
BIT 10 DATA LATE
BIT 11 DATA ERROR
BIT 12 OFF-LINE
BIT 13 END OF FILE (M1200 ONLY)
BIT 14 CARD READER ERROR
BIT 15 ERROR
*****

```

.SBTTL BASIC DEFINITIONS

```

;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
STACK= 1100
.EQUIV EMT,ERROR      ;; BASIC DEFINITION OF ERROR CALL
.EQUIV IOT,SCOPE      ;; BASIC DEFINITION OF SCOPE CALL
PS= 177776            ;; PROCESSOR STATUS WORD
.EQUIV PS,PSW
STKLMT= 177774         ;; STACK LIMIT REGISTER
PIRQ= 177772           ;; PROGRAM INTERRUPT REQUEST REGISTER
DSWR= 177570           ;; HARDWARE SWITCH REGISTER
DDISP= 177570          ;; HARDWARE DISPLAY REGISTER

```

```

;*GENERAL PURPOSE REGISTER DEFINITIONS
R0= %0                ;; GENERAL REGISTER
R1= %1                ;; GENERAL REGISTER
R2= %2                ;; GENERAL REGISTER
R3= %3                ;; GENERAL REGISTER
R4= %4                ;; GENERAL REGISTER
R5= %5                ;; GENERAL REGISTER
R6= %6                ;; GENERAL REGISTER
R7= %7                ;; GENERAL REGISTER
.EQUIV R6,SP          ;; STACK POINTER

```

001100

177776

177774

177772

177570

177570

000000

000001

000002

000003

000004

000005

000006

000007

M06

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 DZCDB.P11 BASIC DEFINITIONS

SEQ 0077

.EQUIV R7,PC ;;PROGRAM COUNTER

.*PRIORITY LEVEL DEFINITIONS

PR0=	0	;;PRIORITY LEVEL 0
PR1=	40	;;PRIORITY LEVEL 1
PR2=	100	;;PRIORITY LEVEL 2
PR3=	140	;;PRIORITY LEVEL 3
PR4=	200	;;PRIORITY LEVEL 4
PR5=	240	;;PRIORITY LEVEL 5
PR6=	300	;;PRIORITY LEVEL 6
PR7=	340	;;PRIORITY LEVEL 7

.*"SWITCH REGISTER" SWITCH DEFINITIONS

SW15=	100000
SW14=	40000
SW13=	20000
SW12=	10000
SW11=	4000
SW10=	2000
SW09=	1000
SW08=	400
SW07=	200
SW06=	100
SW05=	40
SW04=	20
SW03=	10
SW02=	4
SW01=	2
SW00=	1
.EQUIV	SW09,SW9
.EQUIV	SW08,SW8
.EQUIV	SW07,SW7
.EQUIV	SW06,SW6
.EQUIV	SW05,SW5
.EQUIV	SW04,SW4
.EQUIV	SW03,SW3
.EQUIV	SW02,SW2
.EQUIV	SW01,SW1
.EQUIV	SW00,SW0

.*DATA BIT DEFINITIONS (BIT00 TO BIT15)

BIT15=	100000
BIT14=	40000
BIT13=	20000
BIT12=	10000
BIT11=	4000
BIT10=	2000
BIT09=	1000
BIT08=	400
BIT07=	200
BIT06=	100
BIT05=	40
BIT04=	20
BIT03=	10

000000
 000040
 000100
 000140
 000200
 000240
 000300
 000340

100000
 040000
 020000
 010000
 004000
 002000
 001000
 000400
 000200
 000100
 000040
 000020
 000010
 000004
 000002
 000001

100000
 040000
 020000
 010000
 004000
 002000
 001000
 000400
 000200
 000100
 000040
 000020
 000010

```

246      000004      BIT02= 4
247      000002      BIT01= 2
248      000001      BIT00= 1
249      .EQUIV      BIT09,BIT9
250      .EQUIV      BIT08,BIT8
251      .EQUIV      BIT07,BIT7
252      .EQUIV      BIT06,BIT6
253      .EQUIV      BIT05,BIT5
254      .EQUIV      BIT04,BIT4
255      .EQUIV      BIT03,BIT3
256      .EQUIV      BIT02,BIT2
257      .EQUIV      BIT01,BIT1
258      .EQUIV      BIT00,BIT0
259
260      ;*BASIC "CPU" TRAP VECTOR ADDRESSES
261      000004      ERRVEC= 4      ;; TIME OUT AND OTHER ERRORS
262      000010      RESVEC= 10     ;; RESERVED AND ILLEGAL INSTRUCTIONS
263      000014      TBITVEC=14     ;; "T" BIT
264      000014      TRTVEC= 14     ;; TRACE TRAP
265      000014      BPTVEC= 14     ;; BREAKPOINT TRAP (BPT)
266      000020      IOTVEC= 20     ;; INPUT/OUTPUT TRAP (IOT) **SCOPE**
267      000024      PWRVEC= 24     ;; POWER FAIL
268      000030      EMTVEC= 30     ;; EMULATOR TRAP (EMT) **ERROR**
269      000034      TRAPVEC=34     ;; "TRAP" TRAP
270      000060      TKVEC= 60      ;; TTY KEYBOARD VECTOR
271      000064      TPVEC= 64      ;; TTY PRINTER VECTOR
272      000240      PIRQVEC=240    ;; PROGRAM INTERRUPT REQUEST VECTOR
273
274      ;SPECIAL EQUATES
275      000000      DUMMY= 0
276      000002      ADINT= %2      ;; CONTAINS ADDRESS OF INTERRUPT VECTOR
277      000003      CDS= %3        ;; CONTAINS ADDRESS OF CARD READER STATUS REGISTER
278      000004      CDC= %4        ;; CONTAINS ADDRESS OF CARD READER COLUMN COUNT
279      000005      CDA= %5        ;; CONTAINS ADDRESS OF CARD READER BUS ADDRESS REG.
280      000005      TTY= %5
281      000360      TRACE= 360
282
283      .SBTTL TRAP CATCHER
284
285      000000      =0
286      ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
287      ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
288      ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
289
290      000174      =174
291      000174      000000      DISPREG: .WORD 0      ;; SOFTWARE DISPLAY REGISTER
292      000176      000000      SWREG: .WORD 0        ;; SOFTWARE SWITCH REGISTER
293
294      .SBTTL STARTING ADDRESS(ES)
295      000200      000137      002170      JMP 2#BEGIN      ;; JUMP TO STARTING ADDRESS OF PROGRAM
296
297      ;*****
298
299      .SBTTL ACT11 HOOKS

```

B07

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 DZCDB.P11 ACT11 HOOKS

```

300          ;HOOKS REQUIRED BY ACT11
301          $SVPC=.          ;SAVE PC
302          . =46
303 000046   $ENDAD          ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .SEOP
304          . =52
305 000052   .WORD 20000      ;;2)SET LOC.52 TO 20000
306          .=$SVPC          ;; RESTORE PC
307
308          . =14
309 000014   .WORD TRTRAP
310 000016   .WORD 340
311
312          ;ADDITIONAL STARTING ADDRESSES
313
314          . =210
315 000210   JMP ERCD11          ;FOR CD11 (M1000/M200) ERROR FUNCTION TESTS
316          . =220
317 000220   JMP TESTX          ;FOR LOOP WHICH WILL CONTINUALLY RUN
318          . =240          ;ANY SINGLE SUBTEST
319 000240   JMP CKSAME          ;TO READ A SINGLE DATA PATTERN
320          . =250          ;CONTINUOUSLY
321 000250   JMP ER1200          ;FOR CD11 (M1200) ERROR FUNCTION TEST
322
323
324
325
326
327
328
329

```

```

330 ;*****
331
332 .SBTTL COMMON TAGS
333
334 ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
335 ;*USED IN THE PROGRAM.
336
337 001100 .=1100
338 001100 $CMTAG: .WORD 0 ; START OF COMMON TAGS
339 001100 $PASS: .WORD 0 ; CONTAINS PASS COUNT
340 001102 $STNM: .BYTE 0 ; CONTAINS THE TEST NUMBER
341 001103 $ERFLG: .BYTE 0 ; CONTAINS ERROR FLAG
342 001104 $ICNT: .WORD 0 ; CONTAINS SUBTEST ITERATION COUNT
343 001106 $LPADR: .WORD 0 ; CONTAINS SCOPE LOOP ADDRESS
344 001110 $LPERR: .WORD 0 ; CONTAINS SCOPE RETURN FOR ERRORS
345 001112 $ERTTL: .WORD 0 ; CONTAINS TOTAL ERRORS DETECTED
346 001114 $ITEMB: .BYTE 0 ; CONTAINS ITEM CONTROL BYTE
347 001115 $ERMAX: .BYTE 1 ; CONTAINS MAX. ERRORS PER TEST
348 001116 $ERRPC: .WORD 0 ; CONTAINS PC OF LAST ERROR INSTRUCTION
349 001120 $GDADR: .WORD 0 ; CONTAINS ADDRESS OF 'GOOD' DATA
350 001122 $BDADR: .WORD 0 ; CONTAINS ADDRESS OF 'BAD' DATA
351 001124 $GDDAT: .WORD 0 ; CONTAINS 'GOOD' DATA
352 001126 $BDDAT: .WORD 0 ; CONTAINS 'BAD' DATA
353 001130 .WORD 0 ; RESERVED--NOT TO BE USED
354 001132 .WORD 0
355 001134 .WORD 0
356 001136 177570 $SWR: .WORD DSWR ; ADDRESS OF SWITCH REGISTER
357 001140 177570 $DISPLAY: .WORD DDISP ; ADDRESS OF DISPLAY REGISTER
358 001142 177560 $TKS: 177560 ; TTY KBD STATUS
359 001144 177562 $TKB: 177562 ; TTY KBD BUFFER
360 001146 177564 $TPS: 177564 ; TTY PRINTER STATUS REG. ADDRESS
361 001150 177566 $TPB: 177566 ; TTY PRINTER BUFFER REG. ADDRESS
362 001152 000 $NULL: .BYTE 0 ; CONTAINS NULL CHARACTER FOR FILLS
363 001153 002 $FILLS: .BYTE 2 ; CONTAINS # OF FILLER CHARACTERS REQUIRED
364 001154 012 $FILLC: .BYTE 12 ; INSERT FILL CHARS. AFTER A "LINE FEED"
365 001155 000 $TPFLG: .BYTE 0 ; "TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
366 001156 000000 $REGAD: .WORD 0 ; CONTAINS THE ADDRESS FROM
367 ; WHICH ($REGO) WAS OBTAINED
368 001160 000000 $REG0: .WORD 0 ; CONTAINS (($REGAD)+0)
369 001162 000000 $REG1: .WORD 0 ; CONTAINS (($REGAD)+2)
370 001164 000000 $REG2: .WORD 0 ; CONTAINS (($REGAD)+4)
371 001166 000000 $REG3: .WORD 0 ; CONTAINS (($REGAD)+6)
372 001170 000000 $REG4: .WORD 0 ; CONTAINS (($REGAD)+10)
373 001172 000000 $REG5: .WORD 0 ; CONTAINS (($REGAD)+12)
374 001174 000000 $REG6: .WORD 0 ; CONTAINS (($REGAD)+14)
375 001176 000000 $REG7: .WORD 0 ; CONTAINS (($REGAD)+16)
376 001200 000000 $TMP0: .WORD 0 ; USER DEFINED
377 001202 000000 $TMP1: .WORD 0 ; USER DEFINED
378 001204 000000 $TMP2: .WORD 0 ; USER DEFINED
379 001206 000000 $TMP3: .WORD 0 ; USER DEFINED
380 001210 000000 $TMP4: .WORD 0 ; USER DEFINED
381 001212 000000 $TMP5: .WORD 0 ; USER DEFINED
382 001214 000000 $TMP6: .WORD 0 ; USER DEFINED
383 001216 000000 $TMP7: .WORD 0 ; USER DEFINED

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DZCDB.P11 COMMON TAGS

SEQ 0081

384	001220	000000	STIMES: 0	::MAX. NUMBER OF ITERATIONS
385	001222	177607 000377	\$BELL: .ASCIZ <207><377><377>	::CODE FOR BEL'
386	001226	077	\$QUES: .ASCII /?/	::QUESTION MARK
387	001227	015	\$CRLF: .ASCII <15>	::CARRIAGE RETURN
388	001230	000012	\$LF: .ASCIZ <12>	::LINE FEED

```

389 ;*****
390 ;LOAD POINTERS AND GENERAL STORAGE
391 001232 177160 CDST: 177160 ;ADDRESS OF CARD READER STATUS REGISTER #1
392 ;THIS REGISTER'S INFORMATION IS VALID
393 ;DURING DATA TRANSFERS
394 001234 177162 CDCC: 177162 ;ADDRESS OF CARD READER COLUMN COUNT
395 001236 177164 CDCA: 177164 ;ADDRESS OF CARD READER BUS ADDRESS
396 001240 177166 CDOB: 177166 ;ADDRESS OF CARD READER STATUS REGISTER #2
397 ;THIS REGISTER'S INFORMATION IS VALID
398 ;DURING NON-DATA TRANSFER PERIODS
399 001242 000002 TRTRAP: RT1 ;RETURN FROM TRACE LOOP
400 001244 000230 INTVC: 230 ;ADDRESS OF CARD READER INTERRUPT VECTOR
401 001246 000232 ;USED FOR TIMING, ETC.
402 001250 000000 COUNT: 0 ;CONTAINS LEVEL THAT INTERRUPT IS FOUND AT
403 001252 000000 INTFLG: 0 ;TOGGLED TO SWITCH BETWEEN TRACE TRAPPING AND NORMAL FLO
404 001254 000000 TRFLG: 0 ;STORES PROCESSOR STATUS WHEN TRACE TRAP MUST BE CLEARED
405 001256 000000 PROC: 0 ;IN A SUBTEST
406 ;SET TO ZERO TO OUTPUT DATA ERROR HEADING
407 001260 000000 ERFLG: 0 ;FLAG FOR CHECKERBOARD DECK
408 001262 000000 CKRF: 0 ;USED AS COUNTER IN TESTG
409 001264 000000 COUNTG: 0 ;M-1200 OR M-1000/M-200 CARD READER DETECTOR
410 001266 000000 CD1000: 0
411
412 .SBTTL ERROR POINTER TABLE
413
414 ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
415 ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
416 ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
417 ;*NOTE1: IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
418 ;*NOTE2: EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:
419
420 ;* EM ;POINTS TO THE ERROR MESSAGE
421 ;* DH ;POINTS TO THE DATA HEADER
422 ;* DT ;POINTS TO THE DATA
423 ;* DF ;POINTS TO THE DATA FORMAT
424
425
426 001270 $ERRTB:
427
428 ;ITEM 1
429
430 001270 036272 EM1 ;STATUS REGISTER (CDS) BIT07 NOT SET BY
431 ;INITIALIZATION PULSE
432 001272 044254 DH1 ;(PC) (SP) (CDS) (CDD) (PS)
433 001274 045236 DT1 ;$ERRPC,$REG6,$TMP0,$TMP1,$REG7
434 001276 000000 0 ;OCTAL VALUES
435
436 ;ITEM 2
437
438 001300 036367 EM2 ;COLUMN COUNT REGISTER (CDC) NOT CLEARED BY
439 ;INITIALIZATION PULSE
440 001302 044322 DH2 ;(PC) (SP) (CDS) (CDD) (CDC) (PS)
441 001304 045252 DT2 ;$ERRPC,$REG6,$TMP0,$TMP1,$TMP2,$REG7
442 001306 000000 0 ;OCTAL VALUES

```

443				
444			; ITEM 3	
445				
446	001310	036470	EM3	; BUS ADDRESS REGISTER (CDA) NOT CLEARED BY
447				; INITIALIZATION PULSE
448	001312	044400	DH3	; (PC) (SP) (CDS) (CDD) (CDA) (PS)
449	001314	045270	DT3	; SERRPC, SREG6, STMP0, STMP1, STMP3, SREG7
450	001316	000000	0	; OCTAL VALUES
451				
452			; ITEM 4	
453				
454	001320	036570	EM4	; STATUS REGISTER CONTENTS INCORRECT
455	001322	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
456	001324	045236	DT1	; SERRPC, SREG6, STMP0, STMP1, SREG7
457	001326	000000	0	; OCTAL VALUES
458				
459			; ITEM 5	
460				
461	001330	036633	EM5	; COLUMN COUNT REGISTER (CDC) NOT ABLE TO
462				; BE LOADED WITH ALL ONE'S
463	001332	044322	DH2	; (PC) (SP) (CDS) (CDD) (CDC) (PS)
464	001334	045252	DT2	; SERRPC, SREG6, STMP0, STMP1, STMP2, SREG7
465	001336	000000	0	; OCTAL VALUES
466				
467			; ITEM 6	
468				
469	001340	036734	EM6	; COLUMN COUNT REGISTER (CDC) NOT CLEARED
470				; BY POWER CLEAR
471	001342	044322	DH2	; (PC) (SP) (CDS) (CDD) (CDC) (PS)
472	001344	045252	DT2	; SERRPC, SREG6, STMP0, STMP1, STMP2, SREG7
473	001346	000000	0	; OCTAL VALUES
474				
475			; ITEM 7	
476				
477	001350	037024	EM7	; BUS ADDRESS REGISTER (CDA) NOT ABLE TO BE
478				; LOADED WITH ALL ONE'S
479	001352	044400	DH3	; (PC) (SP) (CDS) (CDD) (CDA) (PS)
480	001354	045270	DT3	; SERRPC, SREG6, STMP0, STMP1, STMP3, SREG7
481	001356	000000	0	; OCTAL VALUES
482				
483			; ITEM 10	
484				
485	001360	037124	EM10	; BUS ADDRESS REGISTER (CDA) NOT CLEARED
486				; BY POWER CLEAR
487	001362	044400	DH3	; (PC) (SP) (CDS) (CDD) (CDA) (PS)
488	001364	045270	DT3	; SERRPC, SREG6, STMP0, STMP1, STMP3, SREG7
489	001366	000000	0	; OCTAL VALUES
490				
491			; ITEM 11	
492				
493	001370	037213	EM11	; CONTROLLER READY DIDN'T CLEAR ON
494				; READING A CARD
495	001372	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
496	001374	045236	DT1	; SERRPC, SREG6, STMP0, STMP1, SREG7

497	001376	000000	0	;OCTAL VALUES
498				
499				
500				
501	001400	037275	EM12	;CONTROLLER READY DIDN'T CLEAR BIT00
502				;OF STATUS REGISTER (CDS)
503	001402	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
504	001404	045236	DT1	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7
505	001406	000000	0	;OCTAL VALUES
506				
507				
508				
509	001410	037374	EM13	;CONTROLLER DIDN'T SET WITHIN ONE SECOND
510	001412	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
511	001414	045236	DT1	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7
512	001416	000000	0	;OCTAL VALUES
513				
514				
515				
516	001420	037443	EM14	;ERROR (BIT15) SET IN STATUS REGISTER (CDS)
517	001422	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
518	001424	045236	DT1	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7
519	001426	000000	0	;OCTAL VALUES
520				
521				
522				
523	001430	037516	EM15	;BIT/S SET IN STATUS REGISTER (CDS) THAT
524				;SHOULDN'T BE
525	001432	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
526	001434	045236	DT1	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7
527	001436	000000	0	;OCTAL VALUES
528				
529				
530				
531	001440	037613	EM16	; 'BUSY' SET IN STATUS REGISTER (CDS)
532				;SHOULDN'T BE
533	001442	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
534	001444	045236	DT1	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7
535	001446	000000	0	;OCTAL VALUES
536				
537				
538				
539	001450	037677	EM17	;RESTORING CPU STATUS AFTER READING A CARD
540				;CLEARED CONTROLLER READY IN STATUS REGISTER
541	001452	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
542	001454	045236	DT1	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7
543	001456	000000	0	;OCTAL VALUES
544				
545				
546				
547	001460	040026	EM20	;NO INTERRUPT OCCURRED
548	001462	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
549	001464	045306	DT4	;SERRPC,\$REG6,\$TMP0,\$TMP1,\$TMP2,\$TMP3,\$REG7
550	001466	000000	0	;OCTAL VALUES

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 DZCDB.P11 ERROR POINTER TABLE

SEQ 0085

551						
552						
553						
554	001470	040054	EM21			
555	001472	044456	DH4			
556	001474	045306	DT4			
557	001476	000000	0			
558						
559						
560						
561	001500	040124	EM22			
562	001502	044456	DH4			
563	001504	045306	DT4			
564	001506	000000	0			
565						
566						
567						
568	001510	040201	EM23			
569	001512	044456	DH4			
570	001514	045306	DT4			
571	001516	000000	0			
572						
573						
574						
575	001520	040232	EM24			
576	001522	044456	DH4			
577	001524	045306	DT4			
578	001526	000000	0			
579						
580						
581						
582	001530	040306	EM25			
583	001532	044456	DH4			
584	001534	045306	DT4			
585	001536	000000	0			
586						
587						
588						
589	001540	040364	EM26			
590						
591	001542	044456	DH4			
592	001544	045306	DT4			
593	001546	000000	0			
594						
595						
596						
597	001550	040461	EM27			
598						
599	001552	044456	DH4			
600	001554	045306	DT4			
601	001556	000000	0			
602						
603						
604						

;AN INTERRUPT OCCURRED - SHOULDN'T HAVE
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; INTERRUPT ALREADY OCCURRED AT A HIGHER LEVEL
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; CONTROLLER READY NOT SET
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; AN INTERRUPT OCCURRED AT TWO DIFFERENT LEVELS
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; ERROR (BIT15) NOT SET IN STATUS REGISTER
 ; (CDS) - SHOULD BE
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; NON-EXISTANT MEMORY (BIT09) NOT SET IN
 ; STATUS REGISTER (CDS) - SHOULD BE
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7
 ; OCTAL VALUES

; ITEM 30

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DZCOB.P11 ERROR POINTER TABLE

SEQ 0086

605	001560	040576	EM30	; EXTENDED MEMORY (BIT05) NOT SET IN STATUS
606				; REGISTER (CDS)
607	001562	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
608	001564	045306	DT4	; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
609	001566	000000	0	; OCTAL VALUES
610				
611				; ITEM 31
612				
613	001570	040670	EM31	; EXTENDED MEMORY (BIT04) NOT SET IN STATUS
614				; REGISTER (CDS)
615	001572	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
616	001574	045306	DT4	; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
617	001576	000000	0	; OCTAL VALUES
618				
619				; ITEM 32
620				
621	001600	037516	EM15	; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
622	001602	044456	DH4	; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
623	001604	045306	DT4	; OCTAL VALUES
624	001606	000000	0	
625				
626				; ITEM 33
627				
628	001610	040762	EM32	; CONTENTS OF BUS ADDRESS REGISTER (CDA)
629				; INCORRECT
630	001612	044544	DH5	; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (CDA) (PS)
631				; WAS SHB
632	001614	045326	DT5	; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, STMP4, SREG7
633	001616	000000	0	; OCTAL VALUES
634				
635				; ITEM 34
636				
637	001620	041044	EM33	; CONTENTS OF COLUMN COUNT REGISTER (CDC)
638				; INCORRECT
639	001622	044730	DH6	; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (CDC) (PS)
640				; WAS SHB
641	001624	045326	DT5	; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, STMP4, SREG7
642	001626	000000	0	; OCTAL VALUES
643				
644				; ITEM 35
645				
646	001630	041127	EM34	; READER OFF-LINE BUT CARD READER ERROR
647				; (BIT14) NOT SET IN STATUS REGISTER (CDS)
648	001632	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
649	001634	045236	DT1	; SERRPC, SREG6, STMP0, STMP1, SREG7
650	001636	000000	0	; OCTAL VALUES
651				
652				; ITEM 36
653				
654	001640	041247	EM35	; NO TRANSITION TO ON-LINE (BIT03) OCCURRED
655				; IN STATUS REGISTER (CDS)
656	001642	044254	DH1	; (PC) (SP) (CDS) (CDD) (PS)
657	001644	045236	DT1	; SERRPC, SREG6, STMP0, STMP1, SREG7
658	001646	000000	0	; OCTAL VALUES

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 DZCDB.P11 ERROR POINTER TABLE

SEQ 0087

659					
660					
661					
662	001650	043627	EM63		
663	001652	044456	DH4		
664	001654	045306	DT4		
665	001656	000000	0		
666					
667					
668					
669	001660	041353	EM36		
670					
671	001662	045114	DH7		
672					
673	001664	045350	DT6		
674	001666	000000	0		
675					
676					
677					
678	001670	041432	EM37		
679	001672	044456	DH4		
680	001674	045306	DT4		
681	001676	000000	0		
682					
683					
684					
685	001700	041301	EM40		
686					
687	001702	044456	DH4		
688	001704	045306	DT4		
689	001706	000000	0		
690					
691					
692					
693	001710	041561	EM41		
694					
695	001712	044456	DH4		
696	001714	045306	DT4		
697	001716	000000	0		
698					
699					
700					
701	001720	041646	EM42		
702					
703	001722	044456	DH4		
704	001724	045306	DT4		
705	001726	000000	0		
706					
707					
708					
709	001730	041743	EM43		
710					
711	001732	044456	DH4		
712	001734	045306	DT4		

; ITEM 37

; DISASTEROUS ERROR BUT NO ERROR BITS SET
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
 ; OCTAL VALUES

; ITEM 40

; CONTENTS OF STATUS REGISTER #2 (CDD)
 ; INCORRECT
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; WAS SHB
 ; SERRPC, SREG6, STMP0, STMP1, STMP4, SREG7
 ; OCTAL VALUES

; ITEM 41

; NO INTERRUPT WITH PROCESSOR AT LEVEL 0
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
 ; OCTAL VALUES

; ITEM 42

; DATA LATE (BIT10) NOT SET IN STATUS
 ; REGISTER (CDS)
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
 ; OCTAL VALUES

; ITEM 43

; OFF-LINE (BIT12) NOT SET IN STATUS
 ; REGISTER (CDS)
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
 ; OCTAL VALUES

; ITEM 44

; OFF-LINE (BIT12) SET IN STATUS REGISTER
 ; (CDS) - SHOULDN'T BE
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
 ; OCTAL VALUES

; ITEM 45

; PICK CHECK (BIT13) NOT SET IN STATUS
 ; REGISTER #2 (CDD)
 ; (PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
 ; SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7

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 DZCDB.P11 ERROR POINTER TABLE

SEQ 0788

713	001736	000000	0	; OCTAL VALUES	
714					
715			; ITEM 46		
716					
717	001740	042032	EM44	; STACK CHECK (BIT12) NOT SET IN STATUS	
718				; REGISTER #2 (CDD)	
719	001742	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
720	001744	045306	DT4	; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7	
721	001746	000000	0	; OCTAL VALUES	
722					
723			; ITEM 47		
724					
725	001750	042122	EM45	; END OF FILE (BIT13) SET IN STATUS	
726				; REGISTER (CDS) - SHOULDN'T BE	
727	001752	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
728	001754	045306	DT4	; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7	
729	001756	000000	0	; OCTAL VALUES	
730					
731			; ITEM 50		
732					
733	001760	042230	EM46	; READ CHECK (BIT14) SET IN STATUS	
734				; REGISTER (CDS) - SHOULDN'T BE	
735	001762	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
736	001764	045306	DT4	; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7	
737	001766	000000	0	; OCTAL VALUES	
738					
739			; ITEM 51		
740					
741	001770	042335	EM47	; HOPPER CHECK (BIT02) SET IN STATUS	
742				; REGISTER (CDS) - SHOULDN'T BE	
743	001772	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
744	001774	045306	DT4	; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7	
745	001776	000000	0	; OCTAL VALUES	
746					
747			; ITEM 52		
748					
749	002000	042444	EM50	; END OF FILE (BIT13) OF STATUS REGISTER	
750				; (CDS) NOT SET - SHOULD BE	
751	002002	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
752	002004	045306	DT4	; \$ERRPC, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7	
753	002006	000000	0	; OCTAL VALUES	
754					
755			; ITEM 53		
756					
757	002010	042552	EM51	; READ CHECK (BIT14) OF STATUS REGISTER	
758				; (CDS) NOT SET - SHOULD BE	
759	002012	044456	DH4	; (PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
760	002014	045306	DT4	; \$ERRPC, \$REG6, \$TMP0, \$TMP1, \$TMP2, \$TMP3, \$REG7	
761	002016	000000	0	; OCTAL VALUES	
762					
763			; ITEM 54		
764					
765	002020	042657	EM52	; HOPPER CHECK (BIT12) OF STATUS REGISTER	
766				; CDS) NOT SET - SHOULD BE	

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 DZCDB.P11 ERROR POINTER TABLE

SEQ 0089

767	002022	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
768	002024	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
769	002026	000000	0	OCTAL VALUES	
770					
771					
772					
773	002030	042766	EM53	END OF FILE (BIT13) OF STATUS REGISTER	
774				(CDS) DIDN'T CLEAR WITH TRANSITION	
775				TO ON-LINE	
776	002032	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
777	002034	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
778	002036	000000	0	OCTAL VALUES	
779					
780					
781					
782	002040	043115	EM54	READ CHECK (BIT14) NOT SET IN STATUS	
783				REGISTER #2 (CDD)	
784	002042	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
785	002044	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
786	002046	000000	0	OCTAL VALUES	
787					
788					
789					
790	002050	043204	EM55	CARD READER ERROR BUT NO BOTH CARD	
791	002052	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
792	002054	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
793	002056	000000	0	OCTAL VALUES	
794					
795					
796					
797	002060	043250	EM56	CARD READER ERROR BUT READER NOT OFF-LINE	
798	002062	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
799	002064	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
800	002066	000000	0	OCTAL VALUES	
801					
802					
803					
804	002070	043313	EM57	END OF FILE ERROR (BIT13) OF STATUS	
805				REGISTER (CDS)	
806	002072	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
807	002074	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
808	002076	000000	0	OCTAL VALUES	
809					
810					
811					
812	002100	043376	EM60	DATA ERROR (BIT11) OF STATUS REGISTER (CDS)	
813	002102	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA)	(PS)
814	002104	045306	DT4	SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7	
815	002106	000000	0	OCTAL VALUES	
816					
817					
818					
819	002110	043452	EM61	DATA LATE ERROR (BIT10) OF STATUS	
820				REGISTER (CDS)	

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 02C08.P11 ERROR POINTER TABLE

SEQ 0090

821	002112	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
822	002114	045306	DT4	: SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
823	002116	000000	0	: OCTAL VALUES
824				
825				
826				
827	002120	043533	EM62	: NON-EXISTANT MEMORY ERROR (BIT09) OF
828				: STATUS REGISTER (CDS)
829	002122	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
830	002124	045306	DT4	: SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
831	002126	000000	0	: OCTAL VALUES
832				
833				
834				
835	002130	043677	EM64	: DATA PACKING (BIT01) OF STATUS REGISTER
836				: (CDS) NOT SET - IT SHOULD BE
837	002132	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
838	002134	045306	DT4	: SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
839	002136	000000	0	: OCTAL VALUES
840				
841				
842				
843	002140	044005	EM65	: SHOULD BE ADDRESSING BINARY DECK -
844				: PROGRAM DOESN'T AGREE
845	002142	044456	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
846	002144	045306	DT4	: SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
847	002146	000000	0	: OCTAL VALUES
848				
849				
850				
851	002150	044076	EM66	: CONTENTS OF STATUS REGISTER (CDS)
852				: INCORRECT - SHOULD BE ZERO
853	002152	044254	DH1	(PC) (SP) (CDS) (CDD) (PS)
854	002154	045236	DT1	: SERRPC, SREG6, STMP0, STMP1, SREG7
855	002156	000000	0	: OCTAL VALUES
856				
857				
858				
859	002160	044175	EM67	: ODD BUS ADDRESS CAUSED A TRAP IN
860				: NON-PACK MODE
861	002162	044156	DH4	(PC) (SP) (CDS) (CDD) (CDC) (CDA) (PS)
862	002164	045306	DT4	: SERRPC, SREG6, STMP0, STMP1, STMP2, STMP3, SREG7
863	002166	000000	0	: OCTAL VALUES
864				

Address	Hex	Label	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op417	
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02C08.P11 LOGIC FUNCTION TESTS

SEG 0092

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919 002522 104400 031256 HEADIN: TYPE, MLOGIC ;INDICATE "ENTERING LOGIC TESTS"
920 002526 104400 015165 TYPE, SNULL ;TIME TO FINISH ABOVE MESSAGE
921 002532 000432 BR TST1 ;GO TO INSTRUCTION TESTS
922 002534 005737 001254 RESTRY: TST TRFLG ;CHECK FOR TRACE TRAPPING
923 002540 001012 BNE TRAPX ;IF SET, TRACE TRAP
924 002542 NOTRP:
925 002542 013746 000340 MOV PR7, -(SP) ;PUT NEW PS ON STACK
926 002546 012746 002554 MOV #64$, -(SP) ;PUT NEW PC ON STACK
927 002552 000002 RTI ;POP NEW PC AND PS
928 002554 64$:
929 002554 104400 031256 TYPE, MLOGIC ;INDICATE "ENTERING LOGIC TESTS"
930 002560 104400 015165 TYPE, SNULL ;TIME TO FINISH ABOVE MESSAGE
931 002564 000415 BR TST1 ;GO TO INSTRUCTION TESTS
932 002566 104400 031256 TRAPX: TYPE, MLOGIC ;INDICATE "ENTERING LOGIC TESTS"
933 002572 104400 015165 TYPE, SNULL ;TIME TO FINISH ABOVE MESSAGE
934 002576 032777 010000 176332 BIT #10000, 2SWR ;CHECK SW12
935 002604 001356 BNE NOTRP ;BRANCH IF SET TO CLEAR TRACE BIT
936 002606 013746 000360 MOV TRACE, -(SP) ;PUT NEW PS ON STACK
937 002612 012746 002620 MOV #64$, -(SP) ;PUT NEW PC ON STACK
938 002616 000002 RTI ;POP NEW PC AND PS
939 002620 64$:
940
941 ;*****
942 ;*TEST 1 TEST FOR INIT. OF ALL REGISTERS
943 ;*****
944 002620 000004 TST1: SCOPE
945 002622 004737 025772 JSR PC, CKOFFL ;CHECK FOR OFF-LINE SET
946 002626 000005 RESET ;SEND OUT INIT
947 002630 022713 000200 CMP #200, 2CDS ;CHECK FOR STATUS REGISTER BIT 7 SET
948 002634 001401 BEQ 15 ;BRANCH IF OK
949 002636 104001 ERROR +1 ;STATUS REGISTER NOT CORRECTLY INITIALIZED
950
951 002640 005714 15: TST 2CDC ;CHECK FOR COLUMN COUNT CLEARED
952 002642 001401 BEQ 25 ;BR IF OK
953 002644 104302 ERROR +2 ;COLUMN COUNT NOT CLEARED BY INIT
954
955 002646 005715 25: TST 2CDA ;CHECK FOR BUS ADDRESS CLEARED
956 002650 001401 BEQ 35 ;BR IF OK
957 002652 104003 ERROR +3 ;BUS ADDRESS NOT CLEARED BY INIT
958
959 002654 005777 176360 35: TST 2CDD8 ;TEST BIT15 OF STATUS REGISTER #2
960 002660 100011 BPL 45 ;BRANCH IF NOT SET INDICATING
961 ;OLD CD11 CONTROLLER
962 002662 022777 107777 176350 CMP #107777, 2CDD8 ;IS CONTENTS OF STATUS REGISTER #2
963 ;CORRECT FOR NO ERRORS?
964 002670 001415 BEQ 55 ;BRANCH IF OK!
965 002672 012737 107777 001210 MOV #107777, $TMP4 ;CORRECT CONTENTS OF 'CDD' FOR
966 ;ERROR REPORT
967 002700 104040 ERROR +40 ;CONTENTS OF 'CDD8' STATUS REGISTER
968 ;#2 NOT = 107777
969 002702 000410 BR 55 ;GO TO NEXT TEST
970 002704 022777 007777 176326 45: CMP #007777, 2CDD8 ;WE HAVE AN OLD CD11 CONTROLLER!
971 ;IS CONTENTS OF STATUS REGISTER #2
972 ;CORRECT FOR NO ERRORS?

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973 002712 001404 BEQ 5$ ;BRANCH IF OK!
974 002714 012737 007777 001210 MOV #007777,STMP4 ;CORRECT CONTENTS OF 'CDO' FOR
975 ;ERROR REPORT
976 002722 104040 ERROR +40 ;CONTENTS OF 'CDOB' STATUS REGISTER
977 ;#2 NOT = 007777
978 002724
979
980
981
982 002724 000004
983
984
985 002726 052713 177376
986 002732 022713 000362
987 002736 001402
988 002740 104004
989 002742 000413
990
991
992 002744 005013
993 002746 022713 000200
994 002752 001401
995 002754 104004
996
997
998 002756 012713 177777
999 002762 022713 000200
1000 002766 001401
1001 002770 104004
1002
1003 002772
1004
1005
1006
1007 002772 000004
1008 002774 012714 177777
1009 003000 022714 177777
1010 003004 001401
1011 003006 104005
1012
1013 003010 022713 000200
1014 003014 001401
1015 003016 104004
1016
1017 003020 052713 000400
1018 003024 005714
1019 003026 001401
1020 003030 104006
1021
1022 003032 022713 000200
1023 003036 001401
1024 003040 104004
1025
1026 003042

5$:
;*****
;*TEST 2 TEST READ/WRITE OF STATUS REGISTER
;*****
TST2: SCOPE
;ONLY BITS 1,4,5, AND 6 OF THE STATUS REGISTER SHOULD BE
;ABLE TO BE SET TO ONE AND READ BACK AS ONE
BIS #177376,ACDS ;SET ALL BITS BUT 0 AND 8
CMP #362, ACDS ;ONLY BITS 1,4,5,6, AND 7 SHOULD BE SET
BEQ 1$ ;BRANCH IF OK
ERROR +4 ;STATUS REGISTER DIDN'T CONTAIN 362
BR TST3 ;BRANCH AFTER FAILURE

1$: ;CLEARING STATUS REGISTER SHOULD CLEAR BITS 1,4,5, AND 6
CLR ACDS ;CLEAR BITS 1,4,5, AND 6
CMP #200, ACDS ;CHECK FOR ALL BITS CLEAR BUT 7
BEQ 2$ ;BRANCH IF OK
ERROR +4 ;STATUS REGISTER DIDN'T CONTAIN 200

2$: ;SETTING ALL BITS SHOULD DO A POWER CLEAR
MOV #177777,ACDS ;SET ALL BITS OF THE STATUS REGISTER
CMP #200, ACDS ;CHECK FOR ALL BITS CLEAR BUT 7
BEQ 3$ ;BRANCH IF OK
ERROR +4 ;STATUS REGISTER DIDN'T CONTAIN 200

3$:
;*****
;*TEST 3 TEST READ/WRITE OF COLUMN COUNT REGISTER
;*****
TST3: SCOPE
MOV #177777,ACDC ;LOAD ALL BITS
CMP #177777,ACDC ;TEST TO SEE IF IT CAN BE READ
BEQ 1$ ;BRANCH IF OK
ERROR +5 ;CDCC FAILED TO READ/WRITE

1$: CMP #200, ACDS ;CHECK STATUS REG
BEQ 2$ ;BRANCH IF OK
ERROR +4 ;STATUS REG CHANGED

2$: BIS #400, ACDS ;DO A POWER CLEAR
TST ACDC ;CHECK FOR COLUMN COUNT CLEARED
BEQ 3$ ;BRANCH IF OK
ERROR +6 ;COLUMN COUNT NOT CLEARED BY POWER CLEAR

3$: CMP #200, ACDS ;CHECK STATUS REG
BEQ 4$ ;BRANCH IF OK
ERROR +4 ;STATUS REG CHANGED

4$:

```

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MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 22
 DZCDB.P11 T4 TEST READ/WRITE OF BUS ADDRESS REGISTER

SEW L

```

1027 ;*****
1028 ;*TEST 4 TEST READ/WRITE OF BUS ADDRESS REGISTER
1029 ;*****
1030 003042 000004 177777 177777 177777
1031 003044 012715 177777
1032 003050 022715 177777
1033 003054 001401
1034 003056 104007
1035
1036 003060 022713 000200 15: CMP #200, 2CDS ;CHECK STATUS REG
1037 003064 001401 BEQ 25 ;BRANCH IF OK
1038 003066 104004 ERROR +4 ;STATUS REG CHANGED
1039
1040 003070 052713 000400 25: BIS #400, 2CDS ;DO A POWER CLEAR
1041 003074 005715 TST 2CDA ;CHECK FOR BUS ADDRESS CLEARED
1042 003076 001401 BEQ 35 ;BRANCH IF OK
1043 003100 104010 ERROR +10 ;BUS ADDRESS NOT CLEARED BY POWER CLEAR
1044
1045 003102 022713 000200 35: CMP #200, 2CDS ;CHECK STATUS REG
1046 003106 001401 BEQ 45 ;BRANCH IF OK
1047 003110 104004 ERROR +4 ;STATUS REG CHANGED
1048
1049 003112 45:
1050 ;*****
1051 ;*TEST 5 TEST CONTROLLER READY TO CLEAR BIT0
1052 ;*****
1053 003112 000004
1054
1055 003114 004737 025772
1056 003120 012714 177777
1057 003124 012715 045442
1058
1059 003130 005046
1060 003132 013746 000034
1061 003136 012737 003146 000034
1062 003144 104400
1063 003146 016666 000002 000006 64$: MOV 2(SP), 6(SP)
1064 003154 012716 003162 MOV #65$, 1(SP)
1065 003160 000002 RTI ;REPLACE OLD PC WITH NEW
1066 003162 012637 000034 65$: MOV (SP)+, 34 ;RESTORE OLD TRAP VECTOR
1067 003166 012637 001256 MOV (SP)+, PROC
1068 003172 013746 000000 MOV PROC, -(SP) ;PUT NEW PS ON STACK
1069 003176 012746 003204 MOV #66$, -(SP) ;PUT NEW PC ON STACK
1070 003202 000002 RTI ;POP NEW PC AND PS
1071 003204
1072 003204 005037 001250 66$: CLR COUNT ;INITIALIZE COUNTER
1073 003210 005213 INC 2CDS ;START READING A CARD
1074 003212 105713 TSTB 2CDS ;CHECK FOR CONTROLLER READY CLEARED
1075 003214 100001 BPL LOOP5 ;BRANCH IF OK
1076 003216 104011 ERROR +11 ;CONTROLLER READY DIDN'T CLEAR
1077
1078 003220 032713 000001 LOOP5: BIT #1, 2CDS ;CHECK BIT 0
1079 003224 001402 BEQ 15 ;BRANCH IF NOT SET
1080 003226 104012 ERROR +12 ;BIT 0 READ AS A ONE

```

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 DZCDB.P11 T5 TEST CONTROLLER READY TO CLEAR BIT0

SEQ 0095

```

1081 003230 000423          BR      TST6      ;BRANCH AFTER FAILURE
1082 003232 005237 001250  1$:  INC      COUNT    ;WAIT ABOUT
1083 003236 001370          BNE     LOOP5
1084 003240 013746 001256  MOV     PROC, -(SP)  ;; PUT NEW PS ON STACK
1085 003244 012746 003252  MOV     #64$, -(SP)  ;; PUT NEW PC ON STACK
1086 003250 000002          RTI              ;; POP NEW PC AND PS
1087 003252          64$:  TSTB     @CDS      ;CHECK CONTROLLER READY
1088 003252 105713          BMI     2$      ;CONTINUE IF SET
1089 003254 100401          ERROR +13      ;CONTROLLER READY DIDN'T SET WITHIN 1 SEC
1090 003256 104013          2$:  TST     @CDS
1091 003260 005713          BPL     3$      ;ERROR BIT SET
1092 003262 100002          ERROR +14
1093 003264 104014          BR      TST6
1094 003266 000404          3$:  BIT     #177577, @CDS ;CHECK FOR ANY OTHER BITS
1095 003270 032713 177577  BEQ     4$      ;BRANCH IF OK
1096 003274 001401          ERROR +15      ;EXTRA BIT(S) SET
1097 003276 104015
1098
1099 003300          4$:  *****
1100          ;*TEST 6 TEST BIT2 TO BE CLEAR AFTER CARD READ
1101          ;*****
1102          TST6:  SCOPE
1103 003300 000004          ;IT SHOULD REMAIN NOT SET
1104          ;THIS SHOULD HAPPEN WITHIN ABOUT 1 SECOND
1105          JSR     PC, CKOFF1 ;CHECK FOR OFF-LINE SET
1106 003302 004737 025772  CLR     @CDS      ;INITIALIZE STATUS REGISTER
1107 003306 005013          MOV     #-20, @CDC ;SET UP COLUMN COUNT TO READ 20 COLUMNS
1108 003310 012714 177754  MOV     #BUFBEG, @CDA ;SET UP BUS ADDRESS
1109 003314 012715 045442  INC     @CDS      ;READ A CARD
1110 003320 005213          BIT     #4, @CDS    ;CHECK HOPPER EMPT'
1111 003322 032713 000004  BEQ     1$      ;HOPPER EMPTY SET
1112 003326 001401          ERROR +16
1113 003330 104016          1$:  CLR     COUNT    ;SET UP WAIT COUNTER
1114 003332 005037 001250  ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, PROC"
1115          CLR     -(SP)
1116 003336 005046          MOV     34, -(SP)  ;; SAVE CURRENT TRAP VECTOR
1117 003340 013746 000034  MOV     #64$, 34  ;; SETUP NEW TRAP VECTOR
1118 003344 012737 003354  TRAP          ;; PUSH OLD PSW AN PC ON STACK
1119 003352 104400          64$:  MOV     2(SP), 6(SP)
1120 003354 016666 000002 000006  MOV     #65$, 1(SP)
1121 003362 012716 003370          RTI              ;; REPLACE OLD PC WITH NEW
1122 003366 000002          65$:  MOV     (SP)+, 34  ;; RESTORE PSW
1123 003370 012637 000034          MOV     (SP)+, PROC  ;; RESTORE OLD TRAF VECTOR
1124 003374 012637 001256  MOV     PROC, -(SP)
1125 003400 013746 000000  MOV     #66$, -(SP)
1126 003404 012746 003412  RTI              ;; PUT NEW PS ON STACK
1127 003410 000002          ;; PUT NEW PC ON STACK
1128 003412          ;; POP NEW PC AND PS
1129 003412 105713          66$:  TSTB     @CDS      ;CHECK READY
1130 003414 100405          LOOP6A: BMI     LOOP6B  ;BRANCH IF READY
1131 003416 005337 001250  DEC     COUNT    ;WAIT ABOUT 1 SEC.
1132 003422 001373          BNE     LOOP6A
1133 003424 104013          ERROR +13      ;READING A CARD DIDN'T SET READY
1134 003426 000413          BR      TST7

```

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MAINDEC - 1' - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 24
 DZCDB.P11 T6 TEST BIT2 TO BE CLEAR AFTER CARD READ

SEQ 0096

```

1135 003430
1136 003430 013746 001256
1137 003434 012746 003442
1138 003440 000002
1139 003442
1140 003442 105713
1141 003444 100401
1142 003446 104017
1143
1144 003450 005713
1145 003452 100001
1146 003454 104014
1147
1148 003456
1149
1150
1151
1152 003456 000004
1153 003460 004737 025744
1154 003464 012712 003740
1155
1156 003470 005046
1157 003472 013746 000034
1158 003476 012737 003506 000034
1159 003504 104400
1160 003506 016666 000002 000006
1161 003514 012716 003522
1162 003520 000002
1163 003522 012637 000034
1164 003526 012637 001214
1165 003532 052737 000340 001214
1166 003540 013746 001214
1167 003544 012746 003552
1168 003550 000002
1169 003552
1170
1171 003552 005046
1172 003554 013746 000034
1173 003560 012737 003570 000034
1174 003566 104400
1175 003570 016666 000002 000006
1176 003576 012716 003604
1177 003602 000002
1178 003604 012637 000034
1179 003610 012662 000002
1180
1181 003614 005046
1182 003616 013746 000034
1183 003622 012737 003632 000034
1184 003630 104400
1185 003632 016666 000002 000006
1186 003640 012716 003646
1187 003644 000002
1188 003646 012637 000034

LOOP6B: MOV PROC, -(SP) ;; PUT NEW PS ON STACK
        MOV #64$, -(SP) ;; PUT NEW PC ON STACK
        RTI ;; POP NEW PC AND PS

64$:
LOOP6: TSTB ACDS ;; CHECK CONTROLLER READY
        BMI DONE6 ;; BRANCH IF SET
        ERROR +17 ;; RESTORING STATUS RESET READY

DONE6: TST ACDS ;; CHECK ERROR BIT 15
        BPL 15 ;; BRANCH IF OK
        ERROR +14 ;; ERROR BIT 15 WAS SET

15:
*****
*TEST 7 TEST INTERRUPT FROM CONTROLLER READY
*****
TST7: SCOPE
        JSR PC, INIT ;; INITIALIZE
        MOV #TINT7, ADINT ;; LOAD RETURN POINTER
        ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
        CLR -(SP) ;;
        MOV 34, -(SP) ;; SAVE CURRENT TRAP VECTOR
        MOV #64$, 34 ;; SETUP NEW TRAP VECTOR
        TRAP ;; PUSH OLD PSW AN PCON STACK
        MOV 2(SP), 6(SP) ;;
        MOV #65$, 1(SP) ;; REPLACE OLD PC WITH NEW
        RTI ;; RESTORE PSW
        MOV (SP)+, 34 ;; RESTORE OLD TRAP VECTOR
        MOV (SP)+, $TMP6
        BIS #340, $TMP6
        MOV $TMP6, -(SP) ;; PUT NEW PS ON STACK
        MOV #66$, -(SP) ;; PUT NEW PC ON STACK
        RTI ;; POP NEW PC AND PS

66$:
; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
        CLR -(SP) ;;
        MOV 34, -(SP) ;; SAVE CURRENT TRAP VECTOR
        MOV #67$, 34 ;; SETUP NEW TRAP VECTOR
        TRAP ;; PUSH OLD PSW AN PCON STACK
        MOV 2(SP), 6(SP) ;;
        MOV #68$, 1(SP) ;; REPLACE OLD PC WITH NEW
        RTI ;; RESTORE PSW
        MOV (SP)+, 34 ;; RESTORE OLD TRAP VECTOR
        MOV (SP)+, 2(ADINT)
        ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
        CLR -(SP) ;;
        MOV 34, -(SP) ;; SAVE CURRENT TRAP VECTOR
        MOV #69$, 34 ;; SETUP NEW TRAP VECTOR
        TRAP ;; PUSH OLD PSW AN PCON STACK
        MOV 2(SP), 6(SP) ;;
        MOV #70$, 1(SP) ;; REPLACE OLD PC WITH NEW
        RTI ;; RESTORE PSW
        MOV (SP)+, 34 ;; RESTORE OLD TRAP VECTOR

```

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MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 25
 DZCDB.P11 T7 TEST INTERRUPT FROM CONTROLLER READY

SEQ 0097

```

1189 003652 012637 001214      MOV      (SP)+, $TMP6
1190 003656 042737 000340 001214 BIC      #340, $TMP6
1191 003664 013746 001214      MOV      $TMP6, -(SP)      ;; PUT NEW PS ON STACK
1192 003670 012746 003676      MOV      #71$, -(SP)      ;; PUT NEW PC ON STACK
1193 003674 000002      RTI      ;; POP NEW PC AND PS
1194 003676      71$:      MOV      #-31,  @CDC      ;; SET UP COLUMN COUNT TO READ 31 COLUMNS
1195 003676 012714 177741      MOV      #BUFBEG, @CDA      ;; SET UP BUS ADDRESS
1196 003702 012715 045442      MOV      #101,  @CDS      ;; SET INTERRUPT ENABLE AND READ
1197 003706 012713 000101      TSTB     @CDS      ;; WAIT FOR CONTROLLER READY
1198 003712 105713      1$:      BPL      1$
1199 003714 100376      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT), PS"
1200      MOV      2(ADINT), -(SP)      ;; PUT NEW PS ON STACK
1201 003716 016246 000002      MOV      #72$, -(SP)      ;; PUT NEW PC ON STACK
1202 003722 012746 003730      RTI      ;; POP NEW PC AND PS
1203 003726 000002      72$:      BIC      #100,  @CDS      ;; CLEAR INTERRUPT ENABLE
1204 003730      ERROR +20      ;; NO INTERRUPT OCCURRED
1205 003730 042713 000100      BR      CONT7
1206 003734 104020      TINT7:    TSTB     @CDS      ;; CHECK CONTROLLER READY
1207 003736 070410      BMI      1$      ;; BRANCH IF SET
1208 003740 105713      ERROR +23      ;; CONTROLLER READY NOT SET
1209 003742 100401      1$:      CMP      (SP)+, (SP)+      ;; RESTORE STACK POINTER
1210 003744 104023      TST      @CDS      ;; MAKE SURE NO ERROR OCCURRED
1211 003746 022626      BPL      2$
1212 003750 005713      ERROR +14      ;; BIT 15 WAS SET
1213 003752 100001      2$:      CLR      @CDS      ;; DISABLE INTERRUPTS
1214 003754 104014      CONT7:    MOV      #232, @ADINT      ;; CHANGE INTERRUPT RETURN ADDRESS
1215 003756 005013      CLR      @#232      ;; TO CAUSE A HALT IF AN INTERRUPT OCCURS
1216 003760 012712 000232
1217 003764 005037 000232
1218
1219 ;*****
1220 ;*TEST 10      TEST NO INTERRUPT ON CONTROLLER READY & CPU AT LEVEL 7
1221 ;*****
1222 003770 000004      TST10:  SCOPE
1223 003772 004737 025744      JSR      PC,  INIT      ;; INITIALIZE
1224 003776 012712 004150      MOV      #TINT10, @ADINT      ;; SETUP RETURN
1225      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
1226 004002 005046      CLR      -(SP)      ;;
1227 004004 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
1228 004010 012737 004020 000034      MOV      #64$, 34      ;; SETUP NEW TRAP VECTOR
1229 004016 104400      TRAP      ;; PUSH OLD PSW AN PCON STACK
1230 004020 016666 000002 000006 64$:      MOV      2(SP), 6(SP)      ;;
1231 004026 012716 004034      MOV      #65$, (SP)      ;; REPLACE OLD PC WITH NEW
1232 004032 000002      RTI      ;; RESTORE PSW
1233 004034 012637 000034      65$:      MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
1234 004040 012637 001214      MOV      (SP)+, $TMP6
1235 004044 052737 000340 001214      BIS      #340, $TMP6
1236 004052 013746 001214      MOV      $TMP6, -(SP)      ;; PUT NEW PS ON STACK
1237 004056 012746 004064      MOV      #66$, -(SP)      ;; PUT NEW PC ON STACK
1238 004062 000002      RTI      ;; POP NEW PC AND PS
1239 004064      66$:      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
1240      CLR      -(SP)      ;;
1241 004064 005046      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
1242 004066 013746 000034

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MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 26
 DZCDB.P11 T10 TEST NO INTERRUPT ON CONTROLLER READY & CPU AT LEVEL 7

