

KD11-A

CPU DIAG
MD-11-DQBEA-B

EP-DQBEA-B-DL-A
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FICHE 1 OF 4

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This page contains a grid of 144 small technical diagrams and data tables, arranged in 12 rows and 12 columns. Each cell contains a different type of diagram, including flowcharts, block diagrams, and data tables with columns and rows of text and numbers. The diagrams are densely packed and cover the entire page area below the header.

KD11-A

11/40 CPU TEST
MD-11-DBQEA-B

EP-DBQEA-B-DL-A
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This microfiche card contains a grid of 140 frames of data, arranged in 10 rows and 14 columns. Each frame contains a small table of data, likely representing test results for a CPU. The data is organized into columns, with some frames containing headers and footers. The overall layout is a dense grid of small tables.

KD11-A

11/40 CPU TEST
MD-11-DBQEA-B

EP-DBQEA-B-DL-A
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The microfiche card displays a grid of 144 frames, arranged in 12 rows and 12 columns. Each frame contains a small, dense table of data, likely representing test results for a CPU. The text is too small to read clearly but appears to be organized in columns and rows within each frame.

KD11-A

11/40 CPU TEST
MD-11-DBQEA-B

EP-DBQEA-B-DL A
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This microfiche card contains 120 frames of data, organized in a 10x12 grid. Each frame displays a different set of data, likely test results or program listings, presented in a structured, tabular format. The data is printed in white on a dark background.

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DBSERB.CMB

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PRODUCT CODE: MAINDEC - 11 - DBQEA-8
PRODUCT NAME: KD11-A CPU DIAGNOSTIC (PDP11/40)
DATE: 21-AUGUST-1975
MAINTAINER: DIAGNOSTIC ENGINEERING
AUTHOR: E. CROWLEY

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TABLE OF CONTENTS

1.0	GENERAL PROGRAM INFORMATION
1.1	PROGRAM PURPOSE
1.2	SYSTEM REQUIREMENTS
1.3	RELATED DOCUMENTS AND STANDARDS
1.4	DIAGNOSTIC HIERARCHY PREREQUISITES
1.5	FAILURE ASSUMPTIONS
2.0	OPERATING INSTRUCTIONS
2.1	LOADING AND STARTING PROCEDURES
2.2	SPECIAL ENVIRONMENTS
2.3	PROGRAM OPTIONS
2.4	EXECUTION TIMES
3.0	ERROR INFORMATION
3.1	ERROR REPORTING PROCEDURES
4.0	PERFORMANCE AND PROGRESS REPORTS
4.1	PERFORMANCE REPORTS
4.2	PROGRESS REPORTS
5.0	DEVICE INFORMATION TABLES
5.1	KD11-A MICROPROGRAMMING INFORMATION
5.2	MICROWORD CONTROL SIGNAL TEST POINTS
5.3	KD11-A LOGIC PRINT SUMMARY
6.0	MAINTENANCE PROCEDURES
6.1	INTRODUCTION
6.2	MICROPROGRAMMING / LOGIC INFORMATION
6.3	KM11 MAINTENANCE MODULE
6.4	UPP MATCH MAINTENANCE FEATURE
7.0	FLOW CHARTS
7.1	FUNCTIONAL FLOW
7.2	SUB-FUNCTIONAL FLOW
7.3	FUNCTIONAL TEST FLOWS
7.4	CORE MEMORY MAP
8.0	SUB-TITLE INDEX OF TESTS

116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
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2221.0 GENERAL PROGRAM INFORMATION
-----1.1 PROGRAM PURPOSE

"DBQEAB" IS A DIAGNOSTIC PROGRAM DESIGNED TO DETECT, REPORT, AND IDENTIFY LOGIC FAULTS IN THE KD11-A CENTRAL PROCESSING UNIT OF THE PDP11/40 SYSTEM. IT CONSISTS OF 525(10) INDIVIDUAL TESTS CAREFULLY DESIGNED AND SEQUENCED TO DETECT AND ATTEMPT TO IDENTIFY LOGIC FAULTS AT A MINIMUM HARDWARE/SOFTWARE LEVEL. THESE TESTS ARE PARTITIONED INTO THREE MAJOR SECTIONS AS DESCRIBED BELOW:

A. BASIC INSTRUCTION TESTS (BIT)

THIS SECTION CONSISTS OF A LOGICALLY SEQUENCED SET OF BASIC INSTRUCTION TESTS DESIGNED TO VERIFY THE INTEGRITY OF THOSE INSTRUCTIONS AND LOGIC OPERATIONS USED BY THE UTILITY ROUTINES THAT PROVIDE ERROR LOGGING AND SCOPE LOOPING FACILITIES FOR THE SUBSEQUENT TWO MAJOR SECTIONS. NO UTILITY IS CALLED UNTIL ITS INSTRUCTION COMPLEMENT HAS BEEN VERIFIED. THIS SCHEME ACCOMPLISHES TWO IMPORTANT MAINTENANCE OBJECTIVES: 1) IT MINIMIZES THE POSSIBILITY OF THE ERROR REPORTING ROUTINES CONVEYING AMBIGUOUS ERROR INFORMATION TO THE USER, AND 2) IT MAXIMIZES THE POSSIBILITY THAT THE ERROR WILL BE DETECTED BY A ROUTINE DESIGNED TO IDENTIFY FAILING OPERATIONS RATHER THAN HAVE THE ERROR MANIFEST ITSELF IN A MORE COMPLEX UTILITY ROUTINE THAT IS NOT STRUCTURED TO DIAGNOSE FAULTS.

ANY FAULT DETECTED IN THIS SECTION CAUSES THE PROGRAM TO "HALT" WITH THE CONSOLE ADDRESS AND DATA DISPLAYS INDICATING THE FAILING TEST. ADDITIONAL FAULT IDENTIFICATION INFORMATION IS AVAILABLE IN THE PROCESSOR'S GENERAL REGISTERS, PSW, STACK, AND PROGRAM ANNOTATION FOR THE FAILING TEST. A LOCK ON HARD ERROR FEATURE IS EMPLOYED TO PREVENT THE PROGRAM FROM CONTINUING ON ONCE A SOLID ERROR IS DETECTED. DEPRESSING CONTINUE AFTER THE ERROR HALT CAUSES A RETRY OF THE FAILING TEST

B. COMPREHENSIVE INSTRUCTION TESTS (CIT)

THIS SECTION, COMPRISED OF THE BULK OF THE TESTS, CONSISTS OF A LOGICALLY SEQUENCED AND PARTITIONED SET OF INSTRUCTION TESTS DESIGNED TO TEST AND VERIFY ALL THE MICROINSTRUCTION SEQUENCES AND DATA PATH DATA MANIPULATIONS IMPLICIT IN THE DESIGN SPECIFICATION OF THE KD11-A MICROPROGRAM. ALL LOGIC SEQUENCES, THAT CAN BE ACTIVATED IN THE PROGRAM "RUN" MODE ARE TESTED WITH THE EXCEPTION OF THE SMALL AMOUNT OF LOGIC THAT REQUIRES AN ACTIVE "DMA" DEVICE. THIS EXCLUDES THOSE SEQUENCES AND LOGIC FUNCTIONS THAT SUPPORT THE CONSOLE FUNCTIONS (LOAD ADDRESS, DEPOSIT, ETC.). EACH TEST IN THIS SECTION CALLS A "SCOPE LOOP" UTILITY THAT FACILITATES USER CONTROL OF TEST SELECTION AND EXECUTION VIA THE CONSOLE SWITCH REGISTER.

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UPON DETECTION OF A LOGIC FAULT, EACH TEST IN THIS SECTION CALLS AN "ERROR SERVICE" ROUTINE THAT LOGS THE ERROR AND REPORTS IT AS HARD COPY ON THE CONSOLE TERMINAL DEVICE. THE ERROR SERVICE ROUTINE ALSO FACILITATES USER CONTROL OF THE PROGRAM SEQUENCE VIA CONSOLE SWITCH REGISTER OPTIONS. AFTER REPORTING THE ERROR THE PROGRAM CONTINUES ON IN ITS NORMAL SEQUENCE UNLESS MODIFIED BY THE USER ACTIVATING THE "LOCK ON HARD ERROR" SWITCH OPTION.

C. COMBINED INSTRUCTION EXERCISER (IEX)

THIS SECTION CONSISTS OF A MORE COMPLEX SET OF INSTRUCTION TESTS DESIGNED TO TEST THE INSTRUCTIONS WHEN USED IN VARIOUS COMBINATIONS MANIPULATING VARIABLE DATA PATTERNS. LIKE THE PREVIOUS SECTION, IT CALLS THE "ERROR SERVICE" AND "SCOPE LOOP" UTILITIES TO REPORT ERRORS AND ALLOW USER CONTROL OF TEST EXECUTION.

WHERE AT ALL POSSIBLE THE PROGRAM ANNOTATION ATTEMPTS TO CALL OUT THE MOST PROBABLE FAILURE TO THE FUNCTIONAL LOGIC AREA. EACH TEST OR GROUP OF GENERIC TESTS INCLUDES MICROPROGRAMMING AND LOGIC INFORMATION TO FACILITATE FURTHER ISOLATION OF THE FAULTY COMPONENT THRU THE USE OF ADDITIONAL LOWER LEVEL CHECKS BY THE MAINTENANCE TECHNICIAN USING THE KM-11 MAINTENANCE MODULE OR OSCILLOSCOPE. DETAILED PROCEDURES FOR USING THIS MAINTENANCE INFORMATION IS INCLUDED IN PARA. 6.0.

1.2 SYSTEM REQUIREMENTS

A. HARDWARE REQUIREMENTS

1. PDP11/40 CPU WITH OPERATOR'S CONSOLE
2. 16K OF CORE STORAGE - MF11/U OR EQUIVALENT
3. DL11 ASYNCHRONOUS LINE INTERFACE WITH TERMINAL
4. KW11-L LINE CLOCK (OPTIONAL)

B. SOFTWARE REQUIREMENTS

1. PDP11 ABSOLUTE LOADER PROGRAM FOR PAPER TAPE SYSTEMS
2. XXDP MONITOR FOR DECTAPE, MAGTAPE, CASSETTE, OR DISK SYSTEMS.

1.3 RELATED DOCUMENTS AND STANDARDS

- A. PDP11/40 PROCESSOR HANDBOOK
- B. PDP11 PERIPHERALS HANDBOOK
- C. KD11-A PROCESSOR MAINTENANCE MANUAL
- D. PDP11/40 SYSTEM ENGINEERING DRAWINGS
- E. DIAGNOSTIC ENGINEERING STANDARDS AND CONVENTIONS PROGRAMMING PRACTICES - DOC NO. 175-003-009-00

1.4 DIAGNOSTIC HIERARCHY PREREQUISITES

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 "DBQEAB" ASSUMES THAT THE HARDWARE VERIFIED BY THE "BCPT"
 (RESIDENT BASIC CPU TEST FOR 1080 SYSTEMS) IS OPERATIONAL.
 A COPY OF THE "BCPT" TEST IS INCLUDED AS PART OF THE LOAD
 MODULE AND IS RESIDENT IN CORE STARTING AT LOCATION 1000(8)
 WHENEVER "DBQEAB" IS LOADED. AUTOMATIC LINKAGE TO THE START
 OF "DBQEAB" OCCURS IF "BCPT" RUNS ERROR FREE. THIS
 PROVIDES THE USER WITH THE OPTION OF RUNNING "BCPT" PRIOR
 TO EXECUTING "DBQEAB" IF HE SUSPECTS A FAULT IN THE "HARD
 CORE".

1.5 FAILURE ASSUMPTIONS

"DBQEAB" ASSUMES THAT THE STORAGE MEDIUM USED TO STORE THE
 PROGRAM IS INTACT AND THAT IT CAN BE LOADED INTO CORE.
 IT ALSO ASSUMES THAT THE BASIC TESTS DESCRIBED IN PARA. 1.4
 RUN ERROR FREE AND ANY ASSUMPTIONS MADE BY THESE TESTS
 IS VALID. (REFER TO MAINDEC-10-DFQMAA FOR A DESCRIPTION
 OF THE 1080 RESIDENT TESTS)

2.0 OPERATING INSTRUCTIONS

2.1 LOADING AND STARTING PROCEDURES

A. LOADING PROCEDURES

1) PAPER TAPE SYSTEMS

USE THE STANDARD PDP11 ABSOLUTE LOADER PROCEDURES.

2) XXDP SYSTEMS

USE THE STANDARD XXDP MONITOR LOADING PROCEDURES.

B. STARTING PROCEDURES

1. TO RUN "DBQEAB" ONLY

- A) SET SR = 000200
- B) DEPRESS LOAD ADDRESS
- C) SET SR = 000000 (NO SWITCH OPTIONS)
- D) SET HALT/ENABLE IN THE ENABLE POSITION
- E) DEPRESS START
- F) REFER TO PARA. 3.0 AND 4.0 FOR NORMAL
PROGRAM RESPONSES AND ERROR REPORTS.

2. TO RUN "BCPT" PRIOR TO "DBQEAB"

- A) SET THE SR = 1000
- B) DEPRESS LOAD ADDRESS
- C) SET SR = 000000 (NO SWITCH OPTIONS)

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- D) SET HALT/ENABLE IN THE ENABLE POSITION
- E) DEPRESS START
- F) REFER TO PARA. 3.0 AND 4.0 FOR NORMAL PROGRAM RESPONSES AND ERROR REPORTS OR TO THE "BCPT" DOCUMENT IF AN ERROR HALT OCCURS IN THE BCPT SECTION.

C. RESTART PROCEDURES

1. TO INITIALIZE "PASCNT", "ERRCNT", AND "PFCNT" TO ZERO
SAME AS IN 2.1(B1) ABOVE
2. TO PRESERVE "PASCNT", "ERRCNT", AND "PFCNT"
 - A) SET SR=003034
 - B) DEPRESS LOAD ADDRESS
 - C) SET SR=000000 (NO OPTIONS)
 - D) SET HALT/ENABLE TO ENABLE POSITION
 - E) DEPRESS START SWITCH

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4112.2 SPECIAL ENVIRONMENTS

A. 16K PDP11/40 SYSTEMS

FOR 16K SYSTEMS USING THE "XXDP" PACKAGE YOU WILL BE UNABLE TO USE THE "UPDATE" PROGRAMS TO LOAD, SAVE, UPDATE ETC. SINCE THE SIZE OF "DBQEAB" WILL NOT PERMIT SIMULTANEOUS RESIDENCY OF THE UPDATE PROGRAMS. SUFFICIENT FREE CORE IS AVAILABLE FOR THE "XXDP" MONITOR SO THAT "DBQEAB" CAN BE LOADED BY THE MONITOR.

2.3 PROGRAM OPTIONS

A. SWITCH REGISTER OPTIONS

THE FOLLOWING CONSOLE SWITCH REGISTER OPTIONS ARE ACTIVE UPON ENTERING THE COMPREHENSIVE INSTRUCTION TESTS (CIT) SECTION: (SWITCH OPTION IS ACTIVE WHEN SW IS SET TO A "1")

- SW15 HALT ON ERROR. IF ERROR PRINTING IS ENABLED THE HALT OCCURS AFTER THE PRINTOUT. DEPRESSING "CONTINUE" CAUSES THE PROGRAM TO PROCEED ON IN NORMAL SEQUENCE FROM THE POINT OF ERROR.
- SW14 CONTINUOUSLY LOOP ON THE CURRENT TEST
- SW13 INHIBIT NORMAL ERROR PRINTOUTS - THIS DOES NOT INCLUDE POWER FAIL, BUS ERROR, RSVD INSTR TRAPS, OR MISSED TEST PRINTOUTS.
- SW12 INHIBIT ALL PRINTOUTS NOT COVERED UNDER SW13. THIS INCLUDES I.D., OPTIONS FOUND, ENDPAS, ETC.
- SW11 INHIBIT SUB-TEST ITERATIONS. TEST ITERATIONS ARE AUTOMATICALLY INHIBITED ON THE FIRST PASS.
- SW10 SEARCH FOR AND CONTINUOUSLY LOOP ON THE TEST NUMBER SELECTED BY THE CONTENTS OF SW<09:00>. ONLY USE THIS OPTION FOR TESTS T0145 THRU T1015 SINCE THE "SCOPE" UTILITY IS NOT ACTIVE UNTIL TEST T0145.
- SW09 IF SW10=0 , SW09=1 WILL ACTIVATE THE "LOCK ON HARD ERROR" FEATURE. IF SW10=1, SW09 BECOMES THE HIGH ORDER BIT IN THE TEST NUMBER TO BE SELECTED.
- SW<9:0> USED TO SELECT A PARTICULAR TEST FOR LOOPING IF SW10=1 THERE IS NO TEST 000 DEFINED.

B. MEMORY LOCATIONS

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1. FILLS: THERE IS A LOCATION TAGGED "FILLS" THAT IS USED TO SPECIFY THE FILL COUNT AND FILL CHARACTER FOR THOSE TERMINAL DEVICES REQUIRING THE USE OF FILLERS. THE HIGH BYTE CONTAINS THE FILL COUNT AND THE LOW BYTE CONTAINS THE FILLER CHARACTER. IT IS PROGRAM LOADED AS A 002400(8) TO SPECIFY FIVE NULL CHARACTERS.

2. ITCOUNT: THERE IS A LOCATION TAGGED "ITCOUNT" THAT CONTAINS THE ITERATION COUNT TO BE USED ON PASSES SUBSEQUENT TO PASS 0 TO SPECIFY THE NO. OF SUB-TEST ITERATIONS IT IS PROGRAM LOADED TO SPECIFY 32.(10) ITERATIONS.

3. OPTION: THERE IS A LOCATION TAGGED "OPTION" THAT IS SET UP AUTOMATICALLY BY THE PROGRAM TO INDICATE THE PDP11/40 INTERNAL OPTIONS FOUND:

BIT15=1 KW11-L INSTALLED
BIT07=1 KT11-D INSTALLED
BIT02=1 KJ11-A INSTALLED
BIT01=1 KE11-F INSTALLED
BIT00=1 KE11-E INSTALLED

THE PROGRAM USES THE BITS IN "OPTION" TO SKIP THOSE TESTS THAT ARE OPTION DEPENDENT TO PREVENT REDUNDANT ERROR REPORTS.

4. BPTLOC: THERE IS A LOCATION TAGGED "BPTLOC" THAT PROVIDES THE USER THE MECHANISM FOR SETTING SIXTEEN "BREAKPOINT HALTS" THROUGHOUT THE PROGRAM. THIS ENABLES RAPIDLY "HOMING IN" ON THE FAILING TEST IN THOSE CASES WHERE THE FAULT CAUSES A RUNAWAY OR HUNG PROGRAM. REFER TO PARA. 4.2 FOR A DETAILED DESCRIPTION OF THE USE OF THIS FEATURE.

2.4 EXECUTION TIMES

ONE COMPLETE ERROR FREE PASS OF DBQEAA WITH NO TEST ITERATIONS SHOULD TAKE LESS THAN 5 SECONDS. A SUCCESSFUL PASS WILL BE INDICATED BY THE FOLLOWING PRINTOUT ON THE CONSOLE DEVICE:

PASCNT = 000001 ERRCNT = 000000

WITH ITERATIONS ENABLED A COMPLETE ERROR FREE PASS SHOULD TAKE LESS THAN 2 MINUTES.

3.0 ERROR INFORMATION

3.1 ERROR REPORTING PROCEDURES

A. ERROR MESSAGE FORMATS

1. STANDARD ERROR MESSAGE HEADER

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THE FOLLOWING HEADER IS PRINTED ON DETECTION OF THE FIRST
ERROR DETECTED AFTER THE BASIC INSTRUCTION TEST SECTION.
IT IS ONLY PRINTED ONCE PER PROGRAM PASS.

(PC) (PS) (SP) (TEST) (IR) DEST WAS S/B
(R7) (PSW) (R6) (R0) (R1) (R2) (R3) (R4)

WHERE:

- (PC) INDICATES THE CONTENTS OF THE PROGRAM COUNTER AT THE TIME OF THE ERROR CALL. THIS IS NORMALLY AN ADDRESS THAT IS USED TO LOCATE THE ERROR CALL STATEMENT IN THE FAILING TEST.
- (PSW) INDICATES THE CONTENTS OF THE PROCESSOR STATUS WORD AT THE TIME OF THE ERROR CALL
- (SP) INDICATES THE CONTENTS OF THE STACK POINTER (R6) AT THE TIME OF THE ERROR. (NOTE THAT THE ERROR CALL WILL PUSH THE STACK TWICE)
- (R0) INDICATES THE TEST NO. (IN OCTAL) THAT FAILED
- (R1) CONTAINS A COPY OF THE TEST INSTRUCTION THIS WILL BE THE FIRST WORD IN THE CASE OF TWO OR THREE WORD INSTRUCTIONS.
- (R2) FOR SINGLE AND DOUBLE OPERAND INSTRUCTIONS R2 NORMALLY CONTAINS THE DESTINATION ADDRESS
- (R3) FOR SINGLE AND DOUBLE OPERAND INSTRUCTIONS R3 CONTAINS WHAT THE RESULT (DEST. OPERAND) ACTUALLY WAS AFTER THE TEST.
- (R4) FOR SINGLE AND DOUBLE OPERAND INSTRUCTIONS R4 CONTAINS WHAT THE RESULT (DEST. OPERAND) SHOULD HAVE BEEN (S/B).

IN SOME CASES THE ERROR INFORMATION MAY DEVIATE FROM THAT DESCRIBED ABOVE BUT THE PROGRAM ANNOTATION FOR THOSE TESTS WILL DESCRIBE THE MEANING OF THOSE ENTRIES THAT HAVE BEEN RE-DEFINED.

THE ERROR CALL STATEMENT MAY BE ENCODED TO PRINT ONLY THE INFORMATION RELATIVE TO THE PARTICULAR FUNCTION BEING TESTED. INTERPRETATION OF THE ERROR CALLS IS AS FOLLOWS:

ERROR	PRINTS ALL 8 COLUMNS
ERROR1	PRINT ONLY COLUMN 1
ERROR2	PRINT COLUMNS 1,2
ERROR3	PRINT COLUMNS 1,2,3
ERROR4	PRINT COLUMNS 1,2,3,4
ERROR5	PRINT COLUMNS 1,2,3,4,5
ERROR6	PRINT COLUMNS 1,2,3,4,5,6
ERROR7	PRINT COLUMNS 1,2,3,4,5,6,7

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5792. STANDARD ERROR PRINTOUT

A LINE OF FROM ONE TO EIGHT SIX DIGIT OCTAL NUMBERS THAT LINE UP UNDER THE APPROPRIATE HEADER ENTRY AND HAVE THE MEANINGS DESCRIBED IN THE PREVIOUS SECTION.

3. RESERVED INSTRUCTION TRAP ERROR MESSAGE

ANY RESERVED INSTRUCTION TRAP DETECTED AFTER THE BASIC TESTS RESULTS IN THE FOLLOWING PRINTOUT:

TRAPPED TO 10 PC = XXXXXX

WHERE: XXXXXX IS THE CONTENTS OF THE PROGRAM COUNTER AT THE TIME THE TRAP WAS SPRUNG.

AFTER REPORTING THE ERROR, THE PROGRAM IS RESTARTED FROM THE BEGINNING.

IF A RSVD INSTRUCTION TRAP OCCURS WHILE IN THE PROCESS OF TRYING TO SERVICE A PREVIOUS RSVD INSTRUCTION TRAP OR A BUS ERROR TRAP THE PROGRAM HALTS. A DESCRIPTION OF THIS HALT IS CONTAINED IN PARA. 3.1, B4 BELOW.

IF A RSVD INSTRUCTION TRAP OCCURS PRIOR TO COMPLETION OF THE BASIC INSTRUCTION TEST SECTION THE PROGRAM WILL HALT VIA A TRAPCATCHER IN THE VECTOR. A DESCRIPTION OF THIS HALT IS DESCRIBED IN PARA. 3.1, B2 BELOW.

4. BUS ERROR TRAP ERROR MESSAGE

ANY UNEXPECTED BUS ERROR TRAPS (BUS TIMEOUT, ODD ADDRESS ERROR, ILLEGAL INSTRUCTION, OR STACK OVERFLOW) RESULTS IN THE FOLLOWING PRINTOUT:

TRAPPED TO 4 PC = XXXXXX

WHERE: XXXXXX IS THE CONTENTS OF THE PC AT THE TIME THE TRAP WAS SPRUNG.

AFTER REPORTING THE ERROR THE PROGRAM IS RESTARTED FROM THE BEGINNING.

IF A BUS ERROR TRAP OCCURS WHILE A PREVIOUS BUS ERROR OR RSVD INSTRUCTION IS STILL PENDING THE PROGRAM WILL HALT. A DESCRIPTION OF THE HALT INTERPRETATION IS GIVEN IN PARA. 3.1, B4 BELOW.

IF A BUS ERROR OCCURS PRIOR TO THE COMPLETION OF THE BASIC INSTRUCTION TESTS, THE PROGRAM WILL HALT VIA A TRAPCATCHER IN THE VECTOR. A DESCRIPTION OF THIS HALT

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IS INCLUDED IN PARA. 3.1,B2 BELOW.

5. POWER FAIL

IF A POWER FAIL CONDITION IS DETECTED, THE FOLLOWING MESSAGE IS PRINTED:

POWER

AFTER PRINTING AN ATTEMPT IS MADE TO RESTART THE PROGRAM AT THE BEGINNING.

EACH POWER FAIL ENCOUNTERED DURING ANY PASS IS COUNTED IN A LOCATION TAGGED "PFCNT". DURING END OF PASS PRINTOUT THIS LOCATION IS QUERIED AND IF FOUND NON-ZERO THE NORMAL ENDPAS MESSAGE IS MODIFIED AS SHOWN BELOW:

PASCNT=XXXXXX ERRCNT=YYYYYY PFCNT=ZZZZZZ

WHERE "ZZZZZZ" GIVES THE TOTAL COUNT OF THE POWER FAILS (IN OCTAL) OCCURRING DURING ANY PROGRAM RUN.

IF THE POWER FAIL IS DETECTED BEFORE COMPLETION OF THE BASIC INSTRUCTION TESTS, THE PROGRAM WILL HALT VIA A TRAP CATCHER IN THE VECTOR. A DESCRIPTION OF THIS HALT IS GIVEN IN PARA. 3.1,B2 BELOW.

6. MISSED TEST MESSAGE

THERE IS A 512 BYTE TABLE TAGGED "STAB1" THAT CONTAINS A BYTE ENTRY THAT CORRESPONDS TO EACH SEQUENTIAL TEST NO.. AFTER THE "MOVB #N,X(R)" INSTRUCTION HAS BEEN VERIFIED IN THE "BIT" SECTION, EACH TEST WILL USE THIS INSTRUCTION TO SET THE BYTE THAT CORRESPONDS TO THAT TEST NO. TO ALL ONES (377) THROUGHOUT THE REMAINDER OF THE "BASIC INSTRUCTION TESTS" SECTION. DURING THE "CIT" AND "IEX" SECTIONS THE TABLE ENTRIES ARE UPDATED BY THE "SCOPE" LOOP UTILITY. DURING END OF PASS SERVICE, A CHECK ROUTINE IS CALLED TO SCAN THE TABLE AND INSURE THAT EACH BYTE IS SET TO ALL ONES (377). ANY ENTRY THAT STILL CONTAINS ZEROES (TABLE IS INITIALIZED TO ZEROES BEFORE BEING USED) MEANS THAT ONE OR MORE TESTS WERE SKIPPED FOR SOME REASON. IF ANY TESTS ARE FOUND "MISSED" THE PRINTOUT SHOWN BELOW IS DISPLAYED:

MISSED TEST
XXXXXX
YYYYYY

WHERE: XXXXXX AND YYYYYY ARE THE TEST NUMBERS MISSED.

B. ERROR HALTS

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1. BASIC INSTRUCTION TESTS (BIT)

ANY ERROR DETECTED IN THE BASIC TESTS CAUSES THE PROGRAM TO HALT WITH THE FOLLOWING INFORMATION DISPLAYED IN THE CONSOLE INDICATORS:

ADDRESS DISPLAY: ADDRESS + 2 OF THE LOCATION CONTAINING THE HALT. THIS IS USED TO LOCATE THE SPECIFIC ERROR CALL IN THE FAILING TEST

DATA DISPLAY: NUMBER OF THE FAILING TEST (IN OCTAL). USING THE SBTTL INDEX THIS MAY BE USED TO LOCATE THE FAILING TEST IN THE LISTING.

EXAMINING THE CONTENTS OF THE CPU'S GENERAL REGISTERS, THE PSW, AND THE STACK WILL PROVIDE ADDITIONAL FAULT IDENTIFICATION INFORMATION.

DEPRESSING "CONTINUE" AFTER THE HALT WILL CAUSE AN AUTOMATIC RETRY OF THE FAILING TEST. IF THE ERROR IS SOLID THE PROGRAM WILL LOCK ON THIS TEST, BUT IF IT IS INTERMITTENT THE PROGRAM WILL CONTINUE ON IN NORMAL SEQUENCE ONCE THE TEST IS SUCCESSFULLY EXECUTED.

TO ESTABLISH A TIGHT SCOPE LOOP ON THE FAILING TEST, REPLACE THE "HALT" WITH A 400(8). AND DEPRESS "CONTINUE" THE "400" IS A "BR .+2" WHICH FUNCTIONS AS A NOP. THIS IS NECESSARY TO PRESERVE THE INTEGRITY OF THE CONDITION CODE OPERATE INSTRUCTION THAT IS USED AS A SCOPE SYNC. THIS BUILT IN SYNURE IS DESCRIBED IN PARA. 6.0.

2. TRAPCATCHER HALTS

THE VECTOR AREA (LOC 000 - 776) IS PROGRAM LOADED WITH A STANDARD TRAPCATCHER AS SHOWN BELOW:

V / V+2
V+2/ HALT

AFTER THE BASIC INSTRUCTION TESTS THE FOLLOWING VECTORS ARE SET UP TO POINT TO APPROPRIATE SERVICE ROUTINES:

4/6	BUS ERROR SERVICE
10/12	RSVD INSTRUCTION TRAP SERVICE
20/22	SCOPE LOOP SERVICE
24/26	POWER FAIL SERVICE
30/32	ERROR SERVICE
34/36	PRINT SERVICE

AT THE APPROPRIATE POINTS IN THE COMPREHENSIVE INSTRUCTION TESTS THE KW11-L VECTOR (100/102) AND THE DL11 VECTORS (60/62 - 64/66) ARE SET UP TO CHECK INTERRUPTS

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FROM THESE DEVICES. ALL OTHER VECTORS REMAIN SET UP TO "CATCH" UNEXPECTED TRAPS OR INTERRUPTS BY HALTING.

WHEN AN UNEXPECTED TRAP OR INTERRUPT NOT SUPPORTED BY AN APPROPRIATE SERVICE ROUTINE OCCURS THE CPU HALTS. WITH THE FOLLOWING INFORMATION DISPLAYED IN THE CONSOLE:

ADDRESS DISPLAY: V+4 OF THE VECTOR. THIS IS USED TO IDENTIFY THE CAUSE OF THE UNEXPECTED TRAP OR INTERRUPT.

DATA DISPLAY: TEST NO. OF THE LAST TEST BEING EXECUTED WHEN THE TRAP OR INTERRUPT OCCURRED.

THE LAST ENTRY PUSHED ON THE STACK CAN BE EXAMINED TO DETERMINE WHERE THE PROGRAM WAS WHEN THE TRAP OR INTERRUPT WAS SPRUNG. REMEMBER THAT THE "OLD PC" GETS SAVED ON THE STACK WHEN A TRAP OR INTERRUPT OCCURS.

4. CATASTROPHIC ERROR HALTS

THERE ARE TWO HALTS, ONE IN THE BUS ERROR SERVICE ROUTINE AND THE OTHER IN THE RSVD INSTRUCTION TRAP SERVICE ROUTINE THAT HALT THE PROGRAM IF ONE OF THESE ERRORS OCCURS WHILE STILL SERVICING A PREVIOUS BUS ERROR OR RSVD INSTRUCTION TRAP. AFTER THE HALT THE CONSOLE DISPLAYS THE FOLLOWING INFORMATION:

ADDRESS DISPLAY: PC+2 OF THE ERROR HALT. THIS IS USED TO IDENTIFY WHICH OF THE TWO TYPES OF ERRORS - RSVD OR BUS ERROR.

DATA DISPLAY: LAST TEST NUMBER BEING EXECUTED WHEN THE TRAPS OCCURRED.

THERE IS A SOFTWARE FLAG TAGGED "CATERR" THAT MAY BE EXAMINED TO OBTAIN THE FOLLOWING INFORMATION:

[CATERR] = 000002 TWO SUCCESSIVE BUS ERRORS
[CATERR] = 001000 TWO SUCCESSIVE RSVD INSTR. TRAPS
[CATERR] = 000401 A COMBINATION OF THE TWO. THE CONTENTS OF THE ADDRESS DISPLAY IDENTIFIES WHICH TYPE OCCURRED LAST.

THE STACK PROVIDES THE FOLLOWING ADDITIONAL INFORMATION:

[SP] / PC OF THE 2ND TRAP
[SP+2] / PSW OF THE 2ND TRAP
[SP+4] / PC OF THE 1ST TRAP
[SP+6] / PSW OF THE 1ST TRAP

4.0 PERFORMANCE AND PROGRESS REPORTS

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8034.1 PERFORMANCE REPORTS

THERE IS ONLY ONE PERFORMANCE REPORT SUPPLIED BY THE PROGRAM AND CONSISTS OF A SIMPLE END OF PASS MESSAGE OF THE FORMAT SHOWN BELOW:

PASCNT = XXXXXX ERRCNT = YYYYYY

WHERE: XXXXXX IS THE TOTAL NUMBER OF COMPLETE PASSES OF THE ENTIRE PROGRAM (OCTAL)

YYYYYY IS THE TOTAL ERROR COUNT IN OCTAL WHICH IS FROZEN WHEN IT REACHES 177777(8).

THIS PRINTOUT IS MODIFIED TO PRINT THE POWER FAIL COUNT AS DESCRIBED IN PARA. 3.1, AS ABOVE IF POWER FAILED DURING A PASS.

4.2 PROGRESS REPORTS

THERE ARE THREE PROGRESS REPORTS PRINTED THAT REPORT NORMAL ERROR FREE EXECUTION OF THE PROGRAM.

A. END OF PASS PRINTOUT AS DESCRIBED IN 4.1 ABOVE.

B. PROGRAM IDENTIFICATION MESSAGE AS DESCRIBED BELOW:

DBQEAB PDP11/40 CPU DIAGNOSTIC VERSION XXX

THIS MESSAGE GETS PRINTED THE FIRST TIME THE PROGRAM ENTERS THE COMPREHENSIVE INSTRUCTION TEST SECTION UNLESS INHIBITED BY SW12=1. AFTER THE FIRST PASS THIS PRINTOUT IS AUTOMATICALLY INHIBITED UNLESS THE PROGRAM IS RESTARTED AT 200(8).

C. PDP11/40 OPTIONS FOUND PRINTOUT

AFTER PRINTING THE PROGRAM I.D. MESSAGE, A SUBROUTINE IS CALLED TO "LOOK FOR" THE 11/40 INTERNAL OPTIONS (KT11-D, KW11-L, KE11-E, KE11-F AND KJ11-A). IF ANY OF THESE OPTIONS ARE FOUND THE FOLLOWING PRINTOUT OCCURS:

PDP11/40 INTERNAL OPTIONS FOUND

XXXX-X

YYYY-Y

WHERE "X" AND "Y" ETC. ARE THE NAMES OF THE OPTIONS.

IF NO OPTIONS ARE FOUND THE FOLLOWING PRINTOUT OCCURS:

PDP11/40 INTERNAL OPTIONS FOUND

NONE FOUND

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THE OPTIONS FOUND MESSAGE IS ONLY PRINTED ON THE FIRST PASS THROUGH THE PROGRAM AND MAY ALSO BE INHIBITED BY SETTING SW12=1.

E MAINTENANCE BREAKPOINT FEATURE

THERE IS A MANUAL PROGRESS REPORT FEATURE THAT ALLOWS THE USER TO STEP THROUGH THE PROGRAM, HALTING AFTER EVERY N'TH TEST WITH PROGRESS INFORMATION DISPLAYED IN THE CONSOLE ADDRESS AND DATA DISPLAYS. TO ACTIVATE THIS FEATURE THE USER MUST SET THE DESIRED "BREAKPOINT HALT" BITS IN THE MEMORY LOCATION TAGGED "BPTLOC". THIS LOCATION PROVIDES SIXTEEN POSSIBLE HALTS DISPERSED EVENLY THROUGHOUT THE PROGRAM (APPROX. EVERY 32 TESTS). AT EACH CHECK-POINT THE PROGRAM EXAMINES A PARTICULAR BIT IN "BPTLOC" AND HALTS IF THE BIT IS SET TO A "1" OTHERWISE IT CONTINUES IN NORMAL SEQUENCE. AFTER THE HALT DEPRESSING "CONTINUE" WILL CAUSE RESUMPTION OF NORMAL PROGRAM EXECUTION. SETTING LOCATION "BPTLOC" TO ALL 1'S (177777) WILL RESULT IN THE FOLLOWING SIXTEEN HALTS WITH THE INFORMATION SHOWN DISPLAYED IN THE CONSOLE:

[BPTLOC]	DATA DISPLAY TEST NO.	ADDRESS DISPLAY HALT PC+2
BIT00=1	000040	005076
BIT01=1	000077	007460
BIT02=1	000134	012574
BIT03=1	000174	014700
BIT04=1	000234	016434
BIT05=1	000274	021552
BIT06=1	000334	024532
BIT07=1	000374	027532
BIT08=1	000444	033506
BIT09=1	000504	037340
BIT10=1	000544	042222
BIT11=1	000604	045446
BIT12=1	000644	050226
BIT13=1	000704	054400
BIT14=1	000745	061222
BIT15=1	001005	063566

NOTE: IF THE USER DEPOSITED A 000400(8) IN LOCATION "BPTLOC" ONLY ONE HALT WOULD OCCUR AND AT THAT TIME THE DATA DISPLAY SHOULD CONTAIN 000444 AND THE ADDRESS DISPLAY SHOULD CONTAIN 033506.

THIS FEATURE IS USEFUL FOR TRACKING DOWN THE TEST THAT CAUSES A "RUNAWAY" OR "HUNG" PROGRAM.

LOCATION "BPTLOC" IS PROGRAM LOADED AS 000000 TO INHIBIT ANY HALTS.

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5.0 DEVICE INFORMATION TABLES

5.1 KD11-A MICROPROGRAMMING INFORMATION

A. INTRODUCTION

THE KD11-A PROCESSOR EMPLOYS A MICROPROGRAMMED CONTROL SECTION THAT GENERATES THE PROPER SEQUENCES OF CONTROL SIGNALS REQUIRED TO EXECUTE THE PDP11 INSTRUCTION SET. THE HEART OF THE CONTROL IS A CONTROL STORE THAT CONSISTS OF 256 WORDS OF 56 BITS EACH, STORED IN A READ ONLY MEMORY (ROM). EACH 56 BIT WORD IS CALLED A MICROINSTRUCTION AND IS MICROPROGRAMMED TO PERFORM A UNIQUE ELEMENTARY OPERATION WITHIN THE PROCESSOR. EACH ONE OF THE 56 BITS IS ASSIGNED A PARTICULAR CONTROL FUNCTION THAT MAY BE TURNED "ON" OR "OFF" DEPENDENT UPON HOW EACH MICROWORD IS PROGRAMMED. TO ACTIVATE A SPECIFIC SET OF CONTROL SIGNALS SIMPLY MEANS READING OUT A SPECIFIC ROM ADDRESS. TO GENERATE A SPECIFIC SEQUENCE OF CONTROL SIGNAL SETS SIMPLY MEANS GENERATING A SPECIFIC ROM ADDRESS SEQUENCE. THE PURPOSE OF THIS SECTION IS TO DESCRIBE THE FUNCTION OF EACH BIT OR GROUP OF BITS (CALLED A FIELD) AND PROVIDE A LIST OF BACKPLANE TEST POINTS WHERE THE STATE OF ANY PARTICULAR BIT CAN BE OBSERVED.

B. MICROINSTRUCTION FORMAT

THIS SECTION LISTS THE FUNCTIONAL DESCRIPTION OF EACH BIT. FOR A MORE DETAILED DESCRIPTION OF THE SPECIFIC ENCODING REFER TO THE PDP11/40 SYSTEM ENGINEERING DRAWINGS, KD11A PROCESSOR (UWORD AND TABLES) SHEET.

<u>BIT NO.</u>	<u>NAME</u>	<u>FUNCTIONAL DESCRIPTION</u>
U<56:55>	CLKL<1:0>	THIS TWO BIT CONTROL FIELD IS USED TO SPECIFY THE CLOCK LENGTH FOR EACH MICROINSTRUCTION. THERE ARE THREE CLOCK LENGTHS POSSIBLE AS DESCRIBED BELOW: (PRT - PULSE REPETITION TIME)
		U<56:55>=00 -CLOCK LENGTH 1 - GENERATES A "P1" PULSE WITH PRT=140NSEC
		OR 01
		U<56:55>=10 -CLOCK LENGTH 2 - GENERATES A "P2" PULSE WITH PRT=200NS
		U<56:55>=11 -CLOCK LENGTH 3 - GENERATES A "P2" PULSE

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FOLLOWED 100 NSEC LATER
BY A "P3" PULSE. TOTAL
PRT=300 NSEC.

U<54> CLKOFF

THIS BIT ALLOWS TURNING OFF THE PRO-
CESSOR CLOCK TO STALL PROCESSOR OPERA-
TIONS WHILE WAITING FOR SOME INTERNAL
OR EXTERNAL RESPONSE.

U<53> CLKIR

THIS BIT ENABLES CLOCKING NEW DATA
INTO THE INSTRUCTION REGISTER. IT IS
ONLY ACTIVE WHEN THE PROCESSOR IS
FETCHING A NEW INSTRUCTION.

U<52:51> WRH,WRL

THESE TWO BITS CONTROL THE WRITING
INTO THE PROCESSOR'S GENERAL REGIS-
TERS. THEY PROVIDE THE MECHANISM FOR
CONTROLLING WHETHER WE READ, WRITE A
16 BIT WORD, OR WRITE AN 8 BIT BYTE AS
DESCRIBED BELOW:

U<52:51>=00 READ ONLY - INHIBIT
WRITING

U<52:51>=01 WRITE ONLY THE LOW
BYTE BITS <7:0>

U<52:51>=11 WRITE A FULL 16 BIT
WORD BITS <15:00>

U<50> CLKB

THIS BIT ALLOWS CLOCKING NEW DATA
INTO THE "B" REGISTER

U<50>=0 HOLD B REGISTER

U<50>=1 LOAD B REGISTER

U<49> CLKD

THIS BIT ALLOWS CLOCKING THE OUTPUT
OF THE "ALU" INTO THE "D" REGISTER.

U<49>=0 HOLD D REGISTER

U<49>=1 LOAD "D" REGISTER

U<48> CLKBA

THIS BIT ALLOWS CLOCKING THE BUS
ADDRESS REGISTER "BA"

U<48>=0 HOLD BA REGISTER

U<48>=1 LOAD BA REGISTER

U<47:46> CIBUS,COBUS

THIS TWO BIT FIELD SPECIFIES THE
TYPE OF DATA TRANSFER BUS CYCLE WHEN
U<45> BGBUS IS ACTIVE

U<46:47>=00 DATI

965			U<46:47>=01	DATIP
966			U<46:47>=10	DATC
967			U<46:47>=11	DATOB
968				
969				WHEN U<45> IS INACTIVE U<47:46> ARE
970				USED TO CONTROL INTERNAL PROCESSOR
971				LOGIC RELATED TO PRIORITY TRANSFER
972				OF UNIBUS CONTROL
973				
974		U<45>	BGBUS	THIS BIT IS USED TO TRIGGER INITIATION
975				OF A UNIBUS DATA TRANSFER BUS CYCLE
976				WHICH RESULTS IN ACTIVATING BUS MSYN:
977				
978		U<44:41>	DAD<3:0>	THIS FOUR BIT FIELD (DISCRETE ALTER-
979				ATION OF DATA) PROVIDES THE MECHANISM
980				FOR ALTERING THE OPERATION OF THE
981				BASIC CONTROL FUNCTIONS BASED ON
982				CONDITIONS EXISTING WITHIN THE PRO-
983				CESSOR. IE: CHECK FOR STACK OVFLW
984				IF PUSHING ON STACK, ALLOW ODD ADDRESS
985				IF BYTE INSTRUCTION, MODIFY ALU OPER-
986				ATION AS A FUNCTION OF THE IR DECODE
987				ETC.
988				
989		U<40:38>	SPS<2:0>	THIS THREE BIT FIELD CONTROLS LOADING,
990				CLOCKING, AND GATING OF THE PROCESSOR
991				STATUS WORD.
992				
993		U<37:33>	ALUM,S<3:0>	THESE FIVE BITS CONTROL WHAT OPERATION
994				IS TO BE PERFORMED BY THE PROCESSOR'S
995				ALU. THE FINAL ALU CONTROL IS SUBJECT
996				TO MODIFICATION BY THE "DAD" CODE AS
997				DESCRIBED ABOVE.
998				
999		U<32:29>	SBC<3:0>	THIS FOUR BIT FIELD IS ENCODED TO
1000				SELECT SPECIFIC CONSTANTS THAT MAY
1001				BE FED INTO THE ALU'S "B" INPUT VIA
1002				THE B MUX. IE: SWR ADDRESS=177570
1003				
1004		U<28:27>	SBMH<1:0>	THIS TWO BIT FIELD IS USED TO CONTROL
1005				THE HIGH SECTION OF THE B MUX, BITS
1006				<15:08> AND DETERMINES WHAT APPEARS
1007				AT THE B INPUT TO THE ALU, BIN<15:08>
1008				
1009				U<28:27>=00 BIN<15:08>=BREG<15:08>
1010				U<28:27>=01 BIN<15:08>=BREG07(SEX)
1011				U<28:27>=10 BIN<15:08>=BREG<07:00>(BYTE)
1012				U<28:27>=11 BIN<15:08>=BCON<15:08>(CONSTANT)
1013				
1014		U<26:25>	SBML<1:0>	THIS TWO BIT FIELD IS USED TO CONTROL
1015				THE LOW SECTION OF THE B MUX, BITS
1016				<07:00>. AND DETERMINES WHAT APPEARS
1017				AT THE B INPUT TO THE ALU. BIN<07:00>
1018				
1019				U<26:25>=00 BIN<07:00>=BREG<07:00>
1020				U<26:25>=01 BIN<07:00>=BREG<07:00>

1021			U<26:25>=10 BIN<07:00>=BREG<15:08>(BYTE)
1022			U<26:25>=11 BIN<07:00>=BCON<07:00>(CONSTANT)
1023			
1024	U<24:23>	SDM<1:0>	THIS TWO BIT FIELD IS USED TO SELECT ONE OF FOUR INPUTS THAT APPEAR AT THE INPUT TO THE "D" MUX.
1025			
1026			
1027			
1028			U<24:23>=00 DMUX<15:00>=BUS RD<15:00>(REG)
1029			U<24:23>=01 DMUX<15:00>=BUS D<15:00>(UNIBUS)
1030			U<24:23>=10 DMUX<15:00>=D<15:00>
1031			U<24:23>=11 DMUX<15:00>=D<C>,D<15:01>(SHF RIGHT)
1032			
1033	U<22>	SBAM	THIS BIT IS USED TO SELECT THE DATA LOADED INTO THE BA REGISTER
1034			
1035			
1036			U<22>=1 BA<15:00>=BUS RD<15:00>(REG)
1037			U<22>=0 BA<15:00>=ALU<15:00>
1038			
1039			BIT 48 (CLKBA) MUST BE ACTIVE TO ALLOW CLOCKING INTO THE BA REGISTER.
1040			
1041			
1042	U<21:17>	UBF<4:0>	THIS FOUR BIT FIELD (BUT BITS) IS USED TO SPECIFY ONE OF 16 POSSIBLE MICRO-BRANCH TESTS WHICH PROVIDES THE MECHANISM FOR MODIFYING THE ROM ADDRESS SEQUENCE GENERATED BASED ON THE PRESENCE OR ABSENCE OF SPECIFIC CONDITIONS.
1043			
1044			
1045			
1046			
1047			
1048			
1049	U<16:13>	SR<S,D,BA,I>	THESE FOUR BITS ARE USED TO SELECT THE SPECIFIC BITS USED TO ADDRESS A GENERAL REGISTER.
1050			
1051			
1052			
1053			SRS =1 USE IR<8:6> SOURCE REG BITS
1054			SRD =1 USE IR<2:0> DEST REG BITS
1055			SRBA=1 USE BA<3:0> CONSOLE (EXAM + DEP)
1056			SRI =1 USE U<12:9> MICROWORD
1057			
1058	U<12:09>	RIF<3:0>	THESE FOUR BITS SPECIFY WHICH GENERAL REGISTER TO ACCESS IF "SRI" (U<13>) IS ACTIVE
1059			
1060			
1061			
1062			U<12:09>=0000 R0
1063			U<12:09>=0001 R1
1064			U<12:09>=0001
1065			U<12:09>=0001
1066			U<12:09>=1111 R17
1067			
1068	U<08>	UPF8	THIS BIT IS NOT STORED IN THE ROM BUT IS A SEPARATE CONTROL SIGNAL THAT PROVIDES THE MECHANISM FOR IMPLEMENTING AN EXPANSION ROM WHEN THE EIS/FIS OPTIONS ARE INSTALLED - NOT IN THE BASIC MACHINE.
1069			
1070			
1071			
1072			
1073			
1074			
1075	U<07:00>	UPF<7:0>	THIS EIGHT BIT FIELD (NEXT FIELD) PROVIDES A MEANS OF EACH MICROINSTRUCTION
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TO SPECIFY THE ADDRESS OF THE NEXT
MICROWORD TO BE ACCESSED. THE CONTENTS
OF THIS FIELD MAY BE MODIFIED AS A
RESULT OF A MICROBRANCH TEST BEFORE
BEING LOADED INTO THE ROM ADDRESS
REGISTER. (UPF<7:0>).

IT IS THE COMBINATION OF THIS FIELD
AND THE BUT BITS U<21:17> THAT MAKE
IT POSSIBLE TO GENERATE VARIABLE ROM
ADDRESS SEQUENCES.

THESE 8 BITS ARE UNIQUE IN THAT THEY
ARE ACTIVE (1) WHEN "LOW" IN CONTRAST
TO ALL OTHER BITS THAT ARE ACTIVE (1)
WHEN HIGH.

IE: UPF<7:0>=01010010 = ADDRESS 255

5.2 MICROWORD CONTROL SIGNAL TEST POINTS

KD11-A MICROWORD CONTROL SIGNALS (SH1 OF 2)

	U<N>	PRINT	SIGNAL NAME	ROM	UREG
1095					
1096					
1097					
1098					
1099					
1100					
1101					
1102	56	K2-8	CLKL1(1) H	E38-09	D03N2
1103	56	::	CLKL1(0) H		D03M2
1104	55	::	CLKLO(1) H	E38-10	D03L2
1105	55	::	CLKLO(1) H		D03R1
1106	54	::	CLKOFF(1) H	E38-11	D03U2
1107	53	::	CLKIR(1) H	E38-12	D03T2
1108	52	K2-7	WRH(1) H	E34-09	D03J2
1109	51	::	WRL(1) H	E34-10	D03H2
1110	50	::	CLKB(1) H	E34-11	D03J1
1111	49	::	CLKD(1) H	E34-12	D03K2
1112	48	::	CLKBA(1) H	E35-09	D03L1
1113	47	::	CIBUS(1) H	E35-10	D03K1
1114	46	::	COBUS(1) H	E35-11	D03F2
1115	45	::	3GBUS(1) H	E35-12	D03E2
1116	44	::	DAD3(1) H	E37-09	D03M1
1117	43	::	DAD2(1) H	E37-10	D03N1
1118	42	::	DAD1(1) H	E37-11	D03P1
1119	41	::	DAD0(1) H	E37-12	D03O2
1120	40	K2-6	SPS2(1) H	E31-09	C03M2
1121	39	::	SPS1(1) H	E31-10	D03H1
1122	38	::	SPS0(1) H	E31-11	D03F1
1123	37	::	SALUM(1) H	E31-12	D03E1
1124	36	::	SALU3(1) H	E30-09	C03N2
1125	35	::	SALU2(1) H	E30-10	C03P2
1126	34	::	SALU1(1) H	E30-11	C03T2
1127	33	::	SALU0(1) H	E30-12	C03U2
1128	32	::	SBC3(1) H	E27-09	C03S2
1129	31	::	SBC2(1) H	E27-10	C03U2
1130	30	::	SBC1(1) H	E27-11	C03R2
1131	29	::	SBC0(1) H	E27-12	D03O1

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KD11-A MICROWORD CONTROL SIGNALS (SH2 OF 2)

U<N>	PRINT	SIGNAL NAME	ROM	UREG
28	K2-5	SBMH1(1) H	E22-09	C03N1
27	..	SBMH0(1) H	E22-10	C03M1
26	..	SBML1(1) H	E22-11	C03L1
25	..	SBMLC(1) H	E22-12	C03J1
24	..	SOM1(1) H	E23-09	C03L2
23	..	SOMO(1) H	E23-10	C03K2
22	..	SBAM(1) H	E23-11	C03J2
21	..	UBF4(1) H	E23-12	C03H2
20	..	UBF3(1) H	E26-09	C03S1
19	..	UBF2(1) H	E26-10	C03R1
18	..	UBF1(1) H	E26-11	C03P1
17	..	UBFO(1) H	E26-12	C03F2
16	K2-4	SRS(1) H	E21-09	C03E1
15	..	SRD(1) H	E21-10	C03O2
14	..	SRBA(1) H	E21-11	C03E2
13	..	SRI(1) H	E21-12	C03B1
12	..	RIF3(1) H	E20-09	B03S1
11	..	RIF2(1) H	E20-10	B03U1
10	..	RIF1(1) H	E20-11	B03U2
09	..	RIFO(1) H	E20-12	B03T2
08	K2-3	BUPP8(1) H	N/A	B03E2
07	..	BUPP7(1) H	E14-09	B03J2
06	..	BUPP6(1) H	E14-10	B03M2
05	..	BUPP5(1) H	E14-11	B03P2
04	..	BUPP4(1) H	E14-12	B03R2
03	K2-2	BUPP3(1) H	E15-09	A03L2
02	..	BUPP2(1) H	E15-10	A03P2
01	..	BUPP1(1) H	E15-11	A03S2
00	..	BUPPO(1) H	E15-12	A03U2

NOTES:

1. THE ROM TEST POINTS CORRESPOND TO THE WORD BEING READ OUT AS DEFINED BY THE CONTENTS OF THE "UPP"
2. THE UREG TEST POINTS CORRESPOND TO THE WORD BEING EXECUTED AS DEFINED BY THE CONTENTS OF THE "PUPP"
3. AN "H" (HIGH LEVEL) IS OBSERVED IF THE BIT IS PROGRAMMED AS A "1" AND A "L" (LOW LEVEL) IS OBSERVED IF THE BIT IS PROGRAMMED AS A "0" WITH EXCEPTION OF THE "UPF" FIELD BITS <7:0> WHEN OBSERVED AT THE OUTPUT OF THE ROM DIRECTLY. IN THIS CASE THE BITS ARE STORED IN 1'S COMPLEMENT FORM.

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11985.3 KD11-A LOGIC PRINT SUMMARY

THE LOGIC CIRCUIT DESIGN USED TO IMPLEMENT THE KD11-A CPU IS WELL ORGANIZED AND LOGICALLY PARTITIONED INTO FUNCTIONAL AREAS ON THE FIVE MODULES (4 HEX AND 1 QUAD). EACH MODULE IS IDENTIFIED FOR DOCUMENTATION PURPOSES BY A "KN" NUMBER AS LISTED BELOW AND EACH PRINT APPROPRIATELY IDENTIFIED WITHIN THE PRINT SET:

M7231	DATA PATHS	PRINTS K1-1 THRU K1-9
M7232	UWORD (ROM)	PRINTS K2-1 THRU K2-8
M7233	IR DECODE	PRINTS K3-1 THRU K3-9
M7234	TIMING	PRINTS K4-1 THRU K4-6
M7235	STATUS	PRINTS K5-1 THRU K5-8

THE FIRST PRINT IN EACH SET (KN-1) SHOWS THE PHYSICAL LAYOUT OF THE MODULE AND INCLUDES A COMPONENT PARTS LIST. THE LOGIC PARTITIONING INTO FUNCTIONAL AREAS IS SUMMARIZED IN THE TABLE BELOW:

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***** M7231 *****

K1-2 DESCRIBES THE LOGIC AREAS THAT SUPPORT THE PRIMARY DATA PATH FACILITIES FOR BITS<03:00> THAT INCLUDES:

1. UNIBUS DATA RECEIVERS AND DRIVERS
2. REGISTER DATA BUS RECEIVERS
3. "D" MULTIPLEXOR
4. "B" MULTIPLEXOR
5. "D" REGISTER
6. "B" REGISTER
7. ARITHMETIC LOGIC UNIT
8. "BA" MULTIPLEXOR

K1-3 SAME AS THE K1-2 EXCEPT IT SUPPORTS BITS<07:04>

K1-4 SAME AS THE K1-2 EXCEPT IT SUPPORTS BITS<11:08>

K1-5 SAME AS THE K1-2 EXCEPT IT SUPPORTS BITS<15:12> AND ALSO INCLUDES*

1. "COUT" MULTIPLEXOR
2. "D<C>" CONTROL FLOP

K1-6 DESCRIBES THE LOGIC THAT SUPPORTS:

1. BUS ADDRESS REGISTER (BA)
2. UNIBUS ADDRESS LINE DRIVERS

K1-7 DESCRIBES THE IMPLEMENTATION OF:

1. INTERNAL ADDRESS DECODERS
2. "D" REGISTER DECODER

K1-8 DESCRIBES THE:

1. GENERAL REGESTERS (R00 THRU R17)
2. GENERAL REGISTER ADDRESS SELECTION SWITCHES

K1-9 DESCRIBES THE:

1. KY11-D DATA DISPLAY AND SWITCH REGISTER INTERFACES
2. CABLE CONNECTOR

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***** M7232 *****

K2-2

DESCRIBES THE:

- 1. UPP REGISTER BITS<03:00>
- 2. PUPP REGISTER BITS<03:00>
- 3. MICROBRANCH CONTROL "OR" GATES BITS<03:00>

K2-3

DESCRIBES THE:

- 1. UPP REGISTER BITS<08:04>
- 2. PUPP REGISTER BITS<08:04>
- 3. MICROBRANCH CONTROL "OR" GATES BITS<07:04>

K2-4

DESCRIBES THE:

- 1. ROM U<16:09>
- 2. UREG <16:09>

K2-5

DESCRIBES THE:

- 1. ROM U <28:17>
- 2. UREG <28:17>

K2-6

DESCRIBES THE:

- 1. ROM U <40:29>
- 2. UREG <40:29>

K2-7

DESCRIBES THE:

- 1. ROM U <52:41>
- 2. UREG <52:41>

K2-8

DESCRIBES THE:

- 1. ROM U <56:53>
- 2. UREG <56:53>
- 3. EXPANSION ROM CONNECTORS

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***** M7233 *****

- K3-2 DESCRIBES THE:
 - 1. BUT MULTIPLEXOR
- K3-3 DESCRIBES THE:
 - 1. INSTRUCTION REGISTER
 - 2. IR DECODERS
- K3-4 DESCRIBES THE:
 - 1. IR DECODERS
 - 2. "OVLAP" DECODER
- K3-5 DESCRIBES THE:
 - 1. MICRO BRANCH CONTROL LOGIC
- K3-6 DESCRIBES THE*
 - 1. IR DECODERS (DISCRETE)
- K3-7 DESCRIBES THE:
 - 1. MICROBRANCH CONTROL LOGIC
- K3-8 DESCRIBES THE:
 - 1. "COUT" MUX CONTROL LOGIC
 - 2. AUX ALU CONTROL MULTIPLEXORS
 - 3. "CIN" GENERATION LOGIC
- K3-9 DESCRIBES THE:
 - 1. "C" AND "V" BIT CONTROL LOGIC

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***** M7234 *****

K4-2 DESCRIBES THE:

- 1. CPU CLOCK WITH ASYNCHRONOUS CONTROL LOGIC
- 2. PRIMARY REGISTER TIMING LOGIC FOR:

- A. UPP AND PUPP REGISTERS
- B. U REGISTER
- C. INSTRUCTION REGISTER
- D. B, D, AND BA REGISTERS
- E. GENERAL REGISTERS - WRITE TIMING

K4-3 DESCRIBES THE:

- 1. JAMUPP CONTROL LOGIC AND TIMING

K4-4 DESCRIBES THE:

- 1. UNIBUS DATA TRANSFER CONTROL LOGIC

K4-5 DESCRIBES THE:

- 1. BUS PRIORITY TRANSFER CONTROL LOGIC

K4-6 DESCRIBES THE:

- 1. PRIORITY ARBITRATION LOGIC FOR "BR'S"
- 2. BUS TIMEOUT AND NO SACK TIMEOUT CONTROL

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***** M7235 *****

- K5-2 DESCRIBES THE:
 - 1. PROCESSOR STATUS REGISTER
 - 2. PSW CONTROL
 - 3. PSW BUS DRIVERS (UNIBUS AND RD BUS)
- K5-3 DESCRIBES THE:
 - 1. BRANCH INSTRUCTION DECODERS
 - 2. "BUT" DECODER (WORKING BUTS)
- K5-4 DESCRIBES THE:
 - 1. MISCELLANEOUS HISTORY AND CONTROL FLOPS
- K5-5 DESCRIBES THE:
 - 1. "B" CONSTANTS GENERATOR
 - 2. TRAP VECTOR ADDRESS GENERATOR
- K5-6 DESCRIBES THE:
 - 1. CONSOLE CONTROL SWITCH INTERFACE
- K5-7 DESCRIBES THE:
 - 1. CONSOLE INTERFACE CABLE CONNECTIONS
- K5-8 DESCRIBES THE:
 - 1. POWER FAIL/AUTO RESTART CONTROL LOGIC

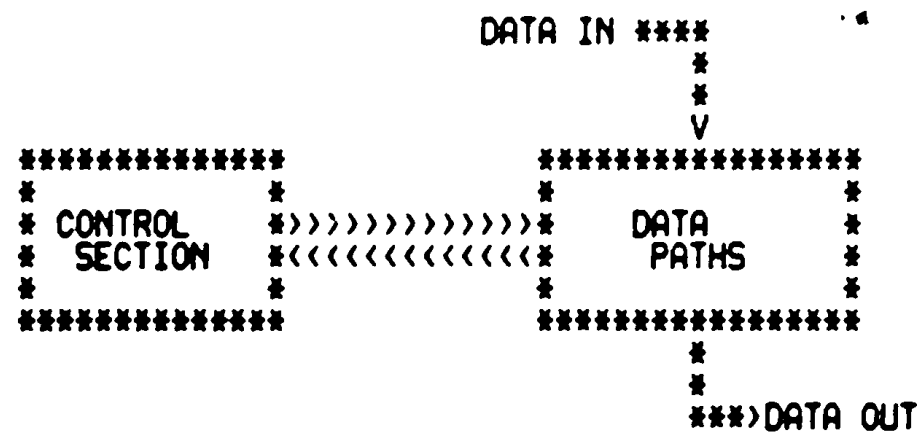
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6.0 MAINTENANCE PROCEDURES

6.1 INTRODUCTION

THE PROCEDURES OUTLINED IN THIS SECTION ASSUME THAT "DBQEAB" CAN BE LOADED INTO CORE AND STARTED. IF THE FAILURE MODE PREVENTS PROGRAM LOADING OR AFFECTS NORMAL POWER UP AND CONSOLE OPERATIONS, THE TECHNICIAN MUST REVERT TO THE MANUAL DEBUG AND CHECKOUT PROCEDURES CONTAINED IN THE "BCPT" DOCUMENT.

THE FIVE MODULES THAT COMPRISE THE KD11-A CENTRAL PROCESSING UNIT OF AN 11/40 SYSTEM CAN BE VIEWED AS CONSISTING OF TWO MAJOR INTERACTING AND INTERDEPENDENT LOGIC AREAS AS DEPICT-BELOW:



THE DATA PATHS CONSIST OF A LOGICALLY INTERCONNECTED GROUP OF STATIC DATA FACILITIES (REGISTERS, MULTIPLEXORS, ALU'S ETC.) REQUIRED TO TEMPORARILY STORE, MODIFY, AND TRANSFER DATA ITEMS (16 BIT WORDS OR 8 BIT BYTES) ACCORDING TO THE DESIGN SPECIFICATIONS FOR THE PD11.

THE CONTROL SECTION SUPPLIES PREDEFINED SEQUENCES OF CONTROL SIGNAL SETS TO ACTIVATE THE REQUIRED DATA FACILITIES WITHIN THE DATA PATHS. IN THE KD11-A THESE CONTROL SIGNAL SETS ARE STORED IN A READ ONLY MEMORY (ROM) AND GENERATED BY READING OUT A UNIQUE SEQUENCE OF ROM WORDS FOR EACH OPERATION TO BE PERFORMED.

THE SEQUENCE GENERATED BY THE CONTROL SECTION IS VARIABLE AND DEPENDENT UPON THE INSTRUCTION OR LOGIC OPERATION BEING EXECUTED. THERE ARE HUNDREDS OF THESE SEQUENCES POSSIBLE DEPENDENT UPON OF THE PROGRAM CODING.

"DBQEAB" IS DESIGNED TO GENERATE ALL POSSIBLE MICROINSTRUCTION SEQUENCES AND COMBINATIONS OF DATA AND CONTROL SIGNALS. THE INDIVIDUAL TESTS ARE LOGICALLY SEQUENCED AND STRUCTURED TO DETECT AND ISOLATE PARTICULAR MICROPROGRAM SEQUENCES THAT ARE FAULTY.

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15036.2 MICROPROGRAMMING / LOGIC INFORMATION

ALL OF THE TESTS DESIGNED TO TEST AND VERIFY A SPECIFIC INSTRUCTION OR LOGIC OPERATION CONTAIN A MAINTENANCE HEADER IN THE LISTING AT THE BEGINNING OF THE TEST. THIS HEADER PROVIDES THE TECHNICIAN WITH DETAILED MICROPROGRAMMING AND LOGIC INFORMATION RELATIVE TO THE INSTRUCTION OR LOGIC OPERATION BEING TESTED. THIS SECTION OF THE DOCUMENT DESCRIBES THE FORMAT AND CONTENT OF THIS INFORMATION AND SUGGESTS WAYS THAT THE TECHNICIAN MAY USE IT TO ISOLATE FAULTS TO THE FAILING MODULE OR IC.

INFORMATION FORMAT:

THE MAINTENANCE HEADER SHOWN BELOW IS FOR THE TEST THAT VERIFIES THE OPERATION OF THE INSTRUCTION:

"DECB 1(SP)"

WHERE: 1) THE INITIAL CONTENTS OF THE STACK WORD IS 000000
2) THE DEC (DECREMENT) MODIFIES THIS TO 177400 (DEC ODD BYTE)

HEADER:

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [166,261,262,267,237,270,222,253,075,374,375,
016] FC 1,3,9,8

;ACT BUTS: 37(004)100,166 / 17(166)262,262 / 33(266)220,237
34(237)220,222 / 16(374)016,016

;EXEC: [222]ALUC=LHMM : [375] D=177400

;CODES: [253]SPS=1, [275]SPS=3 / N:C = 1000

;SYNC: B05J2 (-) T = 4.0 USEC

;KEY SIG: K3-3 DM=6 L / K3-4 DEC ! / K3-6 BYTE INSTR H
K3-7 ODD BYTE L

1) ROM SEQ ENTRIES:

THIS LISTS THE ROM ADDRESS SEQUENCE THAT MUST BE GENERATED TO PROPERLY EXECUTE THE INSTRUCTION. IT BEGINS WITH THE FIRST ROM WORD AFTER FETCH AND INCLUDES ALL MICROWORDS UP TO THE BEGINNING OF THE NEXT FETCH. THIS IS THE SEQUENCE THE TECHNICIAN SHOULD OBSERVE WHEN CLOCKING THE ROM USING THE KM-11 MAINTENANCE MODULE. IT ALSO INCLUDES A LIST OF THE FLOW CHART NUMBERS TO REFER TO TO OBTAIN THE DETAILS OF EACH MICROWORD.

2) ACT BUTS (ACTIVE MICROBRANCH TESTS) ENTRIES:

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THIS IS A LIST OF ONE OR MORE ENTRIES THAT INDICATE ALL THE MICROBRANCHES THAT OCCUR DURING THE SEQUENCE. EACH ENTRY CONSISTS OF FOUR OCTAL NUMBERS AND EACH SEPARATE ENTRY IS DELIMITED BY A "/". THE NO.S ARE INTERPRETED AS FOLLOWS:

- A) THE FIRST NO. IS THE OCTAL CODE OF THE BUT (UBF <4:0> FIELD)
- B) THE SECOND NO. (IN BRACKETS) INDICATES THE ADDRESS OF THE WORD CONTAINING THE BUT
- C) THE THIRD NO. INDICATES THE ENCODING OF THE NEXT FIELD (UPF <7:0>). THIS IS THE BASE ADDRESS THAT MAY OR MAY NOT BE MODIFIED BY THE MICROBRANCH TEST.
- D) THE FOURTH NO. INDICATES THE RESULT OF THE MICROBRANCH MODIFICATION. BY COMPARING THIS NO. WITH THE NEXT FIELD IT IS POSSIBLE TO DETERMINE WHICH MICROBRANCH CONTROL SIGNALS MUST BE ASSERTED TO OBTAIN THE PROPER ROM SEQUENCE.

THE KEY TO GENERATING THE PROPER MICROINSTRUCTION SEQUENCE IS WHAT THE "BUT" DOES TO GENERATE THE MICROBRANCH CONTROL SIGNALS (K3-2 BUBC<5:0>). FROM THE "ACT BUTS" INFORMATION THE TECHNICIAN CAN QUICKLY DETERMINE WHICH OF THESE SIGNALS MUST BE ACTIVE TO GENERATE THE PROPER ROM SEQUENCE.

FOR EXAMPLE THE ENTRY: 37(004)100,166

INDICATES THAT THE BUT37 IN LOC 004 MUST MODIFY THE ROM ADDRESS IN SUCH A WAY THAT THE 100 (NEXT FIELD) GETS CHANGED TO A 166. THIS MEANS THAT WE MUST SOMEHOW "OR" IN A 066 WITH THE BASE ADDRESS OF 100. THIS IS DONE BY GENERATING THE FOLLOWING CONTROL SIGNALS:

K3-2 BUBC5, BUBC4, BUBC2, AND BUBC1

ALL OF THESE SIGNALS CAN BE OBSERVED AT THE OUTPUT OF THE "BUT MUX" ON THE K3-2 PRINT. IT IS IMPORTANT THAT THEY BE OBSERVED WHEN THE PUPP=004 WHICH IS THE WORD CONTAINING THE BUT37.

SINCE OVER 50% OF THE LOGIC FAULTS THAT CAN OCCUR IN THE KD11-A WILL MANIFEST THEMSELVES BY CAUSING AN INCORRECT ROM SEQUENCE TO BE GENERATED, THIS INFORMATION PROVIDES THE TECHNICIAN WITH A CONVENIENT STARTING POINT TO PROCEED TO ISOLATE THE FAULTY COMPONENT.

3) EXEC ENTRIES:

THESE ENTRIES DESCRIBE TWO IMPORTANT MICROWORDS.

- A) THE WORD THAT EXECUTES THE INSTRUCTION
- B) THE WORD WHERE THE RESULT MAY BE OBSERVED

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IN THE DATA DISPLAY ON THE CONSOLE

THE FIRST ENTRY INCLUDES A ROM ADDRESS THAT CONTAINS THE MICROINSTRUCTION THAT EXECUTES THE INSTRUCTION AND INCLUDES THE REQUIRED STATE OF THE ALU CONTROL SIGNALS TO PERFORM THE CORRECT OPERATION ON THE DATA AS DESCRIBED BELOW:

ALUC = ALU M,S<3:0> = LHHH

WHICH MEANS THE LOGIC LEVELS SHOWN BELOW MUST EXIST:

K3-8 ALUM L
K3-8 ALUS3 H
K3-8 ALUS2 H
K3-8 ALUS1 H
K3-8 ALUS0 H

THE SECOND ENTRY SPECIFIES THE ROM ADDRESS WHERE THE RESULT IS DISPLAYED IN THE CONSOLE DATA DISPLAY. IN THE EXAMPLE SHOWN WITH THE ROM AT PUPP=375 THE DATA DISPLAY ON THE CONSOLE SHOULD CONTAIN A 177400.

4) CODES ENTRIES:

THIS ENTRY SPECIFIES THE SPS CODES USED TO ALTER THE FLAGS AND THE ROM WORDS THAT CONTAIN THESE CODES. WHERE APPLICABLE IT ALSO SPECIFIES HOW THE CODES SHOULD APPEAR AFTER THE INSTRUCTION. IN THE EXAMPLE:

N:C = 1000 MEANS THE "N" BIT IS SET AND THE "Z", "V", AND "C" BITS ARE CLEAR.

5) SYNC ENTRIES:

THIS INFORMATION CONTAINS A BACKBOARD PIN NO. THAT MAY BE USED TO SYNC DURING A SCOPE LOOP, THE SCOPE TRIGGER SLOPE (-) TRAILING EDGE TO USE, AND THE APPROXIMATE SETTING OF THE HORIZONTAL SWEEP LENGTH. THIS INSURES THAT WHEN LOOPING ON A TEST, ONLY THE AREA OF INTEREST (THE TEST INSTRUCTION) IS DISPLAYED. THIS MINIMIZES THE POSSIBILITY OF LOOKING AT SIGNALS AT THE "WRONG TIME".

6) KEY SIGNALS:

THIS ENTRY CONTAINS A LIST OF UNIQUE SIGNALS THAT MUST BE ACTIVATED TO PROPERLY EXECUTE THE OPERATION UNDER TEST. THIS ALSO HELPS TO POINT THE TECHNICIAN TO THE KEY FUNCTIONAL AREAS OF LOGIC IN THE PRINT SETS.

6.3 KM11 MAINTENANCE MODULE

A. PURPOSE

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THE KM11 MAINTENANCE MODULE OPTION PROVIDES THE TECHNICIAN WITH A MECHANISM FOR SINGLE CLOCKING THE KD11-A MICROPROGRAM. IT ALLOWS HIM TO VERIFY THAT THE PROPER ROM SEQUENCES ARE BEING GENERATED AND ALSO TO "FREEZE" THE ROM AT ANY ADDRESS AND CHECK THE CONTROL AND DATA PATH SIGNALS THAT SHOULD BE ACTIVE FOR THE PARTICULAR MICROWORD BEING INVESTIGATED.

B. BASIC COMPONENTS

1. W130 SINGLE HEIGHT MODULE THAT CONTAINS THE INDICATOR DRIVERS FOR THE W131 AND ALSO DOUBLES AS A MODULE EXTENDER FOR THE W131. WHEN INSTALLED IT PLUGS INTO SLOT "F1" IN THE KD11-A BACK-PLANE WHICH IS PREWIRED TO ACCEPT THE KM11.
2. W131 SINGLE HEIGHT MODULE THAT CONTAINS THE INDICATOR LAMPS AND CONTROL SWITCHES WITH FILTERS. IT PLUGS INTO THE W130 WHEN INSTALLED.
3. KD11-A OVERLAY (5509081-0-12)
A PLASTIC ETCHED OVERLAY THAT DEFINES THE INDICATORS AND SWITCHES ON THE W131.

C. INDICATORS

- PUPP<08:00> NINE INDICATOR LAMPS THAT DISPLAY THE CONTENTS OF THE PUPP (PAST MICROPROGRAM POINTER). THEY INDICATE THE ADDRESS OF THE MICROWORD THAT IS CURRENTLY STORED IN THE "UREG" (THIS WORD IS EXECUTED ON THE NEXT CLOCK PULSE)
- BUPP<08:00> NINE INDICATOR LAMPS THAT DISPLAY THE CONTENTS OF THE "UPP" (MICROPROGRAM POINTER). THEY INDICATE THE ADDRESS OF THE MICROWORD THAT IS CURRENTLY BEING READ OUT OF THE ROM. THIS MICROWORD IS LOADED INTO THE UPEG ON THE NEXT CLOCK AND THE CONTENTS OF THE UPP GETS TRANSFERRED INTO THE PUPP.
- <T,N:C> FIVE INDICATORS THAT DISPLAY THE STATE OF THE FOLLOWING PSW FLAGS:
- "T" BIT
 - "N" BIT
 - "Z" BIT
 - "V" BIT
 - "C" BIT
- MSYN A SINGLE INDICATOR THAT DISPLAYS THE STATE OF BUS MASTER SYNC.
- SSYN A SINGLE INDICATOR THAT DISPLAYS THE STATE OF BUS SLAVE SYNC.

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NOTE:

THE STATE OF ALL INDICATOR LAMPS IS
DEFINED AS FOLLOWS:

"ON" (1), ASSERTED, ACTIVE
"OFF" (0), NEGATED, INACTIVE

D. SWITCHES

- MCLK ENAB WHEN ACTIVE THIS SWITCH DISABLES THE INTERNAL PROCESSOR CLOCK AND ALLOWS TOGGING A MAINT ENTANCE CLOCK USING THE "MCLK" SWITCH.
- MCLK WHEN ACTIVATED (ON-OFF SEQUENCE) THIS SWITCH GENERATES ONE CLOCK PULSE TO THE KD11-A.
- MSTOP WHEN ACTIVE THIS SWITCH ENABLES TURNING OFF THE PROCESSOR CLOCK WHEN THE CONTENTS OF BUPP<8:0> MATCHES THE ADDRESS CONTAINED IN SR<8:0> IN THE CONSOLE SWITCH REGISTER. WHEN THE CLOCK STOPS, THE CONTENTS OF THE ROM ADDRESS SELECTED BY SR<8:0> IS STORED IN THE "UREG" AND THE ADDRESS ITSELF CONTAINED IN THE "PUPP".

NOTE:

ALL SWITCHES ARE INACTIVE WHEN POSITIONED TOWARD THE INDICATOR DISPLAY ON THE W131. AN "ARROW" ETCHED ON THE OVERLAY SIGNIFIES THE DIRECTION OF THE ACTIVE POSITION.

E. TYPICAL OPERATING PROCEDURES

1. INSTALLATION

- A) TURN OFF ALL POWER TO THE KD11-A
- B) SLIDE OUT THE KD11-A FROM THE CABINET
- C) OPEN THE HINGED COVER ON THE LEFT SIDE
- D) PLUG THE W130 INTO SLOT F1
- E) PLUG THE W131 INTO THE W130 (WITH OVERLAY ATTACHED)

*****CAUTION*****

INSURE THAT THE HINGED COVER IS SECURED PROPERLY TO PREVENT IT FROM SWINGING FORWARD AND SHORTING THE PRINTED CIRCUIT ETCH ON THE BACK OF THE W131.

- D) PLACE ALL THREE SWITCHES ON THE W131 TO "OFF"
- E) TURN ON THE KD11-A POWER AND LOAD AND START THE "DBKDA" DIAGNOSTIC.

2. OPERATION

- A) ESTABLISH A SCOPE LOOP ON THE FAILING TEST
- B) CONSULT THE LISTING FOR THAT TEST TO DETERMINE

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IF THE SCOPE SYNC INSTRUCTION IS A SET OR CLEAR
CONDITION CODES AND SET JP SR<8:0> ON THE
CONSOLE AS FOLLOWS:

SET CODES SR<8:0> = 352
CLR CODES SR<8:0> = 351

- C) PLACE THE "MSTOP" SWITCH IN THE ACTIVE POSITION. THE CLOCK SHOULD STOP AND FREEZE THE ROM WITH THE ADDRESS OF THE FIRST MICROWORD USED TO FETCH THE TARGET INSTRUCTION CONTAINED IN THE "UPP" REG.
- D) PLACE THE "MCLK ENAB" SWITCH ON AND THE "MSTOP" SWITCH OFF.
- E) NOW YOU ARE READY TO "TOGGLE" THROUGH THE ROM SEQUENCE FOR THE TEST INSTRUCTION USING THE "MCLK" SWITCH TO LOCATE AND ISOLATE THE FAILING MICROWORD. EACH TIME THE "MCLK" SWITCH IS TOGGLED THE CONTENTS OF THE "BUPP" AND "PUPP" INDICATORS SHOULD CHANGE TO INDICATE THE ROM SEQUENCE BEING GENERATED. COMPARE THIS SEQUENCE WITH THE CORRECT SEQUENCE INDICATED BY THE MAINTENANCE HEADER INCLUDED IN THE PROGRAM LISTING.

6.4 UPP MATCH MAINTENANCE FEATURE

THERE IS A VALUABLE HARDWARE MAINTENANCE AID BUILT INTO THE KD11-A LOGIC THAT PROVIDES THE TECHNICIAN WITH A METHOD OF ANALYZING THE ROM SEQUENCES BEING GENERATED. IT IS CONTAINED ON THE K1 MODULE AND CONSISTS OF A COMPARATOR CIRCUIT (K1-9 PRINT) THAT ALLOWS TWO UNIQUE LOGIC SIGNALS TO BE GENERATED AS A FUNCTION OF THE ROM ADDRESS CONTAINED IN THE "UPP" AND THE SETTING OF THE CONSOLE SWITCH REGISTER SR<8:0>.

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*****
SR<8:> ---->* MATCH *----> UPP MATCH H
              * CIRCUIT *
BUPP<8:0>-->*          *----> P MATCH L
*****

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UPP MATCH H THIS SIGNAL IS ASSERTED WHENEVER A MATCH OCCURS BETWEEN THE CONTENTS OF THE "UPP" AND THE CONTENTS OF SR<8:0>. IT CAN BE OBSERVED ON BACK-PLANE PIN C04L2 AND IS USEFUL FOR DETERMINING IF AND WHEN A SPECIFIC ROM WORD IS ACCESSED DURING A PARTICULAR ROM SEQUENCE. IT MAY BE USED AS A SCOPE SYNC TRIGGER OR AS A REFERENCE SIGNAL FOR INVESTIGATING ADDITIONAL CONTROL SIGNALS THAT SHOULD OCCUR DURING A SPECIFIC MICROWORD.

P MATCH L THIS SIGNAL WORKS IN CONJUNCTION WITH THE "MSTOP" SWITCH ON THE KM11 MAINTENANCE MODULE TO STOP THE CLOCK AND "FREEZE" THE ROM AT A

M03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 39
DBQEAB.CMB

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SPECIFIC ROM ADDRESS. AS DESCRIBED IN PARA.
6.3 (E2). IT IS USEFUL FOR INITIALLY STOPPING
THE ROM AT THE CORRECT POINT PRIOR TO SINGLE
CLOCKING ROM SEQUENCES.

7.2 SUB-FUNCTIONAL FLOWS

A. BASIC INSTRUCTION TESTS SECTION

* "BIT" STARTUP *
* SET UP STACK *
* POINTER AND *
* INIT FLAGS AND *
* COUNTERS. *

I
I

T0001-T0006

* SIX BASIC TESTS TO VERIFY THE *
* BNE, BEQ, AND BPL INSTRUCTIONS *
* FOR BOTH THE "1" AND "0" STATE *
* OF THE "Z" AND "N" FLAGS. *

I
I

T0007-T0017

* NINE BASIC TESTS OF THE MOV *
* CMP, AND MOVB INSTRUCTIONS AS *
* THEY ARE USED TO CLEAR THE *
* MISSED TEST TABLE. *

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I

* ROUTINE TO CLEAR THE MISSED *
* TEST TABLE - BEGIN FLAGGING *
* EACH TEST ENTERED STARTING *
* WITH T0020 *

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I

T0020-T0035

* FOURTEEN BASIC TESTS OF THE *
* SINGLE OPERAND INSTRUCTIONS IN *
* THE FORMATS USED BY THE *
* UTILITIES (TST, COM, INC, DEC, CLR *
* AND ASL/ROL) *

I
I

T0036-T0041

* FOUR BASIC TESTS OF THE TSTB *
* INSTRUCTION FOR BOTH EVEN AND *
* ODD ADDRESSES. *

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I

T0042

* BASIC TEST OF THE DECB INSTR- *

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C04

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 42
DBQEAB.CMB

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* UCTION IN ADDRESS MODE 6 *
* USING THE STACK POINTER. *

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T0043-T0062
*****
* SIXTEEN BASIC TESTS TO VERIFY *
* THE MOVE INSTRUCTION IN THOSE *
* FORMATS USED BY THE UTILITIES *
*****

I
T0063-T0066
*****
* FOUR BASIC TESTS OF THE COMP- *
* ARE INSTRUCTION IN THOSE FORM- *
* ATS USED BY THE UTILITIES *
*****

I
T0067-T0074
*****
* SIX BASIC TESTS OF THE LOGIC *
* INSTRUCTIONS (BIS,BIC,BIT) AS *
* USED BY THE UTILITIES. *
*****

I
T0075-T0076
*****
* TWO BASIC TESTS OF THE ADD *
* INSTRUCTIONS AS IT IS USED BY *
* THE UTILITIES. *
*****

I
T0077-T0103
*****
* FOUR BASIC TESTS OF THE CMPB *
* INSTRUCTIONS USING BOTH EVEN *
* AND ODD ADDRESSES. *
*****

I
T0104-T0123
*****
* SIXTEEN BASIC TESTS OF THE *
* MOVB INSTRUCTION USING BOTH *
* EVEN AND ODD ADDRESSES AND IN *
* ALL ADDRESS MODES USED BY THE *
* THE UTILITIES. *
*****

I
T0124-T0125
*****
* TWO TESTS TO VERIFY THE BASIC *
* RTS/JSR INSTRUCTIONS AS USED *
* IN THE UTILITIES. *
*****

I
T0126-T0127
*****
* TWO BASIC TESTS OF THE RTI *
* INSTRUCTION. *

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E04

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 44
DBQEAB.CMB

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TO130-T0137 I

* EIGHT BASIC TESTS OF THE VAR- *
* IIOUS TRAP TYPE INSTRUCTIONS *
* TO VERIFY THAT THE UTILITIES *
* CAN BE CALLED VIA THE TRAP *
* MECHANISM. (IOT TRAP EMT, AND *
* RSDV INSTR AND BUS TIMEOUT *
* TRAPS) *

I
TO140-T0144 I

* FIVE BASIC TESTS TO VERIFY THE *
* DL11 INTERFACE USED TO REPORT *
* ERRORS. THE MAINTENANCE MODE *
* FEATURE IS USED TO TURNAROUND *
* AND CHECK AN ALL 1'S ALL 0'S *
* SEQUENCE. *

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* ENTER THE "CIT" *
* SECTION *

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B. COMPREHENSIVE INSTRUCTION TESTS SECTION

* FROM "BIT" SEC*

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I

* START-UP ROUTINE FOR THE "CIT"*
* (COMPREHENSIVE INSTRUCTION *
* TESTS SECTION). THE FOLLOWING:*
* FUNCTIONS ARE PERFORMED: *
* 1) SET UP REQUIRED VECTORS *
* 2) CALL SUBROUTINE TO SET *
* BITS IN "OPTION" TO IND- *
* ICATE INTERNAL OPTIONS *
* FOUND. *
* 3) PRINT PROGRAM NAME *
* 4) PRINT OPTIONS FOUND *
* 5) CLEAR THE PSW AND INIT- *
* THE "SCOPE LOOP" RETURN *

I
I

T0145-T0146

* TWO QUICK VERIFY TESTS OF THE *
* BASIC CONDITIONAL BRANCHES *
* (BMI, BEQ, BVS, BCS) FOR BOTH *
* THE "I" AND "J" STATE OF THE *
* PERTINENT PSW FLAG. *

I
I

T0147-T0223

* FORTY-FIVE LOGICALLY SEQUENCED*
* TESTS TO VERIFY ALL THE BRANCH*
* INSTRUCTIONS FOR ALL PERTIN- *
* ENT COMBINATIONS OF THE PSW *
* FLAGS. THESE TESTS FOCUS ON *
* THE BRANCH MICROROUTINES ON *
* FLOW CHART 7 AND THE BRANCH *
* INSTR DECISION LOGIC ON THE *
* K5-3 PRINT. *

I
I

T0224-T0227

* THESE FOUR TESTS VERIFY THE *
* SXT INSTR. IN MODE 0. THEY *
* FOCUS ON THE (SXT*DMO) MICRO- *
* ROUTINE ON FLOW CHART 8 *

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T0230-T0233 I

* THESE FOUR TESTS VERIFY THE *
* SXT INSTR. IN MODE 1 AND 2. *
* THEY FOCUS ON THE (SXT*-DMO) *
* MICROROUTINE ON FLOW CHART 8 *
* AND THE BUT33 IN ROM LOCATIONS*
* 260 AND 266 ON FLOW CHART 3 *

I
T0234-T0235 I

* TWO TESTS TO VERIFY THE SWAB *
* INSTR. IN MODE 0. THEY FOCUS *
* ON THE (SWAB*DMO) MICROROUTINE*
* ON FLOW CHART 7. *

I
T0236-T0237 I

* TWO TESTS TO VERIFY THE SWAB *
* INSTR. IN MODE 1. THEY FOCUS *
* ON THE (SWAB) MICROROUTINE ON *
* FLOW CHART 9 *

I
T0240-T0243 I

* FOUR TESTS TO VERIFY THE NEG *
* INSTR. IN MODE 0 THAT FOCUS ON*
* THE (SOPMORE*DMO*NEG) MICRO-*
* ROUTINE ON FLOW CHART 7. *

I
T0244-T0247 I

* FOUR TESTS TO VERIFY THE NEG *
* INSTRUCTION IN MODE 1 THAT *
* FOCUS ON THE ((SWAB+SOPMORE) *
* *-DMO*NEG) MICROROUTINE ON *
* FLOW CHART 9. *

I
T0250-T0273 I

* TWENTY TESTS THAT VERIFY THE *
* ROR/ASR INSTRUCTIONS THAT *
* FOCUS ON THE (ROTSHF) MICRO- *
* ROUTINES ON FLOW CHART 9. BOTH *
* WORD AND BYTE OPERATIONS ARE *
* TESTED FOR BOTH EVEN AND ODD *
* ADDRESSES. *

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T0274-T0323 I

* TWENTY FOUR TESTS THAT VERIFY *
* ALL SINGLE OPR. INSTR. OTHER *
* THAN SXT, SWAB, NEG, ASR, ROR, OR *
* JMP. THEY FOCUS ON THE MODE 0 *
* CASE AND THE MICROROUTINE *
* (SOPMORE*DMO*-NEG) ON FLOW *
* CHART 7. *

T0324-T0353 I

* TWENTY FOUR TESTS SIMILAR TO *
* THE PREVIOUS GROUP EXCEPT *
* THEY HANDLE THE NON MODE 0 *
* CASE FOCUSING ON THE (SOPMORE *
* +SWAB)*-NEG*-DMO MICROROUTINE *
* ON FLOW CHART 9 *

T0354-T0370 I

* THIRTEEN TESTS USING THE CLR *
* AND NEG INSTRUCTIONS TO VERIFY *
* THE BYTE MICROROUTINES THAT *
* SUPPORT SINGLE OPERAND INSTR- *
* UCTIONS FOR BOTH EVEN AND ODD *
* ADDRESS CASES. *

T0371-T0417 I

* TWENTY THREE TESTS THAT USE *
* THE ADD INSTRUCTION TO VERIFY *
* THE SOURCE AND DESTINATION *
* MICROBRANCHES ON FLOW CHARTS *
* 2 AND 3. *

T0420-T0427 I

* EIGHT TESTS THAT VERIFY THE *
* XOR INSTRUCTION FOR BOTH THE *
* MODE 0 AND 1 CASES. *

T0430-T0444 I

* THIRTEEN TESTS THAT VERIFY THE *
* MICROWORDS UNIQUE TO THE SUB- *
* TRACT INSTR. FOCUSING ON ROM *
* LOCATIONS 363, 370, AND 365. *

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T0445-T0452 I

* SIX TESTS USING THE NEG INSTR-*
* TO VERIFY FETCH TO DESTINATION*
* MICROBRANCHES FOR SINGLE OPER-*
* ERAND INSTRUCTIONS USING DM2 *
* THRU DM7. *

T0453-T0536 I

* FIFTY TWO MOVE INSTRUCTION *
* TESTS THAT FOCUS ON ALL THE *
* POSSIBLE MOV MICROINSTRUCTION *
* SEQUENCES ON FLOW CHART 4 AND *
* ALL MICROBRANCHES ENTERING AND *
* EXITING THIS SHEET. *

T0537-T0602 I

* THIRTY SIX TESTS THAT VERIFY *
* THE BIS, BIC, BIT, AND CMP INSTR*
* UCTIONS IN ALL SOURCE AND DEST*
* MODE COMBINATIONS FOR WORD OPS*

T0603-T0616 I

* TWELVE TESTS THAT USE THE BIS *
* INSTRUCTION TO VERIFY THE *
* BYTE MICROROUTINES THAT SUPP- *
* DOUBLE OPERAND INSTRUCTIONS *
* FOR BOTH THE EVEN AND ODD CASE*

T0617-T0634 I

* FOURTEEN TESTS THAT VERIFY THE*
* JMP MICROROUTINES ON FLOW CHART *
* 5 AND ALL MICROBRANCHES WITH- *
* WITHIN THESE ROUTINES. *

T0635-T0647 I

* TEN TESTS TO VERIFY THE JSR *
* MICROUTINE ON FLOW CHART 5 AND*
* ALL MICROBRANCHES INTO THIS *
* ROUTINE. *

T0647-T0654 I

* SIX TESTS TO VERIFY THE SOB *
* INSTRUCTION FOCUSING ON THE *



K04

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 50
DBQEAB.CMB

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2201

* MICROROUTINES ON FLOW CHART 7 *
* BOTH THE BRANCH AND NO BRANCH *
* CASES ARE TESTED. *

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2250
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2255

T0655-T0656 I

* TWO TESTS TO VERIFY THE RTS *
* MICROROUTINE ON FLOW CHART 6 *

I
T0657-T0660 I

* TWO TESTS TO VERIFY THE RTT *
* MICROROUTINE ON FLOW CHART 6 *

I
T0661-T0662 I

* TWO TESTS TO VERIFY THE MARK *
* MICROROUTINE ON FLOW CHART 5 *

I
T0663-T0667 I

* FIVE TESTS TO VERIFY THE INT- *
* EGRITY OF THE KW11-L LINE *
* CLOCK OPTION. THESE TESTS ARE *
* SKIPPED IF THE KW11-L IS NOT *
* INSTALLED. *

I
T0670-T0673 I

* FOUR TESTS THAT VERIFY THE *
* RESET AND WAIT INSTRUCTIONS *
* THAT FOCUS ON THE SERVICE MIC- *
* ROROUTINE ON FLOW CHART 10 AND *
* THE RESET MICROROUTINE ON FLOW *
* CHART 6. *

I
T0674-T0715 I

* EIGHTEEN TESTS THAT VERIFY THE *
* PRIORITY ARBITRATION LOGIC *
* FOR BR REQUESTS. THEY FOCUS *
* ON THE SERVICE AND TRAP MICRO- *
* ROUTINES ON FLOW CHARTS 10 AND *
* 6. SEVERAL OF THESE TESTS MAY *
* BE SKIPPED IF THE KW11-L IS *
* NOT INSTALLED. *

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* GO TO "IEX" *
* SECTION *

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C. COMBINED INSTRUCTION EXERCISER TEST SECTION

* "IEX" ENTRY *

I
T0716 I

* TEST TO VERIFY THAT THE "BPT" *
* INSTRUCTION CAUSES A TRAP TO *
* THE VECTOR AT LOC. 14 *

I
T0717-T0734 I

* FOURTEEN TESTS TO VERIFY THAT *
* THE STACK OVERFLOW (BOTH RED *
* AND YELLOW ZONE) MECHANISM AND *
* THE ODD ADDRESS TRAP MECHANISM *
* FUNCTION PROPERLY FOR ALL CASES *
* OF ODD ADDR. ERRORS AND STACK *
* OVERFLOW. *

I
T0735-T0736 I

* TWO TESTS TO VERIFY THAT THE *
* JMP AND JSR CAUSE AN ILLEGAL *
* INSTRUCTION TRAP TO THE VECTOR *
* AT LOCATION 4 WHEN ENCODED IN *
* ADDRESS MODE 0. *

I
T0737-T0740 I

* TWO TESTS TO VERIFY THE BUS *
* TIMEOUT AND "T" BIT TRAP *
* MECHANISM. *

I
T0741-T0743 I

* THREE TESTS TO VERIFY THAT A *
* "RED" ZONE TRAP IS SPRUNG IF *
* AN ATTEMPT IS MADE TO PUSH *
* INTO THE PSW,SR, OR SLR USING *
* R6. T0743 IS CONDITIONAL ON *
* WETHER THE KJ11-A OPTION IS *
* INSTALLED OR NOT. *

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T0744-T0754 I

* NINE TESTS TO VERIFY THAT A *
* RSVD INSTRUCTION TRAP IS SPRU-*
* NG FOR ALL CASES OF RESERVED *
* OPERATION CODES. *

T0755-T1007 I

* TWENTY SEVEN TESTS THAT USE *
* THE "T" BIT TRAP TO VERIFY *
* THAT ALL MICROWORDS ENCODED *
* WITH A "BUT SERVICE" CAUSE *
* A MICROBRANCH TO THE SERVICE *
* MICROROUTINE. *

T1010-T1015 I

* SIX ALU/DATA PATH TESTS THAT *
* VERIFY THE ALU OPERATION FOR *
* ALL POSSIBLE BIT INPUT COMBIN-*
* ATIONS FOR THE ADD, SUB, AND, OR, *
* AND LOGICAL FUNCTIONS USING *
* THE ADD, SUB, BIS, BIC, INC, AND *
* DEC INSTRUCTIONS IN VARIOUS *
* COMBINATIONS. *

I

* GO TO END OF *
* PASS SERVICE *

000000
000001
000002
000003
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000042

7.4 CORE MEMORY MAP

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000000 *****
* VECTOR AREA *
* (ALL UNUSED VECTORS LOADED *
* WITH STANDARD POP11 TRAP- *
* CATCHER) *
*
000200 *****
* MOV #3000,PC *
*
* PROCESSOR STACK AREA *
*
001000 *****
* "BCPT" *
* (BASIC CENTRAL PROCESSOR *
* TESTS) *
*
003000 *****
* "BIT" START-UP CODE *
*
T0001: *****
* "BIT" *
*
* BASIC INSTRUCTION TESTS *
* (100[10] TESTS) *
*
CITST: *****
* "CIT" INITIALIZATION *
*
T0145: *****
* "CIT" *
*
* COMPREHENSIVE INSTRUCTION *
* TESTS *
* (360[10] TESTS) *
*
T0715: *****
* "IEX" *
*
* COMBINED INSTRUCTION *
* EXERCISER TESTS *
* (65[10] TESTS) *
*
ENDPS: *****
* END OF PASS SERVICE *
*
*****
* UTILITIES AND MISCELLANEOUS *

```

2543
2544
2545

* SUBROUTINES *
* *

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OPTION: *****
*
*   CONSTANTS, FLAGS, AND
*   VARIABLES
*
SELL: *****
*
*   ASCII MESSAGES
*
OBUF: *****
*
*   COMMON DATA STRUCTURES
*
*****

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8.0 SUB-TITLE INDEX OF TESTS

REFER TO THE TABLE OF CONTENTS IN THE LISTING FOR A DETAILED SUB-TITLE INDEX OF TESTS. THIS TABLE LISTS ALL TESTS SEQUENTIALLY BY TEST NO. WITH A BRIEF DESCRIPTION OF THE FUNCTION OF EACH TEST. THE LEFT HAND COLUMN CONTAINS LINE NUMBERS THAT FACILITATE RAPIDLY LOCATING ANY PARTICULAR TEST WITHIN THE LISTING.

.ENABLE ABS

000000

.=0

; *****
 ; .SBTTL STANDARD PDP11 "TRAP CATCHER"
 ; *****

; WHEN THE PROGRAM IS LOADED, LOCATIONS 000000-000776 (VECTOR AREA)
 ; GET LOADED WITH THE STANDARD PDP11 "TRAP CATCHER". THE FIRST WORD
 ; IN EACH VECTOR (NEW PC) IS SET UP TO POINT TO THE SECOND WORD WHICH
 ; CONTAINS A "HALT" INSTRUCTION. ANY UNEXPECTED TRAP OR INTERRUPT
 ; DIRECTED TO A VECTOR THAT HAS NOT BEEN INITIALIZED BY THE PROGRAM TO
 ; POINT TO AN APPROPRIATE SERVICE ROUTINE WILL CAUSE THE PROGRAM TO HALT.
 ; AFTER THE HALT THE FOLLOWING ERROR INFORMATION IS AVAILABLE FOR
 ; DETAILED ERROR ANALYSIS BY THE SERVICE TECHNICIAN:

; ADDRESS DISPLAY- V+4 - WHERE "V" IS THE VECTOR THE
 ; TRAP OR INTR. TRAPPED TO.

; DATA DISPLAY- NUMBER OF THE TEST BEING EXECUTED WHEN
 ; THE TRAP WAS SPRUNG.

; CONTENTS OF THE SP- MEMORY ADDRESS CONTAINING THE CONTENTS
 ; OF THE PC WHEN THE TRAP WAS SPRUNG

; "TRAP CATCHER" HALTS ARE CONSIDERED TO BE CATASTROPHIC ERRORS THAT
 ; NORMALLY PRECLUDE CONTINUING ON IN THE PROGRAM FROM THE POINT OF THE
 ; ERROR. THE PROGRAM MUST BE RESTARTED OR PROPER MODIFICATIONS MADE
 ; BASED ON THE ANALYSIS OF THE ERROR INFORMATION.

.+2
 HALT

; AFTER EXECUTION OF THE BASIC INSTRUCTION TESTS AND BEFORE THE COM-
 ; PREHENSIVE INSTRUCTION TESTS, THE VECTOR BELOW IS SET UP TO POINT
 ; TO THE BUS ERROR SERVICE ROUTINE AT "BERR:" WITH A PRIORITY OF 7

.+2
 HALT

; AFTER EXECUTION OF THE BASIC INSTRUCTION TESTS AND BEFORE THE COM-
 ; PREHENSIVE INSTRUCTION TESTS, THE VECTOR BELOW IS SET UP TO POINT
 ; TO THE RSVD INSTR. TRAP SERVICE ROUTINE AT "RSERR:" WITH A PRIORITY OF 7

000000 000002
 000002 000000

000004 000006
 000006 000000

2619			
2620	000010	000012	.+2
2621	000012	000000	HALT
2622	000014	000016	.+2
2623	000016	000000	HALT
2624			
2625			; AFTER EXECUTION OF THE BASIC INSTRUCTION TESTS AND BEFORE THE COM-
2626			; PREHENSIVE INSTRUCTION TESTS, THE VECTOR BELOW IS SET UP TO POINT
2627			; TO THE SCOPE SERVICE ROUTINE AT "SCOPEB:" WITH A PRIORITY OF 0
2628			
2629	000020	000022	.+2
2630	000022	000000	HALT
2631			
2632			; AFTER EXECUTION OF THE BASIC INSTRUCTION TESTS AND BEFORE THE COM-
2633			; PREHENSIVE INSTRUCTION TESTS, THE VECTOR BELOW IS SET UP TO POINT
2634			; TO THE POWER FAIL SERVICE ROUTINE AT "PDWN:" WITH A PRIORITY OF 7
2635			
2636	000024	000026	.+2
2637	000026	000000	HALT
2638			
2639			; AFTER EXECUTION OF THE BASIC INSTRUCTION TESTS AND BEFORE THE COM-
2640			; PREHENSIVE INSTRUCTION TESTS, THE VECTOR BELOW IS SET UP TO POINT
2641			; TO THE ERROR SERVICE ROUTINE AT "ERRB:" WITH A PRIORITY OF 0
2642			
2643	000030	000032	.+2
2644	000032	000000	HALT
2645			
2646			; AFTER EXECUTION OF THE BASIC INSTRUCTION TESTS AND BEFORE THE COM-
2647			; PREHENSIVE INSTRUCTION TESTS, THE VECTOR BELOW IS SET UP TO POINT
2648			; TO THE PRINT SERVICE ROUTINE AT "PRINT:" WITH A PRIORITY OF 0
2649			
2650	000034	000036	.+2
2651	000036	000000	HALT
2652	000040	000042	.+2
2653	000042	000000	HALT
2654	000044	000046	.+2
2655	000046	000000	HALT
2656	000050	000052	.+2
2657	000052	000000	HALT
2658	000054	000056	.+2
2659	000056	000000	HALT
2660	000060	000062	.+2
2661	000062	000000	HALT
2662	000064	000066	.+2
2663	000066	000000	HALT
2664	000070	000072	.+2
2665	000072	000000	HALT
2666	000074	000076	.+2
2667	000076	000000	HALT
2668	000100	000102	.+2
2669	000102	000000	HALT
2670	000104	000106	.+2
2671	000106	000000	HALT
2672	000110	000112	.+2
2673	000112	000000	HALT
2674	000114	000116	.+2

2675	000116	000000		HALT
2676	000120	000122		.+2
2677	000122	000000		HALT
2678	000124	000126		.+2
2679	000126	000000		HALT
2680	000130	000132		.+2
2681	000132	000000		HALT
2682	000134	000136		.+2
2683	000136	000000		HALT
2684	000140	000142		.+2
2685	000142	000000		HALT
2686	000144	000146		.+2
2687	000146	000000		HALT
2688	000150	000152		.+2
2689	000152	000000		HALT
2690	000154	000156		.+2
2691	000156	000000		HALT
2692	000160	000162		.+2
2693	000162	000000		HALT
2694	000164	000166		.+2
2695	000166	000000		HALT
2696	000170	000172		.+2
2697	000172	000000		HALT
2698	000174	000176		.+2
2699	000176	000000		HALT
2700	000200	012707	003000	MOV
2701	000204	000206		.+2
2702	000206	000000		HALT
2703	000210	000212		.+2
2704	000212	000000		HALT
2705	000214	000216		.+2
2706	000216	000000		HALT
2707	000220	000222		.+2
2708	000222	000000		HALT
2709	000224	000226		.+2
2710	000226	000000		HALT
2711	000230	000232		.+2
2712	000232	000000		HALT
2713	000234	000236		.+2
2714	000236	000000		HALT
2715	000240	000242		.+2
2716	000242	000000		HALT
2717	000244	000246		.+2
2718	000246	000000		HALT
2719	000250	000252		.+2
2720	000252	000000		HALT
2721	000254	000256		.+2
2722	000256	000000		HALT
2723	000260	000262		.+2
2724	000262	000000		HALT
2725	000264	000266		.+2
2726	000266	000000		HALT
2727	000270	000272		.+2
2728	000272	000000		HALT
2729	000274	000276		.+2
2730	000276	000000		HALT

3000,PC

;GO START UP AT LOC. 3000

.MAIN. MACY11 27(732) 15-OCT-78 14:58 PAGE 64
DBQEAB.CMB STANDARD POP11 "TRAP CATCHER"

2731	000300	000302	.+2
2732	000302	000000	HALT
2733	000304	000306	.+2
2734	000306	000000	HALT
2735	000310	000312	.+2
2736	000312	000000	HALT
2737	000314	000316	.+2
2738	000316	000000	HALT
2739	000320	000322	.+2
2740	000322	000000	HALT
2741	000324	000326	.+2
2742	000326	000000	HALT
2743	000330	000332	.+2
2744	000332	000000	HALT
2745	000334	000336	.+2
2746	000336	000000	HALT
2747	000340	000342	.+2
2748	000342	000000	HALT
2749	000344	000346	.+2
2750	000346	000000	HALT
2751	000350	000352	.+2
2752	000352	000000	HALT
2753	000354	000356	.+2
2754	000356	000000	HALT
2755	000360	000362	.+2
2756	000362	000000	HALT
2757	000364	000366	.+2
2758	000366	000000	HALT
2759	000370	000372	.+2
2760	000372	000000	HALT
2761	000374	000376	.+2
2762	000376	000000	HALT
2763	000400	000402	.+2
2764	000402	000000	HALT
2765	000404	000406	.+2
2766	000406	000000	HALT
2767	000410	000412	.+2
2768	000412	000000	HALT
2769	000414	000416	.+2
2770	000416	000000	HALT
2771	000420	000422	.+2
2772	000422	000000	HALT
2773	000424	000426	.+2
2774	000426	000000	HALT
2775	000430	000432	.+2
2776	000432	000000	HALT
2777	000434	000436	.+2
2778	000436	000000	HALT
2779	000440	000442	.+2
2780	000442	000000	HALT
2781	000444	000446	.+2
2782	000446	000000	HALT
2783	000450	000452	.+2
2784	000452	000000	HALT
2785	000454	000456	.+2
2786	000456	000000	HALT

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 65
DBQEAB.CMB STANDARD PDP11 "TRAP CATCHER"

2787	000460	000462	.+2
2788	000462	000000	HALT
2789	000464	000466	.+2
2790	000466	000000	HALT
2791	000470	000472	.+2
2792	000472	000000	HALT
2793	000474	000476	.+2
2794	000476	000000	HALT
2795	000500	000502	.+2
2796	000502	000000	HALT
2797	000504	000506	.+2
2798	000506	000000	HALT
2799	000510	000512	.+2
2800	000512	000000	HALT
2801	000514	000516	.+2
2802	000516	000000	HALT
2803	000520	000522	.+2
2804	000522	000000	HALT
2805	000524	000526	.+2
2806	000526	000000	HALT
2807	000530	000532	.+2
2808	000532	000000	HALT
2809	000534	000536	.+2
2810	000536	000000	HALT
2811	000540	000542	.+2
2812	000542	000000	HALT
2813	000544	000546	.+2
2814	000546	000000	HALT
2815	000550	000552	.+2
2816	000552	000000	HALT
2817	000554	000556	.+2
2818	000556	000000	HALT
2819	000560	000562	.+2
2820	000562	000000	HALT
2821	000564	000566	.+2
2822	000566	000000	HALT
2823	000570	000572	.+2
2824	000572	000000	HALT
2825	000574	000576	.+2
2826	000576	000000	HALT
2827	000600	000602	.+2
2828	000602	000000	HALT
2829	000604	000606	.+2
2830	000606	000000	HALT
2831	000610	000612	.+2
2832	000612	000000	HALT
2833	000614	000616	.+2
2834	000616	000000	HALT
2835	000620	000622	.+2
2836	000622	000000	HALT
2837	000624	000626	.+2
2838	000626	000000	HALT
2839	000630	000632	.+2
2840	000632	000000	HALT
2841	000634	000636	.+2
2842	000636	000000	HALT

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 66
DBQEAB.CMB STANDARD PDP11 "TRAP CATCHER"

2843	000640	000642	.+2
2844	000642	000000	HALT
2845	000644	000646	.+2
2846	000646	000000	HALT
2847	000650	000652	.+2
2848	000652	000000	HALT
2849	000654	000656	.+2
2850	000656	000000	HALT
2851	000660	000662	.+2
2852	000662	000000	HALT
2853	000664	000666	.+2
2854	000666	000000	HALT
2855	000670	000672	.+2
2856	000672	000000	HALT
2857	000674	000676	.+2
2858	000676	000000	HALT
2859	000700	000702	.+2
2860	000702	000000	HALT
2861	000704	000706	.+2
2862	000706	000000	HALT
2863	000710	000712	.+2
2864	000712	000000	HALT
2865	000714	000716	.+2
2866	000716	000000	HALT
2867	000720	000722	.+2
2868	000722	000000	HALT
2869	000724	000726	.+2
2870	000726	000000	HALT
2871	000730	000732	.+2
2872	000732	000000	HALT
2873	000734	000736	.+2
2874	000736	000000	HALT
2875	000740	000742	.+2
2876	000742	000000	HALT
2877	000744	000746	.+2
2878	000746	000000	HALT
2879	000750	000752	.+2
2880	000752	000000	HALT
2881	000754	000756	.+2
2882	000756	000000	HALT
2883	000760	000762	.+2
2884	000762	000000	HALT
2885	000764	000766	.+2
2886	000766	000000	HALT
2887	000770	000772	.+2
2888	000772	000000	HALT
2889	000774	000776	.+2
2890	000776	000000	HALT

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; *****
; PROGRAM DEFINITIONS
; *****

;GENERAL REGISTER DEFINITIONS

000000
000001
000002
000003
000004
000005
000006
000007

R0 = %0
R1 = %1
R2 = %2
R3 = %3
R4 = %4
R5 = %5
SP = %6
PC = %7

;DEFINITIONS FOR KD11-A PROCESSOR STATUS WORD AND CONSOLE SWITCH REGISTER

177570
177776

SR = 177570 ;CONSOLE SWITCH REG. ADDR
PSW = 177776 ;PROCESSOR STATUS REG. ADDR

;DEFINITIONS FOR CONSOLE SWITCH REG. - BIT POSITIONS

100000
040000
020000
010000
004000
002000
001000

SW15 = 100000
SW14 = 040000
SW13 = 020000
SW12 = 010000
SW11 = 004000
SW10 = 002000
SW09 = 001000

;IOT USED TO CALL "SCOPE" LOOP UTILITY

000004

SCOPE = IOT

;EMT USED TO CALL "ERROR" SERVICE ROUTINE

104000
104001
104002
104003
104004
104005
104006
104007

ERROR=EMT ;PRINT 8 COLUMNS
ERROR1 = EMT+1 ;PRINT COLUMN 1 ONLY
ERROR2=EMT+2 ;PRINT COLUMNS 1 AND 2
ERROR3 = EMT+3 ;PRINT COLUMNS 1,2,3
ERROR4 = EMT+4 ;PRINT COLUMNS 1,2,3,4
ERROR5 = EMT+5 ;PRINT COLUMNS 1,2,3,4,5
ERROR6 = EMT+6 ;PRINT COLUMNS 1,2,3,4,5,6
ERROR7 = EMT+7 ;PRINT COLUMNS 1,2,3,4,5,6,7

;TRAP USED TO CALL THE PRINT UTILITY

104400

TYPE = TRAP

177546

LKCSR= 177546 ;KW11-L LINE CLOCK ADDRESS

;ADDRESS ASSIGNMENTS FOR DL11 CONSOLE TERMINAL INTERFACE

177560
177562

RCSR=177560 ;RCVR. CONTROL / STATUS REG. ADDRESS
RDBR = 177562 ;RECEIVER DATA BUFFER REG. ADDR.

2947
2948
2949
2950
2951

177564
177566
001000
001000

. = 1000

XCSR = 177564
XDBR = 177566

STACKL=001000

; TRANSMITTER CONTROL / STATUS REG. ADDR
; TRANSMIT DATA BUFFER REG. ADDR.

; TOP OF STACK FOR LOWER TESTS

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/////////
"BCPT" TESTS
/////////

; *****
; .SBTTL BT001 "BR" TEST -POSITIVE OFFSET
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [111,340,341,016] FC 1,7
; ACT BUTS: 37(004)100,111 / 16(340)016,016
; EXEC: [341]ALUC=LHLLH : [016]D=001004
; CODES: N/A / N:C=0000
; SYNC: N/A T=1.76 USEC
; KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=0 L / K3-3 IR(14:12)=0 L
BT001: BR BT002 ;TEST THE BR FORWARD
E001: HALT ;BR FAILED TO LOAD PC PROPERLY

001000 000401
001002 000000

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2991
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2999
3000
3001
3002
3003
3004
3005

; *****
.SBTTL BT002 "BR" TEST - NEGATIVE OFFSET
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [111,340,341,016] FC 1,7

;ACT BUTS: 37(004)100,111 / 16(340)016,016

;EXEC: [341]ALUC=LHLLH : [016]D=001006

;CODES: N/A / N:C=0000

;SYNC: N/A T=1.76 USEC

;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=0 L / K3-3 IR(14:12)=0 L

001004 000402

BT002: BR I002 ;GO TO TEST INSTRUCTION

001006 000403

A002: BR BT003 ;GO TO NEXT TEST

001010 000000

EX002: HALT ;JUST IN CASE

001012 000775

I002: BR A002 ;TEST THE BR - NEG. OFFSET

001014 000000

E2002: HALT ;BR FAILED WITH NEG. OFFSET

```

3006 ; *****
3007 ; .SBTTL BT003 "BASIC COND. BR" TEST - FLAGS CLEARED
3008 ; *****
3009
3010 ;MICROPROGRAMMING / LOGIC INFORMATION (BMI,BEQ,BVS)
3011
3012 ;ROM SEQ: [110,347,016] FC 1,7
3013
3014 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
3015
3016 ;EXEC: NO BRANCH
3017
3018 ;CODES: N/A / N:C=0000
3019
3020 ;SYNC: N/A T=1.4 USEC
3021
3022 ;KEY SIG: K5-3 BR INSTR L / (BMI)K3-3 SM=0 L / (BEQ)K3-3 SM=1 L / (BVS)K3-3 SM=2 L
3023 ; (BMI,BVS)K3-4 IRIS L
3024
3025 001016 100403 BT003: BMI E003 ;BR IF "N" SET
3026 001020 001402 BEQ E003 ;BR IF "Z" SET
3027 001022 102401 BVS E003 ;BR IF "V" SET
3028 001024 103002 BCC BT004 ;BR IF "C" CLEAR
3029
3030 001026 000000 E003: HALT ;ERROR - ONE OF THE ABOVE BR'S FAILED
3031 ;OR THE FLAGS FAILED TO CLEAR ON "START"
3032 001030 000772 BR BT003 ;LOCK ON HARD ERROR
3033

```

G06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 72
DBGERR.CMB BT003 "BASIC COND. BR" TEST - FLAGS CLEARED

```
3034 ; *****  
3035 .SBTTL BT004 "SCC AND COND. BR'S" TEST - FLAGS SET  
3036 ; *****  
3037  
3038 ;MICROPROGRAMMING / LOGIC INFORMATION (SCC)  
3039  
3040 ;ROM SEQ: [117,352,016] FC 1,7  
3041  
3042 ;ACT BUTS: 37(004)100,117 / 16(117)016,016  
3043  
3044 ;EXEC: [117]ALUC=HMLHH,[352]ALUC=HMHHL : [016]D=000017  
3045  
3046 ;CODES: [352]SPS=3 / N:C=1111  
3047  
3048 ;SYNC: B05J2 (+) T=1.72 USEC  
3049  
3050 ;KEY SIG: K3-6 CC INSTR H / K3-6 I1KO(CINSTR) L / K3-3 IR04(1) H  
3051  
3052 001032 000277 BT004: SCC ;MAKE N:C=1111  
3053  
3054 001034 100003 I004: BPL E004 ;BR IF "N" FAILED TO SET  
3055 001036 001002 BNE E004 ;BR IF "Z" FAILED TO SET  
3056 001040 102001 BVC E004 ;BR IF "V" FAILED TO SET  
3057 001042 103402 BCS BT005 ;BR IF "C" SET OK  
3058  
3059 001044 000000 E004: HALT ;ERROR - ONE OF THE ABOVE BR'S FAILED  
3060 ;OR THA SCC FAILED TO SET ALL THE FLAGS  
3061 001046 000771 BR BT004 ;LOCK ON HARD ERROR  
3062
```

```

3063 ; *****
3064 ; .SBTTL BT005 "CCC AND COND. BR'S" TEST - FLAGS CLEARED
3065 ; *****
3066 ;
3067 ;MICROPROGRAMMING / LOGIC INFORMATION (CCC)
3068 ;
3069 ;ROM SEQ: [116,350,351,016] FC 1,7
3070 ;
3071 ;ACT BUTS: 37(004)100,116 / 16(350)016,016
3072 ;
3073 ;EXEC: [116,351]ALUC=HHLHH, [350]ALUC=HLHLH : [016]D=00000
3074 ;
3075 ;CODES: [351]SPS=3 / N:C=0000
3076 ;
3077 ;SYNC: B05J2 (+) T=2.02 USEC
3078 ;
3079 ;KEY SIG: K3-6 CC INSTR H
3080 ;
3081 001050 000257 BT005: CCC ;MAKE N:C=0000
3082 ;
3083 001052 100403 ID05: BMI E005 ;BR IF "N" STILL SET
3084 001054 001402 BEQ E005 ;BR IF "Z" STILL SET
3085 001056 102401 BVS E005 ;BR IF "V" STILL SET
3086 001060 103002 BCC BT006 ;BR IF "C" GOT CLEARED
3087 ;
3088 001062 000000 E005: HALT ;ERROR - ONE OF THE ABOVE BR'S FAILED
3089 ;OR THE CCC FAILED TO CLEAR ALL FLAGS
3090 001064 000771 BR BT005 ;LOCK ON HARD ERROR
3091 ;
  
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001066 000257
001070 005000
001072 001402
001074 000000
001076 000773

```
; *****  
          .SBTTL BT006 "CLR %R" TEST - SETS THE "Z" BIT  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [104,373,360,001] FC 1,7,8  
;ACT BUTS:     37[004]100,104 / 31[104]360,360 / 27[373]000,001  
;EXEC:         [104]ALUC=MLLHH : [373]D=000000  
;CODES:        [373]SPS=1, [360]SPS=3 /      N:C=0100  
;SYNC:         B05J2 (-)      T=1 USEC  
;KEY SIG:      K3-4 CLR L / K3-3 DM=0 L / K3-4 OVLAP INSTR H  
BT006: CCC          ;MAKE N:C=0000  
I006:  CLR      RO  ;TEST THE CLR - IT SHOULD SET "Z"  
          BEQ     BT007 ;BR IF CLR SET "Z"  
E006:  HALT     BT006 ;ERROR - CLR FAILED TO SET "Z"  
          BR      BT006 ;LOCK ON HARD ERROR
```

J06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 75
DBQEAB.CMB BT006 "CLR %R" TEST - SETS THE "Z" BIT

```
3119 ; *****  
3120 ; .SBTTL BT007 "TST %R" TEST - USING THE CLR  
3121 ; *****  
3122 ;MICROPROGRAMMING / LOGIC INFORMATION  
3123  
3124 ;ROM SEQ: [104,373,362,001] FC 1,7,8  
3125  
3126 ;ACT BUTS: 37(004)100,104 / 31(104)360,362 / 27(373)000,001  
3127  
3128 ;EXEC: [104]ALUC=LLLLL :[373]D=000000  
3129  
3130 ;CODES: [373]SPS=1,[362]SPS=3 / N:C=0100  
3131  
3132 ;SYNC: B05J2 (-) T=1 USEC  
3133  
3134 ;KEY SIG: K3-3 DM=0 L / K3-4 TST L / K3-4 OVLAP INSTR H  
3135  
3136  
3137 001100 005000 BT007: CLR RO ;MAKE (RO) = 000000  
3138 001102 000257 CCC ;MAKE N:C=0000  
3139  
3140 001104 005700 I007: TST RO ;TEST THE TST - IT SHOULD SET "Z"  
3141  
3142 001106 001402 BEQ BT010 ;BR IF "Z" SET OK  
3143  
3144 001110 000000 E007: HALT ;ERROR - CLR FAILED TO LOAD RO WITH  
3145 ;ALL ZEROES OR TST FAILED  
3146 001112 000772 BR BT007 ;LOCK ON HARD ERROR  
3147
```

K06

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 76
DBQEAB.CMB BT007 "TST %R" TEST - USING THE CLR

```
3148 ; *****  
3149 .SBTTL BT010 "COM %R" TEST - SHOULD SET "N" AND "C"  
3150 ; *****  
3151 ;MICROPROGRAMMING / LOGIC INFORMATION  
3152  
3153 ;ROM SEQ: [104,373,360,001] FC 1,7,8  
3154 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001  
3155 ;EXEC: [104]ALUC=HLLLL :[373]D=177777  
3156 ;CODES: [373]SPS=1,[360]SPS=3 / N:C=1001  
3157 ;SYNC: B05J2 (-) T=1 USEC  
3158 ;KEY SIG: K3-4 COM L / K3-3 DM=0 L / K3-4 OVLAP INSTR H  
3159  
3160 BT010: CLR RO ;MAKE [RO] = 000000  
3161 CCC ;MAKE N:C=0000  
3162  
3163 I010: COM RO ;TEST THE COM - [RO] S/B = 177777  
3164 BPL E010 ;BR IF "N" FAILED TO SET  
3165 BCS BT011 ;BR IF "C" SET OK  
3166  
3167 E010: HALT ;ERROR - COM FAILED  
3168 BR BT010 ;LOCK ON HARD ERROR  
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3166	001114	005000
3167	001116	000257
3168		
3169	001120	005100
3170		
3171	001122	100001
3172	001124	103402
3173		
3174	001126	000000
3175	001130	000771
3176		

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3177 ; *****
3178 .SBTTL BT011 "COM %R AND ADC %R" TEST
3179 ; *****
3180
3181 ;MICROPROGRAMMING / LOGIC INFORMATION (COM %0)
3182
3183 ;ROM SEQ: [104,373,360,001] FC 1,7,8
3184
3185 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
3186
3187 ;EXEC: [104]ALUC=HLLLL :[373]D=177777
3188 ; (ADC) :[373]D=000000
3189
3190
3191 ;CODES: [373]SPS=1,[360]SPS=3 / N:C=1001
3192 ; (ADC) N:C=0101
3193
3194 ;SYNC: B05J2 (-) T=1 USEC
3195
3196 ;KEY SIG: K3-3 DM=0 L / K3-4 COM L / K3-4 OVLAP INSTR H
3197 ; (ADC) K3-3 DM=0 L / K3-4 ADC L / K3-4 OVLAP INSTR H / K3-8 CIN00 L
3198
3199 001132 005000
3200 001134 000257
3201
3202 001136 005100
3203 001140 005500
3204
3205 001142 001001
3206 001144 103402
3207
3208 001146 000000
3209 001150 000770
3210

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; *****
.SBTTL BT011 "COM %R AND ADC %R" TEST
; *****
;MICROPROGRAMMING / LOGIC INFORMATION (COM %0)
;ROM SEQ: [104,373,360,001] FC 1,7,8
;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
;EXEC: [104]ALUC=HLLLL :[373]D=177777
; (ADC) :[373]D=000000
;CODES: [373]SPS=1,[360]SPS=3 / N:C=1001
; (ADC) N:C=0101
;SYNC: B05J2 (-) T=1 USEC
;KEY SIG: K3-3 DM=0 L / K3-4 COM L / K3-4 OVLAP INSTR H
; (ADC) K3-3 DM=0 L / K3-4 ADC L / K3-4 OVLAP INSTR H / K3-8 CIN00 L
BT011: CLR RO ;MAKE [RO] = 000000
CCC ;MAKE N:C=0000
I011: COM RO ;TEST THE COM - [RO] S/B = 177777
ADC RO ;TEST THE ADC - [RO] S/B = 000000
BNE E011 ;BR IF "Z" DID NOT SET
BCS BT012 ;BR IF "C" SET OK
E011: HALT ;ERROR - COM OR ADC FAILED
BR BT011 ;LOCK ON HARD ERROR

```


MO6

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 78
DBGQAB.CMB BT011 "COM %R AND ADC %R" TEST

```
3211 ; *****  
3212 .SBTTL BT012 "MOV #N,R" TEST WITH N=177777,[R]=000000  
3213 ; *****  
3214  
3215 ;MICROPROGRAMMING / LOGIC INFORMATION  
3216  
3217 ;ROM SEQ: [172,257,200,125,375,016] FC 1,4,8  
3218  
3219 ;ACT BUTS: 37(004)100,172 / 22(172)200,200 / 16(125)016,016  
3220  
3221 ;EXEC: [200]ALUC=LLLLL : [125]D=177777  
3222  
3223 ;CODES: [125]SPS=3 / N:C=1000  
3224  
3225 ;SYNC: B05J2 (-) T= 2.3 USEC  
3226  
3227 ;KEY SIG: K3-3 MOV L / K3-3 SM=2 L / K3-3 DM=0 L  
3228  
3229 001152 005000 BT012: CLR RO ;MAKE [RO] = 000000  
3230 001154 000257 CCC ;MAKE N:C=0000  
3231  
3232 001156 012700 177777 I012: MOV #-1,RO ;TEST THE MOV - [RO] S/B = 177777  
3233  
3234 001162 005100 COM RO ;MAKE [RO] = 000000  
3235 001164 001402 BEQ BT013 ;BR IF "Z" SET  
3236  
3237 001166 000000 E012: HALT ;ERROR - MOV FAILED TO LOAD RO WITH ALL 1'S  
3238 001170 000770 BR BT012 ;LOCK ON HARD ERROR  
3239
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3240 ; *****
3241 .SBTTL BT013 "MOV #N,R" TEST WITH N=000000,[R]=177777
3242 ; *****
3243
3244 ;MICROPROGRAMMING / LOGIC INFORMATION
3245
3246 ;ROM SEQ: [142,240,250,160,204,000] FC 1,4,8
3247
3248 ;ACT BUTS: 37(004)100,142 / 35(240)120,160 / 20(160)000,000
3249
3250 ;EXEC: [160]ALUC=LLLLL : [204]D=000000
3251
3252 ;CODES: [204]SPS=3 / N:C=0100
3253
3254 ;SYNC: B05J2 (-) T=2.3 USEC
3255
3256 ;KEY SIG: K3-3 MOV L / K3-3 SM=2 L / K3-3 DM=0 L
3257
3258 001172 005000 BT013: CLR RO ;MAKE [RO] = 000000
3259 001174 005100 COM RO ;MAKE [RO] = 177777
3260 001176 000257 CCC ;SCOPE SYNC
3261
3262 001200 012700 000000 I013: MOV #0,RO ;TEST THE MOV - [RO] S/B = 000000
3263
3264 001204 005100 COM RO ;MAKE [RO] = 177777, SET "C"
3265 001206 005500 ADC RO ;MAKE [RO] = 000000
3266 001210 001402 BEQ BT014 ;BR IF "Z" GOT SET
3267
3268 001212 000000 E013: HALT ;ERROR - MOV FAILED TO CLEAR RO
3269 001214 000766 BR BT013 ;LOCK ON HARD ERROR
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; *****
; .SBTTL BT014 "CLR (R)" TEST - [R] = 177776
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
; ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
; EXEC: [220]ALUC=HLLMH : [211]D=000000
; CODES: [211]SPS=1, [367]SPS=3 / N:C=0000
; SYNC: B05J2 (-) T=2.6 USEC
; KEY SIG: K3-4 CLR L / K2-3 DM=1 L

001216 012706 001000
001222 012700 177776
001226 000277

001230 005010
001232 001002

001234 001000
001236 000767

BT014: MOV #STACKL,SP ;SET UP STACK POINTER
MOV #PSW,RO ;RO POINTS TO PSW
SCC ;MAKE [PSW] = 017

I014: CLR (RO) ;TEST THE CLR - IT SHOULD CLEAR PSW
BNE BT015 ;BR IF CLR MADE "Z" = 0 - IT SHOULD

E014: HALT ;ERROR- CLR FAILED TO CLEAR PSW
BR BT014 ;LOCK ON HARD ERROR

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: *****
. SBTTL BT015 "CLR (R)+" TEST - [R] = 177776
: *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:      [162,260,267,220,211,367,375,016] FC 1,3,9,8
; ACT BUTS:     37(004)100,162 / 33(260)220,220 / 16(367)016,016
; EXEC:         [220]ALUC=MLLHH :[211]D=000000
; CODES:        [211]SPS=1,[367]SPS=3 /      N:C=0000
; SYNC:         B05J2 (-)      T=2.6 USEC
; KEY SIG:      K3-4 CLR L / K3-3 DM=2 L / K5-5 BCON (1+2) H
BT015:  MOV      #PSW,RO      ;RO POINTS TO PSW
        SCC
        ;MAKE [PSW] = 017
I015:   CLR      (RO)+      ;TEST THE CLR - IT SHOULD CLEAR PSW
        BNE      A015      ;BR IF CLR MADE "Z" = 0 - IT SHOULD
E1015A: HALT
        BR       BT015     ;ERROR- CLR FAILED TO CLEAR PSW
        ;LOCK ON HARD ERROR
A015:   TST      RO        ;AUTO INC SHOULD ZERO RO
        BEQ      BT016     ;BR IF IT DID
E2015:  HALT
        BR       BT015     ;ERROR - AUTOINC. FAILED
        ;LOCK ON HARD ERROR

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001240 012700 177776
001244 000277
001246 005020
001250 001002
001252 000000
001254 000771
001256 005700
001260 001402
001262 000000
001264 000765

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; *****
.SBTTL BT016 "COM (R)" TEST - [R] = 177776
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
; ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
; EXEC: [220]ALUC=HLLLL : [211]D=000357
; CODES: [211]SPS=1, [367]SPS=3 / N:C=1111
; SYNC: B05J2 (-) T=1.8 USEC
; KEY SIG: K3-4 COM L / K3-3 DM=1 L

001266 012700 177776
001272 000257
001274 005110
001276 100003
001300 001002
001302 102001
001304 103402
001306 000000
001310 000766

BT016: MOV #PSW,RO ;RO POINTS TO PSW
CCC ;MAKE [PSW] = 000
ID16: COM (RO) ;TEST THE COM - [PSW] S/B = 357
BPL E016 ;N:C=1111 ?
BNE E016
BVC E016
BCS BT017
E016: HALT ;ERROR - COM FAILED TO MAKE [PSW] = 357.
BR BT016 ;LOCK ON HARD ERROR

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3368 ; *****
3369 .SBTTL BT017 "COM (RO)+" TEST - [RO] = 177776
3370 ; *****
3371
3372 ;MICROPROGRAMMING / LOGIC INFORMATION
3373
3374 ;ROM SEQ: [162,160,267,220,211,367,375,016] FC 1,3,9,8
3375
3376 ;ACT BUTS: 37(004)100,162 / 33(260)220,220 / 16(367)016,016
3377
3378 ;EXEC: [220]ALUC=MLLLL : [211]D=000357
3379
3380 ;CODES: [211]SPS=1, [367]SPS=3 / N:C=1111
3381
3382 ;SYNC: B05J2 (-) T=2 USEC
3383
3384 ;KEY SIG: K3-4 COM L / K3-3 DM=2 L / K5-5 BCON(1+2) H
3385
3386 001312 012700 177776 BT017: MOV #PSW,RO ;RO POINTS TO PSW
3387 001316 005010 CLR (RO) ;MAKE [PSW] = 000
3388 001320 000257 CCC ;SCOPE SYNC
3389
3390 001322 005120 I017: COM (RO)+ ;TEST THE COM - [PSW] S/B = 357
3391
3392 001324 100003 BPL E1017 ;N:C = 1111 ?
3393 001326 001002 BNE E1017
3394 001330 102001 BVC E1017
3395 001332 103402 BCS A017
3396
3397 001334 000000 E1017: HALT ;COM FAILED TO SET ALL FLAGS
3398 001336 000765 BR BT017 ;LOCK ON HARD ERROR
3399
3400 001340 005100 A017: COM RO ;SHOULD MAKE [RO] = 177777
3401 001342 005500 ACC RO ;SHOULD MAKE [RO] = 000000
3402 001344 001402 BEQ BT020
3403
3404 001346 000000 E2017: HALT ;ERROR - COM FAILED TO AUTO INC. RO
3405 001350 000760 BR BT017 ;LOCK ON HARD ERROR
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001352 005000
001354 005001
001356 005101
001360 000257

001362 010100

001364 100402

001366 000000
001370 000770

001372 005100
001374 001402

001376 000000
001400 000764

```
; *****  
      .SBTTL BT02G "MOV RA,RB" TEST - WITH [RA]=177777,[RB]=000000  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ:      [170,204,001] FC 1,4,8  
;ACT BUTS:     37[004]100,170 / 20[170]000,001  
;EXEC:         [170]ALUC=LLLLL :[204]D=177777  
;CODES:        [204]SPS=3      /      N:C=1000  
;SYNC:         B05J2  (-)      T=1 USEC  
;KEY SIG:      K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=0 L / K3-4 OVLAP INSTR H  
  
BT020:  CLR      RO      ;MAKE [RO]=000000  
        CLR      R1      ;MAKE [R1]=000000  
        COM      R1      ;MAKE [R1]=0207777  
        CCC  
  
I020:   MOV      R1,RO    ;TEST THE MOV  
  
        BMI      A020     ;BR IF "N" GOT SET  
  
E1020:  HALT  
        BR       BT020    ;ERROR-MOV FAILED TO SET "N"  
                        ;LOCK ON HARD ERROR  
  
A020:   COM      RO      ;[RO] SHOULD GO TO 000000  
        BEQ      BT021    ;BR IF IT DID  
  
E2020:  HALT  
        BR       BT020    ;ERROR-MOV FAILED TO LOAD RO WITH 1'S  
                        ;LOCK ON HARD ERROR
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; *****
; .SBTTL BT021 "MOV RA,RB" TEST WITH [RA]=000000,[RB]=177777
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      (170,204,001) FC 1,4,8
;ACT BUTS:     37(004)100,170 / 20(170)000,001
;EXEC:         (170)ALUC=LLLLL : (204)D=000000
;CODES:        (204)SPS=3      /      N:C=0100
;SYNC:         B05J2  (-)      T=1 USEC
;KEY SIG:      K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=0 L / K3-4 OVLAP INSTR H

BT021:  CLR    RO      ;MAKE [RO]=000000
        COM    RO      ;MAKE [RO]=177777
        CLR    RI      ;MAKE [RI]=000000
        CCC                    ;SCOPE SYNC

I021:   MOV    R1,RO    ;TEST THE MOV
        BEQ   A021     ;BR IF "Z" GOT SET

E1021:  HALT                    ;MOV FAILED TO SET "Z"
        BR    BT021    ;LOCK ON HARD ERROR

A021:   COM    RO      ;SHOULD MAKE [RO]=177777 AND SET "C"
        ADC    RO      ;SHOULD MAKE [RO]=000000
        BEQ   BT022    ;BR IF "Z" SET

E2021:  HALT                    ;MOV FAILED TO ZERO RO
        BR    BT021    ;LOCK ON HARD ERROR

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001402 005000
001404 005100
001406 005001
001410 000257
001412 010100
001414 001402
001416 000000
001420 000770
001422 005100
001424 005500
001426 001402
001430 000000
001432 000763

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; *****
.SBTTL BT022 "MOV #N,@#A" TEST WITH N=17,A=177776
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [142,240,250,173,207,210,200,125,375,016] FC 1,2,4,8
;ACT BUTS: 37(004)100,142 / 35(240)120,173 / 22(207)200,200 / 16(125)016,016
;EXEC: [200]ALUC=LLLLL : [125]D=000017
;CODES: [125]SPS=3 / N:C=1111
;SYNC: B05J2 (-) T=4 USEC
;KEY SIG: K3-3 MOV L / K3-3 SM=2 L / K3-3 DM=3 L / K5-5 BCO1 H
; K5-5 BCON(1+2) H

001434 000257 BT022: CCC ;MAKE [PSW]=000
001436 012737 000017 177776 I022: MOV #17,@#PSW ;TEST THE MOV
001444 100003 BPL E022 ;N:C=1111
001446 001002 BNE E022
001450 102001 BVC E022
001452 103402 BCS BT023
001454 000000 E022: HALT ;MOV FAILED TO LOAD PSW
001456 000766 BR BT022 ;LOCK ON HARD ERROR