SEQ 0098

```

1243 004072 012737 004102 000034      MOV      #67$,34      ;;SETUP NEW TRAP VECTOT
1244 004100 104400      TRAP                      ;;PUSH OLD PSW AN PCON STACK
1245 004102 016666 000002 000006 67$:  MOV      2(SP),6(SP)      ;;
1246 004110 012716 004116      MOV      #68$,1(SP)      ;;REPLACE OLD PC WITH NEW
1247 004114 000002      RTI                      ;;RESTORE PSW
1248 004116 012637 000034      MOV      (SP)+,34      ;;RESTORE OLD TRAP VECTOR
1249 004122 012662 000002      MOV      (SP)+,2(ADINT)
1250 004126 012714 177703      MOV      #-61,2CDC      ;SET UP COLUMN COUNT TO READ 61 COLUMNS
1251 004132 012715 045442      MOV      #BUFBEG,2CDA      ;SET UP BUS ADDRESS
1252 004136 012713 000101      MOV      #101,2CDS      ;SET INTERRUPT ENABLE AND READ
1253 004142 105713      1$:  TSTB      2CDS      ;WAIT FOR CONTRLLER READY
1254 004144 100376      BPL      1$
1255 004146 000402      BR      T10GO      ;CONTINUE IF NO INTERRUPT OCCURRED
1256 004150 104021      TINT10: ERROR +21      ;AN INTERRUPT OCCURRED
1257 004152 022626      CMP      (SP)+,(SP)+      ;RESTORE STACK POINTER
1258 004154 005013      T10GO: CLR      2CDS      ;CLEAR INTERRUPT ENABLE
1259 004156 012712 000232      MOV      #232,2ADINT      ;CHANGE INTERRUPT RETURN ADDRESS
1260 004162 005037 000232      CLR      2#232      ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1261
1262      ;FIND THE LEVEL AT WHICH AN INTERRUPT OCCURS
1263      ;PRINT OUT A MESSAGE STATING THIS LEVEL IF IT IS OTHER THAN THE STANDARD
1264      ; (LEVEL 6) MAKE CERTAIN THAT IT ALWAYS OCCURS AT THIS LEVEL
1265      ;THE MESSAGE STATING THE LEVEL IS PRINTED ONLY ONCE, AND THE PROGRAM MUST
1266      ;BE STARTED OVER AT LOCATION 200 FOR IT TO BE PRINTED AGAIN
1267
1268      ;*****
1269      ;*TEST 11      TEST FOR AN INTERRUPT ON LEVEL 7
1270      ;*****
1271 004166 000004      TST11: SCOPE
1272 004170 004737 025744      JSR      PC,INIT      ;INITIALIZE
1273 004174 012712 004556      MOV      #TINT11,2ADINT ;SETUP RETURN ADDRESS
1274      ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
1275 004200 005046      CLR      -(SP)
1276 004202 013746 000034      MOV      34,-(SP)      ;SAVE CURRENT TRAP VECTOR
1277 004206 012737 004216 000034      MOV      #64$,34      ;SETUP NEW TRAP VECTOT
1278 004214 104400      TRAP                      ;PUSH OLD PSW AN PCON STACK
1279 004216 016666 000002 000006 64$:  MOV      2(SP),6(SP)      ;;
1280 004224 012716 004232      MOV      #65$,1(SP)      ;;REPLACE OLD PC WITH NEW
1281 004230 000002      RTI                      ;;RESTORE PSW
1282 004232 012637 000034      65$:  MOV      (SP)+,34      ;;RESTORE OLD TRAP VECTOR
1283 004236 012637 001214      MOV      (SP)+,$TMP6
1284 004242 052737 000340 001214      BIS      #340,$TMP6
1285 004250 013746 001214      MOV      $TMP6,-(SP)      ;PUT NEW PS ON STACK
1286 004254 012746 004262      MOV      #66$,-(SP)      ;PUT NEW PC ON STACK
1287 004260 000002      RTI                      ;POP NEW PC AND PS
1288 004262
1289      66$:  ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
1290      CLR      -(SP)
1291 004264 013746 000034      MOV      34,-(SP)      ;SAVE CURRENT TRAP VECTOR
1292 004270 012737 004300 000034      MOV      #67$,34      ;SETUP NEW TRAP VECTOT
1293 004276 104400      TRAP                      ;PUSH OLD PSW AN PCON STACK
1294 004300 016666 000002 000006 67$:  MOV      2(SP),6(SP)      ;;
1295 004306 012716 004314      MOV      #68$,1(SP)      ;;REPLACE OLD PC WITH NEW
1296 004312 000002      RTI                      ;RESTORE PSW

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MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 27
 DZCDB.P11 T11 TEST FOR AN INTERRUPT ON LEVEL 7

SEQ 0099

```

1297 004314 012637 000034      68$: MOV (SP)+,34          ;;RESTORE OLD TRAP VECTOR
1298 004320 012662 000002      MOV (SP)+,2(ADINT)
1299      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
1300 004324 005046      CLR -(SP)          ;;
1301 004326 013746 000034      MOV 34-(SP)          ;;SAVE CURRENT TRAP VECTOR
1302 004332 012737 004342 000034  MOV #69$,34          ;;SETUP NEW TRAP VECTOR
1303 004340 104400      TRAP          ;;PUSH OLD PSW AN PC ON STACK
1304 004342 016666 000002 000006 69$: MOV 2(SP),6(SP)          ;;
1305 004350 012716 004356      MOV #70$, (SP)          ;;REPLACE OLD PC WITH NEW
1306 004354 000002      RTI          ;;RESTORE PSW
1307 004356 012637 000034      70$: MOV (SP)+,34          ;;RESTORE OLD TRAP VECTOR
1308 004362 012637 001214      MOV (SP)+,$TMP6
1309 004366 042737 000340 001214  BIC #340,$TMP6
1310 004374 013746 001214      MOV $TMP6,-(SP)          ;;PUT NEW PS ON STACK
1311 004400 012746 004406      MOV #71$,-(SP)          ;;PUT NEW PC ON STACK
1312 004404 000002      RTI          ;;POP NEW PC AND PS
1313 004406      71$:
1314 004406 005046      CLR -(SP)          ;;
1315 004410 013746 000034      MOV 34-(SP)          ;;SAVE CURRENT TRAP VECTOR
1316 004414 012737 004424 000034  MOV #72$,34          ;;SETUP NEW TRAP VECTOR
1317 004422 104400      TRAP          ;;PUSH OLD PSW AN PC ON STACK
1318 004424 016666 000002 000006 72$: MOV 2(SP),6(SP)          ;;
1319 004432 012716 004440      MOV #73$, (SP)          ;;REPLACE OLD PC WITH NEW
1320 004436 000002      RTI          ;;RESTORE PSW
1321 004440 012637 000034      73$: MOV (SP)+,34          ;;RESTORE OLD TRAP VECTOR
1322 004444 012637 001214      MOV (SP)+,$TMP6
1323 004450 052737 000300 001214  BIS #300,$TMP6
1324 004456 013746 001214      MOV $TMP6,-(SP)          ;;PUT NEW PS ON STACK
1325 004462 012746 004470      MOV #74$,-(SP)          ;;PUT NEW PC ON STACK
1326 004466 000002      RTI          ;;POP NEW PC AND PS
1327 004470      74$:
1328 004470 012714 177660      MOV #-80,$CDS          ;;SET UP COLUMN COUNT TO READ 80 COLUMNS
1329 004474 012715 045442      MOV #80,$CDS          ;;SET UP BUS ADDRESS
1330 004500 012713 000101      MOV #101,$CDS          ;;SET INTERRUPT ENABLE AND READ
1331 004504 105713      1$: TSTB $CDS          ;;WAIT FOR CONTROLLER READY
1332 004506 100376      BPL 1$
1333      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"
1334 004510 016246 000002      MOV 2(ADINT),-(SP)          ;;PUT NEW PS ON STACK
1335 004514 012746 004522      MOV #75$,-(SP)          ;;PUT NEW PC ON STACK
1336 004520 000002      RTI          ;;POP NEW PC AND PS
1337 004522      75$:
1338 004522 005013      CLR $CDS          ;;DISABLE INTERRUPTS
1339 004524 012712 000232      MOV #232,$ADINT          ;;CHANGE INTERRUPT RETURN ADDRESS
1340 004530 005037 000232      CLR #232          ;;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1341 004534 005737 001252      TST INTFLG          ;;TEST FOR A PREVIOUS INTERRUPT
1342 004540 001441      BEQ TST12          ;;BRANCH IF NONE
1343 004542 023727 001252 100007  CMP INTFLG, #100007          ;;CHECK PREVIOUS LEVEL
1344 004550 100435      BMI TST12          ;;BRANCH IF LOWER
1345 004552 104022      ERROR +22          ;;INTERRUPT ALREADY OCCURRED AT LVL 7 OR HIGHER
1346 004554 000433      BR TST12
1347 004556 105713      TINT11: TSTB $CDS          ;;MAKE SURE CONTROLLER READY IS SET
1348 004560 100401      BMI 1$          ;;BRANCH IF SET
1349 004562 104023      ERROR +23          ;;CONTROLLER READY WASN'T SET
1350 004564 005013      1$: CLR $CDS          ;;DISABLE FURTHER INTERRUPTS

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 DZC08.P11 T11 TEST FOR AN INTERRUPT ON LEVEL 7

SEQ 0100

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1351 004566 012712 000232      MOV      #232, 2ADINT ;CHANGE INTERRUPT RETURN ADDRESS
1352 004572 005037 000232      CLR      2#232 ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1353 004576 022626      CMP      (SP)+, (SP)+ ;RESTORE STACK POINTER
1354 004600 005737 001252      TST      INTFLC ;CHECK FOR PREVIOUS FLAG
1355 004604 100412      BMI      SET7 ;BRANCH IF FLAG SET
1356 004606 012737 100007 001252  MOV      #100007 INTFLG ;SET FLAG AND LEVEL
1357 004614 104400 031741      TYPE,   MSG4 ;PRINT MESSAGE "THE INTERRUPT LEVEL WAS"
1358 004620 012746 000007      MOV      #7, -(SP)
1359 004624 104402      TYP0S
1360 004626 001      .BYTE    1
1361 004627 000      .BYTE    0
1362 004630 000405      BR      TST12
1363 004632 023727 001252 100007 SET7: CMP      INTFLG, #100007 ;CHECK PREVIOUS LEVEL
1364 004640 100001      BPL      TST12
1365 004642 104024      ERROR +24 ;INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
1366 *****
1367 ;*TEST 12 TEST FOR AN INTERRUPT ON LEVEL 6
1368 *****
1369 004644 000004      TST12: SCOPE
1370 004646 004737 025744      JSR      PC, INIT ;INITIALIZE
1371 004652 012712 005234      MOV      #TINT12, 2ADINT ;SETUP RETURN ADDRESS
1372 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
1373 004656 005046      CLR      -(SP)
1374 004660 013746 000034      MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
1375 004664 012737 004674 000034      MOV      #64$, 34 ;SETUP NEW TRAP VECTOR
1376 004672 104400      TRAP ;PUSH OLD PSW AN PCON STACK
1377 004674 016666 000002 000006 64$: MOV      2(SP), 6(SP)
1378 004702 012716 004710      MOV      #65$, (SP) ;REPLACE OLD PC WITH NEW
1379 004706 000002      RTI ;RESTORE PSW
1380 004710 012637 000034 65$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
1381 004714 012637 001214      MOV      (SP)+, $TMP6
1382 004720 052737 000340 001214      BIS      #340, $TMP6
1383 004726 013746 001214      MOV      $TMP6, -(SP) ;PUT NEW PS ON STACK
1384 004732 012746 004740      MOV      #65$, -(SP) ;PUT NEW PC ON STACK
1385 004736 000002      RTI ;POP NEW PC AND PS
1386 004740 66$:
1387 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
1388 004740 005046      CLR      -(SP)
1389 004742 013746 000034      MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
1390 004746 012737 004756 000034      MOV      #67$, 34 ;SETUP NEW TRAP VECTOR
1391 004754 104400      TRAP ;PUSH OLD PSW AN PCON STACK
1392 004756 016666 000002 000006 67$: MOV      2(SP), 6(SP)
1393 004764 012716 004772      MOV      #68$, (SP) ;REPLACE OLD PC WITH NEW
1394 004770 000002      RTI ;RESTORE PSW
1395 004772 012637 000034 68$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
1396 004776 012662 000002      MOV      (SP)+, 2(ADINT)
1397 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
1398 005002 005046      CLR      -(SP)
1399 005004 013746 000034      MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
1400 005010 012737 005020 00JJ34      MOV      #69$, 34 ;SETUP NEW TRAP VECTOR
1401 005016 104400      TRAP ;PUSH OLD PSW AN PCON STACK
1402 005020 016666 000002 000006 69$: MOV      2(SP), 6(SP)
1403 005026 012716 005034      MOV      #70$, (SP) ;REPLACE OLD PC WITH NEW
1404 005032 000002      RTI ;RESTORE PSW

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K08

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DZCDB.P11 T12MACY11 27(654) 1-JUL-77 08:39 PAGE 29
TEST FOR AN INTERRUPT ON LEVEL 6

SEQ 0101

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1405 005034 012637 000034      70$: MOV      (SP)+,34      ;;RESTORE OLD TRAP VECTOR
1406 005040 012637 001214      MOV      (SP)+,$TMP6
1407 005044 04272 000340 001214 BIC      #340,$TMP6
1408 005052 013746 001214      MOV      $TMP6,-(SP)      ;;PUT NEW PS ON STACK
1409 005056 012746 005064      MOV      #71$,-(SP)      ;;PUT NEW PC ON STACK
1410 005062 000002      RTI      ;;POP NEW PC AND PS
1411 005064      71$: CLR      -(SP)      ;;
1412 005064 005046      MOV      34,-(SP)      ;;SAVE CURRENT TRAP VECTOR
1413 005066 013746 000034      MOV      #72$,34      ;;SETUP NEW TRAP VECTOR
1414 005072 012737 005102 000034 TRAP      ;;PUSH OLD FSW AN PCON STACK
1415 005100 104400      72$: MOV      2(SP),6(SP)      ;;
1416 005102 016666 000002 000006 MOV      #72$, (SP)      ;;REPLACE OLD PC WITH NEW
1417 005110 012716 005116      RTI      ;;RESTORE PSW
1418 005114 000002      73$: MOV      (SP)+,34      ;;RESTORE OLD TRAP VECTOR
1419 005116 012637 000034      MOV      (SP)+,$TMP6
1420 005122 012637 001214      BIS      #240,$TMP6
1421 005126 052737 000240 001214 MOV      $TMP6,-(SP)      ;;PUT NEW PS ON STACK
1422 075134 013746 001214      MOV      #74$,-(SP)      ;;PUT NEW PC ON STACK
1423 005140 012746 005146      RTI      ;;POP NEW PC AND PS
1424 005144 000002      74$: MOV      #-80,$CDC      ;;SET UP COLUMN COUNT TO READ 80 COLUMNS
1425 005146      MOV      #BUFBEQ,$CDA      ;;SET UP BUS ADDRESS
1426 005146 012714 177660      MOV      #101,$CDS      ;;SET INTERRUPT ENABLE AND READ
1427 005152 012715 045442      TSTB     $CDS      ;;WAIT FOR CONTROLLER READY
1428 005156 012713 000101      1$: BPL      1$
1429 005162 105713      ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"
1430 005164 100376      MOV      2(ADINT),-(SP)      ;;PUT NEW PS ON STACK
1431      MOV      #75$,-(SP)      ;;PUT NEW PC ON STACK
1432 005166 016246 000002      RTI      ;;POP NEW PC AND PS
1433 005172 012746 005200      75$: CLR      $CDS      ;;DISABLE INTERRUPTS
1434 005176 000002      MOV      #232,$ADINT      ;;CHANGE INTERRUPT RETURN ADDRESS
1435 005200      CLR      #232      ;;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1436 005200 005013      TST      INTFLG      ;;TEST FOR A PREVIOUS INTERRUPT
1437 005202 012712 000232      BEQ      TST13      ;;BRANCH IF NONE
1438 005206 005037 000232      CMP      INTFLG, #100006      ;;CHECK PREVIOUS LEVEL
1439 005212 005737 001252      BMI      TST13      ;;BRANCH IF LOWER
1440 005216 001441      ERROR +22      ;;INTERRUPT ALREADY OCCURRED AT LVL 6 OR HIGHER
1441 005220 023727 001252 100006 BR      TST13
1442 005226 100435      TINT12: TSTB     $CDS      ;;MAKE SURE CONTROLLER READY IS SET
1443 005230 104022      BMI      1$      ;;BRANCH IF SET
1444 005232 003433      ERROR +23      ;;CONTROLLER READY WASN'T SET
1445 005234 105713      1$: CLR      $CDS      ;;DISABLE FURTHER INTERRUPTS
1446 005236 100401      MOV      #232,$ADINT      ;;CHANGE INTERRUPT RETURN ADDRESS
1447 005240 104023      CLR      #232      ;;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1448 005242 005013      CMP      (SP)+,(SP)+      ;;RESTORE STACK POINTER
1449 005244 012712 000232      TST      INTFLG      ;;CHECK FOR PREVIOUS FLAG
1450 005250 005037 000232      BMI      SET6      ;;BRANCH IF FLAG SET
1451 005254 022626      MOV      #100006,INTFLG      ;;SET FLAG AND LEVEL
1452 005256 005737 001252      TYPE,     MSG4      ;;PRINT MESSAGE "THE INTERRUPT LEVEL WAS"
1453 005262 100412      MOV      #6,-(SP)
1454 005264 012737 100006 001252 TYPOS
1455 005272 104400 031711      .BYTE     1
1456 005276 012746 000006
1457 005302 104402
1458 005304      001

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L08

 MAINDEC - 11 - DZCDB-8
 DZCDB P11 T12

 MACY11 27(654) 1-JUL-77 08:39 PAGE 30
 TEST FOR AN INTERRUPT ON LEVEL 6

SEQ 0102

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1459 005305 000 .BYTE 0
1460 005306 000405 BR TST13
1461 005310 023727 001252 100006 SET6: CMP INTFLG, #100006 ;CHECK PREVIOUS LEVEL
1462 005316 100001 BPL TST13
1463 005320 104024 ERROR +24 ; INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
1464 *****
1465 ;*TEST 13 TEST FOR AN INTERRUPT ON LEVEL 5
1466 *****
1467 005322 000004 ST13: SCOPE
1468 005324 004737 025744 JSR PC INIT ;INITIALIZE
1469 005330 012712 005712 MOV #TINT13,ADINT ;SETUP RETURN ADDRESS
1470 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
1471 005334 005046 CLR -(SP) ;;
1472 005336 013746 000034 MOV 34,-(SP) ;;SAVE CURRENT TRAP VECTOR
1473 005342 012737 005352 000034 MOV #64$,34 ;;SETUP NEW TRAP VECTOT
1474 005350 104400 TRAP ;;PUSH OLD PSW AN PCON STACK
1475 005352 016666 000002 000006 64$: MOV 2(SP),6(SP) ;;
1476 005360 012716 005366 MOV #65$,1(SP) ;;REPLACE OLD PC WITH NEW
1477 005364 000002 RTI ;;RESTORE PSW
1478 005366 012637 000034 65$: MOV (SP)+,34 ;;RESTORE OLD TRAP VECTOR
1479 005372 012637 001214 MOV (SP)+,$TMP6
1480 005376 052737 000340 001214 BIS #340,$TMP6
1481 005404 013746 001214 MOV $TMP6,-(SP) ;;PUT NEW PS ON STACK
1482 005410 012746 005416 MOV #66$,-(SP) ;;PUT NEW PC ON STACK
1483 005414 000002 RTI ;;POP NEW PC AND PS
1484 66$:
1485 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
1486 005416 005046 CLR -(SP) ;;
1487 005420 013746 000034 MOV 34,-(SP) ;;SAVE CURRENT TRAP VECTOR
1488 005424 012737 005434 000034 MOV #67$,34 ;;SETUP NEW TRAP VECTOT
1489 005432 104400 TRAP ;;PUSH OLD PSW AN PCON STACK
1490 005434 016666 000002 000006 67$: MOV 2(SP),6(SP) ;;
1491 005442 012716 005450 MOV #68$,1(SP) ;;REPLACE OLD PC WITH NEW
1492 005446 000002 RTI ;;RESTORE PSW
1493 005450 012637 000034 68$: MOV (SP)+,34 ;;RESTORE OLD TRAP VECTOR
1494 005454 012662 000002 MOV (SP)+,2(ADINT)
1495 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
1496 005460 005046 CLR -(SP) ;;
1497 005462 013746 000034 MOV 34,-(SP) ;;SAVE CURRENT TRAP VECTOR
1498 005466 012737 005476 000034 MOV #69$,34 ;;SETUP NEW TRAP VECTOT
1499 005474 104400 TRAP ;;PUSH OLD PSW AN PCON STACK
1500 005476 016666 000002 000006 69$: MOV 2(SP),6(SP) ;;
1501 005504 012716 005512 MOV #70$,1(SP) ;;REPLACE OLD PC WITH NEW
1502 005510 000002 RTI ;;RESTORE PSW
1503 005512 012637 000034 70$: MOV (SP)+,34 ;;RESTORE OLD TRAP VECTOR
1504 005516 012637 001214 MOV (SP)+,$TMP6
1505 005522 042737 000340 001214 BIC #340,$TMP6
1506 005530 013746 001214 MOV $TMP6,-(SP) ;;PUT NEW PS ON STACK
1507 005534 012746 005542 MOV #71$,-(SP) ;;PUT NEW PC ON STACK
1508 005540 000002 RTI ;;POP NEW PC AND PS
1509 71$:
1510 005542 005046 CLR -(SP) ;;
1511 005544 013746 000034 MOV 34,-(SP) ;;SAVE CURRENT TRAP VECTOR
1512 005550 012737 005560 000034 MOV #72$,34 ;;SETUP NEW TRAP VECTOT

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M08

M-INDEC - 11 - DZCDB-B
DZCDB P11 T13MACY11 27(654) 1-JUL-77 08:39 PAGE 31
TEST FOR AN INTERRUPT ON LEVEL 5

SEQ 0103

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1513 005556 104400 TRAP ;PUSH OLD PSW AN PCON STACK
1514 005560 016666 000002 000006 72$: MOV 2(SP),5(SP) ;
1515 005566 012716 005574 MOV #73$, (SP) ;REPLACE OLD PC WITH NEW
1516 005572 000002 RTI ;RESTORE PSW
1517 005574 012637 000034 73$: MOV (SP)+,34 ;RESTORE OLD TRAP VECTOR
1518 005600 012637 001214 MOV (SP)+, $TMP6
1519 005604 052737 000200 001214 BIS #200, $TMP6
1520 005612 013746 001214 MOV $TMP6, -(SP) ;PUT NEW PS ON STACK
1521 005616 012746 005624 MOV #1745, -(SP) ;PUT NEW PC ON STACK
1522 005622 000002 RTI ;POP NEW PC AND PS
1523 005624 74$: MOV #-80, $CDS ;SET UP COLUMN COUNT TO READ 80 COLUMNS
1524 005624 012714 177660 MOV #BUFBEQ, $CDA ;SET UP BUS ADDRESS
1525 005630 012715 045442 MOV #101, $CDS ;SET INTERRUPT ENABLE AND READ
1526 005634 012713 000101 1$: TSTB $CDS ;WAIT FOR CONTROLLER READY
1527 0056 0 105713 BPL 1$
1528 005642 100376 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"
1529 MOV 2(ADINT), -(SP) ;PUT NEW PS ON STACK
1530 005644 016246 000002 MOV #75$, -(SP) ;PUT NEW PC ON STACK
1531 005650 012746 005656 RTI ;POP NEW PC AND PS
1532 005654 000002 75$: CLR $CDS ;DISABLE INTERRUPTS
1533 005656 005013 MOV #232, $ADINT ;CHANGE INTERRUPT RETURN ADDRESS
1534 005660 012712 000232 CLR #232 ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1535 005664 005037 000232 TST INTFLG ;TEST FOR A PREVIOUS INTERRUPT
1536 005670 005737 001252 BEQ TST14 ;BRANCH IF NONE
1537 005674 001441 CMP INTFLG, #100005 ;CHECK PREVIOUS LEVEL
1538 005676 023727 001252 100005 BMI TST14 ;BRANCH IF LOWER
1539 005704 100435 ERROR +22 ;INTERRUPT ALREADY OCCURRED AT LVL 5 OR HIGHER
1540 005706 104022 BR TST14
1541 005710 000433 TINT13: TSTB $CDS ;MAKE SURE CONTROLLER READY IS SET
1542 005712 105713 BMI 1$ ;BRANCH IF SET
1543 005714 100401 ERROR +23 ;CONTROLLER READY WASN'T SET
1544 005716 104023 1$: CLR $CDS ;DISABLE FURTHER INTERRUPTS
1545 005720 005013 MOV #232, $ADINT ;CHANGE INTERRUPT RETURN ADDRESS
1546 005722 012712 000232 CLR #232 ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1547 005726 005037 000232 CMP (SP)+, (SP)+ ;RESTORE STACK POINTER
1548 005732 022626 TST INTFLG ;CHECK FOR PREVIOUS FLAG
1549 005734 005737 001252 BMI SET5 ;BRANCH IF FLAG SET
1550 005740 100412 MOV #100005, INTFLG ;SET FLAG AND LEVEL
1551 005742 012737 100005 001252 TYPE, MSG4 ;PRINT MESSAGE "THE INTERRUPT LEVEL WAS"
1552 005744 104400 031741 MOV #5, -(SP)
1553 005750 104400 000005 TYP0S
1554 005754 012746 000005 .BYTE 1
1555 005760 104402 .BYTE 0
1556 005762 001 BR TST14
1557 005763 000 BR TST14
1558 005764 000405 SET5: CMP INTFLG, #100005 ;CHECK PREVIOUS LEVEL
1559 005766 023727 001252 100005 BPL TST14
1560 005774 100001 ERROR +24 ;INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
1561 005776 104024 ;*****
1562 ;*TEST 14 TEST FOR AN INTERRUPT ON LEVEL 4
1563 ;*****
1564 TST14: SCOPE
1565 006000 000004 JSP PC, INIT ;INITIALIZE
1566 006002 004737 025744

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N08

MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 32
 DZCDB.P11 T14 TEST FOR AN INTERRUPT ON LEVEL 4

SEQ 0104

1567	006006	012712	006370		MOV	#TINT14,ADINT	;; SETUP RETURN ADDRESS
1568					;	THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"	
1569	006012	005046			CLR	-(SP)	;;
1570	006014	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
1571	006020	012737	006030	000034	MOV	#64\$, 34	;; SETUP NEW TRAP VECTOR
1572	006026	104400			TRAP		;; PUSH OLD PSW AN PC ON STACK
1573	006030	016666	000002	000006	MOV	2(SP), 6(SP)	;;
1574	006036	012716	006044		MOV	#65\$, (SP)	;; REPLACE OLD PC WITH NEW
1575	006042	000002			RTI		;; RESTORE PSW
1576	006044	012637	000034	65\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
1577	006050	012637	001214		MOV	(SP)+, \$TMP6	
1578	006054	052737	000340	001214	BIS	#340, \$TMP6	;; PUT NEW PS ON STACK
1579	006062	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PC ON STACK
1580	006066	012746	006074		MOV	#66\$, -(SP)	;; POP NEW PC AND PS
1581	006072	000002			RTI		
1582	006074			66\$:			
1583					;	THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"	
1584	006074	005046			CLR	-(SP)	;;
1585	006076	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
1586	006102	012737	006112	000034	MOV	#67\$, 34	;; SETUP NEW TRAP VECTOR
1587	006110	104400			TRAP		;; PUSH OLD PSW AN PC ON STACK
1588	006112	016666	000002	000006	MOV	2(SP), 6(SP)	;;
1589	006120	012716	006126		MOV	#68\$, (SP)	;; REPLACE OLD PC WITH NEW
1590	006124	000002			RTI		;; RESTORE PSW
1591	006126	012637	000034	68\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
1592	006132	012662	000002		MOV	(SP)+, 2(ADINT)	
1593					;	THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"	
1594	006136	005046			CLR	-(SP)	;;
1595	006140	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
1596	006144	012737	006154	000034	MOV	#69\$, 34	;; SETUP NEW TRAP VECTOR
1597	006152	104400			TRAP		;; PUSH OLD PSW AN PC ON STACK
1598	006154	016666	000002	000006	MOV	2(SP), 6(SP)	;;
1599	006162	012716	006170		MOV	#70\$, (SP)	;; REPLACE OLD PC WITH NEW
1600	006166	000002			RTI		;; RESTORE PSW
1601	006170	012637	000034	70\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
1602	006174	012637	001214		MOV	(SP)+, \$TMP6	
1603	006200	042737	000340	001214	BIC	#340, \$TMP6	;; PUT NEW PS ON STACK
1604	006206	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PC ON STACK
1605	006212	012746	006220		MOV	#71\$, -(SP)	;; POP NEW PC AND PS
1606	006216	000002			RTI		
1607	006220			71\$:			
1608	006220	005046			CLR	-(SP)	;;
1609	006222	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
1610	006226	012737	006236	000034	MOV	#72\$, 34	;; SETUP NEW TRAP VECTOR
1611	006234	104400			TRAP		;; PUSH OLD PSW AN PC ON STACK
1612	006236	016666	000002	000006	MOV	2(SP), 6(SP)	;;
1613	006244	012716	006252		MOV	#73\$, (SP)	;; REPLACE OLD PC WITH NEW
1614	006250	000002			RTI		;; RESTORE PSW
1615	006252	012637	000034	73\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
1616	006256	012637	001214		MOV	(SP)+, \$TMP6	
1617	006262	052737	000140	001214	BIS	#140, \$TMP6	;; PUT NEW PS ON STACK
1618	006270	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PC ON STACK
1619	006274	012746	006302		MOV	#74\$, -(SP)	;; POP NEW PC AND PS
1620	006300	000002			RTI		

BC9

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 DZCDB.P11 T14 TEST FOR AN INTERRUPT ON LEVEL 4

SEG 0.05

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1621 006302          745:  MOV    #-80,  @CDC      ;SET UP COLUMN COUNT TO READ 80 COLUMNS
1622 006302 012714 177660  MOV    #BUFBEG, @CDA    ;SET UP BUS ADDRESS
1623 006306 012715 045442  MOV    #101,  @CDS    ;SET INTERRUPT ENABLE AND READ
1624 006312 012713 000101  15:    TSTB   @CDS      ;WAIT FOR CONTROLLER READY
1625 006316 105713          BPL     15
1626 006320 100376          ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"
1627          MOV    2(ADINT), -(SP)  ;PUT NEW PS ON STACK
1628 006322 016246 000002  MOV    #755, -(SP)  ;PUT NEW PC ON STACK
1629 006326 012746 006334  RTI          ;POP NEW PC AND PS
1630 006332 000002
1631 006334          755:    CLR     @CDS      ;DISABLE INTERRUPTS
1632 006334 005013          MOV    #232,  @ADINT  ;CHANGE INTERRUPT RETURN ADDRESS
1633 006336 012712 000232  CLR     @#232  ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1634 006342 005037 000232  TST     INTFLG  ;TEST FOR A PREVIOUS INTERRUPT
1635 006346 105737 001252  BEQ     TST15    ;BRANCH IF NONE
1636 006352 001433          CMP     INTFLG, #100004 ;CHECK PREVIOUS LEVEL
1637 006374 023727 001252 100004 BMI    TST15    ;BRANCH IF LOWER
1638 006372 100427          ERROR +22          ;INTERRUPT ALREADY OCCURRED AT LVL 4 OR HIGHER
1639 006364 104022          BR      TST15
1640 006366 000425          TINT14: TSTB   @CDS      ;MAKE SURE CONTROLLER READY IS SET
1641 006370 105713          BMI     15          ;BRANCH IF SET
1642 006372 100401          ERROR +23          ;CONTROLLER READY WASN'T SET
1643 006374 104023          15:    CLR     @CDS      ;DISABLE FURTHER INTERRUPTS
1644 006376 005013          MOV    #232,  @ADINT  ;CHANGE INTERRUPT RETURN ADDRESS
1645 006400 012712 000232  CLR     @#232  ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1646 006404 005037 000232  CMP     (SP)+, (SP)+ ;RESTORE STACK POINTER
1647 006410 022626          TST     INTFLG  ;CHECK FOR PREVIOUS FLAG
1648 006412 005737 001252  BMI     SET4      ;BRANCH IF FLAG SET
1649 006416 100404          MOV    #100004, INTFLG ;SET FLAG AND LEVEL
1650 006420 012737 100004 001252 BR      TST15
1651 006426 000405          SET4: CMP    INTFLG, #100004 ;CHECK PREVIOUS LEVEL
1652 006430 023727 001252 100004 BPL     TST15
1653 006436 100001          ERROR +24          ;INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
1654 006440 104024
1655          ;*****
1656          ;*TEST 15 TEST FOR AN INTERRUPT ON LEVEL 3
1657          ;*****
1658 006442 000004          TST15: SCOPE
1659 006444 004737 025744  JSR     PC, INIT  ;INITIALIZE
1660 006450 012712 007032  MOV    #TINT15, @ADINT ;SETUP RETURN ADDRESS
1661          ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
1662 006454 005046          CLR     -(SP)      ;
1663 006456 013746 000034  MOV    34, -(SP)    ;SAVE CURRENT TRAP VECTOR
1664 006462 012737 006472 000034 MOV    #645, 34      ;SETUP NEW TRAP VECTOR
1665 006470 104400          TRAP          ;PUSH OLD PSW AN PC ON STACK
1666 006472 016666 000002 000006 645:  MOV    2(SP), 6(SP)  ;
1667 006500 012716 006506          MOV    #655, (SP)    ;REPLACE OLD PC WITH NEW
1668 006504 000002          RTI          ;RESTORE PSW
1669 006506 012637 000034          655:  MOV    (SP)+, 34      ;RESTORE OLD TRAP VECTOR
1670 006512 012637 001214          MOV    (SP)+, $TMP6
1671 006516 052737 000340 001214 BIS    #340, $TMP6
1672 006524 013746 001214          MOV    $TMP6, -(SP)  ;PUT NEW PS ON STACK
1673 006530 012746 006536          MOV    #665, -(SP) ;PUT NEW PC ON STACK
1674 006534 000002          RTI          ;POP NEW PC AND PS

```

1675	006536			66\$:					
1676									
1677	006536	005046							
1678	006540	013746	000034						
1679	006544	012737	006554	000034					
1680	006552	104400							
1681	006554	016666	000002	000006	67\$:				
1682	006562	012716	006570						
1683	006566	000002							
1684	006570	012637	000034		68\$:				
1685	006574	012662	000002						
1686									
1687	006600	005046							
1688	006602	013746	000034						
1689	006606	012737	006616	000034					
1690	006614	104400							
1691	006616	016666	000002	000006	69\$:				
1692	006624	012716	006632						
1693	006630	000002							
1694	006632	012637	000034		70\$:				
1695	006636	012637	001214						
1696	006642	042737	000340	001214					
1697	006650	013746	001214						
1698	006654	012746	006662						
1699	006660	000002							
1700	006662				71\$:				
1701	006662	005046							
1702	006664	013746	000034						
1703	006670	012737	006700	000034					
1704	006676	104400							
1705	006700	016666	000002	000006	72\$:				
1706	006706	012716	006714						
1707	006712	000002							
1708	006714	012637	000034		73\$:				
1709	006720	012637	001214						
1710	006724	052737	000100	001214					
1711	006732	013746	001214						
1712	006736	012746	006744						
1713	006742	000002							
1714	006744				74\$:				
1715	006744	012714	177660						
1716	006750	012715	045442						
1717	006754	012713	000101						
1718	006760	105713			1\$:				
1719	006762	100376							
1720									
1721	006764	016246	000002						
1722	006770	012746	006776						
1723	006774	000002							
1724	006776				75\$:				
1725	006776	005013							
1726	007000	012712	000232						
1727	007004	005037	000232						
1728	007010	005737	001252						

THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"

```

CLR      -(SP)
MOV      34, -(SP)
MOV      #67$, 34
TRAP
MOV      2(SP), 6(SP)
MOV      #68$, (SP)
RTI
MOV      (SP)+, 34
MOV      (SP)+, 2(ADINT)

```

THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"

```

CLR      -(SP)
MOV      34, -(SP)
MOV      #69$, 34
TRAP
MOV      2(SP), 6(SP)
MOV      #70$, (SP)
RTI
MOV      (SP)+, 34
MOV      (SP)+, $TMP6
BIC      #340, $TMP6
MOV      $TMP6, -(SP)
MOV      #71$, -(SP)
RTI

```

```

CLR      -(SP)
MOV      34, -(SP)
MOV      #72$, 34
TRAP
MOV      2(SP), 6(SP)
MOV      #73$, (SP)
RTI
MOV      (SP)+, 34
MOV      (SP)+, $TMP6
BIS      #100, $TMP6
MOV      $TMP6, -(SP)
MOV      #74$, -(SP)
RTI

```

```

MOV      #-80, @CDC
MOV      #BUFBEG, @CDA
MOV      #101, @CDS
TSTB     @CDS
BPL      1$

```

```

MOV      #-80, @CDC
MOV      #BUFBEG, @CDA
MOV      #101, @CDS
TSTB     @CDS
BPL      1$

```

THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"

```

MOV      2(ADINT), -(SP)
MOV      #75$, -(SP)
RTI

```

```

CLR      @CDS
MOV      #232, @ADINT
CLR      @#232
TST      INTFLG

```

```

1729 007014 001441 BEQ TST16 ;BRANCH IF NONE
1730 007016 023727 001252 100003 CMP INTFLG, #100003 ;CHECK PREVIOUS LEVEL
1731 007024 100435 BMI TS16 ;BRANCH IF LOWER
1732 007026 104022 ERROR +22 ;INTERRUPT ALREADY OCCURRED AT LVL 3 OR HIGHER
1733 007030 000433 BR TST16
1734 007032 105713 TINT15: TSTB ACDS ;MAKE SURE CONTROLLER READY IS SET
1735 007034 100401 BMI 15 ;BRANCH IF SET
1736 007036 104023 ERROR +23 ;CONTROLLER READY WASN'T SET
1737 007040 005013 15: CLR ACDS ;DISABLE FURTHER INTERRUPTS
1738 007042 012712 000232 MOV #232, ADINT ;CHANGE INTERRUPT RETURN ADDRESS
1739 007046 005037 000232 CLR #232 ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1740 007052 022626 CMP (SP)+, (SP)+ ;RESTORE STACK POINTER
1741 007054 005737 001252 TST INTFLG ;CHECK FOR PREVIOUS FLAG
1742 007060 100412 BMI SET3 ;BRANCH IF FLAG SET
1743 007062 012737 100003 001252 MOV #100003, INTFLG ;SET FLAG AND LEVEL
1744 007070 104400 031741 TYPE, MSG4 ;PRINT MESSAGE "THE INTERRUPT LEVEL WAS"
1745 007074 012746 000003 MOV #3, -(SP)
1746 007100 104402 TYP0S
1747 007102 001 .BYTE 1
1748 007103 000 .BYTE 0
1749 007104 000405 BR TST16
1750 007106 023727 001252 100003 SET3: CMP INTFLG, #100003 ;CHECK PREVIOUS LEVEL
1751 007114 100001 BPL TST16
1752 007116 104024 ERROR +24 ;INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
1753 *****
1754 ;*TEST 16 TEST FOR AN INTERRUPT ON LEVEL 2
1755 *****
1756 007120 000004 TST16: SCOPE
1757 007122 004737 025744 J3R PC, INIT ;INITIALIZE
1758 007126 012712 007510 MOV #TINT16, ADINT ;SETUP RETURN ADDRESS
1759 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
1760 007132 005046 CLR -(SP)
1761 007134 013746 000034 MOV 34, -(SP) ;SAVE CURRENT TRAP VECTOR
1762 007140 012737 007150 000034 MOV #64$, 34 ;SETUP NEW TRAP VECTOR
1763 007146 104400 TRAP ;PUSH OLD PSW AN PCON STACK
1764 007150 016666 000002 000006 64$: MOV 2(SP), 6(SP)
1765 007156 012716 007164 MOV #65$, (SP) ;REPLACE OLD PC WITH NEW
1766 007162 000002 RTI ;RESTORE PSW
1767 007164 012637 000034 65$: MOV (SP)+, 34 ;RESTORE OLD TRAP VECTOR
1768 007170 012637 001214 MOV (SP)+, $TMP6
1769 007174 052737 000340 001214 BIS #340, $TMP6
1770 007202 013746 001214 MOV $TMP6, -(SP) ;PUT NEW PS ON STACK
1771 007206 012746 007214 MOV #66$, -(SP) ;PUT NEW PC ON STACK
1772 007212 000002 RTI ;POP NEW PC AND PS
1773 66$: ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
1774 CLR -(SP)
1775 007214 005046 MOV 34, -(SP) ;SAVE CURRENT TRAP VECTOR
1776 007216 013746 000034 MOV #67$, 34 ;SETUP NEW TRAP VECTOR
1777 007222 012737 007232 000034 TRAP ;PUSH OLD PSW AN PCON STACK
1778 007230 104400 67$: MOV 2(SP), 6(SP)
1779 007232 016666 000002 000006 67$: MOV #68$, (SP) ;REPLACE OLD PC WITH NEW
1780 007240 012716 007246 RTI ;RESTORE PSW
1781 007244 000002 MOV (SP)+, 34 ;RESTORE OLD TRAP VECTOR
1782 007246 012637 000034 68$:

```

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 DZCDB.P11 T16 TEST FOR AN INTERRUPT ON LEVEL 2

SEQ 0108

1783	007252	012662	000002		MOV	(SP)+,2(ADINT)	
1784					; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"		
1785	007256	005046			CLR	-(SP)	
1786	007260	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
1787	007264	012737	007274	000034	MOV	#69\$, 34	;; SETUP NEW TRAP VECTOT
1788	007272	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
1789	007274	016666	000002	000006	MOV	2(SP), 6(SP)	
1790	007302	012716	007310		MOV	#70\$, (SP)	;; REPLACE OLD PC WITH NEW
1791	007306	000002			RTI		;; RESTORE PSW
1792	007310	012637	000034		MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
1793	007314	012637	001214		MOV	(SP)+, \$TMP6	
1794	007320	042737	000340	001214	BIC	#340, \$TMP6	
1795	007326	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
1796	007332	012746	007340		MOV	#71\$, -(SP)	;; PUT NEW PC ON STACK
1797	007336	000002			RTI		;; POP NEW PC AND PS
1798	007340						
1799	007340	005046			CLR	-(SP)	
1800	007342	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
1801	007346	012737	007356	000034	MOV	#72\$, 34	;; SETUP NEW TRAP VECTOT
1802	007354	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
1803	007356	016666	000002	000006	MOV	2(SP), 6(SP)	
1804	007364	012716	007372		MOV	#73\$, (SP)	;; REPLACE OLD PC WITH NEW
1805	007370	000002			RTI		;; RESTORE PSW
1806	007372	012637	000034		MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
1807	007376	012637	001214		MOV	(SP)+, \$TMP6	
1808	007402	052737	000040	001214	BIS	#040, \$TMP6	
1809	007410	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
1810	007414	012746	007422		MOV	#74\$, -(SP)	;; PUT NEW PC ON STACK
1811	007420	000002			RTI		;; POP NEW PC AND PS
1812	007422						
1813	007422	012714	177660		MOV	#-80, @CDC	;; SET UP COLUMN COUNT TO READ 80 COLUMNS
1814	007426	012715	045442		MOV	#BUFBEG, @CDA	;; SET UP BUS ADDRESS
1815	007432	012713	000101		MOV	#101, @CDS	;; SET INTERRUPT ENABLE AND READ
1816	007436	105713			TSTB	@CDS	;; WAIT FOR CONTROLLER READY
1817	007440	100376			BPL	1\$	
1818					; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"		
1819	007442	016246	000002		MOV	2(ADINT), -(SP)	;; PUT NEW PS ON STACK
1820	007446	012746	007454		MOV	#75\$, -(SP)	;; PUT NEW PC ON STACK
1821	007452	000002			RTI		;; POP NEW PC AND PS
1822	007454						
1823	007454	005013			CLR	@CDS	;; DISABLE INTERRUPTS
1824	007456	012712	000232		MOV	#232, @ADINT	;; CHANGE INTERRUPT RETURN ADDRESS
1825	007462	005037	000232		CLR	#232	;; TO CAUSE A HALT IF AN INTERRUPT OCCURS
1826	007466	005737	001252		TST	INTFLG	;; TEST FOR A PREVIOUS INTERRUPT
1827	007472	001441			BEQ	TST17	;; BRANCH IF NONE
1828	007474	023727	001252	100002	CMP	INTFLG, #100002	;; CHECK PREVIOUS LEVEL
1829	007502	100435			BMI	TST17	;; BRANCH IF LOWER
1830	007504	104022			ERROR +22		;; INTERRUPT ALREADY OCCURRED AT LVL 2 OR HIGHER
1831	007506	000433			BR	TST17	
1832	007510	105713			TINT16: TSTB	@CDS	;; MAKE SURE CONTROLLER READY IS SET
1833	007512	100401			BMI	1\$	;; BRANCH IF SET
1834	007514	104023			ERROR +23		;; CONTROLLER READY WASN'T SET
1835	007516	005013			CLR	@CDS	;; DISABLE FURTHER INTERRUPTS
1836	007520	012712	000232		MOV	#232, @ADINT	;; CHANGE INTERRUPT RETURN ADDRESS

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 02C08.P11 T16 TEST FOR AN INTERRUPT ON LEVEL 2

SEQ 0109

```

1837 007524 005037 000232 CLR 2#232 ;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1838 007530 022626 CMP (SP)+ (SP)+ ;RESTORE STACK POINTER
1839 007532 005737 001252 TST INTFLG ;CHECK FOR PREVIOUS FLAG
1840 007536 100412 BMI SET2 ;BRANCH IF FLAG SET
1841 007540 012737 1000J2 001252 MOV #100002,INTFLG ;SET FLAG AND LEVEL
1842 007546 104400 031741 TYPE, MSG4 ;PRINT MESSAGE "THE INTERRUPT LEVEL WAS"
1843 007552 012746 000002 MOV #2,-(SP)
1844 007556 104402 TYP0S
1845 007560 001 .BYTE 1
1846 007561 000 .BYTE 0
1847 007562 000405 BR TST17
1848 007564 023727 001252 100002 SET2: CMP INTFLG, #100002 ;CHECK PREVIOUS LEVEL
1849 007572 100001 BPL TST17
1850 007574 104024 ERROR +24 ;INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL
1851 *****
1852 ;*TEST 17 TEST FOR AN INTERRUPT ON LEVEL 1
1853 *****
1854 007576 000004 TST17: SCOPE
1855 007600 004737 025744 JSR PC INIT ;INITIALIZE
1856 007604 012712 010150 MOV #TINT17,ADINT ;SETUP RETURN ADDRESS
1857 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
1858 007610 005046 CLR -(SP)
1859 007612 013746 000034 MOV 34,-(SP) ;SAVE CURRENT TRAP VECTOR
1860 007616 012737 007626 000034 MOV #64$,34 ;SETUP NEW TRAP VECTOR
1861 007624 104400 TRAP ;PUSH OLD PSW AN PC ON STACK
1862 007626 016666 000002 000006 64$: MOV 2(SP),6(SP)
1863 007634 012716 007642 MOV #65$,1(SP) ;REPLACE OLD PC WITH NEW
1864 007640 000002 RTI ;RESTORE PSW
1865 007642 012637 000034 65$: MOV (SP)+,34 ;RESTORE OLD TRAP VECTOR
1866 007646 012637 001214 MOV (SP)+,$TMP6
1867 007652 052737 000340 001214 BIS #340,$TMP6
1868 007660 013746 001214 MOV $TMP6,-(SP) ;PUT NEW PS ON STACK
1869 007664 012746 007672 MOV #66$,-(SP) ;PUT NEW PC ON STACK
1870 007670 000002 RTI ;POP NEW PC AND PS
1871 66$:
1872 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
1873 007672 005046 CLR -(SP)
1874 007674 013746 000034 MOV 34,-(SP) ;SAVE CURRENT TRAP VECTOR
1875 007700 012737 007710 000034 MOV #67$,34 ;SETUP NEW TRAP VECTOR
1876 007706 104400 TRAP ;PUSH OLD PSW AN PC ON STACK
1877 007710 016666 000002 000006 67$: MOV 2(SP),6(SP)
1878 007716 012716 007724 MOV #68$,1(SP) ;REPLACE OLD PC WITH NEW
1879 007722 000002 RTI ;RESTORE PSW
1880 007724 012637 000034 68$: MOV (SP)+,34 ;RESTORE OLD TRAP VECTOR
1881 007730 012662 000002 MOV (SP)+,2(ADINT)
1882 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
1883 007734 005046 CLR -(SP)
1884 007736 013746 000034 MOV 34,-(SP) ;SAVE CURRENT TRAP VECTOR
1885 007742 012737 007752 000034 MOV #69$,34 ;SETUP NEW TRAP VECTOR
1886 007750 104400 TRAP ;PUSH OLD PSW AN PC ON STACK
1887 007752 016666 0J0002 000006 69$: MOV 2(SP),6(SP)
1888 007760 012716 007766 MOV #70$,1(SP) ;REPLACE OLD PC WITH NEW
1889 007764 000002 RTI ;RESTORE PSW
1890 007766 012637 000034 70$: MOV (SP)+,34 ;RESTORE OLD TRAP VECTOR

```

G09

MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 38
 DZCDB.P11 T17 TEST FOR AN INTERRUPT ON LEVEL 1

SEQ 0110

```

1891 007772 012637 001214      MOV      (SP)+,STMP6
1892 007776 042737 000340 001214 BIC      #340,STMP6
1893 010004 013746 001214      MOV      STMP6,-(SP)      ;;PUT NEW PS ON STACK
1894 010010 012746 010016      MOV      #715,-(SP)      ;;PUT NEW PC ON STACK
1895 010014 000002      RTI      ;;POP NEW PC AND PS
1896 010016      71$:
1897 010016 005046      CLR      -(SP)      ;;
1898 010020 013746 000034      MOV      34,-(SP)      ;;SAVE CURRENT TRAP VECTOR
1899 010024 012737 010034 000034 MOV      #72$,34      ;;SETUP NEW TRAP VECTOR
1900 010032 104400      TRAP      ;;PUSH OLD PSW AN PCON STACK
1901 010034 016666 000002 000006 72$: MOV      2(SP),6(SP)      ;;
1902 010042 012716 010050      MOV      #73$, (SP)      ;;REPLACE OLD PC WITH NEW
1903 010046 000002      RTI      ;;RESTORE PSW
1904 010050 012637 000034      73$: MOV      (SP)+,34      ;;RESTORE OLD TRAP VECTOR
1905 010054 012637 001214      MOV      (SP)+,STMP6
1906 010060 052737 000000 001214 BIS      #000,STMP6
1907 010066 013746 001214      MOV      STMP6,-(SP)      ;;PUT NEW PS ON STACK
1908 010072 012746 010100      MOV      #74$,-(SP)      ;;PUT NEW PC ON STACK
1909 010076 000002      RTI      ;;POP NEW PC AND PS
1910 010100      74$:
1911 010100 012714 177660      MOV      #-80., @CDC      ;;SET UP COLUMN COUNT TO READ 80 COLUMNS
1912 010104 012715 045442      MOV      #BUFBEG,@CDA      ;;SET UP BUS ADDRESS
1913 010110 012713 000101      MOV      #101, @CDS      ;;SET INTERRUPT ENABLE AND READ
1914 010114 105713      1$: TSTB      @CDS      ;;WAIT FOR CONTROLLER READY
1915 010116 100376      BPL      1$
1916      ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"
1917 010120 016246 000002      MOV      2(ADINT),-(SP)      ;;PUT NEW PS ON STACK
1918 010124 012746 010132      MOV      #75$,-(SP)      ;;PUT NEW PC ON STACK
1919 010130 000002      RTI      ;;POP NEW PC AND PS
1920 010132      75$:
1921 010132 005013      CLR      @CDS      ;;DISABLE INTERRUPTS
1922 010134 012712 000232      MOV      #232, @ADINT      ;;CHANGE INTERRUPT RETURN ADDRESS
1923 010140 005037 000232      CLR      @#232      ;;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1924 010144 104041      ERROR +41      ;;NO INTERRUPT WITH PROCESSOR AT LEVEL 0
1925 010146 000433      BR      TST20
1926 010150 105713      TINT17: TSTB      @CDS      ;;MAKE SURE CONTROLLER READY IS SET
1927 010152 100401      BMI      1$      ;;BRANCH IF SET
1928 010154 104023      ERROR +23      ;;CONTROLLER READY WASN'T SET
1929 010156 005013      1$: CLR      @CDS      ;;DISABLE FURTHER INTERRUPTS
1930 010160 012712 000232      MOV      #232, @ADINT      ;;CHANGE INTERRUPT RETURN ADDRESS
1931 010164 005037 000232      CLR      @#232      ;;TO CAUSE A HALT IF AN INTERRUPT OCCURS
1932 010170 027626      CMP      (SP)+, (SP)+      ;;RESTORE STACK POINTER
1933 010172 005737 001252      TST      INTFLG      ;;CHECK FOR PREVIOUS FLAG
1934 010176 100412      BMI      SET1      ;;BRANCH IF FLAG SET
1935 010200 012737 100001 001252 MOV      #100001,INTFLG      ;;SET FLAG AND LEVEL
1936 010206 104400 031741      TYPE, MSG4      ;;PRINT MESSAGE "THE INTERRUPT LEVEL WAS"
1937 010212 012746 000001      MOV      #1,-(SP)
1938 010216 104402      TYP0S
1939 010220 001      .BYTE 1
1940 010221 000      .BYTE 0
1941 010222 000405      BR      TST20
1942 010224 023727 001252 100001 SET1: CMP      INTFLG, #100001      ;;CHECK PREVIOUS LEVEL
1943 010232 100001      BPL      TST20
1944 010234 104024      ERROR +24      ;;INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL

```

H09

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 DZCDB.P11 T17 TEST FOR AN INTERRUPT ON LEVEL 1

SEQ 0111

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1945
1946
1947
1948
1949 010236 000004
1950 010240 004737 025744
1951 010244 012712 010452
1952
1953 010250 005046
1954 010252 013746 000034
1955 010256 012737 010266 000034
1956 010264 104400
1957 010266 016666 000002 000006 64$:
1958 010274 012716 010302
1959 010300 000002
1960 010302 012637 000034 55$:
1961 010306 012637 001214
1962 010312 052737 000340 001214
1963 010320 013746 001214
1964 010324 012746 010332
1965 010320 000002
1966 010332 66$:
1967
1968 010332 005046
1969 010334 013746 000034
1970 010340 012737 010350 000034
1971 010346 104400
1972 010350 016666 000002 000006 67$:
1973 010356 012716 010364
1974 010362 000002
1975 010364 012637 000034 68$:
1976 010370 012662 000002
1977 010374 013746 000000
1978 010400 012746 010406
1979 010404 000002
1980 010406 69$:
1981 010406 012714 177777
1982 010412 012715 045442
1983 010416 012713 000100
1984 010422 005037 001250
1985 010426 005237 001250
1986 010432 001375
1987
1988 010434 016246 000002
1989 010440 012746 010446
1990 010444 000002
1991 010446 70$:
1992 010446 005013
1993 010450 000403
1994 010452 104021
1995 010454 022626
1996 010456 005013
1997 010460 005037 000232
1998 010464 012712 000232

;*****
;TEST 20 TEST NO INTERRUPT WITH IE SET & REST CLEARED
;*****
TST20: SCOPE
JSR PC INIT ;INITIALIZE CSR TO ZERO
MOV #TINT20,ADINT ;SETUP RETURN ADDRESS
;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
CLR -(SP)
MOV 34,-(SP) ;SAVE CURRENT TRAP VECTOR
MOV #64$,34 ;SETUP NEW TRAP VECTOR
TRAP ;PUSH OLD PSW AN PC ON STACK
MOV 2(SP),6(SP)
MOV #65$,1SP) ;REPLACE OLD PC WITH NEW
RTI ;RESTORE PSW
MOV (SP)+,34 ;RESTORE OLD TRAP VECTOR
MOV (SP)+,STMP6
BIS #340,STMP6
MOV STMP6,-(SP) ;PUT NEW PS ON STACK
MOV #66$,-(SP) ;PUT NEW PC ON STACK
RTI ;POP NEW PC AND PS

;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
CLR -(SP)
MOV 34,-(SP) ;SAVE CURRENT TRAP VECTOR
MOV #67$,34 ;SETUP NEW TRAP VECTOR
TRAP ;PUSH OLD PSW AN PC ON STACK
MOV 2(SP),6(SP)
MOV #68$,1SP) ;REPLACE OLD PC WITH NEW
RTI ;RESTORE PSW
MOV (SP)+,34 ;RESTORE OLD TRAP VECTOR
MOV (SP)+,2(ADINT)
MOV PRO,-(SP) ;PUT NEW PS ON STACK
MOV #69$,-(SP) ;PUT NEW PC ON STACK
RTI ;POP NEW PC AND PS

69$:
MOV #-1,ADCD ;SET UP COLUMN COUNT TO READ 1 COLUMN
MOV #BUFBEQ,ADCA ;SET UP BUS ADDRESS
MOV #100,ADCS ;ENABLE INTERRUPTS
CLR COUNT ;INITIALIZE COUNTER
INC COUNT ;WAIT AWHILE
BNE 1$
;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT),PS"
MOV 2(ADINT),-(SP) ;PUT NEW PS ON STACK
MOV #70$,-(SP) ;PUT NEW PC ON STACK
RTI ;POP NEW PC AND PS

70$:
CLR ADCS ;DISABLE FURTHER INTERRUPTS
BR CONT20
TINT20: ERROR +21 ;AN INTERRUPT OCCURRED
CMP (SP)+,(SP)+ ;RESTORE STACK
CLR ADCS ;DISABLE FURTHER INTERRUPTS
CONT20: CLR #232 ;CHANGE INTERRUPT RETURN ADDRESS TO
MOV #232,ADINT ;CAUSE A HALT IF AN INTERRUPT OCCURS