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3511 ; *****
3512 ; .SBTTL BT023 "MOV RA,(RB)+" TEST WITH [RA]=17,[RB]=177776
3513 ; *****
3514 ; MICROPROGRAMMING / LOGIC INFORMATION
3515 ; ROM SEQ: [172,257,201,125,375,016] FC 1,4,8
3516 ; ACT BUTS: 37(004)100,172 / 22(172)200,201 / 16(125)016,016
3517 ; EXEC: [201]ALUC=LLLLL : [125]D=000017
3518 ; CODES: [125]SPS=3 / N:C=1111
3519 ; SYNC: B05J2 (-) T=2.42 USEC
3520 ; KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=2 L / K5-5 BCON(1+2) H
3521
3522 BT023: MOV #PSW,RO ;RO POINTS TO PSW
3523 MOV #17,R1 ;[SOURCE]=017
3524 CLR (RO) ;MAKE [PSW]=000
3525 CCC ;SCOPE SYNC
3526
3527 I023: MOV R1,(RO)+ ;TEST THE MOV
3528
3529 BPL E1023 ;N:C = 1111 ?
3530 BNE E1023
3531 BVC E1023
3532 BCS A023
3533
3534 E1023: HALT ;MOV FAILED TO LOAD PSW
3535 BR BT023 ;LOCK ON HARD ERROR
3536
3537 A023: COM RO ;SHOULD MAKE [RO]=177777
3538 ADC RO ;SHOULD MAKE [RO]=000000
3539 BEQ BT024 ;BR IF IT DID
3540
3541 E0232: HALT ;MOV FAILED TO AUTO INC. RO
3542 BR BT023 ;LOCK ON HARD ERROR
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; *****
; .SBTTL BT024 "CMP #N,@#A" TEST WITH N=(A)
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
; ACT BUTS: 37(1004)100,142 / 35(240)120,163 / 33(266)220,225 / 16(367)016,016
; EXEC: [225]ALUC=LLHHL : [367]D=000000
; CODES: [367]SPS=3 / N:C=0100
; SYNC: B05J2 (-) T=5.2 USEC
; KEY SIG: K3-3 CMP L / K3-3 SM=2 L / K3-3 DM=3 L / K3-8 CIN00 L
; K4-4 ALLOW CLK L / K5-5 BCO1 H

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001524 012700 177776      BT024:  MOV    #PSW,RO      ;RO POINTS TO PSW
001530 005010              CLR    (RO)        ;MAKE [PSW]=000
001532 000273              273          ;MAKE N:C=1011
001534 022737 000013 177776  I024:  CMP    #13,@#PSW    ;TEST THE CMP
001542 001402              BEQ    BT025       ;BR IF "Z" GOT SET
001544 000000              E024:  HALT                ;CMP FAILED TO SET "Z"
001546 000766              BR     BT024       ;LOCK ON HARD ERROR
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; *****
.SBTTL BT025 "CMP #N, @#A" WITH N > (A)
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
; ACT BUTS: 37[004]100,142 / 35[240]120,163 / 33[266]220,225 / 16[367]016,016
; EXEC: [225]ALUC=LLHML : [367]D=177761
; CODES: [367]SPS=3 / N:C=1001
; SYNC: B05J2 (-) T=5.2 USEC
; KEY SIG: K3-3 CMP L / K3-3 SM=2 L / K3-3 DM=3 L / K3-8 CIN00 L
; K4-4 ALLOW CLK L / K5-5 BCO1 H

001550 000257 BT025: CCC ; MAKE [PSW]=000
001552 022737 000017 177776 I025: CMP #17, @#PSW ; TEST THE CMP
001560 001401 BEQ E025 ; BR IF "Z" GOT SET
001562 000402 BR BT026 ; GO TO NEXT TEST
001564 000000 E025: HALT ; CMP FAILED TO CLEAR "Z"
001566 000770 BR BT025 ; LOCK ON HARD ERROR

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3610 ; *****
3611 .SBTTL BT026 "CMP #N,2#A" WITH N < (A)
3612 ; *****
3613
3614 ;MICROPROGRAMMING / LOGIC INFORMATION
3615
3616 ;ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
3617
3618 ;ACT BUTS: 37(004)100,142 / 35(240)120,163 / 33(266)220,225 / 16(367)016,016
3619
3620 ;EXEC: [225]ALUC=LLHHL :[367]D=177761
3621
3622 ;CODES: [367]SPS=3 / N:C=1001
3623
3624 ;SYNC: B05J2 (-) T=5.2 USEC
3625
3626 ;KEY SIG: K3-3 CMP L / K3-3 SM=2 L / K3-3 DM=3 L / K3-8 CIN00 L
3627 ; K4-4 ALLOW CLK L / K5-5 BCO1 H
3628
3629 001570 000277 BT026: SCC ;MAKE [PSW]=017
3630
3631 001572 022737 000000 177776 I026: CMP #0,2#PSW ;TEST THE CMP
3632
3633 001600 001401 BEQ E026 ;BR IF "Z" GOT SET
3634 001602 000402 BR BT027 ;GO TO NEXT TEST
3635
3636 001604 000000 E026: HALT ;CMP FAILED TO CLEAR "Z"
3637 001606 000770 BR BT026 ;LOCK ON HARD ERROR
3638

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3639 ; *****
3640 ; .SBTTL BT027 "CMP R,#N" TEST WITH [R]=N
3641 ; *****
3642 ;
3643 ;MICROPROGRAMMING / LOGIC INFORMATION
3644 ;
3645 ;ROM SEQ: [162,260,267,224,367,375,016] FC 1,3,8
3646 ;
3647 ;ACT BUTS: 37[004]100,162 / 33[260]220,224 / 16[367]016,016
3648 ;
3649 ;EXEC: [224]ALUC=LLHHL :[367]D=000000
3650 ;
3651 ;CODES: [367]SPS=3 / N:C=0100
3652 ;
3653 ;SYNC: B05J2 (-) T=2.6 USEC
3654 ;
3655 ;KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=2 L / K3-8 CIN00 L
3656 ; K4-4 ALLOW CLK L
3657 ;
3658 001610 012700 177777 BT027: MOV #-1,R0 ;MAKE [R0]=177777
3659 001614 000257 CCC ;N:C=0000
3660 ;
3661 001616 020027 177777 I027: CMP R0,#-1 ;TEST THE CMP
3662 ;
3663 001622 001402 BEQ BT030 ;BR IF CMP SET "Z"
3664 ;
3665 001624 000000 E027: HALT ;CMP FAILED
3666 001626 000770 BR BT027 ;LOCK ON HARD ERROR
3667 ;

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3668 ; *****
3669 .SBTTL BT030 "CMP R,#N" TEST WITH [R] > N
3670 ; *****
3671
3672 ;MICROPROGRAMMING / LOGIC INFORMATION
3673
3674 ;ROM SEQ: [162,260,267,224,367,375,016] FC 1,3,8
3675
3676 ;ACT BUTS: 37(004)100,162 / 33(260)220,224 / 16(367)016,016
3677
3678 ;EXEC: [224]ALUC=LLHHL : [367]D=000002
3679
3680 ;CODES: [367]SPS=3 / N:C=0001
3681
3682 ;SYNC: B05J2 (-) T=2.6 USEC
3683
3684 ;KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=2 L / K3-8 CIN00 L
3685 ; K4-4 ALLOW CLK L
3686
3687 001630 012700 000001 BT030: MOV #1,RO ;MAKE [RO]=000001
3688 001634 000264 ;SET THE "Z" BIT
3689
3690 001636 020027 177777 I030: CMP RO,#-1 ;TEST THE CMP
3691
3692 001642 001002 ;BNE BT031 ;BR IF CMP CLEARED "Z"
3693
3694 001644 000000 E030: HALT ;CMP FAILED
3695 001646 000770 BR BT030 ;LOCK ON HARD ERROR

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001650 012700 000001
001654 000264
001656 020027 000017
001662 001002
001664 000000
001666 000770

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; *****  
; .SBTTL BT031 "CMP R,#N" TEST WITH [R] < N  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [162,260,267,224,367,375.016] FC 1,3,8  
;ACT BUTS: 371004)100,162 / 331260)220,224 / 161367)016,016  
;EXEC: (224)ALUC=LLHHL : (367)D=177762  
;CODES: (367)SPS=3 / N:C=1001  
;SYNC: B05J2 (-) T=2.6 USEC  
;KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=2 L / K3-8 CIN00 L  
; K4-4 ALLCN CLK L  
BT031: MOV #1,R0 ;MAKE [R0] = 000001  
;SET THE "Z" BIT  
I031: CMP RC,#17 ;TEST THE CMP  
;BR IF CMP CLEARED "Z"  
E031: HALT ;CMP FAILED TO SET "Z"  
BR BT031 ;LOCK ON HARD ERROR
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; *****
; .SBTTL BT032 "CMP (RA)+,RB" TEST WITH [SOURCE]=[RB]
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ: [142,240,250,120,371,362,000] FC 1,2,8
;ACT BUTS: 37(004)100,142 / 35(240)120,120 / 31(120)360,362 / 27(37)1016,016
;EXEC: [371]ALUC=LLHHL : [362]D=000000
;CODES: [362]SPS=3 / N:C=0100
;SYNC: B05J2 (-) T=2.5 USEC
;KEY SIG: K3-3 CMP L / K3-3 SM=2 L / K3-3 DM=0 L / K5-5 BCON(1+2) H
; K3-8 CIN00 L

001670	012700	177776		BT032:	MOV	#PSW,RO	;RO POINTS TO PSW
001674	012737	000340	177776		MOV	#340,#PSW	;MAKE [PSW]=340
001702	012701	000340			MOV	#340,R1	;MAKE [TEST]=340
001706	000257				CCC		;N:C=0000
001710	022001			I032:	CMP	(RO)+,R1	;TEST THE CMP
001712	001402				BEG	A032	;BP IF "Z" GOT SET
001714	000000			E1032:	HALT		;CMP FAILED TO ACCESS PSW
001716	000764				BR	BT032	;LOCK ON HARD ERROR
001720	005100			A032:	COM	RO	;MAKE [RO]=177777
001722	005500				ADC	RO	;MAKE [RO]=000000
001724	001402				BEG	BT033	;BR IF "Z" SET
001726	000000			E2032:	HALT		;CMP FAILED TO AUTO INC. RO
001730	000757				BR	BT032	;LOCK ON HARD ERROR

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3764 ; *****
3765 ; .SBTTL BT033 "CMP (RA)+,RB" TEST WITH [SOURCE]>[RB]
3766 ; *****
3767 ;
3768 ;MICROPROGRAMMING / LOGIC INFORMATION
3769 ;
3770 ;ROM SEQ: [142,240,250,120,371,362,000] FC 1,2,8
3771 ;
3772 ;ACT BUTS: 37(004)100,142 / 35(240)120,120 / 31(120)360,362 / 27(371)016,016
3773 ;
3774 ;EXEC: [371]ALUC=LLMHL :[362]D=000010
3775 ;
3776 ;CODES: [362]SPS=3 / N:C=0000
3777 ;
3778 ;SYNC: B05J2 (-) T=2.5 USEC
3779 ;
3780 ;KEY SIG: K3-3 CMP L / K3-3 SM=2 L / K3-3 DM=0 L / K5-5 BCON(1+2) H
3781 ; K3-8 CIN00 L
3782 ;
3783 001732 012700 177776 BT033: MOV #PSW,R0 ;RO POINTS TO PSW
3784 001736 012737 000340 177776 MOV #340,#PSW ;MAKE [PSW]=340
3785 001744 012701 000330 MOV #330,R1 ;MAKE [DEST]=330
3786 001750 000264 SEZ ;SET THE "Z" BIT
3787 ;
3788 001752 022001 I033: CMP (R0)+,R1 ;TEST THE CMP
3789 ;
3790 001754 001002 BNE A033 ;BR IF "Z" GOT CLEARED
3791 ;
3792 001756 000000 E1033: HALT ;CMP FAILED TO ACCESS PSW
3793 001760 000764 BR BT033 ;LOCK ON HARD ERROR
3794 ;
3795 001762 005100 A033: COM R0 ;MAKE [R0]=177777
3796 001764 005500 ADC R0 ;MAKE [R0]=000000
3797 001766 001402 BEQ BT034 ;BR IF "Z" SET
3798 ;
3799 001770 000000 E2033: HALT ;CMP FAILED TO AUTO INC. R0
3800 001772 000757 BR BT033 ;LOCK ON HARD ERROR
    
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3801 ; *****
3802 .SBTTL BT034 "CMP (RA)+,RB" TEST WITH [SOURCE]<[RB]
3803 ; *****
3804 ;MICROPROGRAMMING / LOGIC INFORMATION
3805 ;ROM SEQ: [142,240,250,120,371,362,000] FC 1,2,8
3806 ;ACT BUTS: 37(004)100,142 / 35(240)120,120 / 31(120)360,362 / 27(371)016,016
3807 ;EYTC: [371]ALUC=LLHHL : [362]D=177770
3808 ;CODES: [362]SPS=3 / N:C=1001
3809 ;SYNC: B05J2 (-) T=2.5 USEC
3810 ;KEY SIG: K3-3 CMP L / K3-3 SM=2 L / K3-3 DM=0 L / K5-5 BCON(1+2) H
3811 ; K3-8 CIN00 L
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3820 001774 012700 177776 BT034: MOV #PSW,R0 ;RO POINTS TO PSW
3821 002000 012737 000330 177776 MOV #330,#PSW ;MAKE [PSW]=330
3822 002006 012701 000340 MOV #340,R1 ;MAKE [DEST]=340
3823 002012 000264 SEZ ;SET THE "Z" BIT
3824
3825 002014 022001 I034: CMP (R0)+,R1 ;TEST THE CMP
3826
3827 002016 001002 BNE A034 ;BR IF "Z" GOT CLEARED
3828
3829 002020 000000 E1034: HALT ;CMP FAILED TO ACCESS PSW
3830 002022 000764 BR BT034 ;LOCK ON HARD ERROR
3831
3832 002024 005100 A034: COM R0 ;MAKE [R0]=177777
3833 002026 005500 ADC R0 ;MAKE [R0]=000000
3834 002030 001402 BEQ BT035 ;BR IF "Z" SET
3835
3836 002032 000000 E2034: HALT ;CMP FAILED TO AUTO INC. R0
3837 002034 000757 BR BT034 ;LOCK ON HARD ERROR
  
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F08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 97
DBQEAR.CMB BT034 "CMP (RA)+,RB" TEST WITH [SOURCE]<[RB]

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3838 ; *****  
3839 .SBTTL BT035 "CMP RA, RB" TEST WITH [RA] = [RB]  
3840 ; *****  
3841 ; MICROPROGRAMMING / LOGIC INFORMATION  
3842 ; ROM SEQ: [102,364,362,001] FC 1,8  
3843 ; ACT BUTS: 37(004)100,102 / 31(102)360,362 / 27(364)000,001  
3844 ; EXEC: [364]ALUC=LLHML : [362]D=000000  
3845 ; CODES: [362]SPS=3 / N:C=0100  
3846 ; SYNC: B05J2 (-) T=1 USEC  
3847 ; KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=0 L / K3-4 OVLAP INSTR H  
3848 ; K3-8 CINDO L  
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3856  
3857 002036 012700 125252 BT035: MOV #125252,R0 ; MAKE [R0] = 125252  
3858 002042 010001 MOV RO,R1 ; MAKE [R1] = 125252  
3859 002044 000257 CCC ; SCOPE SYNC  
3860  
3861 002046 020100 I035: CMP R1,R0 ; TEST THE CMP  
3862  
3863 002050 001402 BEQ BT036 ; BR IF "Z" GOT SET  
3864  
3865 002052 000000 E035: HALT ; ERROR - CMP FAILED TO SET "Z"  
3866 002054 000770 BR BT035 ; LOCK ON HARD ERROR
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3867 ; *****
3868 ; .SBTTL BT036 "CMP RA, RB" TEST WITH [RA] < [RB]
3869 ; *****
3870 ; MICROPROGRAMMING / LOGIC INFORMATION
3871 ; ROM SEQ: [102,364,362,001] FC 1,8
3872 ; ACT BUTS: 37[004]100,102 / 31[102]360,362 / 27[364]000,001
3873 ; EXEC: [364]ALUC=LLHHL : [362]D=152526
3874 ; CODES: [362]SPS=3 / N:C=1001
3875 ; SYNC: B05J2 (-) T=1 USEC
3876 ; KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=0 L / K3-4 OVLAP INSTR H
3877 ; K3-8 CIN00 L
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3886 002056 012700 025252 BT036: MOV #25252, R0 ; MAKE [R0] = 25252
3887 002062 005001 CLR R1 ; MAKE [R1] = 000000
3888 002064 000264 SEZ ; SCOPE SYNC - SET "Z"
3889
3890 002066 020100 I036: CMP R1, R0 ; TEST THE CMP
3891
3892 002070 001002 BNE BT037 ; BR IF "Z" GOT CLEARED
3893
3894 002072 000000 E036: HALT ; ERROR - CMP FAILED TO SET "Z"
3895 002074 000770 BR BT036 ; LOCK ON HARD ERROR

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3896 ; *****
3897 ; .SBTTL BT037 "CMP RA,RB" TEST WITH [RA] > [RB]
3898 ; *****
3899
3900 ;MICROPROGRAMMING / LOGIC INFORMATION
3901
3902 ;ROM SEQ: [102,364,362,001] FC 1,8
3903
3904 ;ACT BUTS: 37(004)100,102 / 31(102)360,362 / 27(364)000,001
3905
3906 ;EXEC: [364]ALUC=LLHHL : (362)D=000017
3907
3908 ;CODES: [362]SPS=3 / N:C=0000
3909
3910 ;SYNC: B05J2 (-) T=1 USEC
3911
3912 ;KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=0 L / K3-4 OVLAP INSTR H
3913 ; K3-8 CIN00 L
3914
3915 002076 005000 BT037: CLR RD ;MAKE [RD] = 000000
3916 002100 012701 000017 MOV #17,R1 ;MAKE [R1] = 000017
3917 002104 000264 SEZ ;SCOPE SYNC - SET "Z"
3918
3919 002106 020100 I037: CMP R1,R0 ;TEST THE CMP
3920
3921 002110 001002 BNE BT040 ;BR IF "Z" GOT CLEARED
3922
3923 002112 000000 E037: HALT ;ERROR - CMP FAILED TO SET "Z"
3924 002114 000770 BR BT037 ;LOCK ON HARD ERROR
3925

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002116 012700 177776
002122 005010
002124 005001
002126 000277

002130 011001

002132 020127 000017
002136 001402

002140 000000
002142 000765

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; *****  
          .SBTTL BT040 "MOV (RA),RB" TEST WITH [SOURCE]=[RB]=17  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ:      [141,247,250,160,204,000] FC 1,2,4,8  
  
;ACT BUTS:     37[004]100,141 / 35[247]120,160 / 20[160]000,000  
  
;EXEC:         [160]ALUC=LLLLL : [204]D=000017  
  
;CODES:        [204]SPS=3      /      N:C=0001  
  
;SYNC:         B05J2  (-)      T=2.3 USEC  
  
;KEY SIG:      K3-3 MOV L / K3-3 SM=1 L / K3-3 DM=0 L  
  
BT040:  MOV      #PSW,RO      ;RO POINTS TO PSW  
        CLR      (RO)        ;MAKE [PSW]=000  
        CLR      R1          ;MAKE [R1]=000000  
        SCC      ;MAKE N:C=1111  
  
I040:   MOV      (RO),R1     ;TEST THE MOV  
  
        CMP      R1,#17      ;DID R1 GET LOADED WITH 000017 ?  
        BEQ      BT041      ;BR IF YES  
  
E040:   HALT  
        BR       BT040      ;MOV FAILED TO LOAD R1  
                          ;LOCK ON HARD ERROR
```

JOB

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 101
 DBQEAB.CMB BT040 "MOV (RA),RB" TEST WITH [SOURCE]=[RB]=17

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3956 ; *****
3957 ; .SBTTL BT041 "MOV (RA)+,RB" TEST WITH [SOURCE]=[RB]=17
3958 ; *****
3959
3960 ;MICROPROGRAMMING / LOGIC INFORMATION
3961
3962 ;ROM SEQ: [141,247,250,160,204,000] FC 1,2,4,8
3963
3964 ;ACT BUTS: 37(004)100,141 / 35(247)120,160 / 20(160)000,000
3965
3966 ;EXEC: [160]ALUC=LLLLL : [204]D=000017
3967
3968 ;CODES: [204]SPS=3 / N:C=0001
3969
3970 ;SYNC: B05J2 (-) T=2.3 USEC
3971
3972 ;KEY SIG: K3-3 MOV L / K3-3 SM=1 L / K3-3 DM=0 L
3973
3974 002144 012700 177776 BT041: MOV @PSW,RO ;RO POINTS TO PSW
3975 002150 005010 (RO) ;MAKE [PSW]=000
3976 002152 005001 CLR R1 ;MAKE [R1]=000000
3977 002154 000277 SCC ;MAKE N:C=1111
3978
3979 002156 012001 I041: MOV (RO)+,R1 ;TEST THE MOV
3980
3981 002160 020127 000017 CMP R1,#17 ;DID R1 GET LOADED WITH 000017 ?
3982 002164 001402 BEQ A041 ;BR IF YES
3983
3984 002166 000000 E1041: HALT ;MOV FAILED TO LOAD R1
3985 002170 000765 BR BT041 ;LOCK ON HARD ERROR
3986
3987 002172 005100 A041: COM RO ;[RO] SHOULD GO TO 177777
3988 002174 005500 R0 ;[RO] SHOULD GO TO 000000
3989 002176 001402 BEQ BT042 ;BR IF "Z" GOT SET
3990
3991 002200 000000 E2041: HALT ;MOV FAILED TO AUTO INC. RO
3992 002202 000760 BR BT041 ;LOCK ON HARD ERROR
3993
  
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K08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 102
DBQERB.CMB BT041 "MOV (RA)+,RB" TEST WITH [SOURCE]=[RB]=17

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; *****  
      .SBTTL BT042 "XOR RA,RB" TEST WITH [RA] = [RB] = 000000  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [102,364,360,001] FC 1,7,8  
;ACT BUTS:     37[004]100,102 / 31[02]360,360 / 27[364]1000,001  
;EXEC:         [364]ALUC=HLHL : [360]D=000000  
;CODES:        [360]SPS=3      /      N:C=0100  
;SYNC:         B05J2 (-)      T=1 USEC  
;KEY SIG:      K3-3 DM=0 L / K3-3 IR(08:06)=1 L / K3-5 XOR L / K3-4 OVLAP INSTR H  
  
BT042: CLR    R0      ;MAKE [R0] = 000000  
        CLR    R1      ;MAKE [R1] = 000000  
        CCC  
        ;SCOPE SYNC  
  
I042:  XOR    R1,R0    ;TEST THE XOR  
  
        TST    R0      ;RESULT = 000000 ?  
        BEQ    BT043   ;BR IF YES  
  
E042:  HALT  
        BR     BT042   ;XOR FAILED
```

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4025 ; *****
4026 ; .SBTTL BT043 "XOR RA,RB" TEST WITH [RA] = [RB] = 177777
4027 ; *****
4028 ;MICROPROGRAMMING / LOGIC INFORMATION
4029 ;ROM SEQ: [102,364,360,001] FC 1,7,8
4030 ;ACT BUTS: 37[004]100,102 / 31[102]360,360 / 27[364]000,001
4031 ;EXEC: [364]ALUC=HLHHL :[360]D=000000
4032 ;CODES: [360]SPS=3 / N:C=0100
4033 ;SYNC: B05J2 (-) T=1 USEC
4034 ;KEY SIG: K3-3 DM=0 L / K3-3 IR(08:06)=1 L / K3-5 XOR L / K3-4 OVLAP INSTR H
4035
4036 BT043: CLR R0 ;MAKE [R0] = 177777
4037 COM R0
4038 MOV R0,R1 ;MAKE [R1] = 177777
4039 CCC ;SCOPE SYNC
4040
4041 I043: XOR R1,R0 ;TEST THE XOR
4042
4043 TST R0 ;RESULT = 000000 ?
4044 BEQ BT044 ;BR IF YES
4045
4046 E043: HALT ;XOR FAILED
4047 BR BT043 ;LOCK ON HARD ERROR
4048
4049 002224 005000
4050 002226 005100
4051 002230 010001
4052 002232 000257
4053 002234 074100
4054 002236 005700
4055 002240 001402
4056 002242 000000
4057 002244 000767

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MO8

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 104
DBQEAB.CMB BT043 "XOR RA, RB" TEST WITH [RA] = [RB] = 177777

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4056 ; *****  
4057 ; .SBTTL BT044 "XOR RA, RB" TEST WITH [RB]=052525, [RA]=125252  
4058 ; *****  
4059 ;  
4060 ; MICROPROGRAMMING / LOGIC INFORMATION  
4061 ;  
4062 ; ROM SEQ: [102,364,360,001] FC 1,7,8  
4063 ;  
4064 ; ACT BUTS: 37[1004]100,102 / 31[102]360,360 / 27[364]1000,001  
4065 ;  
4066 ; EXEC: [364]ALUC=HLHHL : [360]D=177777  
4067 ;  
4068 ; CODES: [360]SPS=3 / N:C=1000  
4069 ;  
4070 ; SYNC: B05J2 (-) T=1 USEC  
4071 ;  
4072 ; KEY SIG: K3-3 DM=0 L / K3-3 IR(08:06)=1 L / K3-5 XOR L / K3-4 OVLAP INSTR H  
4073 ;  
4074 002246 012701 125252 BT044: MOV #125252,R1 ;MAKE [R1]=125252  
4075 002252 012700 052525 MOV #052525,R0 ;MAKE [R0]=052525  
4076 002256 000257 CCC ;SCOPE SYNC  
4077 ;  
4078 002260 074100 I044: XOR R1,R0 ;TEST THE XOR  
4079 ;  
4080 002262 020027 177777 CMP R0,#-1 ;RESULT = 177777 ?  
4081 002266 001402 BEQ BT045 ;BR IF YES  
4082 ;  
4083 002270 000000 E044: HALT ;XOR FAILED  
4084 002272 000400 BR BT045 ;LOCK ON HARD ERROR
```

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4085 ; *****
4086 ; .SBTTL BT045 "XOR RA,RB" TEST WITH [RA]=052525,[RB]=125252
4087 ; *****
4088 ;MICROPROGRAMMING / LOGIC INFORMATION
4089 ;ROM SEQ: [102,364,360,001] FC 1,7,8
4090 ;ACT BUTS: 37[004]100,102 / 31[102]360,360 / 27[364]000,001
4091 ;EXEC: [364]ALUC=HLHHL :[360]D=177777
4092 ;CODES: [360]SPS=3 / N:C=1000
4093 ;SYNC: B05J2 (-) T=1 USEC
4094 ;KEY SIG: K3-3 DM=0 L / K3-3 IR(08:06)=1 L / K3-5 XOR L / K3-4 OVLAP INSTR H
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4101
4102
4103 002274 012700 125252 BT045: MOV #125252,R0 ;MAKE [R0]=125252
4104 002300 012701 052525 MOV #052525,R1 ;MAKE [R1]=052525
4105 002304 000257 CCC ;SCOPE SYNC
4106
4107 002306 074100 I045: XOR R1,R0 ;TEST THE XOR
4108
4109 002310 020027 177777 CMP R0,#-1 ;RESULT = 177777 ?
4110 002314 001402 BEQ BT046 ;BR IF YES
4111
4112 002316 000000 E045: HALT ;XOR FAILED
4113 002320 000765 BR BT045 ;LOCK ON HARD ERROR
4114

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4115 ; *****
4116 ; .SBTTL BT046 GPR ADDRESS INTERACTION TEST
4117 ; *****
4118
4119 002322 012700 125252 BT046: MOV #125252,R0 ;(R0) = 125252
4120 002326 010001 MOV R0,R1
4121 002330 005101 COM R1 ;(R1) = 052525
4122 002332 010102 MOV R1,R2
4123 002334 005102 COM R2 ;(R2) = 125252
4124 002336 010203 MOV R2,R3
4125 002340 005103 COM R3 ;(R3) = 052525
4126 002342 010304 MOV R3,R4
4127 002344 005104 COM R4 ;(R4) = 125252
4128 002346 010405 MOV R4,R5
4129 002350 005105 COM R5 ;(R5) = 052525
4130
4131 002352 074100 I046: XOR R1,R0 ;(R0) S/B = 177777
4132 002354 074200 XOR R2,R0 ;(R0) S/B = 125252
4133 002356 074300 XOR R3,R0 ;(R0) S/B = 177777
4134 002360 074400 XOR R4,R0 ;(R0) S/B = 125252
4135 002362 074500 XOR R5,R0 ;(R0) S/B = 177777
4136 002364 005100 COM R0 ;(R0) S/B = 000000
4137
4138 002366 001402 BEQ A046 ;BR IF (R0) WAS 000000
4139
4140 002370 000000 E1046: HALT ;GPR ADDRESSING PROBLEM
4141 002372 000753 BR BT046 ;LOCK ON HARD ERROR
4142
4143 002374 020627 001000 A046: CMP SP,#STACKL ;DID R6 GET DISTURBED
4144 002400 001577 BEQ INIT ;BR IF NOT
4145
4146 002402 000000 E2046: HALT ;R6 ADDRESS PROBLEM
4147 002404 000746 BR BT046 ;LOCK ON HARD ERROR
4148
4149 003000 .=3000

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4150 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
4151 ; / / / / / / / BASIC INSTRUCTION TESTS / / / / / / /
4152 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
4153
4154 003000 012706 001000 INIT: MOV #BT001,SP ;SET UP THE STACK POINTER
4155 003004 012737 000001 066662 MOV #1,#ICOUNT ;NO ITERATIONS ON INITIAL PASS
4156 003012 012737 000001 066664 MOV #1,#ITCNT
4157 003020 012701 066666 MOV #ERRCNT,R1 ;SET UP TO INIT. COUNTERS AND FLAGS
4158 003024 005021 IS: CLR (R1)+ ;CLEAR ONE WORD
4159 003026 020127 066724 CMP R1,#ONCE+2 ;Cleared ALL FLAGS AND COUNTERS?
4160 003032 001374 BNE IS ;BR IF NOT
4161 003034 012706 001000 BEGIN: MOV #BT001,SP ;SET UP THE STACK POINTER
4162
4163 ; *****
4164 .SBTTL T0001 BASIC "BNE" TEST WITH Z=0
4165 ; *****
4166
4167 ;MICROPROGRAMMING / LOGIC INFORMATION
4168
4169 ;ROM SEQ: [111,340,341,016] FC 1,7
4170
4171 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
4172
4173 ;EXEC: [341]ALUC = LLLH :[016] D = #T0002
4174
4175 ;CODES: N / A
4176
4177 ;SYNC: B05J2 (-) / T= 1.8 USEC
4178
4179 ;KEY SIG: K5-3 FALSE BR L / K5-3 BR INSTR L
4180
4181 003040 012700 000001 T0001: MOV #0001,R0 ;LOAD R0 WITH TEST NO.
4182 003044 000257 R0001: CCC ;MAKE Z=0
4183
4184 003046 001002 I0001: BNE T0002 ;TEST THE BNE - IT SHOULD BR
4185
4186 003050 000000 E0001: HALT ;BNE FAILED TO LOAD PC
4187 003052 000774 BR R0001 ;LOCK ON HARD ERROR
4188

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003054 012700 000002
003060 000264
003062 001001
003064 000402
003066 000000
003070 000773

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; *****  
; .SBTTL T0002 BASIC "BNE" TEST WITH Z=1  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [110,347,016]FC 1,7  
;ACT BUTS: 37[004]100,110 / 16[110]016,016  
;EXEC: NO-OP=[016] D= #I0002  
;CODES: N / R  
;SYNC: B05J2 (-) / T= 1.4 USEC  
;KEY SIG: K5-3 BR INSTR L  
T0002: MOV #0002,R0 ;LOAD R0 WITH TEST NO.  
R0002: SEZ ;SET THE "Z" BIT  
I0002: BNE E0002 ;TEST THE BNE - IT SHOULD NOT BR  
BR T0003 ;GO TO NEXT TEST  
E0002: HALT ;BNE BRANCHED WITH Z=1  
BR R0002 ;LOCK ON HARD ERROR
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4235 003072 012700 000003
4236 003076 000264
4237
4238 003100 001402
4239
4240 003102 000000
4241 003104 000774

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; *****
; .SBTTL T0003 BASIC "BEQ" TEST WITH Z=1
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [111,340,341,016] FC 1,7
;ACT BUTS:     37(004)100,111 / 16(340)16,16
;EXEC:         [341]ALUC=LHLLH : [016]D=#T0004
;CODES:        N / A
;SYNC:         B05J2 (-) / T= 1.8 USEC
;KEY SIG:      K5-3 FALSE BRL / K5-3 BR INSTRL
T0003: MOV      #0003,R0 ;LOAD R0 WITH THE TEST NO.
R0003: SEZ                      ;MAKE Z=1
I0003: BEQ      T0004 ;TEST THE BEQ - IT SHOULD BR
E0003: HALT                    ;BEQ FAILED TO LOAD THE PC
BR      R0003 ;LOCK ON HARD ERROR

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4260 003106 012700 000004
4261 003112 000257
4262
4263 003114 001401
4264
4265 003116 000402
4266
4267 003120 000000
4268 003122 000773
4269

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; *****
; .SBTTL T0004 BASIC "BEQ" TEST WITH Z=0
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [110,347,016] FC 1,7
;ACT BUTS:     37(004)100,110 / 16(110)016,016
;EXEC:         NO-OP=(016) D= #I0004
;CODES:        N / A
;SYNC:         B05J2 (-) / T= 1.4 USEC
;KEY SIG:      K5-3 BR INSTR L
T0004:  MOV      #0004,RO      ;LOAD RO WITH THE TEST NO.
R0004:  CCC
I0004:  BEQ      E0004        ;TEST THE BEQ - IT SHOULD NOT BR
BR      T0005                ;GO TO NEXT TEST
E0004:  HALT
BR      R0004                ;BEQ BRANCHED WITH Z=0
;LOCK ON HARD ERROR

```

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4270 ; *****
4271 ; .SBTTL T0005 BASIC "BPL" TEST WITH N=1
4272 ; *****
4273
4274 ; MICROPROGRAMMING / LOGIC INFORMATION
4275
4276 ; ROM SEQ:      (110,347,016) FC 1,7
4277
4278 ; ACT BUTS:    37(1004)100,110 / 16(110)16,16
4279
4280 ; EXEC:       NO-OP=(016) D=#I0005
4281
4282 ; CODES:      N / A
4283
4284 ; SYNC:       B05J2 (-) / T= 1.4 USEC
4285
4286 ; KEY SIG:    K5-3 BR INSTR L
4287
4288 003124 012700 000005 T0005: MOV #0005,RO ;LOAD RO WITH TEST NO.
4289 003130 005037 177776 R0005: CLR @#PSW ;CLEAR THE PSW
4290 003134 000270 ;SEN ;MAKE N=1
4291
4292 003136 100001 I0005: BPL E0005 ;TEST THE BPL - IT SHOULDN'T BR
4293
4294 003140 000402 ;BR T0006 ;GO TO NEXT TEST
4295
4296 003142 000000 E0005: HALT ;BPL BRANCHED WITH N=1
4297 003144 000771 ;BR R0005 ;LOCK ON HARD ERROR
4298

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4299 ; *****
4300 ; .SBTTL T0006 BASIC "BPL" TEST WITH N=0
4301 ; *****
4302 ;MICROPROGRAMMING / LOGIC INFORMATION
4303
4304 ;ROM SEQ: [111,340,341,016] FC 1,7
4305
4306 ;ACT BUTS: 37(004)100,111 / 16(340)116,16
4307
4308 ;EXEC: [341]ALUC LLLH : (016)D=#T0007
4309
4310 ;CODES: N / A
4311
4312 ;SYNC: B05J2 (-) / T= 1.8 USEC
4313
4314 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L
4315
4316
4317 003146 012700 000006 T0006: MOV #0006,RO ;LOAD RO WITH TEST NO.
4318 003152 005037 177776 R0006: CLR @#PSW ;CLEAR THE PSW
4319 003156 000257 ;SCOPE SYNC
4320
4321 003160 100002 I0006: BPL T0007 ;TEST THE BPL - IT SHOULD BR
4322
4323 003162 000000 E0006: HALT ;BPL FAILED TO LOAD THE PC
4324 003164 000772 BR R0006 ;LOCK ON HARD ERROR
4325

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003166 012700 000007
003172 012702 177703
003176 012705 177776
003202 012704 000017
003206 005015
003210 005003
003212 000277
003214 011503
003216 020403
003220 001402
003222 000000
003224 000770

```
; *****  
.SBTTL T0007 BASIC "MOV (RA),RB" TEST - (RA)=177776  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [141,247,250,160,204,000] FC 1,2,4,8  
;ACT BUTS: 37(004)100,141 / 35(247)120,160 / 20(160)000,000  
;EXEC: [160]ALUC=LLLLL : [204]D=000017  
;CODES: [204]SPS=3 / N:C=0000  
;SYNC: B05J2 (-) T=2.25 USEC  
;KEY SIG: K3-3 MOV L / K3-3 SM=1 L / K3-3 DM=0 L  
T0007: MOV #0007,R0 ;LOAD R0 WITH TEST NO.  
MOV #177703,R2 ;DEST ADDR = R3  
MOV #PSW,R5 ;SOURCE ADDR = 177776  
MOV #17,R4 ;RESULT S / B=000017  
R0007: CLR (R5) ;MAKE [PSW]=000  
CLR R3 ;[DEST] = 000000  
SCC ;MAKE [PSW]=017  
I0007: MOV (R5),R3 ;TEST THE MOV  
CMP R4,R3 ;CORRECT RESULT ?  
BEQ T0010 ;BR IF YES  
E0007: HALT ;ERROR-MOV FAILED  
BR R0007 ;LOCK ON HARD ERROR
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4359 ; *****
4360 ; .SBTTL T0010 BASIC "CMP RA,(RB)" TEST - [RA] = [DEST]
4361 ; *****
4362
4363 ;MICROPROGRAMMING / LOGIC INFORMATION
4364
4365 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
4366
4367 ;ACT BLTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
4368
4369 ;EXEC: [224]ALUC=LLHHL :[367]D=000000
4370
4371 ;CODES: [367]SPS=3 / N:C=0100
4372
4373 ;SYNC: B05J2 (-) T=2.6 USEC
4374
4375 ;KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=1 L / K4-4 ALLOW CLK L
4376 ; K3-8 CIN00 L
4377
4378 003226 012700 000010 T0010: MOV #0010,R0 ;LOAD R0 WITH TEST NO.
4379 003232 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
4380 003236 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
4381 003242 012737 125252 067602 R0010: MOV #125252,@#MBUF0 ;MAKE [DEST] = 125252
4382 003250 000257 CCC ;MAKE N:C=0000
4383
4384 003252 020412 I0010: CMP R4,(R2) ;TEST THE CMP
4385
4386 003254 001403 BEQ T0011 ;BR IF "Z" GOT SET
4387
4388 003256 011203 E0010: MOV (R2),R3 ;GET THE WAS DATA
4389 003260 000000 HALT ;ERROR - CMP FAILED TO SET "Z"
4390 003262 000767 BR R0010 ;LOCK ON HARD ERROR

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K09

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 115
DBQEAB.CMB T0010 BASIC "CMP RA,(RB)" TEST - [RA] = [DEST]

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4391 ; *****  
4392 ; .SBTTL T0011 BASIC "CMP RA,(RB)" TEST - [RA] NOT EQUAL TO [DEST]  
4393 ; *****  
4394 ; MICROPROGRAMMING / LOGIC INFORMATION  
4395 ; ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8  
4396 ; ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016  
4397 ; EXEC: [224]ALUC=LLHHL : [367]D=177777  
4398 ; CODES: [367]SPS=3 / N:C=1001  
4399 ; SYNC: B05J2 (-) T=2.6 USEC  
4400 ; KEY SIG: K3-3 CMP L / K3-3 SM=0 L / K3-3 DM=1 L / K4-4 ALLOW CLK L  
4401 ; K3-8 CIN00 L  
4402  
4403  
4404  
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4407  
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4409  
4410  
4411 003264 012700 000011 TOC11: MOV #0011,R0 ;LOAD R0 WITH TEST NO.  
4412 003270 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0  
4413 003274 012704 000001 MOV #1,R4 ;RESULT S / B = 000001  
4414 003300 012737 000000 067602 R0011: MOV #0,2#MBUF0 ;MAKE [DEST] = 000000  
4415 003306 000264 SEZ ;MAKE N:C=0100  
4416  
4417 003310 020412 I0011: CMP R4,(R2) ;TEST THE CMP  
4418  
4419 003312 001003 BNE T0012 ;BR IF "Z" GOT CLEARED  
4420  
4421 003314 011203 E0011: MOV (R2),R3 ;GET THE WAS DATA  
4422 003316 000000 HALT ;ERROR - CMP FAILED TO CLR "Z"  
4423 003320 000767 BR R0011 ;LOCK ON HARD ERROR  
4424
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4425 ; *****
4426 ; .SBTTL T0012 BASIC "CMP #N,R" TEST - N = [R]
4427 ; *****
4428 ; MICROPROGRAMMING / LOGIC INFORMATION
4429 ; ROM SEQ: [142,240,250,120,371,362,000] FC 1,2,8
4430 ; ACT BUTS: 37(004)100,142 / 35(240)120,120 / 27(371)000,000
4431 ; EXEC: [371]ALUC=LLHHL : [362]D=125252
4432 ; CODES: [362] SPS=3 / N:C=
4433 ; SYNC: B05J2 (-) / T= 2.5 USEC
4434 ; KEY SIG: K3-3 CMPL / K3-3 DM=OL / K3-6 BYTE INSTR H
4435
4436 T0012: MOV #0012,R0 ;LOAD R0 WITH TEST NO.
4437 MOV #125252,R4 ;RESULT S / B = 125252
4438 MOV #177703,R2 ;DEST ADDR = R3
4439 R0012: MOV R4,R3 ;[DEST] = 125252
4440 CCC ;SCOPE SYNC
4441
4442 I0012: CMP #125252,R3 ;TEST THE CMP
4443 BEQ A0012 ;BR IF N = [R]
4444
4445 E10012: HALT ;CMP FAILED
4446 BR R0012 ;LOCK ON HARD ERROR
4447
4448 A0012: CMP R4,R3 ;DID CMP ALTER [DEST]?
4449 BEQ T0013 ;BR IF NO
4450
4451 E20012: HALT ;CMP DELIVERED A RESULT
4452 BR R0012 ;LOCK ON HARD ERROR
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4462 ; *****
4463 ; .SBTTL T0013 BASIC "CMP #N,R" TEST - N NOT EQUAL TO [R]
4464 ; *****
4465 ;
4466 ;MICROPROGRAMMING / LOGIC INFORMATION
4467 ;
4468 ;ROM SEQ: [142,240,250,120,371,362,000] FC 1,2,8
4469 ;
4470 ;ACT BUTS: 37[004]100,142 / 35[240]120,120 / 27[371]000,000
4471 ;
4472 ;EXEC: [371]ALUC=LLHHL : [362]D=177777
4473 ;
4474 ;CODES: [362] SPS=3 / N:C=1001
4475 ;
4476 ;SYNC: B05J2 (-) T=2.5 USEC
4477 ;
4478 ;KEY SIG: K3-3 CMPL / K3-3 DM=OL / K3-6 BYTE INSTR H / K3-8 CINCO L
4479 ;
4480 003364 012700 000013 T0013: MOV #0013,R0 ;LOAD R0 WITH TEST NO.
4481 003370 005004 CLR R4 ;RESULT S / B = 000000
4482 003372 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
4483 003376 010403 R0013: MOV R4,R3 ;[DEST] = 125252
4484 003400 000264 SEZ ;SCOPE SYNC
4485 ;
4486 003402 022703 00C001 I0013: CMP #1,R3 ;TEST THE CMP
4487 ;
4488 003406 001002 BNE A0013 ;BR IF N NOT EQUAL TO [R]
4489 ;
4490 003410 000000 E10013: HALT ;CMP FAILED
4491 003412 000771 BR R0013 ;LOCK ON HARD ERROR
4492 ;
4493 003414 020403 A0013: CMP R4,R3 ;DID CMP ALTER [DEST]?
4494 003416 001402 BEQ T0014 ;BR IF NO
4495 ;
4496 003420 000000 E20013: HALT ;CMP DELIVERED A RESULT
4497 003422 000765 BR R0013 ;LOCK ON HARD ERROR
4498 ;
    
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4499 ; *****
4500 .SBTTL T0014 BASIC "MOV RA,(RB)" TEST
4501 ; *****
4502
4503 ;MICROPROGRAMMING / LOGIC INFORMATION
4504
4505 ;ROM SEQ: [171,257,201,125,375,016] FC 1,4,8
4506
4507 ;ACT BUTS: 37[004]100,171 / 22[171]200,201 / 16[125]016,016
4508
4509 ;EXEC: [201]ALUC=LLLLL : [125]D=17777
4510
4511 ;CODES: [125]SPS=3 / N:C=1000
4512
4513 ;SYNC: B05J2 (-) T=2.42 USEC
4514
4515 ;KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=1 L
4516
4517 003424 012700 000014 T0014: MOV #0014,R0 ;LOAD R0 WITH TEST NO.
4518 003430 012702 067602 MOV #MBUF0,R2 ;DEST ADDR=MBUF0
4519 003434 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
4520 003440 005012 R0014: CLR (R2) ;MAKE [DEST] = 000000
4521 003442 000257 CCC ;SCOPE SYNC - N:C=0000
4522
4523 003444 010412 I0014: MOV R4,(R2) ;TEST THE MOV
4524
4525 003446 020412 CMP R4,(R2) ;RESULT CORRECT ?
4526 003450 001403 BEQ T0015 ;BR IF YES
4527
4528 003452 011203 E0014: MOV (R2),R3 ;GET THE WAS DATA
4529 003454 000000 HALT ;ERROR - MOV FAILED
4530 003456 000770 BR R0014 ;LOCK ON HARD ERROR
4531

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; *****  
; .SBTTL T0015 BASIC "MOV #N,(R)" TEST  
; *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; ROM SEQ      [142,240,250,171,257,200,125,375,016] FC 1,2,4,8  
; ACT BUTS:    37(004)100,142 / 35(240)120,171 / 22(171)200,200 / 16(125)016,016  
; EXEC:        [200]ALUC=LLLLL : [125]D=177777  
; CODES:       [125]SPS=3      /      N:C=1000  
; SYNC:        B05J2 (-)      T=3.26 USEC  
; KEY SIG:     K3-3 MOV L / K3-3 SM=2 L / K3-3 DM=1 L / K5-5 BCON(1+2) H
```

```
003460 012700 000015  
003464 012702 067602  
003470 012704 177777  
003474 005012  
003476 000257  
  
003500 012712 177777  
  
003504 020412  
003506 001403  
  
003510 011203  
003512 000000  
003514 000767
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```
T0015: MOV #0015,R0 ;LOAD R0 WITH TEST NO.  
MOV #MBUFD,R2 ;DEST ADDR = MBUFD  
MOV # -1,R4 ;RESULT S / B = 177777  
R0015: CLR (R2) ;MAKE [DEST] = 000000  
CCC ;SCOPE SYNC  
  
I0015: MOV # -1,(R2) ;TEST THE MOV  
  
CMP R4,(R2) ;RESULT OK ?  
BEQ T0016 ;BR IF YES  
  
E0015: MOV (R2),R3 ;GET THE WAS DATA  
HALT ;ERROR - MOV FAILED  
BR R0015 ;LOCK ON HARD ERROR
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: *****
.SBTTL T0016 BASIC "MOV# #N,X(R)" TEST - DEST EVEN
: *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [142,240,250,177,206,212,202,205,125,375,016] FC 1,2,4

;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)1212,212 / 21(206)200,202
; / 16(125)016,016

;EXEC: [205]ALUC=LLLLL : [125]D=001001

;CODES: [125] SPS=3 / N:C=0000

;SYNC: B05J2 (-) / T= 4.2 USEC

;KEY SIG: K3-3 MOVL / K3-3 DM=6L / K3-5 DGPL / K3-6 BYTE INSTR H

00...16 012700 000016
003522 012704 177401
003526 012702 067606
003532 012705 067602
003536 012712 177777
003544 112765 000001 000004
003552 020412
003554 001403
003556 011203
003560 000000
003562 000765

T0016: MOV #0016,R0 ;LOAD R0 WITH TEST NO.
MOV #177401,R4 ;RESULT S / B = 177401
MOV #MBUF1,R2 ;DEST ADDR = MBUF1
MOV #MBUF0,R5 ;BASE DEST ADDR = MBUF0
R0016: MOV #-1,(R2) ;[DEST] = 177777
CCC ;SCOPE SYNC
I0016: MOV# #1,4(R5) ;TEST THE MOV#
CMP R4,(R2) ;RESULT OK?
BEQ T0017 ;BR IF YES
E0016: MOV (R2),R3 ;GET WAS DATA
HALT ;MOV# DELIVERED WRONG RESULT
BR R0016 ;LOCK ON HARD ERROR

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4602 ; *****
4603 ; .SBTTL TOOL7 BASIC "MOV8 #N,X(R)" TEST - DEST ODD
4604 ; *****
4605 ; MICROPROGRAMMING / LOGIC INFORMATION
4606 ; ROM SEQ: (142,240,250,177,206,212,202,205,125,375,016) FC 1,2,4
4607 ; ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,212 / 21(206)200,202
4608 ; / 16(125)016,016
4609 ; EXEC: (205)ALUC=LLLLL :(125)D=001001
4610 ; CODES: (125) SPS=3 / N:C=0000
4611 ; SYNC: B05J2 (-) / T= 4.2 USEC
4612 ; KEY SIG: K3-3 MOVL / K3-3 DM=6L / K3-5 DOPL / K3-6 BYTE INSTR H
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4621 003564 012700 000017 TOOL7: MOV #0017,R0 ;LOAD R0 WITH TEST NO.
4622 003570 012704 000777 MOV #777,R4 ;RESULT S / B = 777
4623 003574 012702 067606 MOV #MBUF1,R2 ;DEST ADDR = MBUF1
4624 003600 012705 067602 MOV #MBUF0,R5 ;BASE DEST ADDR = MBUF0
4625 003604 012712 177777 R0017: MOV #-1,(R2) ;[DEST] = 177777
4626 003610 000257 CCC ;SCOPE SYNC
4627
4628 003612 112765 000001 000005 I0017: MOV8 #1,5(R5) ;TEST THE MOV8
4629
4630 003620 020412 CMP R4,(R2) ;RESULT OK?
4631 003622 001403 BEQ CLMT ;BR IF YES
4632
4633 003624 011203 E0017: MOV (R2),R3 ;GET WAS DATA
4634 003626 000000 HALT ;MOV8 DELIVERED WRONG RESULT
4635 003630 000765 BR R0017 ;LOCK ON HARD ERROR
4636
4637 ;THIS ROUTINE CLEARS THE 512 BYTE MISSED TEST STATUS TABLE
4638
4639 003632 012701 070162 CLMT: MOV #STAB1,R1 ;R1 POINTS TO BEGINNING OF TABLE
4640 003636 012702 071204 MOV #STAB2,R2 ;R2 POINTS TO END OF TABLE
4641 003642 012721 000000 MT: MOV #0,(R1)+ ;CLEAR ONE WORD
4642 003646 020102 CMP R1,R2 ;AT END OF TABLE ?
4643 003650 001374 BNE MT ;BR IF NOT AT END
4644

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 122
DBQERB.CMB T0017 BASIC "MOV B #N,X(R)" TEST - DEST 000

```
4645 ; *****
4646 ; .SBTTL T0020 BASIC "TST @#A" TEST WITH (A)>0
4647 ; *****
4648 ; MICROPROGRAMMING / LOGIC INFORMATION
4649 ; ROM SEQ: [163,264,265,266,267,220,211,367,376,01E1 FC 1,3,9,8
4650 ; ACT BUTS: 37(004)100,163 / 33(266)220,220 / 16(367)C16,016
4651 ; EXEC: [220]ALUC LLLL :[211]D=377
4652 ; CODES: [367]SPS=3 / N:C=0000
4653 ; SYNC: B05J2 (-) / T= 2.8 USEC
4654 ; KEY SIG: K3-4 TSTL / K3-3 DM=3L
4655
4656 T0020: MOV #0020,R0 ;LOAD R0 WITH TEST NO.
4657 MOV #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
4658 MOV #FIRST,R3 ;R3 POINTS TO LOCATION THAT STORES NO OF FIRST TEST
4659 MOV R0,(R3) ;SAVE FIRST TEST NO. CHECKED
4660 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
4661 MOV #377,R4 ;RESULT S / B = 377 (NO CHANGE)
4662 R0020: MOV R4,(R2) ;[DEST] = 377
4663 CCC ;SCOPE SYNC
4664
4665 I0020: TST @#MBUFO ;TEST THE TST
4666
4667 BEQ E0020 ;BR IF "Z" SET - IT SHOULDN'T BE
4668 BPL T0021 ;BR IF "N" CLEAR - IT SHOULD BE
4669
4670 E0020: HALT ;TST FAILED TO ALTER CODES PROPERLY
4671 BR R0020 ;LOCK ON HARD ERROR
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 123
 DBQEAB.CMB T0020 BASIC "TST @#A" TEST WITH [A]>0

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003722 012700 000021
003726 112760 000377
003734 012702 067602
003740 012704 100000
003744 010412
003746 000257
003750 005737 067602
003754 001401
003756 100402
003760 000000
003762 000770
003764 020412
003766 001403
003770 011203
003772 000000
003774 0007E3
  
```

070162

```

; *****
; .SBTTL T0021 BASIC "TST @#A" TEST WITH [A] < 0
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:      [163,264,265,266,267,220,211,367,375,016] FC 1,3,9,8
; ACT BUTS:     37(004)100,163 / 33(266)220,220 / 16(367)016,016
; EXEC:         [220]ALUC=LLLLL : [211]D=100000
; CODES:        [367]SP=3 / N:C=1000
; SYNC:         B05J2 (-) / T= 2.8 USEC
; KEY SIG:      K3-4 TSTL / K3-3 DM=3L / K5-2 PS(N)(1)H

T0021:  MOV      #0021,R0          ;LOAD R0 WITH TEST NO.
        MOV8    #377,STAB1(R0)   ;SET FLAG FOR THIS TEST IN MISSED TABLE
        MOV     #MBUF0,R2        ;DEST ADDR = MBUF0
        MOV     #100000,R4       ;MAKE S / B = 100000
R0021:  MOV     R4,(R2)          ;MAKE [DEST] = 100000
        CCC

I0021:  TST     @MBUF0           ;TEST THE TST
        BEQ     E10021          ;BR IF "Z" SET - IT SHOULDN'T BE
        BMI     A0021           ;BR IF "N" SET - IT SHOULD BE

E10021: HALT                    ;TST FAILED TO ALTER CODES PROPERLY
        BR     R0021            ;LOCK ON HARD ERROR
A0021:  CMP     R4,(R2)          ;DID TST DISTURB [DEST] ?
        BEQ     T0022          ;BR IF NOT

E20021: MOV     (R2),R3          ;GET THE WAS DATA
        HALT                    ;TST DELIVERED A RESULT
        BR     R0021            ;LOCK ON HARD ERROR
  
```

G10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 124
 DBQEAB.CMB T0021 BASIC "TST 2#A" TEST WITH [A] < 0

```

4719 ; *****
4720 ; .SBTTL T0022 BASIC "TST 2#A" WITH [A] = 0
4721 ; *****
4722
4723 ;MICROPROGRAMMING / LOGIC INFORMATION
4724
4725 ;ROM SEQ: [163,264,265,266,267,220,211,367,375,016] FC 1,3,9,8
4726
4727 ;ACT BUTS: 37[004]100,163 / 33[266]220,220 / 16[367]016,016
4728
4729 ;EXEC: [220]ALUC=LLLLL : [211]D=000000
4730
4731 ;CODES: [367]SPS=3 / N:C=0100
4732
4733 ;SYNC: B05J2 (-) / T=2.8 USEC
4734
4735 ;KEY SIG: K3-4 TSTL / K3-3 DM=3L / K5-2 PS(Z)(1)H
4736
4737 003776 012700 0000F2 T0022: MOV #0022,R0 ;LOAD R0 WITH TEST NO.
4738 004002 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
4739 004010 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
4740 004014 005004 CLR R4 ;RESULT S / B = 0 (IT SHOULDN'T CHANGE
4741 004016 005012 R0022: CLR (R2) ;[DEST] = 0
4742 004020 000257 CCC ;SCOPE SYNC - Z=0
4743
4744 004022 005737 067602 I0022: TST 2#MBUF0 ;TEST THE TST
4745
4746 004026 001402 BEQ A0022 ;BR IF TST SET "Z"
4747
4748 004030 000000 E10022: HALT ;TST FAILED TO SET "Z"
4749 004032 000771 BR R0022 ;LOCK ON HARD ERROR
4750
4751 004034 020412 A0022: CMP R4,(R2) ;[DEST] STILL = 000000
4752 004036 001403 BEQ T0023 ;BR IF YES
4753
4754 004040 011203 E20022: MOV (R2),R3 ;GET THE WAS DATA
4755 004042 000000 HALT ;TST ALTERED THE [DEST]
4756 004044 000764 BR R0022 ;LOCK ON HARD ERROR
4757
  
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 125
DBQEAB.CMB T0022 BASIC "TST 0#A" WITH [A] = 0

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4758 ; *****  
4759 ; .SBTTL T0023 BASIC "TST (R)+ TEST  
4760 ; *****  
4761 ;  
4762 ;MICROPROGRAMMING / LOGIC INFORMATION  
4763 ;  
4764 ;ROM SEQ: [162,260,267,220,211,367,375,016] FC 1,3,8,9  
4765 ;  
4766 ;ACT BUTS: 37[004]100,162 / 33[260]220,220 / 16[367]016,016  
4767 ;  
4768 ;EXEC: [220]ALUC=LLLLL : [211]D=000000  
4769 ;  
4770 ;CODES: [367] SPS=3 / N:C=0100  
4771 ;  
4772 ;SYNC: B05J2 (-) / T= 1.84 USEC  
4773 ;  
4774 ;KEY SIG: K3-4 TSTL / K3-3 DM=2L / K5-2 PS(Z)(1)H  
4775 ;  
4776 004046 012700 000023 T0023: MOV #0023,R0 ;LOAD R0 WITH TEST NO.  
4777 004052 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
4778 004060 012702 067602 MOV #MBUFO,R2 ;INITIAL DEST ADDR = MBUFO  
4779 004064 005004 CLR R4 ;RESULT S / B = 0 (NO CHANGE)  
4780 004066 005012 R0023: CLR (R2) ;MAKE [DEST] = 000000  
4781 004070 000257 CCC ;SCOPE SYNC  
4782 ;  
4783 004072 005722 I0023: TST (R2)+ ;TEST THE TST  
4784 ;  
4785 004074 001402 BEQ A0023 ;BR IF "Z" SET - IT SHOULD BE  
4786 ;  
4787 004076 000000 E10023: HALT ;TST FAILED TO SET "Z"  
4788 004100 000772 BR R0023 ;LOCK ON HARD ERROR  
4789 ;  
4790 004102 022702 067604 A0023: CMP #MBUFO+2,R2 ;DID REG. GET AUTO-INCREMENTED ?  
4791 004106 001402 BEQ T0024 ;BR IF YES  
4792 ;  
4793 004110 000000 E20023: HALT ;TST FAILED TO UPDATE REGISTER  
4794 004112 000765 BR R0023 ;LOCK ON HARD ERROR  
4795
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4796 ; *****
4797 ; .SBTTL T0024 BASIC "TST -(R)" TEST
4798 ; *****
4799
4800 ;MICROPROGRAMMING / LOGIC INFORMATION
4801
4802 ;ROM SEQ: [164,260,267,220,211,367,375,016]
4803
4804 ;ACT BUTS: 37(004)100,164 / 33(260)220,220 / 16(367)016,016
4805
4806 ;EXEC: [220]ALUC=LLLLL :[211]D=125252
4807
4808 ;CODES: [367] SPS=3 / N:C=0000
4809
4810 ;SYNC: B05J2 (-) / T= 1.84 USEC
4811
4812 ;KEY SIG: K3-4 TSTL / K3-3 DM=4
4813
4814 004114 012700 000024 T0024: MOV #0024,R0 ;LOAD R0 WITH TEST NO.
4815 004120 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
4816 004126 012702 067620 MOV #DWT A+6,R2 ;DEST ADDR = DWT A+6
4817 004132 012704 000377 MOV #377,R4 ;RESULT S / B = 377
4818 004136 012705 067622 R0024: MOV #DWT A+10,R5 ;BASE DEST ADDR = DWT A+10
4819 004142 000270 SEN ;SCOPE SYNC
4820
4821 004144 005745 I0024: TST -(R5) ;TEST THE TST
4822
4823 004146 100002 BPL A0024 ;BR IF "N" CLEAR
4824
4825 004150 000000 E10024: HALT ;TST FAILED TO CLEAR "N"
4826 004152 000771 BR R0024 ;LOCK ON HARD ERROR
4827
4828 004154 020502 A0024: CMP R5,R2 ;DID DEST REG GET DECREMENTED?
4829 004156 001402 BEQ B0024 ;BR IF YES
4830
4831 004160 000000 E20024: HALT ;ERROR - TST FAILED TO UPDATE DEST REG
4832 004162 000765 BR R0024 ;LOCK ON HARD ERROR
4833
4834 004164 020412 B0024: CMP R4,(R2) ;DID TST ALTER [DEST]?
4835 004166 001404 BEQ T0025 ;BR IF NOT
4836
4837 004170 011203 E30024: MOV (R2),R3 ;GET WAS DATA
4838 004172 000900 HALT ;TST ALTERED [DEST]
4839 004174 010412 MOV R4,(R2) ;RESTORE [DEST]
4840 004176 000757 BR R0024 ;LOCK ON HARD ERROR
4841
    
```

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 127
DBQEAB.CMB T0024 BASIC "TST -(R)" TEST

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4842 ; *****  
4843 ; .SBTTL T0025 BASIC "COM @#A" TEST  
4844 ; *****  
4845 ;MICROPROGRAMMING / LOGIC INFORMATION  
4846 ;ROM SEQ: [163,264,265,266,267,220,211,267,375,016] FC 1,3,9,8  
4847 ;ACT BUS: 37(004)100,163 / 33(266)220,220 / 16 (367)016,016  
4848 ;EXEC: [220]ALUC=HLLLL :[211]D=177777  
4849 ;CODES: [367] SPS=3 / N:C=1001  
4850 ;SYNC: B05J2 (-) / T= 2.8 USEC  
4851 ;KEY SIG: K3-4 COM L / K3-3 DM=3L / K5-2 PS(N)(1)H / K5-2 PS(C)(1)H  
4852  
4853  
4854  
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4856  
4857  
4858  
4859  
4860 004200 012700 000025 T0025: MOV #0025,R0 ;LOAD R0 WITH TEST NO.  
4861 004204 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
4862 004212 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0  
4863 004216 005004 CLR R4 ;RESULT S / B = 177777  
4864 004220 005104 COM R4  
4865 004222 005012 R0025: CLR (R2) ;MAKE [DEST] = 000000  
4866 004224 000257 CCC ;SCOPE SYNC  
4867  
4868 004226 005137 067602 I0025: COM @MBUF0 ;TEST THE COM  
4869  
4870 004232 020412 CMP R4,(R2) ;RESULT = 177777 ??  
4871 004234 001403 BEQ T0026 ;BR IF YES  
4872  
4873 004236 011203 E0025: MOV (R2),R3 ;GET THE WAS DATA  
4874 004240 000000 HALT ;COM DELIVERED THE WRONG RESULT  
4875 004242 000767 BR R0025  
4876
```

K10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 128
DBQEAB.CMB T0025 BASIC "COM J#A" TEST

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4877 ; *****
4878 ; .SBTTL T0026 BASIC "INC J#A" TEST
4879 ; *****
4880
4881 ; MICROPROGRAMMING / LOGIC INFORMATION
4882
4883 ; ROM SEQ: [163,264,265,266,267,220,211,367,375,016] FC 1,3,9,8
4884
4885 ; ACT BUTS: 37[004]100,163 / 33[266]220,220 / 16[367]016,016
4886
4887 ; EXEC: [220]ALUC=LLLLL : [211]D=100
4888
4889 ; CODES: [367] SPS=3 / N:C=0000
4890
4891 ; SYNC: B05J2 (-) / T= 2.8 USEC
4892
4893 ; KEY SIG: K3-4 INC L / K3-3 DM=3L / K3-8 CIN 00 L
4894
4895 004244 012700 000026 T0026: MOV #0026,R0 ;LOAD R0 WITH TEST NO.
4896 004250 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
4897 004256 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
4898 004262 012704 000100 MOV #100,R4 ;RESULT S / B = 100
4899 004266 012712 000077 R0026: MOV #77,(R2) ;[DEST] = 77
4900 004272 000257 CCC ;SCOPE SYNC
4901
4902 004274 005237 067602 I0026: INC J#MBUF0 ;TEST THE INC
4903
4904 004300 020412 CMP R4,(R2) ;DID RESULT = 100 ??
4905 004302 001403 BEQ T0027 ;BR IF YES
4906
4907 004304 011203 E0026: MOV (R2),R3 ;GET THE WAS DATA
4908 004306 000000 HALT ;INC DELIVERED WRONG RESULT
4909 004310 000766 BR R0026 ;LOCK ON HARD ERROR
4910
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4911 ; *****
4912 ; .SBTTL T0027 BASIC "DEC RM" TEST
4913 ; *****
4914 ; MICROPROGRAMMING / LOGIC INFORMATION
4915 ; ROM SEQ: [104,373,360,001] FC 1,7,8
4916 ; ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
4917 ; EXEC: [104]ALUC=LHHHH : [373]D=000000
4918 ; CODES: [367] SPS=3 / N:C=0100
4919 ; SYNC: B05J2 (-) / T= 1 USEC
4920 ; KEY SIG: K3-4 DEC L / K3-4 OVLAP INSTR H / K3-3 DM=OL / K5-2 PS(Z)(1)H
4921
4922
4923
4924
4925
4926
4927
4928
4929 004312 012700 000027 T0027: MOV #0027,R0 ;LOAD R0 WITH TEST NO.
4930 004316 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
4931 004324 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
4932 004330 005004 CLR R4 ;RESULT S / B = 000000
4933 004332 012703 000001 R0027: MOV #1,R3 ;[DEST0030
4934 004336 000257 CCC ;SCOPE SYNC
4935
4936 004340 005303 I0027: DEC R3 ;TEST THE DEC
4937
4938 004342 005703 TST R3 ;RESULT = 000000 ??
4939 004344 001402 BEQ T0030 ;BR IF YES
4940
4941 004346 000000 E0027: HALT ;DEC DELIVERED THE WRONG RESULT
4942 004350 000770 BR R0027 ;LOCK ON HARD ERROR
4943

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M10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 130
DBQEAB.CMB T0027 BASIC "DEC RN" TEST

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4944 ; *****  
4945 .SBTTL T0030 BASIC "DEC Q#A" TEST  
4946 ; *****  
4947  
4948 ;MICROPROGRAMMING / LOGIC INFORMATION  
4949  
4950 ;ROM SEQ: [163,264,265,266,267,220,211,367,375,016] FC 1,3,9,8  
4951  
4952 ;ACT BUTS: 37(004)100,163 / 33(266)220,220 / 16(367)016,016  
4953  
4954 ;EXEC: [220]ALUC=LHHH : [211]D=177777  
4955  
4956 ;CODES: [367] SPS=3 / N:C=1000  
4957  
4958 ;SYNC: B05J2 (-) / T=2.8 USEC  
4959  
4960 ;KEY SIG: K3-4 DEC L / K3-3 DM=3L / K5-2 PS(N)(1)H  
4961  
4962 004352 012700 000030 T0030: MOV #0030,R0 ;LOAD R0 WITH TEST NO.  
4963 004356 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
4964 004364 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777  
4965 004370 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO  
4966 004374 005012 R0030: CLR (R2) ;MAKE [DEST] = 000000  
4967 004376 000257 CCC ;SCOPE SYNC  
4968  
4969 004400 005337 067602 I0030: DEC @#MBUFO ;TEST THE DEC  
4970  
4971 004404 020412 CMP R4,(R2) ;DID RESULT = 177777 ??  
4972 004406 001403 BEQ T0031 ;BR IF YES  
4973  
4974 004410 011203 MOV (R2),R3 ;[R3] = WAS DATA  
4975 004412 000000 E0030: HALT ;DEC DELIVERED WRONG RESULT  
4976 004414 000767 BR R0030 ;LOCK ON HARD ERROR  
4977
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4978 ; *****
4979 ; .SBTTL T0031 BASIC "CLR X(R)" TESTS
4980 ; *****
4981 ; MICROPROGRAMMING / LOGIC INFORMATION
4982 ; ROM SEQ: [167,261,262,266,267,220,211,367,375,016] FC 1,3,9,8
4983 ; ACT BUTS: 37[004]100,167 / 17[167]262,262 / 33[266]220,220 / 16[367]016,016
4984 ; EXEC: [220]ALUC HLLHM : [211]D=000000
4985 ; CODES: [367] SPS=3 / N:C=0100
4986 ; SYNC: B05J2 (-) / T= 2.5 USEC
4987 ; KEY SIG: K3-3 DM=6L / K3-4 CLRL
4988
4989 T0031: MOV #0031,R0 ; LOAD R0 WITH TEST NO.
4990 MOV #377,STAB1(R0) ; SET FLAG FOR THIS TEST IN MISSED TABLE
4991 MOV #MBUFO+2,R2 ; DEST ADDR = MBUFO+2
4992 CLR F.4 ; RESULT S / B = 000000
4993 R0031: MOV #MBUFO,R5 ; BASE DEST ADDR = MBUFO
4994 MOV #-1,(R2) ; [DEST] = 177777
4995 CCC ; SCOPE SYNC
4996
5000 I0031: CLR 2(R5) ; TEST THE CLR
5001
5002 CMP R4,(R2) ; RESULT = 0?
5003 BEQ T0032 ; BR IF YES
5004
5005 E0031: MOV (R2),R3 ; GET WAS DATA
5006 HALT ; CLR FAILED TO ZERO [DEST]
5007 BR R0031 ; LOCK ON HARD ERROR.
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004466 012700 000032
004472 112760 000377 070162
004500 012704 052524
004504 012702 177703
004510 012703 125252
004514 000257

004516 006303

004520 103402

004522 000000
004524 000771

004526 020403
004530 001402

004532 000000
004534 000765

: *****
: .SBTTL TC032 BASIC "ASL RM" TEST WITH [DEST]=125252 AND C(0)
: *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [104,373,360,000] FC 1,7,8
;ACT BUTS: 37[004]160,104 / 31[104]360,360 / 27[373]1000,000
;EXEC: [104]ALUC=LHMLL :[373]D=52524
;CODES: [360] SPS=3 / N:C=0001
;SYNC: B05J2 (-) / T= 1 USEC
;KEY SIG: K3-5 ROTSHF H / K3-3 SM=6L / K5-2 PS (C)(1)H

T0032: MOV #0032,R0 ;LOAD R0 WITH TEST NO.
MOV #377,\$TAB1(RC) ;SET FLAG FOR THIS TEST IN MISSED TABLE
MOV #52524,R4 ;RESULT S / B = 52524
MOV #177703,R2 ;DEST ADDR = R3
R0032: MOV #125252,R3 ;MAKE [DEST] = 125252
CCC ;MAKE C=0

I0032: ASL R3 ;TEST THE ASL - IT SHOULD SET "C"
BCS A0032 ;BR IF "C" GOT SET

E10032: HALT ;ASL FAILED TO SET "C" BIT
BR R0032 ;LOCK ON HRD ERROR

A0032: CMP R4,R3 ;WAS RESULT = 52524 ??
BEQ T0033 ;BR IF YES

E20032: HALT ;ASL DELIVERED THE WRONG RESULT
BR R0032 ;LOCK ON HARD ERROR

C11

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 133
DBQEAB.CMP T0032 BASIC "ASL RM" TEST WITH (DEST)=125252 AND C(0)

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5051 ; *****  
5052 ; .SBTTL T0033 BASIC "ASL RM" TEST WITH (DEST)=052525 AND C(1)  
5053 ; *****  
5054 ; MICROPROGRAMMING / LOGIC INFORMATION  
5055 ; ROM SEQ: (104,373,360,000) FC 1,7,8)  
5056 ; ACT BUTS: 37(004;100,104 / 31(104)360,360 / 27(373)000,000  
5057 ; EXEC: (104)ALUC=LHLL : (373)D=125252  
5058 ; CODES: (360) SPS=3 / N:C=1000  
5059 ; SYNC: B05J2 (-) / T= 1 USEC  
5060 ; KEY SIG: K3-5 ROTSHF H / K3-3 SM=6L / K5-2 PS(N)(1)H  
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5069 034536 012700 000033 T0033: MOV #0033,R0 ; LOAD R0 WITH TEST NO.  
5070 034542 112760 000377 070162 MOVB #377,STAB1(R0) ; SET FLAG FOR THIS TEST IN MISSED TABLE  
5071 004550 012704 125252 MOV #125252,R4 ; RESULT S / B = 125252  
5072 004554 012702 177703 MOV #177703,R2 ; DEST ADDR = R3  
5073 004560 012703 052525 R0033: MOV #052525,R3 ; MAKE (DEST) = 052525  
5074 004564 000241 SEC ; MAKE C=1  
5075  
5076 004566 006303 I0033: ASL R3 ; TEST THE ASL - IT SHOULD CLR "C"  
5077  
5078 004570 103002 BCC A0033 ; BR IF "C" GOT CLEARED  
5079  
5080 004572 000000 E10033: HALT ; ASL FAILED TO CLEAR "C"  
5081 004574 000771 BR R0033 ; LOCK ON HARD ERROR  
5082  
5083 004576 020403 A0033: CMP R4,R3 ; RESULT = 125252 ??  
5084 004600 001402 BEQ T0034 ; BR IF YES  
5085  
5086 004602 000000 E20033: HALT ; ASL DELIVERED WRONG RESULT  
5087 004604 000765 BR R0033 ; LOCK ON HARD ERROR
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; *****
; .SBTTL T0034 BASIC "ROL RM" TEST WITH [DEST]=125252 AND C(0)
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [104,373,360,000] FC 1,7,8
; ACT BUTS: 37(104)100,104 / 31(104)360,360 / 27(373)000,000
; EXEC: [104]ALUC=LHLL : [373]D=052524
; CODES: [360] SPS=3 / N:C=0001
; SYNC: B05J2 (-) / T= 1 USEC
; KEY SIG: K3-5 ROTSHF H / K3-3 SM=6L / K5-2 PS(C)(1)H

004606 012700 000034
004612 112760 000377 070162
004620 012702 177703
004624 012704 052524
004630 012703 125252
004634 000257
004636 006103
004640 103402
004642 000000
004644 000771
004646 020403
004650 001402
004652 000000
004654 000765

T0034: MOV #0034,R0 ;LOAD R0 WITH TEST NO.
MOV #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
MOV #177703,R2 ;DEST ADDR = R3
MOV #052524,R4 ;RESULT S / B = 052524
R0034: MOV #125252,R3 ;MAKE [DEST] = 125252
CCC ;MAKE C=0
I0034: ROL R3 ;TEST THE ROL - IT SHOULD SET C
BCS A0034 ;BR IF "C" GOT SET
E10034: HALT ;ROL FAILED TO SET "C"
BR R0034 ;LOCK ON HARD ERROR
A0034: CMP R4,R3 ;RESULT = 052524 ??
BEQ T0035 ;BR IF YES
E20034: HALT ;ROL DELIVERED WRONG RESULT
BR R0034 ;LOCK ON HARD ERROR

E11

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 135
DBGEAB.CMB T0034 BASIC "ROL RM" TEST WITH [DEST]=125252 AND C(0)

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5126 ; *****
5127 ; .SBTTL T0035 BASIC "ROL RM" TEST WITH [DEST]=052524 AND C(1)
5128 ; *****
5129
5130 ;MICROPROGRAMMING / LOGIC INFORMATION
5131
5132 ;ROM SEQ: [104,373,360,000] FC 1,7,8
5133
5134 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,000
5135
5136 ;EXEC: [104]ALUC=LHLL : [373]D=125251
5137
5138 ;CODES: [360] SPS=3 / N:C=1000
5139
5140 ;SYNC: B05J2 (-) / T= 1 USEC
5141
5142 ;KEY SIG: K3-5 ROTSHF H / K3-3 SM=6L / K5-2 PS(N)(1)H
5143
5144 004656 012700 000035 T0035: MOV #0035,R0 ;LOAD R0 WITH TEST NO.
5145 004662 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5146 004670 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
5147 004674 012704 125251 MOV #125251,R4 ;RESULT S / B = 125251
5148 004700 012703 052524 R0035: MOV #052524,R3 ;MAKE [DEST] = 052524
5149 004704 000261 SEC ;MAKE C=1
5150
5151 004706 006103 I0035: ROL R3 ;TEST THE ROL - IT SHOULD CLEAR C
5152
5153 004710 103002 BCC FJ035 ;BR IF "C" IS CLEAR
5154
5155 004712 003000 E10035: HALT ;ROL FAILED TO CLEAR "C"
5156 004714 C30771 BR R0035 ;LOCK ON HARD ERROR
5157
5158 004716 J20403 A0035: CMP R4,R3 ;RESULT = 125251 ??
5159 004720 001402 BEQ T0036 ;BR IF YES
5160
5161 004722 G30000 E20035: HALT ;ROL DELIVERED WRONG RESULT
5162 004724 000765 BR R0035 ;LOCK ON HARD ERROR
5163
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F11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 136
 DBQEAB.L 8 T0035 BASIC "ROL RN" TEST WITH [DEST]=052524 AND C(1)

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5164 ; *****
5165 .SBTTL T0036 BASIS "TSTB (R)" TEST - EVEN ADDRESS
5166 ; *****
5167
5168 ;MICROPROGRAMMING / LOGIC INFORMATION
5169
5170 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
5171
5172 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
5173
5174 ;EXEC: [220]ALUC=LLLLL : [211]D=000377
5175
5176 ;CODES: [367] SPS=3 / N:C=1000
5177
5178 ;SYNC: B05J2 (-) / T= 1.8 USEC
5179
5180 ;KEY SIG: K3-4 TSTL / K3-3 DM=1L / K5-2 PS(N)(1)H / K3-6 BYTE INSTR H
5181
5182 004726 012700 000036 T0036: MOV #0036,R0 ;LOAD R0 WITH TEST NO.
5183 004732 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5184 004740 012702 067620 MOV #DWTA+6,R2 ;DEST ADDR = DWTA+6
5185 004744 012704 000377 MOV #377,R4 ;RESULT S / B = 377
5186 004750 000257 R0036: CCC ;SCOPE SYNC
5187
5188 004752 105712 I0036: TSTB (R2) ;TEST THE TSTB
5189
5190 004754 100402 BMI A0036 ;BR IF "N" SET - IT SHOULD BE
5191
5192 004756 000000 E10036: HALT ;TSTB FAILED TO SET "N"
5193 004760 000773 BR R0036 ;LOCK ON HARD ERROR
5194
5195 004762 020412 A0036: CMP R4,(R2) ;DID TSTB DISTURB [DEST]
5196 004764 001404 BEQ T0037 ;BR IF NOT
5197
5198 004766 011203 E20036: MOV (R2),R3 ;GET WAS DATA
5199 004770 000000 HALT ;TSTB ALTERED [DEST]
5200 004772 010412 MOV R4,(R2) ;RESTORE [DEST]
5201 004774 000765 BR R0036 ;LOCK ON HARD EROR
  
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G11

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 137
DBGERR.CMB T0035 BASIS "TSTB (R)" TEST - EVEN ADDRESS

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5202 : *****
5203 : .SBTTL T0037 BASIS "TSTB (R)" TEST - ODD ADDRESS
5204 : *****
5205 ;
5206 ;MICROPROGRAMMING / LOGIC INFORMATION
5207 ;
5208 ;ROM SEQ: [161,266,267,237,270,222,253,075,374,375,016] FC 1,3,9,8
5209 ;
5210 ;ACT BUTS: 37(004)100,161 / 33(266)1220,237 / 34(237)1220,222 / 16(374)016,016
5211 ;
5212 ;EXEC: [222]ALUC=LLLLL : [253]D=000377
5213 ;
5214 ;CODES: [075] SPS=3 / N:C=1000
5215 ;
5216 ;SYNC: B05J2 (-) / T= 1.9 USEC
5217 ;
5218 ;KEY SIG: K3-4 TSTL / K3-3 DM=1L / K5-2 PS(N)(1)H / K3-6 BYTE INSTR H
5219 ;
5220 004776 012700 000037 T0037: MOV #0037,R0 ;LOAD R0 WITH TEST NO.
5221 005002 112760 000377 070162 T0037: MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5222 005010 012702 070144 T0037: MOV #DWTB+6,R2 ;DEST ADDR = DWTB+6
5223 005014 012704 177401 T0037: MOV #177401,R4 ;RESULT S / B = 177401
5224 005020 012703 070145 T0037: MOV #DWTB+7,R3 ;DEST ADDR USED = DWTB+7
5225 005024 000257 R0037: CCC ;SCOPE SYNC
5226 ;
5227 005026 105713 I0037: TSTB (R3) ;TEST THE TSTB
5228 ;
5229 005030 100402 I0037: BMI A0037 ;BR IF "N" SET - IT SHOULD BE
5230 ;
5231 005032 000000 E10037: HALT ;TSTB FAILED TO SET "N"
5232 005034 000773 E10037: BR R0037 ;LOCK ON HARD ERROR
5233 ;
5234 005036 020412 A0037: CMP R4,(R2) ;DID TSTB DISTURB (DEST)
5235 005040 001404 A0037: BEQ T0040 ;BR IF NOT
5236 ;
5237 005042 011203 E20037: MOV (R2),R3 ;GET WAS DATA
5238 005044 000000 E20037: HALT ;TSTB ALTERED (DEST)
5239 005046 010412 E20037: MOV R4,(R2) ;RESTORE (DEST)
5240 005050 000765 E20037: BR R0037 ;LOCK ON HARD ERROR
5241
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H11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 138
DB9EAB.CMB T0037 BASIS "TSTB (R)" TEST - ODD ADDRESS

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; *****  
; .SBTTL T0040 BASIC "TSTB @#A" TEST - EVEN ADDRESS  
; *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; ROM SEQ: [163,264,265,266,267,225,367,375,016] FC 1,3,9,8  
; ACT BUTS: 37(004)100,163 / 33(266)220,220 / 16(367)016,016  
; EXEC: [220]ALUC=LLLLL : [211]D=177400  
; CODES: [075] SPS=3 / N:C=0100  
; SYNC: B05J2 (-) / T= 2.8 USEC  
; KEY SIG: K3-4 TSTL / K3-3 DM=3L / K5-2 PS(Z)(1)H / K3-6 BYTE INSTR H  
T0040: MOV #0040,R0 ;LOAD R0 WITH TEST NO.  
;SET FLAG FOR THIS TEST IN MISSED TABLE  
MOV# #377,STAB1(R0) ;BREAKPOINT HALT SET ??  
BIT #1,@#BPTLOC ;BR IF NOT  
BEQ .+4 ;BREAK - DEPRESS CONTINUE TO RESTART  
HALT ;DEST ADDR = DWTA+4  
MOV #DWTA+4,R2 ;RESULT S / B = 177400  
MOV #177400,R4 ;SCOPE SYNC  
R0040: CCC  
I0040: TSTB @#DWTA+4 ;TEST THE TSTB  
BEQ A0040 ;BR IF "Z" SET - IT SHOULD BE  
E10040: HALT ;TSTB FAILED TO SET "Z"  
BR R0040 ;LOCK ON HARD ERROR  
A0040: CMP R4,(R2) ;DID TSTB DISTURB [DEST]?  
BEQ T0041 ;BR IF NOT  
E20040: MOV (R2),R3 ;GET WAS DATA  
HALT ;TSTB ALTERED [DEST]  
MOV R4,(R2) ;RESTORE [DEST]  
BR R0040 ;LOCK ON HARD ERROR
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5284 : *****
5285 : .SBTTL T0041 BASIC "TSTB Q#A" TEST - 000 ADDRESS
5286 : *****
5287 ;MICROPROGRAMMING / LOGIC INFORMATION
5288 ;ROM SEQ: [163,264,265,266,267,270,222,253,075,374,375,016] FC 1,3,9,8
5289 ;ACT BUTS: 37(004)100,163 / 33(266)220,237 / 34(237)220,222 / 16(374)016,016
5290 ;EXEC: [222]ALUC=LLLLL : [253]D=000377
5291 ;CODES: [075] SPS=3 / N:C=0100
5292 ;SYNC: B05J2 (-) / T= 2.8 USEC
5293 ;KEY SIG: K3-4 TSTL / K3-3 DM=3L / K5-2 PS(Z)(1)H / K3-6 BYTF INSTR H
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5302 005136 012700 000041 T0041: MOV #0041,R0 ;LOAD R0 WITH TEST NO.
5303 005142 112760 000377 070162 T0041: MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5304 005150 012702 067620 T0041: MOV #DWT+6,R2 ;DEST ADDR = DWT+6
5305 005154 012704 000377 T0041: MOV #377,R4 ;RESULT S / B = 377
5306 005160 000257 R0041: CCC ;SCOPE SYNC
5307
5308 005162 105737 067621 I0041: TSTB @#DWT+7 ;TEST THE TSTB
5309
5310 005166 001402 BEQ A0041 ;BR IF "Z" SET - IT SHOULD BE
5311
5312 005170 000000 E10041: HALT ;TSTB FAILED TO SET "Z"
5313 005172 000772 BR R0041 ;LOCK ON HARD ERROR
5314
5315 005174 020412 A0041: CMP R4,(R2) ;DID TSTB DISTURB (DEST)?
5316 005176 001404 BEQ T0042 ;BR IF NOT
5317
5318 005200 011203 E20041: MOV (R2),R3 ;GET WAS DATA
5319 005202 000000 E20041: HALT ;TSTB ALTERED (DEST)
5320 005204 010412 MOV R4,(R2) ;RESTORE (DEST)
5321 005206 000764 BR R0041 ;LOCK ON HARD ERROR
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5323 ; *****
5324 ; .SBTTL T0042 BASIC "DECB 1(SP)"
5325 ; *****
5326 ; MICROPROGRAMMING / LOGIC INFORMATION
5327 ; ROM SEQ: [167,261,262,266,267,237,270,222,253,075,374,375,016] FC 1,3,9,8
5328 ; ACT BUTS: 37(004)100,167 / 33(266)220,237 / 34(237)220,222 / 16(374)016,016
5329 ; EXEC: [222]ALUC=LHMMH : [253]D=177400
5330 ; CODES: [075] SPS=3 / N:C=1000
5331 ; SYNC: B0SJ2 (-) / T= 2.8 USEC
5332 ; KEY SIG: K3-4 DEC L / K3-3 DM=6L / K5-2 PS(N)(1)H / K3-6 BYTE INSTR H
5333
5334 T0042: MOV #0042,R0 ;LOAD R0 WITH TEST NO.
5335 MOV #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5336 MOV SP,R5 ;SAVE SP
5337 MOV #177400,R4 ;RESULT S / B = 177400
5338 R0042: MOV R5,SP
5339 MOV #0,-(SP) ;[DEST] = 000000
5340 CCC ;SCOPE SYNC
5341
5342 T0042: DECB 1(SP) ;TEST THE DECB
5343
5344 R0042: CMP R4,(SP) ;RESULT = 177400?
5345 BEQ A0042 ;BR IF YES
5346
5347 MOV (SP),R3 ;GET WAS DATA
5348 MOV SP,R2 ;GENERATE DEST ADDR IN R2
5349 INC R2
5350 E0042: HALT ;ERPOR - DECB FAILED
5351 BR R0042 ;LOCK ON HARD ERROR
5352
5353 A0042: MOV R5,SP ;RESET THE SP
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: *****
.SBTTL T0043 BASIC "MOV 2#A,R" TEST
: *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [143,245,246,247,250,160,204,000] FC 1,2,4

;ACT BUTS: 37(004)100,143 / 35(247)120,160 / 20(160)000,000

;EXEC: [160]ALUC=LLLLL : [204]D=#DWTA

;CODES: [204] SPS=3 / N:C=0000

;SYNC: B05J2 (-) / T= 3.2 USEC

;KEY SIG: K3-3 MOV L / K3-3 DM=OL / K3-5 DOPL

005264 012700 000043
005270 112760 000377 070162
005276 012702 177703
005302 012704 067612
005306 005003
005310 000257

005312 013703 067566

005316 020403
005320 001402

005322 000000
005324 000770

T0043: MOV #0043,R0 ;LOAD R0 WITH TEST NO.
MOV #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
MOV #177703,R2 ;DEST ADDR = 3
MOV #DWTA,R4 ;RESULT S / B = #DWTA
R0043: CLR R3 ;[DEST] = 000000
CCC ;SCOPE SYNC

I0043: MOV 2#ATA,R3 ;TEST THE MOV

CMP R4,R3 ;RESULT = DWTA?
BEQ T0044 ;BR IF YES

E0043: HALT ;MOV FAILED TO DELIVER CORRECT RESULT
BR R0043 ;LOCK ON HARD ERROR


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5395 ; *****
5396 ; .SBTTL T0044 BASIC "MOV @N,X(R)" TEST
5397 ; *****
5398
5399 ;MICROPROGRAMMING / LOGIC INFORMATION
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5401 ;ROM SEQ: [142,240,250,177,206,212,200,125,375,016] FC 1,2,4,8
5402
5403 ;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,212 / 16(125)016,016
5404
5405 ;EXEC: [200]ALUC=LLLLL :[125]D=125252
5406
5407 ;CODES: [125] SPS=3 / N:C=0000
5408
5409 ;SYNC: B05J2 (-) / T= 4 USEC
5410
5411 ;KEY SIG: K3-3 MOVL / K3-3 DM=0 / K3-5 DOPL
5412
5413 005326 012700 000044 T0044: MOV #0044,R0 ;LOAD R0 WITH TEST NO.
5414 005332 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5415 005340 012702 067604 MOV #MBUF0+2,R2 ;DEST ADDR = MBUF0+2
5416 005344 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
5417 005350 012703 067602 R0044: MOV #MBUF0,R3 ;[R3] = BASE DEST ADDR
5418 005354 005012 CLR (R2) ;[DEST] = 000000
5419 005356 000257 CCC ;SCOPE SYNC
5420
5421 005360 012763 125252 000002 I0044: MOV #125252,2(R3) ;TEST THE MOV
5422
5423 005366 020412 CMP R4,(R2) ;RESULT OK?
5424 005370 001403 BEQ T0045 ;BR IF YES
5425
5426 005372 011203 MOV (R2),R3 ;GET WAS DATA
5427 005374 000000 E0044: HALT ;MOV DELIVERED WRONG RESULT
5428 005376 000764 BR R0044 ;LOCK ON HARD ERROR
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; *****
; .SBTTL T0045 BASIC "MOV #N,(R)" TEST
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [142,240,250,171,257,200,125,375,016] FC 1,2,4
;ACT BUTS: 37[004]100,142 / 35[240]120,171 / 22[171]200,200 / 16[125]016,016
;EXEC: [200]ALUC=LLLLL :[125]D=125252
;CODES: [125] SPS=3 / N:C=1000
;SYNC: B05J2 (-) / T= 2.3 USEC
;KEY SIG: K3-3 MOVL / K3-3 DM=1L / K3-5 DOPL / K5-2 PS (N)(1)H

005400 012700 000045
005404 112760 000377 070162
005412 012702 067602
005416 012704 125252
005422 010203
005424 005013
005426 000257

005430 012713 125252

005434 020412
005436 001403

005440 011203
005442 000000
005444 000766

T0045: MOV #0045,R0 ;LOAD R0 WITH TEST NO.
MOV #377,\$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
MOV #MBOF0,R2 ;DEST ADDR = MBOF0
MOV #125252,R4 ;RESULT S / B = 125252
R0045: MOV R2,R3 ;R3 GETS DEST ADDR
CLR (R3) ;[DEST] = 000000
CCC ;SCOPE SYNC

I0045: MOV #125252,(R3) ;TEST THE MOV

CMP R4,(R2) ;RESULT OK?
BEQ T0046 ;BR IF YES

R0045: MOV (R2),R3 ;GET WAS DATA
HALT ;MOV DELIVERED WRONG RESULT
BR R0045 ;LOCK ON HARD ERROR

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5465 : *****
5466 : .SBTTL T0046 BASIC "MOV (RA)+,RB" TEST
5467 : *****
5468
5469 ;MICROPROGRAMMING / LOGIC INFORMATION
5470
5471 ;ROM SEQ: [142,240,250,160,204,000] FC 1,2,4
5472
5473 ;ACT BUTS: 37(004)100,142 / 35(240)120,160 / 20(160)000,000
5474
5475 ;EXEC: (160)ALUC=LLLLL : (204)D=#DWTA
5476
5477 ;CODES: (204) SPS=3 / N:C=0000
5478
5479 ;SYNC: B05J2 (-) / T= 2.3 USEC
5480
5481 ;KEY SIG: K3-3 MOVL / K3-3 DM=OL / K3-5 DOPL
5482
5483 005446 012700 000046 T0046: MOV #0046,R0 ;LOAD R0 WITH TEST NO.
5484 005452 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5485 005460 012704 067612 MOV #DWTA,R4 ;RESULT S / B = #DWTA
5486 005464 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
5487 005470 012705 067566 R0046: MOV #ATA,R5 ;SRC ADDR = ATA
5488 005474 005003 CLR R3 ;[DEST] = 000000
5489 005476 000257 CCC ;SCOPE SYNC
5490
5491 005500 012503 I0046: MOV (R5)+,R3 ;TEST THE MOV
5492
5493 005502 020403 CMP R4,R3 ;RESULT OK?
5494 005504 000402 BR R0046 ;BR IF YES
5495
5496 005506 000000 E10046: HALT ;MOV DELIVERED WRONG RESULT
5497 005510 000767 BR R0046 ;LOCK ON HARD ERROR
5498
5499 005512 022705 067570 A0046: CMP #ATA+2,R5 ;DID SRC REG GET INCREMENTED?
5500 005516 001402 BEQ T0047 ;BR IF YES
5501
5502 005520 000000 E20046: HALT ;MOV FAILED TO UPDATE SRC. REG.
5503 005522 000762 BR R0046 ;LOCK ON HARD ERROR
5504

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; *****
; .SBTTL T0047 BASIC "MOV @A,@B"
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [143,245,256,247,250,173,207,210,200,125,375,016] FC 1,2,4
; ACT BUTS: 37(004)100,143 / 35(247)120,173 / 22(207)200,200 / 16(125)016,016
; EXEC: [200]ALUC=LLLLL : [125]D=#OWTA
; CODES: [125] SPS=3 / N:C=0000
; SYNC: B05J2 (-) / T= 5 USEC
; KEY SIG: K3-3 MOVL / K3-3 SM=3L / K3-3 DM=3L

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005524 012700 000047 T0047: MOV @0047,R0 ;LOAD R0 WITH TEST NO.
005530 112760 000377 070162 MOVB @377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
005536 012702 067606 MOV @MBUF1,R2 ;DEST ADDR = MBUF1
005542 012704 067612 MOV @OWTA,R4 ;RESULT S / B = #OWTA
005546 005012 R0047: CLR (R2) ;MAKE (DEST) = 000000
005550 000257 CCC ;SCOPE SYNC

005552 013737 067566 067606 I0047: MOV @ATA,@MBUF1 ;TEST THE MOV
005560 020412 CMP R4,(R2) ;DID RESULT = #OWTA ?
005562 001403 BEQ T0050 ;BR IF YES

005564 011203 E0047: MOV (R2),R3 ;GET THE WAS DATA
005566 000000 HALT ;MOV DELIVERED THE WRONG RESULT
005570 000766 BR R0047 ;LOCK ON HARD ERROR
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; *****
; .SBTTL T0050 BASIC "MOV X(R),PC" TEST
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ: [146,241,242,247,250,160,204,000] FC 1,2,4
; ACT BUTS: 37(004)100,146 / 35(247)120,160 / 20(160)000,000
; EXEC: [160]ALUC=LLLLL : [204]D=#T077
; CODES: [204] SPS=3 / N:C=0000
; SYNC: B05J2 (-) / T= 4 USEC
; KEY SIG: K3-3 MOVL / K3-3 SM=6L / K3-3 DM=0L / K3-4 IR (02:00)=7L

005572 012700 000050 T0050: MOV #0050,RO ;LOAD RO WITH TEST NO.
005576 112760 000377 070162 RO050: MOV #377,\$TAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
005604 012705 005612 RO050: MOV #I0050,RS ;[RS] = I0050 (BASE ADDRESS)
005610 000257 CCC ;SCOPE SYNC
005612 016507 000010 I0050: MOV A0050-I0050(RS),PC ;TEST THE MOV - GO TO A0050
005616 000000 E0050: HALT ;MOV FAILED TO LOAD THE PC
005620 000771 BR RO050 ;LOCK ON HARD ERROR
005622 005624 A0050: T0051 ;POINTER TO NEXT TEST

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; *****  
.SBTTL T0051 BASIC "MOV @#A,(R)" TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [143,245,246,247,250,171,257,200,125,375,016] FC 1,2,4  
;ACT BUTS: 37(004)100,143 / 35(247)120,171 / 22(171)200,200 / 16(125)016,016  
;EXEC: [200]ALUC=LLLLL :[125]D=051300  
;CODES: [125] SPS=3 / N:C=0000  
;SYNC: B05J2 (-) / T= 4.2 USEC  
;KEY SIG: K3-3 MOVL / K3-3 SM=3L / K3-3 DM=1L
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005624 012700 000051  
005630 112760 000377 070162  
005636 012704 067612  
005642 012702 067602  
005646 005012  
005650 000257  
  
005652 013712 067566  
  
005656 020412  
005660 001403  
  
005662 011203  
005664 000000  
005666 000767
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T0051: MOV #0051,R0 ;LOAD R0 WITH TEST NO.  
MOV #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
MOV #DWTA,R4 ;RESULT S / B = #DWTA  
MOV #MBUF0,R2 ;DEST ADDR = MBUF0  
R0051: CLR (R2) ;MAKE [DEST]=000000  
CCC ;SCOPE SYNC - Z=0  
  
I0051: MOV @#ATA,(R2) ;TEST THE MOV  
  
CMP R4,(R2) ;DID RESULT = #DWTA ??  
BEQ T0052 ;BR IF YES  
  
E0051: MOV (R2),R3 ;GET THE WAS DATA  
HALT ;MOV DELIVERED WRONG RESULT  
BR R0051 ;LOCK ON HARD ERROR
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005670 012700 000052
005674 112760 000377 070162
005702 012704 070152
005706 012702 177703
005712 012705 067566
005716 005003
005720 000257

005722 016503 000004

005726 020403
005730 001402

005732 000000
005734 000770

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; *****  
.SBTTL T0052 BASIC "MOV X(RA),RB" TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [146,241,242,247,250,160,204,000] FC 1,2,4  
;ACT BUTS: 37(004)100,146 / 35(247)120,160 / 20(160)000,000  
;EXEC: [160]ALUC=LLLLL : [204]D=#DBTA  
;CODES: [204] SPS=3 / M:C=0000  
;SYNC: B05J2 (-) / T= 3 USEC  
;KEY SIG: K3-3 MOVL / K3-3 SM=6L / K3-3 DM=OL  
T0052: MOV #0052,R0 ;LOAD R0 WITH TEST NO.  
;MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
MOV #0BTA,R4 ;RESULT S / B = #DBTA  
MOV #177703,R2 ;DEST ADDR = R3  
MOV #ATA,RS ;[RS] = BASE ADDR FOR SOURCE (ATA)  
R0052: CLR R3 ;MAKE [DEST] = 000000  
CCC ;SCOPE SYNC  
  
I0052: MOV 4(R5),R3 ;TEST THE MOV  
  
CMP R4,R3 ;RESULT = #DBTA ??  
BEQ T0053 ;BR IF YES  
  
E0052: HALT ;MOV DELIVERED WRONG RESULT  
BR R0052 ;LOCK ON HARD ERROR
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5636 ; *****
5637 ; .SBTTL T0053 BASIC "MOV RA,-(RB)" TEST
5638 ; *****
5639
5640 ;MICROPROGRAMMING / LOGIC INFORMATION
5641
5642 ;ROM SEQ: [174,257,201,125,375,016] FC 1,4
5643
5644 ;ACT BUTS: 37(004)100,174 / 22(174)200,201 / 16(125)016,016
5645
5646 ;EXEC: [201]A_UC=ELLLL :[125]D=125252
5647
5648 ;CODES: [125] SPS=3 / N:C=1000
5649
5650 ;SYNC: B05J? (-) / T= 1.8 USEC
5651
5652 ;KEY SIG: K-; MOVL / K3-3 SM=0L / K3-3 DM=4L / K5-2 PS(N)(1)H
5653
5654 005736 012700 000053 T0053: MOV #J053,RO ;LOAD RO WITH TEST NO.
5655 005742 112760 000377 070162 MOVB #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5656 005750 012702 067602 MOV #M0U0,R2 ;FINAL DEST ADDR = M0U0
5657 005754 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
5658 005760 012705 067604 R0053: MOV #M0U0+2,R5 ;INITIAL DEST ADDR = TEMP2 + 2
5659 005764 005012 CLR (R2) ;MAKE (DEST) = 000000
5660 005766 000257 CCC ;SCOPE SYNC
5661
5662 005770 010445 I0053: MOV R4,-(R5) ;TEST THE MOV
5663
5664 005772 020412 CMP R4,(R2) ;RESULT = 125252
5665 005774 001403 BEQ A0053 ;BR IF YES
5666
5667 005776 011203 MOV (R2),R3 ;GET THE S / B DATA
5668 006000 000000 E10053: HALT ;MOV DELIVERED THE WRONG RESULT
5669 006002 000766 BR R0053 ;LOCK ON HARD ERROR
5670
5671 006004 020205 A0053: CMP R2,R5 ;DID REGISTER GET DECREMENTED ?
5672 006006 001402 BEQ T0054 ;BR IF YES
5673
5674 006010 000000 E20053: HALT ;MOV FAILED TO UPDATE REGISTER
5675 006012 000762 BR R0053 ;LOCK ON HARD ERROR
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006014 012700 000054
006020 112760 000377 070162
006026 012704 067612
006032 012702 067602
006036 012705 067604
006042 005012
006044 000257

006046 013745 067566

006052 020412
006054 001403

006056 011203
006060 000000
006062 000765

006064 020502
006066 001402

006070 000000
006072 000761

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; *****  
; .SBTTL T0054 BASIC "MOV @#A,-(R)" TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [143,245,246,247,250,174,200,125,375,016] FC 1,2,4  
;ACT BUTS: 37(004)100,143 / 35(247)120,174 / 22(174)200,200 / 16(125)016,016  
;EXEC: [200]ALUC=LLLLL :[125]D=#DWT  
;CODES: [125] SPS=3 / N:C=0100  
;SYNC: B05J2 (-) / T= 4.2 USEC  
;KEY SIG: K3-3 MOVL / K3-3 SM=3L / K3-3 DM=4L / K5-2 PS(Z)(1)H  
T0054: MOV #0054,R0 ;LOAD R0 WITH TEST NO.  
;MOV @377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
;MOV #DWT,R4 ;RESULT S / B = #DWT  
;MOV #MBUF0,R2 ;DEST ADDR = MBUF0  
R0054: MOV #MBUF0+2,R5 ;INITIAL DEST ADDR = MBUF0+2  
;CLR (R2) ;MAKE (DEST) = 000000  
;CCC ;SCOPE SYNC  
I0054: MOV @#ATA,-(R5) ;TEST THE MOV  
;CMP R4,(R2) ;RESULT = 000000  
;BEQ R0054 ;BR IF YES  
E10054: MOV (R2),R3 ;GET THE WAS DATA  
;HALT ;MOV DELIVERED THE WRONG RESULT  
;BR R0054 ;LOCK ON HARD ERROR  
R0054: CMP R5,R2 ;DID DEST REG GET DECREMENTED ??  
;BEQ T0055 ;BR IF YES  
E20054: HALT ;MOV FAILED TO UPDATE REGISTER  
;BR R0054 ;LOCK ON HARD ERROR
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5719 ; *****
5720 ; .SBTTL T0055 BASIC "MOV (R),2#A" TEST
5721 ; *****
5722 ; MICROPROGRAMMING / LOGIC INFORMATION
5723 ; ROM SEQ: [141,247,250,173,210,200,125,375,016] FC 1,2,4
5724 ; ACT BUTS: 37(004)100,141 / 35(247)120,173 / 22(207)200,200 / 16(125)016,016
5725 ; EXEC: [200]ALUC=LLLLL : [125]D=#DWTA
5726 ; CODES: [125] SPS=3 / N:C=0100
5727 ; SYNC: B05J2 (-) / T= 4 USEC
5728 ; KEY SIG: K3-3 MOVL / K3-3 SM=1L / K3-3 DM=3L / K5-2 PS(2)(1)H
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5737 006074 012700 000055 T0055: MOV #0055,R0 ;LOAD R0 WITH TEST NO.
5738 006100 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5739 006106 012702 067602 MOV #M0UFO,R2 ;DEST ADDR = M0UFO
5740 006112 012704 067612 MOV #DWTA,R4 ;RESULT S / B = #DWTA
5741 006116 012705 067566 MOV #ATA,R5 ;SOURCE ADDR = ATA
5742 006122 005012 R0055: CLR (R2) ;MAKE [DEST] = 000000
5743 006124 000257 CCC ;SCOPE SYNC
5744
5745 006126 011537 067602 I0055: MOV (R5),2#M0UFO ;TEST THE MOV
5746
5747 006132 020412 CMP R4,(R2) ;RESULT = #DWTA ??
5748 006134 001403 BEQ T0056 ;BR IF YES
5749
5750 006136 011203 E0055: MOV (R2),R3 ;GET THE WAS DATA
5751 006140 000000 HALT ;MOV DELIVERED THE WRONG RESULT
5752 006142 000767 BR R0055 ;LOCK ON HARD ERROR
5753

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5754 ; *****
5755 ; .SBTTL T0056 BASIC "MOV -(R),2#A" TEST
5756 ; *****
5757 ;
5758 ; MICROPROGRAMMING / LOGIC INFORMATION
5759 ;
5760 ; ROM SEQ: [144,240,250,173,207,210,200,125,375,016] FC 1,2,4
5761 ;
5762 ; ACT BUTS: 37(004)100,144 / 35(240)120,173 / 22(207)200,200 / 16(125)016,016
5763 ;
5764 ; EXEC: [200]ALUC=LLLLL : [125]D=#DWT A
5765 ;
5766 ; CODES: [125] SPS=3 / N:C=0100
5767 ;
5768 ; SYNC: BOSJ2 (-) / T= 4 USEC
5769 ;
5770 ; KEY SIG: K3-3 MOVL / K3-3 SM=4L / K3-3 DM=3L / K5-2 PS(Z)(1)H
5771 ;
5772 006144 012700 000056 T0056: MOV #0056,R0 ; LOAD R0 WITH TEST NO.
5773 006150 012760 000377 070162 T0056: MOVB #377,$TAB1(R0) ; SET FLAG FOR THIS TEST IN MISSED TABLE
5774 006156 012702 067602 T0056: MOV #MBUFO,R2 ; DEST ADDR = MBUFO
5775 006162 012704 067612 T0056: MOV #DWT A,R4 ; RESULT S / B = #DWT A
5776 006166 012705 067570 T0056: MOV #ATA+2,R5 ; INITIAL SOURCE ADDR = ATA+2
5777 006172 005012 T0056: CLR (R2) ; MAKE (DEST) = 000000
5778 006174 000257 T0056: CCC ; SCOPE SYNC
5779 ;
5780 006176 014537 067602 I0056: MOV -(R5),2#MBUFO ; TEST THE MOV
5781 ;
5782 006202 020412 I0056: CMP R4,(R2) ; RESULT = #DWT A ?
5783 006204 001403 I0056: BEQ R0056 ; BR IF YES
5784 ;
5785 006206 011203 I0056: MOV (R2),R3 ; GET THE WAS DATA
5786 006210 000000 I0056: HALT ; MOV DELIVERED THE WRONG RESULT
5787 006212 000765 I0056: BR R0056 ; LOCK ON HARD ERROR
5788 ;
5789 006214 022705 067566 R0056: CMP #ATA,R5 ; DID THE SRC REG GET DECREMENTED ?
5790 006220 001402 R0056: BEQ T0057 ; BR IF YES
5791 ;
5792 006222 000000 E20056: HALT ; MOV FAILED TO UPDATE SOURCE REG
5793 006224 000760 E20056: BR R0056 ; LOCK ON HARD ERROR
    
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5794 : *****
5795 : .SBTTL T0057 BASIC "MOV (RA),RB" TEST
5796 : *****
5797 ;MICROPROGRAMMING / LOGIC INFORMATION
5798 ;ROM SEQ: [142,240,250,160,204,000] FC 1,2,4
5799 ;ACT BUTS: 37[004]100,142 / 35[240]120,160 / 20[160]000,000
5800 ;EXEC: [160]ALUC=LLLLL :[204]D=#DWT A
5801 ;CODES: [204] SPS=3 / N:C=0100
5802 ;SYNC: B05J2 (-) / T= 1.8 USEC
5803 ;KEY SIG: K3-3 MOVL / K3-3 SM=2L / K3-3 DM=0L / K5-2 PS(Z)(1)H
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5812 006226 012700 000057 T0057: MOV #0057,R0 ;LOAD R0 WITH TEST NO.
5813 006232 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5814 006240 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
5815 006244 012704 067612 MOV #DWT A,R4 ;RESULT S / B = #DWT A
5816 006250 012705 067566 R0057: MOV #ATA,R5 ;INITIAL SOURCE ADDR = ATA
5817 006254 005003 CLR R3 ;MAKE [DEST] = 000000
5818 006256 000257 CCC ;SCOPE SYNC
5819
5820 006260 012503 I0057: MOV (R5)+,R3 ;TEST THE MOV
5821
5822 006262 020403 CMP R4,R3 ;RESULT = #DWT A ?
5823 006264 001402 BEQ A0057 ;BR IF YES
5824
5825 006266 000000 E10057: HALT ;MOV DELIVERED WRONG RESULT
5826 006270 000767 BR R0057 ;LOCK ON HARD ERROR
5827
5828 006272 022705 067570 A0057: CMP #ATA+2,R5 ;DID SOURCE REG GET INCREMENTED
5829 006276 001402 BEQ T0060 ;BR IF YES
5830
5831 006300 000000 E20057: HALT ;MOV FAILED TO UPDATE SOURCE REGISTER
5832 006302 000762 BR R0057 ;LOCK ON HARD ERROR
5833

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5834 ; *****
5835 ; .SBTTL T0060 BASIC "MOV X(RA),RB" TEST
5836 ; *****
5837 ; MICROPROGRAMMING / LOGIC INFORMATION
5838 ; ROM SEQ: [146,241,242,247,250,160,204,000] FC 1,2,4
5839 ; ACT BLTS: 37(004)100,146 / 35(247)120,160 / 20(160)000,000
5840 ; EXEC: [160]ALUC=LLLLL : [204]D=#DWTB
5841 ; CODES: [204] SPS=3 / N:C=0100
5842 ; SYNC: B05J2 (-) / T= 2.5 USEC
5843 ; KEY SIG: K3-3 MOVL / K3-3 SM=6L / K3-3 DM=0L / K5-2 PS(Z)(1)H
5850
5851
5852 006304 012700 000060 T0060: MOV #0060,R0 ;LOAD R0 WITH TEST NO.
5853 006310 112760 000377 070162 T0060: MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5854 006316 012702 177703 T0060: MOV #177703,R2 ;DEST ADDR = R3
5855 006322 012704 070136 T0060: MOV #DWTB,R4 ;RESULT S / B = #DWTB
5856 006326 012705 067566 T0060: MOV #ATA,R5 ;BASE SOURCE ADDR = ATA
5857 006332 005003 R0060: CLR R3 ;MAKE [DEST] = 000000
5858 006334 000257 R0060: CCC ;SCOPE SYNC
5859
5860 006336 016503 000002 I0060: MOV 2(R5),R3 ;TEST THE MOV
5861
5862 006342 020403 R0060: CMP R4,R3 ;RESULT = #DWTB ?
5863 006344 001402 R0060: BEQ T0061 ;BR IF YES
5864
5865 006346 000000 E0060: HALT ;MOV FAILED TO DELIVER CORRECT RESULT
5866 006350 000770 R0060: BR R0060 ;LOCK ON HARD ERROR

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5867 ; *****
5868 ; .SBTTL T0061 BASIC "MOV @X(RA),RB" TEST
5869 ; *****
5870 ;MICROPROGRAMMING / LOGIC INFORMATION
5871 ;ROM SEQ: [147,243,244,245,246,247,250,160,204,000] FC 1,2,4
5872 ;ACT BUTS: 37(004)100,147 / 35(247)120,160 / 20(160)000,000
5873 ;EXEC: [160]ALUC=LLLLL :[204]D=177777
5874 ;CODES: [204] SPS=3 / N:C=1000
5875 ;SYNC: B05J2 (-) / T= 3.4 USEC
5876 ;KEY SIG: K3-3 MOVL / K3-3 SM=7L / K3-3 DM=0L / K5-2 PS(N)(1)H
5877
5878 T0061: MOV #0061,R0 ;LOAD R0 WITH TEST NO.
5879 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5880 CLR R4 ;RESULT S / B = 177777
5881 COM R4
5882 MOV #177703,R2 ;DEST ADDR = R3
5883 MOV #DWT+2,@#MBUFO+2 ;SET UP ADDRESS TABLE MBUFO
5884 MOV #MBUFO,R5 ;BASE ADDRESS IN R5
5885 R0061: CLR R3 ;MAKE [DEST] = 000000
5886 CCC ;SCOPE SYNC
5887
5888 I0061: MOV @2(R5),R3 ;TEST THE MOV
5889
5890 CMP R4,R3 ;RESULT = 177777
5891 BEQ T0062 ;BR IF YES
5892
5893 E0061: HALT ;MOV DELIVERED THE WRONG RESULT
5894 BR R0061 ;LOCK ON HARD ERROR
5895
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5903 ; *****
5904 ; .SBTTL T0062 BASIC "MOV (R)+,X(R)" TEST
5905 ; *****
5906 ;
5907 ; MICROPROGRAMMING / LOGIC INFORMATION
5908 ;
5909 ; ROM SEQ: [142,240,250,177,206,212,200,125,375,016] FC 1,2,4
5910 ;
5911 ; ACT BUTS: 37[004]100,142 / 35[240]120,177 / 17[177]212,212 / 21[206]200,200
5912 ; / 16[125]016,016
5913 ;
5914 ; EXEC: [200]ALUC=LLLLL : [125]D=125252
5915 ;
5916 ; CODES: [125] SPS=3 / N:C=1000
5917 ;
5918 ; SYNC: B05J2 (-) / T= 4 USEC
5919 ;
5920 ; KEY SIG: K3-3 MOVL / K3-3 SM=2L / K3-3 DM=6L / K5-2 PS(N)(1)H
5921 ;
5922 006426 012700 000062 T0062: MOV #0062,R0 ;LOAD R0 WITH TEST NO.
5923 006432 112750 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5924 006440 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
5925 006444 012702 067510 MOV #MBUF1+2,R2 ;FINAL DEST ADDR = MBUF1+2
5926 006450 010437 067602 MOV R4,#MBUFO ;SOURCE OPERAND = 125252
5927 006454 012705 067602 R0062: MOV #MBUFO,R5 ;[R5] = INITIAL SRC ADDR = MBUFO
5928 006460 005012 CLR (R2) ;MAKE [DEST] = 000000
5929 006462 000257 CCC ;SCOPE SYNC
5930 ;
5931 006464 012565 000004 I0062: MOV (R5)+,4(R5) ;TEST THE MOV
5932 ;
5933 006470 020412 CMP R4,(R2) ;RESULT = 125252 ?
5934 006472 001403 BEQ A0062 ;BR IF YES
5935 ;
5936 006474 011203 MOV (R2),R3 ;GET THE WAS DATA
5937 006476 000000 E10062: HALT ;MOV DELIVERED WRONG RESULT
5938 006500 000765 BR R0062 ;LOCK ON HARD ERROR
5939 ;
5940 006502 022705 067604 A0062: CMP #MBUFO+2,R5 ;DID REGISTER GET INCREMENTED ?
5941 006506 001402 BEQ T0063 ;BR IF YES
5942 ;
5943 006510 000000 E20062: HALT ;MOV FAILED TO UPDATE REGISTER
5944 006512 000750 BR R0062 ;LOCK ON HARD ERROR
5945 ;

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5946 ; *****
5947 ; .SBTTL T0063 BASIC "CMP R,0#A" TEST WITH [R] = [A]
5948 ; *****
5949
5950 ;MICROPROGRAMMING / LOGIC INFORMATION
5951
5952 ;ROM SEQ: [163,264,265,266,267,224,367,375,016] FC 1,3,8
5953
5954 ;ACT BUTS: 37[004]100,163 / 33[266]220,224 / 16[367]016,016
5955
5956 ;EXEC: [224]ALUC=LLHHL :[367]D=125252
5957
5958 ;CODES: [367] SPS=3 / N:C=1100
5959
5960 ;SYNC: B05J2 (-) / T= 3.5 USEC
5961
5962 ;KEY SIG: K3-3 CMP L / K3-3 SM=0L / K3-3 DM=3L / K5-2 PS(Z)(1)H
5963 ; K3-8 BTI + CMP + TST H
5964
5965 006514 012700 000063 T0063: MOV #0063,R0 ;LOAD R0 WITH TEST NO.
5966 006520 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
5967 006526 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
5968 006532 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
5969 006536 010405 R0063: MOV R4,R5 ;[R5] = SOURCE OP = 125252
5970 006540 010412 MOV R4,(R2) ;MAKE [DEST] = 125252
5971 006542 000257 CCC ;SCOPE SYNC
5972
5973 006544 020537 067602 I0063: CMP R5,#MBUF0 ;TEST THE CMP
5974
5975 006550 001402 BEQ A0063 ;BR IF "Z" WAS SET - IT SHOULD BE
5976
5977 006552 000000 E1J063: HALT ;CMP FAILED TO SET "Z"
5978 006554 000770 BR R0063 ;LOCK ON HARD ERROR
5979
5980 006556 020412 A0063: CMP R4,(R2) ;IS RESULT STILL = 125252 ?
5981 006560 001403 BEQ T0064 ;BR IF YES
5982
5983 006562 011203 E20063: MOV (R2),R3 ;GET THE WAS DATA
5984 006564 000000 HALT ;CMP ALTERED [DEST]
5985 006566 000763 BR R0063 ;LOCK ON HARD ERROR
5986

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: *****
: .SBTTL T0064 BASIC "CMP R,2#A" WITH [R] NOT EQUAL TO [A]
: *****
: MICROPROGRAMMING / LOGIC INFORMATION
: ROM SEQ: [163,264,266,267,224,367,375,016] FC 1,3,8
: ACT BITS: 37(004)100,163 / 33(266)1230,224 / 16(367)016,016
: EXEC: [224]ALUC=LLHHL : [367]D=052526
: CODES: [367] SPS=3 / N:C=1000
: SYNC: B05J2 (-) / T= 3.5 USEC
: KEY SIG: K3-3 MOVL / K3-3 SM=OL / K3-3 DM=3L / K3-8 BIT+CMP+TSTH

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006570 012700 000064 T0064: MOV #0064,R0 ;LOAD R0 WITH TEST NO.
006574 112760 000377 070162 T0064: MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
006602 012702 067602 T0064: MOV #MBUF0,R2 ;DEST ADDR = MBUF0
006606 012704 125252 T0064: MOV #125252,R4 ;MAKE RESULT S / B = 125252
006612 005005 R0064: CLR R5 ;[R5] = SOURCE OP = 000000
006614 010412 R0064: MOV R4,(R2) ;MAKE [DEST] = 125252
006616 000277 R0064: SCC ;SCOPE SYNC - MAKE Z=1
006620 020537 067602 I0064: CMP R5,#MBUF0 ;TEST THE CMP
006624 001002 I0064: BNE T0065 ;BR IF Z=0 - IT SHOULD BE
006626 000000 E0064: HALT ;CMP FAILED TO CLEAR "Z"
006630 000770 E0064: BR R0064 ;LOCK ON HARD ERROR
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6020 ; *****
6021 ; .SBTTL T0065 BASIC "CMP #N,2#A" TEST WITH [A] = N
6022 ; *****
6023 ;MICROPROGRAMMING / LOGIC INFORMATION
6024 ;ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
6025 ;ACT BUTS: 37(004)100,142 / 35(240)120,163 / 33(266)220,225 / 16(367)016,016
6026 ;EXEC: [225]ALUC=LLHHL :[367]D=000000
6027 ;CODES: [367] SPS=3 / N:C=0100
6028 ;SYNC: B05J2 (-) / T= 4.3 USEC
6029 ;KEY SIG: K3-3 CMPL / K3-3 SM=2L / K3-3 DM=3L / K5-2 PS(Z)(1)H
6030 ; K3-8 BIT+CMPT+TSTH
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6039 006632 012700 000065 T0065: MOV #0065,R0 ;LOAD R0 WITH TEST NO.
6040 006636 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6041 006644 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
6042 006650 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
6043 006654 010412 R0065: MOV R4,(R2) ;MAKE [DEST] = 125252
6044 006656 000257 CCC ;SCOPE SYNC - Z=0
6045
6046 006660 022737 125252 067602 I0065: CMP #125252,2#MBUFD ;TEST THE CMP
6047
6048 006666 001402 BEQ T0066 ;BR IF Z=1 - !T SHOULD BE
6049
6050 006670 000000 E0065: HALT ;CMP FAILED TO SET "Z"
6051 006672 000770 BR R0065 ;LOCK ON HARD ERROR
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; *****
; .SBTTL T0066 BASIC "CMP" #N, #A" TEST WITH [A] NOT EQUAL TO #N
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
; ACT BUTS: 37[004]100,142 / 35[240]120,163 / 33[266]220,225 / 16[367]016,016
; EXEC: [225]ALUC=LLHHL : [367]D=125252
; CODES: [367] SPS=3 / N:C=1000
; SYNC: B05J2 (-) / T= 4.3 USEC
; KEY SIG: K3-3 CMPL / K3-3 SM=2L / K3-3 DM=3L / K5-2 PS(N)(1)H
; K3-8 BIT+CMPTSTH

006674 012700 000066 T0066: MOV #0066,R0 ;LOAD R0 WITH TEST NO.
006700 112760 000377 070162 MOVB #377,\$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
006706 012704 125252 MOV #125252,R4 ;RESULT S / B=125252
006712 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
006716 005012 R0066: CLR (R2) ;MAKE [DEST] = 000000
006720 000277 SCC ;SCOPE SYNC - Z=1
006722 022737 125252 067602 I0066: CMP #125252,#MBUFO ;TEST THE CMP
006730 001002 BNE T0067 ;BR IF Z=0 - IT SHOULD BE
006732 000000 E0066: HALT ;CMP FAILED TO CLEAR "Z"
006734 000770 BR R0066 ;LOCK ON HARD ERROR

E13

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 161
DBQEAB.CMB T0066 BASIC "CMP #N,2#A" TEST WITH (A) NOT EQUAL TO #N

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6086 ; *****
6087 ; .SBTTL T0067 BASIC "BIS #N,2#A" TEST - N=177777,[A]=000000
6088 ; *****
6089
6090 ;MICROPROGRAMMING / LOGIC INFORMATI:
6091
6092 ;ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,3,8
6093
6094 ;ACT BUTS: 37(004)100,142 / 35(240)120,163 / 33(266)220,225 / 16(367)016,016
6095
6096 ;EXEC: [225]ALUC LLLLH :[367]D=177777
6097
6098 ;CODES: [367] SPS=3 / N:C=1000
6099
6100 ;SYNC: B05J2 (-) / T= 4.3 USEC
6101
6102 ;KEY SIG: K3-5 D0PL / K3-3 DM=3L / K3-3 BIS L
6103
6104 006736 012700 000067 T0067: MOV #0067,R0 ;LOAD R0 WITH TEST NO.
6105 006742 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6106 006750 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
6107 006754 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
6108 006760 005012 R0067: CLR (R2) ;[DEST] = 000000
6109 006762 000257 CCC ;SCOPE SYNC
6110
6111 006764 052737 177777 067602 I0067: BIS #-1,2#MBUF0 ;TEST THE BIS
6112
6113 006772 020412 CMP R4,(R2) ;RESULT OK?
6114 006774 001403 BEQ T0070 ;BR IF YES
6115
6116 006776 011203 E0067: MOV (R2),R3 ;GET WAS DATA
6117 007000 000000 HALT ;BIS FAILED TO SET ALL BITS IN BITFLG
6118 007002 000766 BR R0067 ;LOCK ON HARD ERROR
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; *****
.SBTTL T0070 BASIC "BIC #N, @#A" TEST
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
; ACT BUTS: 37(004)100,142 / 35(240)120,163 / 33(266)220,225 / 16(367)016,016
; EXEC: [225]ALUC=HLLHL : [367]D=000077
; CODES: [367] SPS=3 / N:C=0000
; SYNC: B05J2 (-) / T= 4.3 USEC
; KEY SIG: K3-3 BICL / K3-3 SM=2L / K3-3 DM=3L

007004 012700 000070 T0070: MOV #0070,R0 ;LOAD R0 WITH TEST NO.
007010 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
007016 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
007022 012704 000077 MOV #77,R4 ;RESULT S / B = 77
007026 012712 177777 R0070: MOV #-1,(R2) ;MAKE (DEST) = 177777
007032 000257 CCC ;SCOPE SYNC
007034 042737 177700 067602 I0070: BIC #177700,@#MBUFD ;TEST THE BIC
007042 020412 CMP R4,(R2) ;DID RESULT = 77 ?
007044 001403 BEQ T0071 ;BR IF YES
007046 011203 E0070: MOV (R2),R3 ;GET THE WAS DATA
007050 000000 HALT ;BIC DELIVERED THE WRONG RESULT
007052 000765 BR R0070 ;LOCK ON HARD ERROR

6154 ; *****
6155 ; .SBTTL T0071 BASIC "BIC #N,R" TEST
6156 ; *****

6157 ; MICROPROGRAMMING / LOGIC INFORMATION

6158 ; ROM SEQ: [142,240,250,120,371,360,000] FC 1,2,8

6159 ; ACT BUTS: 35(240)120,120 / 31(120)360,360 / 27(371)000,000

6160 ; EXEC: [371]ALUC HLLHL : [360]D=377

6161 ; CODES: [360] SPS=3 / N:C=0000

6162 ; SYNC: B05J2 (-) / T= 4.3 USEC

6163 ; KEY SIG: K3-5 DOPL / K3-3 DM=OL / K3-3 BIC L

6172	007054	012700	000071	T0071:	MOV	#0071,R0	;LOAD R0 WITH TEST NO.
6173	007060	112760	000377	070162	MOV	#377,STAB1(R0)	;SET FLAG FOR THIS TEST IN MISSED TABLE
6174	007066	012704	000377		MOV	#377,R4	;RESULT S / B = 377
6175	007072	012702	177703		MOV	#177703,R2	;DEST ADDR = R3
6176	007076	005003		R0071:	CLR	R3	;[DEST] = 177777
6177	007100	005103			COM	R3	
6178	007102	000257			CCC		;SCOPE SYNC
6179							
6180	007104	042703	177400	I0071:	BIC	#177400,R3	;TEST THE BIC
6181							
6182	007110	020304			CMP	R3,R4	;RESULT OK?
6183	007112	001402			BEQ	T0072	;BR IF YES
6184							
6185	007114	000000		E0071:	HALT		;BIC FAILED TO CLEAR HI-BYTE
6186	007116	000767			BR	R0071	;LOCK ON HARD ERROR
6187							

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6188 ; *****
6189 ; .SBTTL T0072 BASIC "BIC #N,2(SP)" TEST
6190 ; *****
6191 ; MICROPROGRAMMING / LOGIC INFORMATION
6192 ; ROM SEQ: [142,240,250,167,261,262,266,267,225,367,375,016] FC 1,2,3,8
6193 ; ACT BUTS: 37(004)100,142 / 35(250)120,167 / 17(167)262,262 / 33(266)220,225
6194 ; / 16(367)016,016
6195 ; EXEC: [225]ALUC HLLHL : [367]D=357
6196 ; CODES: [367] SPS=3 / N:C=0000
6197 ; SYNC: B05J2 (-) / T= 3.3 USEC
6198 ; KEY SIG: K3-5 DOPL / K3-3 DM=6 / K3-3 BIC L
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6207 007120 012700 000072 T0072: MOV #0072,R0 ;LOAD R0 WITH TEST NO.
6208 007124 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6209 007132 012704 000357 MOV #357,R4 ;RESULT S / B = 357
6210 007136 010605 MOV SP,R5 ;SAVE SP
6211 007140 010506 R0072: MOV RS,SP ;RESET SP FOR ERROR LOOP
6212 007142 012746 000377 MOV #377,-(SP) ;[DEST] = 377 PUT ON STACK
6213 007146 005746 TST -(SP) ;DECREMENT SP
6214 007150 000257 CCC ;SCOPE SYNC
6215
6216 007152 042766 000020 000002 I0072: BIC #20,2(SP) ;TEST THE BIC - CLEAR BIT 4
6217
6218 007160 010602 MOV SP,R2 ;[R2] = DEST ADDR
6219 007162 005722 TST (R2)+
6220 007164 020412 CMP R4,(R2) ;RESULT = 357?
6221 007166 001403 BEQ A0072 ;BR IF YES
6222
6223 007170 011203 MOV (R2),R3 ;GET WAS DATA
6224 007172 000000 E0072: HALT ;BIC FAILED TO CLR BIT2 OF DEST
6225 007174 000761 BR R0072 ;LOCK ON HARD ERROR
6226
6227 007176 010506 A0072: MOV R5,SP
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; *****
; .SBTTL T0073 BASIC "BIT #N,2" WITH BIT SET IN "A"
; *****

; MICRO PROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8

; ACT BUTS: 37[004]100,142 / 35[240]120,163 / 33[266]220,225 / 16[367]016,016

; EXEC: [225]ALUC=HMLHH : [367]D=040000

; CODES: [367] SPS=3 / N:C=0000

; SYNC: B05J2 (-) / T= 4.3 USEC

; KEY SIG: K3-3 BITL / K3-3 SM=2L / K3-3 DM=3L / K3-8 BIT+CMPT+TSTH

007200 012700 000073
007204 112760 000377 070162
007212 012702 067602
007216 012704 040000
007222 010412
007224 000277

007226 032737 040000 067602
007234 001002
007236 000000
007240 000770

T0073: MOV #0073,R0 ;LOAD R0 WITH TEST NO.
MOV #377,\$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
MOV #MBUFO,R2 ;DEST ADDR = MBUFO
MOV #40000,R4 ;RESULT S / B = 40000
R0073: MOV R4,(R2) ;MAKE [DEST] = 40000
SCC ;SCOPE SYNC - Z=1

I0073: BIT #40000,2#MBUFO ;TEST THE BIT

BNE T0074 ;BR IF Z=0 - IT SHOULD BE

E0073: HALT ;BIT FAILED TO CLEAR "Z"
BR R0073 ;LOCK ON HARD ERROR


```

6261 ; *****
6262 ; .SBTTL T0074 BASIC "BIT" #N, @#A" WITH BIT CLEAR IN "A"
6263 ; *****
6264
6265 ;MICROPROGRAMMING / LOGIC INFORMATION
6266
6267 ;ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
6268
6269 ;ACT BUTS: 37(004)100,142 / 35(240)120,163 / 33(266)220,225 / 16(367)016,016
6270
6271 ;EXEC: [225]ALUC=HHLHH :[367]D=000000
6272
6273 ;CODES: [367] SPS=3 / N:C=0100
6274
6275 ;SYNC: B05J2 (-) / T= 4.3 USEC
6276
6277 ;KEY SIG: K3-3 BITL / K3-3 SM=2L / K3-3 OM=3L / K3-8 BIT+CMPTSTH
6278 ; K5-2 PS(Z)(1)H
6279
6280 007242 012700 000074 T0074: MOV #0074,R0 ;LOAD R0 WITH TEST NO.
6281 007246 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6282 007254 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
6283 007260 005004 CLR R4 ;RESULT S / B = 000000
6284 007262 005012 R0074: CLR (R2) ;MAKE [DEST] = 000000
6285 007264 000257 CCC ;SCOPE SYNC - Z=0
6286
6287 007266 032737 040000 067602 I0074: BIT #40000,@#MBUFO ;TEST THE BIT
6288
6289 007274 001402 BEQ A0074 ;BR IF Z=1 - IT SHOULD BE
6290
6291 007276 000000 E10074: HALT ;BIT FAILED TO SET "Z"
6292 007300 000770 BR R0074 ;LOCK ON HARD ERROR
6293
6294 007302 020412 A0074: CMP R4,(R2) ;DID BIT DELIVER A RESULT
6295 007304 001403 BEQ T0075 ;BR IF NOT
6296
6297 007306 011203 E20074: MOV (R2),R3 ;GET THE WAS DATA
6298 007310 000000 HALT ;BIT DISTURBED THE [DEST]
6299 007312 000763 BR R0074 ;LOCK ON HARD ERROR
6300

```

Handwritten mark or signature.