```

MAINDEC - 11 - DZCDB-B
DZCDB.P11 T20

MACY11 27(654) 1-JUL-77 08:39 PAGE 40
TEST NO INTERRUPT WITH IE SET & REST CLEARED

SEQ 0112

```

1999
2000
2001
2002
2003 010470 000004
2004 010472 004737 025744
2005 010476 012712 010726
2006
2007 010502 005046
2008 010504 013746 000034
2009 010510 012737 010520 000034
2010 010516 104400
2011 010520 016666 000002 000006 64$:
2012 010526 012716 010534
2013 010532 000002
2014 010534 012637 000034 65$:
2015 010540 012637 001214
2016 010544 052737 000340 001214
2017 010552 013746 001214
2018 010556 012746 010564
2019 010562 000002
2020 010564
2021 66$:
2022 010564 005046
2023 010566 013746 000034
2024 010572 012737 010602 000034
2025 010600 104400
2026 010602 016666 000002 000006 67$:
2027 010610 012716 010616
2028 010614 000002
2029 010616 012637 000034 68$:
2030 010622 012662 000002
2031
2032 010626 005046
2033 010630 013746 000034
2034 010634 012737 010644 000034
2035 010642 104400
2036 010644 016666 000002 000006 69$:
2037 010652 012716 010660
2038 010656 000002
2039 010660 012637 000034 70$:
2040 010664 012637 001214
2041 010670 042737 000340 001214
2042 010676 013746 001214
2043 010702 012746 010710
2044 010706 000002
2045 010710
2046 010710 012714 177777
2047 010714 012715 045442
2048 010720 012713 000101
2049 010724 000777
2050 010726 022626
2051 010730 012712 010764
2052 010734 013746 000000

;*****
;TEST 21 SIMULTANEOUS INTERRUPTS AT MORE THAN 1 LEVEL
;*****
TINT21: SCOPE
JSR PC, INIT ;INITIALIZE CSR TO ZERO
MOV #TINT21, ADINT ;SETUP RETURN ADDRESS
;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
CLR -(SP) ;;
MOV 34, -(SP) ;;SAVE CURRENT TRAP VECTOR
MOV #64$, 34 ;SETUP NEW TRAP VECTOR
TRAP ;;PUSH OLD PSW AN PCON STACK
MOV 2(SP), 6(SP) ;;
MOV #65$, (SP) ;;REPLACE OLD PC WITH NEW
RTI ;;RESTORE PSW
MOV (SP)+, 34 ;;RESTORE OLD TRAP VECTOR
MOV (SP)+, $TMP6
BIS #340, $TMP6
MOV $TMP6, -(SP) ;;PUT NEW PS ON STACK
MOV #66$, -(SP) ;;PUT NEW PC ON STACK
RTI ;;POP NEW PC AND PS

;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
CLR -(SP) ;;
MOV 34, -(SP) ;;SAVE CURRENT TRAP VECTOR
MOV #67$, 34 ;SETUP NEW TRAP VECTOR
TRAP ;;PUSH OLD PSW AN PCON STACK
MOV 2(SP), 6(SP) ;;
MOV #68$, (SP) ;;REPLACE OLD PC WITH NEW
RTI ;;RESTORE PSW
MOV (SP)+, 34 ;;RESTORE OLD TRAP VECTOR
MOV (SP)+, 2(ADINT)
;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
CLR -(SP) ;;
MOV 34, -(SP) ;;SAVE CURRENT TRAP VECTOR
MOV #69$, 34 ;SETUP NEW TRAP VECTOR
TRAP ;;PUSH OLD PSW AN PCON STACK
MOV 2(SP), 6(SP) ;;
MOV #70$, (SP) ;;REPLACE OLD PC WITH NEW
RTI ;;RESTORE PSW
MOV (SP)+, 34 ;;RESTORE OLD TRAP VECTOR
MOV (SP)+, $TMP6
BIC #340, $TMP6
MOV $TMP6, -(SP) ;;PUT NEW PS ON STACK
MOV #71$, -(SP) ;;PUT NEW PC ON STACK
RTI ;;POP NEW PC AND PS

71$:
MOV #-1, @CDC ;SET UP COLUMN COUNT TO READ 1 COLUMN
MOV #BUFBEQ, @CDA ;SET UP BUS ADDRESS
MOV #101, @CDS ;SET INTERRUPT ENABLE AND READ
BR ;WAIT FOR INTERRUPT
TINT21: CMP (SP)+, (SP)+ ;RESTORE STACK POINTER
MOV #TINT21, ADINT ;CHANGE RETURN ADDRESS
MOV PRO, -(SP) ;PUT NEW PS ON STACK

```

MAINDEC - 11 - DZCDB-B
DZCDB.P11 T.1

MACY11 27(654) 1-JUL-77 08:39 PAGE 41
SIMULTANEOUS INTERRUPTS AT MORE THAN 1 LEVEL

SEQ 0113

```

2053 010740 012746 010746      MOV    #64$, -(SP)      ;; PUT NEW PC ON STACK
2054 010744 000002              RTI                ;; POP NEW PC AND PS
2055 010746                      64$: NOP                ; WAIT
2056 010746 000240              ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV 2(ADINT), PS"
2057 010750 016246 000002      MOV    2(ADINT), -(SP)    ;; PUT NEW PS ON STACK
2058 010754 012746 010762      MOV    #65$, -(SP)    ;; PUT NEW PC ON STACK
2059 010760 000002              RTI                ;; POP NEW PC AND PS
2060 010762                      65$: BR    CONT21
2061 010762 000402      TINA21: CMP    (SP)+, (SP)+    ; RESTORE STACK
2062 010764 022626      ERROR +25                      ; THE INTERRUPT OCCURRED AT 2 LEVELS
2063 010766 104025      CONT21: CLR    2CDS            ; DISABLE INTERRUPTS
2064 010770 005013      CLR    2#232                ; CHANGE INTERRUPT RETURN ADDRESS TO
2065 010772 005037 000232      MOV    #232, 2ADINT    ; CAUSE A HALT IF AN INTERRUPT OCCURS
2066 010776 012712 000232
2067
2068
2069 ;*****
2070 ;*TEST 22 NON-EXISTANT MEMORY DETECTION
2071 ;*****
2072 011002 000004      TST22: SCOPE
2073 011004 004737 025744      JSR    PC, INIT        ; INITIALIZE CSR TO ZERO
2074 011010 012712 011240      MOV    #TINT22, 2ADINT    ; SETUP RETURN ADDRESS
2075                      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
2076 011014 005046      CLR    -(SP)
2077 011016 013746 000034      MOV    34, -(SP)        ; SAVE CURRENT TRAP VECTOR
2078 011022 012737 011032 000034      MOV    #64$, 34    ; SETUP NEW TRAP VECTOR
2079 011030 104400      TRAP
2080 011032 016666 000002 000006 64$: MOV    2(SP), 6(SP)    ; PUSH OLD PSW AN PC ON STACK
2081 011040 012716 011046      MOV    #65$, (SP)
2082 011044 000002              RTI                ;; REPLACE OLD PC WITH NEW
2083 011046 012637 000034      65$: MOV    (SP)+, 34    ;; RESTORE PSW
2084 011052 012637 001214      MOV    (SP)+, $TMP6        ; RESTORE OLD TRAP VECTOR
2085 011056 052737 000340 001214      BIS    #340, $TMP6
2086 011064 013746 001214      MOV    $TMP6, -(SP)    ; PUT NEW PS ON STACK
2087 011070 012746 011076      MOV    #66$, -(SP)    ; PUT NEW PC ON STACK
2088 011074 000002              RTI                ;; POP NEW PC AND PS
2089 011076                      66$:
2090                      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
2091 011076 005046      CLR    -(SP)
2092 011100 013746 000034      MOV    34, -(SP)        ; SAVE CURRENT TRAP VECTOR
2093 011104 012737 011114 000034      MOV    #67$, 34    ; SETUP NEW TRAP VECTOR
2094 011112 104400      TRAP
2095 011114 016666 000002 000006 67$: MOV    2(SP), 6(SP)    ; PUSH OLD PSW AN PC ON STACK
2096 011122 012716 011130      MOV    #68$, (SP)
2097 011126 000002              RTI                ;; REPLACE OLD PC WITH NEW
2098 011130 012637 000034      68$: MOV    (SP)+, 34    ;; RESTORE PSW
2099 011134 012662 000002      MOV    (SP)+, 2(ADINT)    ; RESTORE OLD TRAP VECTOR
2100                      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
2101 011140 005046      CLR    -(SP)
2102 011142 013746 000034      MOV    34, -(SP)        ; SAVE CURRENT TRAP VECTOR
2103 011146 012737 011156 000034      MOV    #69$, 34    ; SETUP NEW TRAP VECTOR
2104 011154 104400      TRAP
2105 011156 016666 000002 000006 69$: MOV    2(SP), 6(SP)    ; PUSH OLD PSW AN PC ON STACK
2106 011164 012716 011172      MOV    #70$, (SP)        ; REPLACE OLD PC WITH NEW

```

K09

MAINDEC - 11 - DZCDB-8 MACY11 27(654) 1-JUL-77 08:39 PAGE 42
 DZCDB.P11 T22 NON-EXISTANT MEMORY DETECTION

SEQ 0114

```

2107 011170 000002
2108 011172 012637 000034
2109 011176 012637 001214
2110 011202 042737 000340 001214
2111 011210 013746 001214
2112 011214 012746 011222
2113 011220 000002
2114 011222
2115 011222 012714 177773
2116 011226 012715 160000
2117 011232 012713 000161
2118 011236 000777
2119 011240 022626
2120 011242 005037 000232
2121 011246 012712 000232
2122 011252 105713
2123 011254 100401
2124 011256 104023
2125
2126 011260 005713
2127 011262 100401
2128 011264 104026
2129
2130 011266 032713 001000
2131 011272 001001
2132 011274 104027
2133
2134 011276 032713 000040
2135 011302 001001
2136 011304 104030
2137
2138 011306 032713 000020
2139 011312 001001
2140 011314 104031
2141
2142 011316 032713 076417
2143 011322 001401
2144 011324 104032
2145
2146 011326 022715 160002
2147 011332 001404
2148 011334 012737 160002 001210
2149 011342 104033
2150
2151 011344 022714 177774
2152 011350 001404
2153 011352 012737 177774 001210
2154 011360 104034
2155 011362
2156
2157
2158
2159
2160 011362 000004

70$: RTI
      MOV (SP)+,34
      MOV (SP)+,$TMP6
      BIC #340,$TMP6
      MOV $TMP6,-(SP)
      MOV #71$,-(SP)
      RTI
      ;;RESTORE PSW
      ;;RESTORE OLD TRAP VECTOR

71$:
      MOV #-5,$CDC
      MOV #160000,$CDA
      MOV #161,$CDS
      BR
TINT22: CMP (SP)+,(SP)+
      CLR #232
      MOV #232,$ADINT
      TSTB $CDS
      BMI 1$
      ERROR +23

1$: TST $CDS
      BMI 2$
      ERROR +26

2$: BIT #1000,$CDS
      BNE 3$
      ERROR +27

3$: BIT #40,$CDS
      BNE 4$
      ERROR +30

4$: BIT #20,$CDS
      BNE 5$
      ERROR +31

5$: BIT #076417,$CDS
      BEQ 6$
      ERROR +32

6$: CMP #160002,$CDA
      BEQ 7$
      MOV #160002,$TMP4
      ERROR +33

7$: CMP #-4,$CDC
      BEQ 10$
      MOV #-4,$TMP4
      ERROR +34

10$:
      ;;SET UP COLUMN COUNT TO READ 1 COLUMN
      ;;SET UP BUS ADDRESS TO NON-EXISTANT MEMORY
      ;;SET INTERRUPT ENABLE AND READ, X MEM BITS SET
      ;;WAIT FOR INTERRUPT
      ;;RESTORE STACK
      ;;CHANGE INTERRUPT RETURN ADDRESS TO
      ;;CAUSE A HALT IF AN INTERRUPT OCCURS
      ;;CHECK FOR CONTROLLER READY
      ;;BRANCH IF SET OK
      ;;CONTROLLER READY DIDN'T SET

      ;;CHECK FOR ERROR (BIT 15)
      ;;BRANCH IF SET OK
      ;;ERROR BIT 15 NOT SET

      ;;CHECK FOR NON-EXISTANT MEMORY (BIT 9)
      ;;BRANCH IF SET OK
      ;;BIT 9 NOT SET

      ;;CHECK FOR EXTENDED MEMORY BIT 17 SET
      ;;BRANCH IF SET OK
      ;;EX-MEM BIT 17 GOT CLEARED

      ;;CHECK FOR EX-MEM (BIT 4)
      ;;BRANCH IF SET OK
      ;;EX-MEM (BIT 4) GOT CLEARED

      ;;CHECK FOR ANY OTHER BITS
      ;;BRANCH IF OK
      ;;EXTRA ERROR BITS SET

      ;;CHECK ADDRESS BUFFER
      ;;BRANCH IF OK
      ;;CORRECT 'CDA' CONTENTS FOR ERROR REPORT
      ;;BUS ADDRESS REG CHANGED

      ;;CHECK COLUMN COUNT REG
      ;;BRANCH IF OK
      ;;CORRECT 'CDC' CONTENTS FOR ERROR REPORT
      ;;COLUMN COUNT REG CHANGED

      *****
      *TEST 23 EXECUTE DATA, DATOB(LOW BYTE) LOAD ON COLUMN COUNT
      *****
      TST23: SCOPE

```

MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 43
DZCDB.P11 T23 EXECUTE DATI,DATOB(LOW BYTE) LOAD ON COLUMN COUNT

SEQ 0115

2161	011364	005014		CLR	2CDC	; CLEAR COLUMN COUNT REGISTER
2162						; PRIOR TO BYTE LOADING
2163	011366	005114		COM	2CDC	
2164	011370	012700	000152	MOV	#152,RO	
2165	011374	110014		MOVB	RO,2CDC	; ATTEMPT TO LOAD LOWER BYTE
2166						; OF COLUMN COUNT REGISTER
2167	011376	020014		CMP	RO,2CDC	; DID HIGH BYTE GET LOADED AS
2168						; WELL ON A LOW BYTE LOADING?
2169	011400	001403		BEQ	15	; BRANCH IF YES
2170	011402	010037	001210	MOV	RO,\$TMP4	; STORE GOOD DATA - SHOULD BE
2171	011406	104034		ERROR	+34	; HIGH BYTE NOT LOADED ON A LOW
2172						; BYTE LOAD OF COLUMN COUNT REGISTER
2173	011410			15:		
2174						
2175						
2176						
2177						
2178	011410	000004				
2179	011412	005014		ST24: SCOPE		
2180				CLR	2CDC	; CLEAR COLUMN COUNT REGISTER
2181	011414	012700	125252			; PRIOR TO BYTE LOADING
2182	011420	110064	000001	MOV	#125252,RO	; SET VALUE FOR BYTE LOAD FROM RO
2183				MOVB	RO,+1(R4)	; ATTEMPT TO LOAD HIGH BYTE
2184	011424	005714				; OF COLUMN COUNT REGISTER
2185				TST	2CDC	; DID LOW BYTE GET LOADED AS
2186	011426	001403				; WELL ON HIGH BYTE LOADING?
2187	011430	005037	001210	REQ	15	; BRANCH IF NO
2188	011434	104034		CLR	\$TMP4	; STORE GOOD DATA - SHOULD BE
2189				ERROR	+34	; LOW BYTE LOADED ON A HIGH
2190	011436					; BYTE LOAD OF COLUMN COUNT REGISTER
2191				15:		
2192						
2193						
2194						
2195	011436	000004				
2196	011440	005014		ST25: SCOPE		
2197				CLR	2CDC	; CLEAR COLUMN COUNT REGISTER
2198	011442	012714	100000			; PRIOR TO 'DATIP' PROCESS
2199				MOV	#100000,2CDC	; SET A KNOWN VALUE INTO COLUMN
2200	011446	005414				; COUNT REGISTER
2201				NEG	2CDC	; PERFORM DATIP, ON COLUMN COUNT
2202	011450	022714	100000			; REGISTER
2203	011454	001404		CMP	#100000,2CDC	; IS CONTENTS = 100000?
2204	011456	012737	100000 001210	BEQ	15	; BRANCH IF YES
2205	011464	104034		MOV	#100000,\$TMP4	; STORE GOOD DATA - SHOULD BE
2206				ERROR	+34	; CONTENTS OF COLUMN COUNT REGISTER
2207	011466					; INCORRECT
2208				15:		
2209						
2210						
2211						
2212	011466	000004		ST26: SCOPE		
2213	011470	005015		CLR	2CDA	; CLEAR BUS ADDRESS REGISTER
2214						; PRIOR TO BYTE LOADING

M09

M3INDEC - 11 - DZCDB-8
DZCDB.P11 T26MACY11 27(654) 1-JUL-77 08:39 PAGE 44
EXECUTE DATI,DATOB(LOW BYTE) LOAD ON BUS ADDRESS

SEQ 0116

```

2215 011472 005115          COM      ACDA
2216 011474 012700 000152  MOV      #152,RO
2217 011500 110015          MOV      RO,ACDA
2218
2219 011502 020015          CMP      RO,ACDA
2220
2221 011504 001403          BEQ      15
2222 011506 010037 001210  MOV      RO,$TMP4
2223 011512 104033          ERROR +33
2224
2225 011514          15:
2226
2227 ;*****
2228 ;*TEST 27      EXECUTE DATI,DATOB(HIGH BYTE) LOAD ON BUS ADDRESS
2229 ;*****
2230 011514 000004  †ST27: SCOPE
2231 011516 005015  CLR      ACDA
2232
2233 011520 012700 125252  MOV      #125252,RO
2234 011524 110065 000001  MOV      RO,+1(R5)
2235
2236 011530 005715          TST      ACDA
2237
2238 011532 001403          BEQ      15
2239 011534 005037 001210  CLR      $TMP4
2240 011540 104033          ERROR +33
2241
2242 011542          15:
2243
2244 ;*****
2245 ;*TEST 30      EXECUTE DATI,DATIP ON BUS ADDRESS REGISTER
2246 ;*****
2247 011542 000004  †ST30: SCOPE
2248 011544 005015  CLR      ACDA
2249
2250 011546 012715 100000  MOV      #100000,ACDA
2251
2252 011552 005415          NEG      ACDA
2253
2254 011554 022715 100000  CMP      #100000,ACDA
2255 011560 001404          BEQ      15
2256 011562 012737 100000 001210  MOV      #100000,$TMP4
2257 011570 104033          ERROR +33
2258
2259 011572          15:
2260
2261 ;*****
2262 ;*TEST 31      WORD COUNT OVERFLOW TO 2ND CARD
2263 ;*****
2264 011572 000004  †ST31: SCOPE
2265 011574 004737 025744  JSR      PC INIT
2266 011600 012712 012146  MOV      $TINT31,ADINT
2267
2268 011604 005046          CLR      -(SP)

```

```

; ATTEMPT TO LOAD LOWER BYTE
; OF BUS ADDRESS REGISTER
; DID HIGH BYTE GET LOADED AS
; WELL ON A LOW BYTE LOADING?
; BRANCH IF YES
; STORE GOOD DATA - SHOULD BE
; HIGH BYTE NOT LOADED ON A LOW
; BYTE LOAD OF BUS ADDRESS REGISTER

```

```

; CLEAR BUS ADDRESS REGISTER
; PRIOR TO BYTE LOADING
; SET VALUE FOR BYTE LOAD FROM RO
; ATTEMPT TO LOAD HIGH BYTE
; OF BUS ADDRESS REGISTER
; DID LOW BYTE GET LOADED AS
; WELL ON HIGH BYTE LOADING?
; BRANCH IF NO
; STORE GOOD DATA - SHOULD BE
; LOW BYTE LOADED ON A HIGH
; BYTE LOAD OF BUS ADDRESS REGISTER

```

```

; CLEAR BUS ADDRESS REGISTER
; PRIOR TO 'DATIP' PROCESS
; SET A KNOWN VALUE INTO BUS
; ADDRESS REGISTER
; PERFORM DATIP, ON BUS ADDRESS
; REGISTER
; IS CONTENTS = 100000?
; BRANCH IF YES
; STORE GOOD DATA - SHOULD BE
; CONTENTS OF BUS ADDRESS REGISTER
; INCORRECT

```

```

; INITIALIZE
; SET UP A RETURN ADDRESS
; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
;

```

MACINDEC .1 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 45
 DZCDB P.1 T31 WORD COUNT OVERFLOW TO 2ND CARD

SEQ 0117

2269	011606	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
2270	011612	012737	011622	000034	MOV	#64\$, 34	;; SETUP NEW TRAP VECTOR
2271	011620	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
2272	011622	016666	000002	000006	64\$: MOV	2(SP), 6(SP)	;;
2273	011630	012716	011636		MOV	#65\$, (SP)	;; REPLACE OLD PC WITH NEW
2274	011634	000002			RTI		;; RESTORE PSW
2275	011636	012637	000034		65\$: MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
2276	011642	012637	001214		MOV	(SP)+, \$TMP6	
2277	011646	052737	000340	001214	BIS	#340, \$TMP6	
2278	011654	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
2279	011660	012746	011666		MOV	#66\$, -(SP)	;; PUT NEW PC ON STACK
2280	011664	000002			RTI		;; POP NEW PC AND PS
2281	011666			66\$:			
2282						THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV F3, 2(ADINT)"	
2283	011666	005046			CLR	-(SP)	
2284	011670	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
2285	011674	012737	011704	000034	MOV	#67\$, 34	;; SETUP NEW TRAP VECTOR
2286	011702	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
2287	011704	016666	000002	000006	67\$: MOV	2(SP), 6(SP)	;;
2288	011712	012716	011720		MOV	#68\$, (SP)	;; REPLACE OLD PC WITH NEW
2289	011716	000002			RTI		;; RESTORE PSW
2290	011720	012637	000034		68\$: MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
2291	011724	012662	000002		MOV	(SP)+, 2(ADINT)	
2292						THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"	
2293	011730	005046			CLR	-(SP)	
2294	011732	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
2295	011736	012737	011746	000034	MOV	#69\$, 34	;; SETUP NEW TRAP VECTOR
2296	011744	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
2297	011746	016666	000002	000006	69\$: MOV	2(SP), 6(SP)	;;
2298	011754	012716	011762		MOV	#70\$, (SP)	;; REPLACE OLD PC WITH NEW
2299	011760	000002			RTI		;; RESTORE PSW
2300	011762	012637	000034		70\$: MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
2301	011766	012637	001214		MOV	(SP)+, \$TMP6	
2302	011772	042737	000340	001214	BIC	#340, \$TMP6	
2303	012000	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
2304	012004	012746	012012		MOV	#71\$, -(SP)	;; PUT NEW PC ON STACK
2305	012010	000002			RTI		;; POP NEW PC AND PS
2306	012012			71\$:			
2307	012012	005046			CLR	-(SP)	
2308	012014	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
2309	012020	012737	012030	000034	MOV	#72\$, 34	;; SETUP NEW TRAP VECTOR
2310	012026	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
2311	012030	016666	000002	000006	72\$: MOV	2(SP), 6(SP)	;;
2312	012036	012716	012044		MOV	#73\$, (SP)	;; REPLACE OLD PC WITH NEW
2313	012042	000002			RTI		;; RESTORE PSW
2314	012044	012637	000034		73\$: MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
2315	012050	012637	001214		MOV	(SP)+, \$TMP6	
2316	012054	052737	000000	001214	BIS	#000, \$TMP6	
2317	012062	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
2318	012066	012746	012074		MOV	#74\$, -(SP)	;; PUT NEW PC ON STACK
2319	012072	000002			RTI		;; POP NEW PC AND PS
2320	012074			74\$:			
2321	012074	012714	177657		MOV	#-81., @CDC	;; SET COLUMN COUNT TO READ 81. COLUMNS
2322							;; I.E. - WRAP AROUND INTO 2ND CARD

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DZCDB.P11 T32 BUS ADDRESS ODD & TRANSFER IN NON-PACK MODE

Address	Hex	ASCII	Comments
2377	012262	005037	000012
2378			CLR 2#12 ; UNEXPECTED TRAPS TO LOCATION 10
2379			; CHECK SW7 AND RETURN TO TEST1 IF SET, AFTER RINGING BELL
2380	012266	000004	000200 166640 ; OTHERWISE GO INTO THE DATA TEST
2381	012270	032777	000200 166640 ; OTHERWISE GO INTO THE DATA TEST
2382	012276	001406	000200 166640 ; OTHERWISE GO INTO THE DATA TEST
2383	012300	104400	001222 ; OTHERWISE GO INTO THE DATA TEST
2384	012304	005137	001254 ; OTHERWISE GO INTO THE DATA TEST
2385	012310	000137	002534 ; OTHERWISE GO INTO THE DATA TEST
2386			
2387			

[illegible]

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;THIS MARKS THE END OF THE INSTRUCTION TESTING
;THIS SECTION REQUIRED 16 CARDS FOR COMPLETION

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[illegible]

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2398
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;*****
;DATA RELIABILITY TEST FOR CD11
;*****
;CHECK SWR FOR TYPE OF DECK BEING TESTED, AND INITIALIZE POINTERS
DATST: TYPE, MDATA ;INDICATE "ENTERING DATA TESTS"
;INITIALIZE TABLE OFFSET FOR CARD #1 OF DECK
CLR STMP5 ;MAKE SURE COLUMN COUNT IS ZERO
CLR CLCNT ;SETUP CARD COUNT TO ENTER DATA TABLE AT BEGINNING
CLR CDCNT ;FLAG SET PREVENTS PRINTING OUT ERROR HEADING
CLR ERFLG ;CHECK BIT 4 OF QSWR FOR TYPE OF DECK
BIT #20, QSWR ;BRANCH IF NOT SET TO LOAD ALPHANUMERIC POINTERS
BEQ ALP1 ;BIT 2 SET, LOAD BINARY TABLE POINTERS
MOV #BINCD, TSTART
MOV #BINEND+2, TEND
MOV #MSG15, DECK
BR CONTD ;BRANCH AROUND ALPHANUMERIC POINTERS
ALP1: MOV #ALPCD, TSTART ;LOAD ALPHANUMERIC TABLE POINTERS
MOV #ALPEND+2, TEND
MOV #MSG14, DECK
CONTD: TST TRFLG ;CHECK TRACE TRAP FLAG
BNE TRP1 ;BRANCH IF FLAG WAS SET
NOTRP1: MOV PR7, -(SP) ;;PUT NEW PS ON STACK
MOV #64$, -(SP) ;;PUT NEW PC ON STACK
RTI ;;POP NEW PC AND PS
64$: BR DCNT1
TRP1: BIT #10000, QSWR ;CHECK SW12 TO INHIBIT TRACE TRAPPING

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MAINDEC - 11 - DZCDB-8
DZCDB.P11MACY11 27(654) 1-JUL-77 08:39 PAGE 48
DATA RELIABILITY TEST

SEQ 0120

2431	012446	001366		BNE	NOTRP1		; BRANCH IF SET
2432	012450	013746	000360	MOV	TRACE, -(SP)		; PUT NEW PS ON STACK
2433	012454	012746	012462	MOV	#64\$, -(SP)		; PUT NEW PC ON STACK
2434	012460	000002		RTI			; POP NEW PC AND PS
2435	012462			64\$:			
2436	012462	004737	025744	DCNT1:	JSR PC, INIT		; INITIALIZE CARD READER STATUS REGISTER
2437							
2438							; SET UP INTERRUPT SERVICING, AND START READING
2439	012466	012712	012730	MOV	#SRVC, ADINT		; SETUP RETURN POINTER
2440							; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
2441	012472	005046		CLR	-(SP)		
2442	012474	013746	000034	MOV	34, -(SP)		; SAVE CURRENT TRAP VECTOR
2443	012500	012737	012510	MOV	#64\$, 34		; SETUP NEW TRAP VECTOR
2444	012506	104400		TRAP			; PUSH OLD PSW AN PC ON STACK
2445	012510	016666	000002	64\$:	MOV 2(SP), 6(SP)		
2446	012516	012716	012524	MOV	#65\$, (SP)		; REPLACE OLD PC WITH NEW
2447	012522	000002		RTI			; RESTORE PSW
2448	012524	012637	000034	65\$:	MOV (SP)+, 34		; RESTORE OLD TRAP VECTOR
2449	012530	012637	001214	MOV	(SP)+, \$TMP6		
2450	012534	042737	000340	BIC	#340, \$TMP6		
2451	012542	013746	001214	MOV	\$TMP6, -(SP)		; PUT NEW PS ON STACK
2452	012546	012746	012554	MOV	#66\$, -(SP)		; PUT NEW PC ON STACK
2453	012552	000002		RTI			; POP NEW PC AND PS
2454	012554			66\$:			
2455							; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
2456	012554	005046		CLR	-(SP)		
2457	012556	013746	000034	MOV	34, -(SP)		; SAVE CURRENT TRAP VECTOR
2458	012562	012737	012572	MOV	#67\$, 34		; SETUP NEW TRAP VECTOR
2459	012570	104400		TRAP			; PUSH OLD PSW AN PC ON STACK
2460	012572	016666	000002	67\$:	MOV 2(SP), 6(SP)		
2461	012600	012716	012606	MOV	#68\$, (SP)		; REPLACE OLD PC WITH NEW
2462	012604	000002		RTI			; RESTORE PSW
2463	012606	012637	000034	68\$:	MOV (SP)+, 34		; RESTORE OLD TRAP VECTOR
2464	012612	012662	000002	MOV	(SP)+, 2(ADINT)		
2465	012616	013701	015326	MOV	TSTART, R1		; SET UP TABLE POINTER
2466	012622	012700	045442	MOV	#BUFBEQ, R0		; SET UP BUFFER POINTER
2467	012626	012737	177660	MOV	#-120, SIZE		; SET UP "SIZE"
2468	012634	012737	177660	MOV	#-120, OFFSET		
2469	012642	013714	015314	MOV	SIZE, \$CDC		; SET UP COLUMN COUNT
2470	012646	010015		MOV	R0, \$CDA		; SET UP ADDRESS REG
2471	012650	012713	000100	MOV	#100, \$CDS		; ENABLE INTERRUPTS
2472	012654	032777	000010	BIT	#10, \$SWR		; CHECK FOR PACK MODE ONLY
2473	012662	001406		BEQ	CDREAD		; BRANCH IF NOT SET
2474	012664	032777	000004	BIT	#4, \$SWR		; CHECK FOR IMAGE MODE ONLY
2475	012672	001002		BNE	CDREAD		; BRANCH IF SET
2476	012674	004737	014522	JSR	PC, PAKSET		; SET UP FOR PACKING MODE
2477	012700	005213		CDREAD:	INC \$CDS		; RFAO
2478	012702	032713	004000	BKGND:	BIT #4000, \$CDS		; CHECK FOR DATA ERROR
2479	012706	001775		BEQ	BKGND		
2480	012710	011437	015340	MOV	\$CDC, DERCNT		; SAVE THE COLUMN COUNT
2481	012714	032713	004000	BKGND1:	BIT #4000, \$CDS		; CHECK FOR DATA ERROR
2482	012720	001375		BNE	BKGND1		; BRANCH IF SET
2483	012722	005037	015340	CLR	DERCNT		; CLR COLUMN COUNT SAVER
2484	012726	000765		BR	BKGND		

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MAINDEC - 11 - DZCDB-B
DZCDB.P11MACY11 27(654) 1-JUL-77 08:39 PAGE 49
DATA RELIABILITY TEST

SEQ 0121

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2485
2486 ; INTERRUPT SERVICE ROUTINE WHICH RUNS DATA RELIABILITY TEST
2487 SRVC: TSTB 2CDS ; CHECK CONTROLLER READY
2488 BMI 1$ ; BRANCH IF SET
2489 ERROR +23 ; CONTROLLER READY NOT SET
2490 1$: BIT #2, 2CDS ; CHECK FOR DATA PACK MODE
2491 BEQ ISR ; BRANCH IF IMAGE MODE
2492 JMP PSR ; JUMP TO PACK MODE ROUTINE
2493
2494 ISR: BIT #177477, 2CDS ; CHECK ALL BITS EXCEPT 6 AND 7
2495 BNE 1$ ; BRANCH TO ERROR ROUTINE
2496 BR 2$ ; OTHERWISE, CONTINUE ON
2497 1$: JMP ISRER ; GO TO ERROR ROUTINE
2498 2$: TST 2CDC ; CHECK COLUMN COUNT
2499 BEQ 3$ ; BRANCH IF OK
2500 CLR $TMP4 ; CORRECT 'CDC' CONTENTS FOR ERROR REPORT
2501 ERROR +34 ; COLUMN COUNT REGISTER NOT C
2502
2503 3$: MOV RO, BUFEND
2504 SUB SIZE, BUFEND
2505 SUB SIZE, BUFEND
2506 CMP BUFEND, 2CDA
2507 BEQ ISRNC
2508 MOV BUFEND, $TMP4 ; CORRECT 'CDA' CONTENTS FOR ERROR REPORT
2509 ERROR +33
2510
2511 ISRNC: MOV SIZE, COUNT
2512 ISRLP: TST 2CDD8
2513
2514 BMI 1$
2515 MOV (R1)+, $TMP0
2516 BIC #170000, $TMP0
2517 CMP $TMP0, (R0)+
2518 BNE ISRDE
2519 BR ISRRT
2520 1$: CMP (R0)+, (R1)+
2521 BNE ISRDE
2522 ISRRT: CMP R1, TEND
2523 BMI 1$
2524 MOV TSTART, R1
2525 1$: INC COUNT
2526 BEQ ISRBE
2527 INC CLCNT
2528 ADD #2, $TMP5
2529 CMP CLCNT, #120
2530 BNE ISRLP
2531 JSR PC, NXCRD
2532 TST (R1)+
2533 BR ISRLP
2534
2535 ISRBE: JSR PC, NXCRD ; GO TO NEXT CARD
2536 ISRNX: TST (R1)+
2537 BIT #4, 2SWR ; CHECK FOR IMAGE MODE ONLY
2538 BNE ISRNX1 ; BRANCH IF SET

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MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 50
DZCDB.P11 DATA RELIABILITY TEST

SEQ 0.22

2539	013166	004737	014522		JSR	PC,	PAKSET	;SET UP FOR PACKING MODE
2540	013172	000137	014436		ISRNX1: JMP	SRETRN		;CALCULATE "SIZE" AND RETURN
2541								
2542								
2543	013176	005737	015332		ISRDE: TST	CD CNT		;CHECK FOR FIRST CARD
2544	013202	001102			BNE	ISR D2		;BRANCH IF NOT
2545	013204	005740			ISR D1: TST	-(R0)		;SUB 2 FROM POINTER
2546	013206	005237	015332		INC	CD CNT		
2547	013212	005777	166022		TST	CD DB		;ARE WE ON A CARD READER WITH
2548								;ECO #14 INSTALLED?
2549	013216	100411			BMI	1\$		;BRANCH IF YES
2550	013220	012137	001200		MOV	(R1)+, STMP0		;GET THE TABLE VALUE
2551	013224	042737	170000	001200	BIC	#170000, STMP0		;STRIP OFF TOP 4 BITS BEFORE COMPARISON
2552	013232	023720	001200		CMP	STMP0, (R0)+		;DOES VALUE MATCH THAT DUMPED INTO MEMORY?
2553	013236	001051			BNE	6\$		;BRANCH IF NO
2554	013240	000402			BR	2\$		;OTHERWISE, CONTINUE ON
2555	013242	022021			1\$: CMP	(R0)+, (R1)+		;TEST THE DATA
2556	013244	001046			BNE	6\$		;BRANCH IF NOT THE SAME
2557	013246	062701	000042		2\$: ADD	#42, R1		;ADD THE MAGIC NUMBER
2558	013252	020137	015330		CMP	R1, TEND		;CHECK FOR RAP AROUND
2559	013256	003402			BLE	3\$		;BRANCH IF NOT
2560	013260	162701	000240		SUB	#240, R1		;RAP AROUND
2561	013264	005777	165750		3\$: TST	CD DB		;ARE WE ON A CARD READER WITH
2562								;ECO #14 INSTALLED?
2563	013270	100412			BMI	7\$		;BRANCH IF YES
2564	013272	011137	001200		MOV	(R1), STMP0		;GET THE TABLE VALUE
2565	013276	042737	170000	001200	BIC	#170000, STMP0		;STRIP OFF TOP 4 BITS BEFORE COMPARISON
2566	013304	026037	000042	001200	CMP	42(R0), STMP0		;DOES VALUE MATCH FOR A DOUBLE?
2567	013312	001014			BNE	5\$		;BRANCH IF NO
2568	013314	000403			BR	4\$		;OTHERWISE, CONTINUE ON
2569	013316	026011	000042		7\$: CMP	42(R0), (R1)		;CHECK FOR DOUBLE MATCH
2570	013322	001010			BNE	5\$		;BRANCH IF NOT
2571	013324	162701	000042		4\$: SUB	#42, R1		;SUBTRACT THE MAGIC NUMBER
2572	013330	020137	015326		CMP	R1, TSTART		;CHECK FOR RAP AROUND
2573	013334	003260			BGT	ISRRT		;BRANCH IF NOT
2574	013336	062701	000240		ADD	#240, R1		;RAP AROUND
2575	013342	000655			BR	ISRRT		;GO CHECK REST OF DATA
2576								
2577	013344	162701	000042		5\$: SUB	#42, R1		;SUBTRACT MAGIC NUMBER
2578	013350	020137	015326		CMP	R1, TSTART		;CHECK FOR RAP AROUND
2579	013354	003002			BGT	6\$		;BRANCH IF NOT
2580	013356	062701	000240		ADD	#240, R1		;RAP AROUND
2581	013362	020137	015330		6\$: CMP	R1, TEND		
2582	013366	001306			BNE	ISR D1		
2583	013370	013701	015326		MOV	TSTART, R1		;OBTAIN THE 1ST TABLE ENTRY
2584	013374	063701	001212		ADD	STMP5, R1		;ADD TABLE OFFSET FOR CARD #1 OF DECK
2585	013400	062701	000002		ADD	#2, R1		;GO AHEAD ONE TABLE POSITION FOR ERROR REPORT
2586	013404	005037	015332		CLR	CD CNT		;RESET CARD COUNTER
2587	013410	032777	020000	165520	ISR D2: BIT	#20000, JSWR		;CK SW13 FOR INHIBIT PRINTOUT
2588	013416	001026			BNE	ISR D4		;BRANCH IF SET
2589	013420	004737	014554		JSR	PC, TYHEAD		;TYPE HEADING, DECK, CD CNT, CL CNT
2590	013424	005777	165610		TST	CD DB		;ARE WE ON A CARD READER WITH
2591								;ECO #14 INSTALLED?
2592	013430	100410			BMI	1\$		;BRANCH IF YES

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MAINDEC - 11 - DZCDB-B
DZCDB.P11MACY11 27(654) 1-JUL-77 08:39 PAGE 51
DATA RELIABILITY TEST

SEQ 0123

2593	013432	014137	001200		MOV	-(R1), STMPD	; GET THE TABLE VALUE
2594	013436	042737	170000	001200	BIC	#170000, STMPD	; STRIP OFF TOP 4 BITS BEFORE PRINTOUT
2595	013444	013746	001200		MOV	STMPD, -(SP)	; PLACE VALUE ON STACK FOR PRINTOUT
2596	013450	000401			BR	2\$	; GO TO PRINT OUT VALUE
2597	013452	014146		1\$:	MOV	-(R1), -(SP)	; PUSH SHOULD BE DATA ONTO STACK
2598	013454	104402		2\$:	TYPOS		; SYSMAC ROUTINE
2599	013456	006			.BYTE	6	; FOR
2600	013457	001			.BYTE	1	; ERROR TYPEOUT
2601	013460	104400	030545		TYPE	SPACE	
2602	013464	014046			MOV	-(R0), -(SP)	; PUSH WAS DATA
2603	013466	104402			TYPOS		; ONTO STACK
2604	013470	006			.BYTE	6	; FOR
2605	013471	001			.BYTE	1	; ERROR TYPEOUT
2606	013472	022021			CMP	(R0)+, (R1)+	; RESET POINTERS
2607	013474	005777	165436	ISRDE4:	TST	2\$WR	; CHECK FOR HALT ON ERROR
2608	013500	100001			BPL	1\$	; BRANCH IF HALT ON ERROR NOT SET
2609	013502	000000			HALT		; HALT ON ERROR SET
2610	013504	000137	013076	1\$:	JMP	ISRRT	
2611							
2612							
2613							
2614	013510	100402					
2615	013512	104026					
2616	013514	000447					
2617							
2618	013516	032713	010000	ISRER:	BMI	ISRE1	; INTERRUPT DUE TO SOME KIND OF ERROR
2619	013522	001414			ERROR	+26	; THESE ERRORS ARE DISASTEROUS, THEREFORE THE DATA TEST IS RESTARTED
2620	013524	032713	040000		BR	ISRST	; BRANCH ON ERROR BIT 15
2621	013530	001002					; ERROR BIT 15 NOT SET
2622	013532	104035					
2623	013534	000413					
2624							
2625	013536	004737	014650	1\$:	JSR	PC, LASTCD	; CHECK FOR OFF-LINE
2626	013542	002002			BGE	2\$	; CHECK FOR CARD READER ERROR
2627	013544	104057			ERROR	+57	; BRANCH IF SET
2628	013546	000432			BR	ISRST	; OFF-LINE BUT NOT CARD READER ERROR
2629	013550	000137	013034	2\$:	JMP	ISRNC	; IF BOTH CARD - GO HERE!
2630							
2631	013554	032713	040000	ISRE2:	BIT	#40000, 2CDS	; CHECK FOR CARD READER ERROR
2632	013560	001401			BEQ	ISRE3	; BRANCH IF NOT
2633	013562	104060			ERROR	+60	; CARD READER ERROR BUT NOT OFF LINE
2634							
2635	013564	032713	020000	ISRE3:	BIT	#20000, 2CDS	
2636	013570	001401			BEQ	1\$	
2637	013572	104061			ERROR	+61	; END OF FILE ERROR (M1200 ONLY)
2638							
2639	013574	032713	004000	1\$:	BIT	#4000, 2CDS	
2640	013600	001401			BEQ	2\$	
2641	013602	104062			ERROR	+62	; DATA ERROR
2642							
2643	013604	032713	002000	2\$:	BIT	#2000, 2CDS	
2644	013610	001401			BEQ	3\$	
2645	013612	104063			ERROR	+63	; DATA LATE ERROR
2646							

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DZCDB.P11 DATA RELIABILITY TEST

SEQ 0124

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2647 013614 032713 001000 3S: BIT #1000, 2CDS
2648 013620 001401 BEQ 4S
2649 013622 104064 ERROR +64 ;NON-EXISTANT MEMORY ERROR
2650 013624 032713 077000 4S: BIT #77000, 2CDS ;CHECK ALL ERROR BITS
2651 013630 001001 BNE ISRST ;BRANCH IF AT LEAST ONE
2652 013632 104037 ERROR +37 ;NONE OF THE ERROR BITS SET
2653 013634 000137 015306 ISRST: JMP DATRST ;RESTART THE ENTIRE DATA TEST
2654
2655 013640 032713 177475 PSR: BIT #177475, 2CDS ;CHECK ALL BITS EXCEPT 1,6 AND 7
2656 013644 001402 BEQ 1S ;BRANCH IF OK
2657 013646 000137 014256 JMP PSRER ;OTHERWISE, GO TO REPORT ERROR
2658 013652 005714 1S: TST 2CDC ;CHECK COLUMN COUNT REG.
2659 013654 001403 BEQ 2S ;BRANCH IF OK
2660 013656 005037 071210 CLR STMP4 ;CORRECT 'CDC' CONTENTS FOR ERROR REPORT
2661 013662 104034 ERROR +34 ;
2662 013664 010037 015320 2S: MOV RO, BUFEND
2663 013670 163737 015314 015320 SUB SIZE, BUFEND
2664 013676 023715 015320 CMP BUFEND, 2CDA
2665 013702 001404 BEQ PSRNC
2666 013704 013737 015320 001210 MOV BUFEND, STMP4 ;CORRECT 'CDA' CONTENTS FOR ERROR REPORT
2667 013712 104033 ERROR +33
2668 013714 013737 015314 001250 PSRNC: MOV SIZE, COUNT ;SET UP COLUMN COUNTER
2669 013722 122021 PSRLP: CMPB (RO)+, (R1)+ ;TEST THE DATA
2670 013724 001052 BNE PSRDE ;BRANCH IF DATA ERROR
2671 013726 020137 015330 PSRRT: CMP R1, TEND ;CHECK FOR END OF TABLE
2672 013732 100402 BMI 1S ;BRANCH IF NOT
2673 013734 013701 015326 MOV TSTART, R1 ;MOVE POINTER TO TOP OF TABLE
2674 013740 005237 001250 1S: INC COUNT ;CHECK FOR END OF BUFFER
2675 013744 001415 BEQ PSRBE ;BRANCH IF BUFFER END
2676 013746 005237 015334 INC CLCNT ;KEEP TRACK OF COLUMNS
2677 013752 062737 000001 001210 ADD #1, STMP4 ;UPDATE TABLE OFFSET FOR CARD #1 OF DECK
2678 013760 023727 015334 000120 CMP CLCNT, #120 ;CHECK FOR END OF CARD
2679 013766 001355 BNE PSRLP ;BRANCH IF NOT END OF CARD
2680 013770 004737 014710 JSR PC, NXCRD ;GO TO NEXT CARD
2681 013774 105721 TSTB (R1)+ ;UPDATE TABLE POINTER FOR NEXT CARD
2682 013776 000751 BR PSRLP
2683
2684 014000 004737 014710 PSRBE: JSR PC, NXCRD ;GO TO NEXT CARD
2685 014004 105721 PSRNX: TSTB (R1)+
2686 014006 032777 000010 165122 BIT #10, 2SWR
2687 014014 001014 BNE PSRNX1
2688 014016 162737 000240 015326 SUB #160., TSTART ;MOVE TABLE POINTER TO IMAGE TABLE
2689 014024 162737 000120 015330 SUB #80., TEND
2690 014032 162701 000240 SUB #160., R1 ;UPDATE TABLE POINTER
2691 014036 063701 015332 ADD CDCNT, R1 ;COMPENSATE FOR BYTES
2692 014042 042713 000002 BIC #2, 2CDS ;CLR PACKING MODE BIT
2693 014046 000137 014436 PSRNX1: JMP SRTRN ;CALCULATE "SIZE" AND READ MORE CARDS
2694
2695 ;DATA ERROR WAS DETECTED. OUTPUT ERROR PRINTOUT
2696 014052 005737 015332 PSRDE: TST CDCNT
2697 014056 001051 BNE PSRD2
2698 014060 105740 PSRD1: TSTB -(R0) ;SUB 1 FROM POINTER
2699 014062 005237 015332 INC CDCNT
2700 014066 122021 CMPB (R0)+, (R1)+ ;TEST THE DATA

```

2701	014070	001031		BNE	1\$			; BRANCH IF NOT THE SAME
2702	014072	062701	000021	ADD	#21,	R1		; ADD THE MAGIC NUMBER
2703	014076	020137	015330	CMP	R1,	TEND		; CHECK FOR RAP AROUND
2704	014102	003402		BLE	2\$			; BRANCH IF NOT
2705	014104	162701	000120	SUB	#120,	R1		; RAP AROUND
2706	014110	126011	000021	2\$: CMPB	21(R0),	(R1)		; CHECK FOR DOUBLE MATCH
2707	014114	001010		BNE	3\$			; BRANCH IF NOT
2708	014116	162701	000021	SUB	#21,	R1		; SUBTRACT THE MAGIC NUMBER
2709	014122	020137	015326	CMP	R1,	TSTART		; CHECK FOR RAP AROUND
2710	014126	003277		BGT	PSRR,			; BRANCH IF NOT
2711	014130	062701	000120	ADD	#120,	R1		; RAP AROUND
2712	014134	000674		BR	PSRR+			; GO CHECK REST OF DATA
2713								
2714	014136	162701	000021	3\$: SUB	#21,	R1		; SUBTRACT MAGIC NUMBER
2715	014142	020137	015326	CMP	R1,	TSTART		; CHECK FOR RAP AROUND
2716	014146	003002		BGT	1\$			; BRANCH IF NOT
2717	014150	062701	000120	ADD	#120,	R1		; RAP AROUND
2718	014154	020137	015330	1\$: CMP	R1,	TEND		
2719	014160	001337		BNE	PSRD1			
2720	014162	013701	015326	MOV	TSTART,R1			; OBTAIN THE 1ST TABLE ENTRY
2721	014166	063701	00.212	ADD	\$TMP5,R1			; ADD TABLE OFFSET FOR CARD #1 OF DECK
2722	014172	062701	000001	ADD	#1,R1			; GO AHEAD ONE TABLE POSITION FOR ERROR REPORT
2723	014176	005037	015332	CLR	CDCNT			; RESET CARD COUNTER
2724	014202	032777	020000	164726 PSRD2: BIT	#20000,2SWR			; CK SW13 FOR INHIBIT PRINTOUT
2725	014210	001015		BNE	PSRDE3			; BRANCH IF SET
2726	014212	004737	014554	JSR	PC,	TYHEAD		; TYPE HEADING, DECK, CDCNT, CLCNT
2727	014216	104400	030545	TYPE,	SPACE			
2728	014222	114146		MOVB,	-(R1),-(SP)			; PUSH SHOULD BE DATA
2729	014224	104402		TYPOS				; ONTO STACK
2730	014226	003		.BYTE	3			; FOR
2731	014227	000		.BYTE	0			; ERROR TYPEOUT
2732	014230	104400	030542	TYPE,	SPACE-3			
2733	014234	114046		MOVB,	-(R0),-(SP)			; PUSH WAS DATA
2734	014236	104402		TYPOS				; ONTO STACK
2735	014240	003		.BYTE	3			; FOR
2736	014241	000		.BYTE	0			; ERROR TYPEOUT
2737	014242	122021		CMPB	(R0)+, (R1)+			; RESET POINTERS
2738	014244	005777	164666	PSRDE3: TST	2SWR			; CHECK FOR HALT ON ERROR
2739	014250	100001		BPL	1\$			; BRANCH IF HALT ON ERROR NOT SET
2740	014252	000000		HALT				; HALT ON ERROR SET
2741	014254	000624		1\$: BR	PSRR+			
2742								
2743								
2744	014256	100402		PSRER: BMI	PSRE1			; BRANCH ON ERROR BIT 15
2745	014260	104026		ERROR +26				; ERROR BIT 15 NOT SET
2746	014262	000463		BR	PSRST			
2747								
2748	014264	032713	004000	PSRE1: BIT	#4000, 2CDS			
2749	014270	001414		BEQ	PSRE2			; BRANCH IF NOT
2750	014272	032713	000002	BIT	#2,	2CDS		
2751	014276	001001		BNE	1\$			
2752	014300	104065		ERROR +65				
2753	014302	032777	000020	164626 1\$: BIT	#20,	2SWR		
2754	014310	001001		BNE	2\$			; BRANCH IF BINARY DECK

J10

MAINDEC - 11 - DZCDB-B
DZCDB.P11MACY11 27(654) 1-JUL-77 08:39 PAGE 54
DATA RELIABILITY TEST

SEQ 0126

2755	014312	104066			25:	ERROR +66			
2756	014314	012737	177660	001250	PSR2:	MOV #120, COUNT		; ONLY READ ONE CARD	
2757	014322	032713	010000			BIT #10000, ACDS		; CHECK FOR OFF-LINE	
2758	014326	001415				BEQ PSRE3			
2759	014330	032713	040000			BIT #40000, ACDS		; CHECK FOR CARD READER ERROR	
2760	014334	001002				BNE 15		; BRANCH IF SET	
2761	014336	104035				ERROR +35		; OFF-LINE BUT NOT CARD READER ERROR	
2762	014340	000414				BR PSRE4			
2763									
2764	014342	004737	014650		15:	JSR PC, LASTCD		; CHECK FOR LAST CARD	
2765	014346	002402				BLT 25		; BRANCH IF NOT	
2766	014350	000137	013714			JMP PSRNC		; BRANCH IF BOTH CARD	
2767	014354	104057			25:	ERROR +57		; CARD READER ERROR BUT NOT BOTH CARD	
2768	014356	000137	015306			JMP DATRST		; RESTART THE ENTIRE TEST	
2769									
2770	014362	032713	040000		PSRE3:	BIT #40000, ACDS		; CHECK FOR CARD READER ERROR	
2771	014366	001401				BEQ PSRE4		; BRANCH IF NOT	
2772	014370	104060				ERROR +60		; CARD READER ERROR BUT NOT OFF LINE	
2773									
2774	014372	032713	020000		PSRE4:	BIT #20000, ACDS			
2775	014376	001401				BEQ 15			
2776	014400	104061				ERROR +61		; END OF FILE ERROR (M1200 ONLY)	
2777									
2778	014402	032713	002000		15:	BIT #2000, ACDS			
2779	014406	001401				BEQ 25			
2780	014410	104063				ERROR +63		; DATA LATE ERROR	
2781									
2782	014412	032713	001000		25:	BIT #1000, ACDS			
2783	014416	001401				BEQ 35			
2784	014420	104064				ERROR +64		; NON-EXISTANT MEMORY ERROR	
2785	014422	032713	077000		35:	BIT #077000, ACDS		; CHECK ALL ERROR BITS	
2786	014426	001001				BNE PSRST		; BRANCH IF AT LEAST ONE	
2787	014430	104037				ERROR +37		; NONE OF THE ERROR BITS SET	
2788	014432	000137	013722		PSRST:	JMP PSRLP		; GO CHECK THE DATA	
2789									
2790									
2791									
2792									
2793									
2794	014436	063737	015316	015314	SRETRN:	ADD OFFSET, SIZE			
2795	014444	100404				BMI SRETR1			
2796	014446	012737	177660	015316		MOV #120, OFFSET			
2797	014454	000770				BR SRETRN			
2798	014456	032737	001000	015314	SRETR1:	BIT #001000, SIZE			
2799	014464	001004				BNE SRETR4			
2800	014466	012737	000120	015316	SKETR3:	MOV #120, OFFSET			
2801	014474	000760				BR SRETRN			
2802	014476	004737	014650		SRETR4:	JSR PC, LASTCD		; CHECK FOR MORE THAN 80 CARDS	
2803	014502	003371				BGT SRETR3		; BRANCH IF GREATER	
2804	014504	013714	015314			MOV SIZE, ACDC		; SET UP COLM COUNT	
2805	014510	012700	045442			MOV #BUFBEG, RD		; RESET TABLE POINTER	
2806	014514	010015				MOV RD, ACDA		; SET UP ADDRESS REG	
2807	014516	005213				INC ACDS		; READ	
2808	014520	000002				RTI			

```

2809
2810
2811 ;SUBROUTINE TO SET PACKING MODE AND MOVE THE POINTERS FOR THE DATA.
2812 014522 062737 000240 015326 PAKSET: ADD #160., TSTART ;MOVE TABLE POINTER TO PACKED TABLE
2813 014530 062737 000120 015330 ADD #80., TEND
2814 014536 062701 000240 ADD #160., R1 ;UPDATE TABLE POINTER
2815 014542 163701 015332 SUB CDCNT, R1 ;COMPENSATE FOR BYTES
2816 014546 052713 000002 BIS #2, @CDS ;SET PACKING MODE BIT
2817 014552 000207 RTS PC
2818
2819 ;SUBROUTINE TO TYPE HEADING, TYPE OF DECK, CARD COUNT, AND COLUMN COUNT
2820 014554 005737 001260 TYHEAD: TST ERFLG ;CHECK FOR FIRST ERROR
2821 014560 001004 BNE NOHEAD ;BRANCH IF NOT
2822 014562 005237 001260 INC ERFLG ;SET FLAG
2823 014566 104400 033053 TYPE, MSG13 ;TYPE HEADING FOR DATA ERRORS
2824 014572 104400 NOHEAD: TYPE ;OUTPUT TYPE OF DECK
2825 014574 000000 DECK: DUMMY ;POINTER TO DECK TITLE
2826 014576 104400 030545 TYPE, SPACE
2827 014602 005237 015332 INC CDCNT ;ADJUST CADR COUNT
2828 014606 013746 015332 MOV CDCNT, -(SP)
2829 014612 104404 TYPDS
2830 014614 005337 015332 DEC CDCNT ;READJUST CADR COUNT
2831 014620 104400 030540 TYPE, SPACE-5
2832 014624 005237 015334 INC CLCNT ;ADJUST COLUMN COUNT
2833 014630 013746 015334 MOV CLCNT, -(SP)
2834 014634 104404 TYPDS
2835 014636 005337 015334 DEC CLCNT ;READJUST COLUMN COUNT
2836 014642 104400 030543 TYPE, SPACE-2
2837 014646 000207 RTS PC
2838
2839 ;SUBROUTINE TO CHECK FOR LAST CARD
2840 014650 013737 015314 015322 LASTCD: MOV SIZE, TEMP1
2841 014656 013737 015332 015324 MOV CDCNT, TEMP2
2842 014664 005237 015324 LSTCD1: INC TEMP2
2843 014670 062737 000120 015322 ADD #120, TEMP1
2844 014676 100772 BMI LSTCD1
2845 014700 023727 015324 000120 CMP TEMP2, #80.
2846 014706 000207 RTS PC
2847
2848 ;SUBROUTINE TO KEEP TRACK OF CARDS
2849 014710 005037 015334 NXCRD: CLR CLCNT ;RESET COLUMN COUNT
2850 014714 005037 001212 CLR STMP5
2851 014720 005237 015332 INC CDCNT ;KEEP TRACK OF CARDS
2852 014724 023727 015332 000120 CMP CDCNT, #120 ;CHECK FOR 80TH CARD
2853 014732 002001 BGE SEOP
2854 014734 000207 RTS PC ;RETURN
2855
2856 ;*****
2857
2858 .SBTTL END OF PASS ROUTINE
2859
2860 ;*INCREMENT THE PASS NUMBER ($PASS)
2861 ;*TYPE "END PASS #XXXXX" (WHERE XXXXX IS A DECIMAL NUMBER)
2862

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L10

SEQ 0128

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2863      ;*IF SW12=1 INHIBIT TRACE TRAP
2864      ;*IF THERES A MONITOR GO TO IT
2865      ;*IF THERE ISN'T JUMP TO HOOK1
2866
2867      SEOP:
2868      TST      (SP)+      ;CORRECT STACK POINTER TO REPLACE 'RTS'
2869      CMP      (SP)+, (SP)+ ;CORRECT STACK POINTER TO REPLACE 'RTI'
2870      CLR      $STNM      ;ZERO THE TEST NUMBER
2871      CLR      $TIMES      ;ZERO THE NUMBER OF ITERATIONS
2872      INC      $PASS      ;INCREMENT THE PASS NUMBER
2873      BIC      $10000, $PASS ;DON'T ALLOW A NEG. NUMBER
2874      DEC      (PC)+      ;LOOP?
2875      SEOPCT: .WORD      1
2876      BGT      $DOAGN      ;YES
2877      MOV      (PC)+, 2(PC)+ ;RESTORE COUNTER
2878      SENDCT: .WORD      1
2879      SEOPCT
2880      TYPE      $SENDMG      ;TYPE "END PASS #"
2881      MOV      $PASS, -(SP) ;SAVE $PASS FOR TYPEOUT
2882      TYPDS      ;GO TYPE--DECIMAL ASCII WITH SIGN
2883      TYPE      , $ENULL      ;TYPE A NULL CHARACTER
2884
2885      $GET42:
2886      MOV      2#42, R0      ;GET MONITOR ADDRESS
2887      BEQ      $DOAGN      ;BRANCH IF NO MONITOR
2888      RESET      ;MONITOR, CLEAR WORLD
2889      CLR      -(SP)      ;INSURE THE "T" BIT IS CLEAR
2890      MOV      $SENDAD, -(SP) ;SETUP FOR AN RTI OR RTT
2891      BR      $RTRN      ;GO DO AN RTI OR RTT TO LOAD THE PSW
2892      ;WITH A CLEARED "T" BIT
2893
2894      MOV      2#42, R0      ;GET MONITOR ADDRESS
2895      BEQ      $DOAGN      ;BRANCH IF NO MONITOR
2896      RESET      ;CLEAR THE WORLD
2897      JSR      PC, (R0)      ;GO TO MONITOR
2898      NOP      ;SAVE ROOM
2899      NOP      ;FOR
2900      NOP      ;ACT11
2901
2902      $DOAGN:
2903      CLR      -(SP)      ;RESERVE A STACK LOC. FOR THE PS
2904      MOV      2#34, -(SP) ;SETUP THE TRAP VECTOR
2905      MOV      $15, 2#34 ;TO GET THE PS
2906      TRAP
2907      15:
2908      TST      (SP)+      ;CLEAN OFF THE USED PC
2909      MOV      (SP)+, 2(SP) ;SAVE OFF THE PS
2910      MOV      (SP)+, 2#34 ;RESTORE TRAP VECTOR
2911      BIC      $20, (SP)      ;CLEAR THE "T" BIT
2912      BIT      $BIT12, 2$SWR ;RUN WITH TRACE TRAP?
2913      BR      IF NO
2914      BNE      2$
2915      STBIT      ;IS IT TIME FOR TRACE TRAP
2916      COM      2$
2917      BMI      2$
2918      BIS      $20, (SP)      ;SET TRACE TRAP
2919      MOV      $SLOOP, -(SP) ;JUMP TO START OF TEST
2920      RTI      ;RETURN--THIS IS CHANGED TO
2921      ;AN "RTT" IF "RTT" IS LEGAL

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M10

SEQ 0129

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2917                                     ;; INSTRUCTION
2918 015142 SLOOP: JMP      2#HOOK1      ;; RETURN
2919 015142 000137 015170 STBIT: 0
2920 015146 000000 SENDMG: .ASCIZ <15><12>/END PASS #/
2921 015150 005015 047105 020104
2922 015156 040520 051523 021440
2923 015164 000
2924 015165 377 377 000 SNULL: .BYTE -1,-1,0      ;; NULL CHARACTER STRING
2925
2926 015170 032777 000040 163740 HOOK1: BIT      4#0,2SWR      ;CHECK 2SWR FOR HALT AT END OF DECK
2927 015176 001402 BEQ      ONLINE      ;CONTINUE IF NOT SET
2928 015200 070000 HALT
2929 015202 000427 BR      DECKCK      ;END OF DECK, SW5 SET
2930
2931 015204 032713 010000 ONLINE: BIT      10000, 2CDS      ;CHECK FOR OFF-LINE
2932 015210 001424 BEQ      DECKCK      ;BRANCH IF NOT
2933 015212 005713 TST      2CDS      ;CHECK FOR ERROR (BIT 15)
2934 015214 100401 BMI      15      ;BRANCH IF SET OK
2935 015216 104026 ERROR +26      ;ERROR BIT 15 NOT SET
2936
2937 015220 032713 040000 1$: BIT      40000, 2CDS      ;CHECK FOR CARD READER ERROR
2938 015224 001001 BNE      25      ;BRANCH IF SET OK
2939 015226 104035 ERROR +35      ;OFF-LINE NOT DUE TO CARD READER ERROR
2940
2941 015230 032713 023471 2$: BIT      23471, 2CDS      ;CHECK FOR EXTRA BITS SET
2942 015234 001401 BEQ      35      ;BRANCH IF OK
2943 015236 104015 ERROR +15      ;EXTRA ERROR BITS SET
2944
2945 015240 012712 015250 3$: MOV      2#ONINT, 2ADINT      ;SET UP INTERRUPT VECTOR
2946 015244 000001 4$: WAIT
2947 015246 000776 BR      45      ;WAIT FOR AN INTERRUPT
2948                                     ;WAIT ON TRACE TRAPS
2949 015250 032713 000010 ONINT: BIT      10, 2CDS      ;CHECK FOR TRANSITION TO ON LINE
2950 015254 001001 BNE      15      ;BRANCH IF SET OK
2951 015256 104036 ERROR +36      ;INTERRUPT BY OTHER THAN BIT 3 SETTING
2952
2953 015260 022626 1$: CMP      (SP)+, (SP)+      ;RESTORE THE STACK
2954                                     ;WHEN CONTINUING FROM ONE DECK TO ANOTHER, CHECK SW6 FOR TYPE
2955                                     ;OF TESTING TO BE PERFORMED
2956 015262 005137 001254 DECKCK: COM      TRFLG      ;TOGGLE TRACE FLAG
2957 015266 032777 000100 163642 BIT      100,2SWR      ;CHECK SW6
2958 015274 001402 BEQ      15      ;BRANCH IF NOT SET
2959 015276 000137 002534 JMP      RESTRT      ;RERUN COMBINED INSTRUCTION AND DATA TEST
2960 015302 000137 012314 1$: JMP      DATST
2961
2962 015306 022626 DATRST: CMP      (SP)+, (SP)+      ;RESTORE THE STACK
2963 015310 000137 012314 JMP      DATST      ;RESTART DATA TEST
2964
2965 015314 177660 SIZE: -120
2966 015316 177660 OFFSET: -120
2967 015320 000000 BUFEND: 0
2968 015322 000000 TEMP1: 0
2969 015324 000000 TEMP2: 0
2970 015326 000000 TSTART: 0      ;STARTING ADDRESS OF DATA TABLE

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N10

MAINDEC 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 58
DZCDB.P11 END OF PASS ROUTINE

SEQ 0130

2971 015330 000000
2972 015332 000000
2973 015334 000000
2974 015336 000000
2975 015340 000000

TEND: 0
CDCNT: 0
CLCNT: 0
PTOFF: 0
DERCNT: 0

:END ADDRESS OF DATA TABLE
:NUMBER OF CARD BEING READ
:NUMBER OF COLUMN BEING CHECKED
:OFFSET TO POINTER FOR DATA PRINTOUT
:DATA ERROR COLUMN COUNT

B11

MAINDEC - 11 - DZCDB-8 MACY11 27(654) 1-JUL-77 08:39 PAGE 59
 DZCDB.P11 ERROR +1 FUNCTION TESTS

SEQ 0131

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2976
2977
2978 015342
2979 015342 012706 001100
2980 015346 005026
2981 015350 022706 001126
2982 015354 001374
2983 015356 012706 001100
2984 015362 012737 026326 000020
2985 015370 012737 000340 000022
2986 015376 012737 026152 000030
2987 015404 012737 000340 000032
2988 015412 012737 027374 000034
2989 015420 012737 000340 000036
2990 015426 012737 027430 000024
2991 015434 012737 000340 000026
2992 015442 013737 014774 014766
2993 015450 005037 001220
2994 015454 012737 015140 000014
2995 015462 012737 000340 000016
2996 015470 012737 000002 015140
2997 015476 012737 015524 000010
2998 015504 005046
2999 015506 012746 015514
3000 015512 000006
3001 015514 012737 000006 015140 64$:
3002 015522 000402
3003 015524 062706 000010 65$:
3004 015530 012737 000012 000010 66$:
3005 015536 005037 015146
3006 015542 012737 015542 001106
3007 015550 013746 000004
3008 015554 013746 000006
3009 015560 012737 015574 000004
3010 015566 005777 163344
3011 015572 000407
3012 015574 012737 000176 001136 67$:
3013 015602 012737 000174 001140
3014 015610 022626
3015 015612 012637 000006 68$:
3016 015616 012637 000004
3017 015622 104400 030550
3018 015626 104400 031333
3019
3020 015632 005037 001266
3021 015636 000137 016134
3022 015642
3023 015642 012706 001100
3024 015646 005026
3025 015650 022706 001126
3026 015654 001374
3027 015656 012706 001100
3028 015662 012737 026326 000020
3029 015670 012737 000340 000022

;SETUP FOR ERROR FUNCTION TEST
ER1200:
MOV #SCMTAG,R6 ;FIRST LOCATION TO BE CLEARED
CLR (R6)+ ;CLEAR MEMORY LOCATION
CMP #SBDDAT,R6 ;DONE?
BNE -6 ;LOOP BACK IF NO
MOV #STACK,SP ;SETUP THE STACK POINTER
MOV #SSCOPE,2#IOTVEC ;IOT VECTOR FOR SCOPE ROUTINE
MOV #340,2#IOTVEC+2 ;LEVEL 7
MOV #SEERROR,2#EMTVEC ;EMT VECTOR FOR ERROR ROUTINE
MOV #340,2#EMTVEC+2 ;LEVEL 7
MOV #STRAP,2#TRAPVEC ;TRAP VECTOR FOR TRAP CALLS
MOV #340,2#TRAPVEC+2 ;LEVEL 7
MOV #SPWRON,2#PWAVEC ;POWER FAILURE VECTOR
MOV #340,2#PWAVEC+2 ;LEVEL 7
MOV SENDCT,SEOPCT ;SETUP END-OF-PROGRAM COUNTER
CLR STIMES ;INITIALIZE NUMBER OF ITERATIONS
MOV #SRTN,2#TBITVEC ;SET "T" BIT VECTOR TO SRTN
MOV #340,2#TBITVEC+2 ;LEVEL 7
MOV #RTI,SRTN ;SET SRTN TO A RTI
MOV #655,2#RESVEC ;TRY TO DO A RTT
CLR -(SP) ;DUMMY PS
MOV #645,-(SP) ;AND PC
RTT ;TRY THE RTT
MOV #RTT,SRTN ;RTT IS LEGAL--SET SRTN TO A RTT
BR 665
ADD #10,SP ;RTT ILLEGAL--CLEAN OFF THE STACK
MOV #RESVEC+2,2#RESVEC ;RESTORE TRAP CATCHER
CLR STBIT ;CLEAR "T" BIT SWITCH
MOV #.SLPADR ;INITIALIZE THE LOOP ADDRESS FOR SCOPE
MOV 2#4,-(SP) ;SAVE ERROR VECTOR
MOV 2#6,-(SP)
MOV #675,4 ;SET UP TIME OUT VECTOR
TST 2#SWR ;TRY TO REFERENCE HARDWARE SWR
BR 685 ;BRANCH IF NO TIMEOUT TRAP OCCURS
MOV #SWREG,SWR ;POINT TO SOFTWARE SWR
MOV #DISPREG,DISPLAY ;POINT TO SOFTWARE DISPLAY REG
CMP (SP)+,(SP)+ ;RESTORE STACK
MOV (SP)+,2#6 ;RESTORE ERROR VECTOR
MOV (SP)+,2#4
TYPE,CRLF-3 ;MOVE MESSAGE UP ON TTY
TYPE,M1200E ;INDICATE "ENTERING ERROR FUNCTION"
;TESTING OF AN M-1200"
;CARD READER IS M-1200
CLR CD1000
JMP ER12CD

ERCD11:
MOV #SCMTAG,R6 ;FIRST LOCATION TO BE CLEARED
CLR (R6)+ ;CLEAR MEMORY LOCATION
CMP #SBDDAT,R6 ;DONE?
BNE -6 ;LOOP BACK IF NO
MOV #STACK,SP ;SETUP THE STACK POINTER
MOV #SSCOPE,2#IOTVEC ;IOT VECTOR FOR SCOPE ROUTINE
MOV #340,2#IOTVEC+2 ;LEVEL 7

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```

3030 015676 012737 026152 000030      MOV      #ERROR, #EMTVEC      ;: EMT VECTOR FOR ERROR ROUTINE
3031 015704 012737 000340 000032      MOV      #340, #EMTVEC+2    ;: LEVEL 7
3032 015712 012737 027374 000034      MOV      #STRAP, #TRAPVEC    ;: TRAP VECTOR FOR TRAP CALLS
3033 015720 012737 000340 000036      MOV      #340, #TRAPVEC+2    ;: LEVEL 7
3034 015726 012737 027430 000024      MOV      #SPWRON, #PWAVEC    ;: POWER FAILURE VECTOR
3035 015734 012737 000340 000026      MOV      #340, #PWAVEC+2    ;: LEVEL 7
3036 015742 013737 014774 014766      MOV      SENDCT, SEOPCT      ;: SETUP END-OF-PROGRAM COUNTER
3037 015750 005037 001220                CLR      $TIMES              ;: INITIALIZE NUMBER OF ITERATIONS
3038 015754 012737 015140 000014      MOV      #SRTN, #TBITVEC    ;: SET "T" BIT VECTOR TO $SRTN
3039 015762 012737 000340 000016      MOV      #340, #TBITVEC+2    ;: LEVEL 7
3040 015770 012737 000002 015140      MOV      #RTI, $SRTN        ;: SET $SRTN TO A RTI
3041 015776 012737 016024 000010      MOV      #655, #RESVEC     ;: TRY TO DO A RTT
3042 016004 005046                CLR      -(SP)              ;: DUMMY PS
3043 016006 012746 016014                MOV      #645 -(SP)          ;: AND PC
3044 016012 000006                RTT                          ;: TRY THE RTT
3045 016014 012737 000006 015140 645:   MOV      #RTT, $SRTN        ;: RTT IS LEGAL--SET $SRTN TO A RTT
3046 016022 000402                BR      665                      ;:
3047 016024 062706 000010 665:         ADD      #10, SP              ;: RTT ILLEGAL--CLEAN OFF THE STACK
3048 016030 012737 000012 000010 665:   MOV      #RESVEC+2, #RESVEC ;: RESTORE TRAP CATCHER
3049 016036 005037 015146                CLR      $TBIT              ;: CLEAR "T" BIT SWITCH
3050 016042 012737 016042 C01106      MOV      #, $LPADR          ;: INITIALIZE THE LOOP ADDRESS FOR SCOPE
3051 016050 013746 000004                MOV      #4, -(SP)          ;: SAVE ERROR VECTOR
3052 016054 013746 000006                MOV      #6, -(SP)          ;:
3053 016060 012737 016074 000004      MOV      #67$, 4              ;: SET UP TIME OUT VECTOR
3054 016066 005777 163044                TST      $SWR              ;: TRY TO REFERENCE HARDWARE SWR
3055 016072 000407                BR      685                      ;: BRANCH IF NO TIMEOUT TRAP OCCURS
3056 016074 012737 000176 001136 67$:   MOV      #SWREG, SWR          ;: POINT TO SOFTWARE SWR
3057 016102 012737 000174 001140      MOV      #DISPREG, DISPLAY ;: POINT TO SOFTWARE DISPLAY REG
3058 016110 022626                CMP      (SP)+, (SP)+        ;: RESTORE STACK
3059 016112 012637 000006 68$:         MOV      (SP)+, #6              ;: RESTORE ERROR VECTOR
3060 016116 012637 000004                MOV      (SP)+, #4              ;:
3061 016122 104400 031401                TYPE,    M1000E          ;: INDICATE "ENTERING ERROR FUNCTION
3062                                     ;: TESTING OF AN M1000/M200"
3063 016126 012737 177777 001266      MOV      #177777, CD1000 ;: CARD READER IS M1000/M200
3064 016134 012737 016146 027576 ER12CD: MOV      #ERCD12, RETURN ;: SAVE RETURN POINT FOR THIS
3065                                     ;: SECTION FOR POWER FAILURE RETURN
3066 016142 004737 045366                JSR      PC, SETUP          ;: INITIALIZE REGISTERS
3067 016146 104400 030556 ERCD12: TYPE, STMES ; TYPE MAINDEC TITLE & REV. LEVEL
3068
3069 ;*****
3070 ;*TEST 33      TEST DATA LATE
3071 ;*****
3072 016152 000004      †ST33: SCOPE
3073 ;HALT SHOULD CAUSE DATA LATE ERROR (BIT 10)
3074 ;SHOULD SET ERROR (BIT 15)
3075 016154 004737 025744                JSR      PC, INIT          ;: INITIALIZE STATUS REGISTER
3076 016160 104400 030553                TYPE,    CRLF
3077 016164 104400 035645                TYPE,    MSG32
3078 016170 104400 033605                TYPE,    MSG22
3079
3080 ;TST33 DATA LATE TEST
3081 ;"WHEN PRINTING STOPS PUT HALT AND
3082 ;SINGLE BUS CYCLE DOWN, AND HIT 'CONTINUE' ON THE
3083 016174 104400 030550                TYPE,    CRLF-3      ;: MOVE MESSAGE UP ON TTY

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 DZCDB.P11 T33 TEST DATA LATE

SEQ 0133

3084	01620C	012714	177701	MOV	#-77,	ACDC	;SET UP COLUMN COUNT
3085	016204	012715	045442	MOV	#BUF	BEG, ACDA	;SET UP BUS ADDRESS
3086	016210	000000		HALT			
3087	016212	005213		INC		ACDS	;START READING
3088	016214	105713		TSTB		ACDS	;CHECK FOR CONTROLLER READY
3089	016216	001001		BNE	15		;BRANCH IF SET OK
3090	016220	104023		ERROR	+23		;CONTROLLER READY FAILED TO SET
3091							
3092	016222	005713		15:	TST	ACDS	;CHECK FOR ERROR (BIT 15)
3093	016224	001001			BNE	25	;BRANCH IF SET OK
3094	016226	104026			ERROR	+26	;ERROR BIT 15 NOT SET
3095							
3096	016230	032713	002000	25:	BIT	#2000, ACDS	;CHECK FOR DATA LATE ERROR (BIT 10)
3097	016234	001001			BNE	35	;BRANCH IF SET OK
3098	016236	104042			ERROR	+42	;DATA LATE BIT 10 NOT SET
3099							
3100	016240	032713	075577	35:	BIT	#075577, ACDS	;CHECK FOR ANY OTHER BITS
3101	016244	001401			BEQ	45	;BRANCH IF OK
3102	016246	104004			ERROR	+4	;EXTRA BITS SET IN STATUS WORD
3103							
3104	016250			45:			
3105							
3106							
3107							
3108	016250	000004					
3109							
3110							
3111							
3112	016252	004737	025744		JSR	PC, INIT	;INITIALIZE STATUS REGISTER
3113	016256	104400	035675		TYPE,	MSG33	;TST34 OFF-LINE TEST
3114	016262	104400	031706		TYPE,	MSG3	; "PRESS CARD READER 'STOP'"
3115	016266	104400	031632		TYPE,	MSG2	; "THEN HIT 'CONTINUE' ON THE CONSOLE"
3116	016272	104400	030550		TYPE,	CRLF-3	;MOVE MESSAGE UP ON TTY
3117	016276	000000			HALT		
3118	016300	032713	010000		BIT	#10000, ACDS	;CHECK BIT 12
3119	016304	001001			BNE	15	;BRANCH IF SET
3120	016306	104043			ERROR	+43	;OFF-LINE (BIT 12) WASN'T SET
3121							
3122	016310	005713		15:	TST	ACDS	;CHECK BIT 15
3123	016312	100401			EMI	25	;BRANCH IF SET
3124	016314	104026			ERROR	+26	;ERROR (BIT 15) WASN'T SET
3125							
3126	016316	031327	067577	25:	BIT	ACDS, #067577	;CHECK FOR EXTRA BITS
3127	016322	001401			BEQ	35	;BRANCH IF OK
3128	016324	104015			ERROR	+15	;STATUS WORD ERROR
3129							
3130	016326	104400	031576	35:	TYPE,	MSG1	; "PRESS CARD READER 'RESET'";
3131	016332	104400	031632		TYPE,	MSG2	; "THEN HIT 'CONTINUE' ON THE CONSOLE"
3132	016336	104400	030550		TYPE,	CRLF-3	;MOVE MESSAGE UP ON TTY
3133	016342	000000			HALT		
3134							
3135	016344	032713	000010		BIT	#10, ACDS	;CHECK FOR TRANSITION TO ON-LINE (BIT 3)
3136	016350	001001			BNE	45	;BRANCH IF SET OK
3137	016352	104036			ERROR	+36	;TRANSITION TO ON-LINE FAILED TO SET

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 DZCDB.P11 T34 TEST ERROR AND OFF LINE BITS

SEQ 0134

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3138
3139 016354 032713 010000      4$: BIT      #10000, @CDS ;CHECK FOR OFF-LINE
3140 016360 001401             BEQ      5$ ;BRANCH IF OK
3141 016362 104044             ERROR +44 ;OFF-LINE STILL SET
3142
3143 016364 005713             5$: TST      @CDS ;CHECK ERROR (BIT 15)
3144 016366 100401             BMI      6$ ;BRANCH IF STILL SET
3145 016370 104026             ERROR +26 ;ERROR BIT 15 CLEARED
3146
3147 016372 032713 077567      6$: BIT      #077567, @CDS ;CHECK FOR EXTRA BITS
3148 016376 001401             BEQ      7$ ;BRANCH IF OK
3149 016400 104015             ERROR +15 ;EXTRA STATUS BITS SET
3150
3151 016402             7$:
3152 *****
3153 016402 000004      †ST35: SCOPE
3154 ;TRYING TO READ WHEN CARD READER IS OFF-LINE SHOULD CAUSE AN INTERRUPT
3155 ;CHECK THAT AN INTERRUPT OCCURS WHEN THE CARD READER COMES ON LINE
3156 016404 004737 025744      JSR      PC, INIT ;INITIALIZE STATUS REGISTER
3157 016410 012712 016652      MOV      #TINTC, @ADINT ;LOAD RETURN POINTER
3158 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
3159 016414 005046      CLR      -(SP) ;
3160 016416 013746 000034      MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
3161 016422 012737 016432 000034      MOV      #64$, 34 ;SETUP NEW TRAP VECTOR
3162 016430 104400      TRAP ;PUSH OLD PSW AN PCON STACK
3163 016432 016666 000002 000006 64$: MOV      2(SP), 6(SP) ;
3164 016440 012716 016446      MOV      #65$, (SP) ;REPLACE OLD PC WITH NEW
3165 016444 000002      RTI ;RESTORE PSW
3166 016446 012637 000034      65$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
3167 016452 012637 001214      MOV      (SP)+, $TMP6 ;
3168 016456 052737 000340 001214      BIS      #340, $TMP6 ;PUT NEW PS ON STACK
3169 016464 013746 001214      MOV      $TMP6, -(SP) ;PUT NEW PC ON STACK
3170 016470 012746 016476      MOV      #66$, -(SP) ;POP NEW PC AND PS
3171 016474 000002      RTI ;
3172 016476      66$:
3173 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
3174 016476 005046      CLR      -(SP) ;
3175 016500 013746 000034      MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
3176 016504 012737 016514 000034      MOV      #67$, 34 ;SETUP NEW TRAP VECTOR
3177 016512 104400      TRAP ;PUSH OLD PSW AN PCON STACK
3178 016514 016666 000002 000006 67$: MOV      2(SP), 6(SP) ;
3179 016522 012716 016530      MOV      #68$, (SP) ;REPLACE OLD PC WITH NEW
3180 016526 000002      RTI ;RESTORE PSW
3181 016530 012637 000034      68$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
3182 016534 012662 000002      MOV      (SP)+, 2(ADINT) ;
3183 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
3184 016540 005046      CLR      -(SP) ;
3185 016542 013746 000034      MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
3186 016546 012737 016556 000034      MOV      #69$, 34 ;SETUP NEW TRAP VECTOR
3187 016554 104400      TRAP ;PUSH OLD PSW AN PCON STACK
3188 016556 016666 000002 000006 69$: MOV      2(SP), 6(SP) ;
3189 016564 012716 016572      MOV      #70$, (SP) ;REPLACE OLD PC WITH NEW
3190 016570 000002      RTI ;RESTORE PSW
3191 016572 012637 000034      70$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR

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 DZCDB.P11 T34 TEST ERROR AND OFF LINE BITS

SEQ 0135

3192	016576	012637	001214		MOV	(SP)+, \$TMP6	
3193	016602	042737	000340	001214	BIC	#340, \$TMP6	
3194	016610	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
3195	016614	012746	016622		MOV	#715, -(SP)	;; PUT NEW PC ON STACK
3196	016620	000002			RTI		;; POP NEW PC AND PS
3197	016622			715:			
3198	016622	012713	000100		MOV	#100, \$CDS	;; SET INTERRUPT ENABLE
3199	016626	104400	035724		TYPE,	MSG34	;; TST35 SPECIAL INT. COND. TEST
3200	016632	104400	031706		TYPE,	MSG3	;; "PRESS CARD READER 'STOP'"
3201	016636	104400	030550		TYPE,	CRLF-3	;; MOVE MESSAGE UP ON TTY
3202	016642	032713	010000	TLOPC:	BIT	#10000, \$CDS	;; WAIT FOR OFF-LINE TO SET
3203	016646	001775			BEQ	TLOPC	
3204	016650	000402			BR	CONTC	;; SKIP INTERRUPT HANDLER
3205							
3206	016652	104021		TINTC:	ERROR +21		;; 'STOP' SHOULDN'T CAUSE AN INTERRUPT
3207	016654	000002			RTI		;; RETURN FROM THE INTERRUPT
3208							
3209	016656	105713		CONTC:	TSTB	\$CDS	;; CHECK CONTROLLER READY BIT 7
3210	016660	100401			BMI	15	;; BRANCH IF OK
3211	016662	104023			ERROR +23		;; CU READY DIDN'T SET YET
3212							
3213	016664	005713		15:	TST	\$CDS	;; CHECK ERROR BIT
3214	016666	100401			BMI	25	;; BRANCH IF SET
3215	016670	104026			ERROR +26		;; ERROR (BIT 15) NOT SET
3216							
3217	016672	032713	067477	25:	BIT	#067477, \$CDS	;; CHECK FOR EXTRA BITS
3218	016676	001401			BEQ	35	;; BRANCH IF OK
3219	016700	104004			ERROR +4		;; STATUS WORD ERROR
3220							
3221	016702	012712	017120	35:	MOV	#TINTCA, \$ADINT	;; LOAD RETURN POINTER
3222							;; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
3223	016706	005046			CLR	-(SP)	
3224	016710	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
3225	016714	012737	016724	000034	MOV	#645, 34	;; SETUP NEW TRAP VECTOR
3226	016722	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
3227	016724	016666	000002	000006	645:	MOV	2(SP), 6(SP)
3228	016732	012716	016740		MOV	#655, (SP)	;; REPLACE OLD PC WITH NEW
3229	016736	000002			RTI		;; RESTORE PSW
3230	016740	012637	000034		655:	MOV	(SP)+, 34
3231	016744	012637	001214		MOV	(SP)+, \$TMP6	;; RESTORE OLD TRAP VECTOR
3232	016750	052737	000340	001214	BIS	#340, \$TMP6	
3233	016756	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
3234	016762	012746	016770		MOV	#665, -(SP)	;; PUT NEW PC ON STACK
3235	016766	000002			RTI		;; POP NEW PC AND PS
3236	016770			665:			
3237							;; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
3238	016770	005046			CLR	-(SP)	
3239	016772	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
3240	016776	012737	017006	000034	MOV	#675, 34	;; SETUP NEW TRAP VECTOR
3241	017004	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
3242	017006	016666	000002	000006	675:	MOV	2(SP), 6(SP)
3243	017014	012716	017022		MOV	#685, (SP)	;; REPLACE OLD PC WITH NEW
3244	017020	000002			RTI		;; RESTORE PSW
3245	017022	012637	000034		685:	MOV	(SP)+, 34

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 DZCDB.P11 T34 TEST ERROR AND OFF LINE BITS

SEQ 0136

3246	017026	012662	000002		MOV	(SP)+,2(ADINT)	
3247					;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"		
3248	017032	005046			CLR	-(SP)	
3249	017034	013746	000034		MOV	34,-(SP)	;;SAVE CURRENT TRAP VECTOR
3250	017040	012737	017050	000034	MOV	#65\$,34	;;SETUP NEW TRAP VECTOR
3251	017046	104400			TRAP		;;PUSH OLD PSW AN PCON STACK
3252	017050	016666	000002	000006	69\$:	MOV	2(SP),6(SP)
3253	017056	012716	017064		MOV	#70\$, (SP)	;;REPLACE OLD PC WITH NEW
3254	017062	000002			RTI		;;RESTORE PSW
3255	017064	012537	000034		70\$:	MOV	(SP)+,34
3256	017070	012637	001214		MOV	(SP)+,\$TMP6	;;RESTORE OLD TRAP VECTOR
3257	017074	042737	000340	001214	BIC	#340,\$TMP6	
3258	017102	013746	001214		MOV	\$TMP6,-(SP)	;;PUT NEW PS ON STACK
3259	017106	012746	017114		MOV	#71\$,-(SP)	;;PUT NEW PC ON STACK
3260	017112	000002			RTI		;;POP NEW PC AND PS
3261	017114				71\$:		
3262	017114	005213			INC	@CDS	;;TRY TO READ A CARD
3263	017116	000777			BR	.	;;WAIT FOR THE INTERRUPT
3264							
3265	017120	022626			TINTCA:	CMP	(SP)+, (SP)+
3266	017122	105713			TSTB	@CDS	;;RESTORE THE STACK
3267	017124	100401			BMI	1\$	;;CHECK CONTROLLER READY BIT 7
3268	017126	104023			ERROR	+23	;;BRANCH IF OK
3269							;;CU READY DIDN'T SET YET
3270	017130	032713	010000		1\$:	BIT	#10000, @CDS
3271	017134	001001			BNE	2\$	;;CHECK FOR OFF-LINE BIT 12
3272	017136	104043			ERROR	+43	;;BRANCH IF OK
3273							;;OFF-LINE BIT 12 NOT SET
3274	017140	005713			2\$:	TST	@CDS
3275	017142	100401			BMI	3\$	;;CHECK ERROR BIT
3276	017144	104026			ERROR	+26	;;BRANCH IF SET
3277							;;ERROR (BIT 15) NOT SET
3278	017146	032713	067477		3\$:	BIT	#067477, @CDS
3279	017152	001401			BEQ	4\$	;;CHECK FOR EXTRA BITS
3280	017154	104004			ERROR	+4	;;BRANCH IF OK
3281							;;STATUS WORD ERROR
3282	017156	012712	017402		4\$:	MOV	#TINTCB, @ADINT
3283						;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"	
3284	017162	005046			CLR	-(SP)	
3285	017164	013746	000034		MOV	34,-(SP)	;;SAVE CURRENT TRAP VECTOR
3286	017170	012737	017200	000034	MOV	#64\$,34	;;SETUP NEW TRAP VECTOR
3287	017176	104400			TRAP		;;PUSH OLD PSW AN PCON STACK
3288	017200	016666	000002	000006	64\$:	MOV	2(SP),6(SP)
3289	017206	012716	017214		MOV	#65\$, (SP)	;;REPLACE OLD PC WITH NEW
3290	017212	000002			RTI		;;RESTORE PSW
3291	017214	012637	000034		65\$:	MOV	(SP)+,34
3292	017220	012637	001214		MOV	(SP)+,\$TMP6	;;RESTORE OLD TRAP VECTOR
3293	017224	052737	000340	001214	BIS	#340,\$TMP6	
3294	017232	013746	001214		MOV	\$TMP6,-(SP)	;;PUT NEW PS ON STACK
3295	017236	012746	017244		MOV	#66\$,-(SP)	;;PUT NEW PC ON STACK
3296	017242	000002			RTI		;;POP NEW PC AND PS
3297	017244				66\$:		
3298						;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"	
3299	017244	005046			CLR	-(SP)	;;

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 DZCDB.P11 T34 TEST ERROR AND OFF LINE BITS

SEQ 0137

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3300 017246 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
3301 017252 012737 017262 000034      MOV      #67$, 34      ;; SETUP NEW TRAP VECTOR
3302 017260 104400      TRAP      ;; PUSH OLD PSW AN PC ON STACK
3303 017262 016666 000002 000006 67$:      MOV      2(SP), 6(SP)      ;;
3304 017270 012716 017276      MOV      #68$, (SP)      ;; REPLACE OLD PC WITH NEW
3305 017274 000002      RTI      ;; RESTORE PSW
3306 017276 012637 000034      MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
3307 017302 012663 000002      MOV      (SP)+, 2(ADINT)
3308      ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
3309 017306 005046      CLR      -(SP)      ;;
3310 017310 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
3311 017314 012737 017324 000034      MOV      #69$, 34      ;; SETUP NEW TRAP VECTOR
3312 017322 104400      TRAP      ;; PUSH OL PSW AN PC ON STACK
3313 017324 016666 000002 000006 69$:      MOV      2(SP), 6(SP)      ;;
3314 017332 012716 017340      MOV      #70$, (SP)      ;; REPLACE OLD PC WITH NEW
3315 017336 000002      RTI      ;; RESTORE PSW
3316 017340 012637 000034      MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
3317 017344 012637 001214      MCV      (SP)+, $TMP6
3318 017350 042737 000340 001214      BIC      #340, $TMP6
3319 017356 013746 001214      MOV      $TMP6, -(SP)      ;; PUT NEW PS ON STACK
3320 017362 012746 017370      MOV      #71$, -(SP)      ;; PUT NEW PC ON STACK
3321 017366 000002      RTI      ;; POP NEW PC AND PS
3322 017370      71$:
3323 017370 104400 031576      TYPE,    MSG1      ;; "PRESS CARD READER 'RESET'"
3324 017374 104400 030550      TYPE,    CRLF-3      ;; MOVE MESSAGE UP ON TTY
3325 017400 000777      BR      .      ;; WAIT FOR THE INTERRUPT
3326
3327 017402 022626      TINTCB: CMP      (SP)+, (SP)+      ;; RESTORE THE STACK
3328 017404 032713 000010      BIT      #10, 2CDS      ;; CHECK FOR TRANSITION TO ON-LINE (BIT 3)
3329 017410 001001      BNE      1$      ;; BRANCH IF SET OK
3330 017412 104036      ERROR +36      ;; TRANSITION TO ON-LINE FAILED TO SET
3331
3332 017414 032713 010000      1$:      BIT      #10000, 2CDS      ;; CHECK FOR OFF-LINE
3333 017420 001401      BEQ      2$      ;; BRANCH IF OK
3334 017422 104044      ERROR +44      ;; OFF-LINE STILL SET
3335
3336 017424 005713      2$:      TST      2CDS      ;; CHECK ERROR (BIT 15)
3337 017426 100401      BMI      3$      ;; BRANCH IF STILL SET
3338 017430 104026      ERROR +26      ;; ERROR BIT 15 CLEARED
3339
3340 017432 032713 077467      3$:      BIT      #077467, 2CDS      ;; CHECK FOR EXTRA BITS
3341 017436 001401      BEQ      4$      ;; BRANCH IF OK
3342 017440 104015      ERROR +15      ;; EXTRA STATUS BITS SET
3343
3344 017442      4$:
3345      ;*****
3346      ;*TEST 36      TEST INPUT HOPPER EMPTY
3347      ;*****
3348 017442 000004      †ST36: SCOPE
3349      ;INPUT HOPPER EMPTY SHOULD SET SPECIAL CONDITION
3350      ;CHECK THAT INTERRUPTS OCCUR WHEN THE CARD READER COMES ON LINE
3351 017444 004737 025744      JSR      PC INIT      ;; INITIALIZE STATUS REGISTER
3352 017450 104400 035765      TYPE,    MSG35      ;; TST36 HOPPER EMPTY TEST
3353 017454 104400 031774      TYPE,    MSG5      ;; "REMOVE ALL CARDS FROM THE INPUT HOPPER"

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DZCDB.P11 T36 TEST INPUT HOPPER EMPTY

SEQ 0138

3354	017460	104400	031632		TYPE,	MSG2		;"THEN HIT 'CONTINUE' ON THE CONSOLE"
3355	017464	104400	030550		TYPE,	CRLF-3		;"MOVE MESSAGE UP ON TTY"
3356	017470	000000			HALT			
3357	017472	032713	010000		BIT	#10000,2CDS		;"CHECK BIT12"
3358	017476	001001			BNE	15		;"BRANCH IF SET"
3359	017500	104043			ERROR	+43		;"OFF-LINE (BIT 12) WASN'T SET"
3360								
3361	017502	005713		15:	TST	2CDS		;"CHECK ERROR BIT"
3362	017504	100401			BMI	25		;"BRANCH IF SET"
3363	017506	104026			ERROR	+26		;"ERROR (BIT 15) NOT SET"
3364								
3365	017510	032713	040000	25:	BIT	#40000,2CDS		;"CHECK FOR CARD READER ERROR"
3366	017514	001001			BNE	35		;"BRANCH IF SET"
3367	017516	104035			ERROR	+35		;"CARD READER ERROR BIT 14 NOT SET"
3368								
3369	017520	032713	027573	35:	BIT	#027573,2CDS		;"CHECK FOR EXTRA BITS"
3370	017524	001401			BEQ	45		;"BRANCH IF OK"
3371	017526	104015			ERROR	+15		;"STATUS WORD ERROR"
3372								
3373	017530	012712	017764	45:	MOV	#TINTD,2ADINT		;"LOAD RETURN POINTER"
3374								;"THE FOLLOWING REPRESENTS THE EQUIVALENT OF 'BIS #340,PS'"
3375	017534	005046			CLR	-(SP)		;;
3376	017536	013746	000034		MOV	34, -(SP)		;;SAVE CURRENT TRAP VECTOR
3377	017542	012737	017552	000034	MOV	#64\$,34		;;SETUP NEW TRAP VECTOR
3378	017550	104400			TRAP			;;PUSH OLD PSW AN PCON STACK
3379	017552	016666	000002	000006	MOV	2(SP),6(SP)		;;
3380	017560	012716	017566		MOV	#65\$, (SP)		;;REPLACE OLD PC WITH NEW
3381	017564	000002			RTI			;;RESTORE PSW
3382	017566	012637	000034		MOV	(SP)+,34		;;RESTORE OLD TRAP VECTOR
3383	017572	012637	001214		MOV	(SP)+,\$TMP6		
3384	017576	052737	000340	001214	BIS	#340,\$TMP6		;;PUT NEW PS ON STACK
3385	017604	013746	001214		MOV	\$TMP6, -(SP)		;;PUT NEW PC ON STACK
3386	017610	012746	017616		MOV	#66\$, -(SP)		;;POP NEW PC AND PS
3387	017614	000002			RTI			
3388	017616			66\$:				
3389								;"THE FOLLOWING REPRESENTS THE EQUIVALENT OF 'MOV PS,2(ADINT)'"
3390	017616	005046			CLR	-(SP)		;;
3391	017620	013746	000034		MOV	34, -(SP)		;;SAVE CURRENT TRAP VECTOR
3392	017624	012737	017634	000034	MOV	#67\$,34		;;SETUP NEW TRAP VECTOR
3393	017632	104400			TRAP			;;PUSH OLD PSW AN PCON STACK
3394	017634	016666	000002	000006	MOV	2(SP),6(SP)		;;
3395	017642	012716	017650		MOV	#68\$, (SP)		;;REPLACE OLD PC WITH NEW
3396	017646	000002			RTI			;;RESTORE PSW
3397	017650	012637	000034		MOV	(SP)+,34		;;RESTORE OLD TRAP VECTOR
3398	017654	012662	000002		MOV	(SP)+,2(ADINT)		
3399								;"THE FOLLOWING REPRESENTS THE EQUIVALENT OF 'BIC #340,FS'"
3400	017660	005046			CLR	-(SP)		;;
3401	017662	013746	000034		MOV	34, -(SP)		;;SAVE CURRENT TRAP VECTOR
3402	017666	012737	017676	000034	MOV	#69\$,34		;;SETUP NEW TRAP VECTOR
3403	017674	104400			TRAP			;;PUSH OLD PSW AN PCON STACK
3404	017676	016666	000002	000006	MOV	2(SP),6(SP)		;;
3405	017704	012716	017712		MOV	#70\$, (SP)		;;REPLACE OLD PC WITH NEW
3406	017710	000002			RTI			;;RESTORE PSW
3407	017712	012637	000034		MOV	(SP)+,34		;;RESTORE OLD TRAP VECTOR

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 02CDB.P11 T36 TEST INPUT HOPPER EMPTY

SEQ 0139

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3408 017716 012637 001214      MOV      (SP)+, $TMP6
3409 017722 042737 000340 001214 BIC      #340, $TMP6
3410 017730 013746 001214      MOV      $TMP6, -(SP)      ;; PUT NEW PS ON STACK
3411 017734 012746 017742      MOV      #71$, -(SP)      ;; PUT NEW PC ON STACK
3412 017740 000002      RTI      ;; POP NEW PC AND PS
3413 017742      71$:
3414 017742 012713 000100      MOV      #100, 2CDS      ;; SET INTERRUPT ENABLE
3415 017746 104400 032045      TYPE,    MSG6      ;; "RESTORE CARDS TO THE INPUT HOPPER"
3416 017752 104400 031576      TYPE,    MSG1      ;; "PRESS CARD READER 'RESET'"
3417 017756 104400 030550      TYPE,    CRLF-3      ;; MOVE MESSAGE UP ON TTY
3418 017762 000777      BR      .      ;; WAIT FOR THE INTERRUPT
3419
3420 017764 022626      TINTD:  CMP      (SP)+, (SP)+      ;; RESTORE THE STACK
3421 017766 012712 020214      MOV      #TINTDA, 2ADINT      ;; LOAD RETURN POINTER
3422      : THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
3423      CLR      -(SP)      ;;
3424 017774 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
3425 020000 012737 020010 000034      MOV      #64$, 34      ;; SETUP NEW TRAP VECTOR
3426 020006 104400      TRAP      ;; PUSH OLD PSW AN PC ON STACK
3427 020010 016666 000002 000006 64$:      MOV      2(SP), 6(SP)      ;;
3428 020016 012716 020024      MOV      #65$, (SP)      ;; REPLACE OLD PC WITH NEW
3429 020022 000002      RTI      ;; RESTORE PSW
3430 020024 012637 000034      65$:      MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
3431 020030 012637 001214      MOV      (SP)+, $TMP6
3432 020034 052737 000340 001214      BIS      #340, $TMP6
3433 020042 013746 001214      MOV      $TMP6, -(SP)      ;; PUT NEW PS ON STACK
3434 020046 012746 020054      MOV      #66$, -(SP)      ;; PUT NEW PC ON STACK
3435 020052 000002      RTI      ;; POP NEW PC AND PS
3436 020054      66$:
3437      : THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
3438 020054 005046      CLR      -(SP)      ;;
3439 020056 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
3440 020062 012737 020072 000034      MOV      #67$, 34      ;; SETUP NEW TRAP VECTOR
3441 020070 104400      TRAP      ;; PUSH OLD PSW AN PC ON STACK
3442 020072 016666 000002 000006 67$:      MOV      2(SP), 6(SP)      ;;
3443 020100 012716 020106      MOV      #68$, (SP)      ;; REPLACE OLD PC WITH NEW
3444 020104 000002      RTI      ;; RESTORE PSW
3445 020106 012637 000034      68$:      MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
3446 020112 012662 000002      MOV      (SP)+, 2(ADINT)
3447      : THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
3448 020116 005046      CLR      -(SP)      ;;
3449 020120 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
3450 020124 012737 020134 000034      MOV      #69$, 34      ;; SETUP NEW TRAP VECTOR
3451 020132 104400      TRAP      ;; PUSH OLD PSW AN PC ON STACK
3452 020134 016666 000002 000006 69$:      MOV      2(SP), 6(SP)      ;;
3453 020142 012716 020150      MOV      #70$, (SP)      ;; REPLACE OLD PC WITH NEW
3454 020146 000002      RTI      ;; RESTORE PSW
3455 020150 012637 000034      70$:      MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
3456 020154 012637 001214      MOV      (SP)+, $TMP6
3457 020160 042737 000340 001214      BIC      #340, $TMP6
3458 020166 013746 001214      MOV      $TMP6, -(SP)      ;; PUT NEW PS ON STACK
3459 020172 012746 020200      MOV      #71$, -(SP)      ;; PUT NEW PC ON STACK
3460 020176 000002      RTI      ;; POP NEW PC AND PS
3461 020200      71$:

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 DZCDB P11 T36 TEST INPUT HOPPER EMPTY

SEQ 0140

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3462 020200 012714 177701      MOV    #-77,  @CDC      ;SET UP COLUMN COUNT
3463 020204 012715 045442      MOV    #BUFBE, @CDA    ;SET UP BUS ADDRESS
3464 020210 005213              INC    @CDS      ;START READING
3465 020212 000777              BR      .          ;WAIT FOR AN INTERRUPT
3466
3467 020214 022626              TINTDA: CMP    (SP)+, (SP)+    ;RESTORE THE STACK
3468 020216 022713 000300      CMP    #000300, @CDS    ;CHECK THE CARD READER STATUS
3469 020222 001471              BEQ     1$           ;BRANCH IF OK
3470 020224 104004              ERROR +4          ;CARD READER STATUS ERROR
3471
3472 020226
3473
3474
3475
3476 020226 000004              1$:
3477                                ;*****
3478                                ;*TEST 37      TEST OUTPUT STACKER FULL
3479                                ;*****
3480                                ;TST37: SCOPE
3481                                ;OUTPUT STACKER FULL SHOULD SET BITS 15, 14, 12, 7
3482 020230 004737 025744      JSR     PC, INIT    ;INITIALIZE STATUS REGISTER
3483 020234 104400 036020      TYPE,   MSG36      ;TST37 STACKER FULL TEST
3484 020240 104400 032111      TYPE,   MSG7       ;"PULL OUTPUT STACKER PRESSURE ARM
3485                                ;ALL THE WAY DOWN"
3486 020244 104400 031632      TYPE,   MSG2       ;"THEN HIT 'CONTINUE' ON THE CONSOLE"
3487 020250 104400 030550      TYPE,   CRLF-3    ;MOVE MESSAGE UP ON TTY
3488 020254 000000              HALT
3489 020256 032713 010000      BIT      #10000, @CDS    ;CHECK OFF-LINE BIT 12
3490 020262 001001              BNE     1$           ;BRANCH IF SET
3491 020264 104043              ERROR +43          ;OFF-LINE (BIT 12) WASN'T SET
3492
3493 020266 005713              1$:   TST      @CDS      ;CHECK ERROR BIT 15
3494 020270 100401              BMI     2$           ;BRANCH IF SET
3495 020272 104026              ERROR +26          ;ERROR BIT 15 NOT SET
3496
3497 020274 032713 040000      2$:   BIT      #40000, @CDS    ;CHECK FOR CARD READER ERROR
3498 020300 001001              BNE     3$           ;BRANCH IF SET
3499 020302 104035              ERROR +35          ;CARD READER ERROR BIT 14 NOT SET
3500
3501 020304 032713 027577      3$:   BIT      #027577, @CDS    ;CHECK FOR EXTRA BITS
3502 020310 001401              BEQ     4$           ;BRANCH IF OK
3503 020312 104015              ERROR +15          ;STATUS WORD ERROR
3504
3505 020314 012712 020544      4$:   MOV      #TINTE, @ADINT ;LOAD RETURN POINTER
3506                                ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
3507 020320 005046              CLR      -(SP)
3508 020322 013746 000034      MOV      34, -(SP)    ;;SAVE CURRENT TRAP VECTOR
3509 020326 012737 020336 000034  MOV      #64$, 34      ;;SETUP NEW TRAP VECTOR
3510 020334 104400              TRAP
3511 020336 016666 000002 000006 64$: MOV      2(SP), 6(SP)    ;;PUSH OLD PSW AN PC ON STACK
3512 020344 012716 020352      MOV      #65$, (SP)    ;;
3513 020350 000002              RTI
3514 020352 012637 000034      65$: MOV      (SP)+, 34      ;;REPLACE OLD PC WITH NEW
3515 020356 012637 001214      MOV      (SP)+, $TMP6    ;;RESTORE PSW
3516 020362 052737 000340 001214  BIS      #340, $TMP6    ;;RESTORE OLD TRAP VECTOR
3517 020370 013746 001214      MOV      $TMP6, -(SP)    ;;PUT NEW PS ON STACK
3518 020374 012746 020402      MOV      #66$, -(SP)    ;;PUT NEW PC ON STACK
3519 020400 000002              RTI
3520                                ;;POP NEW PC AND PS