K13

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 167
DBQEAB.CMB T0074 BASIC "BIT #N,2#A" WITH BIT CLEAR IN "A"

```
6301 ; *****
6302 ; .SBTTL T0075 BASIC "ADD #N,(R) " TEST
6303 ; *****
6304 ;
6305 ;MICROPROGRAMMING / LOGIC INFORMATION
6306 ;
6307 ;ROM SEQ: [142,240,250,161,266,267,225,367,375,016] FC 1,2,3,8
6308 ;
6309 ;ACT BUTS: 37(004)100,142 / 35(240)120,161 / 33(266)220,225 / 16(367)016,016
6310 ;
6311 ;EXEC: [225]ALUC=LHLLH : [367]D=000004
6312 ;
6313 ;CODES: [367] SPS=3 / N:C=0000
6314 ;
6315 ;SYNC: B05J2 (-) / T=3.4 USEC
6316 ;
6317 ;KEY SIG: K3-3 ADD+SUBL / K3-3 SM=2L / K3-3 DM=1L
6318 ;
6319 007314 012700 000075 T0075: MOV #0075,R0 ;LOAD R0 WITH TEST NO.
6320 007320 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6321 007326 012702 067602 MOV #MBOF0,R2 ;DEST ADDR = MBOF0
6322 007332 012704 000004 MOV #4,R4 ;RESULT S / B = 4
6323 007336 012712 000002 R0075: MOV #2,(R2) ;MAKE (DEST) = 2
6324 007342 000257 CCC ;SCOPE SYNC
6325 ;
6326 007344 062712 000002 I0075: ADD #2,(R2) ;TEST THE ADD
6327 ;
6328 007350 020412 CMP R4,(R2) ;RESULT = 4 ?
6329 007352 001403 BEQ T0076 ;BR IF YES
6330 ;
6331 007354 011203 E0075: MOV (R2),R3 ;GET THE WAS DATA
6332 007356 000000 HALT ;ADD DELIVERED THE WRONG RESULT
6333 007360 000766 BR R0075 ;LOCK ON HARD ERROR
6334
```

```

6335 ; *****
6336 ; .SBTTL T0076 BASIC "ADD #N,X(R)" TEST
6337 ; *****
6338 ;MICROPROGRAMMING / LOGIC INFORMATION
6339 ;ROM SEQ: [142,240,250,167,261,262,266,267,225,367,375,016] FC 1,2,3,8
6340 ;ACT BUTS: 37[004]100,142 / 35[240]120,167 / 17[167]262,262 / 33[266]220,225
6341 ; / 16[367]016,016
6342 ;EXEC: [225]ALUC=LHLLH : [367]D=000004
6343 ;CODES: [367] SPS=3 / N:C=0000
6344 ;SYNC: B05J2 (-) / T= 3.4 USEC
6345 ;KEY SIG: K3-3 ADD+SUBL / K3-3 SM=2L / K3-3 DM=6L
6346
6347
6348
6349
6350
6351
6352
6353
6354 007362 012700 000076 T0076: MOV #0076,R0 ;LOAD R0 WITH TEST NO.
6355 007366 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6356 007374 012704 000002 MOV #2,R4 ;RESULT S / B = 4
6357 007400 012702 067604 MOV #MBUFO+2,R2 ;DEST ADDR = MBUFO + 2
6358 007404 012705 067602 R0076: MOV #MBUFO,R5 ;BASE DEST ADDR = MBUFO
6359 007410 005012 CLR (R2) ;MAKE [DEST] = 000000
6360 007412 000257 CCC ;SCOPE SYNC
6361
6362 007414 062765 000002 000002 I0076: ADD #2,2(R5) ;TEST THE ADD
6363
6364 007422 020412 CMP R4,(R2) ;RESULT = 4 ?
6365 007424 001403 BEQ T0077 ;BR IF YES
6366
6367 007426 011203 E0076: MOV (R2),R3 ;GET THE WAS DATA
6368 007430 000000 HALT ;ADD DELIVERED THE WRONG RESULT
6369 007432 000764 BR R0076 ;LOOP ON HARD ERROR
6370
6371

```

M13

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 169
 DBQEAB.CMB T0075 BASIC "ADD *N,X(R)" TEST

```

6372 ; *****
6373 ; .SBTTL T0077 BASIC "CMPB *N,(SP)+" TEST
6374 ; *****
6375 ;MICROPROGRAMMING / LOGIC INFORMATION
6376 ;ROM SEQ: [142,240,250,162,260,267,225,367,375,016] FC 1,2,3,E
6377 ;ACT BUTS: 37[004]100,142 / 35[240]120,162 / 33[260]220,225 / 16[367]016,016
6378 ;EXEC: [225]ALUC=LLHHL : [367]ID=177400
6379 ;CODES: [367] SPS=3 / N:C=0100
6380 ;SYNC: B05J2 (-) / T= 4 USEC
6381 ;KEY SIG: K3-3 CMPL / K3-3 DM=2L / K3-6 BYTE INSTR H
6382
6383
6384
6385
6386
6387
6388
6389
6390 007434 012700 000077 T0077: MOV #0077,R0 ;LOAD R0 WITH TEST NO.
6391 007440 112760 000377 070162 MOVB #377,$TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6392 007446 032737 000002 066642 BIT #2,$BPTLOC ;BREAKPOINT HALT SET ??
6393 007454 001401 BEQ .+4 ;BR IF NOT
6394 007456 000000 HALT ;BREAK - DEPRESS CONTINUE TO RESTART
6395 007460 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
6396 007464 010605 MOV SP,R5 ;SAVE SP
6397 007466 010602 MOV SP,R2 ;SET UP DEST ADDR
6398 007470 005742 TST -(R2) ;R2 CONTAINS DEST ADDR
6399 007472 010506 R0077: MOV R5,SP ;RESET SP FOR ERROR LOOP
6400 007474 010446 MOV R4,-(SP) ;MAKE [DEST] = 177400
6401 007476 000257 CCC ;SCOPE SYNC - "Z" = 0
6402
6403 007500 122726 000000 I0077: CMPB #0,(SP)+ ;TEST THE CMPB
6404
6405 007504 001403 BEQ A0077 ;BR IF "Z" SET - IT SHOULD BE
6406
6407 007506 011203 MOV (R2),R3 ;GET WAS DATA
6408 007510 000000 E10077: HALT ;CMPB FAILED TO SET "Z"
6409 007512 000767 BR R0077 ;LOCK ON HARD ERROR
6410
6411 007514 020506 A0077: CMP R5,SP ;DID SP GET UPDATED BY 2?
6412 007516 001402 BEQ B0077 ;BR IF YES
6413
6414 007520 000000 E20077: HALT ;CMPB FAILED TO UPDATE SP PROPERLY
6415 007522 000763 BR R0077 ;LOCK ON HARD ERROR
6416
6417 007524 020412 B0077: CMP R4,(R2) ;[DEST] ALTERED?
6418 007526 001403 BEQ T0100 ;BR IF NOT
6419
6420 007530 011203 E30077: MOV (R2),R3 ;GET WAS DATA
6421 007532 000000 HALT ;CMPB MODIFIED [DEST]
6422 007534 000756 BR R0077 ;LOCK ON HARD ERROR.
6423

```

```

6424 ; *****
6425 ; .SBTTL T0100 BASIC "CMPB (RA)+,(RB)+ " - SRC AND DEST EVEN
6426 ; *****
6427
6428 ;MICROPROGRAMMING / LOGIC INFORMATION
6429
6430 ;ROM SEQ: [142,240,250,162,260,267,225,367,375,016] FC 1,2,3,8
6431
6432 ;ACT BUTS: 37(004)100,142 / 35(240)120,162 / 33(260)220,225 / 16(367)016,016
6433
6434 ;EXEC: [225]ALUC=LLHHL :[326]D=177400
6435
6436 ;CODES: [367] SPS=3 / N:C=0100
6437
6438 ;SYNC: B05J2 (-) / T= 4.5 USEC
6439
6440 ;KEY SIG: K3-3 CMPL / K3-3 DM=2L / K3-6 BYTE INSTR H
6441
6442 007536 012700 000100 T0100: MOV #0100,R0 ;LOAD R0 WITH TEST NO.
6443 007542 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6444 007550 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
6445 007554 012702 067614 MOV #DWTA+2,R2 ;DEST ADDR = DWTA+2
6446 007560 012705 067620 R0100: MOV #DWTA+6,R5 ;SRC ADDR = DWTA+6
6447 007564 010203 MOV R2,R3 ;R3 GETS DEST ADDR
6448 007566 000257 CCC ;SCOPE SYNC
6449
6450 007570 122523 I0100: CMPB (R5)+,(R3)+ ;TEST THE CMPB
6451
6452 007572 001402 BEQ A0100 ;BR IF "Z" = 1 - IT SHOULD BE
6453
6454 007574 000000 E10100: HALT ;CMPB FAILED TO SET "Z"
6455 007576 000770 BR R0100 ;LOCK ON HARD ERROR
6456
6457 007600 022703 067615 A0100: CMP #DWTA+3,R3 ;DID DEST REG GET UPDATED?
6458 007604 001402 BEQ B0100 ;BR IF YES
6459
6460 007606 000000 E20100: HALT ;CMPB FAILED TO UPDATE DEST REG
6461 007610 000763 BR R0100 ;LOCK ON HARD ERROR
6462
6463 007612 022705 067621 B0100: CMP #DWTA+7,R5 ;DID SRC REG GET UPDATED?
6464 007616 001402 BEQ C0100 ;BR IF YES
6465
6466 007620 000000 E30100: HALT ;CMPB FAILED TO UPDATE SRC REG
6467 007622 000756 BR R0100 ;LOCK ON HARD ERROR
6468
6469 007624 020412 C0100: CMP R4,(R2) ;DID [DEST] GET ALTERED?
6470 007626 001404 BEQ T0101 ;BR IF NOT
6471
6472 007630 011203 E40100: MOV (R2),R3 ;GET WAS DATA
6473 007632 000000 HALT ;CMPB DELIVERED A RESULT
6474 007634 010412 MOV R4,(R2) ;RESTORE [DEST]
6475 007636 000750 BR R0100 ;LOCK ON HARD ERROR
6476
    
```

```

6477 ; *****
6478 ; .SBTTL TO101 BASIC "CMPB (RA)+,(RB)+*" - SRC AND DEST ODD
6479 ; *****
6480
6481 / ; MICROPROGRAMMING / LOGIC INFORMATION
6482
6483 ; ROM SEQ: [142,240,250,137,251,162,260,267,237,270,231,254,074,366,375,016] FC 1,2
6484
6485 ; ACT BUTS: 37[004]100,142 / 35[240]120,137 / 36[137]120,162 / 33[260]220,237
6486 ; / 34[237]220,231 / 16[366]016,016
6487
6488 ; EXEC: [231]ALUC=LLHML : [254]D=000000
6489
6490 ; CODES: [074] SPS=3 / N:C=0100
6491
6492 ; SYNC: B05J2 (-) / T= 4.5 USEC
6493
6494 ; KEY SIG: K3-3 CMPL / K3-3 DM=2L / K3-6 BYTE INSTR H
6495
6496 007640 012700 000101 TO101: MOV #0101,R0 ;LOAD R0 WITH TEST NO.
6497 007644 112760 000377 070162 TO101: MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6498 007652 012704 177777 TO101: MOV #1,R4 ;RESULT S / B = 177777
6499 007656 012702 067614 TO101: MOV #DMA+2,R2 ;DEST ADDR = DMA+2
6500 007662 012705 067617 TO101: MOV #DMA+5,R5 ;SRC ADDR = DMA+5
6501 007666 012703 067615 TO101: MOV #DMA+3,R3 ;R3 GETS DEST ADDR+1
6502 007672 000257 TO101: CCC ;SCOPE SYNC
6503
6504 007674 122523 IO101: CMPB (RS)+,(R3)+ ;TEST THE CMPB
6505
6506 007676 001402 IO101: BEQ A0101 ;BR IF "Z" = 1 - IT SHOULD BE
6507
6508 007700 000000 E10101: HALT ;CMPB FAILED TO SET "Z"
6509 007702 000767 E10101: BR R0101 ;LOCK ON HARD ERROR
6510
6511 007704 022703 067616 A0101: CMP #DMA+4,R3 ;DID DEST REG GET UPDATED?
6512 007710 001402 A0101: BEQ B0101 ;BR IF YES
6513
6514 007712 000000 E20101: HALT ;CMPB FAILED TO UPDATE DEST REG
6515 007714 000762 E20101: BR R0101 ;LOCK ON HARD ERROR
6516
6517 007716 022705 067620 B0101: CMP #DMA+6,R5 ;DID SRC REG GET UPDATED?
6518 007722 001402 B0101: BEQ C0101 ;BR IF YES
6519
6520 007724 000000 E30101: HALT ;CMPB FAILED TO UPDATE SRC REG
6521 007726 000755 E30101: BR R0101 ;LOCK ON HARD ERROR
6522
6523 007730 020412 C0101: CMP R4,(R2) ;DID (DEST) GET ALTERED?
6524 007732 001404 C0101: BEQ TO102 ;BR IF NOT
6525
6526 007734 011203 E40101: MOV (R2),R3 ;GET WAS DATA
6527 007736 000000 E40101: HALT ;CMPB DELIVERED A RESULT
6528 007740 010412 E40101: MOV R4,(R2) ;RESTORE (DEST)
6529 007742 000747 E40101: BR R0101 ;LOCK ON HARD ERROR
6530

```

6531 ; *****
6532 ; .SBTTL T0102 BASIC "CMPB (RA)+,(RB)+ - SRC / EVEN,DEST / ODD
6533 ; *****

6534 ;MICROPROGRAMMING / LOGIC INFORMATION
6535 ;ROM SEQ: [142,240,250,162,260,267,237,270,231,254,074,366,375,016] FC 1.2,3,8
6536 ;ACT BLTS: 37(004)100,142 / 35(240)120,162 / 33(260)220,237 / 34(237)220,231
6537 ; / 16(366)016,016
6538 ;EXEC: [231]ALUC=LLMHL : [367]D=000400
6539 ;CODES: [074] SPS=8 / N:C=0100
6540 ;SYNC: B05J2 (-) / T= 4.5 USEC
6541 ;KEY SIG: K3-3 Cmpl / K3-3 DM=2 / K3-6 BYTE INSTR H

6550 007744 012700 000102 T0102: MOV #0102,R0 ;LOAD R0 WITH TEST NO.
6551 007750 112760 000377 070162 MOVB #377, TAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6552 007756 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
6553 007762 012702 067616 MOV #DWT+4,R2 ;DEST ADDR = DWT+4
6554 007766 012705 067620 R0102: MOV #DWT+6,R5 ;SRC ADDR = DWT+6
6555 007772 012703 067617 MOV #DWT+5,R3 ;R3 GETS DEST ADDR
6556 007776 000257 CCC ;SCOPE SYNC

6557
6558 010000 122523 I0102: CMPB (R5)+,(R3)+ ;TEST THE CMPB
6559
6560 010002 001402 BEQ A0102 ;BR IF "Z" = 1 - IT SHOULD BE

6561
6562 010004 000000 E10102: HALT ;CMPB FAILED TO SET "Z"
6563 010006 000767 BR R0102 ;LOCK ON HARD ERROR

6564
6565 010010 022703 067620 A0102: CMP #DWT+6,R3 ;DID DEST REG GET UPDATED?
6566 010014 001402 BEQ B0102 ;BR IF YES

6567
6568 010016 000000 E20102: HALT ;CMPB FAILED TO UPDATE DEST REG
6569 010020 000762 BR R0102 ;LOCK ON HARD ERROR

6570
6571 010022 022705 067621 B0102: CMP #DWT+7,R5 ;DID SRC REG GET UPDATED?
6572 010026 001402 BEQ C0102 ;BR IF YES

6573
6574 010030 000000 E30102: HALT ;CMPB FAILED TO UPDATE SRC REG
6575 010032 000755 BR R0102 ;LOCK ON HARD ERROR

6576
6577 010034 020412 C0102: CMP R4,(R2) ;DID (DEST) GET ALTERED?
6578 010036 001404 BEQ T0103 ;BR IF NOT
6579
6580 010040 011203 E40102: MOV (R2),R3 ;GET WAS DATA
6581 010042 000000 HALT ;CMPB DELIVERED A RESULT
6582 010044 010412 MOV R4,(R2) ;RESTORE (DEST)
6583 010046 000747 BR R0102 ;LOCK ON HARD ERROR
6584

```

6585 ; *****
6586 ; .SBTTL TO103 BASIC "CMPB (RA)+,(RB)+ - SRC / ODD,DEST / EVEN
6587 ; *****
6588 ;MICROPROGRAMMING / LOGIC INFORMATION
6589 ;ROM SEQ: [142,240,250,137,251,162,260,267,225,367,375,016] FC 1,2,3,8
6590 ;ACT BUTS: 37[004]100,142 / 35[240]120,137 / 36[137]120,162 / 33[260]220,225
6591 ; / 16[367]016,016
6592 ;EXEC: [225]ALUC=LLMHL : [367]D=000000
6593 ;CODES: [367] SPS=3 / N:C=0100
6594 ;SYNC: B05J2 (-) / T= 4.5 USEC
6595 ;KEY SIG: K3-3 CMPL / K3-3 DM=2 / K3-6 BYTE INSTR H
6600
6601
6602
6603
6604 010050 012700 000103 TO103: MOV #0103,R0 ;LOAD R0 WITH TEST NO.
6605 010054 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6606 010062 012704 177777 MOV #-1,R4 ;RESULT 5 / 8 = 177777
6607 010066 012702 067614 MOV #DWA+2,R2 ;DEST ADDR = DWA+2
6608 010072 012705 067617 R0103: MOV #DWA+5,R5 ;SRC ADDR = DWA+5
6609 010076 010203 MOV R2,R3 ;R3 GETS DEST ADDR
6610 010100 000257 CCC ;SCOPE SYNC
6611
6612 010102 122523 I0103: CMPB (R5)+,(R3)+ ;TEST THE CMPB
6613
6614 010104 001402 BEQ A0103 ;BR IF "Z" = 1 - IT SHOULD BE
6615
6616 010106 000000 E10103: HALT ;CMPB FAILED TO SET "Z"
6617 010110 000770 BR R0103 ;LOCK ON HARD ERROR
6618
6619 010112 022703 067615 A0103: CMP #DWA+3,R3 ;DID DEST REG GET UPDATED?
6620 010116 001402 BEQ B0103 ;BR IF YES
6621
6622 010120 000000 E20103: HALT ;CMPB FAILED TO UPDATE DEST REG
6623 010122 000763 BR R0103 ;LOCK ON HARD ERROR
6624
6625 010124 022705 067620 B0103: CMP #DWA+6,R5 ;DID SRC REG GET UPDATED?
6626 010130 001402 BEQ C0103 ;BR IF YES
6627
6628 010132 000000 E30103: HALT ;CMPB FAILED TO UPDATE SRC REG
6629 010134 000756 BR R0103 ;LOCK ON HARD ERROR
6630
6631 010136 020412 C0103: CMP R4,(R2) ;DID (DEST) GET ALTERED?
6632 010140 001404 BEQ TO104 ;BR IF NOT
6633
6634 010142 011203 E40103: MOV (R2),R3 ;GET WAS DATA
6635 010144 000000 HALT ;CMPB DELIVERED A RESULT
6636 010146 010412 MOV R4,(R2) ;RESTORE (DEST)
6637 010150 000750 BR R0103 ;LOCK ON HARD ERROR
6638
    
```


E14

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 174
 DBQEAB.CMB T0103 BASIC "CMPB (RA)+,(RB)+ - SRC / OOD,DEST / EVEN

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6639 ; *****
6640 ; .SBTTL T0104 BASIC "MOVB (RA)+,X(RB) - SRC EVEN / DEST EVEN
6641 ; *****
6642
6643 ;MICROPROGRAMMING / LOGIC INFORMATION
6644
6645 ;ROM SEQ: [142,240,250,177,206,212,202,205,125,375,016] FC 1,2,4
6646
6647 ;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,212 / 21(206)200,202
6648 ; / 16(125)016,016
6649
6650 ;EXEC: [205]ALUC=LLLLL : [125]D=000000
6651
6652 ;CODES: [125] SPS=3 / N:C=0100
6653
6654 ;SYNC: B05J2 (-) / T=4.5 USEC
6655
6656 ;KEY SIG: K3-3 MOVL / K3-3 DM=6L / K3-5 DOPL / K5-2 PS(Z)(1)H
6657 ; K3-6 BYTE INSTR H
6658
6659 010152 012700 000104 T0104: MOV #0104,R0 ;LOAD R0 WITH TEST NO.
6660 010156 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6661 010164 012702 067606 MOV #MBUF1,R2 ;DEST ADDR = MBUF1
6662 010170 012703 067602 MOV #MBUF0,R3 ;BASE DEST ADDR = MBUF0
6663 010174 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
6664 010200 012705 070152 R0104: MOV #DBTA,R5 ;SRC ADDR = DBTA
6665 010204 012712 177777 MOV #-1,(R2) ;[DEST] = 177777
6666 010210 000257 CCC ;SCOPE SYNC
6667
6668 010212 112563 000004 I0104: MOVB (RS)+,4(R3) ;TEST THE MOVB
6669
6670 010216 020412 CMP R4,(R2) ;RESULT OK?
6671 010220 001403 BEQ A0104 ;BR IF YES
6672
6673 010222 011203 MOV (R2),R3 ;GET WAS DATA
6674 010224 000000 E10104: HALT ;MOV DELIVERED WRONG RESULT
6675 010226 000764 BR R0104 ;LOCK ON HARD ERROR
6676
6677 010230 022705 070153 R0104: CMP #DBTA+1,R5 ;DID SRC REG GET INCREMENTED BY +1
6678 010234 001402 BEQ T0105 ;BR IF YES
6679
6680 010236 000000 E20104: HALT ;MOVB FAILED TO UPDATE SRC REG
6681 010240 000757 BR R0104 ;LOCK ON HARD ERROR
  
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F14

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 175
 DBQEAB.CMB T0104 BASIC "MOV B (RA)+,X(RB) - SRC EVEN / DEST EVEN

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6682 : *****
6683 : .SBTTL T0105 BASIC "MOV B (RA)+,X(RB) - SRC ODD / DEST ODD
6684 : *****
6685
6686 ;MICROPROGRAMMING / LOGIC INFORMATION
6687
6688 ;ROM SEQ: [142,240,250,137,251,177,206,212,202,205,125,375,016] FC 1,2,4
6689
6690 ;ACT BUTS: 37(004)100,142 / 35(240)120,137 / 36(137)120,177 / 17(177)212,212
6691 ; / 21(206)200,202 / 16(125)016,016
6692
6693 ;EXEC: [205]ALUC=LLLLL : [125]D=177777
6694
6695 ;CODES: [125] SPS=3 / M:C=1000
6696
6697 ;SYNC: B05J2 (-) / T=4.5 USEC
6698
6699 ;KEY SIG: K3-3 MOVL / K3-3 DM=6L / K3-5 DOPL / K5-2 PS (N)(1) H
6700 ; K3-6 BYTE INSTR H
6701
6702 010242 012700 000105 T0105: MOV #0105,R0 ;LOAD R0 WITH TEST NO.
6703 010246 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6704 010254 012702 067606 MOV #MBUF1,R2 ;DEST ADDR = MBUF1
6705 010260 012703 067602 MOV #MBUF0,R3 ;BASE DEST ADDR = MBUF0
6706 010264 012704 000777 MOV #777,R4 ;RESULT S / B = 777
6707 010270 012705 070157 R0105: MOV #DBTB+1,R5 ;SRC ADDR = DBTB+1
6708 010274 012712 177777 MOV #-1,(R2) ;[DEST] = 177777
6709 010300 000257 CCC ;SCOPE SYNC
6710
6711 010302 112563 000005 I0105: MOV B (R5)+,5(R3) ;TEST THE MOV B
6712
6713 010306 020412 CMP R4,(R2) ;RESULT OK?
6714 010310 001403 BEQ R0105 ;BR IF YES
6715
6716 010312 011203 MOV (R2),R3 ;GET WAS DATA
6717 010314 000000 E10105: HALT ;MOV DELIVERED WRONG RESULT
6718 010316 000764 BR R0105 ;LOCK ON HARD ERROR
6719
6720 010320 022705 070160 R0105: CMP #DBTB+2,R5 ;DID SRC REG GET INCREMENTED BY +1
6721 010324 001402 BEQ T0106 ;BR IF YES
6722
6723 010326 000000 E20105: HALT ;MOV B FAILED TO UPDATE SRC REG
6724 010330 000757 BR R0105 ;LOCK ON HARD ERROR
  
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010332 012700 000106
010336 112760 000377
010344 012702 067606
010350 012703 067602
010354 012704 000377
010360 012705 070152
010364 012712 177777
010370 000257

010372 112563 000005

010376 020412
010400 001403

010402 011203
010404 000000
010406 000764

010410 022705 070153
010414 001402

010416 000000
010420 000757

070162

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; *****  
; .SBTTL T0106 BASIC *MOV8 (RA)+,X(RB) - SRC EVEN / DEST ODD  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ: [142,240,250,177,206,212,202,205,125,375,016] FC 1,2,4  
;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,212 / 21(206)200,202  
; / 16(125)016,016  
  
;EXEC: [205]ALUC=LLLLL : [125]D=177777  
  
;CODES: [125] SPS=3 / N:C=1000  
  
;SYNC: B05J2 (-) / T=4.5 USEC  
  
;KEY SIG: K3-3 MOVL / K3-3 DM=6L / K3-5 DOPL / K5-2 PS (N)(1) H  
; K3-6 BYTE INSTR  
  
T0106: MOV #0106,R0 ;LOAD R0 WITH TEST NO.  
MOV8 #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
MOV #MBUF1,R2 ;DEST ADDR = MBUF1  
MOV #MBUF0,R3 ;BASE DEST ADDR = MBUF0  
MOV #377,R4 ;RESULT S / B = 377  
R0106: MOV #DBTA,R5 ;SRC ADDR = DBTA  
MOV #-1,(R2) ;[DEST] = 177777  
CCC ;SCOPE SYNC  
  
T0106: MOV8 (R5)+,5(R3) ;TEST THE MOV8  
  
CMP R4,(R2) ;RESULT OK?  
BEQ R0106 ;BR IF YES  
  
E10106: MOV (R2),R3 ;GET WAS DATA  
HALT ;MOV DELIVERED WRONG RESULT  
BR R0106 ;LOCK ON HARD ERROR  
  
R0106: CMP #DBTA+1,R5 ;DID SRC REG GET INCREMENTED BY +1  
BEQ T0107 ;BR IF YES  
  
E20106: HALT ;MOV8 FAILED TO UPDATE SRC REG  
BR R0106 ;LOCK ON HARD ERROR
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H14

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 177
 D89EAB.CMB T0106 BASIC *MOVB (RA)+,X(RB) - SRC EVEN / DEST ODD

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6768 ; *****
6769 ; .SBTTL T0107 BASIC *MOVB (RA)+,X(RB) - SRC ODD / DEST EVEN
6770 ; *****
6771
6772 ;MICROPROGRAMMING / LOGIC INFORMATION
6773
6774 ;ROM SEQ: [142,240,250,137,251,177,206,212,202,205,125,375,016] FC 1,2,4
6775
6776 ;ACT BUTS: 37[004]100,142 / 35[240]120,137 / 36[137]120,177 / 17[177]212,212
6777 ; / 21[206]200,202 / 16[125]016,016
6778
6779 ;EXEC: [205]ALUC=LLLLL : [125]D=001001
6780
6781 ;CODES: [125] SPS=3 / N:C=0000
6782
6783 ;SYNC: B05J2 (-) / T=4.5 USEC
6784
6785 ;KEY SIG: K3-3 MOVL / K3-3 DM=6L / K3-5 DOPL / K3-6 BYTE INSTR H
6786
6787 010422 012700 000107 T0107: MOV #0107,R0 ;LOAD R0 WITH TEST NO.
6788 010426 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6789 010434 012702 067606 MOV #MBUF1,R2 ;DEST ADDR = MBUF1
6790 010440 012703 067602 MOV #MBUF0,R3 ;BASE DEST ADDR = MBUF0
6791 010444 012704 177401 MOV #177401,R4 ;RESULT S / B = 177401
6792 010450 012705 070157 R0107: MOV #DBTB+1,R5 ;SRC ADDR = DBTB+1
6793 010454 012712 177777 MOV #-1,(R2) ;[DEST] = 177777
6794 010460 000257 CCC ;SCOPE SYNC
6795
6796 010462 112563 000004 I0107: MOVB (R5)+,4(R3) ;TEST THE MOVB
6797
6798 010466 020412 CMP R4,(R2) ;RESULT OK?
6799 010470 0014C3 BEQ A0107 ;BR IF YES
6800
6801 010472 011203 MOV (R2),R3 ;GET WAS DATA
6802 010474 000000 E10107: HALT ;MOV DELIVERED WRONG RESULT
6803 010476 000764 BR R0107 ;LOCK ON HARD ERROR
6804
6805 010500 022705 070160 A0107: CMP #DBTB+2,R5 ;DID SRC REG GET INCREMENTED BY +1
6806 010504 001402 BEQ T0110 ;BR IF YES
6807
6808 010506 000000 E20107: HALT ;MOVB FAILED TO UPDATE SRC REG
6809 010510 000757 BR R0107 ;LOCK ON HARD ERROR
6810
  
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6811 ; *****
6812 ; .SBTTL T0110 BASIC "MOVB 2(RA),(RB)+" TEST - SRC EVEN / DEST EVEN
6813 ; *****
6814

6815 ; MICROPROGRAMMING / LOGIC INFORMATION

6816 ; ROM SEQ: [146,241,242,247,250,172,257,202,205,125,375,016] FC 1,2,4

6817 ; ACT BUTS: 37[004]100,146 / 35[247]120,172 / 22[172]200,202 / 16[125]016,016

6818 ; EXEC: [205]ALUC=LLLLL : [125]D=001001

6819 ; CODES: [125] SPS=3 / N:C=0000

6820 ; SYNC: B05J2 (-) / T=4.2 USEC

6821 ; KEY SIG: K3-3 MOVL / K3-3 DM=2L / K3-5 DOPL / K3-6 BYTE INSTR H

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6829 010512 012700 000110 T0110: MOV #0110,R0 ; LOAD R0 WITH TEST NO.

6830 010516 112760 000377 070162 MOVB #377,STAB1(R0) ; SET FLAG FOR THIS TEST IN MISSED TABLE

6831 010524 012702 067602 MOV #MBUFO,R2 ; DEST ADDR = MBUFO

6832 010530 012704 177401 MOV #177401,R4 ; RESULT S / B = 177401

6833 010534 012705 070136 MOV #DWTB,R5 ; SRC ADDR = DWTB

6834 010540 010203 R0110: MOV R2,R3 ; R3 GETS DEST ADDR

6835 010542 012713 177777 MOV #-1,(R3) ; [DEST] = 177400

6836 010546 000257 CCC ; SCOPE SYNC

6837
6838 010550 116523 000002 I0110: MOVB 2(R5),(R3)+ ; TEST THE MOVB

6839
6840 010554 020412 CMP R4,(R2) ; RESULT OK?

6841 010556 001403 BEQ A0110 ; BR IF YES

6842
6843 010560 011203 MOV (R2),R3 ; GET WAS DATA

6844 010562 000000 E10110: HALT ; MOVB DELIVERED WRONG RESULT

6845 010564 000765 BR R0110 ; LOCK ON HARD ERROR

6846
6847 010566 022703 067603 A0110: CMF #MBUFO+1,R3 ; DID DEST REG GET INCREMENTED?

6848 010572 001402 BEQ T0111 ; BR IF YES

6849
6850 010574 000000 E20110: HALT ; MOVB FAILED TO AUTO INCREMENT DEST REG

6851 010576 000760 BR R0110 ; LOCK ON HARD ERROR

6852

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6853 : *****
6854 : .SBTTL TO111 BASIC "MOVB 2(RA),(RB)++" TEST - SRC ODD / DEST EVEN
6855 : *****
6856 ;MICROPROGRAMMING / LOGIC INFORMATION
6857 ;ROM SEQ: [146,241,242,247,250,137,251,172,257,202,205,125,375,016] FC 1,2,4
6858 ;ACT BUTS: 37(004)100,146 / 35(247)120,137 / 36(137)120,172 / 22(172)200,202
6859 ; / 16(125)016,016
6860 ;EXEC: [205]ALUC=LLLLL :[125]D=001001
6861 ;CODES: [125] SPS=3 / N:C=0000
6862 ;SYNC: B05J2 (-) / T=4.2 USEC
6863 ;KEY SIG: K3-3 MOVL / K3-3 DM=2L / K3-5 DOPL / K3-6 BYTE INSTR H
6864
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6872 010600 012700 000111 TO111: MOV #0111,R0 ;LOAD R0 WITH TEST NO.
6873 010604 112760 000377 070162 TO111: MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6874 010612 012702 067602 TO111: MOV #MBUF0,R2 ;DEST ADDR = MBUF0
6875 010616 012704 177401 TO111: MOV #177401,R4 ;RESULT S / B = 177401
6876 010622 012705 070156 TO111: MOV #DBTB,R5 ;SRC ADDR = DBTB
6877 010626 010203 RO111: MOV R2,R3 ;R3 GETS DEST ADDR
6878 010630 012713 177777 RO111: MOV #-1,(R3) ;[DEST] = 177777
6879 010634 000257 CCC ;SCOPE SYNC
6880
6881 010636 116523 000001 IO111: MOVB 1(R5),(R3)+ ;TEST THE MOVB
6882
6883 010642 020412 CMP R4,(R2) ;RESULT OK?
6884 010644 001403 BEQ AO111 ;BR IF YES
6885
6886 010646 011203 MOV (R2),R3 ;GET WAS DATA
6887 010650 000000 E10111: HALT ;MOVB DELIVERED WRONG RESULT
6888 010652 000765 BR RO111 ;LOCK ON HARD ERROR
6889
6890 010654 022703 067603 AO111: CMP #MBUF0+1,R3 ;DID DEST REG GET INCREMENTED?
6891 010660 001402 BEQ TO112 ;BR IF YES
6892
6893 010662 000000 E20111: HALT ;MOVB FAILED TO AUTO INCREMENT DEST REG
6894 010664 000763 BR RO111 ;LOCK ON HARD ERROR
6895

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K14

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 180
 DBDEAB.CMB T0111 BASIC "MOV B 2(RA),(RB)+" TEST - SRC ODD / DEST EVEN

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6896 ; *****
6897 ; .SBTTL T0112 BASIC "MOV B 2(RA),(RB)+" TEST - SRC EVEN / DEST ODD
6898 ; *****
6899
6900 ;MICROPROGRAMMING / LOGIC INFORMATION
6901
6902 ;ROM SEQ: [146,241,242,247,250,172,257,202,205,125,375,016] FC 1,2,4
6903
6904 ;ACT BUTS: 37(004)100,146 / 35(247)120,172 / 22(172)200,202 / 16(125)016,016
6905
6906 ;EXEC: [205]ALUC=LLLLL : [125]D=001001
6907
6908 ;CODES: [125] SPS=3 / N:C=0000
6909
6910 ;SYNC: B05J2 (-) / T=4.2 USEC
6911
6912 ;KEY SIG: K3-3 MOVL / K3-3 DM=2L / K3-5 DOPL / K3-6 BYTE INSTR H
6913
6914 010666 012700 000112 T0112: MOV #0112,R0 ;LOAD R0 WITH TEST NO.
6915 010672 112760 000377 070162 T0112: MOV #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6916 010700 012702 067602 T0112: MOV #MBUFO,R2 ;DEST ADDR = MBUFO
6917 010704 012704 000777 T0112: MOV #777,R4 ;RESULT S / B = 777
6918 010710 012705 070136 T0112: MOV #DWTB,R5 ;SRC ADDR = DWTB
6919 010714 012703 067603 R0112: MOV #MBUFO+1,R3 ;R3 GETS DEST ADDR
6920 010720 012712 177777 R0112: MOV #-1,(R2) ;[DEST] = 177777
6921 010724 000257 R0112: CCC ;SCOPE SYNC
6922
6923 010726 116523 000002 I0112: MOV B 2(R5),(R3)+ ;TEST THE MOV B
6924
6925 010732 020412 I0112: CMP R4,(R2) ;RESULT OK?
6926 010734 001403 I0112: BEQ A0112 ;BR IF YES
6927
6928 010736 011203 E10112: MOV (R2),R3 ;GET WAS DATA
6929 010740 000000 E10112: HALT ;MOV B DELIVERED WRONG RESULT
6930 010742 000764 E10112: BR R0112 ;LOCK ON HARD ERROR
6931
6932 010744 022703 067604 A0112: CMP #MBUFO+2,R3 ;DID DEST REG GET INCREMENTED?
6933 010750 001402 A0112: BEQ T0113 ;BR IF YES
6934
6935 010752 000000 E20112: HALT ;MOV B FAILED TO AUTO INCREMENT DEST REG
6936 010754 000757 E20112: BR R0112 ;LOCK ON HARD ERROR
6937
  
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6938 ; *****
6939 ; .SBTTL TC113 BASIC "MOVB 2(RA),(RB)+"  
6940 ; *****
6941 ; MICROPROGRAMMING / LOGIC INFORMATION
6942 ; ROM SEQ: [146,241,242,247,250,137,251,172,257,202,205,125,375,016] FC 1,2,4
6943 ; ACT BUTS: 37(004)100,146 / 35(247)120,137 / 36(137)120,172 / 22(172)200,202
6944 ; / 16(125)016,016
6945 ; EXEC: [205]ALUC=LLLLL : [125]D=001001
6946 ; CODES: [125] SPS=3 / N:C=0000
6947 ; SYNC: B05J2 (-) / T=4.2 USEC
6948 ; KEY SIG: K3-3 MOVL / K3-3 DM=2L / K3-5 DOPL / K3-6 BYTE INSTR H
6949
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6957 010756 012700 000113 070162 T0113: MOV #0113,R0 ;LOAD R0 WITH TEST NO.
6958 010762 112760 000377 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
6959 010770 012702 067602 MOV #MBOFD,R2 ;DEST ADDR = MBOFD
6960 010774 012704 000777 MOV #777,R4 ;RESULT S / B = 777
6961 011000 012705 070156 MOV #DBTB,R5 ;SRC ADDR = DBTB
6962 011004 012703 067603 R0113: MOV #MBOFD+1,R3 ;R3 GETS DEST ADDR = MBOFD+1
6963 011010 012712 177777 MOV #-1,(R2) ;[DEST] = 177777
6964 011014 000257 CCC ;SCOPE SYNC
6965
6966 011016 116523 000001 I0113: MOVB 1(R5),(R3)+ ;TEST THE MOVB
6967
6968 011022 020412 CMP R4,(R2) ;RESULT OK?
6969 011024 001403 BEQ A0113 ;BR IF YES
6970
6971 011026 011203 MOV (R2),R3 ;GET WAS DATA
6972 011030 000000 E10113: HALT ;MOVB DELIVERED WRONG RESULT
6973 011032 000764 BR R0113 ;LOCK ON HARD ERROR
6974
6975 011034 022703 067604 A0113: CMP #MBOFD+2,R3 ;DID DEST REG GET INCREMENTED?
6976 011040 001402 BEQ T0114 ;BR IF YES
6977
6978 011042 000000 E20113: HALT ;MOVB FAILED TO AUTO INCREMENT DEST REG
6979 011044 000757 BR R0113 ;LOCK ON HARD ERROR
6980

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M14

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 182
 DBQEAB.CMB T0113 BASIC "MOVB 2(RA),(RB)+" TEST - SRC ODD / DEST ODD

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6981 ; *****
6982 ; .SBTTL T0114 BASIC "MOVB -(RA),RB" TEST - SRC EVEN ADDR
6983 ; *****
6984 ;
6985 ;MICROPROGRAMMING / LOGIC INFORMATION
6986 ;
6987 ;ROM SEQ: [144,240,250,160,204,003,204,000] FC 1,2,4
6988 ;
6989 ;ACT BUTS: 37(004)107 144 / 35(240)120,160 / 20(160)000,003 / 27(003)000,000
6990 ;
6991 ;EXEC: [003]ALUC=LLLLL :[204]D=177777
6992 ;
6993 ;CODES: [204] SPS=3 / N:C=1000
6994 ;
6995 ;SYNC: B05J2 (-) / T=2 USEC
6996 ;
6997 ;KEY SIG: K3-3 MOVL / K3-3 DM=OL / K3-5 DOPL / K3-6 BYTE INSTR
6998 ; K5-2 PS (N)(1)H
6999 ;
7000 011046 012700 000114 T0114: MOV #0114,R0 ;LOAD R0 WITH TEST NO.
7001 011052 112760 000377 070162 T0114: MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7002 011060 012702 177703 T0114: MOV #177703,R2 ;DEST ADDR = R3
7003 011064 012704 177777 T0114: MOV #-1,R4 ;RESULT S / B = 177777
7004 011070 012705 067621 R0114: MOV #DWTA+7,R5 ;SRC ADDR = DWTA+7
7005 011074 005003 R0114: CLR R3 ;[DEST] = 000000
7006 011076 000257 R0114: CCC ;SCOPE SYNC
7007 ;
7008 011100 114503 I0114: MOVB -(R5),R3 ;TEST THE MOVB
7009 ;
7010 011102 020403 I0114: CMP R4,R3 ;RESULT OK?
7011 011104 001402 I0114: BEQ A0114 ;BR IF YES
7012 ;
7013 011106 000000 E10114: HALT ;MOVB FAILED - WRONG RESULT
7014 011110 000767 E10114: BR R0114 ;LOCK ON HARD ERROR
7015 ;
7016 011112 022705 067620 A0114: CMP #DWTA+6,R5 ;SRC REG GET DECREMENTED?
7017 011116 001402 A0114: BEQ T0115 ;BR IF YES
7018 ;
7019 011120 000000 E20114: HALT ;MOVB FAILED TO UPDATE SRC REG
7020 011122 000762 E20114: BR R0114 ;LOCK ON HARD ERROR
  
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 183
DBQEAB.CMB T0114 BASIC "MOV B -(RA),RB" TEST - SRC EVEN ADDR

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7021 ; *****
7022 ; .SBTTL T0115 BASIC "MOV B -(RA),RB" TEST - SRC ODD ADDR
7023 ; *****
7024 ;
7025 ;MICROPROGRAMMING / LOGIC INFORMATION
7026 ;
7027 ;ROM SEQ: [144,240,250,137,251,160,204,003,204,000] FC 1,2,4
7028 ;
7029 ;ACT BUTS: 37(004)100,144 / 35(240)120,137 / 36(137)120,160 / 20(160)000,003
7030 ; / 27(003)000,000
7031 ;
7032 ;EXEC: [003]ALUC=LLLLL : [204]D=177777
7033 ;
7034 ;CODES: [204] SPS=3 / N:C=1000
7035 ;
7036 ;SYNC: B05J2 (-) / T= 2 USEC
7037 ;
7038 ;KEY SIG: K3-3 MOVL / K3-3 DM=OL / K3-5 DOPL / K3-6 BYTE INSTR H
7039 ; K5-2 PS(N)(.)H
7040
7041 011124 012700 000115 T0115: MOV #0115,R0 ;LOAD R0 WITH TEST NO.
7042 011130 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7043 011136 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
7044 011142 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
7045 011146 012705 067620 R0115: MOV #DWTA+6,R5 ;SRC ADDR = DWTA+6
7046 011152 005003 CLR R3 ;[DEST] = 000000
7047 011154 000257 CCC ;SCOPE SYNC
7048
7049 011156 114503 I0115: MOVB -(R5),R3 ;TEST THE MOV B
7050
7051 011160 020403 CMP R4,R3 ;RESULT OK?
7052 011162 001402 BEQ A0115 ;BR IF YES
7053
7054 011164 000000 E10115: HALT ;MOV B FAILED - WRONG RESULT
7055 011166 000767 BR R0115 ;LOCK ON HARD ERROR
7056
7057 011170 022705 067617 A0115: CMP #DWTA+5,R5 ;SRC REG GET DECREMENTED?
7058 011174 001402 BEQ T0116 ;BR IF YES
7059
7060 011176 000000 E20115: HALT ;MOV B FAILED TO UPDATE SRC REG
7061 011200 000762 BR R0115 ;LOCK ON HARD ERROR
7062
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7117 : *****
7118 : .SBTTL T0117 BASIC "MOVB (RA)+,-(SP)" TEST - SRC ADDR ODD
7119 : *****
7120
7121 ;MICROPROGRAMMING / LOGIC INFORMATION
7122
7123 ;ROM SEQ: [142,240,250,137,251,174,257,202,205,125,375,016] FC 1,2,4
7124
7125 ;ACT BUTS: 37(004)100,142 / 35(240)120,137 / 36(137)120,174 / 22(174)200,202
7126 ; / 16(125)016,016
7127
7128 ;EXEC: [205]ALUC=LLLLL : [125]D=000000
7129
7130 ;CODES: [125] SPS=3 / N:C=0100
7131
7132 ;SYNC: B05J2 (-) / T= 3.3 USEC
7133
7134 ;KEY SIG: K3-3 MOVL / K3-3 DM=4L / K3-5 DOPL / K3-6 BYTE INSTR H
7135 ; K5-2 PS(2)(1)H
7136
7137 011302 012700 000117 T0117: MOV #0117,R0 ;LOAD R0 WITH TEST NO.
7138 011306 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7139 011314 010605 MOV SP,R5 ;SAVE SP
7140 011316 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
7141 011322 010506 RO117: MOV R5,SP ;RESET SP FOR ERROR LOOP
7142 011324 012703 070141 MOV #DWTB+3,R3 ;SRC ADDR = DWTB+3
7143 011330 012746 177777 MOV #-1,-(SP) ;[DEST] = 177777
7144 011334 010602 MOV SP,R2 ;R2 GETS DEST ADDR
7145 011336 005726 TST (SP)+ ;RESET SP
7146 011340 000257 CCC ;SCOPE SYNC
7147
7148 011342 112346 IO117: MOVB (R3)+,-(SP) ;TEST THE MOVB
7149
7150 011344 022703 070142 CMP #DWTB+4,R3 ;DID MOVB INCREMENT SRC REG?
7151 011350 001402 BEQ A0117 ;BR IF YES
7152
7153 011352 000000 EO117: HALT ;MOVB FAILED TO UPDATE SRC REG
7154 011354 000762 BR RO117 ;LOCK ON HARD ERROR
7155
7156 011356 020412 A0117: CMP R4,(R2) ;RESULT OK?
7157 011360 001403 BEQ B0117 ;BR IF YES
7158
7159 011362 011203 E10117: MOV (R2),R3 ;GET WAS DATA
7160 011364 000000 HALT ;MOVB FAILED TO DELIVER CORRECT RESULT
7161 011366 000755 BR RO117 ;LOCK ON HARD ERROR
7162
7163 011370 020206 B0117: CMP R2,SP ;DID SP GET PUSHED BY 2
7164 011372 001402 BEQ C0117 ;BR IF YES
7165
7166 011374 000000 E20117: HALT ;MOVB FAILED TO PUSH SP
7167 011376 000751 BR RO117 ;LOCK ON HARD ERROR
7168
7169 011400 010506 C0117: MOV R5,SP ;RESET SP IN CASE OF ERROR
7170
  
```

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7171 ; *****
7172 ; .SBTTL T0120 BASIC "MOVB X(R),2#A" TEST - SRC EVEN / DEST EVEN
7173 ; *****
7174
7175 ;MICROPROGRAMMING / LOGIC INFORMATION
7176
7177 ;ROM SEQ: [146,241,242,247,250,173,207,210,202,205,125,375,016] FC 1,2,4
7178
7179 ;ACT BUTS: 37(004)100,146 / 35(247)120,173 / 22(207)200,202 / 16(125)016,016
7180
7181 ;EXEC: [205]ALUC=LLLLL : [125]D=001001
7182
7183 ;CODES: [125] SPS=3 / N:C=0000
7184
7185 ;SYNC: B05J2 (-) / T= 4.7 USEC
7186
7187 ;KEY SIG: K3-3 MOVL / K3-3 DM=3L / K3-5 DOPL / K3-6 BYTE INSTR H
7188
7189 011402 012700 000120 T0120: MOV #0120,R0 ;LOAD R0 WITH TEST NO.
7190 011406 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7191 011414 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
7192 011420 012704 000001 MOV #1,R4 ;RESULT S / B = 1
7193 011424 012705 070136 MOV #DWTB,R5 ;BASE SRC ADDR = DWTB
7194 011430 005012 R0120: CLR (R2) ;[DEST] = 000000
7195 011432 000257 CCC ;SCOPE SYNC
7196
7197 011434 116537 000006 067602 I0120: MOVB 6(R5),2#MBUF0 ;TEST THE MOVB
7198
7199 011442 020412 CMP R4,(R2) ;RESULT OK?
7200 011444 001403 BEQ T0121 ;BR IF YES
7201
7202 011446 011203 E0120: MOV (R2),R3 ;GET WAS DATA
7203 011450 000000 HALT ;MOVB DELIVERED WRONG RESULT
7204 011452 000766 BR R0120 ;LOCK ON HARD ERROR
    
```

E15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 187
 DBQEAB.CMB T0120 BASIC "MOV B X(R),2#A" TEST - SRC EVEN / DEST EVEN

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7205 ; *****
7206 ; .SBTTL T0121 BASIC "MOV B X(R),2#A" TEST - SRC ODD / DEST EVEN
7207 ; *****
7208 ;
7209 ; MICROPROGRAMMING / LOGIC INFORMATION
7210 ;
7211 ; ROM SEQ: [146,241,242,247,250,137,251,173,207,210,202,205,125,375,016] FC 1,2,4
7212 ;
7213 ; ACT BUTS: 37(004)100,146 / 35(247)1120,137 / 22(207)1200,202 / 16(125)016,016
7214 ;
7215 ; EXEC: [205]ALUC=LLLLL : [125]D=001001
7216 ;
7217 ; CODES: [125] SPS=3 / N:C=0000
7218 ;
7219 ; SYNC: B05J2 (-) / T= 4.7 USEC
7220 ;
7221 ; KEY SIG: K3-3 MOVL / K3-3 DM=3 / K3-5 DOPL / K3-6 BYTE INSTR H
7222 ;
7223 011454 012700 000121 T0121: MOV #0121,R0 ;LOAD R0 WITH TEST NO.
7224 011460 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7225 011466 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
7226 011472 012704 000001 MOV #1,R4 ;RESULT S / B = 1
7227 011476 012705 070156 MOV #DBTB,R5 ;BASE SRC ADDR = DBTB
7228 011502 005012 R0121: CLR (R2) ;[DEST] = 000000
7229 011504 000257 CCC ;SCOPE SYNC
7230 ;
7231 011506 116537 000001 067602 I0121: MOV B 1(R5),2#MBUFD ;TEST THE MOV B
7232 ;
7233 011514 020412 CMP R4,(R2) ;RESULT OK?
7234 011516 001403 BEQ T0122 ;BR IF YES
7235 ;
7236 011520 011203 E0121: MOV (R2),R3 ;GET WAS DATA
7237 011522 000000 HALT ;MOVE DELIVERED WRONG RESULT
7238 011524 000766 BR R0121 ;LOCK ON HARD ERROR
  
```

F15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 188
 DBQEAB.CMB T0121 BASIC "MOV B X(R),2#A" TEST - SRC ODD / DEST EVEN

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7239 ; *****
7240 ; .SBTTL T0122 BASIC "MOV B X(R),2#A" TEST - SRC EVEN / DEST ODD
7241 ; *****
7242 ;
7243 ; MICROPROGRAMMING / LOGIC INFORMATION
7244 ;
7245 ; ROM SEQ: [146,241,242,247,250,173,207,210,202,205,125,375,016] FC 1,2,4
7246 ;
7247 ; ACT BUTS: 37[004]100,146 / 35[247]120,177 / 21[206]200,202 / 16[125]016,016
7248 ;
7249 ; EXEC: [205]ALUC=LLLLL : [125]D=000401
7250 ;
7251 ; CODES: [125] SPS=3 / N:C=0000
7252 ;
7253 ; SYNC: B05J2 (-) / T= 4.7 USEC
7254 ;
7255 ; KEY SIG: K3-3 MOVL / K3-3 DM=3L / K3-5 DOPL / K3-6 BYTE INSTR H
7256 ;
7257 011526 012700 000122 T0122: MOV #0122,R0 ; LOAD R0 WITH TEST NO.
7258 011532 112760 000377 070162 MOVB #377,STAB1(R0) ; SET FLAG FOR THIS TEST IN MISSED TABLE
7259 011540 012702 067602 MOV #MBUF0,R2 ; DEST ACC = MBUF0
7260 011544 012704 000400 MOV #400,R4 ; RESULT B = 400
7261 011550 012705 070136 MOV #DWTB,R5 ; BASE SRC WDR = DWTB
7262 011554 005012 R0122: CLR (R2) ; [DEST] = 000000
7263 011556 000257 CCC ; SCOPE SYNC
7264 ;
7265 011560 116537 000006 067603 I0122: MOV B(R5),2#MBUF0+1 ; TEST THE MOV B
7266 ;
7267 011566 020412 CMP R4,(R2) ; RESULT OK?
7268 011570 001403 BEQ T0123 ; BR IF YES
7269 ;
7270 011572 011203 MOV (R2),R3 ; GET WAS DATA
7271 011574 000000 E0122: HALT ; MOV B DELIVERED WRONG RESULT
7272 011576 000766 BR R0122 ; LOCK ON HARD ERROR
  
```

G15

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 189
 DBQEAB.CMB T0122 BASIC "MOVB X(R),2#A" TEST - SRC EVEN / DEST ODD

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7273 ; *****
7274 ; .SBTTL T0123 BASIC "MOVB X(R),2#A" TEST - SRC ODD / DEST ODD
7275 ; *****
7276 ;MICROPROGRAMMING / LOGIC INFORMATION
7277
7278 ;ROM SEQ: [146,241,242,247,250,137,251,173,207,210,202,205,125,375,016] FC 1,2,4
7279
7280 ;ACT BUTS: 37(004)100,146 / 35(247)120,137 / 36(137)120,173 / 22(207)200,202
7281 ; / 16(125)016,016
7282
7283 ;EXEC: [205]ALUC=LLLLL : [125]D=001001
7284
7285 ;CODES: [125] SPS=3 / N:C=0000
7286
7287 ;SYNC: B05J2 (-) / T= 4.7 USEC
7288
7289 ;KEY SIG: K3-3 MOVL / K3-3 DM=3L / K3-5 DOPL / K3-6 BYTE INSTR H
7290
7291
7292 011600 012700 000123 T0123: MOV #0123,R0 ;LOAD R0 WITH TEST NO.
7293 011604 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7294 011612 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
7295 011616 012704 000400 MOV #400,R4 ;RESULT S / B = 400
7296 011622 012705 070156 MOV #DBTB,R5 ;BASE SRC ADDR = DBTB
7297 011626 005012 R0123: CLR (R2) ;[DEST] = 000000
7298 011630 000257 CCC ;SCOPE SYNC
7299
7300 011632 116537 000001 067603 I0123: MOVB 1(R5),2#MBUFO+1 ;TEST THE MOVB
7301
7302 011640 020412 CMP R4,(R2) ;RESULT OK?
7303 011642 001403 BEQ T0124 ;BR IF YES
7304
7305 011644 011203 MOV (R2),R3 ;GET WAS DATA
7306 011646 000000 E0123: HALT ;MOVB DELIVERED WRONG RESULT
7307 011650 000766 BR R0123 ;LOCK ON HARD ERROR
7308
  
```


H15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 190
DBQEAB.CMB T0123 BASIC "MOV8 X(R),2#A" TEST - SRC ODD / DEST ODD

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7309 ; *****
7310 ; .SBTTL T0124 BASIC "RTS PC" TEST
7311 ; *****
7312 ;MICROPROGRAMMING / LOGIC INFORMATION
7313
7314 ;ROM SEQ: [124,323,324,325,016] FC 1,6
7315 ;ACT BUTS: 37(004)100,124 / 16(324)016,016
7316
7317 ;EXEC: N / A
7318
7319 ;CODES: N / A
7320
7321 ;SYNC: B05J2 (-) / T= 2.5 USEC
7322
7323 ;KEY SIG: K3-6 RTSL
7324
7325
7326
7327 011652 012700 000124 T0124: MOV #0124,RO ;LOAD RO WITH TEST NO.
7328 011656 112760 000377 070162 MOVB #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7329 011664 010605 MOV SP,R5 ;SAVE THE ORIGINAL SP
7330 011666 010506 R0124: MOV RS,SP ;RESET SP FOR ERROR LOOP
7331 011670 012746 011704 MOV #A0124,-(SP) ;PUSH NEW PC ON STACK
7332 011674 000257 CCC ;SCOPE SYNC
7333
7334 011676 000207 I0124: RTS PC ;TEST THE RTS - GO TO A0124
7335
7336 011700 000000 E10124: HALT ;RTS FAILED TO LOAD PC
7337 011702 000771 BR R0124 ;LOCK ON HARD ERROR
7338
7339 011704 020605 R0124: CMP SP,R5 ;DID SP GET POPPED ?
7340 011706 001402 BEQ T0125 ;BR IF YES
7341
7342 011710 000000 E20124: HALT ;RTS FAILED TO UPDATE SP
7343 011712 000765 BR R0124 ;LOCK ON HARD ERROR
7344
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730-44

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7345 ; *****
7346 .SBTTL T0125 BASIC "JSR PC,2#A" TEST
7347 ; *****
7348
7349 ;MICROPROGRAMMING / LOGIC INFORMATION
7350
7351 ;ROM SEQ: [153,303,307,310,311,312,306,313,016] FC 1,5
7352
7353 ;ACT BUTS: 37(004)100,153 / 15(153)306,307 / 16(306)016,016
7354
7355 ;EXEC: N / A
7356
7357 ;CODES: N / A
7358
7359 ;SYNC: B05J2 (-) / T= 3.5 USEC
7360
7361 ;KEY SIG: K3-5 JMP+JSRH / K3-3 DM=3L
7362
7363 011714 012700 000125 T0125: MOV #0125,RO ;LOAD RO WITH TEST NO.
7364 011720 112760 000377 070162 MOVB #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7365 011726 010605 MOV SP,RS ;SAVE ORIGINAL SP
7366 011730 010506 MOV RS,SP ;RESET SP FOR ERROR LOOP
7367 011732 000257 CCC ;SCOPE SYNC
7368
7369 011734 004737 011744 I0125: JSR PC,2#A0125 ;TEST THE JSR - GO TO A0125
7370
7371 011740 000000 E10125: HALT ;JSR FAILED TO LOAD PC
7372 011742 000772 BR R0125 ;LOCK ON HARD ERROR
7373
7374 011744 022726 011740 A0125: CMP #E10125,(SP)+ ;DID JSR SAVE OLD PC ON STACK ?
7375 011750 001402 BEQ T0126 ;BR IF YES
7376
7377 011752 000000 E20125: HALT ;JSR FAILED TO SAVE OLD PC
7378 011754 000765 BR R0125 ;LOCK ON HARD ERROR
7379
  
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7380 ; *****
7381 ; .SBTTL T0126 BASIC "RTI" TEST - N:C=0000
7382 ; *****
7383
7384 ;MICROPROGRAMMING / LOGIC INFORMATION
7385
7386 ;ROM SEQ: [101,320,321,322,017,015,013] FC 6,10
7387
7388 ;ACT BUTS: 37(004)100,101 / 26(017)010,013
7389
7390 ;EXEC: N / A
7391
7392 ;CODFS: N / A
7393
7394 ;SYNC: B05J2 (-) / T= 3 USEC
7395
7396 ;KEY SIG: K3-6 RTI+RTTL
7397
7398 011756 012700 000126 27A T0126: MOV #0126,R0 ;LOAD R0 WITH TEST NO.
7399 011762 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7400 011770 010605 MOV SP,R5 ;SAVE THE SP
7401 011772 010506 R0126: MOV R5,SP ;RESET THE SP FOR ERROR LOOP
7402 011774 012746 000357 MOV #357,-(SP) ;NEW PSW = 357
7403 012000 012746 012020 MOV #A0126,-(SP) ;NEW PC = A0126
7404 012004 005037 177776 CLR #PSW ;MAKE [PSW] = 000
7405 012010 000257 CCC ;MAKE N:C=0000
7406
7407 012012 000002 I0126: RTI ;TEST THE RTI - GO TO A0126
7408
7409 012014 000000 E10126: HALT ;RTI FAILED TO LOAD PC
7410 012016 000765 BR R0126 ;LOOP ON HARD ERROR
7411
7412 012020 013762 177776 A0126: MOV #PSW,R2 ;SAVE THE [PSW] IN R2
7413 012024 022702 000357 CMP #357,R2 ;WAS [PSW] = 357 ?
7414 012030 001404 BEQ B0126 ;BR IF YES
7415
7416 012032 010237 177776 E20126: MOV R2,#PSW ;RESTORE THE ERROR PSW
7417 012036 000000 HALT ;RTI FAILED TO LOAD PSW
7418 012040 000754 BR R0126 ;LOCK ON HARD ERROR
7419
7420 012042 020605 B0126: CMP SP,R5 ;DID SP GET UPDATED OK ?
7421 012044 001402 BEQ T0127 ;BR IF YES
7422
7423 012046 000000 E30126: HALT ;RTI FAILED TO UPDATE THE SP
7424 012050 000750 BR R0126 ;LOCK ON HARD ERROR
7425

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K15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 193
 DBQEAB.CMB T0125 BASIC "RTI" TEST - N:C=0000

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; *****
; .SBTTL T0127 BASIC "RTI" TEST WITH N:C=1111
; *****
```

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [101,320,321,322,017,015,013] FC 6,10

; ACT BUTS: 37(004)100,101 / 26(017)010,013

; EXEC: N / A

; CODES: N / A

; SYNC: B05J2 (-) / T= 3 USEC

; KEY SIG: K3-6 RTI+RTTL

012052	012700	000127		T0127:	MOV	#0127,RO	; LOAD RO WITH TEST NO.
012056	112760	000377	070162		MOVB	#377,\$TAB1(RO)	; SET FLAG FOR THIS TEST IN MISSED TABLE
012064	010605				MOV	SP,RS	; SAVE THE SP IN RS
012066	010506			R0127:	MOV	RS,SP	; RESET SP FOR ERROR LOOP
012070	005046				CLR	-(SP)	; NEW PSW = 000000
012072	012746	012110			MOV	#A0127,-(SP)	; NEW PC = A0127
012076	012737	000357	177776		MOV	#357,@#PSW	; MAKE OLD PSW = 357
012104	000240				NOP		; SCOPE SYNC
012106	000002			I0127:	RTI		; TEST THE RTI - GO TO A0127
012110	013702	177776		A0127:	MOV	@#PSW,R2	; GET THE PSW
012114	022702	000000			CMP	#0,R2	; WAS [PSW]=000
012120	001404				BEG	T0!30	; BR IF YES
012122	0!0237	177776			MOV	R2,@#PSW	; RESTORE ERROR PSW
012126	000000			E0127:	HALT		; RTI FAILED TO CLEAR PSW
012130	000756				BR	R0127	; LOCK ON HARD ERROR

L15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 194
 DBQEAB.CMB T0127 BASIC "RTI" TEST WITH N:C=1111

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7463 ; *****
7464 .SBTTL T0130 BASIC "IOT" TEST -VERIFY LOADING PSW WITH 357
7465 ; *****
7466
7467 ;MICROPROGRAMMING / LOGIC INFORMATION
7468
7469 ;ROM SEQ: [126,007,115,326,327,113,330,331,77,140,332,333,123,015,013] FC 1,6,10
7470
7471 ;ACT BUTS: 37[004]100,126 / 04[140]REG EXAM / 0:[332]122,123 / 03[333]REG DEP
7472 ; / 26[123]010,013
7473
7474 ;EXEC: N / A
7475
7476 ;CODES: N / A
7477
7478 ;SYNC: B05J2 (-) / T= 6 USEC
7479
7480 ;KEY SIG: K3-6 TRAP INSTR L
7481
7482 012132 012700 000130 T0130: MOV #0130,R0 ;LOAD R0 WITH TEST NO.
7483 012136 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7484 012144 010605 MOV SP,R5 ;SAVE THE SP
7485 012146 010506 R0130: MOV R5,SP ;RESET SP FOR ERROR LOOP
7486 012150 012737 012206 000020 MOV #A0130,R#20 ;SET UP IOT VECTOR
7487 012156 012737 000357 000022 MOV #357,R#22
7488 012164 012766 177777 177776 MOV #-1,-2(SP) ;IOT SHOULD CHANGE -1 TO 0
7489 012172 005037 177776 CLR #PSW ;MAKE [PSW] = 000
7490 012176 000257 CCC ;SCOPE SYNC
7491
7492 012200 000004 I0130: IOT ;TEST THE IOT
7493
7494 012202 000000 E!0130: HALT ;IOT FAILED TO LOAD PC
7495 012204 000760 BR R0130 ;LOCK ON HARD ERROR
7496
7497 012206 013702 177776 A0130: MOV #PSW,R2 ;GET THE PSW
7498 012212 022702 000357 CMP #357,R2 ;DID IOT LOAD A 357 ?
7499 012216 001404 BEQ B0130 ;BR IF YES
7500
7501 012220 010237 177776 E20130: MOV R2,#PSW ;RESTORE ERROR PSW
7502 012224 000000 HALT ;IOT FAILED TO LOAD PSW
7503 012226 000747 BR R0130 ;LOCK ON HARD ERROR
7504
7505 012230 022726 012202 B0130: CMP #E10130,(SP)+ ;DID IOT SAVE OLD PC ?
7506 012234 001404 BEQ C0130 ;BR IF YES
7507
7508 012236 010237 177776 E30130: MOV R2,#PSW ;RESTORE ERROR PSW
7509 012242 000000 HALT ;IOT FAILED TO SAVE OLD PC
7510 012244 000740 BR R0130 ;LOCK ON HARD ERROR
7511
7512 012246 005726 C0130: TST (SP)+ ;DID IOT SAVE OLD PSW ?
7513 012250 001404 BEQ T0131 ;BR IF YES
7514
7515 012252 010237 177776 E40130: MOV R2,#PSW ;RESTORE ERROR PSW
7516 012256 000000 HALT ;IOT FAILED TO SAVE OLD PSW
7517 012260 000732 BR R0130 ;LOCK ON HARD ERROR
7518
  
```

M15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 195
DBQEAB.CMB T0130 BASIC "IOT" TEST -VERIFY LOADING PSW WITH 357

7519

N15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 196
 DBQEAB.CMB T0130 BASIC "IOT" TEST -VERIFY LOADING PSW WITH 357

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7520 ; *****
7521 ; .SBTTL T0131 BASIC "IOT" TEST - VERIFY LINKAGE TO SCOPE SERVICE
7522 ; *****
7523
7524 ;MICROPROGRAMMING / LOGIC INFORMATION
7525
7526 ;ROM SEQ: [126,007,115,326,327,113,330,331,77,140,332,333,123,015,013] FC 1,6,10
7527
7528 ;ACT BUTS: 37(004)100,126 / 04(140)REG EXAM / 01(332)122,123 / 03(333)REG DEP
7529 ; / 26(123)010,013
7530
7531 ;EXEC: N / A
7532
7533 ;CODES: N / A
7534
7535 ;SYNC B05J2 (-) / T= 6 USEC
7536
7537 ;KEY SIG: K3-6 TRAP INSTR L
7538
7539 012262 012700 000131 T0131: MOV #0131,RO ;LOAD RO WITH TEST NO.
7540 012266 112760 000377 070162 MOVB #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7541 012274 010605 MOV SP,R5 ;SAVE SP
7542 012276 010506 R0131: MOV R5,SP ;RESET SP FOR ERROR LOOP
7543 012300 005037 066702 CLR @#SCOFLG ;TRAP SERVICE WILL COM "SCOFLG"
7544 012304 012737 065260 000020 MOV #SCOPEA,@#20 ;SET UP IOT VECTOR
7545 012312 005037 000022 CLR @#22
7546 012316 000257 CCC ;SCOPE SYNC
7547
7548 012320 000004 I0131: SCOPE ;TEST THE IOT
7549
7550 012322 005137 066702 COM @#SCOFLG ;SCOFLG SHOULD BECOME 000000
7551 012326 001402 BEQ A0131 ;BR IF IT DID
7552
7553 012330 000000 E0131: HALT ;IOT FAILED TO LINK TO SCOPE SERVICE
7554 012332 000761 BR R0131 ;LOCK ON HARD ERROR
7555
7556 012334 010506 A0131: MOV R5,SP ;RESET SP IN CASE OF ERROR
  
```

B16

MAIN MACY11 27.732 15-OCT-76 14:58 PAGE 197
DB2E28.CMB T0131 BASIC "IOT" TEST - VERIFY LINKAGE TO SCOPE SERVICE

```
7557 ; *****
7558 ; SBTTL T0132 BASIC "IOT" TEST -VERIFY LOADING PSW WITH 357
7559 ; *****
7560
7561 ;MICROPROGRAMMING / LOGIC INFORMATION
7562
7563 ;ROM SEQ: (126,007,115,326,327,113,330,331,77,140,332,333,123,015,013) FC 1,6,10
7564
7565 ;ACT BUTS: 37(004)100,126 / 04(146)REG EXAM / 01(332)122,123 / 03(333)REG DEP
7566 ; / 26(123)010,013
7567
7568 ;EXEC: N / A
7569
7570 ;CODES: N / A
7571
7572 ;SYNC: B05J2 (-) / T= 6 USEC
7573
7574 ;KEY SIG: K3-6 TRAP INSTR L
7575
7576 012336 012700 000132 T0132: MOV #0132,R0 ;LOAD R0 WITH TEST NO.
7577 012342 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7578 012350 010605 MOV SP,R5 ;SAVE THE SP
7579 012352 010506 R0132: MOV R5,SP ;RESET SP FOR ERROR LOOP
7580 012354 012737 012412 000020 MOV #A0132,R#20 ;SET UP IOT VECTOR
7581 012362 012737 000357 000022 MOV #357,R#22
7582 012370 012766 177777 177776 MOV #-1,-2(SP) ;IOT SHOULD CHANGE -1 TO 0
7583 012376 005037 177776 CLR #PSW ;MAKE [PSW] = 000
7584 012402 000257 CCC ;SCOPE SYNC
7585
7586 012404 000004 I0132: IOT ;TEST THE IOT
7587
7588 012406 000000 E10132: HALT ;IOT FAILED TO LOAD PC
7589 012410 000760 BR R0132 ;LOCK ON HARD ERROR
7590
7591 012412 013702 177776 R0132: MOV #PSW,R2 ;GET THE PSW
7592 012416 022702 000357 CMP #357,R2 ;DID IOT LOAD A 357 ?
7593 012422 001404 BEQ B0132 ;BR IF YES
7594
7595 012424 010237 177776 E20132: MOV R2,#PSW ;RESTORE ERROR PSW
7596 012430 000000 HALT ;IOT FAILED TO LOAD PSW
7597 012432 000747 BR R0132 ;LOCK ON HARD ERROR
7598
7599 012434 022726 012406 B0132: CMP #E10132,(SP)+ ;DID IOT SAVE OLD PC ?
7600 012440 001404 BEQ C0132 ;BR IF YES
7601
7602 012442 010237 177776 E30132: MOV R2,#PSW ;RESTORE ERROR PSW
7603 012446 000000 HALT ;IOT FAILED TO SAVE OLD PC
7604 012450 000740 BR R0132 ;LOCK ON HARD ERROR
7605
7606 012452 005726 C0132: TST (SP)+ ;DID IOT SAVE OLD PSW ?
7607 012454 001404 BEQ T0133 ;BR IF YES
7608
7609 012456 010237 177776 E40132: MOV R2,#PSW ;RESTORE ERROR PSW
7610 012462 000000 HALT ;IOT FAILED TO SAVE OLD PSW
7611 012464 000732 BR R0132 ;LOCK ON HARD ERROR
7612
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.MAIN. MRCY11 27(732) 15-OCT-76 14:58 PAGE 198
DBDEAB.CMB T0132 BASIC "ICT" TEST -VERIFY LOADING PSW WITH 357

7613

```

7614 ; *****
7615 ; .SBTTL T0133 BASIC IOT TEST - VERIFY LOADING PSW WITH 000
7616 ; *****
7617 ; MICROPROGRAMMING / LOGIC INFORMATION
7618 ; ROM SEQ: [126,007,115,326,327,113,330,331,77,140,323,333,123,015,013] FC 1,6,10
7619 ; ACT BUTS: 37(004)100,126 / 04(140)REG EXAM / 01(332)122,123 / 03(333)REG DEP
7620 ; / 26(123)010,013
7621 ; EXEC: N / A
7622 ; CODES: N / A
7623 ; SYNC: B05J2 (-) / T= 6 USEC
7624 ; KEY SIG: K3-6 TRAP INSTR L
7625
7626 T0133: MOV #0133,R0 ;LOAD R0 WITH TEST NO.
7627 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7628 MOV SP,R5 ;SAVE THE SP
7629 R0133: MOV R5,SP ;RESET SP FOR ERROR LOOP
7630 MOV #R0133,@#20 ;SET UP IOT VECTOR
7631 CLR @#22
7632 MOV #340,@#PSW ;MAKE [PSW] = 340
7633 SCC ;MAKE N:C=1111
7634
7635 I0133: IOT ;TEST THE IOT
7636
7637 R0133: MOV @#PSW,R2 ;GET THE [PSW]
7638 BEQ B0133 ;BR IF [PSW] = 000
7639
7640 E0133: MOV R2,@#PSW ;RESTORE THE ERROR PSW
7641 HALT ;IOT FAILED TO CLEAR THE PSW
7642 BR R0133 ;LOCK ON HARD ERROR
7643
7644 B0133: MOV R5,SP ;RESET THE SP BEFORE CONTINUING
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012550 012700 000134
012554 112760 000377 070162
012562 032737 000004 066642
012570 001401
012572 000000
012574 010605
012576 010506
012600 012737 066042 000034
012606 005037 000036
012612 005037 066674
012616 000257
012620 104400
012622 005137 066674
012626 001402
012630 000000
012632 000761

```
; *****  
; .SBTTL TC134 BASIC "TRAP" TEST - LINKAGE TO PRINT ROUTINE  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [126,007,115,326,327,113,330,331,77,140,332,333,123,015,013] FC 1,6,10  
;ACT BUTS: 37(004)100,126 / 04(140)REG EXAM / 01(332)122,123 / 03(333)REG DEP  
; / 26(123)010,013  
;EXEC: N / A  
;CODES: N / A  
;SYNC: BOSJ2 (-) / T= 6 USEC  
;KEY SIG: K3-6 TRAP INSTR L  
TC134: MOV #0134,RO ;LOAD RO WITH TEST NO.  
MOV #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
BIT #4,#BPTLOC ;BREAKPOINT HALT SET ??  
BEQ .+4 ;BR IF NOT  
HALT ;BREAK - DEPRESS CONTINUE TO RESTART  
MOV SP,RS ;SAVE THE SP  
MOV RS,SP ;RESET SP FOR ERROR LOOP  
MOV #PRINA,#34 ;SET UP THE "TRAP" VECTOR  
CLR #36  
CLR #PRIFLG ;INITIALIZE TEST FLAG  
CCC ;SCOPE SYNC  
IO134: TYPE ;TEST THE TRAP  
COM #PRIFLG ;SHOULD MAKE [PRIFLG] = 000000  
BEQ TC135 ;BR IF IT DID  
EO134: HALT ;TRAP FAILED TO LINK TO PRINT SERV.  
BR RO134 ;LOCK ON HARD ERROR
```

F16

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 201
 060EAB.CMB T0134 BASIC "TRAP" TEST - LINKAGE TO PRINT ROUTINE

```

7693 ; *****
7694 ; .SBTTL T0135 BASIC "EMT" TEST - LINKAGE TO ERROR SERVICE
7695 ; *****
7696 ;
7697 ;MICROPROGRAMMING / LOGIC INFORMATION
7698 ;
7699 ;ROM SEQ: (126,007,115,326,327,113,330,331,077,140,332,333,123,015,C13) FC 1,6,10
7700 ;
7701 ;ACT BUTS: 37(004)100,126 / 04(140)REG EXAM / 01(332)122,123 / 03(333)REG DEP
7702 ; / 26(123)010,013
7703 ;
7704 ;EXEC: N / A
7705 ;
7706 ;CODES: N / A
7707 ;
7708 ;SYNC: B05J2 (-) / T= 6 USEC
7709 ;
7710 ;KEY SIG: K3-6 TRAP INSTR L
7711 ;
7712 012634 012700 000135 T0135: MOV #0135,RO ;LOAD RO WITH TEST NO.
7713 012640 112760 000377 070162 MOVB #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7714 012646 010605 MOV SP,RS ;SAVE THE SP
7715 012650 010506 R0135: MOV R5,SP ;RESET SP FOR ERROR LOOP
7716 012652 012737 065400 000030 MOV #ERRA,#30 ;SET UP THE EMT VECTOR
7717 012660 005037 000032 CLR #32
7718 012664 005037 066676 CLR #ERRFLG ;EMT SERVICE WILL COM (ERRFLG)
7719 012670 000257 CCC ;SCOPE SYNC
7720 ;
7721 012672 104000 I0135: ERRORF ;TEST THE EMT
7722 ;
7723 012674 005137 066676 COM #ERRFLG ;DID EMT SERV. COM ERRFLG?
7724 012700 001402 BEQ T0136 ;BR IF YES
7725 ;
7726 012702 000000 E0135: HALT ;EMT DID NOT LINK PROPERLY
7727 012704 000761 BR R0135 ;LOCK ON HARD ERROR
  