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3516 020402 66$: ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
3517 ; CLR -(SP) ;
3518 020402 005046 ; MOV 34,-(SP) ; SAVE CURRENT TRAP VECTOR
3519 020404 013746 000034 ; MOV #67$,34 ; SETUP NEW TRAP VECTOR
3520 020410 012737 020420 000034 ; TRAP ; PUSH OLD PSW AN PCON STACK
3521 020416 104400 ;
3522 020420 016666 000002 000006 67$: ; MOV 2(SP),6(SP) ;
3523 020426 012716 020434 ; MOV #68$, (SP) ; ; REPLACE OLD PC WITH NEW
3524 020432 000002 ; RTI ; ; RESTORE PSW
3525 020434 012637 000034 68$: ; MOV (SP)+,34 ; ; RESTORE OLD TRAP VECTOR
3526 020440 012662 000002 ; MOV (SP)+,2(ADINT) ;
3527 ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
3528 020444 005046 ; CLR -(SP) ;
3529 020446 013746 000034 ; MOV 34,-(SP) ; SAVE CURRENT TRAP VECTOR
3530 020452 012737 020462 000034 ; MOV #69$,34 ; SETUP NEW TRAP VECTOR
3531 020460 104400 ; TRAP ; PUSH OLD PSW AN PCON STACK
3532 020462 016666 000002 000006 69$: ; MOV 2(SP),6(SP) ;
3533 020470 012716 020476 ; MOV #70$, (SP) ; ; REPLACE OLD PC WITH NEW
3534 020474 000002 ; RTI ; ; RESTORE PSW
3535 020476 012637 000034 70$: ; MOV (SP)+,34 ; ; RESTORE OLD TRAP VECTOR
3536 020502 012637 001214 ; MOV (SP)+,$TMP6 ;
3537 020506 042737 000340 001214 ; BIC #340,$TMP6 ;
3538 020514 013746 001214 ; MOV $TMP6,-(SP) ; PUT NEW PS ON STACK
3539 020520 012746 020526 ; MOV #71$,-(SP) ; PUT NEW PC ON STACK
3540 020524 000002 ; RTI ; POP NEW PC AND PS
3541 020526 ;
3542 020526 012713 000100 71$: ; MOV #100, 2CDS ; SET INTERRUPT ENABLE
3543 020532 104400 031576 ; TYPE, MSG1 ; "PRESS CARD READER 'RESET'"
3544 020536 104400 030550 ; TYPE, CRLF-3 ; MOVE MESSAGE UP ON TTY
3545 020542 000777 ; BR ; WAIT FOR THE INTERRUPT
3546 ;
3547 020544 022626 ; TINT: CMP (SP)+, (SP)+ ; RESTORE THE STACK
3548 020546 012712 020774 ; MOV #TINTEA,2ADINT ; LOAD RETURN POINTER
3549 ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
3550 020552 005046 ; CLR -(SP) ;
3551 020554 013746 000034 ; MOV 34,-(SP) ; SAVE CURRENT TRAP VECTOR
3552 020560 012737 020570 000034 ; MOV #64$,34 ; SETUP NEW TRAP VECTOR
3553 020566 104400 ; TRAP ; PUSH OLD PSW AN PCON STACK
3554 020570 016666 000002 000006 64$: ; MOV 2(SP),6(SP) ;
3555 020576 012716 020604 ; MOV #65$, (SP) ; ; REPLACE OLD PC WITH NEW
3556 020602 000002 ; RTI ; ; RESTORE PSW
3557 020604 012637 000034 65$: ; MOV (SP)+,34 ; ; RESTORE OLD TRAP VECTOR
3558 020610 012637 001214 ; MOV (SP)+,$TMP6 ;
3559 020614 052737 000340 001214 ; BIS #340,$TMP6 ;
3560 020622 013746 001214 ; MOV $TMP6,-(SP) ; PUT NEW PS ON STACK
3561 020626 012746 020634 ; MOV #66$,-(SP) ; PUT NEW PC ON STACK
3562 020632 000002 ; RTI ; POP NEW PC AND PS
3563 020634 66$: ;
3564 ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
3565 020634 005046 ; CLR -(SP) ;
3566 020636 013746 000034 ; MOV 34,-(SP) ; SAVE CURRENT TRAP VECTOR
3567 020642 012737 020652 000034 ; MOV #67$,34 ; SETUP NEW TRAP VECTOR
3568 020650 104400 ; TRAP ; PUSH OLD PSW AN PCON STACK
3569 020652 016666 000002 000006 67$: ; MOV 2(SP),6(SP) ;

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 DZCDB.P11 T37 TEST OUTPUT STACKER FULL

SEQ 0142

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3570 020660 012716 020666      MOV      #68$, (SP)          ;; REPLACE OLD PC WITH NEW
3571 020664 000002              RTI                      ;; RESTORE PSW
3572 020666 012637 000034      68$: MOV      (SP)+, 34          ;; RESTORE JLD TRAP VECTOR
3573 020672 012662 000002      MOV      (SP)+, 2(ADINT)
3574              ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
3575 020676 005046              CLR      -(SP)
3576 020700 013746 000034      MOV      34, -(SP)          ;; SAVE CURRENT TRAP VECTOR
3577 020704 012737 020714 000034  MOV      #69$, 34          ;; SETUP NEW TRAP VECTOR
3578 020712 104400              TRAP
3579 020714 016666 000002 000006 69$: MOV      2(SP), 6(SP)      ;; PUSH OLD PSW AN PCON STACK
3580 020722 012716 020730      MOV      #70$, (SP)          ;;
3581 020726 000002              RTI                      ;; REPLACE OLD PC WITH NEW
3582 020730 012637 000034      70$: MOV      (SP)+, 34          ;; RESTORE PSW
3583 020734 012637 001214      MOV      (SP)+, $TMP6          ;; RESTORE OLD TRAP VECTOR
3584 020740 042737 000340 001214  BIC      #340, $TMP6
3585 020746 013746 001214      MOV      $TMP6, -(SP)          ;; PUT NEW PS ON STACK
3586 020752 012746 020760      MOV      #71$, -(SP)          ;; PUT NEW PC ON STACK
3587 020756 000002              RTI                      ;; POP NEW PC AND PS
3588 020760              71$:
3589 020760 012714 177701      MOV      #-77, $CDC          ;; SET UP COLUMN COUNT
3590 020764 012715 045442      MOV      #BUFBEG, $CDA        ;; SET UP BUS ADDRESS
3591 020770 005213              INC      $CDS                ;; START READING
3592 020772 000777              BR      .                    ;; WAIT FOR AN INTERRUPT
3593
3594 020774 022626              TINTER: CMP      (SP)+, (SP)+      ;; RESTORE THE STACK
3595 020776 022713 000300      CMP      #000300, $CDS          ;; CHECK THE CARD READER STATUS
3596 021002 001401              BEQ      15                    ;; BRANCH IF OK
3597 021004 104004              ERROR +4                      ;; CARD READER STATUS ERROR
3598
3599 021006              15:
3600              ;*****
3601              ;*TEST 40 TEST PICK CHECK ERROR
3602              ;*****
3603 021006 000004      TST40: SCOPE
3604              ; A PICK CHECK ERROR SHOULD SET BIT 15, BIT 14, AND BIT 12
3605              ; THIS ERROR OCCURS WHEN THE FEED MECHANISM FAILS TO DELIVER A CARD TO
3606              ; THE READ STATION WITHIN 400 MS.
3607              ; CAN ALSO BE FORCED BY FOLDING A CARD IN HALF
3608              ; AND PLACING IT INTO CARD READER 'INPUT HOPPER'
3609 021010 004737 025744      JSR      PC INIT
3610 021014 104400 036053      TYPE,    MSG37          ; TST40 PICK CHECK TEST
3611 021020 104400 031774      TYPE,    MSG5           ; "REMOVE ALL CARDS FROM THE INPUT HOPPER"
3612 021024 104400 031632      TYPE,    MSG2           ; "WHEN HIT 'CONTINUE' ON THE CONSOLE"
3613 021030 104400 032270      TYPE,    MSG8           ; "HOLD DOWN THE SWITCH UNDER THE CAP
3614              ; OF THE INPUT HOPPER"
3615 021034 104400 031576      TYPE,    MSG1           ; "PRESS CARD READER 'RESET'"
3616 021040 104400 030550      TYPE,    CRLF-3          ; MOVE MESSAGE UP ON TTY
3617 021044 000000              HALT
3618 021046 032713 010000      BIT      #10000, $CDS        ; CHECK FOR OFF-LINE
3619 021052 001001              BNE      15                    ; BRANCH IF SET
3620 021054 104043              ERROR +43                      ; OFF LINE NOT SET AFTER "CONTINUE"
3621
3622 021056 032713 000010      15: BIT      #10, $CDS          ; CHECK FOR "TRANSITION TO ON LINE"
3623 021062 001775              BEQ      15                    ; WAIT FOR IT

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 DZCDB.P11 T40 TEST PICK CHECK ERROR

SEQ 014

3624	021064	022713	140210			CMP	#140210, 2CDS	;CHECK FOR CORRECT STATUS BITS
3625	021070	001401				BEQ	25	;BRANCH IF OK
3626	021072	104004				ERROR +"		;STATUS NOT EQUAL TO 140210
3627								
3628	021074	012714	177701	25:		MOV	#-77, 2CDC	;SET UP COLUMN COUNT
3629	021100	012715	045442			MOV	#BUFBEQ, 2CDA	;SET UP BUS ADDRESS
3630	021104	005213				INC	2CDS	;READ
3631	021106	105713		35:		TST	2CDS	;CHECK CONTROLLER READY
3632	021110	100376				BPL	35	;WAIT FOR CONTROLLER READY
3633	021112	032713	010000			BIT	#10000, 2CDS	;CHECK BIT12
3634	021116	001001				BNE	45	;BRANCH IF SET
3635	021120	104043				ERROR +43		;OFF-LINE (BIT 12) WASN'T SET
3636								
3637	021122	005713		45:		TST	2CDS	;CHECK SPECIAL CONDITION BIT
3638	021124	100401				BMI	55	;BRANCH IF SET
3639	021126	104026				ERROR +26		;SPECIAL CONDITION NOT SET
3640								
3641	021130	032713	040000	55:		BIT	#40000, 2CDS	;CHECK FOR CARD READER ERROR
3642	021134	001001				BNE	65	;BRANCH IF SET
3643	021136	104035				ERROR +35		;CARD READER ERROR BIT 14 NOT SET
3644								
3645	021140	005777	160074	65:		TST	2CDD8	;TEST BIT15 OF STATUS REGISTER #2
3646	021144	100005				BPL	75	;BRANCH IF NOT SET INDICATING
3647								;OLD CD11 CONTROLLER
3648	021146	032777	020000			BIT	#20000, 2CDD8	;IS PICK CHECK INDICATOR SET?
3649	021154	001001				BNE	75	;BRANCH IF SET
3650	021156	104045				ERROR +45		;PICK CHECK BIT13 NOT SET
3651								
3652	021160	031327	027577	75:		BIT	2CDS, #027577	;CHECK FOR EXTRA BITS
3653	021164	001401				BEQ	105	;BRANCH IF OK
3654	021166	104015				ERROR +15		;STATUS WORD ERROR
3655								
3656	021170	012712	021424	105:		MOV	#TINTF, 2ADINT	;LOAD RETURN POINTER
3657								;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
3658	021174	005046				CLR	-(SP)	
3659	021176	013746	000034			MOV	34, -(SP)	;SAVE CURRENT TRAP VECTOR
3660	021202	012737	021212	000034		MOV	#645, 34	;SETUP NEW TRAP VECTOR
3661	021210	104400				TRAP		;PUSH OLD PSW AN PC ON STACK
3662	021212	016666	000002	000006	645:	MOV	2(SP), 6(SP)	
3663	021220	012716	021226			MOV	#655, (SP)	
3664	021224	000002				RTI		;REPLACE OLD PC WITH NEW
3665	021226	012637	000034		655:	MOV	(SP)+, 34	;RESTORE PSW
3666	021232	012637	001214			MOV	(SP)+, \$TMP6	;RESTORE OLD TRAP VECTOR
3667	021236	052737	000340	001214		BIS	#340, \$TMP6	
3668	021244	013746	001214			MOV	\$TMP6, -(SP)	;PUT NEW PS ON STACK
3669	021250	012746	021256			MOV	#665, -(SP)	;PUT NEW PC ON STACK
3670	021254	000002				RTI		;POP NEW PC AND PS
3671	021256				665:			
3672								;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
3673	021256	005046				CLR	-(SP)	
3674	021260	013746	000034			MOV	34, -(SP)	;SAVE CURRENT TRAP VECTOR
3675	021264	012737	021274	000034		MOV	#675, 34	;SETUP NEW TRAP VECTOR
3676	021272	104400				TRAP		;PUSH OLD PSW AN PC ON STACK
3677	021274	016666	000002	000006	675:	MOV	2(SP), 6(SP)	

3678	021302	012716	021310		MOV	#68\$, (SP)	;; REPLACE OLD PC WITH NEW
3679	021306	000002			RTI		;; RESTORE PSW
3680	021310	012637	000034	68\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
3681	021314	012662	000002		MOV	(SP)+, 2(ADINT)	
3682					; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"		
3683	021320	005046			CLR	-(SP)	
3684	021322	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
3685	021326	012737	021336	000034	MOV	#69\$, 34	;; SETUP NEW TRAP VECTOR
3686	021334	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
3687	021336	016666	000002	000006	69\$:	MOV	2(SP), 6(SP)
3688	021344	012716	021352		MOV	#70\$, (SP)	;; REPLACE OLD PC WITH NEW
3689	021350	000002			RTI		;; RESTORE PSW
3690	021352	012637	000034	70\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
3691	021356	012637	001214		MOV	(SP)+, \$TMP6	
3692	021362	012737	000340	001214	BIC	#340, \$TMP6	
3693	021370	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
3694	021374	012746	021402		MOV	#71\$, -(SP)	;; PUT NEW PC ON STACK
3695	021400	000002			RTI		;; POP NEW PC AND PS
3696	021402			71\$:			
3697	021402	012713	000100		MOV	#100, JCD5	;; SET INTERRUPT ENABLE
3698	021406	104400	032045		TYPE,	MSG6	;; "RESTORE CARDS TO THE INPUT HOPPER"
3699	021412	104400	031576		TYPE,	MSG1	;; "PRESS CARD READER 'RESET'"
3700	021416	104400	030550		TYPE,	CRLF-3	;; MOVE MESSAGE UP ON TTY
3701	021422	000777			BR	.	;; WAIT FOR THE INTERRUPT
3702							
3703	021424	022626		TINTF:	CMP	(SP)+, (SP)+	;; RESTORE THE STACK
3704	021426	012712	021654		MOV	#TINTFA, JADINT	;; LOAD RETURN POINTER
3705					; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"		
3706	021432	005046			CLR	-(SP)	
3707	021434	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
3708	021440	012737	021450	000034	MOV	#64\$, 34	;; SETUP NEW TRAP VECTOR
3709	021446	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
3710	021450	016666	000002	000006	64\$:	MOV	2(SP), 6(SP)
3711	021456	012716	021464		MOV	#65\$, (SP)	;; REPLACE OLD PC WITH NEW
3712	021462	000002			RTI		;; RESTORE PSW
3713	021464	012637	000034	65\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
3714	021470	012637	001214		MOV	(SP)+, \$TMP6	
3715	021474	052737	000340	001214	BIS	#340, \$TMP6	
3716	021502	013746	001214		MOV	\$TMP6, -(SP)	;; PUT NEW PS ON STACK
3717	021506	012746	021514		MOV	#66\$, -(SP)	;; PUT NEW PC ON STACK
3718	021512	000002			RTI		;; POP NEW PC AND PS
3719	021514			66\$:			
3720					; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"		
3721	021514	005046			CLR	-(SP)	
3722	021516	013746	000034		MOV	34, -(SP)	;; SAVE CURRENT TRAP VECTOR
3723	021522	012737	021532	000034	MOV	#67\$, 34	;; SETUP NEW TRAP VECTOR
3724	021530	104400			TRAP		;; PUSH OLD PSW AN PCON STACK
3725	021532	016666	000002	000006	67\$:	MOV	2(SP), 6(SP)
3726	021540	012716	021546		MOV	#68\$, (SP)	;; REPLACE OLD PC WITH NEW
3727	021544	000002			RTI		;; RESTORE PSW
3728	021546	012637	000034	68\$:	MOV	(SP)+, 34	;; RESTORE OLD TRAP VECTOR
3729	021552	012662	000002		MOV	(SP)+, 2(ADINT)	
3730					; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"		
3731	021556	005046			CLR	-(SP)	;;

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 DZCDB.P11 T40 TEST PICK CHECK ERROR

SEQ 0145

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3732 021560 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
3733 021564 012737 021574 000034  MOV      #69$, 34      ;; SETUP NEW TRAP VECTOR
3734 021572 104400      TRAP                      ;; PUSH OLD PSW AN PCOM STACK
3735 021574 016666 000002 000006 69$:  MOV      2(SP), 6(SP)      ;;
3736 021602 012716 021610      MOV      #70$, (SP)      ;;
3737 021606 000002      RTI                      ;; REPLACE OLD PC WITH NEW
3738 021610 012637 000034      MOV      (SP)+, 34      ;; RESTORE PSW
3739 021614 012637 001214      MOV      (SP)+, STMP6      ;; RESTORE OLD TRAP VECTOR
3740 021620 042737 000340 001214  BIC      #340, STMP6
3741 021626 013746 001214      MOV      STMP6, -(SP)      ;; PUT NEW PS ON STACK
3742 021632 012746 021640      MOV      #71$, -(SP)      ;; PUT NEW PC ON STACK
3743 021636 000002      RTI                      ;; POP NEW PC AND PS
3744 021640      71$:
3745 021640 012714 177701      MOV      #-77, @CDC      ;; SET UP COLUMN COUNT
3746 021644 012715 045442      MOV      #BUFBEG, @CDA      ;; SET UP BUS ADDRESS
3747 021650 005213      INC      @CDS      ;; START READING
3748 021652 000777      BR      .      ;; WAIT FOR AN INTERRUPT
3749
3750 021654 022626      TINTFA: CMP      (SP)+, (SP)+      ;; RESTORE THE STACK
3751 021656 022713 000300      CMP      #000370, @CDS      ;; CHECK THE CARD READER STATUS
3752 021662 001401      BEQ      15      ;; BRANCH IF OK
3753 021664 104004      ERROR +4      ;; CARD READER STATUS ERROR
3754
3755 021666      $:
3756      *****
3757      *TEST 41      TEST STACK CHECK ERROR
3758      *****
3759 021666 000004      TST41: SCOPE
3760      ; A STACK CHECK ERROR SHOULD SET BIT 15, BIT 14, AND BIT 12
3761      ; THIS ERROR OCCURS WHEN THE FEED MECHANISM FAILS TO DELIVER A CARD TO
3762      ; THE READ STATION
3763 021670 004737 025744      JSR      PC INIT
3764 021674 104400 036104      TYPE,    MSG38
3765 021700 104400 031706      TYPE,    MSG3
3766 021704 104400 032362      TYPE,    MSG9
3767
3768      ; TST41 STACK ERROR TEST
3769      ; "PRESS CARD READER 'STOP'"
3770      ; "SLIDE A CARD FROM THE OUTPUT HOPPER ABOUT
3771      ; HALF AN INCH BACK INTO THE READ HEAD
3772      ; BLOCKING THE PHOTO CELL
3773      ; NOTE: SOME CARD READER MODELS MAY HAVE
3774      ; A LARGE ROLLER BLOCKING ACCESS TO THE PHOTOCCELL
3775      ; IN WHICH CASE, THE PHOTOCCELL CAN BE
3776      ; BLOCKED BY TEARING OFF A PIECE OF CARD
3777      ; AND SLIPPING IT IN FRONT OF THE PHOTOCCELL
3778      ; "PRESS CARD READER 'RESET'"
3779      ; MOVE MESSAGE UP ON TTY
3780      ; CHECK FOR OF LINE
3781      ; WAIT FOR OFF-LINE
3782      ; CHECK FOR "TRANSITION TO ON LINE"
3783      ; WAIT FOR IT
3784      ; CHECK FOR CORRECT STATUS BITS
3785      ; BRANCH IF OK
3786      ; STATUS NOT EQUAL TO 100210
3787
3788      TLOPG: BIT      #10000, @CDS
3789      BEQ      TLOPG
3790      TLOPGA: BIT      #10, @CDS
3791      BEQ      TLOPGA
3792      CMP      #100210, @CDS
3793      BEQ      15
3794      ERROR +4
3795
3796 021710 104400 031576      TYPE,    MSG1
3797 021714 104400 030550      TYPE,    CRLF-3
3798 021720 032713 010000      BIT      #10000, @CDS
3799 021724 001775      BEQ      TLOPG
3800 021726 032713 000010      BIT      #10, @CDS
3801 021732 001775      BEQ      TLOPGA
3802 021734 022713 100210      CMP      #100210, @CDS
3803 021740 001401      BEQ      15
3804 021742 104004      ERROR +4
3805
3806 021744 012714 177701      1$:  MOV      #-77, @CDC      ;; SET UP COLUMN COUNT
3807 021750 012715 045442      MOV      #BUFBEG, @CDA      ;; SET UP BUS ADDRESS

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DZCDB.P11 T41 TEST STACK CHECK ERROR

SEQ 0146

3786	021754	005213				INC	2CDS		; READ
3787	021756	105713				TLOPGB: TSTB	2CDS		; CHECK CONTROLLER READY
3788	021760	100376				BPL	TLOPGB		; WAIT FOR CONTROLLER READY
3789	021762	032713	010000			BIT	#10000, 2CDS		; CHECK BIT12
3790	021766	001001				BNE	15		; BRANCH IF SET
3791	021770	104043				ERROR	+43		; OFF-LINE (BIT 12) WASN'T SET
3792									
3793	021772	005713				15: TST	2CDS		; CHECK SPECIAL CONDITION BIT
3794	021774	100401				BMI	25		; BRANCH IF SET
3795	021776	104026				ERROR	+26		; SPECIAL CONDITION NOT SET
3796									
3797	022000	032713	040000			25: BIT	#40000, 2CDS		; CHECK FOR CARD READER ERROR
3798	022004	001001				BNE	35		; BRANCH IF SET
3799	022006	104035				ERROR	+35		; CARD READER ERROR BIT 14 NOT SET
3800									
3801	022010	005777	157224			35: TST	2CDD8		; TEST BIT15 OF STATUS REGISTER #2
3802	022014	100005				BPL	45		; BRANCH IF NOT SET INDICATING
3803									; OLD CD11 CONTROLLER
3804	022016	032777	010000	157214		BIT	#10000, 2CDD8		; IS STACK CHECK INDICATOR SET?
3805	022024	001001				BNE	45		; BRANCH IF SET
3806	022026	104046				ERROR	+46		; STACK CHECK BIT12 NOT SET
3807									
3808	022030	032713	027577			45: BIT	#027577, 2CDS		; CHECK FOR EXTRA BITS
3809	022034	001401				BEQ	55		; BRANCH IF OK
3810	022036	104015				ERROR	+15		; STATUS WORD ERROR
3811									
3812	022040	012712	022270			55: MOV	#TINTG, 2ADINT		; LOAD RETURN POINTER
3813									; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"
3814	022044	005046				CLR	-(SP)		
3815	022046	013746	000034			MOV	34, -(SP)		; SAVE CURRENT TRAP VECTOR
3816	022052	012737	022062	000034		MOV	#645, 34		; SETUP NEW TRAP VECTOR
3817	022060	104400				TRAP			; PUSH OLD PSW AN PCON STACK
3818	022062	016666	000002	000006		645: MOV	2(SP), 6(SP)		
3819	022070	012716	022076			MOV	#655, (SP)		; REPLACE OLD PC WITH NEW
3820	022074	000002				RTI			; RESTORE PSW
3821	022076	012637	000034			655: MOV	(SP)+, 34		; RESTORE OLD TRAP VECTOR
3822	022102	012637	001214			MOV	(SP)+, \$TMP6		
3823	022106	052737	000340	001214		BIS	#340, \$TMP6		
3824	022114	013746	001214			MOV	\$TMP6, -(SP)		; PUT NEW PS ON STACK
3825	022120	012746	022126			MOV	#665, -(SP)		; PUT NEW PC ON STACK
3826	022124	000002				RTI			; POP NEW PC AND PS
3827	022126					665: ;			
3828									; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
3829	022126	005046				CLR	-(SP)		
3830	022130	013746	000034			MOV	34, -(SP)		; SAVE CURRENT TRAP VECTOR
3831	022134	012737	022144	000034		MOV	#675, 34		; SETUP NEW TRAP VECTOR
3832	022142	104400				TRAP			; PUSH OLD PSW AN PCON STACK
3833	022144	016666	000002	000006		675: MOV	2(SP), 6(SP)		
3834	022152	012716	022160			MOV	#685, (SP)		; REPLACE OLD PC WITH NEW
3835	022156	000002				RTI			; RESTORE PSW
3836	022160	012637	000034			685: MOV	(SP)+, 34		; RESTORE OLD TRAP VECTOR
3837	022164	012662	000002			MOV	(SP)+, 2(ADINT)		
3838									; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"
3839	022170	005046				CLR	-(SP)		

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 DZCOB.P11 T41 TEST STACK CHECK ERROR

SEQ 0147

3840	022172	013746	000034		MOV	34, -(SP)	;;SAVE CURRENT TRAP VECTOR
3841	022176	012737	022206	000034	MOV	#69\$, 34	;;SETUP NEW TRAP VECTOR
3842	022204	104400			TRAP		;;PUSH OLD PSW AN PCON STACK
3843	022206	016666	000002	000006	69\$: MOV	2(SP), 6(SP)	;;
3844	022214	012716	022222		MOV	#70\$, (SP)	;;REPLACE OLD PC WITH NEW
3845	022220	000002			RTI		;;RESTORE PSW
3846	022222	012637	000034		70\$: MOV	(SP)+, 34	;;RESTORE OLD TRAP VECTOR
3847	022226	012637	001214		MOV	(SP)+, \$TMP6	
3848	022232	042737	000340	001214	BIC	#340, \$TMP6	
3849	022240	013746	001214		MOV	\$TMP6, -(SP)	;;PUT NEW PS ON STACK
3850	022244	012746	022252		MOV	#71\$, -(SP)	;;PUT NEW PC ON STACK
3851	022250	000002			RTI		;;POP NEW PC AND PS
3852	022252				71\$:		
3853	022252	012713	000100		MOV	#100, 3CDS	;;SET INTERRUPT ENABLE
3854	022256	104400	031576		TYPE, MSG1		;;"PRESS CARD READER 'RESET'"
3855	022262	104400	030550		TYPE, CRLF-3		;;MOVE MESSAGE UP ON TTY
3856	022266	000777			BR	.	;;WAIT FOR THE INTERRUPT
3857							
3858	022270	022626			TINTG: CMP	(SP)+, (SP)+	;;RESTORE THE STACK
3859	022272	012712	022520		MOV	#TINTG, 3ADINT	;;LOAD RETURN POINTER
3860					:	THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340, PS"	
3861	022276	005046			CLR	-(SP)	;;
3862	022300	013746	000034		MOV	34, -(SP)	;;SAVE CURRENT TRAP VECTOR
3863	022304	012737	022314	000034	MOV	#64\$, 34	;;SETUP NEW TRAP VECTOR
3864	022312	104400			TRAP		;;PUSH OLD PSW AN PCON STACK
3865	022314	016666	000002	000006	64\$: MOV	2(SP), 6(SP)	;;
3866	022322	012716	022330		MOV	#65\$, (SP)	;;REPLACE OLD PC WITH NEW
3867	022326	000002			RTI		;;RESTORE PSW
3868	022330	012637	000034		65\$: MOV	(SP)+, 34	;;RESTORE OLD TRAP VECTOR
3869	022334	012637	001214		MOV	(SP)+, \$TMP6	
3870	022340	052737	000340	001214	BIS	#340, \$TMP6	
3871	022346	013746	001214		MOV	\$TMP6, -(SP)	;;PUT NEW PS ON STACK
3872	022352	012746	022360		MOV	#66\$, -(SP)	;;PUT NEW PC ON STACK
3873	022356	000002			RTI		;;POP NEW PC AND PS
3874	022360				66\$:		
3875					:	THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"	
3876	022360	005046			CLR	-(SP)	;;
3877	022362	013746	000034		MOV	34, -(SP)	;;SAVE CURRENT TRAP VECTOR
3878	022366	012737	022376	000034	MOV	#67\$, 34	;;SETUP NEW TRAP VECTOR
3879	022374	104400			TRAP		;;PUSH OLD PSW AN PCON STACK
3880	022376	016666	000002	000006	67\$: MOV	2(SP), 6(SP)	;;
3881	022404	012716	022412		MOV	#68\$, (SP)	;;REPLACE OLD PC WITH NEW
3882	022410	000002			RTI		;;RESTORE PSW
3883	022412	012637	000034		68\$: MOV	(SP)+, 34	;;RESTORE OLD TRAP VECTOR
3884	022416	012662	000002		MOV	(SP)+, 2(ADINT)	
3885					:	THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340, PS"	
3886	022422	005046			CLR	-(SP)	;;
3887	022424	013746	000034		MOV	34, -(SP)	;;SAVE CURRENT TRAP VECTOR
3888	022430	012737	022440	000034	MOV	#69\$, 34	;;SETUP NEW TRAP VECTOR
3889	022436	104400			TRAP		;;PUSH OLD PSW AN PCON STACK
3890	022440	016666	000002	000006	69\$: MOV	2(SP), 6(SP)	;;
3891	022446	012716	022454		MOV	#70\$, (SP)	;;REPLACE OLD PC WITH NEW
3892	022452	000002			RTI		;;RESTORE PSW
3893	022454	012637	000034		70\$: MOV	(SP)+, 34	;;RESTORE OLD TRAP VECTOR

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 DZCDB.P11 T41 TEST STACK CHECK ERROR

SEQ 0148

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3894 022460 012637 001214      MOV      (SP)+,STMP6
3895 022464 042737 000340 001214 BIC      #340,STMP6
3896 022472 013.46 001214      MOV      STMP6,-(SP)      ;:PUT NEW PS ON STACK
3897 022476 012746 022504      MOV      #715,-(SP)      ;:PUT NEW PC ON STACK
3898 022502 000002      RTI          ;:POP NEW PC AND PS
3899 022504      715:
3900 022504 012714 177701      MOV      #-77,ACDC      ;:SET UP COLUMN COUNT
3901 022510 012715 045442      MOV      #BUFBEG,ACDA      ;:SET UP BUS ADDRESS
3902 022514 005213      INC      ACDS      ;:START READING
3903 022516 000777      BR          .      ;:WAIT FOR AN INTERRUPT
3904
3905 022520 022626      TINTGA: CMP      (SP)+,(SP)+      ;:RESTORE THE STACK
3906 022522 022713 000300      CMP      #000300,ACDS      ;:CHECK THE CARD READER STATUS
3907 022526 001401      BEQ      1$      ;:BRANCH IF OK
3908 022530 104004      ERROR +4      ;:CARD READER STATUS ERROR
3909
3910 022532      1$:
3911      ;ON M-1000/M-200 BIT 13 IS ALWAYS CLEARED
3912      ;ON M-1200 IF END OF FILE BUTTON IS PRESSED WITH INPUT
3913      ;HOPPER LOADED THEN WHEN INPUT HOPPER BECOMES EMPTY
3914      ;HOPPER CHECK INDICATOR LIGHT COMES ON AND BITS
3915      ;13 14 AND 15 ARE SET
3916
3917
3918 022532 005737 001266      TST      CD1000      ;:IS READER M1000/M200?
3919 022536 001402      BEQ      TSTM12      ;:BRANCH IF READER IS M-1200
3920 022540 000137 023256      JMP      TSTM10      ;:OUT OF THIS TEST IF M1000/M200
3921
3922 022544      TSTM12:
3923      ;*****
3924      ;*TEST 42      TEST 'END OF FILE' AND HOPPER CHECK
3925      ;*****
3926 022544 000004      TST42: SCOPE
3927 022546 004737 025744      JSR      PC,      INIT
3928 022552 104400 036140      TYPE,    MSG39
3929 022556 104400 033506      TYPE,    MSG20
3930 022562 104400 031576      TYPE,    MSG1
3931 022566 104400 031632      TYPE,    MSG2
3932 022572 104400 030550      TYPE,    CRLF-3
3933 022576 000000      HALT
3934
3935 022600 032713 000010      1$:      BIT      #10,      ACDS      ;:CHECK FOR TRANSITION TO ON LINE
3936 022604 001775      BEQ      1$      ;:WAIT FOR IT
3937 022606 104400 033552      TYPE,    MSG21      ;:"PRESS END OF FILE BUTTON"
3938 022612 104400 031632      TYPE,    MSG2      ;:"THEN HIT 'CONTINUE' ON THE CONSOLE"
3939 022616 104400 030550      TYPE,    CRLF-3      ;:MOVE MESSAGE UP ON TTY
3940 022622 004737 025744      JSR      PC,      INIT
3941 022626 000000      HALT
3942
3943
3944 022630 032713 020000      BIT      #20000, ACDS      ;:CHECK BIT 13
3945 022634 001401      BEQ      2$      ;:BRANCH IF NOT SET
3946 022636 104047      ERROR +47      ;:EOF SET FROM BEGINNING
3947

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 DZCDB.P11 T42 TEST 'END OF FILE' AND HOPPER CHECK

SEQ 0149

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3948
3949 022640 032713 040000      2$: BIT      #40000, 2CDS ;CHECK BIT 14
3950 022644 001401              BEQ      3$ ;BRANCH IF NOT SET
3951 022646 104050              ERROR +50 ;READER CHECK ERROR SET FROM BEGINNING
3952
3953
3954 022650 032713 000004      3$: BIT      #4, 2CDS ;CHECK BIT 2
3955 022654 001401              BEQ      4$ ;BRANCH IF NOT SET
3956 022656 104051              ERROR +51 ;HOPPER CHECK SET FROM BEGINNING
3957
3958 022660 005713              4$: TST      2CDS ;CHECK ERROR BIT
3959 022662 100001              BPL      5$ ;BRANCH IF NOT SET
3960 022664 104014              ERROR +14 ;ERROR SET FROM BEGINNING
3961
3962
3963
3964
3965 022666 012712 023120      5$: MOV      #TINTI, 2ADINT ;LOAD RETURN POINTER
3966 022672              SECN:
3967 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
3968 CLR      -(SP) ;
3969 MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
3970 MOV      #64$, 34 ;SETUP NEW TRAP VECTOT
3971 TRAP ;PUSH OLD PSW AN PCON STACK
3972 022710 016666 000002 000006 64$: MOV      2(SP), 6(SP) ;
3973 022716 012716 022724 ;REPLACE OLD PC WITH NEW
3974 022722 000002 ;RESTORE PSW
3975 022724 012637 000034 65$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
3976 022730 012637 001214 ;
3977 022734 052737 000340 001214 MOV      (SP)+, $TMP6
3978 022742 013746 001214 BIS      #340, $TMP6
3979 022746 012746 022754 MOV      $TMP6, -(SP) ;PUT NEW PS ON STACK
3980 022752 000002 MOV      #66$, -(SP) ;PUT NEW PC ON STACK
3981 022754 66$: RTI ;POP NEW PC AND PS
3982 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS, 2(ADINT)"
3983 CLR      -(SP) ;
3984 022756 013746 000034 MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
3985 022762 012737 022772 000034 MOV      #67$, 34 ;SETUP NEW TRAP VECTOT
3986 022770 104400 TRAP ;PUSH OLD PSW AN PCON STACK
3987 022772 016666 000002 000006 67$: MOV      2(SP), 6(SP) ;
3988 023000 012716 023006 MOV      #68$, (SP) ;REPLACE OLD PC WITH NEW
3989 023004 000002 ;RESTORE PSW
3990 023006 012637 000034 68$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
3991 023012 012662 000002 MOV      (SP)+, 2(ADINT)
3992 ;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
3993 023016 005046 CLR      -(SP) ;
3994 023020 013746 000034 MOV      34, -(SP) ;SAVE CURRENT TRAP VECTOR
3995 023024 012737 023034 000034 MOV      #69$, 34 ;SETUP NEW TRAP VECTOT
3996 023032 104400 TRAP ;PUSH OLD PSW AN PCON STACK
3997 023034 016666 000002 000006 69$: MOV      2(SP), 6(SP) ;
3998 023042 012716 023050 MOV      #70$, (SP) ;REPLACE OLD PC WITH NEW
3999 023046 000002 ;RESTORE PSW
4000 023050 012637 000034 70$: MOV      (SP)+, 34 ;RESTORE OLD TRAP VECTOR
4001 023054 012637 001214 MOV      (SP)+, $TMP6

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 DZCDB.P11 T42 TEST 'END OF FILE' AND HOPPER CHECK

SEQ 0150

4002	023063	042737	000340	001214	BIC	#340, STMP6	
4003	023066	013746	001214		MOV	STMP6, -(SP)	;; PUT NEW PS ON STACK
4004	023072	012746	023100		MOV	#715, -(SP)	;; PUT NEW PC ON STACK
4005	023076	000002			RTI		;; POP NEW PC AND PS
4006	023100				715:		
4007	023100	012713	000100		MOV	#100, ACDS	; SET INTERRUPT ENABLE
4008	023104	012714	177701		MOV	#-77, CDC	; SET UP COLUMN COUNT
4009	023110	012715	045442		MOV	#BUFBEG, ACDA	; SET UP BUS ADDRESS
4010	023114	005213			INC	ACDS	; START READER
4011	023116	000777			BR	.	; WAIT FOR AN INTERRUPT
4012							
4013							
4014	023120	022626			TINTI:	CMP (SP)+, (SP)+	; RESTORE THE STACK
4015							
4016	023122	032713	020000		BIT	#20000, ACDS	; CHECK BIT 13
4017	023126	001401			BEQ	15	; BRANCH IF NOT SET
4018	023130	104047			ERROR	+47	; EOF SET AT END OF ONE CARD
4019							
4020	023132	032713	040000		15:	BIT #40000, ACDS	; CHECK BIT 14
4021	023136	001401			BEQ	25	; BRANCH IF NOT SET
4022	023140	104050			ERROR	+50	; READER CHECK ERROR SET AT END OF ONE CARD
4023							
4024	023142	005713			25:	TST ACDS	; CHECK ERROR BIT
4025	023144	100001			BPL	35	; BRANCH IF NOT SET
4026	023146	104014			ERROR	+14	; ERROR SET AT END OF ONE CARD
4027							
4028	023150	012712	023156		35:	MOV #TINTIA, ADINT	; LOAD RETURN POINTER
4029	023154	000646			BR	SECN	; READ SECOND CARD
4030	023156	022626			TINTIA:	CMP (SP)+, (SP)+	; RESTORE THE STACK
4031							
4032	023160	032713	020000		BIT	#20000, ACDS	; CHECK BIT 13
4033	023164	001001			BNE	15	; BRANCH IF SET
4034	023166	104052			ERROR	+52	; EOF NOT SET AT END OF FILE
4035							
4036	023170	032713	040000		15:	BIT #40000, ACDS	; CHECK BIT 14
4037	023174	001001			BNE	25	; BRANCH IF SET
4038	023176	104053			ERROR	+53	; READER CHECK NOT SET AT END OF FILE
4039							
4040	023200	032713	000004		25:	BIT #4, ACDS	; CHECK BIT 2
4041	023204	001001			BNE	35	; BRANCH IF SET
4042	023206	104054			ERROR	+54	; HOPPER CHECK NOT SET WHEN HOPPER EMPTY
4043							
4044							
4045	023210	005713			35:	TST ACDS	; CHECK ERROR BIT
4046	023212	100401			BMI	45	; BRANCH IF SET
4047	023214	104026			ERROR	+26	; ERROR BIT NOT SET AT END OF FILE
4048							
4049	023216	104400	032045		45:	TYPE, MSG6	; "RESTORE CARDS TO THE INPUT HOPPER"
4050	023222	104400	031576		TYPE,	MSG1	; "PRESS CARD READER 'RESET'"
4051	023226	104400	031632		TYPE,	MSG2	; "THEN HIT CONTINUE ON THE CONSOLE"
4052	023232	104400	030550		TYPE,	CRLF-3	; MOVE MESSAGE UP ON TTY
4053	023236	000000			HALT		
4054							
4055	023240	032713	000010		55:	BIT #10, ACDS	; CHECK TRANSITION TO ON LINE

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DZCDB.P11 T42 TEST 'END OF FILE' AND HOPPER CHECK

SEQ 0151

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4056 023244 001775          BEQ      5$          ;WAIT FOR IT
4057
4058
4059 023246 032713 020000    BIT      #20000, @CDS ;CHECK BIT 13
4060 023252 001401          BEQ      TSTM10      ;BRANCH IF NOT SET
4061 023254 104055          ERROR +55          ;EOF DIDN'T CLEAR BY TRANSITION TO ON LINE
4062
4063 023256          TSTM10:
4064          ;*****
4065          ;*TEST 43      TEST READ CHECK ERROR
4066          ;*****
4067 023256 000004    TST43: SCOPE
4068          ;A READ CHECK ERROR SHOULD SET BIT 15, BIT 14, AND BIT 12
4069          ;THIS ERROR OCCURS WHEN THE READ ELECTRONICS IN THE CARD
4070          ;READER DISAGREES WITH THE NORMAL UNPUNCHED AREA OF THE CARD
4071 023260 004737 025744    JSR      PC, INIT
4072 023264 104400 036174    TYPE,    MSG40
4073 023270 104400 032706    TYPE,    MSG12
4074
4075 023274 104400 031576    TYPE,    MSG1
4076 023300 104400 030550    TYPE,    CRLF-3
4077 023304 032713 010000    TLOPH: BIT  #10000, @CDS
4078 023310 001775          BEQ      TLOPH
4079 023312 032713 000010    TLOPHA: BIT  #10, @CDS
4080 023316 001775          BEQ      TLOPHA
4081 023320 022713 140210    CMP      #140210, @CDS
4082 023324 001401          BEQ      1$
4083 023326 104004          ERROR +4
4084
4085 023330 012714 177701    1$:      MOV      #-77, @CDC
4086 023334 012715 045442    MOV      #BUF@EG, @CDA
4087 023340 005213          INC      @CDS
4088 023342 105713          TLOPHB: TSTB   @CDS
4089 023344 100376          @PL      TLOPHB
4090 023346 032713 010000    BIT      #10000, @CDS
4091 023352 001001          BNE      1$
4092 023354 104043          ERROR +43
4093
4094 023356 005713          1$:      TST      @CDS
4095 023360 100401          BMI      2$
4096 023362 104026          ERROR +26
4097
4098 023364 032713 040000    2$:      BIT      #40000, @CDS
4099 023370 001001          BNE      3$
4100 023372 104053          ERROR +53
4101
4102 023374 005777 155640    3$:      TST      @CDOB
4103 023400 100005          EPL      4$
4104
4105 023402 032777 040000 155630 BIT      #40000, @CDOB
4106 023410 001001          BNE      4$
4107 023412 104056          ERROR +56
4108
4109 023414 032713 027577    4$:      BIT      #027577, @CDS ;CHECK FOR EXTRA BITS

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 DZCDB.P11 T43 TEST READ CHECK ERROR

SEQ 0152

4110	023420	001401			BEQ	AGAIN		;BRANCH IF OK
4111	023422	104015			ERROR +15			;STATUS WORD ERROR
4112	023424	104400	035373		TYPE,	MSG30		;IS CARD READER RS-1200
4113	023430	105777	155506		WAITA: TSTB	STKS		;TEST TTY FOR READY
4114	023434	100375			BPL	WAITA		;IF NOT READY WAIT
4115	023436	117737	155502	001202	MOVB	STKB,STMP1		;MOVE CHARACTER IN
4116	023444	105777	155476		WAITB: TSTB	STPS		;TEST TTY FOR DONE
4117	023450	100375			BPL	WAITB		;WAIT IF NOT READY
4118	023452	113777	001202	155470	MOVB	STMP1,STPB		;ECHO CHARACTER
4119	023460	042737	177600	001202	BIC	#177600,STMP1		;CLEAN JUNK OFF BYTE
4120	023466	104400	030550		TYPE,	CRLF-3		
4121	023472	123727	001202	000116	CMPB	STMP1,#116		;TEST FOR N
4122	023500	001452			BEQ	BYPASS		;SKIP TEST IF NO
4123	023502	123727	001202	000131	CMPB	STMP1,#131		;TEST FOR Y
4124	023510	001403			BEQ	SS		;BRANCH IF YES
4125	023512	104400	032570		TYPE,	MSG10		;WRONG RESPONSE TRY AGAIN
4126	023516	000742			BR	AGAIN		;CHARACTER WAS NOT Y OR N
4127								;REPEAT QUESTION AGAIN
4128								
4129	023520	104400	036226		SS:	TYPE,	MSG41	;TST43A MIS-REGISTERED CARD TEST
4130	023524	104400	034745		TYPE,	MSG26		;TEST FOR VISUAL VERIFICATION OF
4131								;READ CHECK LIGHT
4132	023530	104400	030553		TYPE,	CRLF		
4133	023534	104400	035064		TYPE,	MSG27		;PLACE CARD INTO HOPPER
4134	023540	104400	031576		TYPE,	MSG1		
4135	023544	104400	030550		TYPE,	CRLF-3		
4136								
4137	023550	032713	010000		TLOPHC: JIT	#10000,ACDS		;WAIT FOR OFF-LINE
4138	023554	001775			BEQ	TLOPHC		;WAIT FOR OFF-LINE
4139	023556	032713	000010		TLOPHC: BIT	#10,ACDS		;CHECK FOR TRANSITION TO ON LINE
4140	023562	001775			BEQ	TLOPHD		
4141	023564	022713	140210		CMP	#140210,ACDS		;CHECK FOR CORRECT STATUS BITS
4142	023570	001401			BEQ	IS		;BRANCH IF OK
4143	023572	104004			ERROR +4			;STATUS NOT EQUAL 140210
4144								
4145	023574	012714	177701		IS:	MOV	#-77,ACDC	;SET UP COLUMN COUNT
4146	023600	012715	045442		MOV	#BUFBEG,ACDA		;SET UP BUS ADDRESS
4147	023604	005213			INC	ACDS		
4148								
4149	023606	105713			TLOPHE: TSTB	ACDS		
4150	023610	100376			BPL	TLOPHE		
4151	023612	032713	010000		BIT	#10000,ACDS		
4152	023616	001001			BNE	IS		
4153	023620	104043			ERROR +43			
4154								
4155	023622	104400	035236		IS:	TYPE,MSG28		;CHECK READ CHECK LIGHT
4156	023626	012712	024064		BYPASS: MOV	#TINTH,ADINT		;LOAD RETURN POINTER
4157								;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #340,PS"
4158	023632	005046			CLR	-(SP)		
4159	023634	013746	000034		MOV	34, -(SP)		;SAVE CURRENT TRAP VECTOR
4160	023640	012737	023650	000034	MOV	#64\$,34		;SETUP NEW TRAP VECTOT
4161	023646	104400			TRAP			;PUSH OLD PSW AN PC ON STACK
4162	023650	016666	000002	000006	64\$: MOV	2(SP),6(SP)		
4163	023656	012716	023664		MOV	#65\$,1(SP)		;REPLACE OLD PC WITH NEW

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 DZCDB.P11 T43 TEST READ CHECK ERROR

SEQ 0153

4164	023662	000002			RTI		;;RESTORE PSW
4165	023664	012637	000034		MOV	(SP)+,34	;;RESTORE OLD TRAP VECTOR
4166	023670	012637	001214		MOV	(SP)+,\$TMP6	
4167	023674	052737	000340	001214	BIS	#340,\$TMP6	
4168	023702	013746	001214		MOV	\$TMP6,-(SP)	;;PUT NEW PS ON STACK
4169	023706	012746	023714		MOV	#66\$,-(SP)	;;PUT NEW PC ON STACK
4170	023712	000002			RTI		;;POP NEW PC AND PS
4171	023714						
4172							
4173	023714	005046			CLR	-(SP)	;;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "MOV PS,2(ADINT)"
4174	023716	013746	000034		MOV	34,-(SP)	;;SAVE CURRENT TRAP VECTOR
4175	023722	012737	023732	000034	MOV	#67\$,34	;;SETUP NEW TRAP VECTOR
4176	023730	104400			TRAP		;;PUSH OLD PSW AN PC ON STACK
4177	023732	016666	000002	000006	MOV	2(SP),6(SP)	;;
4178	023740	012716	023746		MOV	#68\$, (SP)	;;REPLACE OLD PC WITH NEW
4179	023744	000002			RTI		;;RESTORE PSW
4180	023746	012637	000034		MOV	(SP)+,34	;;RESTORE OLD TRAP VECTOR
4181	023752	012652	000002		MOV	(SP)+,2(ADINT)	
4182							;;THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #340,PS"
4183	023756	005046			CLR	-(SP)	;;
4184	023760	013746	000034		MOV	34,-(SP)	;;SAVE CURRENT TRAP VECTOR
4185	023764	012737	023774	000034	MOV	#69\$,34	;;SETUP NEW TRAP VECTOR
4186	023772	104400			TRAP		;;PUSH OLD PSW AN PC ON STACK
4187	023774	016666	000002	000006	MOV	2(SP),6(SP)	;;
4188	024002	012716	024010		MOV	#70\$, (SP)	;;REPLACE OLD PC WITH NEW
4189	024006	000002			RTI		;;RESTORE PSW
4190	024010	012637	000034		MOV	(SP)+,34	;;RESTORE OLD TRAP VECTOR
4191	024014	012637	001214		MOV	(SP)+,\$TMP6	
4192	024020	042737	000340	001214	BIC	#340,\$TMP6	
4193	024026	013746	001214		MOV	\$TMP6,-(SP)	;;PUT NEW PS ON STACK
4194	024032	012746	024040		MOV	#71\$,-(SP)	;;PUT NEW PC ON STACK
4195	024036	000002			RTI		;;POP NEW PC AND PS
4196	024040						
4197	024040	012713	000100		MOV	#100, 2CDS	;;SET INTERRUPT ENABLE
4198	024044	104400	030045		TYPE,	MSG6	;;"RESTORE CARDS TO THE INPUT HOPPER"
4199	024050	104400	035306		TYPE,	MSG29	;;"PRESS CARD READER 'RESET'"
4200	024054	104400	030550		TYPE,	CRLF-3	;;MOVE MESSAGE UP ON TTY
4201	024060	000777			BR	.	;;WAIT FOR AN INTERRUPT
4202	024062	000000			HALT		
4203	024064	022626			TINTH: CMP	(SP)+, (SP)+	;;RESTORE THE STACK
4204	024066	000004			SCOPE		
4205	024070	104400	001222		TYPE,	\$BELL	;;RING-A-DING
4206	024074	000137	016134		JMP	ERI2CD	;;LOOP BACK TO THE BEGINNING
4207							
4208							
4209							
4210							
4211							
4212							
4213							
4214							
4215	024100						
4216	024100	012706	001100		MOV	\$SCMTAG,R6	;;FIRST LOCATION TO BE CLEARED
4217	024104	005026			CLR	(R6)+	;;CLEAR MEMORY LOCATION

 ROUTINE TO LOOP THRU A SINGLE INSTRUCTION TEST OR ERROR FUNCTION TEST
 NOTE THAT SW11 MUST BE DOWN AFTER 2ND HALT
 NOTE THAT SW(14) MUST BE SET.....MUST BE SET.....MUST BE SET.....

 TESTX:

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LOOP ON TEST ROUTINE

4218	024106	022706	001126		CMP	#SBO DAT,R6	:: DONE?
4219	024112	001374			BNE	.-6	:: LOOP BACK IF NO
4220	024114	012706	001100		MOV	#STACK,SP	:: SETUP THE STACK POINTER
4221	024120	012737	026326	000020	MOV	#SCOPE,2#IOTVEC	:: IOT VECTOR FOR SCOPE ROUTINE
4222	024126	012737	000340	000022	MOV	#340,2#IOTVEC+2	:: LEVEL 7
4223	024134	012737	026152	000030	MOV	#ERROR,2#EMTVEC	:: EMT VECTOR FOR ERROR ROUTINE
4224	024142	012737	000340	000032	MOV	#340,2#EMTVEC+2	:: LEVEL 7
4225	024150	012737	027374	000034	MOV	#STRAP,2#TRAPVEC	:: TRAP VECTOR FOR TRAP CALLS
4226	024156	012737	000340	000036	MOV	#340,2#TRAPVEC+2	:: LEVEL 7
4227	024164	012737	027430	000024	MOV	#SPWRDN,2#PWAVEC	:: POWER FAILURE VECTOR
4228	024172	012737	000340	000026	MOV	#340,2#PWAVEC+2	:: LEVEL 7
4229	024200	013737	014774	014766	MOV	SENDCT,SEOPCT	:: SETUP END-OF-PROGRAM COUNTER
4230	024206	005037	001220		CLR	STIMES	:: INITIALIZE NUMBER OF ITERATIONS
4231	024212	012737	015140	000014	MOV	#SRTN,2#TBITVEC	:: SET "T" BIT VECTOR TO SRTN
4232	024220	012737	000340	000016	MOV	#340,2#TBITVEC+2	:: LEVEL 7
4233	024226	012737	000002	015140	MOV	#RTI,SRTN	:: SET SRTN TO A RTI
4234	024234	012737	024262	000010	MOV	#65\$,2#RESVEC	:: TRY TO DO A RTT
4235	024242	005046			CLR	-(SP)	:: DUMMY PS
4236	024244	012746	024252		MOV	#64\$,-(SP)	:: AND PC
4237	024250	000006			RTT		:: TRY THE RTT
4238	024252	012737	000006	015140	MOV	#RTT,SRTN	:: RTT IS LEGAL--SET SRTN TO A RTT
4239	024260	000402			BR	66\$	
4240	024262	062706	000010		ADD	#10,SP	:: RTT ILLEGAL--CLEAN OFF THE STACK
4241	024266	012737	000012	000010	MOV	#RESVEC+2,2#RESVEC	:: RESTORE TRAP CATCHER
4242	024274	005037	015146		CLR	STBIT	:: CLEAR "T" BIT SWITCH
4243	024300	012737	024300	001106	MOV	#,SLPADR	:: INITIALIZE THE LOOP ADDRESS FOR SCOPE
4244	024306	013746	000004		MOV	2#4,-(SP)	:: SAVE ERROR VECTOR
4245	024312	013746	000006		MOV	2#6,-(SP)	
4246	024316	012737	024332	000004	MOV	#67\$,4	:: SET UP TIME OUT VECTOR
4247	024324	005777	154606		TST	2SWR	:: TRY TO REFERENCE HARDWARE SWR
4248	024330	000407			BR	68\$	:: BRANCH IF NO TIMEOUT TRAP OCCURS
4249	024332	012737	000176	001136	MOV	#SWREG,SWR	:: POINT TO SOFTWARE SWR
4250	024340	012737	000174	001140	MOV	#DISPREG,DISPLAY	:: POINT TO SOFTWARE DISPLAY REG
4251	024346	022626			CMP	(SP)+,2#4	:: RESTORE STACK
4252	024350	012637	000006		MOV	(SP)+,2#6	:: RESTORE ERROR VECTOR
4253	024354	012637	000004		MOV	(SP)+,2#4	
4254	024360	004737	045366		JSR	PC,SETUP	:: SETUP POINTERS AND FLAGS
4255	024364	104400	034223		TYPE,	MSG23	:: ASK USER TO LOAD ADDRESS OF DESIRED
4256							:: TEST INTO SWITCH REGISTER, THEN
4257							:: PRESS CONTINUE
4258	024370	000000			HALT		:: WAIT FOR STARTING ADDRESS
4259	024372	017737	154540	024622	MOV	2SWR,RETRNX	:: STORE STARTING ADDRESS
4260	024400	062737	000002	024622	ADD	#2,RETRNX	:: CHANGE TO FIRST ADDRESS AFTER SCOPE INSTRUCTION
4261	024406	104400	034472		TYPE,	MSG24	:: ASK USER TO SET SWITCH REGISTER
4262							:: OPTIONS, THEN PRESS CONTINUE
4263	024412	000000			HALT		:: SET SWR OPTIONS (BIT 11 MUST = 0)
4264	024414	032777	010000	154514	BIT	#10000,2SWR	:: CHECK SW12
4265	024422	001432			BEQ	1\$	:: BRANCH IF NOT SET
4266							:: THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIC #20,PS"
4267	024424	005046			CLR	-(SP)	
4268	024426	013746	000034		MOV	34,-(SP)	:: SAVE CURRENT TRAP VECTOR
4269	024432	012737	024442	000034	MOV	#69\$,34	:: SETUP NEW TRAP VECTOT
4270	024440	104400			TRAP		:: PUSH OLD PSW AN PCON STACK
4271	024442	016666	000002	000006	MOV	2(SP),6(SP)	::

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DZCDB.P11 LOOP ON TEST ROUTINE

SEQ 0155

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4272 024450 012716 024456      MOV      #70$, (SP)          ;; REPLACE OLD PC WITH NEW
4273 024454 000002              RTI                      ;; RESTORE PSW
4274 024456 012637 000034      70$:  MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
4275 024462 012637 001214      MOV      (SP)+, STMP6
4276 024466 042737 000020 001214 BIC      #20, STMP6
4277 024471 013746 001214      MOV      STMP6, -(SP)      ;; PUT NEW PS ON STACK
4278 024500 012746 024506      MCV      #71$, -(SP)      ;; PUT NEW PC ON STACK
4279 024504 000002              RTI                      ;; POP NEW PC AND PS
4280 024506
4281 024506 000431      71$:  BR       2$              ; SKIP NEXT INSTRUCTION
4282 024510      1$:
4283              ; THE FOLLOWING REPRESENTS THE EQUIVALENT OF "BIS #20, PS"
4284 024510 005046      CLR      -(SP)
4285 024512 013746 000034      MOV      34, -(SP)      ;; SAVE CURRENT TRAP VECTOR
4286 024516 012737 024526 000034      MOV      #72$, 34      ;; SETUP NEW TRAP VECTOR
4287 024524 104400      TRAP
4288 024526 016666 000002 000006 72$:  MOV      2(SP), 6(SP)      ;;
4289 024534 012716 024542      MOV      #73$, (SP)      ;; REPLACE OLD PC WITH NEW
4290 024540 000002              RTI                      ;; RESTORE PSW
4291 024542 012637 000034      73$:  MOV      (SP)+, 34      ;; RESTORE OLD TRAP VECTOR
4292 024546 012637 001214      MOV      (SP)+, STMP6
4293 024552 052737 000020 001214      BIS      #20, STMP6
4294 024560 013746 001214      MOV      STMP6, -(SP)      ;; PUT NEW PS ON STACK
4295 024564 012746 024572      MCV      #74$, -(SP)      ;; PUT NEW PC ON STACK
4296 024570 000002              RTI                      ;; POP NEW PC AND PS
4297 024572
4298 024572 012737 024600 027576 74$:  MOV      #XLOOP, RETURN      ; SAVE RETURN POINT FOR THIS SECTION
4299              2$:
4300 024600 104400 030556      XLOOP:  TYPE,    STMES      ; FOR POWER FAILURE RETURN
4301 024604 104400 031454      TYPE,    MLOOP      ; TYPE MAINDEC TITLE & REV. LEVEL
4302              ; INDICATE "ENTERING A LOOP ON TEST
4303 024610 013737 024622 001106      MOV      RETRNX, $LPADR      ; SELECTED BY THE USER"
4304              ; STORE 1ST ADDRESS OF TEST FOR LOOPING
4305 024616 000177 000000      JMP      @RETRNX      ; $LPADR WILL BE PICKED UP BY 'SCOPE'
4306 024622 000000      RETRNX: 0      ; JUMP TO TEST SELECTED
4307
4308
4309
4310
4311
4312
4313
4314
4315
4316
4317
4318
4319
4320
4321
4322
4323
4324
4325 024624

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*****
ROUTINE TO CHECK CARDS WHICH HAVE ALL COLUMNS IDENTICALLY PUNCHED.
THIS ROUTINE ALLOWS SPECIFIC TYPES OF DATA FAILURES TO BE STUDIED
EASILY. THE ROUTINE HALTS ONCE AT THE START. SET THE CORRECT CARD
IMAGE PATTERN IN SW11-SW00, THEN HIT CONTINUE (AFTER THE DECK IS
LOADED AND CARD READER IS ON-LINE). THE PATTERN IS STORED, AND THEN
EACH COLUMN OF EACH CARD IS READ TWICE AND COMPARED WITH IT. IF A
DISCREPANCY OCCURS, THE ERROR IS PRINTED OUT ALONG WITH THE TOTAL
NUMBER OF CARDS READ AND THE TOTAL NUMBER OF DATA ERRORS DISCOVERED
UP TO THAT POINT (ALL PRINTOUTS ARE IN OCTAL). WHEN THE INPUT HOPPER
IS EMPTY, THE ROUTINE RINGS THE BELL AND WAITS FOR MORE CARDS TO BE
LOADED AND THE CARD READER TO BE PUT BACK ON-LINE.
SW15=1 CAUSES A HALT AFTER AN ERROR, AND SW13=1 INHIBITS ERROR PRINTOUTS.
*****

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CKSAME:

N12

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 IDENTICALLY PUNCHED CARDS TEST

SEW 0156

4326	024624	012706	001100		MOV	#SCMTAG,R6	;; FIRST LOCATION TO BE CLEARED
4327	024630	005026			CLR	(R6)+	;; CLEAR MEMORY LOCATION
4328	024632	022706	001126		CMP	#SBO DAT,R6	;; DONE?
4329	024636	001374			BNE	.-6	;; LOOP BACK IF NO
4330	024640	012706	001100		MOV	#STACK,SP	;; SETUP THE STACK POINTER
4331	024644	012737	026326	000020	MOV	#SCOPE,2#IOTVEC	;; IOT VECTOR FOR SCOPE ROUTINE
4332	024652	012737	000340	000022	MOV	#340,2#IOTVEC+2	;; LEVEL 7
4333	024660	012737	026152	000030	MOV	#ERROR,2#EMTVEC	;; EMT VECTOR FOR ERROR ROUTINE
4334	024666	012737	000340	000032	MOV	#340,2#EMTVEC+2	;; LEVEL 7
4335	024674	012737	027374	000034	MOV	#STRAP,2#TRAPVEC	;; TRAP VECTOR FOR TRAP CALLS
4336	024702	012737	000340	000036	MOV	#340,2#TRAPVEC+2	;; LEVEL 7
4337	024710	012737	027430	000024	MOV	#SPWRON,2#PWAVEC	;; POWER FAILURE VECTOR
4338	024716	012737	000340	000026	MOV	#340,2#PWAVEC+2	;; LEVEL 7
4339	024724	013737	014774	014766	MOV	SENDCT,SEOPCT	;; SETUP END-OF-PROGRAM COUNTER
4340	024732	005037	001220		CLR	\$TIMES	;; INITIALIZE NUMBER OF ITERATIONS
4341	024736	012737	015140	000014	MOV	#SRTN,2#TBITVEC	;; SET "T" BIT VECTOR TO SRTN
4342	024744	012737	000340	000016	MOV	#340,2#TBITVEC+2	;; LEVEL 7
4343	024752	012737	000002	015140	MOV	#RTI,SRTN	;; SET SRTN TO A RTI
4344	024760	012737	025006	000010	MOV	#65\$,2#RESVEC	;; TRY TO DO A RTT
4345	024766	005046			CLR	-(SP)	;; DUMMY PS
4346	024770	012746	024776		MOV	#64\$,-(SP)	;; AND PC
4347	024774	000006			RTT		;; TRY THE RTT
4348	024776	012737	000006	015140	MOV	#RTT,SRTN	;; RTT IS LEGAL--SET SRTN TO A RTT
4349	025004	000402			BR	66\$	
4350	025006	062706	000010		ADD	#10,SP	;; RTT ILLEGAL--CLEAN OFF THE STACK
4351	025012	012737	000012	000010	MOV	#RESVEC+2,2#RESVEC	;; RESTORE TRAP CATCHER
4352	025020	005037	015146		CLR	\$TBIT	;; CLEAR "T" BIT SWITCH
4353	025024	012737	025024	001106	MOV	#,SLPADR	;; INITIALIZE THE LOOP ADDRESS FOR SCOPE
4354	025032	013746	000004		MOV	2#4,-(SP)	;; SAVE ERROR VECTOR
4355	025036	013746	000006		MOV	2#6,-(SP)	
4356	025042	012737	025056	000004	MOV	#67\$,4	;; SET UP TIME OUT VECTOR
4357	025050	005777	154062		TST	2\$WR	;; TRY TO REFERENCE HARDWARE SWR
4358	025054	000407			BR	68\$	;; BRANCH IF NO TIMEOUT TRAP OCCURS
4359	025056	012737	000176	001136	MOV	#SWREG,SWR	;; POINT TO SOFTWARE SWR
4360	025061	012737	000174	001140	MOV	#DISPREG,DISPLAY	;; POINT TO SOFTWARE DISPLAY REG
4361	025072	022626			CMP	(SP)+,2#4	;; RESTORE STACK
4362	025074	012637	000006		MOV	(SP)+,2#6	;; RESTORE ERROR VECTOR
4363	025100	012637	000004		MOV	(SP)+,2#4	
4364	025104	012737	024624	027576	MOV	#CKSAME,RETURN	;; SAVE RETURN POINT FOR THIS SECTION
4365							;; FOR POWER FAILURE ROUTINE
4366	025112	104400	030556		TYPE,	\$TIMES	;; TYPE MAINDEC TITLE & REV. LEVEL
4367	025116	104400	031527		TYPE,	MPATS	;; INDICATE "ENTERING SINGLE DATA
4368							;; PATTERN TESTING"
4369	025122	004737	045366		JSR	PC,SETUP	;; INITIALIZE POINTERS
4370	025126	104400	034574		TYPE,	MSG25	;; ASK USER TO LOAD PATTERN VALUE INTO
4371							;; SWITCH REGISTER SWS<11:0>, THEN
4372							;; PRESS CONTINUE
4373	025132	000000			HALT		;; WAIT FOR CARD IMAGE PATTERN
4374	025134	017737	153776	025736	MOV	2\$WR,CARDIM	;; STORE PATTERN
4375	025142	042737	170000	025736	BIC	#170000,CARDIM	;; CLEAR UPPER BITS OF PATTERN
4376	025150	013737	025736	025740	MOV	CARDIM,CDPK0	
4377	025156	005037	025742		CLR	DERFLG	
4378	025162	006037	025740		ROR	CDPK0	
4379	025166	106137	025741		ROLB	CDPK1	

4380	025172	106037	025740	RORB	CDPK0	
4381	025176	106137	025741	ROLB	CDPK1	
4382	025202	106137	025741	ROLB	CDPK1	
4383	025206	106137	025741	ROLB	CDPK1	
4384	025212	106137	025741	ROLB	CDPK1	
4385	025216	012701	000007	MOV	#7, R1	
4386	025222	006037	025740	CKLOP1: ROR	CDPK0	
4387	025226	103004		BCC	CKOVR	
4388	025230	005237	025742	INC	DERFLG	
4389	025234	150137	025741	BISB	R1, CDPK1	
4390	025240	005301		CKOVR: DEC	R1	
4391	025242	001367		BNE	CKLOP1	
4392	025244	104400	034472	TYPE,	MSG24	
4393						;ASK USER TO SET SWITCH REGISTER
4394	025250	000000				;OPTIONS, THEN PRESS CONTINUE
4395	025252	004737	025744	CKSTRT: JSR	PC, INIT	;WAIT FOR SWITCH SETTINGS
4396	025256	005037	025734	CLR	TOTCRD	;INITIALIZE CARD COUNT
4397	025262	005037	025732	CLR	TOTERR	;INITIALIZE ERROR COUNT
4398	025266	005037	001260	CLR	ERFLG	;CLEAR FLAG FOR PRINTING ERROR HEADING
4399	025272	105037	025743	CKLOOP: CLRB	DERFLG+1	
4400	025276	032777	000010	BIT	#10, %SWR	;CHECK FOR PACK MODE ONLY
4401	025304	001410		BEQ	CKREAD	;BRANCH IF NOT SET
4402	025306	032777	000004	BIT	#4, %SWR	;CHECK FOR IMAGE MODE ONLY
4403	025314	001004		BNE	CKREAD	;BRANCH IF SET
4404	025316	052713	000002	BIS	#2, %CDS	;SET PACKING MODE
4405	025322	105137	025743	CKREAD: COMB	DERFLG+1	
4406	025326	005037	015334	CLR	CLCNT	;INITIALIZE COLUMN COUNT
4407	025332	012700	045442	MOV	%BUFBEQ, RO	;SET UP BUFFER POINTER
4408	025336	012714	177660	MOV	#-120, %CDC	;SET UP COLUMN COUNTER
4409	025342	010015		MOV	RO, %CDA	;SET UP BUS ADDRESS
4410	025344	005213		INC	%CDS	;START READING CARD
4411	025346	005237	025734	INC	TOTCRD	;INCREMENT CARD COUNT
4412	025352	105713		CKLP1: TSTB	%CDS	;CHECK CONTROLLER READY
4413	025354	100376		BPL	CKLP1	;LOOP IF NOT SET
4414	025356	005713		TST	%CDS	;CHECK FOR ERROR
4415	025360	100435		BMI	CKERR	;BRANCH IF ERROR SET
4416	025362	005737	025742	TST	DERFLG	
4417	025366	100012		BPL	CKLOP2	
4418	025370	122037	025741	CKLOP3: CMPB	(RO)+, CDPK1	;CHECK DATA (PACKED MODE)
4419	025374	001054		BNE	CKFAIL	
4420	025376	005237	015334	INC	CLCNT	
4421	025402	023727	015334	CMP	CLCNT, #120	
4422	025410	001367		BNE	CKLOP3	
4423	025412	000727		BR	CKLOOP	
4424	025414	012037	001200	CKLOP2: MOV	(RO)+, \$TMP0	;GET VALUE READ FROM CARD
4425	025420	042737	170000	BIC	#170000, \$TMP0	;STRIP OFF BITS 15 THRU 12
4426						;IN THE EVENT WE ARE TESTING A CD20
4427	025426	023737	001200	CMP	\$TMP0, CARDIM	;CHECK THE DATA (IMAGE MODE)
4428	025434	001034		BNE	CKFAIL	;BRANCH IF DATA ERROR
4429	025436	005237	015334	INC	CLCNT	;COUNT THE COLUMNS
4430	025442	023727	015334	CMP	CLCNT, #120	;CHECK FOR LAST COLUMN
4431	025450	001361		BNE	CKLOP2	
4432	025452	000707		BR	CKLOOP	
4433						

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IDENTICALLY PUNCHED CARDS TEST

SEQ 0158

4434	025454	032713	010000	CKERR:	BIT	#10000, 2CDS	;CHECK FOR OFFLINE
4435	025460	001406			BEQ	CKERR1	;BRANCH IF NOT
4436	025462	104400	001222		TYPE,	\$BELL	;RING-A-DING
4437	025466	032713	000010	CKERR3:	BIT	#10, 2CDS	;CHECK TRANSITION TO ON-LINE
4438	025472	001775			BEQ	CKERR3	;BRANCH IF OFF-LINE
4439	025474	000666			BR	CKSTR	;START OVER
4440							
4441	025476	032713	004000	CKERR1:	BIT	#4000, 2CDS	;CHECK FOR DATA ERROR
4442	025502	001407			BEQ	CKERR2	
4443	025504	005737	025742		TST	DERFLG	
4444	025510	100004			BFL	CKERR2	
4445	025512	122737	000001 025742		CMPB	#1, DERFLG	;BRANCH IF LEGIT
4446	025520	003323		CKERR2:	BGT	CKLOP3	;REAL, LIVE ERROR.
4447	025522	104062			ERROR +62		
4448	025524	000662			BR	CKLOOP	
4449							
4450	025526	005237	025732	CKFAIL:	INC	TOTERR	;COUNT ERRORS
4451	025532	032777	020000 153376		BIT	#20000, 2SWR	;CHECK FOR INHIBITING PRINTOUT
4452	025540	001052			BNE	CKERROR	;BRANCH AROUND PRINTOUT IF SET
4453	025542	005737	001260		TST	ERFLG	;TEST FLAG TO PRINT HEADING
4454	025546	001004			BNE	CKNOHD	;BRANCH IF ALREADY DONE
4455	025550	005237	001260		INC	ERFLG	;PRINT HEADING ONCE ONLY
4456	025554	104400	033442		TYPE,	MSG19	;OUTPUT HEADING
4457	025560	104400	030553	CKNOHD:	TYPE,	CRLF	;OUTPUT CARRIAGE RETURN, LINEFEED
4458	025564	005237	015334		INC	CLCNT	;STEP UP COLUMN COUNT FOR ERROR REPORT
4459	025570	013746	015334		MOV	CLCNT, -(SP)	;PRINT THE COLUMN OF THE CARD
4460	025574	104404			TYPDS		;ON WHICH AN ERROR WAS DETECTED
4461	025576	104400	030545		TYPE,	SPACE	
4462	025602	005337	015334		DEC	CLCNT	;DROP COLUMN COUNT BACK AFTER REPORTING
4463	025606	005737	025742		TST	DERFLG	
4464	025612	100007			BPL	CKNOPK	
4465	025614	104400	030545		TYPE,	SPACE	
4466	025620	114046			MOVB	-(R0), -(SP)	;PRINT THE INCORRECT VALUE
4467	025622	104402			TYPDS		;THAT WAS READ FROM THE
4468	025624	003			.BYTE	3	;COLUMN INDICATED ABOVE
4469	025625	000			.BYTE	0	; (PACKED MODE)
4470	025626	105720			TSTB	(R0)+	;CORRECT MEMORY LOCATION AFTER PRINTOUT
4471	025630	000404			BR	CKOVR1	
4472	025632	014046		CKNOPK:	MOV	-(R0), -(SP)	;PRINT THE INCORRECT VALUE THAT
4473	025634	104402			TYPDS		;WAS READ FROM THE COLUMN
4474	025636	006			.BYTE	6	;INDICATED ABOVE
4475	025637	001			.BYTE	1	; (IMAGE MODE)
4476	025640	005720			TST	(R0)+	;CORRECT THE MEMORY LOCATION AFTER PRINTOUT
4477	025642	104400	030545	CKOVR1:	TYPE,	SPACE	
4478	025646	013746	025734		MOV	TOTCRD, -(SP)	;PRINT THE CARD NUMBER ON WHICH
4479	025652	104404			TYPDS		;THE ERROR WAS FOUND
4480	025654	104400	030545		TYPE,	SPACE	
4481	025660	013746	025732		MOV	TOTERR, -(SP)	;PRINT THE TOTAL NUMBER OF ERRORS
4482	025664	104404			TYPDS		;ACCUMULATED TO NOW
4483	025666	005777	153244	CKERR0P:	TST	2SWR	;CHECK SW15 TO HALT ON ERROR
4484	025672	100001			BPL	15	;BRANCH IF NOT SET
4485	025674	000000			HALT		;HALT ON ERROR
4486	025676	005237	015334	15:	INC	CLCNT	;STEP UP COLUMN COUNT TO BE CORRECT FOR
4487							;NEXT POSSIBLE COLUMN TO BE CHECKED

D13

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 DZCDB.P11 IDENTICALLY PUNCHED CARDS TEST

SEQ 0159

4488	025702	023727	015334	000120	CMP	CLCNT, #120	: HAVE WE FINISHED A CARD?
4489	025710	001002			BNE	25	: BRANCH IF NO
4490	025712	000137	025272		JMP	CKLOOP	: OTHERWISE, GO TO SET UP FOR NEXT CARD
4491	025716	032777	000004	153212 25:	BIT	#4, 2SWR	: ARE WE DOING PACKED MODE?
4492	025724	001233			BNE	CKLOP2	: BRANCH IF NOT
4493	025726	000137	025370		JMP	CKLOP3	: OTHERWISE, CONTINUE CHECKING COLUMNS
4494							: IN PACKED MODE
4495							
4496	025732	000000			TOTERR:	0	
4497	025734	000000			TOTCRD:	0	
4498	025736	000000			CARDIM:	0	
4499	025740	000			CDPK0:	.BYTE 0	
4500	025741	000			CDPK1:	.BYTE 0	
4501	025742	000000			DERFLG:	0	

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4502 ;ISSUE MESSAGE IF CARD READER IS OFF-LINE
4503 ;WAIT FOR BUSY TO CLEAR IN CASE CARD READER IS STILL READING A CARD
4504 ;INITIALIZE STATUS REGISTER AND USE ERROR HALT IF IT DOESN'T CLEAR PROPERLY
4505 ;NOTE THAT PROGRAM WILL HANG HERE IF BUSY REMAINS SET
4506
4507 025744 004737 025772 INIT: JSR PC CKOFFL ;SEE IF OFF-LINE BIT IS SET
4508 025750 105713 1S: TSTB 2CDS ;WAIT FOR CONTROLLER READY, IN CASE
4509 025752 100376 BPL 1$ ;A CARD IS STILL BEING READ
4510 025754 012713 000400 MOV 2400, 2CDS ;INITIALIZE THE CARD READER
4511 025760 022713 000200 CMP 200, 2CDS ;MAKE SURE INITIALIZATION OK
4512 025764 001401 BEQ 2$ ;BRANCH IF ALL BITS ZERO
4513 025766 104067 ERROR +67 ;NOT ALL BITS OF STATUS REGISTER ARE ZERO
4514 025770 000207 2$: RTS PC ;RETURN
4515
4516 ;SUBROUTINE TO CHECK FOR BIT 12 (OFF-LINE) BEING SET IN CARD
4517 ;READER CSR, AND PRINT OUT A MESSAGE IF IT IS
4518 025772 032713 010000 CKOFFL: BIT 210000, 2CDS ;CHECK BIT 12
4519 025776 001001 BNE 1$ ;BRANCH IF SET
4520 026000 000207 RTS PC ;RETURN IF NOT SET
4521 026002 104400 033410 1$: TYPE, MSG18 ;"CARD READER OFF-LINE"
4522 026006 104400 033175 TYPE, MSG17 ;"REMEDY THE CONDITION ... ETC."
4523 026012 000000 HALT ;WAIT FOR CONTINUE
4524 026014 000766 BR CKOFFL ;CHECK AGAIN
4525
4526 ;*****
4527
4528 .SBTTL. ERROR MESSAGE TYPEOUT ROUTINE
4529
4530 ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
4531 ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE" ($ERRTB),
4532 ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.
4533
4534 $ERRTYP:
4535 026016 104400 001227 TYPE $CRLF ;;"CARRIAGE RETURN" & "LINE FEED"
4536 026016 010045 MOV RO, -(SP) ;;SAVE RC
4537 026022 005000 CLR RO ;;PICKUP THE ITEM INDEX
4538 026024 153700 001114 BISB 2$ITEMB, RO
4539 026032 001004 BNE 1$ ;;IF ITEM NUMBER IS ZERO, JUST
4540 ;;TYPE THE PC OF THE ERROR
4541 MOV $ERRPC, -(SP) ;;SAVE $ERRPC FOR TYPEOUT
4542 ;;ERROR ADDRESS
4543 ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
4544 026040 104401 TYP0C ;;GET OUT
4545 026042 000426 BR 6$ ;;ADJUST THE INDEX SO THAT IT WILL
4546 026044 005300 1$: DEC RO ;;WORK FOR THE ERROR TABLE
4547 026046 006300 ASL RO
4548 026050 006300 ASL RO
4549 026052 006300 ASL RO
4550 026054 062700 001270 ADD 2$ERRTB, RO ;;FORM TABLE POINTER
4551 026060 012037 026070 MOV (RO)+, 2$ ;;PICKUP "ERROR MESSAGE" POINTER
4552 026064 001404 BEQ 3$ ;;SKIP TYPEOUT IF NO POINTER
4553 026066 104400 TYPE ;;TYPE THE "ERROR MESSAGE"
4554 026070 000000 2$: .WORD 0 ;;"ERROR MESSAGE" POINTER GOES HERE
4555 026072 104400 001227 TYPE , $CRLF ;;"CARRIAGE RETURN" & "LINE FEED"

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02CDB.P11 ERROR MESSAGE TYPEOUT ROUTINE

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4556 026076 012037 026106 3$: MOV (RO)+,4$ ; PICKUP 'DATA HEADER' POINTER
4557 026102 001404 BEQ 5$ ; SKIP TYPEOUT IF 0
4558 026104 104400 TYPE ; TYPE THE "DATA HEADER"
4559 026106 000200 4$: .WORD 0 ; "DATA HEADER" POINTER GOES HERE
4560 026110 104400 001227 TYPE .SCRLF ; "CARRIAGE RETURN" & "LINE FEED"
4561 026114 011000 5$: MOV (RO),RO ; PICKUP "DATA TABLE" POINTER
4562 026116 001004 BNE 7$ ; GO TYPE THE DATA
4563 026120 012600 6$: MOV (SP)+,RO ; RESTORE RO
4564 026122 104400 001227 TYPE .SCRLF ; "CARRIAGE RETURN" & "LINE FEED"
4565 026126 000207 RTS PC ; RETURN
4566 026130 7$:
4567 026130 013046 MOV 2(RO)+,-(SP) ; SAVE 2(RO)+ FOR TYPEOUT
4568 026132 104401 TYPOC ; GO TYPE--OCTAL ASCII(ALL DIGITS)
4569 026134 005710 TST (RO) ; IS THERE ANOTHER NUMBER?
4570 026136 001770 BEQ 6$ ; BR IF NO
4571 026140 104400 026146 TYPE .8$ ; TYPE TWO(2) SPACES
4572 026144 000771 BR 7$ ; LOOP
4573 026146 020040 000 8$: .ASCIZ / / ; TWO(2) SPACES
4574 026152 .EVEN
4575
4576 ;*****
4577
4578 .SBTTL ERROR HANDLER ROUTINE
4579
4580 ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT.
4581 ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
4582 ;*AND GO TO $ERRTYP ON ERROR
4583 ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
4584 ;*SW15=1 HALT ON ERROR
4585 ;*SW13=1 INHIBIT ERROR TYPEOUTS
4586 ;*SW10=1 BELL ON ERROR
4587 ;*CALL
4588 ;*
4589 ;* ERROR N ;;ERROR=EMT AND N=ERROR ITEM NUMBER
4590
4591 026152 $ERROR: MOV SP,$REG6 ; STACK POINTER POSITION
4592 026152 010637 001174 MOV 2(SP),$REG7 ; CONTENTS OF 'PSW'
4593 026156 016637 000002 001176 MOV 2CDS,$TMP0 ; CONTENTS OF DEVICE 'CDS'
4594 026164 011337 001200 MOV 2CDD8,$TMP1 ; CONTENTS OF DEVICE 'CDD'
4595 026170 017737 153044 001202 MOV 2CDC,$TMP2 ; CONTENTS OF DEVICE 'CDC'
4596 026176 011437 001204 MOV 2CDA,$TMP3 ; CONTENTS OF DEVICE 'CDA'
4597 026202 011537 001206 7$: INCB $ERFLG ; SET THE ERROR FLAG
4598 026212 001775 BEQ 7$ ; DON'T LET THE FLAG GO TO ZERO
4599 026214 013777 001102 152716 MOV $TSYNM,$DISPLAY ; DISPLAY TEST NUMBER AND ERROR FLAG
4600 026222 032777 002000 152706 BIT #BIT10,$SWR ; BELL ON ERROR?
4601 026230 001402 BEQ 1$ ; NO - SKIP
4602 026232 104400 001222 TYPE .SBELL ; RING BELL
4603 026236 005237 001112 1$: INC $ERTTL ; COUNT THE NUMBER OF ERRORS
4604 026242 011637 001116 MOV (SP),$ERRPC ; GET ADDRESS OF ERROR INSTRUCTION
4605 026246 162737 000002 001116 SUB #2,$ERRPC
4606 026254 117737 152636 001114 MOVB 2$ERRPC,$ITEMB ; STRIP AND SAVE THE ERROR ITEM CODE
4607 026262 032777 020000 152646 BIT #BIT13,$SWR ; SKIP TYPEOUT IF SET
4608 026270 001004 BNE 20$ ; SKIP TYPEOUTS
4609 026272 004737 02601E JSR PC,$ERRTYP ; GO TO USER ERROR ROUTINE

```

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 DZCDB.P11 ERROR HANDLER ROUTINE

SEQ 0162

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4610 026276 104400 001227
4611 026302
4612 026302 005777 152630
4613 026306 100006
4614 026310 000000
4615 026312 022737 015046 000042
4616 026320 001001
4617 026322 000000
4618 026324
4619 026324 000002
4620
4621
4622
4623
4624
4625
4626
4627
4628
4629
4630
4631
4632
4633
4634 026326
4635 026326 032777 040000 152602
4636 026334 001055
4637
4638 026336 000416
4639
4640 026340 013746 000004
4641 026344 012737 026364 000004
4642 026352 005737 177060
4643 026356 012637 000004
4644 026362 000436
4645 026364 022626
4646 026366 012637 000004
4647 026372 000436
4648 026374
4649 026374 105737 001103
4650 026400 001404
4651 026402 105037 001103
4652 026406 005037 001220
4653 026412 032777 004000 152516
4654 026420 001011
4655 026422 005737 001100
4656 026426 001406
4657 026430 005237 001104
4658 026434 023737 001220 001104
4659 026442 002012
4660 026444 012737 000001 001104
4661 026452 013737 026504 001220
4662 026460 105237 001102
4663 026464 011637 001106

                                TYPE ,SCRLF
20$:
2$: TST 2SWR ;;HALT ON ERROR
    BPL 3$ ;;SKIP IF CONTINUE
    HALT ;;HALT ON ERROR!
    CMP #SENDAD,2#42 ;;ACT-11 AUTO-ACCEPT?
    BNE 3$ ;;BRANCH IF NO
    HALT ;;YES
3$: RTI ;;RETURN

;*****
.SBTTL SCOPE HANDLER ROUTINE

;THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
;AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
;AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
;THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
;SW14=1 LOOP ON TEST
;SW11=1 INHIBIT ITERATIONS
;CALL SCOPE ;;SCOPE=IOT

$SCOPE:
1$: BIT #BIT14,2SWR ;;LOOP ON PRESENT TEST?
   BNE $OVER ;;YES IF SW14=1
;*****START OF CODE FOR THE XOR TESTER*****
$XTSTR: BR 6$ ;;IF RUNNING ON THE "XOR" TESTER CHANGE
                                THIS INSTRUCTION TO A "NOP" (NOP=240)
                                SAVE THE CONTENTS OF THE ERROR VECTOR
                                SET FOR TIMEOUT
                                TIME OUT ON XOR?
                                RESTORE THE ERROR VECTOR
                                GO TO THE NEXT TEST
                                CLEAR THE STACK AFTER A TIME OUT
                                RESTORE THE ERROR VECTOR
                                LOOP ON THE PRESENT TEST
                                TESTER*****
                                END OF CODE FOR THE XOR TESTER*****
6$: TSTB $ERFLG ;;HAS AN ERROR OCCURRED?
   BEQ 3$ ;;BR IF NO
   CLR $ERFLG ;;ZERO THE ERROR FLAG
   CLR $TIMES ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
   BIT #BIT11,2SWR ;;INHIBIT ITERATIONS?
   BNE 1$ ;;BR IF YES
   TST $PASS ;;IF FIRST PASS OF PROGRAM
   BEQ 1$ ;;INHIBIT ITERATIONS
   INC $ICNT ;;INCREMENT ITERATION COUNT
   CMP $TIMES,$ICNT ;;CHECK THE NUMBER OF ITERATIONS MADE
   BGE $OVER ;;BR IF MORE ITERATION REQUIRED
   MOV #1,$ICNT ;;REINITIALIZE THE ITERATION COUNTER
   MOV $MXCNT,$TIMES ;;SET NUMBER OF ITERATIONS TO DO
   INCB $TSTNM ;;COUNT TEST NUMBERS
   MOV (SP),$LPADR ;;SAVE SCOPE LOOP ADDRESS

```

H13

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 DZCDB.P11 SCOPE HANDLER ROUTINE

SEQ 0163

```

4664 026470 013777 001102 152442 $OVER: MOV $STNM, @DISPLAY ;; DISPLAY TEST NUMBER
4665 026476 013716 001106      MOV $LPADR, (SP) ;; FUDGE RETURN ADDRESS
4666 026502 000002      RTI ;; FIXES PS
4667 026504 000001      $MXCNT: 1 ;; MAX. NUMBER OF ITERATIONS
4668
4669 ;*****
4670
4671 .SBTTL TYPE ROUTINE
4672
4673 ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
4674 ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
4675 ;*NOTE1: $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
4676 ;*NOTE2: $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
4677 ;*NOTE3: $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
4678
4679 ;*
4680 ;*CALL:
4681 ;*1) USING A TRAP INSTRUCTION
4682 ;*      TYPE ,MESADR ;; MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
4683 ;*
4684 ;*      TYPE
4685 ;*      MESADR
4686 ;*
4687 026506 105737 001155 $TYPE: TSTB $TPFLG ;; IS THERE A TERMINAL?
4688 026512 100002      BPL 1$ ;; BR IF YES
4689 026514 000000      HALT ;; HALT HERE IF NO TERMINAL
4690 026516 000407      BR 3$ ;; LEAVE
4691 026520 010046      1$: MOV R0, -(SP) ;; SAVE R0
4692 026522 017600 000002      MOV @2(SP), R0 ;; GET ADDRESS OF ASCIZ STRING
4693 026526 112046      2$: MOVB (R0)+, -(SP) ;; PUSH CHARACTER TO BE TYPED ONTO STACK
4694 026530 001005      BNE 4$ ;; BR IF IT ISN'T THE TERMINATOR
4695 026532 005726      TST (SP)+ ;; IF TERMINATOR POP IT OFF THE STACK
4696 026534 012600      50$: MOV (SP)+, R0 ;; RESTORE R0
4697 026536 062716 000002      3$: ADD #2, (SP) ;; ADJUST RETURN PC
4698 026542 000002      RTI ;; RETURN
4699 026544 122716 000011      4$: CMPB #HT, (SP) ;; BRANCH IF <HT>
4700 026550 001426      BEQ 8$
4701 026552 122716 000200      CMPB #TCRLF, (SP) ;; BRANCH IF NOT <CRLF>
4702 026556 001004      BNE 5$
4703 026560 005726      TST (SP)+ ;; POP <CR> <LF> EQUIV
4704 026562 104400      TYPE ;; TYPE A CR AND LF
4705 026564 001227      $CRLF
4706 026566 000757      BR 2$ ;; GET NEXT CHARACTER
4707 026570 004737 026652      5$: JSR PC, $TYPEC ;; GO TYPE THIS CHARACTER
4708 026574 123726 001154      6$: CMPB $FILLC, (SP)+ ;; IS IT TIME FOR FILLER CHARS.?
4709 026600 001352      BNE 2$ ;; IF NO GO GET NEXT CHAR.
4710 026602 013746 001152      MOV $NULL, -(SP) ;; GET # OF FILLER CHARS. NEEDED
4711 ;; AND THE NULL CHAR.
4712 026606 105366 000001      7$: DECB 1(SP) ;; DOES A NULL NEED TO BE TYPED?
4713 026612 002770      BLT 6$ ;; BR IF NO--GO POP THE NULL OFF OF STACK
4714 026614 004737 026652      JSR PC, $TYPEC ;; GO TYPE A NULL
4715 026620 105337 026716      DECB $CHARCNT ;; DO NOT COUNT AS A COUNT
4716 026624 000770      BR 7$ ;; LOOP
4717

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DZCDB.P11 TYPE ROUTINE

SEQ 0164

```

4718 ;HCRIZONTAL TAB PROCESSOR
4719
4720 026626 112716 000040 85: MOVB #40,(SP) ; REPLACE TAB WITH SPACE
4721 026632 004737 026652 95: JSR PC,$TYPEC ; TYPE A SPACE
4722 026636 132737 000007 026715 BITB #7,$CHARCNT ; BRANCH IF NOT AT
4723 026644 001372 BNE 95 ; TAB STOP
4724 026646 005726 TST (SP)+ ; POP SPACE OFF STACK
4725 026650 000726 BR 25 ; GET NEXT CHARACTER
4726 026652 105777 152270 $TYPEC: TSTB $STPS ; WAIT UNTIL PRINTER IS READY
4727 026656 100375 BPL $TYPEC
4728 026660 116677 000002 152262 MOVB 2(SP),$STPB ; LOAD CHAR TO BE TYPED INTO DATA REG.
4729 026666 122766 000015 000002 CMFB #15,2(SP) ; BRANCH IF
4730 026674 001003 BNE 15 ; NOT <CR>
4731 026676 105037 026716 CLRB $CHARCNT
4732 026702 000406 BR $TYPEX ; EXIT
4733 026704 122766 000012 000002 15: CMPB #12,2(SP) ; BRANCH IF
4734 026712 002002 BGE $TYPEX ; <LF>
4735 026714 105227 INCB (PC)+ ; INC SPACE
4736 026716 000000 $CHARCNT: WORD 0 ; COUNT
4737 026720 000207 $TYPEX: RTS PC
4738 ; EQUATES
4739 THT=11
4740 TCRLF=200
4741
4742 ;*****
4743
4744 .SBTTL BINARY TO OCTAL (ASCII) AND TYPE
4745
4746 *THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
4747 *OCTAL (ASCII) NUMBER AND TYPE IT.
4748 *$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
4749 *CALL:
4750 * MOV NUM,-(SP) ; NUMBER TO BE TYPED
4751 * TYPOS ; CALL FOR TYPEOUT
4752 * .BYTE N ; N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
4753 * .BYTE M ; M=1 OR 0
4754 * ; 1=TYPE LEADING ZEROS
4755 * ; 0=SUPPRESS LEADING ZEROS
4756 *
4757 *$STYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
4758 *$TYPOS OR $TYPOC
4759 *CALL:
4760 * MOV NUM,-(SP) ; NUMBER TO BE TYPED
4761 * TYPON ; CALL FOR TYPEOUT
4762 *
4763 *$STYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
4764 *CALL:
4765 * MOV NUM,-(SP) ; NUMBER TO BE TYPED
4766 * TYPOC ; CALL FOR TYPEOUT
4767 *
4768
4769 026722 017646 000000 $TYPOS: MOV 3(SP),-(SP) ; PICKUP THE MODE
4770 026726 116637 000C01 027145 MOVB 1(SP),$OFILL ; LOAD ZERO FILL SWITCH
4771 026734 112637 027147 MOVB (SP)+,$OMODE+1 ; NUMBER OF DIGITS TO TYPE

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J13

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 DZCOB.P11 BINARY TO OCTAL (ASCII) AND TYPE

SL0 0165

4772	026740	062716	0000C2		ADD	#2,(SP)	;;ADJUST RETURN ADDRESS
4773	026744	000406			BR	\$TYPON	
4774	026746	112737	000001	027145	\$TYPON: MOV	#1,\$OFILL	;;SET THE ZERO FILL SWITCH
4775	026754	112737	000006	027147	MOV	#6,\$OMODE+1	;;SET FOR SIX(6) DIGITS
4776	026762	112737	000005	027144	\$TYPON: MOV	#5,\$OCNT	;;SET THE ITERATION COUNT
4777	026770	010346			MOV	R3,-(SP)	;;SAVE R3
4778	026772	010446			MOV	R4,-(SP)	;;SAVE R4
4779	026774	010546			MOV	R5,-(SP)	;;SAVE R5
4780	026776	113704	027147		MOV	\$OMODE+1,R4	;;GET THE NUMBER OF DIGITS TO TYPE
4781	027002	005404			NEG	R4	
4782	027004	062704	000006		ADD	#6,R4	;;SUBTRACT IT FOR MAX. ALLOWED
4783	027010	110437	027146		MOV	R4,\$OMODE	;;SAVE IT FOR USE
4784	027014	113704	027145		MOV	\$OFILL,R4	;;GET THE ZERO FILL SWITCH
4785	027020	016605	000012		MOV	12(SP),R5	;;PICKUP THE INPUT NUMBER
4786	027024	005003			CLR	R3	;;CLEAR THE OUTPUT WORD
4787	027026	006105		1\$:	ROL	R5	;;ROTATE MSB INTO "C"
4788	027030	000404			BR	3\$	;;GO DO MSB
4789	027032	006105		2\$:	ROL	R5	;;FORM THIS DIGIT
4790	027034	006105			ROL	R5	
4791	027036	006105			ROL	R5	
4792	027040	010503			MOV	R5,R3	
4793	027042	006103		3\$:	ROL	R3	;;GET LSB OF THIS DIGIT
4794	027044	105337	027146		DECB	\$OMODE	;;TYPE THIS DIGIT?
4795	027050	100016			BPL	7\$	;;BR IF NO
4796	027052	042703	177770		BIC	#177770,R3	;;GET RID OF JUNK
4797	027056	001002			BNE	4\$	;;TEST FOR 0
4798	027060	005704			TST	R4	;;SUPPRESS THIS 0?
4799	027062	001403			BEQ	5\$	;;BR IF YES
4800	027064	005204		4\$:	INC	R4	;;DON'T SUPPRESS ANYMORE 0'S
4801	027066	052703	000060		BIS	#'0,R3	;;MAKE THIS DIGIT ASCII
4802	027072	052703	000040		BIS	#' ,R3	;;MAKE ASCII IF NOT ALREADY
4803	027076	110337	027142		MOV	R3,\$\$	;;SAVE FOR TYPING
4804	027102	104400	027142		TYPE	\$	;;GO TYPE THIS DIGIT
4805	027106	105337	027144		DECB	\$OCNT	;;COUNT BY 1
4806	027112	003347			3GT	2\$	;;BR IF MORE TO DO
4807	027114	002402			BLT	6\$	;;BR IF DONE
4808	027116	005204			INC	R4	;;INSURE LAST DIGIT ISN'T A BLANK
4809	027120	000744			BR	2\$	;;GO DO THE LAST DIGIT
4810	027122	012605		6\$:	MOV	(SP)+,R5	;;RESTORE R5
4811	027124	012604			MOV	(SP)+,R4	;;RESTORE R4
4812	027126	012603			MOV	(SP)+,R3	;;RESTORE R3
4813	027130	016665	000002 000004		MOV	2(SP),4(SP)	;;SET THE STACK FOR RETURNING
4814	027136	012616			MOV	(SP)+,(SP)	
4815	027140	000002			RTI		;;RETURN
4816	027142	000		8\$:	.BYTE	0	;;STORAGE FOR ASCII DIGIT
4817	027143	000			.BYTE	0	;;TERMINATOR FOR TYPE ROUTINE
4818	027144	000		\$OCNT:	.BYTE	0	;;OCTAL DIGIT COUNTER
4819	027145	000		\$OFILL:	.BYTE	0	;;ZERO FILL SWITCH
4820	027146	000000		\$OMODE:	.WORD	0	;;NUMBER OF DIGITS TO TYPE

.SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

4825

K13

SEQ 0166

;;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
 ;;SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
 ;;NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
 ;;BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
 ;;REPLACED WITH SPACES.

;;CALL:
 ;;* MOV NUM,-(SP) ;;PUT THE BINARY NUMBER ON THE STACK
 ;;* TYPDS ;;GO TO THE ROUTINE

\$TYPDS:

MOV	R0,-(SP)	;;PUSH R0 ON STACK
MOV	R1,-(SP)	;;PUSH R1 ON STACK
MOV	R2,-(SP)	;;PUSH R2 ON STACK
MOV	R3,-(SP)	;;PUSH R3 ON STACK
MOV	R5,-(SP)	;;PUSH R5 ON STACK
MOV	#20200,-(SP)	;;SET BLANK SWITCH AND SIGN
MOV	20(SP),R5	;;GET THE INPUT NUMBER
RPL	1\$	;;BR IF INPUT IS POS.
NEG	R5	;;MAKE THE BINARY NUMBER POS.
MOVB	#'-,1(SP)	;;MAKE THE ASCII NUMBER NEG.
CLP	R0	;;ZERO THE CONSTANTS INDEX
MOV	#\$DBLK,R3	;;SETUP THE OUTPUT POINTER
MOVB	2',(R3)+	;;SET THE FIRST CHARACTER TO A BLANK
CLR	R2	;;CLEAR THE BCD NUMBER
MOV	\$DTBL(R0),R1	;;GET THE CONSTANT
SUB	R1,R5	;;FORM THIS BCD DIGIT
BLT	4\$	;;BR IF DONE
INC	R2	;;INCREASE THE BCD DIGIT BY 1
BR	3\$	
ADD	R1,R5	;;ADD BACK THE CONSTANT
TST	R2	;;CHECK IF BCD DIGIT=0
BNE	5\$	;;FALL THROUGH IF 0
TSTB	(SP)	;;STILL DOING LEADING 0'S?
BMI	7\$	;;BR IF YES
ASLB	(SP)	;;MSD?
BCC	6\$	;;BR IF NO
MOVB	1(SP),-1(R3)	;;YES--SET THE SIGN
BIS	#'0,R2	;;MAKE THE BCD DIGIT ASCII
BIS	#',R2	;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
MOVB	R2,(R3)+	;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
TST	(R0)+	;;JUST INCREMENTING
CMP	R0,#10	;;CHECK THE TABLE INDEX
BLT	2\$	;;GO DO THE NEXT DIGIT
BGT	8\$	;;GO TO EXIT
MOV	R5,R2	;;GET THE LSD
BR	6\$	;;GO CHANGE TO ASCII
TSTB	(SP)+	;;WAS THE LSD THE FIRST NON-ZERO?
SPL	9\$	;;BR IF NO
MOVB	-1(SP),-2(R3)	;;YES--SET THE SIGN FOR TYPING
CLRB	(R3)	;;SET THE TERMINATOR
MOV	(SP)+,R5	;;POP STACK INTO R5
MOV	(SP)+,R3	;;POP STACK INTO R3
MOV	(SP)+,R2	;;POP STACK INTO R2
MOV	(SP)+,R1	;;POP STACK INTO R1

4826				
4827				
4828				
4829				
4830				
4831				
4832				
4833				
4834				
4835	027150			
4836	027150	010046		
4837	027152	010146		
4838	027154	010246		
4839	027156	010346		
4840	027160	010546		
4841	027162	012746	020200	
4842	027166	016605	000020	
4843	027172	100004		
4844	027174	005405		
4845	027176	112766	000055	000001
4846	027204	005000		
4847	027206	012703	027364	
4848	027212	112723	000040	
4849	027216	005002		
4850	027220	016001	027354	
4851	027224	160105		
4852	027226	002402		
4853	027230	005202		
4854	027232	000774		
4855	027234	060105		
4856	027236	005702		
4857	027240	001002		
4858	027242	105716		
4859	027244	100407		
4860	027246	106316		
4861	027250	103003		
4862	027252	116663	000001	177777
4863	027260	052702	000060	
4864	027264	052702	000040	
4865	027270	110223		
4866	027272	005720		
4867	027274	020027	000010	
4868	027300	002746		
4869	027302	003002		
4870	027304	010502		
4871	027306	000764		
4872	027310	105726		
4873	027312	100003		
4874	027314	116663	177777	177776
4875	027322	105013		
4876	027324	012605		
4877	027326	012603		
4878	027330	012602		
4879	027332	012601		

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 02CDB.P11 CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

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4880 027334 012600      MOV      (SP)+,RO      ;; POP STACK INTO RO
4881 027336 104400 027364  TYPE      $DBLK      ;; NOW TYPE THE NUMBER
4882 027342 016666 000002 000004  MOV      2(SP),4(SP)  ;; ADJUST THE STACK
4883 027350 012616      MOV      (SP)+,(SP)
4884 027352 000002      RTI                      ;; RETURN TO USER
4885 027354 023420      SOTBL: 1000.
4886 027356 001750      1000.
4887 027360 000144      100.
4888 027362 000012      10.
4889 027364 000004      $DBLK: .BLKW 4
4890
4891 ;*****
4892 .SBTTL TRAP DECODER
4893
4894 ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
4895 ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
4896 ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
4897 ;*GO TO THAT ROUTINE.
4898
4899 $TRAP: MOV      RO,-(SP)      ;; SAVE RO
4900 027374 010046      MOV      2(SP),RO      ;; GET TRAP ADDRESS
4901 027376 016600 000002  TST      -(RO)      ;; BACKUP BY 2
4902 027402 005740      MOVB     (PO),RO      ;; GET RIGHT BYTE OF TRAP
4903 027404 111000      ASL      RO          ;; POSITION FOR INDEXING
4904 027406 006300      MOV      $TRPAD(RO),RO  ;; INDEX TO TABLE
4905 027410 016000 027416  RTS      RO          ;; GO TO ROUTINE
4906 027414 000200
4907
4908 .SBTTL TRAP TABLE
4909
4910 ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
4911 ;*BY THE "TRAP" INSTRUCTION.
4912
4913 ROUTINE
4914 -----
4915 $TRPAD:
4916 027416      $TYPE      ;; CALL=TYPE      TRAP+0(104400) TTY TYPEOUT ROUTINE
4917 027416 026506      $TYPOC  ;; CALL=TYPOC   TRAP+1(104401) TYPE OCTAL NUMBER (WITH LEADING ZEROS)
4918 027420 026746      $TYPOS  ;; CALL=TYPOS   TRAP+2(104402) TYPE OCTAL NUMBER (NO LEADING ZEROS)
4919 027422 026722      $TYPON  ;; CALL=TYPON   TRAP+3(104403) TYPE OCTAL NUMBER (AS PER LAST CALL)
4920 027424 026762      $TYPDS  ;; CALL=TYPDS   TRAP+4(104404) TYPE DECIMAL NUMBER (WITH SIGN)
4921 027426 027150
4922
4923 ;*****
4924 .SBTTL POWER DOWN AND UP ROUTINES
4925
4926 :POWER DOWN ROUTINE
4927 $PWDRN: MOV      $SILLUP,2*$PWVREC ;; SET FOR FAST UP
4928 027430 012737 027564 000024  MOV      $340,2*$PWVREC+2 ;; PRI0:7
4929 027436 012737 000340 000026  MOV      RO,-(SP)      ;; PUSH RO ON STACK
4930 027444 010046      MOV      R1,-(SP)      ;; PUSH R1 ON STACK
4931 027446 010146      MOV      R2,-(SP)      ;; PUSH R2 ON STACK
4932 027450 010246      MOV      R3,-(SP)      ;; PUSH R3 ON STACK
4933 027452 010346

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M13

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 DZCDB P11 POWER DOWN AND UP ROUTINES

```

4934 027454 010446      MOV      R4,-(SP)      ;; PUSH R4 ON STACK
4935 027456 010546      MOV      R5,-(SP)      ;; PUSH R5 ON STACK
4936 027460 010637 027570  MOV      SP,$$AVR6      ;; SAVE SP
4937 027464 012737 027476 000024  MOV      $PWRUP,$PWRVEC ;; SET UP VECTOR
4938 027472 000000      HALT
4939 027474 000776      BR      -2      ;; HANG UP
4940
4941      : POWER UP ROUTINE
4942 027476 013706 027570 $PWRUP: MOV      $$AVR6,SP      ;; GET SP
4943 027502 005037 027570      CLR      $$AVR6      ;; WAIT LOOP FOR THE TTY
4944 027504 005237 027570      IS:    INC      $$AVR6      ;; WAIT FOR THE INC
4945 027512 001375      BNE      IS      ;; OF WORD
4946 027514 012605      MOV      (SP)+,R5      ;; POP STACK INTO R5
4947 027516 012604      MOV      (SP)+,R4      ;; POP STACK INTO R4
4948 027520 012603      MOV      (SP)+,R3      ;; POP STACK INTO R3
4949 027522 012602      MOV      (SP)+,R2      ;; POP STACK INTO R2
4950 027524 012601      MOV      (SP)+,R1      ;; POP STACK INTO R1
4951 027526 012600      MOV      (SP)+,R0      ;; POP STACK INTO R0
4952 027530 012737 027430 000024  MOV      $PWRDN,$PWRVEC ;; SET UP THE POWER DOWN VECTOR
4953 027536 012737 000340 000026  MOV      $340,$PWRVEC+2 ;; PRI0:7
4954 027544 104400      TYPE      POWMES      ;; REPORT THE POWER FAILURE
4955 027546 031124      $PWRMG: .WORD  POWMES      ;; POWER FAIL MESSAGE POINTER
4956 027550 012716      MOV      (PC)+,(SP)      ;; RESTART AT DISPATCH
4957 027552 027572      $PWRAD: .WORD  DISPATCH      ;; RESTART ADDRESS
4958 027554 042766 000020 000002  BIC      #20,2(SP)      ;; CLEAR "1" BIT
4959 027562 000002      RTI
4960 027564 000000      $ILLUP: HALT
4961 027566 000776      BR      -2      ;; THE POWER UP SEQUENCE WAS STARTED
4962 027570 000000      $$AVR6: 0      ;; BEFORE THE POWER DOWN WAS COMPLETE
4963      ;; PUT THE SP HERE
4964 027572 000177 000000      DISPATCH: JMP      $RETURN      ;; ATTEMPT TO RESTART LAST SECTION
4965      ;; BEING RUN BEFORE POWER FAILURE
4966      ;; OCCURRED
4967 027576 000000      RETURN:  .WORD  0      ;; THIS LOCATION HOLDS THE STARTING
4968      ;; ADDRESS OF THE SECTION BEING RUN
4969      ;; BEFORE THE POWER FAILURE OCCURRED
4970      ;; EITHER:      BEGIN:
4971      ;;                  ERCD12:
4972      ;;                  XLOOP:
4973      ;;                  CKSAME:
4974