```

G16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 202
 DBQEAB.CMB T0135 BASIC "EMT" TEST - LINKAGE TO ERROR SERVICE

```

7728 ; *****
7729 ; .SBTTL T0135 BASIC TEST OF RSVD INSTR. TRAP LINKAGE
7730 ; *****
7731 ; MICROPROGRAMMING / LOGIC INFORMATION
7732 ; ROM SEQ: [100,126,007,115,327,113,330,331,077,140,332,333,123,015,013] FC 1,6,10
7733 ; ACT BUTS: 37(004)100,100 / 04(140)REG EXAM / 01(332)122,123 / 03(333)REG DEP
7734 ; / 26(123)010,013
7735 ; EXEC: N / A
7736 ; CODES: N / A
7737 ; SYNC: B05J2 (-) / T= 6 USEC
7738 ; KEY SIG: K3-6 RSVD INSTR L
7739
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7741
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7746
7747 012706 012700 000136 T0136: MOV #0136,RO ;LOAD RO WITH TEST NO.
7748 012712 112760 000377 070162 MOVB #377,STAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7749 012720 013701 012752 MOV @#I0136,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
7750 012724 010605 MOV SP,R5 ;SAVE THE SP
7751 012726 012737 065042 000010 MOV #RSVTST,@#10 ;SET UP RSVD INSTR. TRAP VECTOR
7752 012734 012737 000340 000012 MOV #340,@#12
7753 012742 010506 R0136: MOV R5,SP ;RESET SP FOR ERROR LOOP
7754 012744 005037 066712 CLR @#RSVFLG ;INITIALIZE TEST FLAG THAT WILL GET
7755 ;COMPLEMENTED BY TRAP SERVICE
7756 012750 000257 CCC ;SCOPE SYNC
7757
7758 012752 177777 I0136: 177777 ;FORCE RSVD INSTR. TRAP
7759
7760 012754 005137 066712 COM @#RSVFLG ;TEST FLAG SHOULD GO TO 000000
7761 012760 001402 BEQ A0136 ;BR IF TRAP SPRUNG
7762
7763 012762 000000 E0136: HALT ;RSVD INSTR. TRAP FAILED
7764 012764 000750 BR T0136 ;LOCK ON HARD ERROR
7765
7766 012766 012737 065050 000010 A0136: MOV #RSERR,@#10 ;SET UP RSVD INSTR TRAP VECTOR TO POINT
7767 012774 012737 000340 000012 MOV #340,@#12 ;TO ERROR SERVICE ROUTINE
7768
  
```

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H16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 203
DBQEAB.CMB T0135 BASIC TEST OF RSVD INSTR. TRAP LINKAGE

```
7769 ; *****
7770 ; .SBTTL T0137 BASIC TEST OF BUS TIMEOUT TRAP LINKAGE.
7771 ; *****
7772 ;MICROPROGRAMMING / LOGIC INFORMATION.
7773
7774 ;ROM SEQ: [150,097,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6,10
7775
7776 ;ACT BUTS: 37[004]100,126 / 04[140]REG EXAM / 01[332]122,123 / 03[333]REG DEP
7777 ; / 26[123]010,013
7778
7779 ;EXEC: N / A
7780
7781 ;CODES: N / A
7782
7783 ;SYNC: B05J2 (-) / T= 6 USEC
7784
7785 ;KEY SIG: K4-6 NOSACK(1)L
7786
7787
7788 013002 012700 000137 T0137: MOV #0137,RO ;LOAD RO WITH TEST NO.
7789 013006 112760 000377 070162 MOVB #377,$TAB1(RO) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7790 013014 013701 013046 MOV @#I0137,RI ;LOAD RI WITH TEST INSTRUCTION WORD
7791 013020 010605 MOV SP,RS ;SAVE THE SP
7792 013022 012737 065152 000004 MOV #BETST,@#4 ;SET UP THE BUS ERROR VECTOR
7793 013030 012737 000340 000006 MOV #340,@#6
7794 013036 010506 R0137: MOV RS,SP ;RESET SP FOR ERROR LOOP
7795 013040 005037 066714 CLR @#BERFLG ;INITIALIZE TEST FLAG THAT WILL GET
7796 ;COMPLEMENTED BY TRAP SERVICE
7797 013044 000257 CCC ;SCOPE SYNC
7798
7799 013046 005737 177700 I0137: TST @#177700 ;FORCE BUS TIMEOUT USING RO ADDR.
7800
7801 013052 005137 066714 COM @#BERFLG ;TEST FLAG SHOULD GO TO 000000
7802 013056 001402 BEQ T0140 ;BR IF TRAP SPRUNG
7803
7804 013060 000000 E0137: HALT ;BUS ERROR FAILED TO SPRING TRAP
7805 013062 000747 BR T0137 ;LOCK ON HARD ERROR
7806
7807
```

```

7808 ; *****
7809 .SBTTL TO140 BASIC TEST FOR ACCESSING DL11 REGISTERS
7810 ; *****
7811 ;MICROPROGRAMMING / LOGIC INFORMATION
7812 ;ROM SEQ: [162,260,267,220,211,367,375,016] FC 1,3,9,8
7813 ;ACT BUTS: 37(004)100,162 / 33(260)220,220 / 16(367)016,016
7814 ;EXEC: [220]ALUC=LLLLL : [211]D=N / A
7815 ;CODES: N / A
7816 ;SYNC: B05J2 (-)
7817 ;KEY SIG: K3-8 BIT+CMPT+TSTH / K3-3 DM=2L
7818
7819
7820
7821
7822
7823
7824
7825
7826 013064 012700 000140 TO140: MOV #0140,R0 ;LOAD R0 WITH TEST NO.
7827 013070 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7828 013076 005067 054500 CLR MBUF0 ;INIT STALL COUNTER
7829 013102 005367 054474 IS: DEC MBUF0 ;COUNT THE TIMER
7830 013106 001375 BNE IS ;BR IF NO TIMEOUT
7831 013110 012737 013150 000004 MOV #E0140,2#4 ;SET UP BUS TIMEOUT VECTOR
7832 013116 012737 000340 000006 MOV #340,2#6
7833 013124 010605 MOV SP,R5 ;SAVE TH SP
7834 013126 010506 RO140: MOV RS,SP ;RESET SP FOR ERROR LOOP
7835 013130 012702 177560 MOV #RCSR,R2 ;[R2] = STARTING DL11 ADDR.
7836 013134 000257 CCC ;SCOPE SYNC
7837
7838 013136 005722 IO140: TST (R2)+ ;REFERENCE DL11 - RCSR
7839 013140 005722 TST (R2)+ ;REFEKENCE DL11 - RDBR
7840 013142 005722 TST (R2)+ ;REFERENCE DL11 - XCSR
7841 013144 005712 TST (R2) ;REFERENCE DL11 - XDBR
7842
7843 013146 000403 BR A0140 ;GO TO NEXT TEST
7844
7845 013150 005742 EO140: TST -(R2) ;BAD ADDRESS IN R2
7846 013152 000000 HALT ;ONE OF DL11 ADDR'S CAUSED TIME OUT
7847 013154 000764 BR RO140 ;LOCK ON HARD ERROR
7848
7849 013156 012737 065160 000004 A0140: MOV #BERR,2#4 ;SET UP BUS ERROR VECTOR TO POINT
7850 013164 012737 000340 000006 MOV #340,2#6 ;TO ERROR SERVICE ROUTINE
    
```

J16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 205
DBQEAB.CMB T0140 BASIC TEST FOR ACCESSING DL11 REGISTERS

```
7851 ; *****  
7852 ; .SBTTL T0141 BASIC TEST OF DL11 - XCSR - READY(1)  
7853 ; *****  
7854 ;  
7855 ;MICROPROGRAMMING / LOGIC INFORMATION  
7856 ;  
7857 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8  
7858 ;  
7859 ;ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016  
7860 ;  
7861 ;EXEC: [224]ALUC=LLHHL : [367]D=000000  
7862 ;  
7863 ;CODES: [367] SPS=3 / N:C=0100  
7864 ;  
7865 ;SYNC: B05J2 (-)  
7866 ;  
7867 ;KEY SIG: K3-3 SM=0L / K3-3 DM=1L / K5-2 PS(2)(1)H / K3-8 BIT+CMPT+TSTH  
7868 ;  
7869 013172 012700 000141 T0141: MOV #0141,R0 ;LOAD R0 WITH TEST NO.  
7870 013176 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE  
7871 013204 012702 177564 MOV #XCSR,R2 ;DEST ADDR = XCSR  
7872 013210 012704 000200 MOV #200,R4 ;RESULT S / B = 200  
7873 013214 005012 R0141: CLR (R2) ;CLEAR (DEST)  
7874 013216 012701 000000 MOV #0,R1 ;SET UP TIMEOUT COUNTER  
7875 013222 000257 CCC ;SCOPE SYNC  
7876 ;  
7877 013224 020412 I0141: CMP R4,(R2) ;TEST READY BIT - IT SHOULD BE SET  
7878 ;  
7879 013226 001405 BEQ T0142 ;BR IF IT WAS  
7880 013230 005301 DEC R1 ;TICK-TOCK GOES THE TIMER  
7881 013232 001374 BNE I0141 ;BR IF NOT A TIMEOUT  
7882 ;  
7883 013234 011203 MOV (R2),R3 ;GET THE WAS DATA  
7884 013236 000000 E0141: HALT ;READY BIT IN XCSR FAILED ON A (0)  
7885 013240 000765 BR R0141 ;LOCK ON HARD ERROR  
7886
```


K16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 206
DBQEAB.CMB T0141 BASIC TEST OF DL11 - XCSR - READY(1)

```
7887 ; *****
7888 ; .SBTTL T0142 BASIC TEST OF DL11 - XCSR - MAINT BIT (0)
7889 ; *****
7890 ; MICROPROGRAMMING / LOGIC INFORMATION
7891 ; ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
7892 ; ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
7893 ; EXEC: [224]ALUC=LLHHL : [367]D=000000
7894 ; CODES: [367] SPS=3 / N:C=0100
7895 ; SYNC: B05J2 (-)
7896 ; KEY SIG: K3-3 SM=0L / K3-3 DM=1L / K5-2 PS(2)(1)H / K3-8 BIT+CMP+TSTH
7897
7898
7899
7900
7901
7902
7903
7904
7905 013242 012700 000142 T0142: MOV #0142,R0 ;LOAD R0 WITH TEST NO.
7906 013246 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7907 013254 012702 177564 MOV #XCSR,R2 ;DEFST ADDR = XCSR
7908 013260 012704 000200 MOV #200,R4 ;RESULT S / B = 200
7909 013264 005012 .. R0142: CLR (R2) ;CLEAR MAINT. BIT
7910 013266 000257 CCC ;SCOPE SYNC
7911
7912 013270 020412 I0142: CMP R4,(R2) ;TEST MAINT(0)
7913
7914 013272 001403 BEQ T0143 ;BR IF MAINT BIT CLEAR
7915
7916 013274 011203 MOV (R2),R3 ;GET THE WAS DATA
7917 013276 000000 E0142: HALT ;CAN'T CLEAR MAINT BIT
7918 013300 000771 BR R0142 ;LOCK ON HARD ERROR
7919
```

L16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 207
DBGQAB.CMB T0142 BASIC TEST OF DL11 - XCSR - MAINT BIT (0)

```
7920 ; *****  
7921 ; .SBTTL T0143 BASIC TEST OF DL11 XCSR - MAINT BIT = 1  
7922 ; *****  
7923  
7924 ; MICROPROGRAMMING / LOGIC INFORMATION  
7925  
7926 ; ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8  
7927  
7928 ; ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016  
7929  
7930 ; EXEC: [224]SLUC=LLHHL : [367]D=000000  
7931  
7932 ; CODES: [367] SPS=3 / N:C=0100  
7933  
7934 ; SYNC: BOSJ2 (-)  
7935  
7936 ; KEY SIG: K3-3 SM=DL / K3-3 DM=1L / K5-2 PS(Z)(1)H / K3-8 BIT+CMP+TSTH  
7937  
7938 013302 012700 000143 T0143: MOV #0143,R0 ; LOAD R0 WITH TEST NO.  
7939 013306 112760 000377 070162 T0143: MOVB #377,STAB1(R0) ; SET FLAG FOR THIS TEST IN MISSED TABLE  
7940 013314 012702 177564 T0143: MOV #XCSR,R2 ; DEST ADDR = XCSR  
7941 013320 012704 000204 T0143: MOV #204,R4 ; RESULT S / B = 204  
7942 013324 012712 000004 T0143: MOV #4,(R2) ; SET THE MAINT. BIT  
7943 013330 000257 T0143: CCC ; SCOPE SYNC  
7944  
7945 013332 020412 T0143: CMP R4,(R2) ; TEST MAINT.(1)  
7946  
7947 013334 001403 T0143: BEQ T0144 ; BR IF IT WAS  
7948  
7949 013336 011203 T0143: MOV (R2),R3 ; GET THE WAS DATA  
7950 013340 000000 T0143: HALT ; CAN'T SET MAINT BIT IN XCSR  
7951 013342 000770 T0143: BR R0143 ; LOCK O HARD ERROR
```

M16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 208
 DBQEAB.CMB T0143 BASIC TEST OF DL11 XCSR - MAINT BIT = 1

```

7952 ; *****
7953 ; .SBTTL T0144 BASIC DL11 OUT / IN ECHO TEST (MAINT MODE)
7954 ; *****
7955
7956
7957 ; THIS ROUTINE USES THE MAINTENANCE MODE FEATURE OF THE DL11 TO
7958 ; TURN AROUND A STRING OF 8 CHARACTERS TO THE DL11. THIS STRING CONSISTS
7959 ; OF ALTERNATING NULL / DELETE CHARS WHICH ARE NON PRINTING. THE 8 CHARS
7960 ; ARE OUTPUT THEN READ BACK INTO A CORE BUFFER AND THEN THE INPUT AND
7961 ; OUTPUT CORE BUFFERS ARE CHECKED FOR EQUIVALENCE. IF AN ERROR IS DET-
7962 ; ECTED DURING THE COMPARISON THE ROUTINE HALTS WITH THE WAS AND S / B
7963 ; DATA IN R3 AND R4 RESPECTFULLY. A TIMER IS EMPLOYED TO PREVENT THE
7964 ; TEST FROM HANGING IF RECEIVER DONE DOES NOT RESPOND.
7965
7966 013344 012700 000144 T0144: MOV #0144,R0 ;LOAD R0 WITH TEST NO.
7967 013350 112760 000377 070162 MOVB #377,STAB1(R0) ;SET FLAG FOR THIS TEST IN MISSED TABLE
7968 013356 012702 177560 MOV #RCSR,R2 ;R2 POINTS TO DL11 - START ADDR
7969 013362 105762 000002 TSTB 2(R2) ;REFERENCE DL11 INPUT DATA BUFFER TWICE
7970 013366 105762 000002 TSTB 2(R2) ;TO FLUSH RCVR "DONE" BIT
7971 013372 012703 067556 MOV #IBUF,R3 ;R3 POINTS TO CORE INPUT BUFFER
7972 013376 012704 067546 MOV #OBUF,R4 ;R4 POINTS TO CORE OUTPUT BUFFER
7973 013402 012705 000010 MOV #10,R5 ;R5 WILL COUNT 8 CHARS OUTPUT
7974 013406 012762 000004 000004 MOV #4,4(R2) ;TURN ON MAINT MODE
7975
7976 013414 012701 000000 15: MOV #0,R1 ;R1 USED AS TIMEOUT COUNTER
7977 013420 112462 000006 MOVB (R4)+,6(R2) ;LOAD OUTPUT BUFFER IN DL11
7978 013424 105712 25: TSTB (R2) ;RECEIVER DONE SET ?
7979 013426 107404 BMI 35 ;BR IF YES
7980 013430 005301 DEC R1 ;COUNT THE TIMER
7981 013432 001374 BNE 25 ;BR IF NO TIMEOUT
7982
7983 013434 000000 HALT ;DL11 FAILED TO RESPOND IN TIME
7984 013436 000742 BR T0144 ;LOCK ON HARD ERROR
7985
7986 013440 116223 000002 35: MOVB 2(R2),(R3)+ ;READ THE DL11 INPUT BUFFER INTO CORE
7987 013444 005305 DEC R5 ;COUNT ONE CHAR
7988 013446 001362 BNE 15 ;BR IF NOT DONE 8 CHARS
7989
7990 013450 005062 000004 CLR 4(R2) ;TURN OFF MAINT. MODE
7991 013454 012705 000010 MOV #10,R5 ;RESET CHAR COUNTER
7992 013460 012703 067556 MOV #IBUF,R3 ;RESET INBUF POINTER
7993 013464 012704 067546 MOV #OBUF,R4 ;RESET OUTBUF POINTER
7994
7995 013470 122324 45: CMPB (R3)+,(R4)+ ;INPUT = OUTPUT ??
7996 013472 001003 BNE 55 ;BR IF NOT
7997 013474 005305 DEC R5 ;COUNT ONE CHECKED
7998 013476 001374 BNE 45 ;BR UNTIL 8 DONE
7999 013500 000410 BR CITST ;GO TO NEXT TEST
8000
8001 013502 114303 55: MOVB -(R3),R3 ;WAS DATA IN R3 [BITS 7:0]
8002 013504 114404 MOVB -(R4),R4 ;S / B DATA IN R4 [BITS 7:0]
8003 013506 042703 177400 BIC #177400,R3 ;STRIP OFF BITS <15:08>
8004 013512 042704 177400 BIC #177400,R4 ;
8005 013516 000000 HALT ;RECEIVED DATA NOT EQUAL TO OUTPUT DATA
8006 013520 000711 BR T0144 ;LOCK ON HARD ERROR
8007

```

801

MAIN. MACY11 27.732) 15-OCT-75 14:58 PAGE 209
382EAB.CMB *0144 BASIC DL11 OUT IN ECHO TEST (MAINT MODE)

8038
8039

CO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 210
DB2EAB.CMB T0144 BASIC DL11 OUT / IN ECHO TEST (MAINT MODE)

```

8010 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
8011 ;////////////////COMPREHENSIVE INSTRUCTION TESTS////////////////////////////////////
8012 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
8013
8014 013522 012737 065266 000020 CITST: MOV #SCOPEB, @#20 ;SET UP IOT VECTOR
8015 013530 005037 000022 CLR @#22
8016 013534 012737 065406 070030 MOV #ERRB, @#30 ;SET UP EMT VECTOR
8017 013542 012737 000340 000032 MOV @340, @#32
8018 013550 012737 066050 000034 MOV #PRINT, @#34 ;SET UP TRAP VECTOR
8019 013556 012737 000340 000036 MOV @340, @#36
8020 013564 012737 064706 000024 MOV #PDWH, @#24 ;SET UP POWER FAIL VECTOR
8021 013572 012737 000340 000026 MOV @340, @#26
8022 013600 032737 010000 177570 BIT #SW12, @#SR ;INHIBIT PRINTING INTRO. I.D. MESSAGE
8023 013606 001007 BNE 1$ ;BR IF YES
8024 013610 005737 066722 TST @#ONCE ;FIRST TIME INTO "CIT" TESTS ?
8025 013614 001004 BNE 1$ ;BR IF NOT - PRINT ID ONLY ONCE
8026 013616 005137 066722 COM @#ONCE ;SET FLAG TO INHIBIT PRINTING AGAIN
8027 013622 104400 TYPE ;IDENTIFY THIS PROGRAM
8028 013624 067212 IDENT1 ;ADDR OF THE ID MESSAGE
8029 013626 004737 066210 1$: JSR PC, @#TSTOPT ;GO TEST FOR 11/40 OPTIONS
8030 013632 005037 177776 CLR @#PSW ;SET CPU PRIORITY TO LEVEL 000
8031 013636 012737 013636 066654 2$: MOV @2$, @#RETURN ;INITIALIZE SCOPE LOOP RETURN
8032

```

001

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 211
DBQERB.CMB T0144 BASIC DL11 OUT / IN ECHO TEST (MAINT MODE)

```

8033 ; * *****
8034 ; .SBTTL T0145 QUICK VERIFY TEST FOR BMI,BEQ,BVS,BCS-FLG=0
8035 ; *****
8036 ;MICROPROGRAMMING / LOGIC INFORMATION
8037 ;ROM SEQ: [110,347,016] FC 1,7
8038 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8039 ;EXEC: N / A
8040 ;CODES: N / A
8041 ;SYNC: B05J2 (-) T = 1.5 USEC
8042 ;KEY SIG: K5-3 BR INSTR L / K3-5 BUBC3(BUT37) H
8043
8044
8045
8046
8047
8048
8049
8050
8051 013644 012700 000145 T0145: MOV #0145,R0 ;LOAD R0 WITH TEST NO.
8052 013650 013701 013656 R0145: MOV 2#I0145,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8053 013654 000257 R0145: CCC ;CLEAR ALL FLAGS
8054
8055 013656 001404 I0145: BEQ E0145 ;NO BR SHOULD OCCUR-FLAG=0
8056 013660 100403 BMI E0145 ;NO BR SHOULD OCCUR-FLAG=0
8057 013662 102402 BVS E0145 ;NO BR SHOULD OCCUR-FLAG=0
8058 013664 103401 BCS E0145 ;NO BR SHOULD OCCUR-FLAG=0
8059 013666 000402 BR 00145 ;GO CALL SCOPE
8060
8061 013670 104005 E0145: ERRORS ;ONE OF ABOVE BR'S FAILED
8062 013672 013654 R0145 ;ERROR LOOP RETURN
8063
8064 013674 000004 00145: SCOPE ;CALL SCOPE LOOP UTILITY
8065
8066

```

E01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 212
DBQEAB.CMB T0145 QUICK VERIFY TEST FOR BMI,BEQ,BVS,BCS-FLAG=0

```
8067 ; *****
8068 ; .SBTTL T0146 QUICK VERIFY TEST FOR BMI,BEQ,BVS,BCS-FLAG=1
8069 ; *****
8070 ;MICROPROGRAMMING / LOGIC INFORMATION
8071 ;ROM SEQ: [111,340,341,016] FC 1,7
8072 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
8073 ;EXEC: [341]ALUC=LHLLH :[016]D=#I20146 OR #I30146 OR #I40146 OR #00146 DEPENDEN
8074 ;CODES: N / A
8075 ;SYNC: B05J2 (-) T = 2 USEC
8076 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-5 BUBC3(BUT37) H / K3-
8077
8078
8079
8080
8081
8082
8083
8084
8085 013676 012700 000146 T0146: MOV #0146,R0 ;LOAD R0 WITH TEST NO.
8086 013702 013701 013710 MOV #I10146,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8087
8088 013706 000277 R0146: SCC ;MAKE N:C = 1111
8089
8090 013710 001402 I10146: BEQ I20146 ;TEST THE BEQ-IT SHOULD BR
8091
8092 013712 104005 E10146: ERRORS ;BEQ FAILED
8093 013714 013706 R0146 ;ERROR LOOP RETURN
8094
8095 013716 100402 I20146: BMI I30146 ;TEST THE BMI-IT SHOULD BR
8096
8097 013720 104005 E20146: ERRORS ;BMI FAILED
8098 013722 013706 R0146 ;ERROR LOOP RETURN
8099
8100 013724 102402 I30146: BVS I40146 ;TEST THE BVS-IT SHOULD BR
8101
8102 013726 104005 E30146: ERRORS ;BVS FAILED
8103 013730 013706 R0146 ;ERROR LOOP RETURN
8104
8105 013732 103402 I40146: BCS 00146 ;TEST THE BCS-IT SHOULD BR
8106
8107 013734 104005 E40146: ERRORS ;BCS FAILED
8108 013736 013706 R0146 ;ERROR LOOP RETURN
8109
8110 013740 000004 00146: SCOPE ;CALL SCOPE LOOP UTILITY
8111
8112
```

F01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 213
DBQEAB.CMB T0146 QUICK VERIFY TEST FOR BMI,BEQ,BVS,BCS-FLAG=1

```
8113 ; *****
8114 ; .SBTTL T0147 BNE TEST WITH Z=1
8115 ; *****
8116
8117 ;MICROPROGRAMMING / LOGIC INFORMATION
8118
8119 ;ROM SEQ: [110,347,016] FC 1,7
8120
8121 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8122
8123 ;EXEC: N / A
8124
8125 ;CODES: N / A
8126
8127 ;SYNC: B05J2 (-) T = 1.5 USEC
8128
8129 ;KEY SIG: K5-3 BR INSTR L / K3-5 BUBC3(BUT37) H
8130
8131 013742 012700 000147 T0147: MOV #0147,R0 ;LOAD R0 WITH TEST NO.
8132 013746 013701 013754 ;LOAD R1 WITH TEST INSTRUCTION WORD
8133
8134 013752 000264 R0147: SEZ ;MAKE Z=1
8135
8136 013754 001001 I0147: BNE E0147 ;TEST THE BNE-IT SHOULDN'T BR
8137 013756 000402 BR 00147 ;GO TO SCOPE EXIT
8138
8139 013760 104005 E0147: ERRORS ;BNE FAILED
8140 013762 013752 R0147 ;ERROR LOOP RETURN
8141
8142 013764 000004 00147: SCOPE ;CALL SCOPE LOOP UTILITY
8143
8144
```


GO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 214
DBQEAB.CMB TO147 BNE TEST WITH Z=1

```
8145 ; *****
8146 ; .SBTTL TO150 BNE TEST WITH Z=0
8147 ; *****
8148
8149 ; MICROPROGRAMMING / LOGIC INFORMATION
8150
8151 ; ROM SEQ: [111,340,341,016] FC 1,7
8152
8153 ; ACT BUTS: 37(004)100,111 / 16(340)016,016
8154
8155 ; EXEC: [016] D = #00150
8156
8157 ; CODES: N / A
8158
8159 ; SYNC: B05J2 (-) T = 1.8 USEC
8160
8161 ; KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=1L
8162
8163 013766 012700 000150 TO150: MOV #0150,R0 ;LOAD R0 WITH TEST NO.
8164 013772 013701 014000 TO150: MOV @#10150,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8165
8166 013776 000244 RO150: CLZ ;MAKE Z=0
8167 014000 001002 IO150: BNE 00150 ;TEST THE BNE-IT SHOULD BR
8168 014002 104005 EO150: ERRORS ;BNE FAILED
8169 014004 013776 RO150 ;ERROR LOOP RETURN
8170 014006 000004 00150: SCOPE ;CALL SCOPE LOOP UTILITY
8171
```

H01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 215
DBQEAB.CMB T0150 BNE TEST WITH Z=0

```
8172 ; *****  
8173 .SBTTL T0151 BPL TEST WITH N=1  
8174 ; *****  
8175  
8176 ;MICROPROGRAMMING / LOGIC INFORMATION  
8177  
8178 ;ROM SEQ: [110,347,016] FC 1,7  
8179  
8180 ;ACT BUTS: 37(004)100,110 / 16(110)016,016  
8181  
8182 ;EXEC: NO BRANCH  
8183  
8184 ;CODES: N / A  
8185  
8186 ;SYNC: B05J2 (-) T= 1.4 USEC  
8187  
8188 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=OL / K3-4 IR15 L  
8189  
8190 014010 012700 000151 T0151: MOV #0151,R0 ;LOAD R0 WITH TEST NO.  
8191 014014 013701 014022 MOV @#I0151,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
8192  
8193 014020 000270 R0151: SEN ;MAKE N=1  
8194  
8195 014022 100001 I0151: BPL E0151 ;TEST THE BPL-IT SHOULDN'T BR  
8196 014024 000402 BR 00151 ;GO TO SCOPE EXIT  
8197  
8198 014026 104005 E0151: ERRORS ;BPL FAILED  
8199 014030 014020 R0151 ;ERROR LOOP RETURN  
8200  
8201 014032 000004 00151: SCOPE ;CALL SCOPE LOOP UTILITY  
8202  
8203
```

I01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 216
DBQEAB.CMB T0151 BPL TEST WITH N=1

```
8204 ; *****
8205 ; .SBTTL T0152 BPL TEST WITH N=0
8206 ; *****
8207
8208 ;MICROPROGRAMMING / LOGIC INFORMATION
8209
8210 ;ROM SEQ: [111,340,341,016] FC 1,7
8211
8212 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
8213
8214 ;EXEC: (016) D = #00152
8215
8216 ;CODES: N / A
8217
8218 ;SYNC: B05J2 (-) T = 1.8 USEC
8219
8220 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=0L / K3-4 IR15 L
8221
8222 014034 012700 000152 T0152: MOV #0152,R0 ;LOAD R0 WITH TEST NO.
8223 014040 013701 014046 MOV @#I0152,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8224
8225 014044 000250 R0152: CLN ;MAKE n=0
8226
8227 014046 100002 I0152: BPL 00152 ;TEST THE BPL-IT SHOULD BR
8228
8229 014050 104005 E0152: ERRORS ;BPL FAILED
8230 014052 014044 R0152 ;ERROR LOOP RETURN
8231
8232 014054 000004 00152: SCOPE ;CALL SCOPE LOOP UTILITY
8233
8234
```

J01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 217
DBQEAB.CMB T0152 BPL TEST WITH N=0

```
8235 ; *****  
8236 ; .SBTTL T0153 BVC TEST WITH V=1  
8237 ; *****  
8238 ;  
8239 ;MICROPROGRAMMING / LOGIC INFORMATION  
8240 ;ROM SEQ: (110,347,016) FC 1,7  
8241 ;ACT BUTS: 37(004)100,110 / 16(110)016,016  
8242 ;  
8243 ;EXEC: NO BRANCH  
8244 ;  
8245 ;CODES: N / A  
8246 ;  
8247 ;SYNC: BOSJ2 (-) T = 1.4 USEC  
8248 ;  
8249 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=2L / K3-4 IR15 L  
8250 ;  
8251 T0153: MOV #0153,R0 ;LOAD R0 WITH TEST NO.  
8252 T0153: MOV @I0153,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
8253 014056 012700 000153  
8254 014062 013701 014070  
8255 ;  
8256 R0153: SEV ;MAKE V=1  
8257 ;  
8258 I0153: BVC E0153 ;TEST THE BVC-IT SHOULDN'T BR  
8259 014072 000402 ;GO TO SCOPE EXIT  
8260 ;  
8261 E0153: ERRORS ;BVC FAILED  
8262 014076 014066 R0153 ;ERROR LOOP RETURN  
8263 ;  
8264 014100 000004 00153: SCOPE ;CALL SCOPE LOOP UTILITY  
8265 ;  
8266 ;
```

K01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 218
DBQEAB.CMB T0153 BVC TEST WITH V=1

```
8267 ; *****
8268 ; .SBTTL T0154 BVC TEST WITH V=0
8269 ; *****
8270
8271 ;MICROPROGRAMMING / LOGIC INFORMATION
8272
8273 ;ROM SEQ: [111,340,341,016] FC 1,7
8274
8275 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
8276
8277 ;EXEC: [016] D = #00154
8278
8279 ;CODES: N / A
8280
8281 ;SYNC: B05J2 (-) T = 1.8 USEC
8282
8283 ;KEY SIG: K5-3 BR INSTR L / KK5-3 FALSE BR L / K3-3 SM-2L / K3-4 IR15
8284
8285
8286 ;CODES: N / A
8287 014102 012700 000154 T0154: MOV #0154,R0 ;LOAD R0 WITH TEST NO.
8288 014106 013701 014114 MOV @#I0154,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8289
8290 014112 000242 R0154: CLV ;MAKE V=0
8291
8292 014114 102002 I0154: BVC 00154 ;TEST THE BVC-IT SHOULD BR
8293
8294 014116 104005 E0154: ERRORS ;BVC FAILED
8295 014120 014112 R0154 ;ERROR LOOP RETURN
8296
8297 014122 000004 00154: SCOPE ;CALL SCOPE LOOP UTILITY
8298
8299
```

L01

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8300 ; *****
8301 ; .SBTTL T0155 BCC TEST WITH C=1
8302 ; *****
8303
8304 ;MICROPROGRAMMING / LOGIC INFORMATION
8305
8306 ;ROM SEQ: [110,347,016] FC 1,7
8307
8308 ;ACT BUTS: 37[004]100,110 / 16[110]016,016
8309
8310 ;EXEC: NO BRANCH
8311
8312 ;CODES: N / A
8313
8314 ;SYNC: B05J2 (-) T = 1.4 USEC
8315
8316 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L / K3-4 IR15 L
8317
8318 014124 012700 000155 T0155: MOV #0155,R0 ;LOAD R0 WITH TEST NO.
8319 014130 013701 014136 T0155: MOV @#I0155,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8320
8321 014134 000261 R0155: SEC ;MAKE C=1
8322
8323 014136 103001 I0155: BCC E0155 ;TEST THE BCC, IT SHOULDN'T BR
8324 014140 000402 I0155: BR 00155 ;GO TO SCOPE EXIT
8325
8326 014142 104005 E0155: ERRORS ;BCC FAILED
8327 014144 014134 R0155 ;ERROR LOOP RETURN
8328
8329 014146 000004 00155: SCOPE ;CALL SCOPE LOOP UTILITY
8330

```

MO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 220
DBQEAB.CMB TC155 BCC TEST WITH C=1

```
8331 ; *****  
8332 .SBTTL T0156 BCC TEST WITH C=0  
8333 ; *****  
8334  
8335 ;MICROPROGRAMMING / LOGIC INFORMATION  
8336  
8337 ;ROM SEQ: [111,340,341,016] FC 1,7  
8338  
8339 ;ACT BUTS: 37(004)100,111 / 16(340)016,016  
8340  
8341 ;EXEC: [016] D = #00156  
8342  
8343 ;CODES: N / A  
8344  
8345 ;SYNC: B05J2 (-) T = 1.8 USEC  
8346  
8347 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=3L / K3-4 IR15 L  
8348  
8349  
8350 014150 012700 000156 T0156: MOV #0156,R0 ;LOAD R0 WITH TEST NO.  
8351 014154 013701 014162 MOV @#I0156,R1 -;LOAD R1 WITH TEST INSTRUCTION WORD  
8352  
8353 014160 000241 R0156: CLC ;MAKE C=0  
8354  
8355 014162 103002 I0156: BCC 00156 ;TEST THE BCC-IT SHOULD BR  
8356  
8357 014164 104005 E0156: ERRORS ;BCC FAILED  
8358 014166 014160 R0156 ;ERROR LOOP RETURN  
8359  
8360 014170 000004 00156: SCOPE ;CALL SCOPE LOOP UTILITY  
8361  
8362
```

NO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 221
 DBQEAB.CMB T0156 BCC TEST WITH C=0

```

8363 ; *****
8364 ; .SBTTL T0157 VERIFY NO BRANCH MICROROUTINE DOES NOT CLR FLAGS
8365 ; *****
8366 ;MICROPROGRAMMING / LOGIC INFORMATION
8367
8368 ;ROM SEQ: [110,347,016] FC 1,7
8369
8370 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8371
8372 ;EXEC: NO BRANCH
8373
8374 ;CODES: N:C = 1111 (NO CHANGE)
8375
8376 ;SYNC: B05J2 (-) T = 1.4 USEC
8377
8378 ;KEY SIG: K5-3 BR INSTR L / ^3-3 SM=3L / K3-4 IR15 L
8379
8380
8381 014172 012700 000157 T0157: MOV #0157,R0 ;LOAD R0 WITH TEST NO.
8382 014176 013701 014204 MOV #I0157,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8383
8384 014202 000277 R0157: SCC ;MAKE N:C = 1111
8385
8386 014204 103007 I0157: BCC E0157 ;TEST THE BCC-IT SHOULDN'T BR
8387
8388 014206 013702 177776 MOV #PSW,R2 ;GET WAS FLAGS
8389 014212 022702 000017 CMP #17,R2 ;N:C = 1111?
8390 014216 001404 BEQ 00157 ;BR IF YES
8391
8392 014220 010237 177776 MOV R2,#PSW ;RESTORE N:C
8393
8394 014224 104005 E0157: ERRORS ;NO BRANCH MICROROUTINE ALTERED CODES
8395 014226 014202 R0157 ;ERROR LOOP RETURN
8396
8397 014230 000004 00157: SCOPE ;CALL SCOPE LOOP UTILITY
8398
8399
  
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01339

```

: *****
. SBTTL T0160 VERIFY BRANCH MICROROUTINE DOES NOT CLR FLAGS
: *****

; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:      [111,340,341,016] FC 1,7
; ACT BUTS:     37(004)100,111 / 16(340)016,016
; EXEC:         (016) D = #A0160
: CODES:        N:C = 1111      (NO CHANGE)
; SYNC:         B05J2 (-) T = 1.8 USEC
; KEY SIG:      K5-3 BR INSTR L / K5-3 TRUE BR / K3-3 SM=OL / K3-3 IR(14:12) = 0 L

T0160:  MOV      #0160,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0160,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD

R0160:  SCC

I0160:  BR       A0160          ;TEST THE BR

E10160: ERRORS
        R0160          ;JUST IN CASE THE BR DIDN'T WORK
        ;ERROR LOOP RETURN

A0160:  MOV      @#PSW,R2        ;GET THE FLAGS
        CMP      #17,R2         ;N:C = 1111?
        BEQ     00160          ;BR IF YES

        MOV      R2,@#PSW      ;RESTORE FLAGS

E20160: ERRORS
        R0160          ;BRANCH MICROROUTINE ALTERED CODES
        ;ERROR LOOP RETURN

00160:  SCOPE
        ;CALL SCOPE LOOP UTILITY

```

```

014232 012700 000160
014236 013701 014244
014242 000277
014244 000402
014246 104005
014250 014242
014252 013702 177776
014256 022702 000017
014262 001404
014264 010237 177776
014270 104005
014272 014242
014274 000004

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01458
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01460
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01462
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01467
01468
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01475
01476

```

; *****
; .SBTTL T0161 VERIFY NO BRANCH MICROROUTINE DOES NOT SET FLAGS
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [110,347,016] FC 1,7
;ACT BUTS:     37[004]100,110 / 16[110]016,016
;EXEC:         NO BRANCH
;CODES:        N:C = 0000      (NO CHANGE)
;SYNC:         B05J2 (-) T = 1.4 USEC
;KEY SIG:      K5-3 BR INSTR L / K3-3 SM=3L / K3-4 IR15 L

T0161:  MOV      @0161,R0      ;LOAD R0 WITH TEST NO.
        MOV      @I0161,R1    ;LOAD R1 WITH TEST INSTRUCTION WORD

R0161:  CCC                      ;MAKE N:C = 0000

I0161:  BCS      E0161        ;TEST THE BCS-IT SHOULDN'T BR

        MOV      @PSW,R2      ;GET FLAGS
        TST     R2            ;N:C = 0000
        BEQ     00161        ;BR IF YES

        MOV      R2,@PSW      ;RESTORE FLAGS

E0161:  ERRORS                    ;NO BRANCH MICROROUTINE-ALTERED CODES
        R0161                    ;ERROR LOOP RETURN

00161:  SCOPE                      ;CALL SCOPE LOOP UTILITY

```

```

014276 012700 000161
014302 013701 014310
014306 000257
014310 103406
014312 013702 177776
014316 005702
014320 001404
014372 010237 177776
014326 104005
014330 014306
014332 000004

```

85177
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85179
85180
85181
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: *****
.SBTTL T0162 VERIFY BRANCH MICROROUTINE DOES NOT SET FLAGS
: *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [111,340,341,016] FC 1,7
;ACT BUTS: 37(004)100,111 / 16(340)016,016
;EXEC: [016] D = #A0162
;CODES: N:C = 0000 (NO CHANGE)
;SYNC: B05J2 (-) T = 1.8 USEC
;KEY SIG: K5-3 BIT INSTR L / K5-3 TRUE BR L / K3-3 SM=0L / K3-4 IR(14:12)=0

014334 012700 000162
014340 013701 014346

014344 000257

014346 000402

014350 104005
014352 014344

014354 013702 177776
014360 015702
014362 001404

014364 010237 177776

014370 104005
014372 014344

014374 000004

T0162: MOV #0162,R0 ;LOAD R0 WITH TEST NO.
MOV #I0162,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD

R0162: CCC ;MAKE N:C = 0000

I0162: BR A0162 ;TEST THE BR

E10162: ERRORS ;JUST IN CASE THE BR DIDN'T WORK
R0162 ;ERROR LOOP RETURN

A0162: MOV #PSW,R2 ;GET FLAGS
TST R2 ;N:C = 0000
BEQ 00162 ;BR IF YES

MOV R2,#PSW ;RESTORE FLAGS

E20162: ERRORS ;BRANCH MICROROUTINE ALTERED CODES.
R0162 ;ERROR LOOP RETURN

00162: SCOPE ;CALL SCOPE LOOP UTILITY

E02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 225
DBQEAB.CMB T0162 VERIFY BRANCH MICROROUTINE DOES NOT SET FLAGS

```

8517 ; *****
8518 ; .SBTTL T0163 BGE TEST WITH N,V = 00
8519 ; *****
8520 ;MICROPROGRAMMING / LOGIC INFORMATION
8521 ;ROM SEQ: [111,340,341,016] FC 1,7
8522 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
8523 ;EXEC: [016] D = #00163
8524 ;CODES: N:C = 0000
8525 ;SYNC: B05J2 (-) T = 1.8 USEC
8526 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=2L
8527
8528 T0163: MOV #0163,R0 ;LOAD R0 WITH TEST NO.
8529 T0163: MOV @#I0163,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8530
8531 R0163: CCC ;MAKE N:C = 0000
8532
8533 I0163: BGE 00163 ;TEST THE BGE-IT SHOULD BR
8534
8535 E0163: ERRORS ;BGE FAILED
8536 E0163: R0163 ;ERROR LOOP RETURN
8537
8538 00163: SCOPE ;CALL SCOPE LOOP UTILITY
8539
8540
8541
8542
8543
8544
8545
8546
8547

```

```

014376 012700 000163
014402 013701 014410
014406 000257
014410 002002
014412 104005
014414 014406
01-416 000004

```

```

8548 ; *****
8549 .SBTTL T0164 BGE TEST WITH N,V = 01
8550 ; *****
8551
8552 ;MICROPROGRAMMING / LOGIC INFORMATION
8553
8554 ;ROM SEQ: [110,347,016] FC 1,7
8555
8556 ;ACT BLTS: 37[004]100,110 / 16[110]016,016
8557
8558 ;EXEC: NO BRANCH
8559
8560 ;CODES: N:C = 0010
8561
8562 ;SYNC: B05J2 (-) T = 1.4 USEC
8563
8564 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=2L / K3-3 IR(14:12)=0 L
8565
8566 014420 012700 000164 T0164: MOV #0164,R0 ;LOAD R0 WITH TEST NO.
8567 014424 013701 014434 MOV @#I0164,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8568
8569 014430 000257 R0164: CCC ;CLEAR FLAGS
8570 014432 000262 SEV ;MAKE N,V = 01
8571
8572 014434 002001 I0164: BGE E0164 ;TEST THE BGE-IT SHOULDN'T BR
8573 014436 000402 BR 00164 ;GO TO SCOPE EXIT
8574
8575 014440 104005 E0164: ERRORS ;BGE FAILED
8576 014442 014430 R0164 ;ERROR LOOP RETURN
8577 014444 000004 00164: SCOPE ;CALL SCOPE LOOP UTILITY
8578

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124

```

8579          ; *****
8580          ; .SBTTL T0165 BGE TEST WITH N,V = 10
8581          ; *****
8582
8583          ;MICROPROGRAMMING / LOGIC INFORMATION
8584
8585          ;ROM SEQ:      [110,347,016] FC 1,7
8586
8587          ;ACT BUTS:    37[004]100,110 / 16[110]016,016
8588
8589          ;EXEC:        NO BRANCH
8590
8591          ;CODES:       N:C = 1000
8592
8593          ;SYNC:        B05J2 (-) T = 1.4 USEC
8594
8595          ;KEY SIG:      K5-3 BR INSTR L / K3-3 SM=2L
8596
8597 014446 012700 000165      T0165:  MOV      #0165,R0          ;LOAD R0 WITH TEST NO.
8598 014452 013701 014462      MOV      @#I0165,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
8599
8600          ;CLEAR FLAGS
8601 014456 000257              RO165:  CCC
8602 014460 000270              SEN
8603          ;MAKE N,V = 10
8604 014462 002001              I0165:  BGE      E0165          ;TEST THE BGE-IT SHOULDN'T BR
8605 014464 000402              BR      00165          ;GO TO SCOPE EXIT
8606
8607 014466 104005              E0165:  ERRORS
8608 014470 014456              R0165
8609          ;BGE FAILED
8610          ;ERROR LOOP RETURN
8611 014472 000004              00165:  SCOPE          ;CALL SCOPE LOOP UTILITY

```

H02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 228
DBGERR.CMB T0166 BGE TEST WITH N,V = 10

```
8612 ; *****  
8613 .SBTTL T0166 BGE TEST WITH N,V = 11  
8614 ; *****  
8615  
8616 ;MICROPROGRAMMING / LOGIC INFORMATION  
8617  
8618 ;ROM SEQ: [111,340,341,016] FC 1,7  
8619  
8620 ;ACT BUTS: 37(004)100,111 / 16(340)016,016  
8621  
8622 ;EXEC: [016] D = #00166  
8623  
8624 ;CODES: N:C = 1010  
8625  
8626 ;SYNC: B05J2 (-) T = 1.8 USEC  
8627  
8628 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=2L / K3-3 IR(14:  
8629  
8630 014474 012700 000166 T0166: MOV #0166,R0 ;LOAD R0 WITH TEST NO.  
8631 014500 013701 014510 MOV @#I0166,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
8632  
8633 014504 000257 R0166: CCC ;CLEAR FLAGS  
8634 014506 000272 272 ;MAKE N,V = 11  
8635  
8636 014510 002002 I0166: BGE 00166 ;TEST THE BGE-IT SHOULD BR  
8637  
8638 014512 104005 E0166: ERRORS ;BGE FAILED  
8639 014514 014504 R0166 ;ERROR LOOP RETURN  
8640  
8641 014516 000004 00166: SCOPE ;CALL SCOPE LOOP UTILITY  
8642  
8643
```

```

8644 : *****
8645 : .SBTTL T0167 BLT TEST WITH N,V = 00
8646 : *****
8647 ; MICROPROGRAMMING / LOGIC INFORMATION
8648 ; ROM SEQ: [110,347,016] FC 1,7
8649 ; ACT BUTS: 37(004):00,110 / 16(110)016,016
8650 ; EXEC: NO BRANCH
8651 ; CODES: N:C = 0000
8652 ; SYNC: B05J2 (-) T = 1.4 USEC
8653 ; KEY SIG: K5-3 BR INSTR L / K3-3 SM=2L
8654
8655 T0167: MOV #0167,R0 ;LOAD R0 WITH TEST NO.
8656 T0167: MOV @I0167,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8657
8658 R0167: CCC ;CLEAR FLAGS
8659
8660 T0167: BLT E0167 ;TEST THE BLT-IT SHOULDN'T BR
8661 T0167: BR 00167 ;GO TO SCOPE EXIT
8662
8663 E0167: ERRORS ;BLT FAILED
8664 R0167 ;ERROR LOOP RETURN
8665
8666 00167: SCOPE ;CALL SCOPE LOOP UTILITY
8667
8668
8669
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8674
8675

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J02

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8676 ; *****
8677 .SBTTL T0170 BLT TEST WITH N,V = 01
8678 ; *****
8679
8680 ;MICROPROGRAMMING / LOGIC INFORMATION
8681
8682 ;ROM SEQ: [111,340,341,016] FC 1,7
8683
8684 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
8685
8686 ;EXEC: [016] D = #00170
8687
8688 ;CODES: N:C = 0010
8689
8690 ;SYNC: B05J2 (-) T = 1.8 USEC
8691
8692 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=2L / K3-3 IR(14:1
8693
8694 014544 012700 000170 T0170: MOV #0170,R0 ;LOAD R0 WITH TEST NO.
8695 014550 013701 014560 MOV @#I0170,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8696
8697 014554 000257 R0170: CCC ;CLEAR FLAGS
8698 014556 000262 SEV ;MAKE N,V = 01
8699
8700 014560 002402 I0170: BLT 00170 ;TEST THE BLT-IT SHOULD BR
8701
8702 014562 104005 E0170: ERRORS ;BLT FAILED
8703 014564 014554 R0170 ;ERROR LOOP RETURN
8704
8705 014566 000004 00170: SCOPE ;CALL SCOPE LOOP UTILITY
8706
8707

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11

K02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 231
DBQEAB.CMB T0170 BLT TEST WITH N,V = 01

```

8708 ; *****
8709 ; .SBTTL T0171 BLT TEST WITH N,V = 10
8710 ; *****
8711 ; MICROPROGRAMMING / LOGIC INFORMATION
8712 ; ROM SEQ: [111,340,341,016] FC 1,7
8713 ; ACT BUTS: 37(004)100,111 / 16(340)016,016
8714 ; EXEC: [016] D = #00171
8715 ; CODES: N:C = 1000
8716 ; SYNC: B05J2 (-) T = 1.8 USEC
8717 ; KEY SIG: K5-3 BR INSTR L / K3-3 SM=2L / K5-3 TRUE L
8718
8719
8720
8721
8722
8723
8724
8725
8726 014570 012700 000171 T0171: MOV #0171,R0 ;LOAD R0 WITH TEST NO.
8727 014574 013701 014604 MOV @#I0171,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8728
8729 014600 000257 R0171: CCC ;CLEAR FLAGS
8730 014602 000270 SEN ;SET N - N,V = 10
8731
8732 014604 002402 I0171: BLT 00171 ;TEST THE BLT-IT SHOULD BR
8733
8734 014606 104005 E0171: ERRORS ;BLT FAILED
8735 014610 014600 R0171 ;ERROR LOOP RETURN
8736
8737 014612 000004 00171: SCOPE ;CALL SCOPE LOOP UTILITY
8738
8739

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8740 ; *****
8741 ; .SBTTL T0172 BLT TEST WITH N,V = 11
8742 ; *****
8743 ;MICROPROGRAMMING / LOGIC INFORMATION
8744 ;ROM SEQ: [110,347,016] FC 1,7
8745 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8746 ;EXEC: NO BRANCH
8747 ;CODES: N:C = 1010
8748 ;SYNC: B05J2 (-) T = 1.4 USEC
8749 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=2L / K3-3 IR(14:12)=0 L
8750
8751
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8756
8757
8758 014614 012700 000172 T0172: MOV #0172,R0 ;LOAD R0 WITH TEST NO.
8759 014620 013701 014630 MOV @#I0172,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8760
8761 014624 000257 R0172: CCC ;CLEAR FLAGS
8762 014626 000272 272 ;MAKE N,V = 11
8763
8764 014630 002401 I0172: BLT E0172 ;TEST THE BLT-IT SHOULDN'T BR
8765 014632 000402 BR 00172 ;GO TO SCOPE EXIT
8766
8767 014634 104005 E0172: ERRORS ;BLT FAILED
8768 014636 014624 R0172 ;ERROR LOOP RETURN
8769
8770 014640 000004 00172: SCOPE ;CALL SCOPE LOOP UTILITY
8771
8772

```

M02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 233
 DBGARB.CMB T0172 BLT TEST WITH N,V = 11

```

8773 ; *****
8774 ; .SBTTL T0173 BGT TEST WITH Z = 1 AND N,V = 01
8775 ; *****
8776 ; MICROPROGRAMMING / LOGIC INFORMATION
8777
8778 ;ROM SEQ: [110,347,016] FC 1,7
8779
8780 ;ACT BUTS: 37[004]100,110 / 16[110]016,016
8781
8782 ;EXEC: NO BRANCH
8783
8784 ;CODES: N:C = 0110
8785
8786 ;SYNC: B05J2 (-) T = 1.4 USEC
8787
8788 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L
8789
8790
8791 014642 012700 000173 T0173: MOV #0173,R0 ;LOAD R0 WITH TEST NO.
8792 014646 013701 014656 MOV #I0173,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8793
8794 014652 000257 R0173: CCC ;CLEAR FLAGS
8795 014654 000266 266 ;SET Z AND V
8796
8797 014656 003001 I0173: BGT E0173 ;TEST THE BGT-IT SHOULDN'T BR
8798 014660 000402 BR 00173 ;GO TO SCOPE EXIT
8799
8800 014662 104005 E0173: ERRORS ;BGT FAILED
8801 014664 014652 R0173 ;ERROR LOOP RETURN
8802
8803 014666 000004 00173: SCOPE ;CALL SCOPE LOOP UTILITY
8804
8805
  
```

```

8806 ; *****
8807 ; .SBTTL T0174 BGT TEST WITH Z = 0 AND N,V = 01
8808 ; *****
8809 ;MICROPROGRAMMING / LOGIC INFORMATION
8810 ;ROM SEQ: [110,347,016] FC 1,7
8811 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8812 ;EXEC: NO BRANCH
8813 ;CODES: N:C = 0010
8814 ;SYNC: B05J2 (-) T = 1.4 USEC
8815 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L / K3-3 IR(14:12)=0 L
8816
8817
8818
8819
8820
8821
8822
8823
8824 014670 012700 000174 T0174: MOV #0174,R0 ;LOAD R0 WITH TEST NO.
8825 014674 013701 014716 MOV @#I0174,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8826
8827 014700 032737 000010 066642 BIT #10,@#BPTLOC ;BREAKPOINT HALT SET ??
8828 014706 001401 BEQ .+4 ;BR IF NOT
8829 014710 000000 HALT ;BREAK - DEPRESS CONTINUE TO RESTART
8830 014712 000257 R0174: CCC ;CLEAR FLAGS
8831 014714 000262 SEV ;SET V
8832
8833 014716 003001 I0174: BGT E0174 ;TEST THE BGT-IT SHOULD NOT BR
8834 014720 000402 BR 00174 ;GO TO SCOPE LOOP EXIT
8835
8836 014722 104005 E0174: ERRORS ;BGT FAILED
8837 014724 014712 R0174 ;ERROR LOOP RETURN
8838
8839 014726 000004 00174: SCOPE ;CALL SCOPE LOOP UTILITY
8840
8841

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8859
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8870
8871
8872

014730 012700 000175
014734 013701 014744

014740 000257
014742 000264

014744 003001
014746 000402

014750 104005
014752 014740

014754 000004

```
; *****  
      .SBTTL T0175 BGT TEST WITH Z = 1 AND N,V = 00  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [110,347,016] FC 1,7  
;ACT BUTS:     37[004]100,110 / 16[110]016,016  
;EXEC:         NO BRANCH  
;CODES:        N:C = 0100  
;SYNC:        BOSJ2 (-) T = 1.4 USEC  
;KEY SIG:      K5-3 BR INSTR L / K3-3 SM=3L  
T0175:  MOV      #0175,R0      ;LOAD R0 WITH TEST NO.  
        MOV      @#I0175,R1    ;LOAD R1 WITH TEST INSTRUCTION WORD  
R0175:  CCC                      ;CLEAR FLAGS  
        SEZ                      ;SET Z  
I0175:  BGT      E0175          ;TEST THE BGT-IT SHOULD NOT BR  
        BR       00175          ;GO TO SCOPE LOOP EXIT  
E0175:  ERRORS  R0175          ;BGT FAILED  
        R0175                    ;ERROR LOOP RETURN  
00175:  SCOPE                    ;CALL SCOPE LOOP UTILITY
```

```

8873 ; *****
8874 ; .SBTTL T0176 BGT TEST WITH Z = 0 AND N,V = 00
8875 ; *****
8876 ;MICROPROGRAMMING / LOGIC INFORMATION
8877 ;ROM SEQ: [111,340,347,016] FC 1,7
8878 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
8879 ;EXEC: [016] D = #00176
8880 ;CODE N:C = 0000
8881 ;SYNC: B05J2 (-) T = 1.8 USEC
8882 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=3L / K3-3 IR(14:12)=0
8883
8884
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8886
8887
8888
8889
8890
8891 014756 012700 000176 T0176: MOV #0176,R0 ;LOAD R0 WITH TEST NO.
8892 014762 013701 014770 MOV #I0176,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8893
8894 014766 000257 R0176: CCC ;CLEAR FLAGS
8895
8896 014770 003002 I0176: BGT 00176 ;TEST THE BGT - IT SHOULD BR
8897
8898 014772 104005 E0176: ERRORS ;BGT FAILED
8899 014774 014766 R0176 ;ERROR LOOP RETURN
8900
8901 014776 000004 00176: SCOPE ;CALL SCOPE LOOP UTILITY
8902
8903
8904

```

```

8905 ; *****
8906 ; .SBTTL T0177 BGT TEST WITH Z = 1 AND N,V = 01
8907 ; *****
8908
8909 ;MICROPROGRAMMING / LOGIC INFORMATION
8910
8911 ;ROM SEQ: [110,347,016] FC 1,7
8912
8913 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8914
8915 ;EXEC: NO BRANCH
8916
8917 ;CODES: N:C = 0110
8918
8919 ;SYNC: B05J2 (-) T = 1.4 USEC
8920
8921 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L
8922
8923 015000 012700 000177 T0177: MOV #0177,R0 ;LOAD R0 WITH TEST NO.
8924 015004 013701 015014 MOV @#I0177,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8925
8926 015010 000257 R0177: CCC ;CLEAR FLAGS
8927 015012 000266 266 ;MAKE N,V = 01 AND Z = 1
8928
8929 015014 003001 I0177: BGT E0177 ;TEST THE BGT-IT SHOULDN'T BR
8930 015016 000402 BR 00177 ;GO TO SCOPE EXIT
8931
8932 015020 104005 E0177: ERRORS ;BGT FAILED
8933 015022 015010 R0177 ;ERROR LOOP RETURN
8934
8935 015024 000004 00177: SCOPE ;CALL SCOPE LOOP UTILITY
8936
8937
    
```


E03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 238
DB0EAB.CMB T0177 BGT TEST WITH Z = 1 AND N,V = 01

```
8938 ; *****
8939 ; .SBTTL T0200 BGT TEST WITH Z = 1 AND N,V = 10
8940 ; *****
8941
8942 ;MICROPROGRAMMING / LOGIC INFORMATION
8943
8944 ;ROM SEQ: [110,347,016] FC 1,7
8945
8946 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8947
8948 ;EXEC: NO BRANCH
8949
8950 ;CODES: N:C = 1100
8951
8952 ;SYNC: B05J2 (-) T = 1.4 USEC
8953
8954 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L / K3-3 IR(14:12)=0 L
8955
8956 015026 012700 000200 T0200: MOV #0200,R0 ;LOAD R0 WITH TEST NO.
8957 015032 013701 015042 T0200: MOV #I0200,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8958
8959 015036 000257 R0200: CCC ;CLEAR FLAGS
8960 015040 000274 R0200: 274 ;MAKE Z = 1 AND N,V = 10
8961
8962 015042 003001 I0200: BGT E0200 ;TEST THE BLT-IT SHOULDN'T BR
8963 015044 000402 I0200: BR 00200 ;GO TO SCOPE EXIT
8964
8965 015046 104005 E0200: ERRORS ;BLT FAILED
8966 015050 015036 E0200: R0200 ;ERROR LOOP RETURN
8967
8968 015052 000004 00200: SCOPE ;CALL SCOPE LOOP UTILITY
8969
8970
```

F03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 239
DBQEAB.CMB T0200 BGT TEST WITH Z = 1 AND N,V = 10

```
8971 ; *****
8972 ; .SBTTL T0201 BGT TEST WITH Z = 1 AND N,V = 11
8973 ; *****
8974 ;MICROPROGRAMMING / LOGIC INFORMATION
8975 ;ROM SEQ: [110,347,016] FC 1,7
8976 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
8977 ;EXEC: NO BRANCH
8978 ;CODES: N:C = 1110
8979 ;SYNC: B05J2 (-) T = 1.4 USEC
8980 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L
8981
8982 T0201: MOV #0201,R0 ;LOAD R0 WITH TEST NO.
8983 015054 012700 000201 MOV #I0201,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
8984 015060 013701 015070
8985
8986 R0201: CCC ;CLEAR FLAGS
8987 015064 000257 276 ;MAKE Z = 1 AND N,V = 11
8988 015066 000276
8989
8990 I0201: BGT E0201 ;TEST THE BGT-IT SHOULD NOT BR
8991 015070 003001 00201 ;GO TO SCOPE EXIT
8992 015072 000402
8993
8994 E0201: ERRORS ;BLT FAILED
8995 015074 104005 R0201 ;ERROR LOOP RETURN
8996 015076 015064
8997
9000 00201: SCOPE ;CALL SCOPE LOOP UTILITY
9001 015100 000004
```

G03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 240
DBQEAB.CMB T0201 BGT TEST WITH Z = 1 AND N,V = 11

```
9002 : *****
9003 : .SBTTL T0202 BGT TEST WITH Z=0 AND N,V=11
9004 : *****
9005
9006 ;MICROPROGRAMMING / LOGIC INFORMATION
9007
9008 ;ROM SEQ: [111,340,341,016] FC 1,7
9009
9010 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
9011
9012 ;EXEC: [016] D = #00202
9013
9014 ;CODES: N:C = 1010
9015
9016 ;SYNC: B05J2 (-) T = 1.8 USEC
9017
9018 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=3L / K3-3 IR(14:12)=0
9019
9020
9021 015102 012700 000202 T0202: MOV #0202,R0 ;LOAD R0 WITH TEST NO.
9022 015106 013701 015116 MOV #I0202,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9023
9024 015112 000257 R0202: CCC ;CLEAR FLAGS
9025 015114 000272 272 ;MAKE N:C=1010
9026
9027 015116 003002 I0202: BGT 00202 ;TEST THE BGT - IT SHOULD BR
9028
9029 015120 104005 E0202: ERRORS ;BGT FAILED
9030 015122 015112 R0202 ;ERROR LOOP RETURN
9031
9032 015124 000004 00202: SCOPE ;CALL SCOPE LOOP UTILITY
9033
9034
9035
```

H03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 241
DBQEAB.CMB T0202 BGT TEST WITH Z=0 AND N,V=11

```
9036 ; *****  
9037 .SBTTL T0203 BLE TEST WITH Z = 0, AND N,V = 00  
9038 ; *****  
9039  
9040 ;MICROPROGRAMMING / LOGIC INFORMATION  
9041  
9042 ;ROM SEQ: [110,347,016] FC 1,7  
9043  
9044 ;ACT BUTS: 37[004]100,110 / 16[110]016,016  
9045  
9046 ;EXEC: NO BRANCH  
9047  
9048 ;CODES: N:C = 0000  
9049  
9050 ;SYNC: B05J2 (-) T = 1.4 USEC  
9051  
9052 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L  
9053  
9054 015126 012700 000203 T0203: MOV #0203,R0 ;LOAD R0 WITH TEST NO.  
9055 015132 013701 015140 MOV @#I0203,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
9056  
9057 015136 000257 R0203: CCC ;CLEAR FLAGS  
9058  
9059 015140 003401 I0203: BLE E0203 ;TEST THE BLE-IT SHOULDN'T BR  
9060 015142 000402 BR 00203 ;GO TO SCOPE EXIT  
9061  
9062 015144 104005 E0203: ERRCR5 ;BLE FAILED  
9063 015146 015136 R0203 ;ERROR LOOP RETURN  
9064  
9065 015150 000004 00203: SCOPE ;CALL SCOPE LOOP UTILITY  
9066  
9067
```

```

9068 ; *****
9069 ; .SBTTL T0204 BLE TEST WITH Z = 1 AND N,V = 00
9070 ; *****
9071 ;MICROPROGRAMMING / LOGIC INFORMATION
9072 ;ROM SEQ: [111,340,341,016] FC 1,7
9073 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
9074 ;EXEC: [016] D = #00204
9075 ;CODES: N:C = 0100
9076 ;SYNC: B05J2 (-) T = 1.8 USEC
9077 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=3L / K3-3 IR(14:12)=0 L
9078
9079
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9081
9082
9083
9084
9085
9086 015152 012700 000204 T0204: MOV #0204,R0 ;LOAD R0 WITH TEST NO.
9087 015156 013701 015166 MOV @#I0204,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9088
9089 015162 000257 R0204: CCC ;CLEAR FLAGS
9090 015164 000264 SEZ ;SET Z = 1
9091
9092 015166 003402 I0204: BLE 00204 ;TEST THE BLE-IT SHOULD BR
9093
9094 015170 104005 E0204: ERRORS ;BLE FAILED
9095 015172 015162 R0204 ;ERROR LOOP RETURN
9096
9097 015174 000004 00204: SCOPE ;CALL SCOPE LOOP UTILITY
9098
9099

```

J03

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE: 243
DBQEAB.CMB T0204 BLE TEST WITH Z = 1 AND N,V = 00

```
9100 ; *****  
9101 ; .SBTTL T0205 BLE TEST WITH Z = 0 AND N,V = 01  
9102 ; *****  
9103 ;MICROPROGRAMMING / LOGIC INFORMATION  
9104 ;ROM SEQ: [111,340,341,016] FC 1,7  
9105 ;ACT BUTS: 37(004)100,111 / 16(340)016,016  
9106 ;EXEC: [016] D = #00205  
9107 ;CODES: N:C = 0010  
9108 ;SYNC: B05J2 (-) T = 1.8 USEC  
9109 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=3L / K5-2 PS(V)(1)H  
9110  
9111  
9112  
9113  
9114  
9115  
9116  
9117  
9118 015176 012700 000205 T0205: MOV #0205,R0 ;LOAD R0 WITH TEST NO.  
9119 015202 013701 015212 MOV #I0205,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
9120  
9121 015206 000257 R0205: CCC ;CLEAR FLAGS  
9122 015210 000262 SEV ;MAKE Z = 0 AND N,V = 01  
9123  
9124 015212 003402 I0205: BLE 00205 ;TEST THE BLE-IT SHOULD BR  
9125  
9126 015214 104005 E0205: ERRORS ;BLE FAILED  
9127 015216 015206 R0205 ;ERROR LOOP RETURN  
9128  
9129 015220 000004 00205: SCOPE ;CALL SCOPE LOOP UTILITY  
9130  
9131
```

K03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 244
DBGQAB.CMB T0205 BLE TEST WITH Z = 0 AND N,V = 01

```
9132 ; *****
9133 ; .SBTTL T0206 BLE TEST WITH Z = 0 AND N,V = 10
9134 ; *****
9135 ;MICROPROGRAMMING / LOGIC INFORMATION
9136 ;ROM SEQ: [111,340,341,016] FC 1,7
9137 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
9138 ;EXEC: [016] D = #00206
9139 ;CODES: N:C = 1000
9140 ;SYNC: B05J2 (-) T = 1.8 USEC
9141 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=3L / K3-3 IR(14:12)=0 L
9142 ; K5-2 PS(N)(1)H
9143
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9150
9151 015222 012700 000206 T0206: MOV #0206,R0 ;LOAD R0 WITH TEST NO.
9152 015226 013701 015236 MOV #I0206,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9153
9154 015232 000257 R0206: CCC ;CLEAR FLAGS
9155 015234 000270 SEN ;MAKE Z = 0 AND N,V = 10
9156
9157 015236 003402 I0206: BLE 00206 ;TEST THE BLE-IT SHOULD BR
9158
9159 015240 104005 E0206: ERRORS ;BLE FAILED
9160 015242 015232 R0206 ;ERROR LOOP RETURN
9161
9162 015244 000004 00206: SCOPE ;CALL SCOPE LOOP UTILITY
9163
9164
```

24.13

```

9165 ; *****
9166 ; .SBTTL T0207 BLE TEST WITH Z = 0 AND N,V = 11
9167 ; *****
9168 ;MICROPROGRAMMING / LOGIC INFORMATION
9169 ;ROM SEQ: [110,347,016] FC 1,7
9170 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
9171 ;EXEC: NO BRANCH
9172 ;CODES: N:C = 1010
9173 ;SYNC: B05J2 (-) T = 1.4 USEC
9174 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L
9175
9176 T0207: MOV #0207,R0 ;LOAD R0 WITH TEST NO.
9177 T0207: MOV @#I0207,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9178
9179 R0207: CCC ;CLEAR FLAGS
9180 R0207: 272 ;MAKE Z = 0 AND N,V = 11
9181
9182 I0207: BLE E0207 ;TEST THE BLE-IT SHOULDN'T BR
9183 I0207: BR 00207 ;GO TO SCOPE EXIT
9184
9185 E0207: ERRORS ;BLE FAILED
9186 E0207: R0207 ;ERROR LOOP RETURN
9187
9188 00207: SCOPE ;CALL SCOPE LOOP UTILITY
9189
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```


M03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 246
DBQEAB.CMB T0207 BLE TEST WITH Z = 0 AND N,V = 11

```
9198 ; *****  
9199 ; .SBTTL T0210 BHI TEST WITH Z,C = 00  
9200 ; *****  
9201  
9202 ;MICROPROGRAMMING / LOGIC INFORMATION  
9203  
9204 ;ROM SEQ: [111,340,341,016] FC 1,7  
9205  
9206 ;ACT BUTS: 37[004]100,111 / 16[340]016,016  
9207  
9208 ;EXEC: [016] 0 = #00210  
9209  
9210 ;CODES: N:C = 0000  
9211  
9212 ;SYNC: B05J2 (-) T = 1.8 USEC  
9213  
9214 ;KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=1L / K3-4 IR15 L  
9215  
9216 015274 012700 000210 T0210: MOV #0210,R0 ;LOAD R0 WITH TEST NO.  
9217 015300 013701 015306 MOV #I0210,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
9218  
9219 015304 000257 R0210: CCC ;MAKE Z,C = 00  
9220  
9221 015306 101002 I0210: BHI 00210 ;TEST THE BHI-IT SHOULD BR  
9222  
9223 015310 104005 E0210: ERROR5 ;BHI FAILED  
9224 015312 015304 R0210 ;ERROR LOOP RETURN  
9225  
9226 015314 000004 00210: SCOPE ;CALL SCOPE LOOP UTILITY  
9227  
9228
```

N03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 247
 DBQEAB.CMB T0210 BHI TEST WITH Z,C = 00

```

9229 ; *****
9230 ; .SBTTL T0211 BHI TEST WITH Z,C = 01
9231 ; *****
9232 ;MICROPROGRAMMING / LOGIC INFORMATION
9233 ;ROM SEQ: [110,347,016] FC 1,7
9234 ;ACT BUTS: 37(004)100,110 / 16(110)016,016
9235 ;EXEC: NO BRANCH
9236 ;CODES: N:C = 0001
9237 ;SYNC: B05J2 (-) T = 1.4 USEC
9238 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=1L / K3-4 IR15 L
9239
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9246
9247 015316 012700 000211 T0211: MOV #0211,R0 ;LOAD R0 WITH TEST NO.
9248 015322 013701 015332 MOV #I0211,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9249
9250 015326 000257 R0211: CCC ;CLEAR FLAGS
9251 015330 000261 SEC ;MAKE Z,C = 01
9252
9253 015332 101001 I0211: BHI E0211 ;TEST THE BHI-IT SHOULD NOT BR
9254 015334 000402 BR 00211 ;GO TO SCOPE EXIT
9255
9256 015336 104005 E0211: ERRORS ;BHI FAILED
9257 015340 015326 R0211 ;ERROR LOOP RETURN
9258
9259 015342 000004 00211: SCOPE ;CALL SCOPE LOOP UTILITY
9260
9261

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015344 012700 000212
015350 013701 015360

015354 000257
015356 000264

015360 101001
015362 000402

015364 104005
015366 015354

015370 000004

```
; *****  
; .SBTTL T0212 BHI TEST WITH Z,C = 10  
; *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; ROM SEQ: [110,347,016] FC 1,7  
; ACT BUTS: 37(004)100,110 / 16(110)016,016  
; EXEC: NO BRANCH  
; CODES: N:C = 0100  
; SYNC: B05J2 (-) T = 1.4 USEC  
; KEY SIG: K5-3 BR INSTR L / K3-3 SM=1L / K3-4 IR15 L  
T0212: MOV #0212,R0 ;LOAD R0 WITH TEST NO.  
MOV #T0212,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
R0212: CCC ;CLEAR FLAGS  
SEZ ;MAKE Z,C = 10  
I0212: BHI E0212 ;TEST THE BHI-IT SHOULD NOT BR  
BR 00212 ;GO TO SCOPE EXIT  
E0212: ERRORS ;BHI FAILED  
R0212 ;ERROR LOOP RETURN  
00212: SCOPE ;CALL SCOPE LOOP UTILITY
```

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9294 ; *****
9295 ; .SBTTL T0213 BHI TEST WITH Z,C = 11
9296 ; *****
9297
9298 ; MICROPROGRAMMING / LOGIC INFORMATION
9299
9300 ; ROM SEQ: [110,347,016] FC 1,7
9301
9302 ; ACT BUTS: 37(004)100,110 / 16(110)016,016
9303
9304 ; EXEC: NO BRANCH
9305
9306 ; CODES: N:C = 0101
9307
9308 ; SYNC: B05J2 (-) T = 1.4 USEC
9309
9310 ; KEY SIG: K5-3 BR INSTR L / K3-3 SM=1L / K3-4 IR15 L
9311
9312 015372 012700 000213 T0213: MOV #0213,R0 ;LOAD R0 WITH TEST NO.
9313 015376 013701 015406 T0213: MOV @#I0213,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9314
9315 015402 000257 R0213: CCC ;CLEAR FLAGS
9316 015404 000265 R0213: 265 ;MAKE Z,C = 11
9317
9318 015406 101001 I0213: BHI E0213 ;TEST THE BHI-IT SHOULDN'T BR
9319 015410 000402 I0213: BR 00213 ;GO TO SCOPE EXIT
9320
9321 015412 104005 E0213: ERRORS ;BHI FAILED
9322 015414 015402 E0213: R0213 ;ERROR LOOP RETURN
9323
9324 015416 000004 00213: SCOPE ;CALL SCOPE LOOP UTILITY
9325
9326

```

```

9327 ; *****
9328 ; .SBTTL T0214 BLOS TEST WITH Z,C = 00
9329 ; *****
9330
9331 ;MICROPROGRAMMING / LOGIC INFORMATION
9332
9333 ;ROM SEQ: [110,347,016] FC 1,7
9334
9335 ;ACT BUTS: 37[004]100,110 / 16[110]1016,016
9336
9337 ;EXEC: NO BRANCH
9338
9339 ;CODES: N:C = 0000
9340
9341 ;SYNC: B05J2 (-) T = 1.4 USEC
9342
9343 ;KEY SIG: K5-3 BR INSTR H / K3-3 SM=3L / K3-4 IR15 L
9344
9345 015420 012700 000214 T0214: MOV #0214 R0 ;LOAD R0 WITH TEST NO.
9346 015424 013701 015432 MOV @#I0214,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9347
9348 015430 000257 R0214: CCC ;MAKE Z,C = 00
9349
9350 015432 101401 I0214: BLOS E0214 ;TEST THE BLOS-IT SHOULDN'T BR
9351 015434 000402 BR 00214 ;GO TO SCOPE EXIT
9352
9353 015436 104005 E0214: ERRORS ;BLOS FAILED
9354 015440 015430 R0214 ;ERROR LOOP RETURN
9355
9356 015442 000004 00214: SCOPE ;CALL SCOPE LOOP UTILITY
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9358

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E04

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 251
DBQEAB.CMB T0214 BLOS TEST WITH Z,C = 00

```
9359 ; *****  
9360 ; .SBTTL T0215 BLOS TEST WITH Z,C = 01  
9361 ; *****  
9362 ;MICROPROGRAMMING / LOGIC INFORMATION  
9363 ;ROM SEQ: [111,340,341,016] FC 1,7  
9364 ;ACT BUTS: 37(004)100,111 / 16(340)016,016  
9365 ;EXEC: [016] D = #00215  
9366 ;CODES: N:C = 0001  
9367 ;SYNC: BOSJ2 (-) T = 1.8 USEC  
9368 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=iL / K3-4 IRIS L  
9369 ; K5-2 PS(C)(1)L  
9370  
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9376  
9377  
9378 015444 012700 000215 T0215: MOV #0215,R0 ;LOAD R0 WITH TEST NK).  
9379 015450 013701 015460 MOV @#I0215,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
9380  
9381 015454 000257 R0215: CCC ;CLEAR FLAGS  
9382 015456 000261 SEC ;MAKE Z,C = 01  
9383  
9384 015460 101402 I0215: BLOS 00215 ;TEST THE BLOS-IT SHOULD BR  
9385  
9386 015462 104005 E0215: ERRORS ;BLOS FAILED  
9387 015464 015454 R0215 ;ERROR LOOP RETURN  
9388  
9389 015466 000004 00215: SCOPE ;CALL SCOPE LOOP UTILITY  
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```

; *****
; .SBTTL T0216 BLOS TEST WITH Z,C = 10
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [111,340,341,016] FC 1,7
;ACT BUTS:     37[004]100,111 / 16[340]016,016
;EXEC:         [016] D = #00216
;CODES:        N:C = 0100
;SYNC:         B05J2 (-) T = 1.8 USEC
;KEY SIG:      K5-3 BR INS,R L / K5-3 TRUE BR L / K3-3 SM=1L / K3-4 IR15 L
;              ; K5-2 PS(Z)(1)L

T0216:  MOV      #0216,R0          ;LOAD R0 WITH TEST NO.
          MOV      @#I0216,R1     ;LOAD R1 WITH TEST INSTRUCTION WORD

R0216:  CCC          ;CLEAR FLAGS
          SEZ          ;MAKE Z,C = 10

I0216:  BLOS      00216          ;TEST THE BLOS-IT SHOULD BR

E0216:  ERRORS     ;BLOS FAILED
          R0216      ;ERROR LOOP RETURN

00216:  SCOPE          ;CALL SCOPE LOOP UTILITY

```

```

015470 012700 000216
015474 013701 015504

015500 000257
015502 000264

015504 101402

015506 104005
015510 015500

015512 000004

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015514 012700 000217
015520 013701 015530

015524 000257
015526 000265

015530 101402

015532 104005
015534 015524

015536 000004

```
; *****  
; .SRTTL T0217 BLOS TEST WITH Z,C = 11  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ: [111,340,341,016] FC 1,7  
;ACT BUTS: 37(004)100,111 / 16(340)016,016  
;EXEC: [016] D = #00217  
;CODES: N:C = 0101  
;SYNC: B05J2 (-) T = 1.8 USEC  
;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K3-3 SM=1L / K3-4 IR15 L  
; K5-2 PS(C)(1)L  
  
T0217: MOV #0217,R0 ;LOAD R0 WITH TEST NO.  
MOV @#I0217,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
  
R0217: CCC ;CLEAR FLAGS  
265 ;MAKE Z,C = 11  
  
I0217: BLOS 00217 ;TEST THE BLOS-IT SHOULD BR  
  
E0217: ERRORS ;BLOS FAILED  
R0217 ;ERROR LOOP RETURN  
  
00217: SCOPE ;CALL SCOPE LOOP UTILITY
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015540 012700 000220
015544 013701 015552

015550 000257

015552 103002

015554 104000
015556 015550

015560 000004

```
; *****  
; .SBTTL T0220 BHS TEST WITH C = 0  
; *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; ROM SEQ: [111,340,341,016] FC 1,7  
; ACT BUTS: 37(004)100,111 / 16(340)016,016  
; EXEC: [016] D = #00220  
; CODES: N:C = 0000  
; SYNC: B05J2 (-) T = 1.8 USEC  
; KEY SIG: K5-3 BR INSTR L / K5-3 FALSE BR L / K3-3 SM=3L / K3-4 IRIS L  
T0220: MOV #0220,R0 ;LOAD R0 WITH TEST NO.  
MOV @#I0220,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
R0220: CCC ;CLEAR FLAGS  
I0220: BHS 00220 ;TEST THE BHS-IT SHOULD BR  
E0220: ERROR ;BHS FAILED  
R0220 ;ERROR LOOP RETURN  
00220: SCOPE ;CALL SCOPE LOOP UTILITY
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; *****
; .SBTTL T0221 BHIS TEST WITH C = 1
; *****

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [110,347,016] FC 1,7
; ACT BUTS: 37(004)100,110 / 16(110)016,016
; EXEC: NO BRANCH
; CODES: N:C = 0001
; SYNC: B05J2 (-) T = 1.4 USEC
; KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L / K3-4 IR15 L

015562 012700 000221
015566 013701 015576

015572 000257
015574 000261

015576 103001
015600 000402

015602 104000
015604 015572

015606 000004

T0221: MOV #0221,R0 ;LOAD R0 WITH TEST NO.
MOV @#I0221,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD

R0221: CCC ;CLEAR FLAGS
SEC ;MAKE C = 1

I0221: BHIS E0221 ;TEST THE BHIS-IT SHOULDN'T BR
BR 00221 ;GO TO SCOPE EXIT

E0221: ERROR ;BHIS FAILED
R0221 ;ERROR LOOP RETURN

00221: SCOPE ;CALL SCOPE LOOP UTILITY

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9521 ; *****
9522 ; .SBTTL T0222 BLO TEST WITH C = 0
9523 ; *****
9524
9525 ;MICROPROGRAMMING / LOGIC INFORMATION
9526
9527 ;ROM SEQ: [110,347,016] FC 1,7
9528
9529 ;ACT BUTS: 37(004)100,111 / 16(110)016,016
9530
9531 ;EXEC: NO BRANCH
9532
9533 ;CODES: N:C = 0000
9534
9535 ;SYNC: B05J2 (-) T = 1.4 USEC
9536
9537 ;KEY SIG: K5-3 BR INSTR L / K3-3 SM=3L / K3-4 IR15 L
9538
9539 015610 012700 000222 T0222: MOV #0222,R0 ;LOAD R0 WITH TEST NO.
9540 015614 013701 015622 MOV @#I0222,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9541
9542 015620 000257 R0222: CCC ;CLEAR FLAGS
9543
9544 015622 103401 I0222: BLO E0222 ;TEST THE BLO-IT SHOULDN'T BR
9545 015624 000402 BR 00222 ;GO TO SCOPE EXIT
9546
9547 015626 104005 E0222: ERRORS ;BLO FAILED
9548 015630 015620 R0222 ;ERROR LOOP RETURN
9549
9550 015632 000004 00222: SCOPE ;CALL SCOPE LOOP UTILITY
9551

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```

9552 ; *****
9553 .SBTTL T0223 BLO TEST WITH C = 1
9554 ; *****
9555
9556 ;MICROPROGRAMMING / LOGIC INFORMATION
9557
9558 ;ROM SEQ: [111,340,341,016] FC 1,7
9559
9560 ;ACT BUTS: 37(004)100,111 / 16(340)016,016
9561
9562 ;EXEC: [016] D = #00223
9563
9564 ;CODES: N:C = 0001
9565
9566 ;SYNC: B05J2 (-) T = 1.8 USEC
9567
9568 ;KEY SIG: K5-3 BR INSTR L / K5-3 TRUE BR L / K5-2 PS(C)(1)H / K3-3 SM=3L
9569 ; K3-4 IR15 L
9570
9571 015634 012700 000223 T0223: MOV #0223,R0 ;LOAD R0 WITH TEST NO.
9572 015640 013701 015650 MOV @#I0223,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9573
9574 015644 000257 R0223: CCC ;CLEAR FLAGS
9575 015646 000261 SEC ;MAKE C = 1
9576
9577 015650 103402 I0223: BLO 00223 ;TEST THE BLO-IT SHOULD BR
9578
9579 015652 104005 E0223: ERRORS ;BLO FAILED
9580 015654 015644 R0223 ;ERROR LOOP RETURN
9581
9582 015656 000004 00223: SCOPE ;CALL SCOPE LOOP UTILITY
9583
9584

```

L04

```

9585 ; *****
9586 ; .SBTTL T0224 SXT MODE 0 TEST WITH N = 0 AND C = 1
9587 ; *****
9588
9589 ;MICROPROGRAMMING / LOGIC INFORMATION
9590
9591 ;ROM SEQ: [132,360,001] FC 1,8
9592
9593 ;ACT BUTS: 37[004]100,132 / 27[132]000,001
9594
9595 ;EXEC: [132]ALUC=HLLHH :[360] D = 000000
9596
9597 ;CODES: [360] SPS=3 / N:C = 0101
9598
9599 ;SYNC: B05J2 (-) T = 1 USEC
9600
9601 ;KEY SIG: K3-3 DM=OL / K3-4 ONLAP INSTR H / K3-5 SXT L / K3-8 ALUM H
9602
9603 015660 012700 000224 T0224: MOV #0224,R0 ;LOAD R0 WITH TEST NO.
9604 015664 013701 015706 MOV #I0224,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9605 015670 005004 CLR R4 ;RESULT S. B = 0
9606 015672 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
9607 015676 012703 177777 R0224: MOV #-1,R3 ;INITIAL DEST. OP = 177777
9608 015702 000257 CCC ;CLEAR CODES
9609 015704 000263 263 ;N:C = 0011
9610
9611 015706 006703 I0224: SXT R3 ;TEST THE SXT
9612
9613 015710 100403 BMI E10224
9614 015712 001002 BNE E10224 ;DID SXT MAKE N:C = 0101?
9615 015714 102401 BVS E10224
9616 015716 103402 BCS A0224
9617
9618 015720 104000 E10224: ERROR ;SXT FAILED TO ALTER CODES PROPERLY
9619 015722 015676 R0224 ;ERROR LOOP RETURN
9620
9621 015724 005703 A0224: TST R3 ;DID RESULT = 0?
9622 015726 001402 BEQ 00224 ;BR IF IT DID
9623
9624 015730 104000 E20224: ERROR ;SXT DELIVERED WRONG RESULT TO R3
9625 015732 015676 R0224 ;ERROR LOOP RETURN
9626
9627 015734 000004 00224: SCOPE ;CALL SCOPE LOOP UTILITY
9628
9629

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M04

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 259
 DBQEAB.CMB T0224 SXT MODE 0 TEST WITH N = 0 AND C = 1

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9630 ; *****
9631 ; .SBTTL T0225 SXT MODE 0 TEST WITH N = 0 AND C = 0
9632 ; *****
9633 ;MICROPROGRAMMING / LOGIC INFORMATION
9634 ;ROM SEQ: [132,360,001] FC 1,8
9635 ;ACT BUTS: 37(004)100,132 / 27(132)000,001
9636 ;EXEC: [132]ALUC=HLLMH :[360] D = 700000
9637 ;CODES: [360] SPS=3 / N:C = 0100
9638 ;SYNC: B05J2 (-) T = 1 USEC
9639 ;KEY SIG: K3-3 DM=OL / K3-4 JVLAP INSTR F / K3-5 SXT L / K3-8 ALUM H
9640
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9647
9648 015736 012700 000225 T0225: MOV #0225,R0 ;LOAD R0 WITH TEST NO.
9649 015742 013701 015762 MOV @#I0225,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9650
9651 015746 005004 CLR R4 ;RESULT S / B = 0
9652 015750 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
9653 015754 012703 177777 R0225: MOV #-1,R3 ;INITIAL DEST OP = 177777
9654 015760 000257 CCC ;CLEAR N:C
9655
9656 015762 006703 I0225: SXT R3 ;TEST THE SXT
9657 015764 103002 BCC 00225 ;BR IF "C" STILL CLEAR
9658
9659 015766 104000 E0225: ERROR ;SXT AFFECTED "C" BIT
9660 015770 015754 R0225 ;ERROR LOOP RETURN
9661
9662 015772 000004 00225: SCOPE ;CALL SCOPE LOOP UTILITY
9663
9664

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 260
 DBQEAB.CMB T0225 SXT MODE 0 TEST WITH N = 0 AND C = 0

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9665 ; *****
9666 ; .SBTTL T0226 SXT ,MODE 0 TEST WITH N = 1 AND C = 1
9667 ; *****
9668
9669 ;MICROPROGRAMMING / LOGIC INFORMATION
9670
9671 ;ROM SEQ: [132,360,001] FC 1,8
9672
9673 ;ACT BUTS: 37(004)100,132 / 27(132)000,001
9674
9675 ;EXEC: [132]A UC=LL.LH :[360] D = 177777
9676
9677 ;CODES: [360] SPS=3 / N:C = 1001
9678
9679 ;SYNC: B05J2 (-) T = 1 USEC
9680
9681 ;KEY SIG: K3-3 DM=0L / K3-4 OVLAP INSTR H / K3-5 SXT L / K5-2 PS(N)(1)H
9682
9683 015774 012700 000226 T0226: MOV #0226,R0 ;LOAD R0 WITH TEST NO.
9684 016000 013701 016020 MOV #10226,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9685
9686 016004 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
9687 016010 012703 177703 MOV #177703,R3 ;DEST ADDR = 177703
9688 016014 005003 R0226: CLR R3 ;INITIAL DEST OP = 0
9689 016016 000277 SCC ;MAKE N:C = 1111
9690
9691 016020 006703 I0226: SXT R3 ;TEST THE SXT
9692
9693 016022 100003 BPL E10226
9694 016024 001402 BEQ E10226 ;N:C = 1001?
9695 016026 102401 BVS E10226
9696 016030 103402 BCS A0226
9697
9698 016032 104000 E10226: ERROR ;SXT FAILED TO ALTER CODES PROPERLY
9699 016034 016014 R0226 ;ERROR LOOP RETURN
9700
9701 016036 010305 A0226: MOV R3,R5 ;GET RESULT
9702 016040 005105 COM R5 ;COMPLEMENT IT-SHOULD GO TO 0
9703 016042 001402 BEQ 00226 ;BR IF RESULT OF SXT = 1
9704
9705 016044 104000 E20226: ERROR ;SXT DELIVERED WRONG RESULT.
9706 016046 016014 R0226 ;ERROR LOOP RETURN
9707
9708 016050 000004 00226: SCOPE ;CALL SCOPE LOOP UTILITY
9709
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; *****
; .SBTTL T0227 SXT MODE 0 TEST WITH N = 1 AND C = 0
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      (132,360,001) FC 1,8
;ACT BUTS:     37(004)100,132 / 27(132)000,001
;EXEC:         (132)ALUC=LLLHM : (360) D = 177777
;CODES:        (360) SPS=3 / N:C = 1000
;SYNC:         B05J2 (-) T = 1 USEC
;KEY SIG:      K3-3 DM = DL / K3-4 OVLAP INSTR H / K3-5 SXT L / K5-2 PS(N)(1) H
T0227:  MOV      #0227,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0227,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #-1,R4          ;RESULT S / B = 177777
        MOV      #177703,R2     ;DEST ADDR = 177703
R0227:  CLR      R3              ;INITIAL DEST OP = 0
        CCC      276            ;CLEAR FLAGS
        ;MAKE N:C = 1110
I0227:  SXT      R3              ;TEST THE SXT
        BCC     00227           ;BR IF "C" UNAFFECTED
E0227:  ERROR   R0227           ;SXT SET "C" BIT
        ;ERROR LOOP RETURN
00227:  SCOPE                    ;CALL SCOPE LOOP UTILITY

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016052 012700 000227
016056 013701 016100
016062 012704 177777
016066 012702 177703
016072 005003
016074 000257
016076 000276
016100 006703
016102 103002
016104 104000
016106 016072
016110 000004

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9747      ; *****
9748      ; .SBTTL T0230 SXT MODE 1 AND 2 TEST WITH N = 0 AND C = 1
9749      ; *****
9750
9751      ;MICROPROGRAMMING / LOGIC INFORMATION
9752
9753      ;ROM SEQ:(DM1) [161,266,267,234,367,375,016] FC 1,3,8
9754      ;          :(DM2) [162,260,267,234,367,375,016] FC 1,3,8
9755
9756      ;ACT BUTS:(DM1) 37(004)100,161 / 33(266)220,234 / 16(367)016,016
9757      ;          :(DM2) 37(004)100,162 / 33(260)220,234 / 16(367)016,016
9758
9759      ;EXEC:          [234]ALUC=HLLMH :[367] D = 000000
9760
9761      ;CODES:        [367] SPS=3 / N:C = 0101
9762
9763      ;SYNC:        B05J2 (-) T = 2.5 USEC
9764
9765      ;KEY SIG:     K3-3 DM=1L / K3-5 SXT L / K3-8 ALUM H
9766
9767 016112 012700 000230 T0230: MOV #0230,R0 ;LOAD R0 WITH TEST NO.
9768 016116 013701 016140      MOV #I10230,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9769
9770 016122 012702 067602      MOV #M0230,R2 ;R2 POINTS TO DEST OP
9771 016126 005004      CLR R4 ;RESULT S / B = 0
9772 016130 012712 177777 R10230: MOV #-1,(R2) ;INITIAL (DEST) = 177777
9773 016134 000257      CCC ;CLEAR CODES
9774 016136 000263      263 ;MAKE N:C = 0011
9775
9776 016140 006712 I10230: SXT (R2) ;TEST THE SXT - DM1
9777
9778 016142 100403      BMI E10230
9779 016144 001002      BNE E10230 ;N:C = 0101
9780 016146 102401      BVS E10230
9781 016150 103402      BCS A0230
9782
9783 016152 104000 E10230: ERROR ;SXT FAILED TO ALTER CODES PROPERLY
9784 016154 016130 R10230 ;ERROR LOOP RETURN
9785
9786 016156 005712 A0230: TST (R2) ;DID RESULT = 0?
9787 016160 001402      BEQ R20230 ;BR IF YES
9788
9789 016162 104000 E20230: ERROR ;SXT SHOULD HAVE ZEROED (DEST)
9790 016164 016130 R10230 ;ERROR LOOP RETURN
9791
9792 016166 012702 067602 R20230: MOV #M0230,R2 ;DEST ADDR = M0230
9793 016172 013701 016206      MOV #I20230,R1 ;LOAD R1 WITH TEST INSTR WORD
9794 016176 012712 177777      MOV #-1,(R2) ;INITIAL (DEST) = 177777
9795 016202 000257      CCC ;CLEAR CODES
9796 016204 000263      263 ;MAKE N:C = 0011
9797
9798 016206 006722 I20230: SXT (R2)+ ;TEST SXT - DM2
9799
9800 016210 100403      BMI E30230
9801 016212 001002      BNE E30230 ;N:C = 0101 ?
9802 016214 102401      BVS E30230
    
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 263
DBQEAB.CMB T0230 SXT MODE 1 AND 2 TEST WITH N = 0 AND C = 1

9803	016216	103402		BUS	B0230	
9804						
9805	016220	104000		E30230:	ERROR	:SXT FAILED TO ALTER CODES PROPERLY
9806	016222	016166			R20230	:ERROR LOOP RETURN ADDRESS
9807						
9808	016224	005737	067602	B0230:	TST	:DID RESULT GET ZEROED ?
9809	016230	001402			BEQ	:BR IF YES
9810					C0230	
9811	016232	104000		E40230:	ERROR	:SXT FAILED TO ZERO (DEST)
9812	016234	016166			R20230	:ERROR LOOP RETURN ADDRESS
9813						
9814	016236	020227	067604	C0230:	CMP	:WAS IT REALLY MODE 2 ?
9815	016242	001402			BEQ	:BR IF YES
9816					R2, #MBUFO+2	
9817	016244	104000		E50230:	ERROR	:SXT FAILED TO AUTO INCREMENT
9818	016246	016166			R20230	:ERROR LOOP RETURN ADDRESS
9819						
9820	016250	000004		00230:	SCOPE	:CALL SCOPE LOOP UTILITY
9821						
9822						

E05

.MAIN. MACY1: 27(732) 15-OCT-76 14:58 PAGE 264
DBGEAB.CMB T0230 SXT MODE 1 AND 2 TEST WITH N = 0 AND C = 1

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9823 ; *****
9824 ; .SBTTL T0231 SXT MODE 1 TEST WITH N = 0 AND C = 0
9825 ; *****
9826
9827 ;MICROPROGRAMMING / LOGIC INFORMATION
9828
9829 ;ROM SEQ: [161,266,267,234,367,375,016] FC 1,3,8
9830
9831 ;ACT BLTS: 37(004)100,161 / 33(266)220,234 / 16(367)016,016
9832
9833 ;EXEC: [234]ALUC=HLLH : [367] D = 000000
9834
9835 ;CODES: [367] SPS=3 / N:C = 0100
9836
9837 ;SYNC: B05J2 (-) T = 2.5 USEC
9838
9839 ;KEY SIG: K3-3 DM=1L / K3-5 SXT L / K3-8 ALUM H
9840
9841 016252 012700 000231 T0231: MOV #0231,R0 ;LOAD R0 WITH TEST NO.
9842 016256 013701 016276 ;LOAD R1 WITH TEST INSTRUCTION WORD
9843
9844 016262 005004 CLR R4 ;RESULT S / B = 0
9845 016264 012702 067602 MOV #MBUFD,R2 ;R2 POINTS TO DEST OP
9846 016270 012712 177777 R0231: MOV #-1,(R2) ;INITIAL [DEST] = 177777
9847 016274 000257 CCC ;CLEAR "C" BIT
9848
9849 016276 006712 I0231: SXT (R2) ;TEST THE SXT
9850 016300 103002 BCC 00231 ;BR IF "C" UNDISTURBED
9851
9852 016302 104000 E0231: ERROR ;SXT SET THE "C" BIT
9853 016304 016270 R0231 ;ERROR LOOP RETURN
9854
9855 016306 000004 00231: SCOPE ;CALL SCOPE LOOP UTILITY
9856
9857
```

F05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 265
 DBQEAB.CMB T0231 SXT MODE 1 TEST WITH N = 0 AND C = 0

```

9858 ; *****
9859 ; .SBTTL T0232 SXT MODE 1 TEST WITH N = 1 AND C = 1
9860 ; *****
9861 ;MICROPROGRAMMING / LOGIC INFORMATION
9862 ;ROM SEQ: [161,266,267,234,367,375,016] FC 1,3,8
9863 ;ACT BUTS: 37(004)100,161 / 33(266)220,234 / 16(367)016,016
9864 ;EXEC: [234]ALUC=LLLHM :[367] D = 177777
9865 ;CODES: [367] SPS=3 / N:C =1001
9866 ;SYNC: B05J2 (-) T = 2.5 USEC
9867 ;KEY SIG: K3-3 DM=1L / K3-5 SXT L / K5-2 PS(N)(1)H
9868
9869
9870
9871
9872
9873
9874
9875
9876 016310 012700 000232 T0232: MOV #0232,R0 ;LOAD R0 WITH TEST NO.
9877 016314 013701 016334 MOV #I0232,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9878
9879 016320 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
9880 016324 012702 067602 MOV #MBUFO,R2 ;R2 POINTS TO DEST OP
9881 016330 005012 R0232: CLR (R2) ;INITIAL [DEST] = 0
9882 016332 000277 SCC ;MAKE N:C = 1111
9883
9884 016334 006712 I0232: SXT (R2) ;TEST THE SXT
9885
9886 016336 100003 BPL E10232
9887 016340 001402 BEQ E10232 ;N:C = 1001?
9888 016342 102401 BVS E10232
9889 016344 103402 BCS A0232
9890
9891 016346 104000 E10232: ERROR ;SXT FAILED TO ALTER CODES PROPERLY
9892 016350 016330 R0232 ;ERROR LOOP RETURN
9893
9894 016352 021204 A0232: CMP (R2),R4 ;RESULT = 177777?
9895 016354 001402 BEQ 00232 ;BR IF YES
9896
9897 016356 104000 E20232: ERROR ;SXT DELIVERED WRONG RESULT
9898 016360 016330 R0232 ;ERROR LOOP RETURN
9899
9900 016362 000004 00232: SCOPE ;CALL SCOPE LOOP UTILITY
9901
9902

```

G05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 266
 DBQEAB.CMB T0232 SXT MODE 1 TEST WITH N = 1 AND C = 1

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9903      ; *****
9904      ; .SBTTL T0233 SXT MODE 1 TEST WITH N = 1 AND C = 0
9905      ; *****
9906
9907      ;MICROPROGRAMMING / LOGIC INFORMATION
9908
9909      ;ROM SEQ:      [161,266,267,234,367,375,016] FC 1,3,8
9910
9911      ;ACT BUTS:    37(004)100,161 / 33(266)220,234 / 16(367)016,016
9912
9913      ;EXEC:        [234]ALUC=LLLHH :[367] D = 177777
9914
9915      ;CODES:       [367] SPS=3 / N:C = 1000
9916
9917      ;SYNC:        B05J2 (-) T = 2.5 USEC
9918
9919      ;KEY SIG:     K3-3 DM=1L / K3-5 SXT L / K5-2 PS(N)(1)H
9920
9921      016364 012700 000233      T0233: MOV      #0233,R0      ;LOAD R0 WITH TEST NO.
9922      016370 013701 016412      MOV      @#I0233,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
9923
9924      016374 012704 177777      MOV      #-1,R4      ;RESULT S / B = 177777
9925      016400 012702 067602      MOV      #MBUFO,R2      ;R2 POINTS TO DEST OP
9926      016404 005012      R0233: CLR      (R2)      ;INITIAL [DEST] = 0
9927      016406 000257      CCC      ;CLEAR FLAGS
9928      016410 000276      276      ;MAKE N:C = 1110
9929
9930      016412 006712      I0233: SXT      (R2)      ;TEST THE SXT
9931      016414 103002      BCC      00233      ;BR IF "C" UNAFFECTED
9932
9933      016416 104000      E0233: ERROR      ;SXT SET THE "C" BIT
9934      016420 016404      R0233      ;ERROR LOOP RETURN
9935
9936      016422 000004      00233: SCOPE      ;CALL SCOPE LOOP UTILITY
9937
9938
  
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H05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 267
DBQEAB.CMB T0233 SXT MODE 1 TEST WITH N = 1 AND C = 0

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9939 ; *****
9940 ; .SBTTL T0234 SWAB MODE 0 TEST WITH POS. RESULT
9941 ; *****
9942
9943 ;MICROPROGRAMMING / LOGIC INFORMATION
9944
9945 ;ROM SEQ: [134,135,360,001] FC 1,7,8
9946
9947 ;ACT BUTS: 37[004]100,134 / 27[135]000,001
9948
9949 ;EXEC: [135]ALUC=HMLHL :[360] D = 177400
9950
9951 ;CODES: [360] SPS=3 / N:C = 0100
9952
9953 ;SYNC: B05J2 (-) T = 1 USEC
9954
9955 ;KEY SIG: K2-5 SBML1 (1) H / K2-5 SMBLO (1) L / K2-5 SBMH1 (1) H
9956 ; / K2-5 SBMHO (1) L / K3-3 DM=OL / K3-5 SWAB H / K3-4 OVLAP INS
9957
9958 016424 012700 000234 T0234: MOV #0234,R0 ;LOAD R0 WITH TEST NO.
9959 016430 013701 016466 MOV #I0234,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
9960
9961 016434 032737 000020 066642 BIT #20,#BPTLOC ;BREAKPOINT HALT SET ??
9962 016442 001401 BEQ .+4 ;BR IF NOT
9963 016444 000000 HALT ;BREAK - DEPRESS CONTINUE TO RESTART
9964 016446 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
9965 016452 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
9966 016456 012703 000377 R0234: MOV #377,R3 ;INITIAL DEST OP = 377
9967 016462 000257 CCC ;CLEAR FLAGS
9968 016464 000273 273 ;MAKE N:C = 1011
9969
9970 016466 000303 I0234: SWAB R3 ;TEST THE SWAB
9971
9972 016470 100403 BMI E10234
9973 016472 001002 BNE E10234 ;N:C = 0100
9974 016474 102401 BVS E10234
9975 016476 103002 BCC A0234
9976
9977 016500 104000 E10234: ERROR ;SWAB FAILED TO ALTER CODES PROPERLY
9978 016502 016456 R0234 ;ERROR LOOP RETURN
9979
9980 016504 020403 A0234: CMP R4,R3 ;CORRECT RESULT?
9981 016506 001402 BEQ 00234 ;BR IF YES
9982
9983 016510 104000 E20234: ERROR ;SWAB DELIVERED WRONG RESULT
9984 016512 016456 R0234 ;ERROR LOOP RETURN
9985
9986 016514 000004 00234: SCOPE ;CALL SCOPE LOOP UTILITY
9987
9988
```

```

9989 ; *****
9990 .SBTTL T0235 SWAB MODE 0 TEST WITH NEG. RESULT
9991 ; *****
9992
9993 ;MICROPROGRAMMING / LOGIC INFORMATION
9994
9995 ;ROM SEQ: [174,135,360,001] FC 1,7,8
9996
9997 ;ACT BUTS: 371004)100,134 / 27(135)000,001
9998
9999 ;EXEC: [135]ALUC=MHLHL :[360] D = 000377
10000
10001 ;CODES: [360] SPS=3 / N:C = 1000
10002
10003 ;SYNC: B05J2 (-) T = 1 USEC
10004
10005 ;KEY SIG: K2-5 SBML1 (1) H / K2-5 SBMLO (1) L / K2-5 SBMH1 (1) H
10006 ; / K2-5 SBMHO (1) L / K3-3 DM=OL / K3-5 SWAB H / K3-4 0
10007
10008 016516 012700 000235 T0235: MOV #0235,R0 ;LOAD R0 WITH TEST NO.
10009 016522 013701 016546 MOV #I0235,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10010
10011 016526 012704 000377 MOV #377,R4 ;RESULT S / B = 377
10012 016532 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
10013 016536 012703 177400 R0235: MOV #177400,R3 ;INITIAL DEST OP = 177400
10014 016542 000257 CCC ;CLEAR FLAGS
10015 016544 000267 267 ;MAKE N:C = 0111
10016
10017 016546 000303 I0235: SWAB R3 ;TEST THE SWAB
10018
10019 016550 100003 BPL E10235
10020 016552 001402 BEQ E10235 ;DID SWAB MAKE N:C = 1000
10021 016554 102401 BVS E10235
10022 016556 103002 BCC A0235
10023
10024 016560 104000 E10235: ERROR ;SWAB FAILED TO ALTER CODES PROPERLY
10025 016562 016536 R0235 ;ERROR LOOP RETURN
10026
10027 016564 020403 A0235: CMP R4,R3 ;DID SWAB DELIVER CORRECT RESULT?
10028 016566 001402 BEQ 00235 ;BR IF OK
10029
10030 016570 104000 E20235: ERROR ;SWAB DELIVERED WRONG RESULT
10031 016572 016536 R0235 ;ERROR LOOP RETURN
10032
10033 016574 000004 00235: SCOPE ;CALL SCOPE LOOP UTILITY
10034
10035

```

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10036 ; *****
10037 ; .SBTTL T0236 SWAB MODE 1 AND 2 TEST WITH POS. RESULT
10038 ; *****
10039 ;
10040 ;MICROPROGRAMMING / LOGIC INFORMATION
10041 ;
10042 ;ROM SEQ:(DM1) [161,266,267,236,367,375,016] FC 1,3,9,8
10043 ; : (DM2) [162,260,267,236,367,375,016] FC 1,3,9,8
10044 ;
10045 ;ACT BUTS:(DM1) 37[004]100,161 / 33[266]220,236 / 16[367]016,016
10046 ; (DM2) 37[004]100,162 / 33[260]220,236 / 16[367]016,016
10047 ;
10048 ;EXEC: [236]ALUC=MHLHL :[367] D = 177400
10049 ;
10050 ;CODES: [367] SPS=3 / N:C = 0100
10051 ;
10052 ;SYNC: B05J2 (-) T = 2 USEC
10053 ;
10054 ;KEY SIG: K2-5 SBML1 (1) H / K2-5 SBMLO (1) L / K2-5 SBMH1 (1) H / K2-
10055 ; K3-3 DM=1L / K3-5 SWAB H
10056
10057 016576 012700 000236 T0236: MOV #0236,R0 ;LOAD R0 WITH TEST NO.
10058 016602 013701 016626 MOV #I10236,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10059
10060 016606 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
10061 016612 012702 067602 MOV #MBUFO,R2 ;R2 POINTS TO DEST OP
10062 016616 012712 000377 R10236: MOV #377,(R2) ;SET UP DEST OP = 377
10063 016622 000257 CCC ;CLEAR FLAGS
10064 016624 000273 273 ;MAKE N:C = 1011
10065
10066 016626 000312 I10236: SWAB (R2) ;TEST THE SWAB - DM1
10067
10068 016630 100403 BMI E10236
10069 016632 001002 BNE E10236 ;N:C = 0100
10070 016634 102401 BVS E10236
10071 016636 103002 BCC A0236
10072
10073 016640 104000 E10236: ERROR ;SWAB FAILED TO ALTER CODES PROPERLY
10074 016642 016616 R10236 ;ERROR LOOP RETURN
10075
10076 016644 020412 A0236: CMP R4,(R2) ;CORRECT RESULT?
10077 016646 001402 BEQ R20236 ;BR IF OK
10078
10079 016650 104000 E20236: ERROR ;SWAB DELIVERED WRONG RESULT
10080 016652 016616 R10236 ;ERROR LOOP RETURN
10081
10082 016654 013701 016674 R20236: MOV #I20236,R1 ;LOAD R1 WITH TEST INSTR. WORD
10083 016660 012702 067602 MOV #MBUFO,R2 ;R2 POINTS TO DEST OP
10084 016664 012712 000377 MOV #377,(R2) ;[DEST] = 000377
10085 016670 000257 CCC ;CLEAR FLAGS
10086 016672 000273 273 ;MAKE N:C = 1011
10087
10088 016674 000322 I20236: SWAB (R2)+ ;TEST THE SWAB - DM2
10089
10090 016676 100403 BMI E30236 ;N:C = 0100
10091 016700 001002 BNE E30236
    
```


K05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 270
 DBQEAB.CMB T0236 SWAB MODE 1 AND 2 TEST WITH POS. RESULT

10092	016702	102401		BVS	E30236	
10093	016704	103002		BCC	B0236	
10094						
10095	016706	104000		E30236:	ERROR	;SWAB FAILED TO SET CODES PROPERLY
10096	016710	016654			R20236	;ERROR LOOP RETURN ADDRESS
10097						
10098	016712	020437	067602	B0236:	CMP	R4,0#MBUFO
10099	016716	001402			BEQ	C0236
10100						;CORRECT RESULT ?
10101	016720	104000		E40236:	ERROR	;SWAB DELIVERED THE WRONG RESULT
10102	016722	016654			R20236	;ERROR LOOP RETURN ADDRESS
10103						
10104	016724	020227	067604	C0236:	CMP	R2,#MBUFO+2
10105	016730	001402			BEQ	00236
10106						;DID AUTO INCREMENT OCCUR ?
10107	016732	104000		E50236:	ERROR	;SWAB FAILED TO AUTO INC REG.
10108	016734	016654			R20236	;ERROR LOOP RETURN ADDRESS
10109						
10110	016736	000004		00236:	SCOPE	;CALL SCOPE LOOP UTILITY
10111						
10112						

```

10113 ; *****
10114 ; .SBTTL T0237 SWAB MODE 1 TEST WITH NEG. RESULT
10115 ; *****
10116 ;MICROPROGRAMMING / LOGIC INFORMATION
10117 ;ROM SEQ: [161,266,267,236,367,375,016] FC 1,3,9,8
10118 ;ACT BUTS: 37[004]100,134 / 33[266]220,236 / 16[367]016,016
10119 ;EXEC: [236]ALUC=HHLHL :[367] D = 000377
10120 ;CODES: [367] SPS=3 / N:C = 1000
10121 ;SYNC: B05J2 (-) T = 2 USEC
10122 ;KEY SIG: K2-5 SBML1 (1) H / K2-5 SBML0 (1) L / K2-5 SBMH2 (1) H / K2-5 SBMH
10123 ; K3-3 DM=1L / K3-5 SWAB H
10124
10125
10126
10127
10128
10129
10130
10131
10132 016740 012700 000237 T0237: MOV #0237,R0 ;LOAD R0 WITH TEST NO.
10133 016744 013701 016770 MOV #I0237,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10134
10135 016750 012704 000377 MOV #377,R4 ;RESULT S / B = 377
10136 016754 012702 067602 MOV #MBOF0,R2 ;R2 POINTS TO DEST OP
10137 016760 012712 177400 R0237: MOV #177400,(R2) ;SET UP DEST. OP = 177400
10138 016764 000257 CCC ;CLEAR FLAGS
10139 016766 0002E7 267 ;MAKE N:C = 0111
10140
10141 016770 000312 I0237: SWAB (R2) ;TEST THE SWAB
10142
10143 016772 100003 BPL E10237
10144 016774 001402 BEQ E10237 ;N:C = 1000?
10145 016776 102401 BVS E10237
10146 017000 103002 BCC A0237
10147
10148 017002 104000 E10237: ERROR ;SWAB FAILED TO ALTER CODES PROPERLY
10149 017004 016760 R0237 ;ERROR LOOP RETURN
10150
10151 017006 020412 A0237: CMP R4,(R2) ;CORRECT RESULT?
10152 017010 001402 BEQ 00237 ;BR IF YES
10153
10154 017012 104000 E20237: ERROR ;SWAB DELIVERED WRONG RESULT
10155 017014 016760 R0237 ;ERROR LOOP RETURN
10156
10157 017016 000004 00237: SCOPE ;CALL SCOPE LOOP UTILITY
10158
10159

```

M05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 272
 DBQEAB.CMB T0237 SWAB MODE 1 TEST WITH NEG. RESULT

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10160 ; *****
10161 ; .SBTTL T0240 NEG MODE 0 TEST : [DEST] = 0
10162 ; *****
10163
10164 ;MICROPROGRAMMING / LOGIC INFORMATION
10165
10166 ;ROM SEQ: [105,372,360,001] FC 1,7,8
10167
10168 ;ACT BUTS: 37[004]100,105 / 31[105]360,360 / 27[372]000,001
10169
10170 ;EXEC: [372]ALUC=LLHHL :[360] D = 000000
10171
10172 ;CODES: [360] SPS=3 / N:C = 0100
10173
10174 ;SYNC: B05J2 (-) T = 1 USEC
10175
10176 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=0L / K3-4 NEG L / K3-4 OVLAP INSTR H
10177
10178 017020 012700 000240 T0240: MOV #0240,R0 ;LOAD R0 WITH TEST NO.
10179 017024 013701 017044 MOV #I0240,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10180
10181 017030 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
10182 017034 005004 CLR R4 ;RESULT S / B = 0
10183 017036 005003 R0240: CLR R3 ;INITIAL [DEST] = 0
10184 017040 000257 CCC ;CLEAR FLAGS
10185 017042 000273 273 ;MAKE N:C = 1011
10186
10187 017044 005403 I0240: NEG R3 ;TEST THE NEG
10188
10189 017046 100403 BMI E10240
10190 017050 001002 BNE E10240 ;N:C = 0100 ONLY "Z" SET?
10191 017052 102401 BVS E10240
10192 017054 103002 BCC A0240
10193
10194 017056 104000 E10240: ERROR ;NEG FAILED TO ALTER CODES PROPERLY
10195 017060 017036 R0240 ;ERROR LOOP RETURN
10196
10197 017062 020304 A0240: CMP R3,R4 ;WAS RESULT = 0
10198 017064 001402 BEQ 00240 ;BR IF YES
10199
10200 017066 104000 E20240: ERROR ;NEG DELIVERED WRONG RESULT
10201 017070 017036 R0240 ;ERROR LOOP RETURN
10202
10203 017072 000004 00240: SCOPE ;CALL SCOPE LOOP UTILITY
10204
10205

```

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10206 ; *****
10207 ; .SBTTL T0241 NEG MODE 0 TEST : (DEST) > 0
10208 ; *****
10209
10210 ;MICROPROGRAMMING / LOGIC INFORMATION
10211
10212 ;ROM SEQ: [105,372,360,001] FC 1,7,8
10213
10214 ;ACT BUTS: 37(004)100,105 / 31(105)360,360 / 27(372)000,001
10215
10216 ;EXEC: [372]ALUC=LLHHL :[360] D = 177776
10217
10218 ;CODES: [360] SPS=3 / N:C = 1001
10219
10220 ;SYNC: B05J2 (-) T = 1 USEC
10221
10222 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=0L / K3-4 NEG L / K3-4 OVLAP INSTR H
10223
10224 017074 012700 000241 T0241: MOV #0241,R0 ;LOAD R0 WITH TEST NO.
10225 017100 013701 017124 MOV #I0241,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10226
10227 017104 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
10228 017110 012704 177776 MOV #-2,R4 ;RESULT S / B = 177776
10229 017114 012703 000002 R0241: MOV #2,R3 ;INITIAL (DEST) = 2
10230 017120 000257 CCC ;CLEAR FLAGS
10231 017122 000266 266 ;MAKE N:C = 0110
10232
10233 017124 005403 I0241: NEG R3 ;TEST THE NEG
10234
10235 017126 100003 BPL E10241
10236 017130 001402 BEQ E10241 ;DID N:C = 1001?
10237 017132 102401 BVS E10241
10238 017134 103402 BCS A0241
10239
10240 017136 104000 E10241: ERROR ;NEGATE FAILED TO ALTER CODES PROPERLY
10241 017140 017114 R0241 ;ERROR LOOP RETURN
10242
10243 017142 020304 A0241: CMP R3,R4 ;CORRECT RESULT?
10244 017144 001402 BEQ 00241 ;BR IF YES
10245
10246 017146 104000 E20241: ERROR ;NEG DELIVERED WRONG RESULT
10247 017150 017114 R0241 ;ERROR LOOP RETURN
10248
10249 017152 000004 00241: SCOPE ;CALL SCOPE LOOP UTILITY
10250
10251
    
```

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10252 ; *****
10253 .SBTTL T0242 NEG MODE 0 TEST : (DEST) < 0
10254 ; *****
10255 ;MICROPROGRAMMING / LOGIC INFORMATION
10256 ;ROM SEQ: [105,372,360,001] FC 1,7,8
10257
10258 ;ACT BUTS: 37(1004)100,105 / 31(105)360,360 / 27(372)1000,001
10259
10260 ;EXEC: [372]ALUC=LLHML :[360] D = 000002
10261
10262 ;CODES: [360] SPS=3 / N:C = 0001
10263
10264 ;SYNC: B05J2 (-) T = 1 USEC
10265
10266 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=0L / K3-4 NEG L / K3-4 OVLAP INSTR H
10267
10268
10269
10270 017154 012700 000242 T0242: MOV #0242,R0 ;LOAD R0 WITH TEST NO.
10271 017160 013701 017204 MOV #10242,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10272
10273 017164 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
10274 017170 012704 000002 MOV #2,R4 ;RESULT S / B = 2
10275 017174 012703 177776 R0242: MOV #2,R3 ;INITIAL (DEST) = 177776
10276 017200 000257 CCC ;CLEAR FLAGS
10277 017202 000276 276 ;MAKE N:C = 1110
10278
10279 017204 005403 I0242: NEG R3 ;TEST THE NEG
10280
10281 017206 100403 BMI E10242
10282 017210 001402 BEQ E10242 ;N·C = 0001?
10283 017212 102401 BVS E10242
10284 017214 103402 BCS A0242
10285
10286 017216 104000 E10242: ERROR ;NEG FAILED TO ALTER CODES PROPERLY
10287 017220 017174 R0242 ;ERROR LOOP RETURN
10288
10289 017222 020304 A0242: CMP R3,R4 ;RESULT = 2?
10290 017224 001402 BEQ 00242 ;BR IF YES
10291
10292 017226 104000 E20242: ERROR ;NEG DELIVERED WRONG RESULT
10293 017230 017174 R0242 ;ERROR LOOP RETURN
10294
10295 017232 000004 00242: SCOPE ;CALL SCOPE LOOP UTILITY
10296
10297

```

```

10298 ; *****
10299 .SBTTL T0243 NEG MODE 0 TEST : (DEST) = 100000 (8)
10300 ; *****
10301 ;MICROPROGRAMMING / LOGIC INFORMATION
10302 ;ROM SEQ: (105,372,360,001) FC 1,7,8
10303 ;ACT BUTS: 37(1004)100,105 / 31(105)360,360 / 27(372)1000,001
10304 ;EXEC: (372)ALUC=LLMHL : (360) D = 100000
10305 ;CODES: (360) SPS=3 / N:C = 1011
10306 ;SYNC: B05J2 (-) T = 1 USEC
10307 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=DL / K3-4 NEG L / K3-4 OVLAP INSTR H
10308
10309 T0243: MOV #0243,R0 ;LOAD R0 WITH TEST NO.
10310 MOV #I0243,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10311
10312 MOV #177703,R2 ;DEST ADDR = 177703
10313 MOV #100000,R4 ;RESULT S / B = 100000
10314 R0243: MOV R4,R3 ;INITIAL (DEST) = 100000
10315 CCC ;CLEAR FLAGS
10316 SEZ ;MAKE N:C = 01000
10317
10318 I0243: NEG R3 ;TEST THE NEG
10319
10320 BPL E10243
10321 BEQ E10243 ;N:C = 1011?
10322 BVC E10243
10323 BCS A0243
10324
10325 E10243: ERROR ;NEG FAILED TO ALTER CODES PROPERLY
10326 R0243 ;ERROR LOOP RETURN
10327
10328 A0243: CMP R3,R4 ;RESULT STILL 100000?
10329 BEQ 00243 ;BR IF YES
10330
10331 E20243: ERROR ;NEG DELIVERED WRONG RESULT
10332 R0243 ;ERROR LOOP RETURN
10333
10334 00243: SCOPE ;CALL SCOPE LOOP UTILITY
10335
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10343

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10344 ; *****
10345 ; .SBTTL T0244 NEG MODE 1 TEST : [DEST] = 0
10346 ; *****
10347 ; MICROPROGRAMMING / LOGIC INFORMATION
10348 ; ROM SEQ: [161,266,267,221,367,375,016] FC 1,3,9,8
10349 ; ACT BUTS: 37(004)100,161 / 33(266)220,221 / 16(367)016,016
10350 ; EXEC: [221]ALUC=LLHML : [367] D = 000000
10351 ; CODES: [367] SPS=3 / N:C = 0100
10352 ; SYNC: BOSJ2 (-) T = 2 USEC
10353 ; KEY SIG: K3-8 CIN00 L / K3-3 DM=1L / K3-4 NEG L
10354
10355
10356
10357
10358
10359
10360
10361
10362 017312 012700 000244 T0244: MOV #0244,R0 ;LOAD R0 WITH TEST NO.
10363 017316 013701 017336 MOV #I0244,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10364
10365 017322 012702 067602 MOV #MBUFO,R2 ;R2 POINTS TO DEST OP
10366 017326 005004 CLR R4 ;RESULT S / B = 0
10367 017330 005012 R0244: CLR (R2) ;INITIAL [DEST] = 0
10368 017332 000257 CCC ;CLEAR FLAGS
10369 017334 000273 273 ;MAKE N:C = 1011
10370
10371 017336 005412 I0244: NEG (R2) ;TEST THE NEG
10372
10373 017340 100403 BMI E10244
10374 017342 001002 BNE E10244 ;N:C = 0100?
10375 017344 102401 BVS E10244
10376 017346 103002 BCC A0244
10377
10378 017350 104000 E10244: ERROR ;NEG FAILED TO ALTER CODES PROPERLY
10379 017352 017330 R0244 ;ERROR LOOP RETURN
10380
10381 017354 021204 A0244: CMP (R2),R4 ;RESULT = 0?
10382 017356 001402 BEQ 00244 ;BR IF YES
10383
10384 017360 104000 E20244: ERROR ;NEG DELIVERED WRONG RESULT
10385 017362 017330 R0244 ;ERROR LOOP RETURN
10386
10387 017364 000004 00244: SCOPE ;CALL SCOPE LOOP UTILITY
10388
10389

```

E06

.MAIN. MACY11 27:732) 15-OCT-76 14:58 PAGE 277
DB2EAB.CMB T0244 NEG MODE 1 TEST : [DEST] = 0

```
10390 ; *****  
10391 ; .SBTTL T0245 NEG MODE 1 TEST : [DEST] > 0  
10392 ; *****  
10393  
10394 ; MICROPROGRAMMING / LOGIC INFORMATION  
10395  
10396 ; ROM SEQ: [161,266,267,221,367,375,016] FC 1,3,9,8  
10397  
10398 ; ACT BUTS: 37(004)100,161 / 33(266)220,221 / 16(367)016,016  
10399  
10400 ; EXEC: [221]ALUC=LLHML : [367] D = 177776  
10401  
10402 ; CODES: [367] SPS=3 / N:C = 1001  
10403  
10404 ; SYNC: B05J2 (-) T = 2 USEC  
10405  
10406 ; KEY SIG: K3-8 CIN00 L / K3-3 DM=1L / K3-4 NEG L  
10407  
10408 017366 012700 000245 T0245: MOV #0245,R0 ;LOAD R0 WITH TEST '10.  
10409 017372 013701 017416 MOV #I0245,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
10410  
10411 017376 012702 067602 MOV #MBUF0,R2 ;R2 POINTS TO DEST OP  
10412 017402 012704 177776 MOV #-2,R4 ;RESULT S / B = 177776  
10413 017406 012712 000002 R0245: MOV #2,(R2) ;INITIAL [DEST] = 2  
10414 017412 000257 CCC ;CLEAR FLAGS  
10415 017414 000266 266 ;MAKE N:C = 0110  
10416  
10417 017416 005412 I0245: NEG (2) ;TEST THE NEG  
10418  
10419 017420 100003 BPL E10245  
10420 017422 001402 BEQ E10245 ;N:C = 1001?  
10421 017424 102401 BVS E10245  
10422 017426 103402 BCS A0245  
10423  
10424 017430 104000 E10245: ERROR ;NEG FAILED TO ALTER CODES PROPERLY  
10425 017432 017406 R0245 ;ERROR LOOP RETURN  
10426  
10427 017434 021204 A0245: CMP (R2),R4 ;CORRECT RESULT?  
10428 017436 001402 BEQ 00245 ;BR IF YES  
10429  
10430 017440 104000 E20245: ERROR ;NEG DELIVERED WRONG RESULT  
10431 017442 017406 R0245 ;ERROR LOOP RETURN  
10432  
10433 017444 000004 00245: SCOPE ;CALL SCOPE LOOP UTILITY  
10434  
10435
```


F06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 278
DBJERB.CMB T0245 NEG MODE 1 TEST : [DEST] > 0

```
10436 ; *****
10437 ; .SBTTL T0246 NEG MODE 1 TEST : [DEST] < 0
10438 ; *****
10439 ;MICROPROGRAMMING / LOG.C INFORMATION
10440
10441 ;ROM SEQ: [161,266,267,221,367,375,016] FC 1,3,9,8
10442
10443 ;ACT BUTS: 37[004]100,161 / 33[266]220,221 / 16[367]016,016
10444
10445 ;EXEC: [221]ALUC=LLHML :[367] D = 000002
10446
10447 ;CODES: [367] SPS=3 / N:C = 0001
10448
10449 ;SYNC: B05J2 (-) T = 2 USEC
10450
10451 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=1L / K3-4 NEG L
10452
10453 T0246: MOV #0246,R0 ;LOAD R0 WITH TEST NO.
10454 MOV #I0246,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10455
10456 MOV #MBUF0,R2 ;R2 POINTS TO DEST OP
10457 MOV #2,R4 ;RESULT S / B = 2
10458 R0246: MOV #-2,(R2) ;INITIAL [DEST] = 177776
10459 CCC ;CLEAR FLAGS
10460 276 ;MAKE N:C = 1110
10461
10462 I0246: NEG (R2) ;TEST THE NEG
10463
10464 BMI E10246
10465 BEQ E10246 ;N:C = 0001?
10466 BVS E10246
10467 BCS A0246
10468
10469 E10246: ERROR ;NEG FAILED TO ALTER CODES PROPERLY
10470 R0246 ;ERROR LOOP RETURN
10471
10472 A0246: CMP (R2),R4 ;CORRECT RESULT = 2?
10473 BEQ 00246 ;BR IF YES
10474
10475 E20246: ERROR ;NEG DELIVERED WRONG RESULT
10476 R0246 ;ERROR LOOP RETURN
10477
10478 00246: SCOPE ;CALL SCOPE LOOP UTILITY
10479
10480
10481
```

```

10482 ; *****
10483 ; .SBTTL T0247 NEG MODE 1 TEST: [DEST] = 100000 (8)
10484 ; *****
10485 ;MICROPROGRAMMING / LOGIC INFORMATION
10486 ;ROM SEQ: [161,266,267,221,367,375,016] FC 1,3,9,8
10487 ;ACT BUTS: 37[004]100,161 / 33[266]220,221 / 16[367]016,016
10488 ;EXEC: [221]ALUC=LLHHL :[367] D = 100000
10489 ;CODES: [367] SPS=3 / N:C = 1011
10490 ;SYNC: B05J2 (-) T = 2 USEC
10491 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=1L / K3-4 NEG L
10492
10493
10494
10495
10496
10497
10498
10499
10500 017526 012700 000247 T0247: MOV #0247,R0 ;LOAD R0 WITH TEST NO.
10501 017532 013701 017554 MOV #I0247,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10502
10503 017536 012702 067602 MOV #MBUFD,R2 ;R2 POINTS TO DEST OP
10504 017542 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
10505 017546 010412 R0247: MOV R4,(R2) ;INITIAL [DEST] = 100000
10506 017550 000257 CCC ;CLEAR FLAGS
10507 017552 000264 SEZ ;MAKE N:Z = 0100
10508
10509 017554 005412 I0247: NEG (R2) ;TEST THE NEG
10510
10511 017556 100003 BPL E10247
10512 017560 001402 BEQ E10247 ;N:C = 1011?
10513 017562 102001 BVC E10247
10514 017564 103402 BCS A0247
10515
10516 017566 104000 E10247: ERROR ;NEG FAILED TO ALTER CODES PROPERLY
10517 017570 017546 R0247 ;ERROR LOOP RETURN
10518
10519 017572 021204 A0247: CMP (R2),R4 ;CORRECT RESULT = 100000?
10520 017574 001402 BEQ 00247 ;BR IF YES
10521
10522 017576 104000 E20247: ERROR ;NEG DELIVERED WRONG RESULT
10523 017600 017546 R0247 ;ERROR LOOP RETURN
10524
10525 017602 000004 00247: SCOPE ;CALL SCOPE LOOP UTILITY
10526
10527
    
```

H06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 280
 DBQEAB.CMB T0247 NEG MODE 1 TEST: [DEST] = 10000 (8)

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10528 ; *****
10529 ; .SBTTL T0250 ROR TEST - DMO - <N:C> = 1110
10530 ; *****
10531 ;MICROPROGRAMMING / LOGIC INFORMATION
10532
10533 ;ROM SEQ: [106,271,274,001] FC 1,9
10534
10535 ;ACT BUTS: 37[004]100,106 / 27[271]1000,001
10536
10537 ;EXEC: [106]ALUC=LLLLL :[271] D = 052525
10538
10539 ;CODES: [106] SPS=1, [274] SPS=2 / N:C = 0000
10540
10541 ;SYNC: B05J2 (-) T = 1.25 USEC
10542
10543 ;KEY SIG: K2-5 SDM1 (1) H / K2-5 SDM0 (1) H / K3-3 DM=OL / K3-4 OVLAP INSTR
10544 ; K3-8 ROT (R)L / K3-8 ROTSHF (R)H
10545
10546
10547 017604 012700 000250 T0250: MOV #0250,R0 ;LOAD R0 WITH TEST NO.
10548 017610 013701 017634 ;LOAD R1 WITH TEST INSTRUCTION WORD
10549 017614 012702 177703 ;DEST ADDR = R3
10550 017620 012704 052525 ;RESULT S / B = 52525
10551 017624 012703 125252 R0250: MOV #125252,R3 ;[DEST] = 125252
10552 017630 000257 ;CLEAR FLAGS
10553 017632 000276 ;N:C = 1111
10554
10555 017634 006003 I0250: ROR R3 ;TEST THE ROR
10556
10557 017636 100403 BMI E10250 ;N:C = 0000 ?
10558 017640 001402 BEQ E10250
10559 017642 102401 BVS E10250
10560 017644 103002 BCC A0250
10561
10562 017646 104005 E10250: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10563 017650 017624 R0250 ;ERROR LOOP RETURN ADDRESS
10564
10565 017652 020403 A0250: CMP R4,R3 ;CORRECT RESULT ?
10566 017654 001402 BEQ 00250 ;BR IF YES
10567
10568 017656 104000 E20250: ERROR ;ROR DELIVERED THE WRONG RESULT
10569 017660 017624 R0250 ;ERROR LOOP RETURN
10570
10571 017662 000004 00250: SCOPE ;CALL THE SCOPE LOOP UTILITY
10572

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10573 ; *****
10574 ; .SBTTL T0251 ROR TEST - DMO - <N:C> = 1000
10575 ; *****
10576 ;MICROPROGRAMMING / LOGIC INFORMATION
10577
10578 ;ROM SEQ: [106,271,274,001] FC 1,9
10579
10580 ;ACT BUTS: 37(004)100,106 / 27(271)000,001
10581
10582 ;EXEC: [106]ALUC=LLLLL :[271] D = 000000
10583
10584 ;CODES: [106] SPS=1, [274] SPS=2 / N:C = 0111
10585
10586 ;SYNC: B05J2 (-) T = 1.25 USEC
10587
10588 ;KEY SIG: K2-5 SDM1 (1) H / K2-5 SDM0 (1) H / K3-3 DM=DL / K3-8 ROT (R)H
10589 ; K3-8 ROTSHF (R)H / K3-4 OVLAP INSTR H
10590
10591
10592 017664 012700 000251 T0251: MOV #0251,R0 ;LOAD R0 WITH TEST NO.
10593 017670 013701 017712 ;LOAD R1 WITH TEST INSTRUCTION WORD
10594 017674 012702 177703 ;DEST ADDR = R3
10595 017700 005004 ;RESULT S / B = 000000
10596 017702 012703 000001 R0251: MOV #1,R3 ;[DEST] = 1
10597 017706 000257 ;CLEAR FLAGS
10598 017710 000270 ;N:C = 1000
10599
10600 017712 006003 I0251: ROR R3 ;TEST THE ROR
10601
10602 017714 100403 ;N:C = 0111 ?
10603 017716 001002 BMI E10251
10604 017720 102001 BNE E10251
10605 017722 103402 BVC E10251
10606 BCS A0251
10607 017724 104005 E10251: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10608 017726 017702 R0251 ;ERROR LOOP RETURN ADDRESS
10609
10610 017730 020403 A0251: CMP R4,R3 ;CORRECT RESULT ?
10611 017732 001402 BEQ 00251 ;BR IF YES
10612
10613 017734 104000 E20251: ERROR ;ROR DELIVERED THE WRONG RESULT
10614 017736 017702 R0251 ;ERROR LOOP RETURN
10615
10616 017740 000004 00251: SCOPE ;CALL THE SCOPE LOOP UTILITY
10617
    
```

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10618 ; *****
10619 ; .SBTTL T0252 ROR TEST - DMO - <N:C> = 0111
10620 ; *****
10621 ; MICROPROGRAMMING / LOGIC INFORMATION
10622 ; ROM SEQ: [106,271,274,001] FC 1,9
10623 ; ACT BUTS: 37(004)100,106 / 27(271)000,001
10624 ; EXEC: [106]ALUC=LLLLL : [271] D = 125252
10625 ; CODES: [106] SPS=1, [274] SPS=2 / N:C = 1001
10626 ; SYNC: B05J2 (-) T = 1.25 USEC
10627 ; KEY SIG: K1-5 D(C)(1) H / K2-5 SDM1 (1) H / K2-5 SDMO (1) H / K3-8 ROT (R)
10628 ; / K3-8 ROTSHF (R)H / K3-3 DM=OL / K3-4 OVLAP INSTR H
10629
10630 T0252: MOV #0252,R0 ;LOAD R0 WITH TEST NO.
10631 MOV #I0252,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10632 MOV #177703,R2 ;DEST ADDR = R3
10633 MOV #125252,R4 ;RESULT S / B = 125252
10634 R0252: MOV #52525,R3 ;[DEST] = 052525
10635 CCC ;CLEAR FLAGS
10636 267 ;N:C = 0111
10637
10638 I0252: ROR R3 ;TEST THE ROR
10639 BPL E10252 ;N:C = 1001 ?
10640 BEQ E10252
10641 BVS E10252
10642 BCS A0252
10643
10644 E10252: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10645 R0252 ;ERROR LOOP RETURN ADDRESS
10646
10647 A0252: CMP R4,R3 ;CORRECT RESULT ?
10648 BEQ 00252 ;BR IF YES
10649
10650 E20252: ERROR ;ROR DELIVERED THE WRONG RESULT
10651 R0252 ;ERROR LOOP RETURN
10652
10653 00252: SCOPE ;CALL THE SCOPE LOOP UTILITY
10654
10655
10656
10657
10658
10659
10660
10661
10662
    
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K06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 283
 DBQEAB.CMB T0252 ROR TEST - DMO - <N:C> = 0111

```

10653 ; *****
10654 ; .SBTTL T0253 ASR TEST - DMO - <N:C> = 1000
10655 ; *****
10656
10657 ;MICROPROGRAMMING / LOGIC INFORMATION
10658
10659 ;ROM SEQ:      [106,271,274,001] FC 1,9
10670 ;ACT BUTS:     37[004]100,106 / 27[271]000,001
10671
10672 ;EXEC:         [106]ALUC=LLLLL :[271] D = 000000
10673
10674 ;CODES:        [106] SPS=1, [274] SPS=2 / N:C = 0111
10675
10676 ;SYNC:         B05J2 (-) T = 1.25 USEC
10677
10678 ;KEY SIG:      K2-5 SDM1 (1) H / K2-5 SDM0 (1) H / K3-3 DM=OL / K3-8 SHF (R)L
10679 ;              ; K3-8 ROTSHF (R)H / K3-4 OVLAP INSTR H
10680
10681
10682 020022 012700 000253 T0253: MOV #0253,R0 ;LOAD R0 WITH TEST NO.
10683 020026 013701 020050 MOV #I0253,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10684 020032 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
10685 020036 005004 CLR R4 ;RESULT S / B = 000000
10686 020040 012703 000001 R0253: MOV #1,R3 ;[DEST] = 1
10687 020044 000257 CCC ;CLEAR FLAGS
10688 020046 000270 SEN ;N:C = 1000
10689
10690 020050 006003 I0253: ROR R3 ;TEST THE ROR
10691
10692 020052 100403 BMI E10253 ;N:C = 0111 ?
10693 020054 001002 BNE E10253
10694 020056 102001 BVC E10253
10695 020060 103402 BCS A0253
10696
10697 020062 104005 E10253: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10698 020064 020040 R0253 ;ERROR LOOP RETURN ADDRESS
10699
10700 020066 020403 A0253: CMP R4,R3 ;CORRECT RESULT ?
10701 020070 001402 BEQ 00253 ;BR IF YES
10702
10703 020072 104000 E20253: ERROR ;ROR DELIVERED THE WRONG RESULT
10704 020074 020040 R0253 ;ERROR LOOP RETURN
10705
10706 020076 000004 00253: SCOPE ;CALL THE SCOPE LOOP UTILITY
10707

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10708 ; *****
10709 ; .SBTTL T0254 ASR TEST - DMO - <N:C> = 0101
10710 ; *****
10711 ;
10712 ; MICROPROGRAMMING / LOGIC INFORMATION
10713 ;
10714 ; ROM SEQ: [106,271,274,001] FC 1,9
10715 ;
10716 ; ACT BUTS: 37[004]100,106 / 27[271]000,001
10717 ;
10718 ; EXEC: [106]ALUC=LLLLL :[271] D = 152525
10719 ;
10720 ; CODES: [106] SPS=1, [274] SPS=2 / N:C = 1010
10721 ;
10722 ; SYNC: B05J2 (-) T = 1.25 USEC
10723 ;
10724 ; KEY SIG: K2-5 SDM1 (1) H / K2-5 SDM0 (1) H / K3-3 DM=OL / K1-5 D(C)(1)H
10725 ; / K3-4 OVLAP INSTR H / K3-8 SHF (R)L / K3-8 ROTSHF (R) H
10726 ;
10727 020100 012700 000254 T0254: MOV #0254,R0 ;LOAD R0 WITH TEST NO.
10728 020104 013701 020130 MOV #I0254,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10729 020110 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
10730 020114 012704 152525 MOV #152525,R4 ;RESULT S / B = 152525
10731 020120 012703 125252 R0254: MOV #125252,R3 ;[DEST] = 125252
10732 020124 000257 CCC ;CLEAR FLAGS
10733 020126 000265 265 ;N:C = 0101
10734 ;
10735 020130 006003 I0254: ROR R3 ;TEST THE ROR
10736 ;
10737 020132 100003 BPL E10254 ;N:C = 1010 ?
10738 020134 001402 BEQ E10254
10739 020136 102001 BVC E10254
10740 020140 103002 BCC A0254
10741 ;
10742 020142 104005 E10254: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10743 020144 020120 R0254 ;ERROR LOOP RETURN ADDRESS
10744 ;
10745 020146 020403 A0254: CMP R4,R3 ;CORRECT RESULT ?
10746 020150 001402 BEQ 00254 ;BR IF YES
10747 ;
10748 020152 104000 E20254: ERROR ;ROR DELIVERED THE WRONG RESULT
10749 020154 020120 R0254 ;ERROR LOOP RETURN
10750 ;
10751 020156 000004 00254: SCOPE ;CALL THE SCOPE LOOP UTILITY
10752 ;
    
```