```

N13

MAINDEC - 11 - DZCDB-8 MACY11 27(654) 1-JUL-77 08:39 PAGE 97
DZCDB.P11 DATA ABLES

;DATA TABLES FOR DATA RELIABILITY TESTS

;ALPHANUMERIC DECK DATA TABLE
;CARD IMAGE FORM

ALPCD:	COLUMN	ASCII	PUNCH
4000	1	A	12
14400	2	B	12
24200	3	C	12
34100	4	D	12
44040	5	E	12
54020	6	F	12
64010	7	G	12
74004	8	H	12
4002	9	I	12
4001	10	J	12
24202	11	K	12
34102	12	L	12
44042	13	M	12
54022	14	N	12
64012	15	O	12
74006	16	P	12
2000	17	Q	12
12400	18	R	12
22200	19	S	12
32100	20	T	12
42040	21	U	12
52020	22	V	12
62010	23	W	12
72004	24	X	12
2002	25	Y	12
2001	26	Z	12
22202	27	[	12
32102	28	\	12
42042	29	]	12
52022	30	^	12
62012	31	_	12
72006	32	`	12
1000	33	a	12
11400	34	b	12
21200	35	c	12
31100	36	d	12
41040	37	e	12
51020	38	f	12
61010	39	g	12
71004	40	h	12
1002	41	i	12
1001	42	j	12
21202	43	k	12
31102	44	l	12
41042	45	m	12
51022	46	n	12
61012	47	o	12
71006	48	p	12

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4981 027600 004000
4982 027602 014400
4983 027604 024200
4984 027606 034100
4985 027610 044040
4986 027612 054020
4987 027614 064010
4988 027616 074004
4989 027620 004002
4990 027622 004001
4991 027624 024202
4992 027626 034102
4993 027630 044042
4994 027632 054022
4995 027634 064012
4996 027636 074006
4997 027640 002000
4998 027642 012400
4999 027644 022200
5000 027646 032100
5001 027650 042040
5002 027652 052020
5003 027654 062010
5004 027656 072004
5005 027660 002002
5006 027662 002001
5007 027664 022202
5008 027666 032102
5009 027670 042042
5010 027672 052022
5011 027674 062012
5012 027676 072006
5013 027700 001000
5014 027702 011400
5015 027704 021200
5016 027706 031100
5017 027710 041040
5018 027712 051020
5019 027714 061010
5020 027716 071004
5021 027720 001002
5022 027722 001001
5023 027724 021202
5024 027726 031102
5025 027730 041042
5026 027732 051022
5027 027734 061012
5028 027736 071006

MAINDEC - 11 - DZCDB-8
DZCDB.P11

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DATA TABLES

SEQ 0170

5029 027740 000000
5030 027742 010400
5031 027744 020200
5032 027746 030100
5033 027750 040040
5034 027752 050020
5035 027754 060010
5036 027756 070004
5037 027760 000002
5038 027762 000001
5039 027764 020202
5040 027766 030102
5041 027770 040042
5042 027772 050022
5043 027774 060012
5044 027776 070006
5045 030000 004000
5046 030002 014400
5047 030004 024200
5048 030006 034100
5049 030010 044040
5050 030012 054020
5051 030014 064010
5052 030016 074004
5053 030020 004002
5054 030022 004001
5055 030024 024202
5056 030026 034102
5057 030030 044042
5058 030032 054022
5059 030034 064012
5060 030036 074006

ALPEND: 74006

ALPHANUMERIC DECK DATA TABLE
THE VALUE IS THE ENCODED FORM OF THE DATA
ALPCDP: .BYTE 200

5061
5062
5063
5064
5065 030040 200
5066 030041 201
5067 030042 202
5068 030043 203
5069 030044 204
5070 030045 205
5071 030046 206
5072 030047 207
5073 030050 210
5074 030051 220
5075 030052 212
5076 030053 213
5077 030054 214
5078 030055 215
5079 030056 216
5080 030057 217
5081 030060 100
5082 030061 101

.BYTE 201
.BYTE 202
.BYTE 203
.BYTE 204
.BYTE 205
.BYTE 206
.BYTE 207
.BYTE 210
.BYTE 220
.BYTE 212
.BYTE 213
.BYTE 214
.BYTE 215
.BYTE 216
.BYTE 217
.BYTE 100
.BYTE 101

49 SPACE BLANK
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COLUMN ASCII PUNCH
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5083	030062	102
5084	030063	103
5085	030064	104
5086	030065	105
5087	030066	106
5088	030067	107
5089	030070	110
5090	030071	120
5091	030072	112
5092	030073	113
5093	030074	114
5094	030075	115
5095	030076	116
5096	030077	117
5097	030100	040
5098	030101	041
5099	030102	042
5100	030103	043
5101	030104	044
5102	030105	045
5103	030106	046
5104	030107	047
5105	030110	050
5106	030111	060
5107	030112	052
5108	030113	053
5109	030114	054
5110	030115	055
5111	030116	056
5112	030117	057
5113	030120	000
5114	030121	001
5115	030122	002
5116	030123	003
5117	030124	004
5118	030125	005
5119	030126	006
5120	030127	007
5121	030130	010
5122	030131	020
5123	030132	012
5124	030133	013
5125	030134	014
5126	030135	015
5127	030136	016
5128	030137	017
5129	030140	200
5130	030141	201
5131	030142	202
5132	030143	203
5133	030144	204
5134	030145	205
5135	030146	206
5136	030147	207

.BYTE	102
.BYTE	103
.BYTE	104
.BYTE	105
.BYTE	106
.BYTE	107
.BYTE	110
.BYTE	120
.BYTE	112
.BYTE	113
.BYTE	114
.BYTE	115
.BYTE	116
.BYTE	117
.BYTE	40
.BYTE	41
.BYTE	42
.BYTE	43
.BYTE	44
.BYTE	45
.BYTE	46
.BYTE	47
.BYTE	50
.BYTE	60
.BYTE	52
.BYTE	53
.BYTE	54
.BYTE	55
.BYTE	56
.BYTE	57
.BYTE	0
.BYTE	1
.BYTE	2
.BYTE	3
.BYTE	4
.BYTE	5
.BYTE	6
.BYTE	7
.BYTE	10
.BYTE	20
.BYTE	12
.BYTE	13
.BYTE	14
.BYTE	15
.BYTE	16
.BYTE	17
.BYTE	200
.BYTE	201
.BYTE	202
.BYTE	203
.BYTE	204
.BYTE	205
.BYTE	206
.BYTE	207

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SPACE

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MAINDEC - 11 - DZCDB-B
DZCDB.P11MACY11 27(654) 1-JUL-77 08:39 PAGE 100
DATA TABLES

SEQ 0172

5137	030150	210
5138	030151	220
5139	030152	212
5140	030153	213
5141	030154	214
5142	030155	215
5143	030156	216
5144	030157	217

.BYTE	210
.BYTE	220
.BYTE	212
.BYTE	213
.BYTE	214
.BYTE	215
.BYTE	216
ALPENP: .BYTE	217

73	H	12	8
74	I	12	9
75	J	12	0
76	K	12	1
77	L	12	2
78	M	12	3
79	N	12	4
80	O	12	5

;BINARY DECK DATA TABLE

BINCD:	0
	1
	2
	70004
	60010
	50020
	40040
	30100
	20200
	10400
	1000
	2000
	4000
	171111
	172222
	173333
	174444
	175555
	176666
	177777
	61010
	161212
	171313
	171414
	171515
	171616
	171717
	52020
	172121
	172323
	172424
	172525
	172626
	172727
	173030
	173131
	173232
	173434
	173535
	173636
	173737
	44040
	174141

COLUMN	PUNCH
1	BLANK
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5145		
5146		
5147		
5148	030160	000000
5149	030162	000001
5150	030164	000002
5151	030166	070004
5152	030170	060010
5153	030172	050020
5154	030174	040040
5155	030176	030100
5156	030200	020200
5157	030202	010400
5158	030204	001000
5159	030206	002000
5160	030210	004000
5161	030212	171111
5162	030214	172222
5163	030216	173333
5164	030220	174444
5165	030222	175555
5166	030224	176666
5167	030226	177777
5168	030230	061010
5169	030232	161212
5170	030234	171313
5171	030236	171414
5172	030240	171515
5173	030242	171616
5174	030244	171717
5175	030246	052020
5176	030250	172121
5177	030252	172323
5178	030254	172424
5179	030256	172525
5180	030260	172626
5181	030262	172727
5182	030264	173030
5183	030266	173131
5184	030270	173232
5185	030272	173434
5186	030274	173535
5187	030276	173636
5188	030300	173737
5189	030302	044040
5190	030304	174141

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 DZCDB.P11 DATA TABLES

SEQ 0173

5191	030306	164242	164242	44
5192	030310	174343	174343	45
5193	030312	174545	174545	46
5194	030314	174646	174646	47
5195	030316	174747	174747	48
5196	030320	165050	165050	49
5197	030322	175151	175151	50
5198	030324	165252	165252	51
5199	030326	175353	175353	52
5200	030330	175454	175454	53
5201	030332	175656	175656	54
5202	030334	175757	175757	55
5203	030336	156060	156060	56
5204	030340	176161	176161	57
5205	030342	176262	176262	58
5206	030344	176363	176363	59
5207	030346	176464	176464	60
5208	030350	176565	176565	61
5209	030352	176767	176767	62
5210	030354	177070	177070	63
5211	030356	177171	177171	64
5212	030360	177272	177272	65
5213	030362	177373	177373	66
5214	030364	177474	177474	67
5215	030366	177575	177575	68
5216	030370	177676	177676	69
5217	030372	030101	30101	70
5218	030374	020202	20202	71
5219	030376	130303	130303	72
5220	030400	170404	170404	73
5221	030402	170505	170505	74
5222	030404	170606	170606	75
5223	030406	170707	170707	76
5224	030410	163210	163210	77
5225	030412	170123	170123	78
5226	030414	177654	177654	79
5227	030416	174567	174567	80

BINEND:

..BINARY DECK DATA TABLE
 ..THE VALUE IS THE ENCODED VALUE, WHICH ORS THE OCTAL REPRESENTATION OF
 ..ROWS ONE THRU SEVEN

			COLUMN	ASCII	PUNCH
BINCDP:	.BYTE	0	1	SPACE	BLANK
	.BYTE	20	2	9	9
	.BYTE	10	3	8	8
	.BYTE	7	4	7	7
	.BYTE	6	5	6	6
	.BYTE	5	6	5	5
	.BYTE	4	7	4	4
	.BYTE	3	8	3	3
	.BYTE	2	9	2	2
	.BYTE	1	10	1	1
	.BYTE	40	11	0	0
	.BYTE	100	12	1	11

5228		
5229		
5230		
5231		
5232		
5233	030420	000
5234	030421	020
5235	030422	010
5236	030423	007
5237	030424	006
5238	030425	005
5239	030426	004
5240	030427	003
5241	030430	002
5242	030431	001
5243	030432	040
5244	030433	100

MAINDEC - 11 - DZCDB-B MACY11 27(654) 1-JUL-77 08:39 PAGE 102
DZCDB.P11 DATA TABLES

SEQ 0.74

Address	Value	Label	Value	Label	Value	Label
5245	030434	200	.BYTE	200	13	
5246	030435	067	.BYTE	67	14	
5247	030436	117	.BYTE	117	15	
5248	030437	177	.BYTE	177	16	
5249	030440	207	.BYTE	207	17	
5250	030441	267	.BYTE	267	18	
5251	030442	317	.BYTE	317	19	
5252	030443	377	.BYTE	377	20	
5253	030444	046	.BYTE	46	21	
5254	030445	056	.BYTE	56	22	
5255	030446	077	.BYTE	77	23	
5256	030447	047	.BYTE	47	24	
5257	030450	067	.BYTE	67	25	
5258	030451	057	.BYTE	57	26	
5259	030452	077	.BYTE	77	27	
5260	030453	105	.BYTE	105	28	
5261	030454	127	.BYTE	127	29	
5262	030455	137	.BYTE	137	30	
5263	030456	107	.BYTE	107	31	
5264	030457	127	.BYTE	127	32	
5265	030460	117	.BYTE	117	33	
5266	030461	137	.BYTE	137	34	
5267	030462	147	.BYTE	147	35	
5268	030463	167	.BYTE	167	36	
5269	030464	157	.BYTE	157	37	
5270	030465	147	.BYTE	147	38	
5271	030466	167	.BYTE	167	39	
5272	030467	157	.BYTE	157	40	
5273	030470	177	.BYTE	177	41	
5274	030471	204	.BYTE	204	42	
5275	030472	227	.BYTE	227	43	
5276	030473	216	.BYTE	216	44	
5277	030474	237	.BYTE	237	45	
5278	030475	227	.BYTE	227	46	
5279	030476	217	.BYTE	217	47	
5280	030477	237	.BYTE	237	48	
5281	030500	246	.BYTE	246	49	
5282	030501	267	.BYTE	267	50	
5283	030502	256	.BYTE	256	51	
5284	030503	277	.BYTE	277	52	
5285	030504	247	.BYTE	247	53	
5286	030505	257	.BYTE	257	54	
5287	030506	277	.BYTE	277	55	
5288	030507	305	.BYTE	305	56	
5289	030510	327	.BYTE	327	57	
5290	030511	317	.BYTE	317	58	
5291	030512	337	.BYTE	337	59	
5292	030513	307	.BYTE	307	60	
5293	030514	327	.BYTE	327	61	
5294	030515	337	.BYTE	337	62	
5295	030516	347	.BYTE	347	63	
5296	030517	367	.BYTE	367	64	
5297	030520	357	.BYTE	357	65	
5298	030521	377	.BYTE	377	66	

MAINDEC - 11 - DZCDB-8 MACY11 27(654) 1-JUL-77 08:39 PAGE 103
 DZCDB.P11 DATA TABLES

SEQ C: 15

5299	030522	347			.BYTE	347		:67
5300	030523	367			.BYTE	367		:68
5301	030524	357			.BYTE	357		:69
5302	030525	023			.BYTE	23		:70
5303	030526	012			.BYTE	12		:71
5304	030527	033			.BYTE	33		:72
5305	030530	007			.BYTE	7		:73
5306	030531	027			.BYTE	27		:74
5307	030532	017			.BYTE	17		:75
5308	030533	037			.BYTE	37		:76
5309	030534	146			.BYTE	146		:77
5310	030535	037			.BYTE	37		:78
5311	030536	347			.BYTE	347		:79
5312	030537	237			.BYTE	237		:80
5313								
5314	030540	020040	020040	040	SPACE:	.ASCII	/ / /	
5315	030545	040	000040			.ASCII	/ /	
5316	030550	005012	012		CRLF:	.ASCII	<12><12><12>	
5317	030553	015	000012			.ASCII	<15><12>	
5318								
5319	030556	005015	046412	044501	STMES:	.ASCII	<15><12><12>"MAINDEC-11-DZCDB REV. 8"<15><12>	
5320	030564	042116	041505	030455				
5321	030572	026461	055104	042103				
5322	030600	020102	020040	051040				
5323	030606	053105	020056	006502				
5324	030614	000012						
5325								
5326	030616	005015	052123	051101	STADDR:	.ASCII	<15><12>"STARTING ADDRESSES ARE:"	
5327	030624	044524	043516	040440				
5328	030632	042104	042522	051523				
5329	030640	051505	040440	042522				
5330	030646	072						
5331	030647	015	031012	030060		.ASCII	<15><12>"200 = INSTRUCTION AND DATA TEST"	
5332	030654	036440	044440	051516				
5333	030662	051124	041525	044524				
5334	030670	047117	040440	042116				
5335	030676	042040	052101	020101				
5336	030704	042524	052123			.ASCII	<15><12>"210 = ERROR FUNCTION TEST (M-1000/M-200)"	
5337	030710	005015	030462	020060				
5338	030716	020075	051105	047522				
5339	030724	020122	052506	041516				
5340	030732	044524	047117	052040				
5341	030740	051505	020124	046450				
5342	030746	030455	030060	027460				
5343	030754	026515	030062	024460				
5344	030762	005015	031062	020060		.ASCII	<15><12>"220 = SINGLE TEST LOOP"	
5345	030770	020075	044523	043516				
5346	030776	042514	052040	051505				
5347	031004	020124	047514	050117				
5348	031012	005015	032062	020060		.ASCII	<15><12>"240 = READ SINGLE DATA PATTERN TEST"	
5349	031020	020075	042522	042101				
5350	031026	051440	047111	046107				
5351	031034	020105	040504	040524				
5352	031042	050040	052101	042524				

5353	031050	047122	052040	051505	
5354	031056	124			
5355	031057	015	031012	030065	.ASCIZ <15><12>"250 = ERROR FUNCTION TEST (M-1200)"
5356	031064	036440	042440	051122	
5357	031072	051117	043040	047125	
5358	031100	052103	047511	020116	
5359	031106	042524	052123	024040	
5360	031114	026515	031061	030060	
5361	031122	000051			
5362					
5363	031124	005015	050012	053517	POWME: .ASCII <15><12><12>"POWER FAILURE OCCURRED - WILL ATTEMPT TO"
5364	031132	051105	043040	044501	
5365	031140	052514	042522	047440	
5366	031146	041503	051125	042522	
5367	031154	020104	020055	044527	
5368	031162	046114	040440	052124	
5369	031170	046505	052120	052040	
5370	031176	117			
5371	031177	015	051012	051505	.ASCIZ <15><12>"RESTART SECTION OF PROGRAM FORMERLY IN USE"<15><12>
5372	031204	040524	052122	051440	
5373	031212	041505	044524	047117	
5374	031220	047440	020106	051120	
5375	031226	043517	040522	020115	
5376	031234	047506	046522	051105	
5377	031242	054514	044440	020116	
5378	031250	051525	006505	000012	
5379					
5380	031256	005015	047105	042524	MLOGIC: .ASCIZ <15><12>"ENTERING LOGIC TESTS"
5381	031264	044522	043516	046040	
5382	031272	043517	041511	052040	
5383	031300	051505	051524	000	
5384					
5385	031305	015	042412	052116	MDATA: .ASCIZ <15><12>"ENTERING DATA TESTS"
5386	031312	051105	047111	020107	
5387	031320	040504	040524	052040	
5388	031326	051505	051524	000	
5389					
5390	031333	015	042412	052116	M1200E: .ASCIZ <15><12>"ENTERING M1200 ERROR FUNCTION TESTS"
5391	031340	051105	047111	020107	
5392	031346	030515	030062	020060	
5393	031354	051105	047522	020122	
5394	031362	052506	041516	044524	
5395	031370	047117	052040	051505	
5396	031376	051524	000		
5397					
5398	031401	015	042412	052116	M1000E: .ASCIZ <15><12>"ENTERING M1000/M200 ERROR FUNCTION TESTS"
5399	031406	051105	047111	020107	
5400	031414	030515	030060	027460	
5401	031422	031115	030060	042440	
5402	031430	051122	051117	043040	
5403	031436	047125	052103	047511	
5404	031444	020116	042524	052123	
5405	031452	000123			
5406					

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SEQ 0177

5407	031454	005015	047105	042524	ML00P: .ASCIZ <15><12>"ENTERING A LOOP ON TEST SELECTED BY USER"
5408	031462	044522	043516	040440	
5409	031470	046040	047517	020120	
5410	031476	047117	052040	051505	
5411	031504	020124	042523	042514	
5412	031512	052103	042105	041040	
5413	031520	020131	051525	051105	
5414	031526	000			
5415					
5416	031527	015	042412	052116	
5417	031534	051105	047111	020107	MPATS: .ASCIZ <15><12>"ENTERING SINGLE DATA PATTERN TESTING"
5418	031542	044523	043516	042514	
5419	031550	042040	052101	020101	
5420	031556	040520	052124	051105	
5421	031564	020116	042524	052123	
5422	031572	047111	000107		
5423					
5424	031576	005015	051120	051505	
5425	031604	020123	040503	042122	
5426	031612	051040	040505	042504	
5427	031620	020122	051047	051505	MSG1: .ASCIZ <15><12>/PRESS CARD READER 'RESET' /
5428	031626	052105	000047		
5429	031632	005015	044124	047105	
5430	031640	041440	047117	044524	
5431	031646	052516	020105	044504	
5432	031654	043501	047516	052123	MSG2: .ASCIZ <15><12>/THEN CONTINUE DIAGNOSTIC FROM CPU CONSOLE /
5433	031662	041511	043040	047522	
5434	031670	020115	050103	020125	
5435	031676	047503	051516	046117	
5436	031704	000105			
5437	031706	005015	051120	051505	MSG3: .ASCIZ <15><12>/PRESS CARD READER 'STOP' /
5438	031714	020123	040503	042122	
5439	031722	051040	040505	042504	
5440	031730	020122	051447	047524	
5441	031736	023520	000		
5442	031741	015	052012	042510	MSG4: .ASCIZ <15><12>/THE INTERRUPT LEVEL WAS /
5443	031746	044440	052116	051105	
5444	031754	052522	052120	046040	
5445	031762	053105	046105	053440	
5446	031770	051501	000040		
5447	031774	005015	042522	047515	MSG5: .ASCIZ <15><12>/REMOVE ALL CARDS FROM THE INPUT HOPPER /
5448	032002	042526	040440	046114	
5449	032010	041440	051101	051504	
5450	032016	043040	047522	020115	
5451	032024	044124	020105	047111	
5452	032032	052520	020124	047510	MSG6: .ASCIZ <15><12>/RESTORE CARDS TO THE INPUT HOPPER /
5453	032040	050120	051105	000	
5454	032045	015	051012	051505	
5455	032052	047524	042522	041440	
5456	032060	051101	051504	052040	
5457	032066	020117	044124	020105	
5458	032074	047111	052520	020124	
5459	032102	047510	050120	051105	
5460	032110	000			

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SEQ 0170

5461	032111	015	030412	020056	MSG7:	ASCII	<15><12>/1. PULL OUTPUT STACKER PRESSURE ARM DOWN /
5462	032116	052520	046114	047440			
5463	032124	052125	052520	020124			
5464	032132	052123	041501	042513			
5465	032140	020122	051120	051505			
5466	032146	052523	042522	040440			
5467	032154	046522	042040	053517			
5468	032162	020118					
5469	032164	005015	047125	044524		.ASCII	<15><12>/UNTIL HOPPER CHECK LIGHT COMES ON/
5470	032172	020114	047510	050120			
5471	032200	051105	041440	042510			
5472	032206	045503	046040	043511			
5473	032214	052110	041440	046517			
5474	032222	051505	047440	116		.ASCIZ	<15><12><12>/2. RELEASE STACKER PRESS. ARM/
5475	032227	015	005012	027062			
5476	032234	051040	046105	040505			
5477	032242	042523	051440	040524			
5478	032250	045503	051105	053040			
5479	032256	042522	051523	020056			
5480	032264	051101	000115				
5481	032270	005015	044012	046117	MSG8:	.ASCII	<15><12><12>/HOLD DOWN THE SWITCH UNDER THE CAP OF THE INPUT /
5482	032276	020104	047504	047127			
5483	032304	052040	042510	051440			
5484	032312	044527	041524	020110			
5485	032320	047125	042504	020122			
5486	032326	044124	020105	040503			
5487	032334	020120	043117	052040			
5488	032342	042510	044440	050116			
5489	032350	052125	040				
5490	032353	110	050117	042520		.ASCIZ	/HOPPER/
5491	032360	000122					
5492	032362	005015	042524	051101	MSG9:	.ASCII	<15><12>/TEAR OFF A PIECE OF CARD AND SLIP IT IN/
5493	032370	047440	043106	040440			
5494	032376	050040	042511	042503			
5495	032404	047440	020106	040503			
5496	032412	042122	040440	042116			
5497	032420	051440	044514	020120			
5498	032426	052111	044440	116			
5499	032433	015	043012	047522		.ASCII	<15><12>/FRONT OF THE PHOTOCCELL/
5500	032440	052116	047440	020106			
5501	032446	044124	020105	044120			
5502	032454	052117	041517	046105			
5503	032462	114					
5504	032463	015	012			.ASCII	<15><12>
5505	032465	015	041412	052501		.ASCII	<15><12>/CAUTION:MOVE YOUR FINGERS AWAY FROM THIS /
5506	032472	044524	047117	046472			
5507	032500	053117	020105	047531			
5508	032506	051125	043040	047111			
5509	032514	042507	051522	040440			
5510	032522	040527	020131	051106			
5511	032530	046517	052040	044510			
5512	032536	020123					
5513	032540	051101	040505	041040		.ASCIZ	/AREA BEFORE CONTINUING!//
5514	032546	043105	051117	020105			

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SEQ 0179

5515	032554	047503	052116	047111
5516	032552	044525	043516	000041
5517	032570	005015	020412	020441
5518	032576	053440	047522	043516
5519	032604	051040	051505	047520
5520	032612	051516	020105	051124
5521	032620	020131	043501	044501
5522	032626	020116	020441	000041
5523	032634	005015	047510	042114
5524	032642	052040	042510	047440
5525	032650	052125	052520	020124
5526	032656	052123	041501	042513
5527	032664	020122	040507	042524
5528	032672	047440	042520	027116
5529	032700	052040	042510	000116
5530	032706	005015	042040	051101
5531	032714	026513	044514	044107
5532	032722	020124	044103	041505
5533	032730	020113		
5534	032732	005015	027111	027105
5535	032740	026440	052040	040505
5536	032746	020122	020101	047503
5537	032754	047122	051105	047440
5538	032762	043105	040440	041440
5539	032770	051101	020104	047101
5540	032776	020104	046120	041501
5541	033004	020105	052111	
5542	033010	005015	052101	052040
5543	033016	042510	041040	052117
5544	033024	047524	020115	043117
5545	033032	052040	042510	044440
5546	033040	050116	052125	051440
5547	033046	040524	045503	000
5548	033053	015	042012	041505
5549	033060	020113	020040	020040
5550	033066	040503	042122	047040
5551	033074	046525	020040	020040
5552	033102	041440	051101	020104
5553	033110	047503	020114	020040
5554	033116	044123	020102	020040
5555	033124	020040	040527	000123
5556	033132	005015	046101	044120
5557	033140	020101	000	
5558	033143	015	041012	047111
5559	033150	051101	000131	
5560	033154	005015	044502	020124
5561	033162	032461	053440	051501
5562	033170	051440	052105	000
5563	033175	015	051012	046505
5564	033202	042105	020131	044124
5565	033210	020105	047503	042116
5566	033216	052111	047511	020116
5567	033224	054502	051040	046105
5568	033232	040517	044504	043516

MSG10: .ASCIZ <15><12><12>/!!! WRONG RESPONSE TRY AGAIN !!!/

MSG11: .ASCIZ <15><12>/HOLD THE OUTPUT STACKER GATE OPEN. THEN/

MSG12: .ASCII <15><12>/ DARK-LIGHT CHECK /

.ASCII <15><12>/I.E. - TEAR A CORNER OFF A CARD AND PLACE IT/

.ASCIZ <15><12> /AT THE BOTTOM OF THE INPUT STACK/

MSG13: .ASCIZ <15><12>/DECK CARD NUM CARD COL SHB WAS/

MSG14: .ASCIZ <15><12>/ALPHA /

MSG15: .ASCIZ <15><12>/BINARY/

MSG16: .ASCIZ <15><12>/BIT 15 WAS SET/

MSG17: .ASCII <15><12>/REMEDY THE CONDITION BY RELOADING INPUT HOPPER/

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SEQ 0180

5569	033240	044440	050116	052125	
5570	033246	044040	050117	042520	
5571	033254	122			
5572	033255	015	053412	052111	.ASCII <15><12>/WITH CARD DECK - PRESS 'RESET' BUTTON/
5573	033262	020110	040503	042122	
5574	033270	042040	041505	020113	
5575	033276	020055	051120	051505	
5576	033304	020123	051047	051505	
5577	033312	052105	020047	052502	
5578	033320	052124	047117		
5579	033324	005015	047117	041440	.ASCIIZ <15><12>/ON CARD READER AND 'CONTINUE' SWITCH ON CPU PANEL/
5580	033332	051101	020104	042522	
5581	033340	042101	051105	040440	
5582	033346	042116	023440	047503	
5583	033354	052116	047111	042525	
5584	033362	020047	053523	052111	
5585	033370	044103	047440	020116	
5586	033376	050103	020125	040520	
5587	033404	042516	000114		
5588	033410	005015	040503	042122	MSG18: .ASCIIZ <15><12>/CARD READER IS OFF-LINE/
5589	033416	051040	040505	042504	
5590	033424	020122	051511	047440	
5591	033432	043106	046055	047111	
5592	033440	000105			
5593	033442	005015	020040	041440	MSG19: .ASCIIZ <15><12>/ COL. WAS CARD NUM. ERRORS/
5594	033450	046117	020056	020040	
5595	033456	040527	020123	020040	
5596	033464	040503	042122	047040	
5597	033472	046525	020056	042440	
5598	033500	051122	051117	000123	
5599	033506	005015	052520	020124	MSG20: .ASCIIZ <15><12>/PUT ANY TWO CARDS IN INPUT HOPPER/
5600	033514	047101	020131	053524	
5601	033522	020117	040503	042122	
5602	033530	020123	047111	044440	
5603	033536	050116	052125	044040	
5604	033544	050117	042520	000122	
5605	033552	005015	051120	051505	MSG21: .ASCIIZ <15><12>/PRESS END OF FILE BUTTON/
5606	033560	020123	047105	020104	
5607	033566	043117	043040	046111	
5608	033574	020105	052502	052124	
5609	033602	047117	000		
5610	033605	015	030412	020056	MSG22: .ASCII <15><12>/1. PUT 'HALT'SW. DOWN AND PRESS/
5611	033612	052520	020124	044047	
5612	033620	046101	023524	053523	
5613	033626	020056	047504	047127	
5614	033634	040440	042116	050040	
5615	033642	042522	051523		
5616	033646	005015	020040	041440	.ASCII <15><12>/ CONTINUE ON THE CONSOLE UNTIL/
5617	033654	047117	044524	052516	
5618	033662	020105	047117	052040	
5619	033670	042510	041440	047117	
5620	033676	047523	042514	052440	
5621	033704	052116	046111		
5622	033710	005015	020040	047440	.ASCII <15><12>/ ONE OR MORE CARDS ARE READ./

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SEQ 0181

5623	033716	042516	047440	020122
5624	033724	047515	042522	041440
5625	033732	051101	051504	040440
5626	033740	042522	051040	040505
5627	033746	027104		
5628	033750	005015	020040	024040
5629	033756	047508	020122	044124
5630	033764	020105	030461	031457
5631	033772	020064	051120	051505
5632	034000	020123	046110	027524
5633	034006	051523	051	
5634	034011	015	005012	027062
5635	034016	052040	042510	020116
5636	034024	042522	052123	051117
5637	034032	020105	040510	052114
5638	034040	051440	027127	052040
5639	034047	020117	047516	046522
5640	034054	046101	050040	051517
5641	034062	052111	047511	116
5642	034067	015	020012	020040
5643	034074	047101	020104	047503
5644	034102	052116	047111	042525
5645	034110	042040	040511	047107
5646	034116	051517	044524	020103
5647	034124	051106	046517	041440
5648	034132	052520	041440	047117
5649	034140	047523	042514	
5650	034144	005015	020040	024040
5651	034152	030461	031457	020064
5652	034160	051120	051505	020123
5653	034166	047103	051124	020114
5654	034174	020046	047503	052116
5655	034202	051440	046511	046125
5656	034210	040524	042516	052517
5657	034216	046123	024531	000
5658				
5659	034223	015	046012	040517
5660	034230	020104	044124	020105
5661	034236	042101	051104	051505
5662	034244	020123	043117	052040
5663	034252	042510	042040	051505
5664	034260	051111	042105	052040
5665	034266	051505	020124	047111
5666	034274	047524	052040	042510
5667	034302	005015	053523	052111
5668	034310	044103	051040	043505
5669	034316	051511	042524	020122
5670	034324	020055	027111	027105
5671	034332	052040	042510	040440
5672	034340	042104	042522	051523
5673	034346	047440	020106	044124
5674	034354	020105	041523	050117
5675	034362	105		
5676	034363	015	044412	051516

.ASCII <15><12>" (FOR THE 11/34 PRESS HLT/SS)"

.ASCII <15><12><12>/2. THEN RESTORE HALT SW. TO NORMAL POSITION/

.ASCII <15><12>/ AND CONTINUE DIAGNOSTIC FROM CPU CONSOLE/

.ASCIZ <15><12>" (11/34 PRESS CNTRL & CONT SIMULTANEOUSLY)"

MSG23: .ASCII <15><12>"LOAD THE ADDRESS OF THE DESIRED TEST INTO THE"

.ASCII <15><12>"SWITCH REGISTER - I.E. THE ADDRESS OF THE SCOPE"

.ASCII <15><12>"INSTRUCTION AT THE BEGINNING OF THE TEST"

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SEQ 0182

5677	034370	051124	041525	044524
5678	034376	047117	040440	020124
5679	034404	044124	020105	042502
5680	034412	044507	047116	047111
5681	034420	020107	043117	052040
5682	034426	042510	052040	051505
5683	034434	124		
5684	034435	015	052012	042510
5685	034442	020116	051120	051505
5686	034450	020123	047503	052116
5687	034456	047111	042525	051440
5688	034464	044527	041524	000110
5689				
5690	034472	005015	042523	020124
5691	034500	042504	044523	042522
5692	034506	020104	053523	052111
5693	034514	044103	051040	043505
5694	034522	051511	042524	020122
5695	034530	050117	044524	047117
5696	034536	123		
5697	034537	015	052012	042510
5698	034544	020116	051120	051505
5699	034552	020123	047503	052116
5700	034560	047111	042525	051440
5701	034566	044527	041524	000110
5702				
5703	034574	005015	047514	042101
5704	034602	042040	051505	051111
5705	034610	042105	050040	052101
5706	034616	042524	047122	053040
5707	034624	046101	042525	044440
5708	034632	052116	020117	044124
5709	034640	020105	053523	052111
5710	034646	044103		
5711	034650	005015	042522	044507
5712	034656	052123	051105	026440
5713	034664	044440	042456	020056
5714	034672	047111	047524	051440
5715	034700	051527	030474	035061
5716	034706	037060		
5717	034710	005015	044124	047105
5718	034716	050040	042522	051523
5719	034724	041440	047117	044524
5720	034732	052516	020105	053523
5721	034740	052111	044103	000
5722				
5723	034745	015	052012	044510
5724	034752	020123	042524	052123
5725	034760	053040	051105	043111
5726	034766	042511	020123	044124
5727	034774	020105	041101	046111
5728	035002	052111	020131	043117
5729	035010	052040	042510	
5730	035014	005015	051522	031061

.ASCIZ <15><12>"THEN PRESS CONTINUE SWITCH"

MSG24: .ASCII <15><12>"SET DESIRED SWITCH REGISTER OPTIONS"

.ASCIZ <15><12>"THEN PRESS CONTINUE SWITCH"

MSG25: .ASCII <15><12>"LOAD DESIRED PATTERN VALUE INTO THE SWITCH"

.ASCII <15><12>"REGISTER - I.E. INTO SWS<11:0>"

.ASCIZ <15><12>"THEN PRESS CONTINUE SWITCH"

MSG26: .ASCII <15><12>"/THIS TEST VERIFIES THE ABILITY OF THE/"

.ASCIZ <15><12>"/RS1200 TO DETECT MIS-REGISTERED CARDS/"

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SEQ 0183

5731	035022	030060	052040	020117
5732	035030	042504	042524	052103
5733	035036	046440	051511	051055
5734	035044	043505	051511	042524
5735	035052	042522	020104	040503
5736	035060	042122	000123	
5737				
5738	035064	005015	040515	042513
5739	035072	040440	042116	052040
5740	035100	042510	020116	046120
5741	035106	041501	020105	020101
5742	035114	050123	041505	040511
5743	035122	020114	040503	042122
5744	035130	044440	052116	020117
5745	035136	044124	020105	047111
5746	035144	052520	124	
5747	035147	015	044012	050117
5748	035154	042520	027122	020040
5749	035162	042522	042506	020122
5750	035170	047524	051440	041505
5751	035176	044524	047117	033040
5752	035204	031456	047440	020106
5753	035212	044514	052123	047111
5754	035220	020107	047506	020122
5755	035226	042504	040524	046111
5756	035234	000123		
5757				
5758	035236	005015	051042	040505
5759	035244	020104	044103	041505
5760	035252	020113	044514	044107
5761	035260	021124	051440	047510
5762	035266	046125	020104	042502
5763	035274	041040	044514	045516
5764	035302	047111	000107	
5765				
5766	035306	005015	051120	051505
5767	035314	020123	051042	051505
5768	035322	052105	020042	047524
5769	035330	051040	050105	040505
5770	035336	020124	051105	047522
5771	035344	122		
5772	035345	015	043012	047125
5773	035352	052103	047511	020116
5774	035360	042524	052123	040440
5775	035366	040507	047111	000
5776	035373	015	044412	020123
5777	035400	044124	020105	040503
5778	035406	042122	051040	040505
5779	035414	042504	020122	047125
5780	035422	042504	122	
5781	035425	015	052012	051505
5782	035432	020124	047515	042504
5783	035440	020114	051522	030455
5784	035446	030062	037460	054450

MSG27: .ASCII <15><12>/MAKE AND THEN PLACE A SPECIAL CARD INTO THE INPUT.

.ASCIZ <15><12>/HOPPER. REFER TO SECTION 6.3 OF LISTING FOR DETAILS/

MSG28: .ASCIZ <15><12>/"READ CHECK LIGHT" SHOULD BE BLINKING/

MSG29: .ASCII <15><12>/PRESS "RESET" TO REPEAT ERROR/

.ASCIZ <15><12>/FUNCTION TEST AGAIN/

MSG30: .ASCII <15><12>/IS THE CARD READER UNDER/

.ASCIZ <15><12>/TEST MODEL RS-1200?(Y OR N)/

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SEQ 0184

5785	035454	047440	020122	024516	
5786	035462	000			
5787	035463	015	040412	020124	MSG31: .ASCII <15><12>/AT THIS TIME SET THE APPROPRIATE/
5788	035470	044124	051511	052040	
5789	035476	046511	020105	042523	
5790	035504	020124	044124	020105	
5791	035512	050101	051120	050117	
5792	035520	044522	052101	105	
5793	035525	015	051412	044527	.ASCII <15><12>/SWITCHES ON THE SR. (REFER TO THE/
5794	035532	041524	042510	020123	
5795	035540	047117	052040	042510	
5796	035546	051440	027122	024040	
5797	035554	042522	042506	020122	
5798	035562	047524	052040	042510	
5799	035570	005015	047504	052503	.ASCIIZ <15><12>/DOCUMENTATION ON SWITCH REGISTER SETTINGS)/
5800	035576	042515	052116	052101	
5801	035604	047511	020116	047117	
5802	035612	051440	044527	041524	
5803	035620	020110	042522	044507	
5804	035626	052123	051105	051440	
5805	035634	052105	044524	043516	
5806	035642	024523	000		
5807	035645	015	052012	052123	MSG32: .ASCIIZ <15><12>/TST33 DATA RATE TEST/
5808	035652	031463	020040	040504	
5809	035660	040524	046040	052101	
5810	035666	020105	042524	052123	
5811	035674	000			
5812	035675	015	052012	052123	MSG33: .ASCIIZ <15><12>/TST34 OFF-LINE TEST/
5813	035702	032063	020040	043117	
5814	035710	026506	044514	042516	
5815	035716	052040	051505	000124	
5816	035724	005015	051524	031524	MSG34: .ASCIIZ <15><12>/TST35 SPECIAL INT. COND. TEST/
5817	035732	020065	051440	042520	
5818	035740	044503	046101	044440	
5819	035746	052116	020056	047503	
5820	035754	042116	020056	042524	
5821	035762	052123	000		
5822	035765	015	052012	052123	MSG35: .ASCIIZ <15><12>/TST36 HOPPER EMPTY TEST/
5823	035772	033063	020040	047510	
5824	036000	050120	051105	042440	
5825	036006	050115	054524	052040	
5826	036014	051505	000124		
5827	036020	005015	051524	031524	MSG36: .ASCIIZ <15><12>/TST37 STACKER FULL TEST/
5828	036026	020067	051440	040524	
5829	036034	045503	051105	043040	
5830	036042	046125	020114	042524	
5831	036050	052123	000		
5832	036053	015	052012	052123	MSG37: .ASCIIZ <15><12>/TST40 PICK CHECK TEST/
5833	036060	030064	020040	044520	
5834	036066	045503	041440	042510	
5835	036074	045503	052040	051505	
5836	036102	000124			
5837	036104	005015	051524	032124	MSG38: .ASCIIZ <15><12>/TST41 STACKER ERROR TEST/
5838	036112	020061	051440	040524	

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SEQ 0185

5839	036120	045503	051105	042440	
5840	036126	051122	051117	052040	
5841	036134	051505	000124		
5842	036140	005015	051524	032124	MSG39: .ASCIZ <15><12>/TST42 EOF & HOPPER CHECK/
5843	036146	020062	042440	043117	
5844	036154	023040	044040	050117	
5845	036162	042520	020122	044103	
5846	036170	041505	000113		
5847	036174	005015	051524	032124	MSG40: .ASCIZ <15><12>/TST43 DARK-LIGHT CHECK/
5848	036202	020063	042040	051101	
5849	036210	026513	044514	044107	
5850	036216	020124	044103	041505	
5851	036224	000113			
5852	036226	005015	051524	032124	MSG41: .ASCIZ <15><12>/TST43A MIS-REGISTERED CARD TEST/
5853	036234	040463	020040	044515	
5854	036242	026523	042522	044507	
5855	036250	052123	051105	042105	
5856	036256	041440	051101	020104	
5857	036264	042524	052123	000	
5858					
5859	036272				.EVEN
5860					
5861					;ERROR ITEMS MESSAGE TABLE
5862					
5863	036272	052123	052101	051525	EM1: .ASCII "STATUS REGISTER (CDS) BIT07 NOT SET BY"
5864	036300	051040	043505	051511	
5865	036306	042524	020122	041450	
5866	036314	051504	020051	044502	
5867	036322	030124	020067	047516	
5868	036330	020124	042523	020124	
5869	036336	054502			
5870	036340	005015	047111	052111	.ASCIZ <15><12>"INITIALIZATION PULSE"
5871	036346	040511	044514	040532	
5872	036354	044524	047117	050040	
5873	036362	046125	042523	000	
5874					
5875	036367	103	046117	046525	EM2: .ASCII "COLUMN COUNT REGISTER (CDC) NOT CLEARED BY"
5876	036374	020116	047503	047125	
5877	036402	020124	042522	044507	
5878	036410	052123	051105	024040	
5879	036416	042103	024503	047040	
5880	036424	052117	041440	042514	
5881	036432	051101	042105	041040	
5882	036440	131			
5883	036441	015	044412	044516	.ASCIZ <15><12>"INITIALIZATION PULSE"
5884	036446	044524	046101	055111	
5885	036454	052101	047511	020116	
5886	036462	052520	051514	000105	
5887					
5888	036470	052502	020123	042101	EM3: .ASCII "BUS ADDRESS REGISTER (CDA) NOT CLEARED BY"
5889	036476	051104	051505	020123	
5890	036504	042522	044507	052123	
5891	036512	051105	024040	042103	
5892	036520	024501	047040	052117	

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SEQ 0186

5893	036526	041440	042514	051101	
5894	036534	042105	041040	131	
5895	036541	015	044412	044516	.ASCIZ <15><12>"INITIALIZATION PULSE"
5896	036546	044524	046101	055111	
5897	036554	052101	047511	020116	
5898	036562	052520	051514	000105	
5899					
5900	036570	052123	052101	051525	EM4: .ASCIZ "STATUS REGISTER CONTENTS INCORRECT"
5901	036576	051040	043505	051511	
5902	036604	042524	020122	047503	
5903	036612	052116	047105	051524	
5904	036620	044440	041516	051117	
5905	036625	042522	052103	000	
5906					
5907	036633	103	046117	046525	EM5: .ASCII "COLUMN COUNT REGISTER (CDC) NOT ABLE TO"
5908	036640	020116	047503	047125	
5909	036646	020124	042522	044507	
5910	036654	052123	051105	024040	
5911	036662	042103	024503	047040	
5912	036670	052117	040440	046102	
5913	036676	020105	047524		
5914	036702	005015	042502	046040	.ASCIZ <15><12>"BE LOADED WITH ALL ONES"
5915	036710	040517	042504	020104	
5916	036716	044527	044124	040440	
5917	036724	046114	047440	042516	
5918	036732	000123			
5919					
5920	036734	047503	052514	047115	EM6: .ASCII "COLUMN COUNT REGISTER (CDC) NOT CLEARED"
5921	036742	041440	052517	052116	
5922	036750	051040	043505	051511	
5923	036756	042524	020122	041450	
5924	036764	041504	020051	047516	
5925	036772	020124	046103	040505	
5926	037000	042522	104		
5927	037003	015	041012	020131	.ASCIZ <15><12>"BY POWER CLEAR"
5928	037010	047520	042527	020122	
5929	037016	046103	040505	000122	
5930					
5931	037024	052502	020123	042101	EM7: .ASCII "BUS ADDRESS REGISTER (CDA) NOT ABLE TO BE"
5932	037032	051104	051505	020123	
5933	037040	042522	044507	052123	
5934	037046	051105	024040	042103	
5935	037054	024501	047040	052117	
5936	037062	040440	046102	020105	
5937	037070	047524	041040	105	
5938	037075	015	046012	040517	.ASCIZ <15><12>"LOADED WITH ALL ONES"
5939	037102	042504	020104	044527	
5940	037110	044124	040440	046114	
5941	037116	047440	042516	000123	
5942					
5943	037124	052502	020123	042101	EM10: .ASCII "BUS ADDRESS REGISTER (CDA) NOT CLEARED"
5944	037132	051104	051505	020123	
5945	037140	042522	044507	052123	
5946	037146	051105	024040	042103	

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5947	037154	024501	047040	052117	
5948	037162	041440	042514	051101	
5949	037170	042105			
5950	037172	005015	054502	050040	.ASCIZ <15><12>"BY POWER CLEAR"
5951	037200	053517	051105	041440	
5952	037206	042514	051101	000	
5953					
5954	037213	103	047117	051124	EM11: .ASCII "CONTROLLER READY DID NOT CLEAR ON"
5955	037220	046117	042514	020122	
5956	037226	042522	042101	020131	
5957	037234	044504	020104	047516	
5958	037242	020124	046103	040505	
5959	037250	020122	047117		
5960	037254	005015	042522	042101	.ASCIZ <15><12>"READING A CARD"
5961	037262	047111	020107	020101	
5962	037270	040503	042122	000	
5963					
5964	037275	103	047117	051124	EM12: .ASCII "CONTROLLER READY DID NOT CLEAR BIT00"
5965	037302	046117	042514	020122	
5966	037310	042522	042101	020131	
5967	037316	044504	020104	047516	
5968	037324	020124	046103	040505	
5969	037332	020122	044502	030124	
5970	037340	060			
5971	037341	015	047412	020106	.ASCIZ <15><12>"OF STATUS REGISTER (CDS)"
5972	037346	052123	052101	051525	
5973	037354	051040	043505	051511	
5974	037362	042524	020122	041450	
5975	037370	051504	000051		
5976					
5977	037374	047503	052116	047522	EM13: .ASCIZ "CONTROLLER DID NOT SET WITHIN 1 SECOND"
5978	037402	046114	051105	042040	
5979	037410	042111	047040	052117	
5980	037416	051440	052105	053440	
5981	037424	052111	044510	020116	
5982	037432	020061	042523	047503	
5983	037440	042116	000		
5984					
5985	037443	105	051122	051117	EM14: .ASCIZ "ERROR (BIT15) SET IN STATUS REGISTER (CDS)"
5986	037450	024040	044502	030524	
5987	037456	024465	051440	052105	
5988	037464	044440	020116	052123	
5989	037472	052101	051525	051040	
5990	037500	043505	051511	042524	
5991	037506	020122	041450	051504	
5992	037514	000051			
5993					
5994	037516	044502	020124	051117	EM15: .ASCII "BIT OR BITS SET IN STATUS REGISTER (CDS) THAT"
5995	037524	041040	052111	020123	
5996	037532	042523	020124	047111	
5997	037540	051440	040524	052524	
5998	037546	020123	042522	044507	
5999	037554	052123	051105	024040	
6000	037562	042103	024523	052040	

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SEQ 0188

6001	037570	040510	124			
6002	037573	015	051412	047510		.ASCIZ <15><12>"SHOULD NOT BE"
6003	037600	046125	020104	047516		
6004	037606	020124	042502	000		
6005						
6006	037613	102	051525	020131	EM16:	.ASCII "BUSY SET IN STATUS REGISTER (CDS)"
6007	037620	042523	020124	047111		
6008	037626	051440	040524	052524		
6009	037634	020123	042522	044507		
6010	037642	052123	051105	024040		
6011	037650	042103	024523			
6012	037654	005015	052111	051440		.ASCIZ <15><12>"IT SHOULD NOT BE"
6013	037662	047510	046125	020104		
6014	037670	047516	020124	042502		
6015	037676	000				
6016						
6017	037677	122	051505	047524	EM17:	.ASCII "RESTORING CPU STATUS AFTER READING A CARD"
6018	037704	044522	043516	041440		
6019	037712	052520	051440	040524		
6020	037720	052524	020123	043101		
6021	037726	042524	020122	042522		
6022	037734	042101	047111	020107		
6023	037742	020101	040503	042122		
6024	037750	005015	046103	040505		.ASCIZ <15><12>"CLEARED CONTROLLER READY IN STATUS REGISTER"
6025	037756	042522	020104	047503		
6026	037764	052116	047522	046114		
6027	037772	051105	051040	040505		
6028	040000	054504	044440	020116		
6029	040006	052123	052101	051525		
6030	040014	051040	043505	051511		
6031	040022	042524	000122			
6032						
6033	040026	047516	044440	052116	EM20:	.ASCIZ "NO INTERRUPT OCCURRED"
6034	040034	051105	052522	052120		
6035	040042	047440	041503	051125		
6036	040050	042522	000104			
6037						
6038	040054	047101	044440	052116	EM21:	.ASCIZ "AN INTERRUPT OCCURRED - SHOULD NOT HAVE"
6039	040062	051105	052522	052120		
6040	040070	047440	041503	051125		
6041	040076	042522	020104	020055		
6042	040104	044123	052517	042114		
6043	040112	047040	052117	044040		
6044	040120	053101	000105			
6045						
6046	040124	047111	042524	051122	EM22:	.ASCIZ "INTERRUPT ALREADY OCCURRED AT A HIGHER LEVEL"
6047	040132	050125	020124	046101		
6048	040140	042522	042101	020131		
6049	040146	041517	052503	051122		
6050	040154	042105	040440	020124		
6051	040162	020101	044510	044107		
6052	040170	051105	046040	053105		
6053	040176	046105	000			
6054						

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SEQ 0189

6055	040201	103	047117	051124	EM23: .ASCIZ "CONTROLLER READY NOT SET"
6056	040206	046117	042514	020122	
6057	040214	042522	042101	020131	
6058	040222	047516	020124	042523	
6059	040230	000124			
6060					
6061	040232	047111	042524	051122	EM24: .ASCIZ "INTERRUPT ALREADY OCCURRED AT A LOWER LEVEL"
6062	040240	050125	020124	046101	
6063	040246	042522	042101	020131	
6064	040254	041517	052503	051122	
6065	040262	042105	040440	020124	
6066	040270	020101	047514	042527	
6067	040276	020122	042514	042526	
6068	040304	000114			
6069					
6070	040306	047101	044440	052116	EM25: .ASCIZ "AN INTERRUPT OCCURRED AT TWO DIFFERENT LEVELS"
6071	040314	051105	052522	052120	
6072	040322	047440	041503	051125	
6073	040330	042522	020104	052101	
6074	040336	052040	047527	042040	
6075	040344	043111	042506	042522	
6076	040352	052116	046040	053105	
6077	040360	046105	000123		
6078					
6079	040364	051105	047522	020122	EM26: .ASCII "ERROR (BIT15) NOT SET IN STATUS REGISTER (CDS)"
6080	040372	041050	052111	032461	
6081	040400	020051	047516	020124	
6082	040406	042523	020124	047111	
6083	040414	051440	040524	052524	
6084	040422	020123	042522	044507	
6085	040430	052123	051105	024040	
6086	040436	042103	024523		
6087	040442	005015	052111	051440	.ASCIZ <15><12>"IT SHOULD BE"
6088	040450	047510	046125	020104	
6089	040456	042502	000		
6090					
6091	040461	116	047117	042455	EM27: .ASCII "NON-EXISTANT MEMORY (BIT09) NOT SET IN"
6092	040466	044530	052123	047101	
6093	040474	020124	042515	047515	
6094	040502	054522	024040	044502	
6095	040510	030124	024471	047040	
6096	040516	052117	051440	052105	
6097	040524	044440	116		
6098	040527	015	051412	040524	.ASCIZ <15><12>"STATUS REGISTER (CDS) - IT SHOULD BE"
6099	040534	052524	020123	042522	
6100	040542	044507	052123	051105	
6101	040550	024040	042103	024523	
6102	040556	026440	044440	020124	
6103	040564	044123	052517	042114	
6104	040572	041040	000105		
6105					
6106	040576	054105	042524	042116	EM30: .ASCII "EXTENDED MEMORY (BIT05) NOT SET IS STATUS"
6107	040604	042105	046440	046505	
6108	040612	051117	020131	041050	

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DZCDB.P11 DATA TABLES

SEQ 0190

6109	040620	052111	032460	020051	
6110	040626	047516	020124	042523	
6111	040634	020124	051511	051440	
6112	040642	040524	052524	123	
6113	040647	015	051012	043505	.ASCIZ <15><12>"REGISTER (CDS)"
6114	040654	051511	042524	020122	
6115	040662	041450	051504	000051	
6116					
6117	040670	054105	042524	042116	EM31: .ASCII "EXTENDED MEMORY (BIT04) NOT SET IN STATUS"
6118	040676	042105	046440	046505	
6119	040704	051117	020131	041050	
6120	040712	052111	032060	020051	
6121	040720	047516	020124	042523	
6122	040726	020124	047111	051440	
6123	040734	040524	052524	123	
6124	040741	015	051012	043505	.ASCIZ <15><12>"REGISTER (CDS)"
6125	040746	051511	042524	020122	
6126	040754	041450	051504	000051	
6127					
6128	040762	047503	052116	047105	EM32: .ASCII "CONTENTS OF BUS ADDRESS REGISTER (CDA)"
6129	040770	051524	047440	020106	
6130	040776	052502	020123	042101	
6131	041004	051104	051505	020123	
6132	041012	042522	044507	052123	
6133	041020	051105	024040	042103	
6134	041026	024501			
6135	041030	005015	047111	047503	.ASCIZ <15><12>"INCORRECT"
6136	041036	051122	041505	000124	
6137					
6138	041044	047503	052116	047105	EM33: .ASCII "CONTENTS OF COLUMN COUNT REGISTER (CDC)"
6139	041052	051524	047440	020106	
6140	041060	047503	052514	047115	
6141	041066	041440	052517	052116	
6142	041074	051040	043505	051511	
6143	041102	042524	020122	041450	
6144	041110	041504	051		
6145	041113	015	044412	041516	.ASCIZ <15><12>"INCORRECT"
6146	041120	051117	042522	052103	
6147	041126	000			
6148					
6149	041127	122	040505	042504	EM34: .ASCII "READER OFF-LINE BUT CARD READER ERROR"
6150	041134	020122	043117	026506	
6151	041142	044514	042516	041040	
6152	041150	052125	041440	051101	
6153	041156	020104	042522	042101	
6154	041164	051105	042440	051122	
6155	041172	051117			
6156	041174	005015	041050	052111	.ASCIZ <15><12>"(BIT14) NOT SET IN STATUS REGISTER (CDS)"
6157	041202	032061	020051	047516	
6158	041210	020124	042523	020124	
6159	041216	047111	051440	040524	
6160	041224	052524	020123	042522	
6161	041232	044507	052123	051105	
6162	041240	024040	042103	024523	

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SEQ 0191

6163	041246	000			
6164					
6165	041247	116	020117	051124	EM35: .ASCII "NO TRANSITION TO ON-LINE (BIT03) OCCURRED"
6166	041254	047101	044523	044524	
6167	041262	047117	052040	020117	
6168	041270	047117	046055	047111	
6169	041276	020105	041050	052111	
6170	041304	031460	020051	041517	
6171	041312	052503	051122	042105	
6172	041320	005015	047111	051440	.ASCIZ <15><12>"IN STATUS REGISTER (CDS)"
6173	041326	040524	052524	020123	
6174	041334	042522	044507	052123	
6175	041342	051105	024040	042103	
6176	041350	024523	000		
6177					
6178	041353	103	047117	042524	EM36: .ASCIZ "CONTENTS OF STATUS REGISTER #2 (CDD) INCORRECT"
6179	041360	052116	020123	043117	
6180	041366	051440	040524	052524	
6181	041374	020123	042522	044507	
6182	041402	052123	051105	021440	
6183	041410	020062	041450	042104	
6184	041416	020051	047111	047503	
6185	041424	051122	041505	000124	
6186					
6187	041432	047516	044440	052116	EM37: .ASCIZ "NO INTERRUPT WITH PROCESSOR AT LEVEL 0"
6188	041440	051105	052522	052120	
6189	041446	053440	052111	020110	
6190	041454	051120	041517	051505	
6191	041462	047523	020122	052101	
6192	041470	041504	053105	046105	
6193	041476	030040	000		
6194					
6195	041506	104	052101	020101	EM40: .ASCIZ "DATA LATE (BIT10) NOT SET IN STATUS REGISTER (CDS)"
6196	041506	040514	042524	024040	
6197	041514	044502	030524	024460	
6198	041522	047040	052117	051440	
6199	041530	052105	044440	020116	
6200	041536	052123	052101	051525	
6201	041544	051040	043505	051511	
6202	041552	042524	020122	041450	
6203	041560	051504	000051		
6204					
6205	041564	043117	026506	044514	EM41: .ASCIZ "OFF-LINE (BIT12) NOT SET IN STATUS REGISTER (CDS)"
6206	041572	042516	024040	044502	
6207	041600	030524	024462	047040	
6208	041606	052117	051440	052105	
6209	041614	044440	020116	052123	
6210	041622	052101	051525	051040	
6211	041630	043505	051511	042524	
6212	041636	020122	041450	051504	
6213	041644	000051			
6214					
6215	041646	043117	026506	044514	EM42: .ASCII "OFF-LINE (BIT12) SET IN STATUS REGISTER"
6216	041654	042516	024040	044502	

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DATA TABLES

SEQ 0192

6217	041662	030524	024462	051440
6218	041670	052105	044440	020116
6219	041676	052123	052101	051525
6220	041704	051040	043505	051511
6221	041712	042524	122	
6222	041715	015	020012	020055
6223	041722	052111	051440	047510
6224	041730	046125	020104	047516
6225	041736	020124	042502	000
6226				
6227	041743	120	041511	020113
6228	041750	044103	041505	020113
6229	041756	041050	052111	031461
6230	041764	020051	047516	020124
6231	041772	042523	020124	047111
6232	042000	051440	040524	052524
6233	042006	020123	042522	044507
6234	042014	052123	051105	021440
6235	042022	020062	041450	042104
6236	042030	000051		
6237				
6238	042032	052123	041501	020113
6239	042040	044103	041505	020113
6240	042046	041050	052111	031061
6241	042054	020051	047516	020124
6242	042062	042523	020124	047111
6243	042070	051440	040524	052524
6244	042076	020123	042522	044507
6245	042104	052123	051105	021440
6246	042112	020062	041450	042104
6247	042120	000051		
6248				
6249	042122	047105	020104	043117
6250	042130	043040	046111	020105
6251	042136	041050	052111	031461
6252	042144	020051	042523	020124
6253	042152	047111	051440	040524
6254	042160	052524	020123	042522
6255	042166	044507	052123	051105
6256	042174	024040	042103	024523
6257	042202	005015	026440	044440
6258	042210	020124	044123	052517
6259	042216	042114	047040	052117
6260	042224	041040	000105	
6261				
6262	042230	042522	042101	041440
6263	042236	042510	045503	024040
6264	042244	044502	030524	024464
6265	042252	051440	052105	044440
6266	042260	020116	052123	052101
6267	042266	051525	051040	043505
6268	042274	051511	042524	020122
6269	042302	041450	051504	051
6270	042307	015	020012	020055

.ASCIZ <15><12>" - IT SHOULD NOT BE"

EM43: .ASCIZ "PICK CHECK (BIT13) NOT SET IN STATUS REGISTER #2 (CDD)"

EM44: .ASCIZ "STACK CHECK (BIT12) NOT SET IN STATUS REGISTER #2 (CDD)"

EM45: .ASCII "END OF FILE (BIT13) SET IN STATUS REGISTER (CDS)"

.ASCIZ <15><12>" - IT SHOULD NOT BE"

EM46: .ASCII "READ CHECK (BIT14) SET IN STATUS REGISTER (CDS)"

.ASCIZ <15><12>" - IT SHOULD NOT BE"

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SEQ 0193

6271	042314	052111	051440	047510
6272	042322	046125	020104	047516
6273	042330	020124	042502	000
6274				
6275	042335	110	050117	042520
6276	042342	020122	044103	041505
6277	042350	020113	041050	052111
6278	042356	031060	020051	042523
6279	042364	020124	047111	051440
6280	042372	040524	052524	020123
6281	042400	042522	044507	052123
6282	042406	051105	024040	042103
6283	042414	024523		
6284	042416	005015	026440	044440
6285	042424	020124	044123	052517
6286	042432	042114	047040	052117
6287	042440	041040	000105	
6288				
6289	042444	047105	020104	043117
6290	042452	043040	046111	020105
6291	042460	041050	052111	031461
6292	042466	020051	043117	051440
6293	042474	040524	052524	020123
6294	042502	042522	044507	052123
6295	042510	051105	024040	042103
6296	042516	024523	047040	052117
6297	042524	051440	052105	
6298	042530	005015	026440	044440
6299	042536	020124	044123	052517
6300	042544	042114	041040	000105
6301				
6302	042552	042522	042101	041440
6303	042560	042510	045503	024040
6304	042566	044502	030524	024464
6305	042574	047440	020106	052123
6306	042602	052101	051525	051040
6307	042610	043505	051511	042524
6308	042616	020122	041450	051504
6309	042624	020051	047516	020124
6310	042632	042523	124	
6311	042635	015	020012	020055
6312	042642	052111	051440	047510
6313	042650	046125	020104	042502
6314	042656	000		
6315				
6316	042657	110	050117	042520
6317	042664	020122	044103	041505
6318	042672	020113	041050	052111
6319	042700	031061	020051	043117
6320	042706	051440	040524	052524
6321	042714	020123	042522	044507
6322	042722	052123	051105	024040
6323	042730	042103	024523	047040
6324	042736	052117	051440	052105

EM47: .ASCII "HOPPER CHECK (BIT02) SET IN STATUS REGISTER (CDS)"

.ASCIZ <15><12>" - IT SHOULD NOT BE"

EM50: .ASCII "END OF FILE (BIT13) OF STATUS REGISTER (CDS) NOT SET"

.ASCIZ <15><12>" - IT SHOULD BE"

EM51: .ASCII "READ CHECK (BIT14) OF STATUS REGISTER (CDS) NOT SET"

.ASCIZ <15><12>" - IT SHOULD BE"

EM52: .ASCII "HOPPER CHECK (BIT12) OF STATUS REGISTER (CDS) NOT SET"

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SEQ 0194

6325	042744	005015	026440	044440
6326	042752	020124	044123	052517
6327	042760	042114	041040	000105
6328				
6329	042766	047105	020104	043117
6330	042774	043040	046111	020105
6331	043002	041050	052111	031461
6332	043010	020051	043117	051440
6333	043016	040524	052524	020123
6334	043024	042522	044507	052123
6335	043032	051105	024040	042103
6336	043040	024523	042040	042111
6337	043046	047040	052117	
6338	043052	005015	046103	040505
6339	043060	020122	044527	044124
6340	043066	052040	040522	051516
6341	043074	052111	047511	020116
6342	043102	047524	047440	026516
6343	043110	044514	042516	000
6344				
6345	043115	122	040505	020104
6346	043122	044103	041505	020113
6347	043130	041050	052111	032061
6348	043136	020051	047516	020124
6349	043144	042523	020124	047111
6350	043152	051440	040524	052524
6351	043160	020123	042522	044507
6352	043166	052123	051105	021440
6353	043174	020062	041450	042104
6354	043202	000051		
6355				
6356	043204	040503	042122	051040
6357	043212	040505	042504	020122
6358	043220	051105	047522	020122
6359	043226	052502	020124	047516
6360	043234	020124	030070	044124
6361	043242	041440	051101	000104
6362				
6363	043250	040503	042122	051040
6364	043256	040505	042504	020122
6365	043264	051105	047522	020122
6366	043272	052502	020124	047516
6367	043300	020124	043117	026506
6368	043306	044514	042516	000
6369				
6370	043313	105	042116	047440
6371	043320	020106	044506	042514
6372	043326	024040	044502	030524
6373	043334	024463	042440	051122
6374	043342	051117	047440	020106
6375	043350	052123	052101	051525
6376	043356	051040	043505	051511
6377	043364	042524	020122	041450
6378	043372	051504	000051	

.ASCIZ <15><12>" - IT SHOULD BE"

EM53: .ASCII "END OF FILE (BIT13) OF STATUS REGISTER (CDS) DID NOT"

.ASCIZ <15><12>"CLEAR WITH TRANSITION TO ON-LINE"

EM54: .ASCIZ "READ CHECK (BIT14) NOT SET IN STATUS REGISTER #2 (CDD)"

EM55: .ASCIZ "CARD READER ERROR BUT NOT BOTH CARD"

EM56: .ASCIZ "CARD READER ERROR BUT NOT OFF-LINE"

EM57: .ASCIZ "END OF FILE (BIT13) ERROR OF STATUS REGISTER (CDS)"

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DATA TABLES

SEQ 0195

6379					EM60: .ASCIZ "DATA ERROR (BIT11) OF STATUS REGISTER (CDS)"
6380	043376	040504	040524	042440	
6381	043404	051122	051117	024040	
6382	043412	044502	030524	024461	
6383	043420	047440	020106	052123	
6384	043428	052101	051525	051040	
6385	043436	043506	051511	042524	
6386	043442	020122	041450	051504	
6387	043450	000051			
6388					
6389	043452	040504	040524	046040	EM61: .ASCIZ "DATA LATE (BIT11) ERROR OF STATUS REGISTER (CDS)"
6390	043460	052101	020105	041050	
6391	043466	052111	030461	020051	
6392	043474	051105	047522	020122	
6393	043502	043117	051440	040524	
6394	043510	052524	020123	042522	
6395	043516	044507	052123	051105	
6396	043524	024040	042103	024523	
6397	043532	000			
6398					
6399	043533	116	047117	042455	EM62: .ASCII "NON-EXISTANT MEMORY (BIT09) ERROR OF STATUS"
6400	043540	044530	052123	047101	
6401	043546	020124	042515	047515	
6402	043554	054522	024040	044502	
6403	043562	030124	024471	042440	
6404	043570	051122	051117	047440	
6405	043576	020106	052123	052101	
6406	043604	051525			
6407	043606	005015	042522	044507	.ASCIZ <15><12>"REGISTER (CDS)"
6408	0436.4	052123	051105	024040	
6409	04362.1	042103	024523	000	
6410					
6411	043627	104	051511	051501	EM63: .ASCIZ "DISASTEROUS ERROR BUT NO ERROR BITS SET"
6412	043634	042524	047522	051525	
6413	043642	042440	051122	051117	
6414	043650	041040	052125	047040	
6415	043656	020117	051105	047522	
6416	043664	020122	044502	051524	
6417	043672	051440	052105	000	
6418					
6419	043677	104	052101	020101	EM64: .ASCII "DATA PACKING (BIT01) OF STATUS REGISTER (CDS)"
6420	043704	040520	045503	047111	
6421	043712	020107	041050	052111	
6422	043720	030460	020051	043117	
6423	043726	051440	040524	052524	
6424	043734	020123	042522	044507	
6425	043742	052123	051105	024040	
6426	043750	042103	024523		
6427	043754	005015	047516	020124	.ASCIZ <15><12>"NOT SET - IT SHOULD BE"
6428	043762	042523	020124	020055	
6429	043770	052111	051440	047510	
6430	0-3775	046125	020104	042502	
6431	044004	000			
6432					

6433	044005	124	047510	046125	EM65:	.ASCII	"SHOULD BE ADDRESSING BINARY DECK"
6434	044012	020104	042502	040440			
6435	044020	042104	042522	051523			
6436	044026	047111	020107	044502			
6437	044034	040516	054522	042040			
6438	044042	041505	113				
6439	044045	015	050012	047522		.ASCIZ	<15><12>"PROGRAM DOES NOT AGREE"
6440	044052	051107	046501	042040			
6441	044060	042517	020123	047516			
6442	044066	020124	043501	042522			
6443	044074	000105					
6444							
6445	044076	047503	052116	047105	EM66:	.ASCII	"CONTENTS OF STATUS REGISTER (CDS) INCORRECT"
6446	044104	051524	047440	020106			
6447	044112	052123	052101	051525			
6448	044120	051040	043505	051511			
6449	044126	042524	020122	041450			
6450	044134	051504	020051	047111			
6451	044142	047503	051122	041505			
6452	044150	124					
6453	044151	015	020012	020055		.ASCIZ	<15><12>" - SHOULD BE ZERO"
6454	044156	044123	052517	042114			
6455	044164	041040	020105	042532			
6456	044172	047522	000				
6457							
6458	044175	117	042104	041040	EM67:	.ASCIZ	"ODD BUS ADDRESS CAUSED A TRAP IN NON-PACK MODE"
6459	044202	051525	040440	042104			
6460	044210	042522	051523	041440			
6461	044216	052501	042523	020104			
6462	044224	020101	051124	050101			
6463	044232	044440	020116	047516			
6464	044240	026516	040520	045503			
6465	044246	046440	042117	000105			
6466							
6467							
6468							
6469	044254	024040	041520	020051	DH1:	.ASCIZ	" (PC) (SP) (CDS) (CDD) (PS)"
6470	044262	020040	024040	050123			
6471	044270	020051	020040	041450			
6472	044276	051504	020051	020040			
6473	044304	041450	042104	020051			
6474	044312	020040	024040	051520			
6475	044320	000051					
6476	044322	024040	041520	020051	DH2:	.ASCIZ	" (PC) (SP) (CDS) (CDD) (CDC) (PS)"
6477	044330	020040	024040	050123			
6478	044336	020051	020040	041450			
6479	044344	051504	020051	020040			
6480	044352	041450	042104	020051			
6481	044360	020040	041450	041504			
6482	044366	020051	020040	024040			
6483	044374	051520	000051				
6484	044400	024040	041520	020051	DH3:	.ASCIZ	" (PC) (SP) (CDS) (CDD) (CDA) (PS)"
6485	044406	020040	024040	050123			
6486	044414	020051	020040	041450			

;ERROR ITEMS HEADER TABLE

WAS SHB"

MAINDEC - 11 - 0ZCDB-8
0ZCDB.P11

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DATA TABLES

SEQ 0198

6541	045104	020040	020040	044123	
6542	045112	000102			
6543	045114	024040	041520	020051	DM7: .ASCII " (PC) (SP) (COS) (CDO) (CDO) (PS)"
6544	045122	020040	051450	024520	
6545	045130	020040	024040	042103	
6546	045138	024523	020040	024040	
6547	045144	042103	024504	020040	
6548	045152	024040	042103	024504	
6549	045160	020040	020040	050050	
6550	045166	024523			
6551	045170	005015	020040	020040	.ASCIIZ <15><12>" WAS SHB"
6552	045176	020040	020040	020040	
6553	045204	020040	020040	020040	
6554	045212	020040	020040	020040	
6555	045220	020040	040527	020123	
6556	045226	020040	020040	044123	
6557	045234	000102			
6558					.EVEN
6559					
6560					;ERROR ITEMS DATA TABLE
6561					
6562	045236	001116	001174	001200	DT1: \$ERRPC,\$REG6,\$TMP0,\$TMP1,\$REG7,0
6563	045244	001202	001176	000000	
6564	045252	001116	001174	001200	DT2: \$ERRPC,\$REG6,\$TMP0,\$TMP1,\$TMP2,\$REG7,0
6565	045260	001202	001204	001176	
6566	045266	000000			
6567	045270	001116	001174	001200	DT3: \$ERRPC,\$REG6,\$TMP0,\$TMP1,\$TMP3,\$REG7,0
6568	045276	001202	001206	001176	
6569	045304	000000			
6570	045306	001116	001174	001200	DT4: \$ERRPC,\$REG6,\$TMP0,\$TMP1,\$TMP2,\$TMP3,\$REG7,0
6571	045314	001202	001204	001206	
6572	045322	001176	000000		
6573	045326	001116	001174	001200	DT5: \$ERRPC,\$REG6,\$TMP0,\$TMP1,\$TMP2,\$TMP3,\$TMP4,\$REG7,0
6574	045334	001202	001204	001206	
6575	045342	001210	001176	000000	
6576	045350	001116	001174	001200	DT6: \$ERRPC,\$REG6,\$TMP0,\$TMP1,\$TMP4,\$REG7,0
6577	045356	001202	001210	001176	
6578	045364	000000			
6579					

```

6580
6581 ;*****
6582 ;SUBROUTINE TO INITIALIZE CSR AND DBR POINTERS
6583 ;*****
6584
6585 045366 013703 001232 SETUP: MOV CDST,CDS ;SET UP STATUS REGISTER POINTER
6586 045372 013704 001234 MOV CDCC,CCC ;SET UP COLUMN COUNT REGISTER POINTER
6587 045376 013705 001236 MOV CDBA,CDA ;SET UP BUS ADDRESS REGISTER POINTER
6588 045402 013702 001244 MOV INTVC,ADINT ;LOAD ADDRESS OF INTERRUPT VECTOR
6589 045406 013712 001246 MOV INTVC+2,(ADINT) ;SET UP CARD READER TRAP VECTOR
6590 045412 005077 133630 CLR @INTVC+2 ;TO HALT
6591 045416 005037 001252 CLR INTFLG ;INITIALIZE INTERRUPT FLAG
6592 045422 005037 001254 CLR TRFLG ;INITIALIZE TRACE FLAG
6593 045426 013746 000340 MOV PR7,-(SP) ;;PUT NEW PS ON STACK
6594 045432 012746 045440 MOV #64$,-(SP) ;;PUT NEW PC ON STACK
6595 045436 000002 RTI ;;POP NEW PC AND PS
6596 045440
6597 045440 000207 64$: RTS PC ;RETURN TO MAINLINE CODE
6598
6599 ;*****
;*****
;*****
;
;THIS MARKS THE BEGINNING OF THE MEMORY BUFFER AREA WHERE THE
;CONTENTS OF THE CARD COLUMNS ARE DUMPED ON READ CYCLES
;
;
6612 ;*****
6613 ;*****
6614 ;*****
6615 ;*****
6616
6617
6618 045442 000000 BUFBEQ: 0
6619 000001 .END

```

ADINT =%000002

AGAIN	023424
ALPCD	027600
ALPCDP	030040
ALPEN0	030036
ALPENP	030157
ALPI	012374
BEGIN	002170
BINCD	030160
BINCDP	030420
BINENO	030416
BINENP	030537
BIT0	000001
BIT00	030001
BIT01	000002
BIT02	000004
BIT03	000010
BIT04	000020
BIT05	000040
BIT06	000100
BIT07	000200
BIT08	000400
BIT09	001000
BIT1	000002
BIT10	002000
BIT11	004000
BIT12	010000
BIT13	020000
BIT14	040000
BIT15	100000
BIT2	000004
BIT3	000010
BIT4	000020
BIT5	000040
BIT6	000100
BIT7	000200
BIT8	000400
BIT9	001000
BLKNO	012702
BLKNO1	012714
BPTVER	000014
BUFBFG	045442
BUFENO	015320
BYPALS	023626
CARDIM	025736

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 DZCDB '11 CROSS REFERENCE TABLE

SEQ 0203

EM16	037613	531	6006#					
EM17	037677	539	6017#					
EM2	036367	438	5875#					
EM20	040026	547	6033#					
EM21	040054	554	6038#					
EM22	040124	561	6046#					
EM23	040201	568	6055#					
EM24	040232	575	6061#					
EM25	040306	582	6070#					
EM26	040364	589	6079#					
EM27	040461	597	6091#					
EM3	036470	446	5888#					
EM30	040576	505	6106#					
EM31	040670	613	6117#					
EM32	040762	628	6128#					
EM33	041044	637	6138#					
EM34	041127	646	6149#					
EM35	041247	654	6165#					
EM36	041353	669	6178#					
EM37	041432	678	6187#					
EM4	036570	454	5900#					
EM40	041501	685	6195#					
EM41	041564	693	6205#					
EM42	041646	701	6215#					
EM43	041743	709	6227#					
EM44	042032	717	6238#					
EM45	042122	725	6249#					
EM46	042230	733	6262#					
EM47	042335	741	6275#					
EM5	036633	461	5907#					
EM50	042444	749	6289#					
EM51	042552	757	6302#					
EM52	042657	765	6316#					
EM53	042766	773	6329#					
EM54	043115	782	6345#					
EM55	043204	790	6356#					
EM56	043250	797	6363#					
EM57	043313	804	6370#					
EM6	036734	469	5920#					
EM60	043376	812	6380#					
EM61	043452	819	6389#					
EM62	043533	827	6399#					
EM63	043527	662	6411#					
EM64	043677	835	6419#					
EM65	044005	843	6433#					
EM66	044076	851	6445#					
EM67	044175	859	6458#					
EM7	037024	477	5931#					
ENDCK	012266	2380#						
ERCD11	015642	315	3022#					
ERCD12	016146	3064	3067#					
ERFLG	001260	407#	2412#	2820	2822*	4398*	4453	4455*
ERRVEC=	000004	261#	4640	4641*	4643*	4646*		
ER1200	016134	3021	3064#	4206				

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DZCDB.P11 CROSS REFERENCE TABLE

ER1200	015342	326	2978#											
GNS =	***** U	290	4917	4918	4919	4920	4921							
HEADIN	002522	911	919#											
HOOK1	015170	2919	2926#											
INIT	025744	1153	1223	1272	1370	1468	1566	1659	1757	1855	1950	2004	2073	2265
		2362	2436	3075	3112	3156	3351	3478	3609	3763	3927	3940	4071	4395
		4507#												
INTFLC	001252	403#	1341	1343	1354	1356*	1363	1439	1441	1452	1454*	1461	1537	1539
		1550	1552*	1559	1635	1637	1648	1650*	1652	1728	1730	1741	1743*	1750
		1826	1828	1839	1841*	1848	1933	1935*	1942	6591*				
INTVC	001244	400#	6588	6589	6590*									
IOTVEC=	000020	266#	874*	875*	2984*	2985*	3028*	3029*	4221*	4222*	4331*	4332*		
ISR	012750	2491	2494#											
ISRBE	013150	2525	2535#											
ISROE	013176	2518	2521	2543#										
ISROE4	013474	2588	2607#											
ISRO1	013204	2545#	2582											
ISRO2	013410	2544	2587#											
ISREER	013510	2497	2614#											
ISRE1	013516	2614	2618#											
ISRE2	013554	2619	2631#											
ISRE3	013564	2623	2632	2635#										
ISRLP	013042	2512#	2530	2533										
ISRNC	013034	2507	2511#	2629										
ISRNX	013154	2536#												
ISRNX1	013172	2538	2540#											
ISRRT	013076	2519	2522#	2573	2575	2610								
ISRST	013634	2616	2628	2651	2653#									
LASTCD	014650	2625	2764	2802	2840#									
LOOP5	003220	1075	1078#	1083										
LOOP6	003442	1140#												
LOOP6A	003412	1129#	1132											
LOOP6B	003430	1130	1135#											
LSTCD1	014664	2842#	2844											
MDATA	031305	2408	5385#											
MLOGIC	031256	919	929	932	5380#									
MLOOP	031454	4301	5407#											
MPATS	031527	4367	5416#											
MSG1	031576	3130	3323	3416	3543	3615	3699	3774	3854	3930	4050	4075	4134	5424#
MSG10	032570	4125	5517#											
MSG11	032634	5523#												
MSG12	032706	4073	5530#											
MSG13	033053	2823												

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DZCDB.P11 CROSS REFERENCE TABLE

[illegible]

M16

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 DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0207

SIZE 015314
 SP =%000006

2467*	2469	2504	2505	2511	2663	2668	2794*	2798	2804	2840	2965*	936*
191*	873*	898*	899*	893*	897*	898*	904	905	906	925*	926*	936*
937*	1059*	1060*	1063*	1064*	1066	1067	1068*	1069*	1084*	1085*	1116*	1117*
1120*	1121*	1123	1124	1125*	1126*	1136*	1137*	1156*	1157*	1160*	1161*	1163
1164	1166*	1167*	1171*	1172*	1175*	1176*	1178	1179	1181*	1182*	1185*	1186*
1188	1189	1191*	1192*	1201*	1202*	1211	1226*	1227*	1230*	1231*	1233	1234
1236*	1237*	1241*	1242*	1245*	1246*	1248	1249	1257	1275*	1276*	1279*	1280*
1282	1283	1285*	1286*	1290*	1291*	1294*	1295*	1297	1298	1300*	1301*	1304*
1305*	1307	1308	1310*	1311*	1314*	1315*	1318*	1319*	1321	1322	1324*	1325*
1334*	1335*	1353	1358*	1373*	1374*	1377*	1378*	1380	1381	1383*	1384*	1388*
1389*	1392*	1393*	1395	1396	1398*	1399*	1402*	1403*	1405	1406	1408*	1409*
1412*	1413*	1416*	1417*	1419	1420	1422*	1423*	1432*	1433*	1451	1456*	1471*
1472*	1475*	1476*	1478	1479	1481*	1482*	1486*	1487*	1490*	1491*	1493	1494
1496*	1497*	1500*	1501*	1503	1504	1506*	1507*	1510*	1511*	1514*	1515*	1517
1518	1520*	1521*	1530*	1531*	1549	1554*	1569*	1570*	1573*	1574*	1576	1577
1579*	1580*	1584*	1585*	1588*	1589*	1591	1592	1594*	1595*	1598*	1599*	1601
1602	1604*	1605*	1608*	1609*	1612*	1613*	1615	1616	1618*	1619*	1628*	1629*
1647	1662*	1663*	1666*	1667*	1669	1670	1672*	1673*	1677*	1678*	1681*	1682*
1684	1685	1687*	1688*	1691*	1692*	1694	1695	1697*	1698*	1701*	1702*	1705*
1706*	1708	1709	1711*	1712*	1721*	1722*	1740	1745*	1760*	1761*	1764*	1765*
1767	1768	1770*	1771*	1775*	1776*	1779*	1780*	1782	1783	1785*	1786*	1789*
1790*	1792	1793	1795*	1796*	1799*	1800*	1803*	1804*	1806	1807	1809*	1810*
1819*	1820*	1838	1843*	1858*	1859*	1862*	1863*	1865	1866	1868*	1869*	1873*
1874*	1877*	1878*	1880	1881	1883*	1884*	1887*	1888*	1890	1891	1893*	1894*
1897*	1898*	1901*	1902*	1904	1905	1907*	1908*	1917*	1918*	1932	1937*	1953*
1954*	1957*	1958*	1960	1961	1963*	1964*	1968*	1969*	1972*	1973*	1975	1976
1977*	1978*	1988*	1989*	1995	2007*	2008*	2011*	2012*	2014	2015	2017*	2018*
2022*	2023*	2026*	2027*	2029	2030	2032*	2033*	2036*	2037*	2039	2040	2042*
2043*	2050	2052*	2053*	2058*	2059*	2063	2076*	2077*	2080*	2081*	2083	2084
2086*	2087*	2091*	2092*	2095*	2096*	2098	2099	2101*	2102*	2105*	2106*	2108
2109	2111*	2112*	2119	2268*	2269*	2272*	2273*	2275	2276	2278*	2279*	2283*
2284*	2287*	2288*	2290	2291	2293*	2294*	2297*	2298*	2300	2301	2303*	2304*
2307*	2308*	2311*	2312*	2314	2315	2317*	2318*	2330*	2331*	2350	2374	2425*
2426*	2432*	2433*	2441*	2442*	2445*	2446*	2448	2449	2451*	2452*	2456*	2457*
2460*	2461*	2463	2464	2595*	2597*	2602*	2728*	2733*	2828*	2833*	2868	2369
2831*	2888*	2889*	2901*	2902*	2905	2906*	2907	2908*	2913*	2914*	2953	2962
2983*	2998*	2999*	3003*	3007*	3008*	3014	3015	3016	3027*	3042*	3043*	3047*
3051*	3052*	3058	3059	3060	3159*	3160*	3163*	3164*	3166	3167	3169*	3170*
3174*	3175*	3178*	3179*	3181	3182	3184*	3185*	3188*	3189*	3191	3192	3194*
3195*	3223*	3224*	3227*	3228*	3230	3231	3233*	3234*	3238*	3239*	3242*	3243*
3245	3246	3248*	3249*	3252*	3253*	3255	3256	3258*	3259*	3265	3284*	3285*
3288*	3289*	3291	3292	3294*	3295*	3299*	3300*	3303*	3304*	3306	3307	3309*
3310*	3313*	3314*	3316	3317	3319*	3320*	3327	3375*	3376*	3379*	3380*	3382
3383	3385*	3386*	3390*	3391*	3394*	3395*	3397	3398	3400*	3401*	3404*	3405*
3407	3408	3410*	3411*	3420	3423*	3424*	3427*	3428*	3430	3431	3433*	3434*
3438*	3439*	3442*	3443*	3445	3446	3448*	3449*	3452*	3453*	3455	3456	3458*
3459*	3467	3503*	3504*	3507*	3508*	3510	3511	3513*	3514*	3518*	3519*	3522*
3523*	3525	3526	3528*	3529*	3532*	3533*	3535	3536	3538*	3539*	3547	3550*
3551*	3554*	3555*	3557	3558	3560*	3561*	3565*	3566*	3569*	3570*	3572	3573
3575*	3576*	3579*	3580*	3582	3583	3585*	3585*	3594	3658*	3659*	3662*	3663*
3665	3666	3668*	3669*	3673*	3674*	3677*	3678*	3680	3681	3683*	3684*	3687*
3688*	3690	3691	3693*	3694*	3703	3706*	3707*	3710*	3711*	3713	3714	3716*
3717*	3721*	3722*	3725*	3726*	3728	3729	3731*	3732*	3735*	3736*	3738	3739
3741*	3742*	3750	3814*	3815*	3818*	3819*	3821	3822	3824*	3825*	3829*	3830*

SW7 = 000200	223#												
SW8 = 000400	222#												
SW9 = 001000	221#												
TBITVE = 000014	263#	884*	885*	2994*	2995*	3038*	3039*	4231*	4232*	4341*	4342*		
TCRLF = 000200	4701	4740#											
TEMP1 015322	2840*	2843*	2968#										
TEMP2 015324	2841*	2842*	2845	2969#									
TEND 015330	2416*	2420*	2522	2558	2581	2671	2689*	2703	2718	2813*	2971#		
TESTX 024100	318	4215#											
THT = 000011	4699	4739#											
TINA21 010764	2051	2063#											
TINTC 016652	3157	3206#											
TINTCA 017120	3221	3265#											
TINTCB 017402	3282	3327#											
TINTD 017764	3373	3420#											
TINTDA 020214	3421	3467#											
TINTE 020544	3501	3547#											
TINTEA 020774	3548	3594#											
TINTF 021424	3656	3703#											
TINTFA 021654	3704	3750#											
TINTG 022270	3812	3858#											
TINTGA 022520	3859	3905#											
TINTH 024064	4156	4203#											
TINTI 023120	3965	4014#											
TINTIA 023156	4028	4030#											
TINT10 004150	1224	1256#											
TINT11 004556	1273	1347#											
TINT12 005234	1371	1445#											
TINT13 005712	1469	1543#											
TINT14 006370	1567	1641#											
TINT15 007032	1660	1734#											
TINT16 007510	1758	1832#											
TINT17 010150	1856	1926#											
TINT20 010452	1951	1994#											
TINT21 010726	2005	2050#											
TINT22 011240	2074	2119#											
TINT31 012146	2266	2343#											
TINT7 003740	1154	1208#											
TKVEC = 000060	270#												
TLOPC 016642	3202#	3203											
TLOPG 021720	3776#	3777											
TLOPGA 021726	3778#	3779											
TLOPG8 021756	3787#	3788											
TLOPH 023304	4077#	4078											
TLOPHA 023312	4079#	4080											
TLOPH8 023342	4088#	4089											
TLOPHC 023550	4137#	4138											
TLOPHD 023556	4139#	4140											
TLOPHE 023606	4149#	4150											
TOTCRO 025734	4396*	4411*	4478	4497#									
TOTERR 025732	4397*	4450*	4481	4496#									
TPVEC = 000064	271#												
TRACE = 000360	281#	936	2432										
TRAPVE = 000034	269#	878*	879*	2988*	2989*	3032*	3033*	4225*	4226*	4335*	4336*		

D01

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 DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0210

TRAPX	002566	923	932#											
TRFLG	001254	404#	922	2384*	2422	2956*	6592*							
TRP1	012440	2423	2430#											
TRTRAP	001242	309	399#											
TRIVEC=	000014	264#												
TSTART	015326	2415*	2419*	2465	2524	2572	2578	2583	2673	2688*	2709	2715	2720	2812*
		2970#												
TSTM10	023256	3920	4060	4063#										
TSTM12	022544	3919	3922#											
TST1	002620	921	931	944#										
TST10	003770	1222#												
TST11	004166	1271#												
TST12	004644	1342	1344	1346	1362	1364	1369#							
TST13	005322	1440	1442	1444	1460	1462	1467#							
TST14	006000	1538	1540	1542	1558	1560	1565#							
TST15	006442	1636	1638	1640	1651	1653	1658#							
TST16	007120	1729	1731	1733	1749	1751	1756#							
TST17	007576	1827	1829	1831	1847	1849	1854#							
TST2	002724	982#												
TST20	010236	1925	1941	1943	1949#									
TST21	010470	2003#												
TST22	011002	2072#												
TST23	011362	2160#												
TST24	011410	2178#												
TST25	011436	2195#												
TST26	011466	2212#												
TST27	011514	2230#												
TST3	002772	989	1007#											
TST30	011542	2247#												
TST31	011572	2264#												
TST32	012206	2361#												
TST33	016152	3072#												
TST34	016250	3108#												
TST35	016402	3153#												
TST36	017442	3348#												
TST37	020226	3476#												
TST4	003042	1030#												
TST40	021006	3603#												
TST41	021666	3759#												
TST42	022544	3926#												
TST43	023256	4067#												
TST5	003112	1053#												
TST6	003300	1081	1094	1103#										
TST7	003456	1134	1152#											
TTY = %000005		280#												
TYHEAD	014554	2589	2726	2820#										
TYPOS =	104404	2829	2834	2882	4460	4479	4492	4921#						
TYPE =	104400	912	913	914	915	916	918	919	920	929	930	932	933	1357
		1455	1553	1744	1842	1936	2383	2408	2601	2727	2732	2823	2824	2826
		2831	2836	2880	2883	3017	3018	3061	3067	3076	3077	3078	3083	3113
		3114	3115	3116	3130	3131	3132	3199	3200	3201	3323	3324	3352	3353
		3354	3355	3415	3416	3417	3479	3480	3482	3483	3543	3544	3610	3611
		3612	3613	3615	3616	3698	3699	3700	3764	3765	3766	3774	3775	3854
		3855	3928	3929	3930	3931	3932	3937	3938	3939	4049	4050	4051	4052

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DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0211

	4072	4073	4075	4076	4112	4120	4125	4129	4130	4132	4133	4134	4135
	4155	4198	4199	4200	4207	4255	4261	4300	4301	4366	4367	4370	4392
	4436	4456	4457	4461	4465	4477	4480	4521	4522	4533	4553	4555	4558
	4560	4564	4571	4602	4610	4704	4804	4881	4917*	4954			
	4544	4568	4918*										
	4920*												
	1359	1457	1555	1746	1844	1938	2598	2603	2729	2734	4467	4473	4919*
	1255	1258*											
	2342	2352	2356*										
	4113*	4114											
	4116*	4117											
	4298	4300*											
	350*												
	352*	871	2981	3025	4218	4328							
	385*	2383	4205	4436	4602	4620							
	4715*	4722	4731*	4736*									
	338*	869	876	882	883	884	2979	2986	2992	2993	2994	3023	3030
	3036	3037	3038	4216	4223	4229	4230	4231	4326	4333	4339	4340	4341
	368*	369*	370*	371*	372*	373*	374*	375*	376*				
	368*	369*	370*	371*	372*	373*	374*	375*	376*				
	366*	368											
	376*	377*	378*	379*	380*	381*	382*	383*	384*				
	387*	4536	4555	4560	4564	4610	4620	4705	4742				
	4847	4881	4889*										
	2876	2886	2894	2900*									
	4850	4885*											
	303	2889	2896*	4615									
	882	2878*	2992	3036	4229	4339							
	2880	2921*											
	920	930	933	2883	2924*								
	2853	2867*											
	882*	2875*	2879	2992*	3036*	4229*	4339*						
	341*	4597*	4620	4627	4649	4651*	4668						
	347*	4668											
	876	2986	3030	4223	4333	4590*							
	348*	4542	4604*	4605*	4606	4620	6562	6564	6567	6570	6573	6576	
	426*	4550											
	4535*	4609											
	345*	4603*	4620										
	364*	4708	4742										
	363*	4742											
	349*												
	351*												
	2884*												
	20	21											
	342*	4657*	4658	4660*	4667								
	4928	4960*											
	346*	4539	4606*	4620									
	388*	4620	4742										
	2914	2918*											
	343*	896*	3006*	3050*	4243*	4303*	4353*	4663*	4665	4667			
	344*												
	907	3017	3061	4254	4364	4612	4663	4693					
	4661	4667*											

TYP0C = 104401
 TYP0N = 104403
 TYP0S = 104402
 T10G0 004154
 T31E0 012206
 WAITA 023430
 WAITB 023444
 XLOOP 024600
 \$B0ADR 001122
 \$B0DAT 001126
 \$BELL 001122
 \$CHARC 026716
 \$CHTAG 001100
 \$CM1 = 000010
 \$CM2 = 000020
 \$CM3 = 000010
 \$CM4 = 000010
 \$CRLF 001227
 \$DBLK 027364
 \$DOAGN 015056
 \$DTBL 027354
 \$ENDAO 015046
 \$ENDCT 014774
 \$ENDMG 015150
 \$ENULL 015165
 \$EOP 014736
 \$EOPCT 014766
 \$ERFLG 001103
 \$ERMAX 001115
 \$ERROR 026152
 \$ERRPC 001116
 \$ERRTB 001270
 \$ERRTY 026016
 \$ERTTL 001112
 \$FILLC 001154
 \$FILLS 001153
 \$GOADR 001120
 \$GO DAT 001124
 \$GET42 015016
 \$HD = 000001
 \$ICNT 001104
 \$ILLUP 027564
 \$ITEMB 001114
 \$LF 001230
 \$LOOP 015142
 \$LPAOR 001106
 \$LPERR 001110
 \$MAIL = ***** U
 \$MXCNT 026504

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 DZCOB.P11 CROSS REFERENCE TABLE

SEQ 0212

\$NULL	001152	362#	4710	4742										
\$NWTST=	000001	941#	979#	1004#	1027#	1050#	1100#	1149#	1219#	1269#	1366#	1464#	1562#	1655#
		1753#	1851#	1946#	2000#	2069#	2157#	2175#	2192#	2209#	2227#	2244#	2261#	2358#
		3069#	3105#	3152#	3345#	3473#	3600#	3756#	3923#	4064#				
\$OCNT	027144	4776#	4805#	4818#										
\$OMODE	027146	4771#	4775#	4780	4783#	4794#	4820#							
\$OVER	026470	4636	4647	4659	4664#									
\$PASS	001100	339#	2872#	2873#	2881	2920	4655	4668						
\$PWRAO	027552	4957#												
\$PWROD	027430	880	2990	3034	4227	4337	4928#	4952						
\$PWRMG	027546	4955#												
\$PWUP	027476	4937	4942#											
\$QJES	001226	386#	4620	4742										
\$ROCHR=	***** U	4922												
\$RODEC=	***** U	4922												
\$ROLIN=	***** U	4922												
\$ROCT=	***** U	4922												
\$REGAD	001156	366#												
\$REGO	001160	368#												
\$REG1	001162	369#												
\$REG2	001164	370#												
\$REG3	001166	371#												
\$REG4	001170	372#												
\$REG5	001172	373#												
\$REG6	001174	374#	4591#	6562	6564	6567	6570	6573	6576					
\$REG7	001176	375#	4592#	6562	6564	6567	6570	6573	6576					
\$RTN	015140	884	886#	891#	2890	2915#	2994	2996#	3001#	3038	3040#	3045#	4231	4233#
		4238#	4341	4343#	4348#									
\$R2A =	***** U	4922												
\$SAVRE=	***** U	4922												
\$SAVR6	027570	4936#	4942	4943#	4944#	4962#								
\$SCOPE	026326	874	2984	3028	4221	4331	4634#							
\$SETUP=	000037	328#	874	876	878	880	882	883	884	896	2870	2984	2986	2988
		2990	2992	2993	2994	3006	3028	3030	3032	3034	3036	3037	3038	3050
		4221	4223	4225	4227	4229	4230	4231	4243	4331	4333	4335	4337	4339
		4340	4341	4353	4615									
\$STUP =	177777	328#												
\$SVLAD	026460	4644	4662#											
\$SVPC =	000204	301#	306											
\$SWR =	176000	8#	20	384	385	883	884	896	897	945	983	1008	1031	1054
		1104	1153	1223	1272	1370	1468	1566	1659	1757	1855	1950	2004	2073
		2161	2179	2196	2213	2231	2248	2265	2362	2863	2871	2885	2901	2920
		2993	2994	3006	3007	3037	3038	3050	3051	3073	3109	3154	3349	3477
		3604	3760	3927	4068	4230	4231	4243	4244	4340	4341	4353	4354	4583
		4584	4585	4586	4587	4600	4607	4612	4618	4620	4628	4629	4630	4631
		4635	4647	4649	4650	4651	4652	4653	4664	4667	4958			
\$SWRMK=	000000	4631												
\$TBIT	015146	895#	2911#	2920#	3005#	3049#	4242#	4352#						
\$TIMES	001220	384#	883#	2871#	2993#	3037#	4230#	4340#	4652#	4658	4561#	4667		
\$TKB	001144	359#	4115											
\$TKS	001142	358#	4113											
\$TMP0	001200	376#	2515#	2516#	2517	2550#	2551#	2552	2564#	2565#	2566	2593#	2594#	2595
		4424#	4425#	4427	4593#	6562	6564	6567	6570	6573	6576			
\$TMP1	001202	377#	4115#	4118	4119#	4121	4123	4594#	6562	6564	6567	6570	6573	6576

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 DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0213

STMP2	001204	378#	4595*	6564	6570	6573								
STMP3	001206	379#	4596*	6567	6570	6573								
STMP4	001210	380#	965*	974*	2148*	2153*	2170*	2187*	2204*	2222*	2239*	2256*	2353*	2500*
		2508*	2660*	2666*	2677*	6573	6576							
STMP5	001212	381#	2409*	2528*	2584	2721	2850*							
STMP6	001214	382#	1164*	1165*	1166	1189*	1190*	1191	1234*	1235*	1236	1283*	1284*	1285
		1308*	1309*	1310	1322*	1323*	1324	1381*	1382*	1383	1406*	1407*	1408	1420*
		1421*	1422	1479*	1480*	1481	1504*	1505*	1506	1518*	1519*	1520	1577*	1578*
		1579	1602*	1603*	1604	1616*	1617*	1618	1670*	1671*	1672	1695*	1696*	1697
		1709*	1710*	1711	1768*	1769*	1770	1793*	1794*	1795	1807*	1808*	1809	1866*
		1867*	1868	1891*	1892*	1893	1905*	1906*	1907	1961*	1962*	1963	2015*	2016*
		2017	2040*	2041*	2042	2084*	2085*	2086	2109*	2110*	2111	2276*	2277*	2278
		2301*	2302*	2303	2315*	2316*	2317	2449*	2450*	2451	3167*	3168*	3169	3192*
		3193*	3194	3231*	3232*	3233	3256*	3257*	3258	3292*	3293*	3294	3317*	3318*
		3319	3383*	3384*	3385	3408*	3409*	3410	3431*	3432*	3433	3456*	3457*	3458
		3511*	3512*	3513	3536*	3537*	3538	3558*	3559*	3560	3583*	3584*	3585	3666*
		3667*	3668	3691*	3692*	3693	3714*	3715*	3716	3739*	3740*	3741	3822*	3823*
		3824	3847*	3848*	3849	3869*	3870*	3871	3894*	3895*	3896	3976*	3977*	3978
		4001*	4002*	4003	4166*	4167*	4168	4191*	4192*	4193	4275*	4276*	4277	4292*
		4293*	4294											
STMP7	001216	383#												
STN	= 000044	20#	941	945#	979	983#	1004	1008#	1027	1031#	1050	1054#	1100	1104#
		1149	1153#	1219	1223#	1268	1272#	1366	1370#	1464	1468#	1562	1566#	1655
		1659#	1753	1757#	1851	1855#	1946	1950#	2000	2004#	2069	2073#	2157	2161#
		2175	2179#	2192	2196#	2209	2213#	2227	2231#	2244	2248#	2261	2265#	2358
		2362#	3069	3073#	3105	3109#	3152	3154#	3345	3349#	3473	3477#	3600	3604#
		3756	3760#	3923	3927#	4064	4068#							
STPB	001150	361#	4118*	4728*	4742									
STPFLG	001155	365#	4687	4742										
STPS	001146	360#	4116	4726	4742									
STRAP	027374	878	2988	3032	4225	4335	4900#							
STRP	= 000005	4908#	4918#	4919#	4920#	4921#	4922#							
STRPAD	027416	4905	4916#											
STSTNM	001102	340#	2870*	4599	4620	4627	4662*	4664	4668					
STYPBN=	***** U	4922												
STYPDS	027150	4835#	4921											
STYPE	026506	4687#	4908	4917										
STYPEC	026652	4707	4714	4721	4726#	4727								
STYPEX	026720	4732	4734	4737#										
STYPOC	026746	4774#	4918											
STYPON	026762	4773	4776#	4920										
STYPOS	026722	4769#	4919											
\$XTSTR	026336	4638#												
\$OFILL	027145	4770*	4774*	4784	4819#									
\$4OCAT=	***** U	4609	4635											
	= 045444	286#	290#	301	302#	304#	306#	308#	314#	317#	321#	325#	337#	389
		872	896	2049	2118	2920	2925	2982	3006	3026	3050	3263	3325	3418
		3465	3545	3592	3701	3748	3856	3903	4011	4201	4219	4243	4329	4353
		4574#	4620	4667	4668	4742	4889#	4939	4961	5859#				

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 DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0216

ADD	893	2528	2557	2574	2580	2584	2585	2677	2691	2702	2711	2717	2721	2722	2794
	2812	2813	2814	2843	3003	3047	4240	4260	4350	4550	4697	4772	4782	4855	
ASL	4547	4548	4549	4904											
ASLB	4860														
BCC	4387	4861													
BEQ	948	952	956	964	973	987	994	1000	1010	1014	1019	1023	1033	1037	1042
	1046	1079	1096	1112	1342	1440	1538	1636	1729	1827	2143	2147	2152	2169	2186
	2203	2221	2238	2255	2352	2382	2414	2473	2479	2491	2499	2507	2526	2619	2632
	2636	2640	2644	2648	2656	2659	2665	2675	2749	2758	2771	2775	2779	2783	2886
	2894	2927	2932	2942	2958	3101	3127	3140	3148	3203	3218	3279	3333	3341	3370
	3469	3498	3596	3623	3625	3653	3752	3777	3779	3781	3809	3907	3919	3936	3945
	3950	3955	4017	4021	4056	4060	4078	4080	4082	4110	4122	4124	4138	4140	4142
	4265	4401	4435	4438	4442	4512	4552	4557	4570	4598	4601	4650	4656	4700	4799
BGE	2626	2853	4659	4734											
BG	2573	2579	2710	2716	2803	2876	4446	4806	4869						
BIC	1190	1205	1309	1407	1505	1603	1696	1794	1892	2041	2110	2302	2450	2516	2551
	2565	2594	2692	2873	2908	3193	3257	3318	3409	3457	3537	3584	3692	3740	3848
	3895	4002	4119	4192	4276	4375	4425	4796	4958						
BIS	985	1017	1040	1165	1235	1284	1323	1382	1421	1480	1519	1578	1617	1671	1710
	1769	1808	1867	1906	1962	2016	2085	2277	2316	2816	2913	3168	3232	3293	3384
	3432	3512	3559	3667	3715	3823	3870	3977	4167	4293	4404	4801	4802	4863	4864
BISB	4389	4539													
BIT	934	1078	1095	1111	2130	2134	2138	2142	2381	2413	2430	2472	2474	2478	2481
	2490	2494	2537	2587	2618	2620	2631	2635	2639	2643	2647	2650	2655	2686	2724
	2748	2750	2753	2757	2759	2770	2774	2778	2782	2785	2798	2909	2926	2931	2937
	2941	2949	2957	3096	3100	3118	3126	3135	3139	3147	3202	3217	3270	3278	3328
	3332	3340	3357	3365	3369	3485	3493	3497	3618	3622	3633	3641	3648	3652	3776
	3778	3789	3797	3804	3808	3935	3944	3949	3954	4016	4020	4032	4036	4040	4055
	4059	4077	4079	4090	4098	4105	4109	4137	4139	4151	4264	4400	4402	4434	4437
	4441	4451	4491	4518	4600	4607	4635	4653							
BITB	4722														
BLE	2559	2704													
BLT	2765	4713	4807	4852	4868										
BMI	1089	1130	1141	1209	1344	1348	1355	1442	1446	1453	1540	1544	1551	1638	1642
	1649	1731	1735	1742	1829	1833	1840	1927	1934	2123	2127	2344	2488	2514	2523
	2549	2563	2592	2614	2672	2744	2795	2844	2912	2934	3123	3144	3210	3214	3267
	3275	3337	3362	3490	3638	3794	4046	4095	4415	4859					
BNE	872	911	923	935	1083	1132	1986	2131	2135	2139	2423	2431	2475	2482	2495
	2518	2521	2530	2538	2544	2553	2556	2567	2570	2582	2588	2621	2651	2670	2679
	2687	2697	2701	2707	2719	2725	2751	2754	2760	2786	2799	2821	2910	2938	2950
	2982	3026	3089	3093	3097	3119	3136	3271	3329	3358	3366	3486	3494	3619	3634
	3642	3649	3790	3798	3805	4033	4037	4041	4091	4099	4106	4152	4219	4329	4391
	4403	4419	4422	4428	4431	4452	4454	4489	4492	4519	4540	4562	4608	4616	4636
	4654	4694	4702	4709	4723	4730	4797	4857	4945						
BPL	960	1075	1092	1145	1199	1213	1254	1332	1364	1430	1462	1528	1560	1626	1653
	1719	1751	1817	1849	1915	1943	2328	2370	2608	2739	3632	3646	3788	3802	3959
	4025	4089	4103	4114	4117	4150	4413	4417	4444	4464	4484	4509	4613	4688	4727
	4795	4843	4873												
BR	892	901	921	931	969	989	1081	1094	1134	1207	1255	1346	1362	1444	1460
	1542	1558	1640	1651	1733	1749	1831	1847	1925	1941	1993	2049	2062	2118	2371
	2418	2429	2484	2496	2519	2533	2554	2568	2575	2596	2616	2623	2628	2682	2712
	2741	2746	2762	2797	2801	2890	2929	2947	3002	3011	3046	3055	3204	3263	3325
	3418	3465	3545	3592	3701	3748	3856	3903	4011	4029	4126	4201	4239	4248	4281
	4349	4358	4423	4432	4439	4448	4471	4524	4545	4572	4638	4644	4647	4690	4706

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DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0217

CLR	4716	4725	4732	4773	4788	4809	4854	4871	4939	4961	1156	1171	1181	1215	1217
	870	883	888	895	992	1059	1072	1107	1114	1116	1156	1171	1181	1215	1217
	1226	1241	1258	1260	1275	1290	1300	1314	1338	1340	1350	1352	1373	1388	1398
	1412	1436	1438	1448	1450	1471	1486	1496	1510	1534	1536	1546	1548	1569	1584
	1594	1608	1632	1634	1644	1646	1662	1677	1687	1701	1725	1727	1737	1739	1760
	1775	1785	1799	1823	1825	1835	1837	1858	1873	1883	1897	1921	1923	1929	1931
	1953	1968	1984	1992	1996	1997	2007	2022	2032	2065	2066	2076	2091	2101	2120
	2161	2179	2187	2196	2213	2231	2239	2248	2268	2283	2293	2307	2336	2338	2346
	2348	2377	2409	2410	2411	2412	2441	2456	2483	2500	2586	2660	2723	2849	2850
	2870	2871	2888	2901	2980	2993	2998	3005	3020	3024	3037	3042	3049	3159	3174
	3184	3223	3238	3248	3284	3299	3309	3375	3390	3400	3423	3438	3448	3503	3518
	3528	3550	3565	3575	3658	3673	3683	3706	3721	3731	3814	3829	3839	3861	3876
	3886	3968	3983	3993	4158	4173	4183	4217	4230	4235	4242	4267	4284	4327	4340
	4345	4352	4377	4396	4397	4398	4406	4538	4652	4786	4846	4849	4943	6590	6591
CLRB	6592														
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	2254	2350	2351	2374	2506	2517	2520	2522	2529	2552	2555	2558	2566	2569	2572
	2578	2581	2606	2664	2671	2678	2703	2709	2715	2718	2845	2852	2869	2953	2962
	2981	3014	3025	3056	3265	3327	3420	3467	3468	3547	3594	3595	3624	3703	3750
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COMB	4405														
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	4388	4410	4411	4420	4429	4450	4455	4458	4486	4603	4657	4800	4808	4853	4944
INCB	4597	4662	4735												
IOT	174														
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LC1

SEQ 0218

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MO1

SEQ 0219

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CROSS REFERENCE TABLE

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NEG	2200	2252	4781	4844											
NOP	2056	2897	2898	2899											
RESET	946	2887	2895												
ROL	4787	4789	4790	4791	4793										
ROLB	4379	4381	4382	4383	4384										
ROR	4378	4386													
RORB	4380														
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 DZCDB.P11 CROSS REFERENCE TABLE

SEQ 0220

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002

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DZCDB.P11

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