M06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 285
 DBQEAB.CMB T0254 ASR TEST - DMO - <N:C> = 0101

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10753 ; *****
10754 ; .SBTTL T0255 ASR TEST - DMO - <N:C> = 1100
10755 ; *****
10756 ;MICROPROGRAMMING / LOGIC INFORMATION
10757
10758 ;ROM SEQ: [106,271,274,001] FC 1,9
10759
10760 ;ACT BUTS: 37[004]100,106 / 27[271]000,001
10761
10762 ;EXEC: [106]ALUC=LLLLL :[271] D = 025252
10763
10764 ;CODES: [106] SPS=1, [274] SPS=2 / N:C = 0011
10765
10766 ;SYNC: B05J2 (-) T = 1.25 USEC
10767
10768 ;KEY SIG: K2-5 SDM1 (1) H / K2-5 SDMO (1) H / K3-3 DM=OL / K3-8 SHF (R)L
10769 ; K3-8 ROTSHF (R)H / K3-4 OVLAP INSTR H
10770
10771
10772 020160 012700 000255 T0255: MOV #0255,R0 ;LOAD R0 WITH TEST NO.
10773 020164 013701 020210 ;LOAD R1 WITH TEST INSTRUCTION WORD
10774 020170 012702 177703 ;DEST ADDR = R3
10775 020174 012704 025252 ;RESULT S / B = 25252
10776 020200 012703 052525 R0255: MOV #25252,R4 ;[DEST] = 52525
10777 020204 000257 ;CLEAR FLAGS
10778 020206 000274 ;N:C = 1100
10779
10780 020210 006003 I0255: ROR R3 ;TEST THE ROR
10781
10782 020212 100403 ;N:C = 0011 ?
10783 020214 001402 BMI E10255
10784 020216 102001 BEQ E10255
10785 020220 103402 BVC E10255
10786 BCS A0255
10787 020222 104005 E10255: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10788 020224 020200 R0255 ;ERROR LOOP RETURN ADDRESS
10789
10790 020226 020403 A0255: CMP R4,R3 ;CORRECT RESULT ?
10791 020230 001402 BEQ 00255 ;BR IF YES
10792
10793 020232 104000 E20255: ERROR ;ROR DELIVERED THE WRONG RESULT
10794 020234 020200 R0255 ;ERROR LOOP RETURN
10795
10796 020236 000004 00255: SCOPE ;CALL THE SCOPE LOOP UTILITY
10797

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N06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 286
 DBGEAB.CMB T0255 ASR TEST - DMO - <N:C> = 1100

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10798 ; *****
10799 ; .SBTTL T0256 ROR TEST - DM1 - <N:C> = 1110
10800 ; *****
10801 ;MICROPROGRAMMING / LOGIC INFORMATION
10802 ;ROM SEQ: [161,266,267,232,275,277,376,016] FC 1,3,9
10803 ;ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,016
10804 ;EXEC: [232]ALUC=HHLHL :[275] D = 052525
10805 ;CODES: [232] SPS=1, [277] SPS=2 / N:C = 0000
10806 ;SYNC: B05J2 (-) T = 2 USEC
10807 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF L / K3-8 ROT (R) L / K3-8 ROTSHF (R) L
10808 ; K2-5 SDM1 (1) H / K2-5 SDMD (1) L
10809
10810
10811
10812
10813
10814
10815
10816
10817 020240 012700 000256 T0256: MOV #0256,R0 ;LOAD R0 WITH TEST NO.
10818 020244 013701 020270 MOV #I0256,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10819 020250 012702 067602 MOV #M0256,R2 ;DEST ADDR = M0256
10820 020254 012704 052525 MOV #52525,R4 ;RESULT S / B = 52525
10821 020260 012712 125252 R0256: MOV #125252,(R2) ;[DEST] = 125252
10822 020264 000257 CCC ;CLEAR FLAGS
10823 020266 000276 276 ;N:C = 1110
10824
10825 020270 006012 I0256: ROR (R2) ;TEST THE ROR
10826
10827 020272 100403 BMI E10256 ;N:C = 0000 ?
10828 020274 001402 BEQ E10256
10829 020276 102401 BVS E10256
10830 020300 103002 BCC A0256
10831
10832 020302 104005 E10256: ERROR5 ;ROR FAILED TO ALTER CODES PROPERLY
10833 020304 020260 R0256 ;ERROR LOOP RETURN
10834
10835 020306 020412 A0256: CMP R4,(R2) ;CORRECT RESULT ?
10836 020310 001403 BEQ 00256 ;BR IF YES
10837
10838 020312 011203 MOV (R2),R3 ;GET THE WAS DATA
10839 020314 104000 E20256: ERROR ;ROR DELIVERED WRONG RESULT
10840 020316 020260 R0256 ;ERROR LOOP RETURN ADDRESS
10841
10842 020320 000004 00256: SCOPE ;CALL THE SCOPE LOOP UTILITY
10843

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10844 ; *****
10845 ; .SBTTL T0257 ROR TEST - DM1 - (N:C) = 1000
10846 ; *****
10847
10848 ;MICROPROGRAMMING / LOGIC INFORMATION
10849
10850 ;ROM SEQ: [161,266,267,232,275,277,376,016] FC 1,3,9
10851
10852 ;ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,016
10853
10854 ;EXEC: [232]ALUC=HMLHL :[275] D = 000000
10855
10856 ;CODES: [232] SPS=1, [277] SPS=2 / N:C = 0111
10857
10858 ;SYNC: B05J2 (-) T = 2 USEC
10859
10860 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF L / K3-8 ROT (R) L / K3-8 ROTSHF (R) L
10861 ; K2-5 SDM1 (1) H / K2-5 SDM0 (1) L
10862
10863 020322 012700 000257 T0257: MOV #0257,R0 ;LOAD R0 WITH TEST NO.
10864 020326 013701 020350 MOV #I0257,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10865 020332 012702 067602 MOV #M0UFO,R2 ;DEST ADDR = M0UFO
10866 020336 005004 CLR R4 ;RESULT S / B = 000000
10867 020340 012712 000001 R0257: MOV #1,(R2) ;[DEST] = 1
10868 020344 000257 CCC ;CLEAR FLAGS
10869 020346 000270 SEN ;N:C = 1000
10870
10871 020350 006012 I0257: ROR (R2) ;TEST THE ROR
10872
10873 020352 100403 BMI E10257 ;N:C = 0111 ?
10874 020354 001002 BNE E10257
10875 020356 102001 BVC E10257
10876 020360 103402 BCS A0257
10877
10878 020362 104005 E10257: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10879 020364 020340 R0257 ;ERROR LOOP RETURN
10880
10881 020366 020412 A0257: CMP R4,(R2) ;CORRECT RESULT ?
10882 020370 001403 BEQ 00257 ;BR IF YES
10883
10884 020372 011203 MOV (R2),R3 ;GET THE WAS DATA
10885 020374 104000 E20257: ERROR ;ROR DELIVERED WRONG RESULT
10886 020376 020340 R0257 ;ERROR LOOP RETURN ADDRESS
10887
10888 020400 000004 00257: SCOPE ;CALL THE SCOPE LOOP UTILITY
10889

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10890 ; *****
10891 ; .SBTTL T0260 ROR TEST - DMI - <N:C> = 0111
10892 ; *****
10893 ; MICROPROGRAMMING / LOGIC INFORMATION
10894 ; ROM SEQ: [161,266,267,232,275,277,376,016] FC 1.3.9
10895 ; ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,016
10896 ; EXEC: [232]ALUC=HMLHL : [275] D = 125252
10897 ; CODES: [232] SPS=1, [277] SPS=2 / N:C = 1001
10898 ; SYNC: B05J2 (-) T = 2 USEC
10899 ; KEY SIG: K3-3 DM=1L / K3-6 ROTSHF L / K3-8 ROT (R) L / K3-8 ROTSHF (R) L
10900 ; / K2-5 SDM1 (1) H / K2-5 SDM0 (1) L / K1-5 D(C)(1) H
10901
10902
10903
10904
10905
10906
10907
10908
10909 020402 012700 000260 T0260: MOV #0260,R0 ;LOAD R0 WITH TEST NO.
10910 020406 013701 020432 MOV #I0260,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10911 020412 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
10912 020416 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
10913 020422 012712 052525 R0260: MOV #52525,(R2) ;[DEST] = 52525
10914 020426 000257 CCC ;CLEAR FLAGS
10915 020430 000267 267 ;N:C = 0111
10916
10917 020432 006012 I0260: ROR (R2) ;TEST THE ROR
10918
10919 020434 100003 BPL E10260 ;N:C = 1001 ?
10920 020436 001402 BEQ E10260
10921 020440 102401 BVS E10260
10922 020442 103402 BCS A0260
10923
10924 020444 104005 E10260: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10925 020446 020422 R0260 ;ERROR LOOP RETURN
10926
10927 020450 020412 R0260: CMP R4,(R2) ;CORRECT RESULT ?
10928 020452 001403 BEQ 00260 ;BR IF YES
10929
10930 020454 011203 E20260: MOV (R2),R3 ;GET THE WAS DATA
10931 020456 104000 ERROR ;ROR DELIVERED WRONG RESULT
10932 020460 020422 R0260 ;ERROR LOOP RETURN ADDRESS
10933
10934 020462 000004 00260: SCOPE ;CALL THE SCOPE LOOP UTILITY
10935

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10936 ; *****
10937 ; .SBTTL T0261 ASR TEST - DM1 - <N:C> = 1000
10938 ; *****
10939
10940 ;MICROPROGRAMMING / LOGIC INFORMATION
10941
10942 ;ROM SEQ: [161,266,267,232,275,277,376,016] FC 1,3,9
10943
10944 ;ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,016
10945
10946 ;EXEC: [232]ALUC=MHLHL :[275] D = 000000
10947
10948 ;CODES: [232] SPS=1, [277] SPS=2 / N:C = 0111
10949
10950 ;SYNC: B05J2 (-) T = 2 USEC
10951
10952 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF L / K3-8 SHF (R) L / K3-8 ROTSHF (R
10953 ; K2-5 SDM1 (1) H / K2-5 SDM0 (1) L
10954
10955 020464 012700 000261 T0261: MOV #0261,R0 ;LOAD R0 WITH TEST NO.
10956 020470 013701 020512 MOV #I0261,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
10957 020474 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
10958 020500 005004 CLR R4 ;RESULT S / B = 000000
10959 020502 012712 000001 R0261: MOV #1,(R2) ;[DEST] = 1
10960 020506 000257 CCC ;CLEAR FLAGS
10961 020510 000270 SEN ;N:C = 1000
10962
10963 020512 006012 I0261: ROR (R2) ;TEST THE ROR
10964
10965 020514 100403 BMI E10261 ;N:C = 0111 ?
10966 020516 001002 BNE E10261
10967 020520 102001 BVC E10261
10968 020522 103402 BCS A0261
10969
10970 020524 104005 E10261: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
10971 020526 020502 R0261 ;ERROR LOOP RETURN
10972
10973 020530 020412 A0261: CMP R4,(R2) ;CORRECT RESULT ?
10974 020532 001403 BEQ 00261 ;BR IF YES
10975
10976 020534 011203 E20261: MOV (R2),R3 ;GET THE WAS DATA
10977 020536 104000 ERROR ;ROR DELIVERED WRONG RESULT
10978 020540 020502 R0261 ;ERROR LOOP RETURN ADDRESS
10979
10980 020542 000004 00261: SCOPE ;CALL THE SCOPE LOOP UTILITY
10981
    
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E07

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 290
 DBQEAB.CMB T0261 ASR TEST - DM1 - (N:C) = 1000

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10982 ; *****
10983 ; .SBTTL T0262 ASR TEST - DM1 - (N:C) = 1100
10984 ; *****
10985 ; MICROPROGRAMMING / LOGIC INFORMATION
10986 ; ROM SEQ: [161,266,267,232,275,277,376,016] FC 1,3,9
10987 ; ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,016
10988 ; EXEC: [232]ALUC=HMLHL :[275] D= 025252
10989 ; CODES: [232] SPS=1, [277] SPS=2 / N:C = 0011
10990 ; SYNC: B05J2 (-) T = 2 USEC
10991 ; KEY SIG: K3-3 DM=1L / K3-6 ROTSHF L / K3-8 SHF (R) L / K3-8 ROTSHF (R)
10992 ; K2-5 SDM1(1) H / K2-5 SDM0 (1) L
11000
11001 020544 012700 000262 T0262: MOV #0262,R0 ;LOAD R0 WITH TEST NO.
11002 020550 013701 020574 ;LOAD R1 WITH TEST INSTRUCTION WORD
11003 020554 012702 067602 ;DEST ADDR = MBUFO
11004 020560 012704 025252 ;RESULT S / B = 25252
11005 020564 012712 052525 R0262: MOV #52525,(R2) ;[DEST] = 52525
11006 020570 000257 ;CLEAR FLAGS
11007 020572 000274 ;N:C = 1100
11008
11009 020574 006012 I0262: ROR (R2) ;TEST THE ROR
11010 ;N:C = 0011 ?
11011 020576 100403 BMI E10262
11012 020600 001402 BEQ E10262
11013 020602 102001 BVC E10262
11014 020604 103402 BCS A0262
11015
11016 020606 104005 E10262: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
11017 020610 020564 R0262 ;ERROR LOOP RETURN
11018
11019 020612 020412 A0262: CMP R4,(R2) ;CORRECT RESULT ?
11020 020614 001403 BEQ 00262 ;BR IF YES
11021
11022 020616 011203 MOV (R2),R3 ;GET THE WAS DATA
11023 020620 104000 E20262: ERROR ;ROR DELIVERED WRONG RESULT
11024 020622 020564 R0262 ;ERROR LOOP RETURN ADDRESS
11025
11026 020624 000004 00262: SCOPE ;CALL THE SCOPE LOOP UTILITY
11027

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```

11028 ; *****
11029 ; .SBTTL T0263 ASR TEST - DMI - <N:C> = 0101
11030 ; *****
11031 ;MICROPROGRAMMING / LOGIC INFORMATION
11032
11033 ;ROM SEQ: (161,266,267,232,275,277,376,016) FC 1,3,9
11034 ;ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,016
11035 ;EXEC: [232]ALUC=HMLHL :[275] D= 152525
11036 ;CODES: [232] SPS=1, [277] SPS=2 / N:C = 1010
11037 ;SYNC: BOSJ2 (-) T = 2 USEC
11038 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF L / K3-8 SHF (R) L / K3-8 ROTSHF (R) L
11039 ; / K2-5 SDM1 (1) H / K2-5 SDM0 (1) L / K1-5 D(C)(1) H
11040
11041
11042
11043
11044
11045
11046
11047 020626 012700 000263 T0263: MOV #0263,R0 ;LOAD R0 WITH TEST NO.
11048 020632 013701 020656 ;LOAD R1 WITH TEST INSTRUCTION WORD
11049 020636 012702 067602 ;DEST ADDR = MBUFO
11050 020642 012704 152525 ;RESULT S / B = 152525
11051 020646 012712 125252 R0263: MOV #152525,R4 ;[DEST] = 125252
11052 020652 000257 ;CLEAR FLAGS
11053 020654 000265 ;N:C = 0101
11054
11055 020656 006012 I0263: ROR (R2) ;TEST THE ROR
11056
11057 020660 100003 ;N:C = 1010 ?
11058 020662 001402 BPL E10263
11059 020664 102001 BEQ E10263
11060 020666 103002 BVC E10263
11061 ; BCC A0263
11062 020670 104005 E10263: ERRORS ;ROR FAILED TO ALTER CODES PROPERLY
11063 020672 020646 R0263 ;ERROR LOOP RETURN
11064
11065 020674 020412 R0263: CMP R4,(R2) ;CORRECT RESULT ?
11066 020676 001403 BEQ 00263 ;BR IF YES
11067
11068 020700 011203 ;GET THE WAS DATA
11069 020702 104000 E20263: ERROR ;ROR DELIVERED WRONG RESULT
11070 020704 020646 R0263 ;ERROR LOOP RETURN ADDRESS
11071
11072 020706 000004 00263: SCOPE ;CALL THE SCOPE LOOP UTILITY
11073
  
```

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11074 ; *****
11075 ; .SBTTL T0264 RORB TEST - DM2 - EVEN ADDRESS
11076 ; *****
11077 ;
11078 ;MICROPROGRAMMING / LOGIC INFORMATION
11079 ;
11080 ;ROM SEQ: (162,260,267,233,276,277,376,016) FC 1,3,9
11081 ;
11082 ;ACT BUTS: 37(004)100,162 / 33(260)220,233 / 16(277)016,016
11083 ;
11084 ;EXEC: (233) DMUX SHIFT RIGHT : (277) D = 077777
11085 ;
11086 ;CODES: (233) SPS=1, (277) SPS=2 / N:C = 0000
11087 ;
11088 ;SYNC: B05J2 (-) T = 2.4 USEC
11089 ;
11090 ;KEY SIG: K3-6 BYTE INSTR H / K1-5 D(C)(1) H
11091 ;
11092 020710 012700 000264 T0264: MOV #0264,R0 ;LOAD R0 WITH TEST NO.
11093 020714 013701 020740 ;LOAD R1 WITH TEST INSTRUCTION WORD
11094 020720 012702 067602 ;DEST ADDR = MBUF0
11095 020724 012704 000177 ;RESULT S / B = 177
11096 020730 010203 R0264: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11097 020732 012712 000377 ;[DEST] = 377
11098 020736 000257 CCC ;SCOPE SYNC "C" = 0
11099 ;
11100 020740 106023 I0264: RORB (R3)+ ;TEST THE RORB
11101 ;
11102 020742 103402 BCS A0264 ;BR IF ROR SET "C"
11103 ;
11104 020744 104005 E10264: ERRORS ;ROR FAILED TO SET "C"
11105 020746 020730 R0264 ;ERROR LOOP RETURN ADDRESS
11106 ;
11107 020750 022703 067603 A0264: CMP #MBUF0+1,R3 ;DID DEST REG GET INCREMENTED ?
11108 020754 001402 BEQ B0264 ;BR IF YES
11109 ;
11110 020756 104005 E20264: ERRORS ;RORB FAILED TO UPDATE DEST REG
11111 020760 020730 R0264 ;ERROR LOOP RETURN ADDRESS
11112 ;
11113 020762 020412 B0264: CMP R4,(R2) ;CORRECT RESULT ?
11114 020764 001403 BEQ 00264 ;BR IF YES
11115 ;
11116 020766 011203 E30264: MOV (R2),R3 ;GET THE WAS DATA
11117 020770 104000 ERROR ;RORB DELIVERED WRONG RESULT
11118 020772 020730 R0264 ;ERROR LOOP RETURN ADDRESS
11119 ;
11120 020774 000004 00264: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

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11121 ; *****
11122 ; .SBTTL T0265 RORB TEST - DM1 - EVEN ADDRESS
11123 ; *****
11124 ;MICROPROGRAMMING / LOGIC INFORMATION
11125
11126 ;ROM SEQ: [161,266,267,233,276,277,376,016] FC 1,3,9
11127
11128 ;ACT BUTS: 37(004)100,161 / 33(266)220,233 / 16(277)016,016
11129
11130 ;EXEC: [233] DMUX SHIFT RIGHT :[277] D = 077777
11131
11132 ;CODES: [233] SPS=1, [277] SPS= / N:C = 1010
11133
11134 ;SYNC: B05J2 (-) T = 2.4 USEC
11135
11136 ;KEY SIG: K3-6 BYTE INSTR H / K1-5 D(C)(1) H
11137
11138
11139 020776 012700 000265 T0265: MOV #0265,R0 ;LOAD R0 WITH TEST NO.
11140 021002 013701 021030 ;LOAD R1 WITH TEST INSTRUCTION WORD
11141 021006 012702 067602 ;DEST ADDR = MBUFO
11142 021012 012704 000377 ;RESULT S / B = 377
11143 021016 010203 ;R3 CONTAINS DEST ADDR
11144 021020 012712 000376 R0265: MOV R2,R3 ;[DEST] = 376
11145 021024 000257 ;CLEAR FLAGS
11146 021026 000261 ;SCOPE SYNC - SET "C"
11147
11148 021030 106013 I0265: RORB (R3) ;TEST THE RORB
11149
11150 021032 103002 BCC A0265 ;BR IF "C" CLR - IT SHOULD BE
11151
11152 021034 104005 E10265: ERRORS ;RORB FAILED TO CLR "C"
11153 021036 021016 R0265 ;ERROR LOOP RETURN ADDRESS
11154
11155 021040 020412 A0265: CMP R4,(R2) ;CORRECT RESULT ?
11156 021042 001403 BEQ 00265 ;BR IF YES
11157
11158 021044 011203 E20265: MOV (R2),R3 ;GET THE WAS DATA
11159 021046 104000 ;RORB DELIVERED WRONG RESULT
11160 021050 021016 R0265 ;ERROR LOOP RETURN ADDRESS
11161
11162 021052 000004 00265: SCOPE ;CALL SCOPE LOOP UTILITY
    
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11163 ; *****
11164 ; .SBTTL T0266 RORB TEST - DM2 - ODD ADDRESS
11165 ; *****
11166 ;MICROPROGRAMMING / LOGIC INFORMATION
11167 ;ROM SEQ: [162,260,267,237,270,233,276,277,376,016] FC 1,3,9
11168 ;ACT BUTS: 37(004)100,162 / 33(260)220,237 / 34(237)220,233 / 16(277)016,016
11169 ;EXEC: [233] DMUX SHIFT RIGHT : [277] D = 77577
11170 ;CODES: [233] SPS=1, [277] SPS=3 / N:C = 0011
11171 ;SYNC: B05J2 (-) T = 2.8 USEC
11172 ;KEY SIG: K3-6 BYTE INSTR H / K3-7 ODD BYTE H / K1-6 BA00(1) H
11173
11174
11175
11176
11177
11178
11179
11180
11181 021054 012700 000266 T0266: MOV #0266,R0 ;LOAD R0 WITH TEST NO.
11182 021060 013701 021110 ;I0266,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11183 021064 012702 067603 MOV #MBOFD+1,R2 ;DEST ADDR = MBOFD+1
11184 021070 012704 077777 MOV #77777,R4 ;RESULT S / B = 77777
11185 021074 012705 067602 MOV #MBOFD,R5 ;POINT R5 TO CHECK RESULT
11186 021100 010203 R0266: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11187 021102 012715 177777 MOV #-1,(R5) ;[DEST] = 177777
11188 021106 000257 CCC ;SCOPE SYNC - "C" =0
11189
11190 021110 106023 I0266: RORB (R3)+ ;TEST THE RORB
11191
11192 021112 103402 BCS A0266 ;BR IF "C" IS SET - IT SHOULD BE
11193
11194 021114 104005 E10266: ERRORS ;RORB FAILED TO SET "C"
11195 021116 021100 R0266 ;ERROR LOOP RETURN ADDRESS
11196
11197 021120 022703 067604 A0266: CMP #MBOFD+2,R3 ;DID DEST REG GET INCREMENTED ?
11198 021124 001402 BEQ B0266 ;BR IF YES
11199
11200 021126 104005 E20266: ERRORS ;RORB FAILED TO UPDATE DEST REG
11201 021130 021100 R0266 ;ERROR LOOP RETURN ADDRESS
11202
11203 021132 020415 B0266: CMP R4,(R5) ;CORRECT RESULT ?
11204 021134 001403 BEQ 00266 ;BR IF YES
11205
11206 021136 011503 E30266: MOV (R5),R3 ;GET THE WAS DATA
11207 021140 104000 ERROR ;RORB DELIVERED WRONG RESULT
11208 021142 021100 R0266 ;ERROR LOOP RETURN ADDRESS
11209
11210 021144 000004 00266: SCOPE ;CALL SCOPE LOOP UTILITY
    
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11211 : *****
11212 : .SBTTL T0267 RORB TEST - DM1 - ODD ADDRESS
11213 : *****
11214 ; MICROPROGRAMMING / LOGIC INFORMATION
11215 ; ROM SEQ: [161,266,267,237,270,233,276,277,376,016] FC 1,3,9
11216 ; ACT BUTS: 37(004)100,161 / 33(266)220,237 / 34(237)220,233 / 16(277)016,016
11217 ; EXEC: [233] DMUX SHIFT RIGHT : [277] D = 177777
11218 ; CODES: [233] SPS=1, [277] SPS=2 / N:C - 1010
11219 ; SYNC: B05J2 (-) T = 2.8 USEC
11220 ; KEY SIG: K1-5 D(C)(1) H / K3-6 BYTE INSTR H / K3-7 ODD BYTE H / K1-6 BA00(1
11221
11222
11223
11224
11225
11226
11227
11228
11229 021146 012700 000267 T0267: MOV #0267,R0 ;LOAD R0 WITH TEST NO.
11230 021152 013701 021202 MOV #I0267,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11231 021156 012702 067603 MOV #M0267+1,R2 ;DEST ADDR = M0267+1
11232 021162 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
11233 021166 012705 067602 MOV #M0267,R5 ;POINT R5 TO CHECK RESULT
11234 021172 010203 R0267: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11235 021174 012715 177377 MOV #177377,(R5) ;[DEST] = 177377
11236 021200 000261 SEC ;SCOPE SYNC - SET "C"
11237
11238 021202 106023 I0267: RORB (R3)+ ;TEST THE RORB
11239
11240 021204 103002 BCC A0267 ;BR IF "C" CLEAR - IT SHOULD BE
11241
11242 021206 104005 E10267: ERROR5 ;RORB FAILED TO CLEAR "C"
11243 021210 021172 R0267 ;ERROR LOOP RETURN ADDRESS
11244
11245 021212 020415 A0267: CMP R4,(R5) ;CORRECT RESULT ?
11246 021214 001403 BEQ 00267 ;BR IF YES
11247
11248 021216 011503 E20267: MOV (R5),R3 ;GET THE WAS DATA
11249 021220 104000 ERROR ;RORB DELIVERED WRONG RESULT
11250 021222 021172 R0267 ;ERROR LOOP RETURN ADDRESS
11251
11252 021224 000004 00267: SCOPE ;CALL SCOPE LOOP UTILITY

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K07

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 296
 DBQEAB.CMB T0267 RORB TEST - DM1 - ODD ADDRESS

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11253 ; *****
11254 ; .SBTTL T0270 ASRB TEST - DM2 - ODD ADDRESS
11255 ; *****
11256
11257 ;MICROPROGRAMMING / LOGIC INFORMATION
11258
11259 ;ROM SEQ: [162,260,267,237,270,233,276,277,376,016] FC 1,3,9
11260
11261 ;ACT BUTS: 37(004)100,162 / 33(260)220,237 / 34(237)220,233 / 16(277)016,016
11262
11263 ;EXEC: [233] DMUX SHIFT RIGHT :[277] D = 000000
11264
11265 ;CODES: [233] SPS=1, [277] SPS=2 / N:C = 0111
11266
11267 ;SYNC: B05J2 (-) T = 2.8 USEC
11268
11269 ;KEY SIG: K3-6 BYTE INSTR H / K3-7 ODD BYTE H / K1-6 BA00(1) H
11270
11271 021226 012700 000270 T0270: MOV #0270,R0 ;LOAD R0 WITH TEST NO.
11272 021232 013701 021262 MOV @#I0270,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11273 021236 012702 067603 MOV #M0270+1,R2 ;DEST ADDR = M0270+1
11274 021242 012704 000377 MOV #377,R4 ;RESULT S / B = 377
11275 021246 012705 067602 MOV #M0270,R5 ;POINT R5 TO CHECK RESULT
11276 021252 010203 R0270: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11277 021254 012715 000777 MOV #777,(R5) ;[DEST] = 777
11278 021260 000257 CCC ;SCOPE SYNC "C" = 0
11279
11280 021262 106223 I0270: ASRB (R3)+ ;TEST THE ASRB
11281
11282 021264 103402 BCS A0270 ;BR IF CARRY SET - IT SHOULD BE
11283
11284 021266 104005 E10270: ERRORS ;ASRB FAILED TO SET THE CARRY
11285 021270 021252 R0270 ;ERROR LOOP RETURN ADDRESS
11286
11287 021272 022703 067604 A0270: CMP #M0270+2,R3 ;DID DEST REG GET INCREMENTED ?
11288 021276 001402 BEQ B0270 ;BR IF YES
11289
11290 021300 104005 E20270: ERRORS ;ASRB FAILED TO UPDATE DEST REG
11291 021302 021252 R0270 ;ERROR LOOP RETURN ADDRESS
11292
11293 021304 020415 B0270: CMP R4,(R5) ;CORRECT RESULT ?
11294 021306 001403 BEQ 00270 ;BR IF YES
11295
11296 021310 011503 E30270: MOV (R5),R3 ;GET THE WAS DATA
11297 021312 104000 ERROR ;ASRB DELIVERED WRONG RESULT
11298 021314 021252 R0270 ;ERROR LOOP RETURN ADDRESS
11299
11300 021316 000004 00270: SCOPE ;CALL SCOPE LOOP UTILITY
  
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11301 ; *****
11302 .SBTTL T0271 ASRB TEST - DM1 - ODD ADDRESS
11303 ; *****
11304 ;MICROPROGRAMMING / LOGIC INFORMATION
11305 ;ROM SEQ: [161,266,267,237,270,233,276,277,376,016] FC 1,3,9
11306 ;ACT BUTS: 37[004]100,161 / 33[266]220,237 / 34[237]220,233 / 16[277]016,016
11307 ;EXEC: [233] DMUX SHIFT RIGHT :[277] D = 140300
11308 ;CODES: [233] SPS=1, [277] SPS=2 / N:C = 1010
11309 ;SYNC: B05J2 (-) T = 2.8 USEC
11310 ;KEY SIG: K1-5 D(C)(1) H / K3-6 BYTE INSTR H / K3-7 ODD BYTE H / K1-6 BA00(1
11311
11312
11313
11314
11315
11316
11317
11318
11319 021320 012700 000271 T0271: MOV #0271,R0 ;LOAD R0 WITH TEST NO.
11320 021324 013701 021354 MOV #I0271,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11321 021330 012702 067603 MOV #MBUFO+1,R2 ;DEST ADDR = MBUFO+1
11322 021334 012704 140377 MOV #140377,R4 ;RESULT S / B = 140377
11323 021340 012705 067602 MOV #MBUFO,R5 ;POINT R5 TO CHECK RESULT
11324 021344 010203 R0271: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11325 021346 012715 100377 MOV #100377,(R5) ;[DEST] = 100377
11326 021352 000261 SEC ;SCOPE SYNC - "C" = 1
11327
11328 021354 106213 I0271: ASRB (R3) ;TEST THE ASRB
11329
11330 021356 103002 BCC A0271 ;BR IF CARRY CLEAR - IT SHOULD BE
11331
11332 021360 104005 E10271: ERRORS ;ASRB FAILED TO CLEAR THE CARRY
11333 021362 021344 R0271 ;ERROR LOOP RETURN ADDRESS
11334
11335 021364 020415 A0271: CMP R4,(R5) ;CORRECT RESULT ?
11336 021366 001403 BEQ 00271 ;BR IF YES
11337
11338 021370 011503 E20271: MOV (R5),R3 ;GET THE WAS DATA
11339 021372 104000 ERROR ;ASRB DELIVERED WRONG RESULT
11340 021374 021344 R0271 ;ERROR LOOP RETURN ADDRESS
11341
11342 021376 000004 00271: SCOPE ;CALL SCOPE LOOP UTILITY
    
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11343 ; *****
11344 .SBTTL T0272 ASRB TEST - DM2 - EVEN ADDRESS
11345 ; *****
11346
11347 ;MICROPROGRAMMING / LOGIC INFORMATION
11348
11349 ;ROM SEQ: [162,260,267,233,276,277,376,016] FC 1,3,9
11350
11351 ;ACT BUTS: 37(004)100,162 / 33(260)220,233 / 16(277)016,016
11352
11353 ;EXEC: [233] DMUX SHIFT RIGHT :[277] D =
11354
11355 ;CODES: [233] SPS=1, [277] SPS=2 / N:C =
11356
11357 ;SYNC: B05J2 (-) T = 2.8 USEC
11358
11359 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 DM=2L
11360
11361 021400 012700 000272 T0272: MOV #0272,R0 ;LOAD R0 WITH TEST NO.
11362 021404 013701 021430 MOV #I0272,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11363 021410 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
11364 021414 012704 000077 MOV #77,R4 ;RESULT S / B = 77
11365 021420 010203 R0272: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11366 021422 012712 000177 MOV #177,(R2) ;[DEST] = 177
11367 021426 000257 CCC ;SCOPE SYNC - "C" = 0
11368
11369 021430 106223 I0272: ASRB (R3)+ ;TEST THE ASRB
11370
11371 021432 103402 BCS A0272 ;BR IF "C" = 1 - IT SHOULD BE
11372
11373 021434 104005 E10272: ERRORS ;ASRB FAILED TO SET "C"
11374 021436 021420 R0272 ;ERROR LOOP RETURN ADDRESS
11375
11376 021440 022703 067603 A0272: CMP #MBUFO+1,R3 ;DID DEST REG GET INCREMENTED ?
11377 021444 001402 BEQ B0272 ;BR IF YES
11378
11379 021446 104005 E20272: ERRORS ;ASRB FAILED TO UPDATE DEST REG
11380 021450 021420 R0272 ;ERROR LOOP RETURN ADDRESS
11381
11382 021452 020412 B0272: CMP R4,(R2) ;CORRECT RESULT ?
11383 021454 001403 BEQ 00272 ;BR IF YES
11384
11385 021456 011203 E30272: MOV (R2),R3 ;GET THE WAS DATA
11386 021460 104000 ERROR ;ASRB DELIVERED WRONG RESULT
11387 021462 021420 R0272 ;ERROR LOOP RETURN ADDRESS
11388
11389 021464 000004 00272: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

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11390 : *****
11391 : .SBTTL T0273 ASRB TEST - DM1 - EVEN ADDRESS
11392 : *****
11393
11394 ;MICROPROGRAMMING / LOGIC INFORMATION
11395
11396 ;ROM SEQ: [161,266,267,233,276,277,376,016] FC 1,3,9
11397
11398 ;ACT BUTS: 37(004)100,161 / 33(266)220,233 / 16(277)016,016
11399
11400 ;EXEC: [233] DMUX SHIFT RIGHT :[277] D = 141703
11401
11402 ;CODES: [233] SPS=1, [277] SPS=2 / N:C = 1010
11403
11404 ;SYNC: B05J2 (-) T = 2.4 USEC
11405
11406 ;KEY SIG: K1-5 D(C)(1) H / K3-6 BYTE INSTR H
11407
11408 021466 012700 000273 T0273: MOV #0273,R0 ;LOAD R0 WITH TEST NO.
11409 021472 013701 021516 MOV #I0273,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11410 021476 012702 067602 MOV #M0273,R2 ;DEST ADDR = M0273
11411 021502 012704 000303 MOV #303,R4 ;RESULT S / B = 303
11412 021506 010203 R0273: MOV R2,R3 ;R3 CONTAINS DEST ADDR
11413 021510 012712 000206 MOV #206,(R2) ;[DEST] = 206
11414 021514 000261 SEC ;SCOPE SYNC - "C" = 1
11415
11416 021516 106213 I0273: ASRB (R3) ;TEST THE CLRASRB
11417
11418 021520 103002 BCC A0273 ;BR IF CARRY CLEAR - IT SHOULD BE
11419
11420 021522 104005 E10273: ERROR5 ;ASRB FAILED TO CLEAR THE CARRY
11421 021524 021506 R0273 ;ERROR LOOP RETURN ADDRESS
11422
11423 021526 020412 R0273: CMP R4,(R2) ;CORRECT RESULT ?
11424 021530 001403 BEQ 00273 ;BR IF YES
11425
11426 021532 011203 E20273: MOV (R2),R3 ;GET THE WAS DATA
11427 021534 104000 ERROR ;ASRB DELIVERED WRONG RESULT
11428 021536 021506 R0273 ;ERROR LOOP RETURN ADDRESS
11429
11430 021540 000004 00273: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

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11431 ; *****
11432 ; .SBTTL T0274 TST DMO TEST - <N:C> = 1011
11433 ; *****
11434
11435 ; MICROPROGRAMMING / LOGIC INFORMATION
11436
11437 ; ROM SEQ: (104,373,362,001) FC 1,7,8
11438
11439 ; ACT BUTS: 37(004)100,104 / 31(104)360,362 / 27(373)000,001
11440
11441 ; EXEC: (104)ALUC=LLLLL : (373) D = 000000
11442
11443 ; CODES: (373) SPS=1, (362) SPS=2 / N:C = 0100
11444
11445 ; SYNC: B05J2 (-) T = 1 USEC
11446
11447 ; KEY SIG: K3-3 DM=0L / K1-7 D(15:00)=0 H / K3-4 TST L / K3-4 OVLAP INSTR H
11448
11449 021542 012700 000274 T0274: MOV #0274,R0 ;LOAD R0 WITH TEST NO.
11450 021546 013701 021600 MOV #I0274,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11451 021552 032737 000040 066642 BIT #40,#BPTLOC ;BREAKPOINT HALT SET ??
11452 021560 001401 BEQ .+4 ;BR IF NOT
11453 021562 000000 HALT ;BREAK - DEPRESS CONTINUE TO RESTART
11454 021564 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
11455 021570 005004 CLR R4 ;RESULT S / B = 000000
11456 021572 005003 R0274: CLR R3 ;[DEST] = 000000
11457 021574 000257 CCC ;CLEAR CODES
11458 021576 000273 273 ;N:C=1011
11459
11460 021600 005703 I0274: TST R3 ;TEST THE TST
11461
11462 021602 100403 BMI E10274 ;N:C = 0100 ?
11463 021604 001002 BNE E10274
11464 021606 102401 BVS E10274
11465 021610 103002 BCC A0274
11466
11467 021612 104005 E10274: ERROR5 ;TST FAILED TO ALTER CODES PROPERLY
11468 021614 021572 R0274 ;ERROR LOOP RETURN
11469
11470 021616 020403 A0274: CMP R4,R3 ;RESULT OK ?
11471 021620 001402 BEQ 00274 ;BR IF YES
11472
11473 021622 104000 E20274: ERROR ;TST ALTERED THE [DEST]
11474 021624 021572 R0274 ;ERROR LOOP RETURN
11475
11476 021626 000004 00274: SCOPE ;CALL SCOPE LOOP UTILITY

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11477 ; *****
11478 ; .SBTTL T0275 TST DMO TEST - (N:C) = 0100
11479 ; *****
11480 ;MICROPROGRAMMING / LOGIC INFORMATION
11481 ;ROM SEQ: [104,373,362,001] FC 1,7,8
11482 ;ACT BUTS: 37(004)100,104 / 31(104)360,362 / 27(373)000,001
11483 ;EXEC: [104]ALUC=LLLLL :[373] D = 177777
11484 ;CODES: [373] SPS=1, [362] SPS=3 / N:C = 1000
11485 ;SYNC: BOSJ2 (-) T = 1 USEC
11486 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 TST L
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11495 021630 012700 000275 T0275: MOV #0275,R0 ;LOAD R0 WITH TEST NO.
11496 021634 013701 021656 177703 ;LOAD R1 WITH TEST INSTRUCTION WORD
11497 021640 012702 177703 ;DEST ADDR = R3
11498 021644 005004 CLR R4
11499 021646 005104 COM R4 ;RESULT S / B = 177777
11500 021650 010403 R0275: MOV R4,R3 ;[DEST] = 177777
11501 021652 000257 CCC ;CLEAR CODES
11502 021654 000264 264 ;N:C=0100
11503
11504 021656 005703 I0275: TST R3 ;TEST THE TST
11505
11506 021660 100003 BPL E10275 ;N:C = 1000 ?
11507 021662 001402 BEQ E10275
11508 021664 102401 BVS E10275
11509 021666 103002 BCC A0275
11510
11511 021670 104005 E10275: ERRORS ;TEST FOR ALTER CODES PROPERLY
11512 021672 021650 R0275 ;JRN
11513
11514 021674 020403 A0275: CMP R4,R3 ;TEST FOR THE (DEST)
11515 021676 001402 BEQ 00275 ;BR .F
11516
11517 021700 104000 E20275: ERROR ;TEST FOR THE (DEST)
11518 021702 021650 R0275 ;ERROR LOOP RETURN
11519
11520 021704 000004 00275: SCOPE ;CALL SCOPE LOOP UTILITY
11521
    
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11522 ; *****
11523 ; .SBTTL T0276 CLR DMO TEST - (N:C) = 1011
11524 ; *****
11525
11526 ;MICROPROGRAMMING / LOGIC INFORMATION
11527
11528 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11529
11530 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
11531
11532 ;EXEC: [104]ALUC=HLLMH : [373] D = 000000
11533
11534 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0100
11535
11536 ;SYNC: B05J2 (-) T = 1 USEC
11537
11538 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 CLR L
11539
11540 021706 012700 000276 T0276: MOV #0276,R0 ;LOAD R0 WITH TEST NO.
11541 021712 013701 021734 ;LOAD R1 WITH TEST INSTRUCTION WORD
11542 021716 012702 177703 ;DEST ADDR = R3
11543 021722 005004 ;RESULT S / B = 000000
11544 021724 012703 177777 R0276: MOV #-1,R3 ;[DEST] = 177777
11545 021730 000257 ;CLEAR CODES
11546 021732 000273 ;N:C = 1011
11547
11548 021734 005003 I0276: CLR R3 ;TEST THE CLR
11549
11550 021736 100403 BMI E10276 ;N:C = 0100 ?
11551 021740 001002 BNE E10276
11552 021742 102401 BVS E10276
11553 021744 103002 BCC A0276
11554
11555 021746 104005 E10276: ERRORS ;CLR FAILED TO ALTER THE CODES PROPERLY
11556 021750 021724 R0276 ;ERROR LOOP RETURN
11557 021752 020403 A0276: CMP R4,R3 ;RESULT OK ?
11558 021754 001402 BEQ 00276 ;BR IF YES
11559
11560 021756 104000 E20276: ERROR ;CLR DELIVERED THE WRONG RESULT
11561 021760 021724 R0276 ;ERROR LOOP RETURN
11562
11563 021762 000004 00276: SCOPE ;CALL SCOPE LOOP UTILITY
11564
    
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11565 ; *****
11566 ; .SBTTL T0277 CLR DMO TEST - <N:C> = 0000
11567 ; *****
11568 ;MICROPROGRAMMING / LOGIC INFORMATION
11569 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11570 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
11571 ;EXEC: [104]ALUC=MLLHM :[373] D = 000000
11572 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0100
11573 ;SYNC: B05J2 (-) T = 1 USEC
11574 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 CLR L
11575
11576 T0277: MOV #0277,R0 ;LOAD R0 WITH TEST NO.
11577 ;MOV #I0277,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11578 ;MOV #177703,R2 ;DEST ADDR = R3
11579 ;CLR R4 ;RESULT S / B = 000000
11580 R0277: MOV #-1,R3 ;[DEST] = 177777
11581 ;CCC ;CLEAR CODES
11582
11583 I0277: CLR R3 ;TEST THE CLR
11584 ;BMI E10277 ;N:C = 0100 ?
11585 ;BNE E10277
11586 ;BVS E10277
11587 ;BCC A0277
11588
11589 E10277: ERRORS ;CLR FAILED TO ALTER THE CODES PROPERLY
11590 R0277 ;ERROR LOOP RETURN
11591 A0277: CMP R4,R3 ;RESULT OK ?
11592 ;BEQ 00277 ;BR IF YES
11593
11594 E20277: ERROR ;CLR DELIVERED THE WRONG RESULT
11595 R0277 ;ERROR LOOP RETURN
11596
11597 00277: SCOPE ;CALL SCOPE LOOP UTILITY
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F08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 304
 DBQEAB.CMB T0277 CLR DMO TEST - <N:C> = 0000

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11607 ; *****
11608 ; .SBTTL T0300 COM DMO TEST - <N:C> = 0110
11609 ; *****
11610 ;
11611 ; MICROPROGRAMMING / LOGIC INFORMATION
11612 ;
11613 ; ROM SEQ: [104,373,360,001] FC 1,7,8
11614 ;
11615 ; ACT BUTS: 37(104)100,104 / 31(104)360,360 / 27(373)000,001
11616 ;
11617 ; EXEC: [104]ALUC=MLLLL : [373] D = 125252
11618 ;
11619 ; CODES: [373] SPS=1, [360] SPS=3 / N:C = 1001
11620 ;
11621 ; SYNC: B05J2 (-) T = 1 USEC
11622 ;
11623 ; KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 COM L
11624 ;
11625 022040 012700 000300 T0300: MOV #0300,R0 ;LOAD R0 WITH TEST NO.
11626 022044 013701 022070 ;LOAD R1 WITH TEST INSTRUCTION WORD
11627 022050 012702 177703 ;DEST ADDR = R3
11628 022054 012704 125252 ;RESULT S / B = 125252
11629 022060 012703 052525 R0300: MOV #125252,R4 ;[DEST] = 52525
11630 022064 000257 ;CLEAR CODES
11631 022066 000266 ;N:C = 0110
11632 ;
11633 022070 005103 I0300: COM R3 ;TEST THE COM
11634 ;
11635 022072 100003 ;N:C = 1001 ?
11636 022074 001402 BPL E10300
11637 022076 102401 BEQ E10300
11638 022100 103402 BVS E10300
11639 ; BCS A0300
11640 022102 104005 E10300: ERRORS ;COM FAILED TO ALTER THE CODES PROPERLY
11641 022104 022060 R0300 ;ERROR LOOP RETURN
11642 022106 020403 A0300: CMP R4,R3 ;RESULT OK ?
11643 022110 001402 BEQ 00300 ;BR IF YES
11644 ;
11645 022112 104000 E20300: ERROR ;COM DELIVERED THE WRONG RESULT
11646 022114 022060 R0300 ;ERROR LOOP RETURN
11647 ;
11648 022116 000004 00300: SCOPE ;CALL SCOPE LOOP UTILITY
11649 ;
11650 ;
  
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11651 ; *****
11652 ; .SBTTL T0301 COM DMO TEST - <N:C> = 1001
11653 ; *****
11654 ;MICROPROGRAMMING / LOGIC INFORMATION
11655 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11656 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
11657 ;EXEC: [104]ALUC=HLLLL :[373] D = 000000
11658 ;CODES: [373] SPS=1, [360] SPS=3 / N:C =0101
11659 ;SYNC: B05J2 (-) T = 1 USEC
11660 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 COM L
11661
11662 T0301: MOV #0301,R0 ;LOAD R0 WITH TEST NO.
11663 MOV #I0301,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11664 MOV #177703,R2 ;DEST ADDR = R3
11665 CLR R4 ;RESULT S / B = 000000
11666 R0301: MOV #-1,R3 ;[DEST] = 177777
11667 CCC ;CLEAR CODES
11668 271 ;N:C = 1001
11669
11670 I0301: COM R3 ;TEST THE COM
11671 BMI E10301 ;N:C = 0101 ?
11672 BNE E10301
11673 BVS E10301
11674 BCS A0301
11675
11676 E10301: ERRORS ;COM FAILED TO ALTER THE CODES PROPERLY
11677 R0301 ;ERROR LOOP RETURN
11678 A0301: CMP R4,R3 ;RESULT OK ?
11679 BEQ 00301 ;BR IF YES
11680
11681 E20301: ERROR ;COM DELIVERED THE WRONG RESULT
11682 R0301 ;ERROR LOOP RETURN
11683
11684 00301: SCOPE ;CALL SCOPE LOOP UTILITY
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MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 306
 DBQEAR.CMB T0301 COM DMO TEST - <N:C> = 1001

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022176 012700 000302
 022202 013701 022224
 022206 012702 177703
 022212 005004
 022214 012703 177777
 022220 000257
 022222 000273
 022224 005203
 022226 100403
 022230 001002
 022232 102401
 022234 103402
 022236 104005
 022240 022214
 022242 020403
 022244 001402
 022246 104000
 022250 022214
 022252 000004

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; *****
; .SBTTL T0302 INC DMO TEST - <N:C> = 1011
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [104,373,360,001] FC 1,7,8
;ACT BUTS:     37[004]100,104 / 31[104]360,360 / 27[373]000,001
;EXEC:         [104]ALUC=LLLLL :[373] D = 000000
;CODES:        [373] SPS=1, [360] SPS=3 / N:C = 0101
;SYNC:         B05J2 (-) T = 1 USEC
;KEY SIG:      K3-8 CINDO L / K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 INC L

T0302:  MOV      #0302,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0302,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #177703,R2     ;DEST WORD = R3
        CLR      R4              ;RESULT S / B = 000000
R0302:  MOV      #-1,R3          ;[DEST] = 177777
        CCC      273            ;CLEAR CODES
        ;N:C = 1011

I0302:  INC      R3              ;TEST THE INC
        ;N:C = 0101 ?

E10302:  ERRORS R0302          ;INC FAILED TO ALTER THE CODES PROPERLY
A0302:  CMP      R4,R3          ;ERROR LOOP RETURN
        BEQ      00302         ;RESULT OK ?
        ;BR IF YES

E20302:  ERROR  R0302          ;INC DELIVERED THE WRONG RESULT
        ;ERROR LOOP RETURN

00302:  SCOPE
        ;CALL SCOPE LOOP UTILITY
  
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022254	012700	000303
022260	013701	022304
022264	012702	177703
022270	012704	100000
022274	012703	077777
022300	000257	
022302	000264	
022304	005203	
022306	100003	
022310	001402	
022312	102001	
022314	103002	
022316	104005	
022320	022274	
022322	020403	
022324	001402	
022326	104000	
022330	022274	
022332	000004	

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; *****
; .SBTTL T0303 INC DMO TEST - <N:C> = 0100
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:      [104,373,360,001] FC 1,7,8
; ACT BUTS:     37[004]100,104 / 31[104]360,360 / 27[373]000,001
; EXEC:         [104]ALUC=LLLLL :[373] D = 100000
; CODES:        [373] SPS=1, [360] SPS=3 / N:C = 1010
; SYNC:         B05J2 (-) T = 1 USEC
; KEY SIG:      K3-8 CIN00 L / K3-3 DM=0L / K3-4 INC L / K3-4 OVLAP INSTR H
T0303: MOV      #0303,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0303,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #177703,R2      ;DEST ADDR = R3
        MOV      #100000,R4      ;RESULT S / B = 100000
R0303:  MOV      #77777,R3        ;[DEST] = 77777
        CCC
        264                      ;CLEAR CODES
        ;N:C = 0100
I0303:  INC      R3              ;TEST THE INC
        BPL      E10303          ;N:C = 1010 ?
        BEQ      E10303
        BVC      E10303
        BCC      R0303
E10303: ERRORS
R0303:  CMP      R4,R3           ;INC FAILED TO ALTER THE CODES PROPERLY
        BEQ      00303          ;ERROR LOOP RETURN
        ;RESULT OK ?
        ;BR IF YES
E20303: ERROR
R0303:
00303:  SCOPE                   ;CALL SCOPE LOOP UTILITY
  
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JOB

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 308
 DBQEAB.CMB T0303 INC DMO TEST - (N:C) = 0100

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11780 ; *****
11781 ; .SBTTL T0304 DEC DMO TEST - (N:C) = 1011
11782 ; *****
11783
11784 ; MICROPROGRAMMING / LOGIC INFORMATION
11785
11786 ; ROM SEQ: [104,373,360,001] FC 1,7,8
11787
11788 ; ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
11789
11790 ; EXEC: [104]ALUC=LHHHH : [373] D = 000000
11791
11792 ; CODES: [373] SPS=1, [360] SPS=3 / N:C = 0101
11793
11794 ; SYNC: B05J2 (-) T = 1 USEC
11795
11796 ; KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 DEC L
11797
11798 022334 012700 000304 T0304: MOV #0304,R0 ;LOAD R0 WITH TEST NO.
11799 022340 013701 022362 MOV #I0304,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11800 022344 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
11801 022350 005004 CLR R4 ;RESULT S / B = 000000
11802 022352 012703 000001 R0304: MOV #1,R3 ;[DEST] = 1
11803 022356 000257 CCC ;CLEAR CODES
11804 022360 000273 273 ;N:C = 1011
11805
11806 022362 005303 I0304: DEC R3 ;TEST THE DEC
11807
11808 022364 100403 BMI E10304 ;N:C = 0101 ?
11809 022366 001002 BNE E10304
11810 022370 102401 BVS E10304
11811 022372 103402 BCS A0304
11812
11813 022374 104005 E10304: ERRORS ;DEC FAILED TO ALTER THE CODES PROPERLY
11814 022376 022352 R0304 ;ERROR LOOP RETURN
11815 022400 020403 A0304: CMP R4,R3 ;RESULT OK ?
11816 022402 001402 BEQ 00304 ;BR IF YES
11817
11818 022404 104000 E20304: ERROR ;DEC DELIVERED THE WRONG RESULT
11819 022406 022352 R0304 ;ERROR LOOP RETURN
11820
11821 022410 000004 00304: SCOPE ;CALL SCOPE LOOP UTILITY
11822
  
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K08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 309
 DBQEAB.CMB T0304 DEC DMO TEST - <N:C> = 1011

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11823 ; *****
11824 ; .SBTTL T0305 DEC DMO TEST - <N:C> = 1100
11825 ; *****
11826
11827 ;MICROPROGRAMMING / LOGIC INFORMATION
11828
11829 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11830
11831 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
11832
11833 ;EXEC: [104]ALUC=LHHH :[373] D = 77777
11834
11835 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0010
11836
11837 ;SYNC: 805J2 (-) T = 1 USEC
11838
11839 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 DEC L
11840
11841 022412 012700 000305 T0305: MOV #0305,R0 ;LOAD R0 WITH TEST NO.
11842 022416 013701 022442 ;LOAD R1 WITH TEST INSTRUCTION WORD
11843 022422 012702 177703 ;DEST ADDR = R3
11844 022426 012704 077777 ;RESULT S / B = 77777
11845 022432 012703 100000 R0305: MOV #100000,R3 ;[DEST] = 100000
11846 022436 000257 ;CLEAR CODES
11847 022440 000274 ;N:C = 1100
11848
11849 022442 005303 I0305: DEC R3 ;TEST THE DEC
11850
11851 022444 100403 ;BMI E10305 ;N:C = 0010 ?
11852 022446 001402 ;BEQ E10305
11853 022450 102001 ;BVC E10305
11854 022452 103002 ;BCC A0305
11855
11856 022454 104005 E10305: ERRORS ;DEC FAILED TO ALTER THE CODES PROPERLY
11857 022456 022432 R0305 ;ERROR LOOP RETURN
11858 022460 020403 A0305: CMP R4,R3 ;RESULT OK ?
11859 022462 001402 ;BEQ 00305 ;BR IF YES
11860
11861 022464 104000 E20305: ERROR ;DEC DELIVERED THE WRONG RESULT
11862 022466 022432 R0305 ;ERROR LOOP RETURN
11863
11864 022470 000004 00305: SCOPE ;CALL SCOPE LOOP UTILITY
11865

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11866 ; *****
11867 ; .SBTTL TO306 DEC DMO TEST - <N:C> = 0000
11868 ; *****
11869
11870 ;MICROPROGRAMMING / LOGIC INFORMATION
11871
11872 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11873
11874 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
11875
11876 ;EXEC: [104]ALUC=LHHHH :[373] D = 177777
11877
11878 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 1000
11879
11880 ;SYNC: B05J2 (-) T = 1 USEC
11881
11882 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 DEC L
11883
11884 022472 012700 000306 TO306: MOV #0306,R0 ;LOAD R0 WITH TEST NO.
11885 022476 013701 022516 MOV @#I0306,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11886 022502 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
11887 022506 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
11888 022512 005003 R0306: CLR R3 ;[DEST] = 000000
11889 022514 000257 CCC ;CLEAR CODES
11890
11891 022516 005303 I0306: DEC R3 ;TEST THE DEC
11892
11893 022520 100003 BPL E10306 ;N:C = 1000 ?
11894 022522 001402 BEQ E10306
11895 022524 102401 BVS E10306
11896 022526 103002 BCC A0306
11897
11898 022530 104005 E10306: ERRORS ;DEC FAILED TO ALTER THE CODES PROPERLY
11899 022532 022512 R0306 ;ERROR LOOP RETURN
11900 022534 020403 A0306: CMP R4,R3 ;RESULT OK ?
11901 022536 001402 BEQ 00306 ;BR IF YES
11902
11903 022540 104000 E20306: ERROR ;DEC DELIVERED THE WRONG RESULT
11904 022542 022512 R0306 ;ERROR LOOP RETURN
11905
11906 022544 000004 00306: SCOPE ;CALL SCOPE LOOP UTILITY
11907
  
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M08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 311
 DBQEAB.CMB T0305 DEC DMO TEST - <N:C> = 0000

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11908 ; *****
11909 ; .SBTTL T0307 ASL DMO TEST - <N:C> = 1000
11910 ; *****
11911
11912 ;MICROPROGRAMMING / LOGIC INFORMATION
11913
11914 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11915
11916 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
11917
11918 ;EXEC: [104]ALUC=LHLL :[373] D = 000000
11919
11920 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0111
11921
11922 ;SYNC: B05J2 (-) T = 1 USEC
11923
11924 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-6 ROTSHF (L) L / K3-5 ROTSHF
11925
11926 022546 012700 000307 T0307: MOV #0307,R0 ;LOAD R0 WITH TEST NO.
11927 022552 013701 022574 ;LOAD R1 WITH TEST INSTRUCTION WORD
11928 022556 012702 177703 ;DEST ADDR = R3
11929 022562 005004 ;RESULT S / B = 000000
11930 022564 012703 100000 R0307: MOV #100000,R3 ;[DEST] = 100000
11931 022570 000257 ;CLEAR CODES
11932 022572 000270 ;N:C = 1000
11933
11934 022574 006303 I0307: ASL R3 ;TEST THE ASL
11935
11936 022576 100403 ;N:C = 0111 ?
11937 022600 001002 BMI E10307
11938 022602 102001 BNE E10307
11939 022604 103402 BVC E10307
11940 BCS A0307
11941 022606 104005 E10307: ERRORS ;ASL FAILED TO ALTER THE CODES PROPERLY
11942 022610 022564 R0307 ;ERROR LOOP RETURN
11943 022612 020403 A0307: CMP R4,R3 ;RESULT OK ?
11944 022614 001402 BEQ 00307 ;BR IF YES
11945
11946 022616 104000 E20307: ERROR ;ASL DELIVERED THE WRONG RESULT
11947 022620 022564 R0307 ;ERROR LOOP RETURN
11948
11949 022622 000004 00307: SCOPE ;CALL SCOPE LOOP UTILITY
11950
  
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11951 ; *****
11952 ; .SBTTL T0310 ASL DMO TEST - <N:C> = 0101
11953 ; *****
11954 ;MICROPROGRAMMING / LOGIC INFORMATION
11955 ;ROM SEQ: [104,373,360,001] FC 1,7,8
11956 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
11957 ;EXEC: [104]ALUC=LHMLL :[373] D = 100000
11958 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 1010
11959 ;SYNC: B05J2 (-) T = 1 USEC
11960 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-6 ROTSHF (L) L / K3-5 ROTSHF
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11969 022624 012700 000310 T0310: MOV #0310,R0 ;LOAD R0 WITH TEST NO.
11970 022630 013701 022654 2#I0310,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
11971 022634 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
11972 022640 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
11973 022644 012703 040000 R0310: MOV #40000,R3 ;[DEST] = 40000
11974 022650 000257 CCC ;CLEAR CODES
11975 022652 000265 265 ;N:C = 0101
11976
11977 022654 006303 I0310: ASL R3 ;TEST THE ASL
11978
11979 022656 100003 BPL E10310 ;N:C = 1010 ?
11980 022660 001402 BEQ E10310
11981 022662 102001 BVC E10310
11982 022664 103002 BCC A0310
11983
11984 022666 104005 E10310: ERRORS ;ASL FAILED TO ALTER THE CODES PROPERLY
11985 022670 022644 R0310 ;ERROR LOOP RETURN
11986 022672 020403 A0310: CMP R4,R3 ;RESULT OK ?
11987 022674 001402 BEQ 00310 ;BR IF YES
11988
11989 022676 104000 E20310: ERROR ;ASL DELIVERED THE WRONG RESULT
11990 022700 022644 R0310 ;ERROR LOOP RETURN
11991
11992 022702 000004 00310: SCOPE ;CALL SCOPE LOOP UTILITY
11993

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11994 ; *****
11995 ; .SBTTL T0311 ASL DMO TEST - (N:C) = 0010
11996 ; *****
11997
11998 ;MICROPROGRAMMING / LOGIC INFORMATION
11999
12000 ;ROM SEQ: [104,373,360,001] FC 1,7,8
12001
12002 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
12003
12004 ;EXEC: [104]ALUC=LHLL :[373] D = 000000
12005
12006 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0100
12007
12008 ;SYNC: B05J2 (-) T = 1 USEC
12009
12010 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-6 ROTSHF (L) L / K3-5 R
12011
12012 022704 012700 000311 T0311: MOV #0311,R0 ;LOAD R0 WITH TEST NO.
12013 022710 013701 022730 ;LOAD R1 WITH TEST INSTRUCTION WORD
12014 022714 012702 177703 ;DEST ADDR = R3
12015 022720 005004 ;RESULT S / B = 000000
12016 022722 005003 R0311: CLR R4 ;[DEST] = 000000
12017 022724 000257 ;CLEAR CODES
12018 022726 000262 ;N:C = 0010
12019
12020 022730 006303 I0311: ASL R3 ;TEST THE ASL
12021
12022 022732 100403 ;N:C = 0100 ?
12023 022734 001002 BMI E10311
12024 022736 102401 BNE E10311
12025 022740 103002 BVS E10311
12026 ;
12027 022742 104005 E10311: ERRORS ;ASL FAILED TO ALTER THE CODES PROPERLY
12028 022744 022722 R0311 ;ERROR LOOP RETURN
12029 022746 020403 A0311: CMP R4,R3 ;RESULT OK ?
12030 022750 001402 BEQ 00311 ;BR IF YES
12031
12032 022752 104000 E20311: ERROR ;ASL DELIVERED THE WRONG RESULT
12033 022754 022722 R0311 ;ERROR LOOP RETURN
12034
12035 022756 000004 00311: SCOPE ;CALL SCOPE LOOP UTILITY
12036

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12037 ; *****
12038 ; .SBTTL T0312 ROL DMO TEST - <N:C> = 1101
12039 ; *****
12040 ;MICROPROGRAMMING / LOGIC INFORMATION
12041 ;ROM SEQ: [104,373,360,001] FC 1,7,8
12042 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
12043 ;EXEC: [104]ALUC=LHLL :[373] D = 052525
12044 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0011
12045 ;SYNC: B05J2 (-) T = 1 USEC
12046 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-6 ROTSHF (L) L / K3-5 R
12047 ; K3-8 ROT (L) H
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12056 022760 012700 000312 T0312: MOV #0312,R0 ;LOAD R0 WITH TEST NO.
12057 022764 013701 023010 MOV #I0312,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12058 022770 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
12059 022774 012704 052525 MOV #52525,R4 ;RESULT S / B = 52525
12060 023000 012703 125252 R0312: MOV #125252,R3 ;[DEST] = 125252
12061 023004 000257 CCC ;CLEAR CODES
12062 023006 000275 275 ;N:C = 1101
12063
12064 023010 006103 I0312: ROL R3 ;TEST THE ROL
12065
12066 023012 100403 BMI E10312 ;N:C = 0011 ?
12067 023014 001402 BEQ E10312
12068 023016 102001 BVC E10312
12069 023020 103402 BCS A0312
12070
12071 023022 104005 E10312: ERRORS ;ROL FAILED TO ALTER THE CODES PROPERLY
12072 023024 023000 R0312 ;ERROR LOOP RETURN
12073 023026 020403 A0312: CMP R4,R3 ;RESULT OK ?
12074 023030 001402 BEQ 00312 ;BR IF YES
12075
12076 023032 104000 E20312: ERROR ;ROL DELIVERED THE WRONG RESULT
12077 023034 023000 R0312 ;ERROR LOOP RETURN
12078
12079 023036 000004 00312: SCOPE ;CALL SCOPE LOOP UTILITY
12080

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12081 ; *****
12082 ; .SBTTL T0313 ROL DMO TEST - (N:C) = 0101
12083 ; *****
12084 ;MICROPROGRAMMING / LOGIC INFORMATION
12085 ;ROM SEQ: [104,373,360,001] FC 1,7,8
12086 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
12087 ;EXEC: [104]ALUC=LHLL :[373] D = 125252
12088 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 1010
12089 ;SYNC: BOSJ2 (-) T = 1 USEC
12090 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-6 ROTSHF (L) L / K3-5 ROTSHF
12091 ; K3-8 ROT (L) H
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12099
12100 023040 012700 000313 T0313: MOV #0313,R3 ;LOAD R0 WITH TEST NO.
12101 023044 013701 023070 MOV #I0313,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12102 023050 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
12103 023054 012704 125253 MOV #125253,R4 ;RESULT S / B = 125253
12104 023060 012703 052525 R0313: MOV #52525,R3 ;[DEST] = 52525
12105 023064 000257 CCC ;CLEAR CODES
12106 023066 000265 265 ;N:C = 0101
12107
12108 023070 006103 I0313: ROL R3 ;TEST THE ROL
12109
12110 023072 100003 BPL E10313 ;N:C = 1010 ?
12111 023074 001402 BEQ E10313
12112 023076 102001 BVC E10313
12113 023100 103002 BCC A0313
12114
12115 023102 104005 E10313: ERRORS ;ROL FAILED TO ALTER THE CODES PROPERLY
12116 023104 023060 R0313 ;ERROR LOOP RETURN
12117 023106 020403 A0313: CMP R4,R3 ;RESULT OK ?
12118 023110 001402 BEQ 00313 ;BR IF YES
12119
12120 023112 104000 E20313: ERROR ;ROL DELIVERED THE WRONG RESULT
12121 023114 023060 R0313 ;ERROR LOOP RETURN
12122
12123 023116 000004 00313: SCOPE ;CALL SCOPE LOOP UTILITY
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023120 012700 000314
023121 013701 023144
023130 012702 177703
023134 005004
023136 005003
023140 000257
023142 000262

023144 006103

023146 100403
023150 001002
023152 102401
023154 103002

023156 104005
023160 023136
023162 020403
023164 001402

023166 104000
023170 023136

023172 000004

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; *****  
; .SBTTL T0314 ROL DM0 TEST - <N:C> = 0010  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [104,373,360,001] FC 1,7,8  
;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001  
;EXEC: [104]ALUC=LHMLL : [373] D = 000000  
;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0100  
;SYNC: B05J2 (-) T = 1 USEC  
;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-6 ROTSHF (L) L / K3-5 ROTSHF  
; K3-8 ROT (L) H  
  
T0314: MOV #0314 R0 ;LOAD R0 WITH TEST NO.  
MOV #10314,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #177703,R2 ;DEST ADDR = R3  
CLR R4 ;RESULT S / B = 000000  
R0314: CLR R3 ;[DEST] = 000000  
CCC ;CLEAR CODES  
SEV ;N:C = 0010  
  
I0314: ROL R3 ;TEST THE ROL  
  
BMI E10314 ;N:C = 0100 ?  
BNE E10314  
BVS E10314  
BCC R0314  
  
E10314: ERRORS ;ROL FAILED TO ALTER THE CODES PROPERLY  
R0314 ;ERROR LOOP RETURN  
R0314: CMP R4,R3 ;RESULT OK ?  
BEQ 00314 ;BR IF YES  
  
E20314: ERROR ;ROL DELIVERED THE WRONG RESULT  
R0314 ;ERROR LOOP RETURN  
  
00314: SCOPE ;CALL SCOPE LOOP UTILITY
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12169 ; *****
12170 ; .SBTTL T0315 ADC DMO TEST - <N:C> = 0101
12171 ; *****
12172 ;MICROPROGRAMMING / LOGIC INFORMATION
12173 ;ROM SEQ: [104,373,360,001] FC 1,7,8
12174 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
12175 ;EXEC: [104]ALUC=LLLLL :[373] D = 100000
12176 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 1010
12177 ;SYNC: B05J2 (-) T = 1 USEC
12178 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 ADC L
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12187 023174 012700 000315 T0315: MOV #0315,R0 ;LOAD R0 WITH TEST NO.
12188 023200 013701 023224 ;LOAD R1 WITH TEST INSTRUCTION WORD
12189 023204 012702 177703 ;DEST ADDR = R3
12190 023210 012704 100000 ;RESULT S / B = 100000
12191 023214 012703 077777 R0315: MOV #100000,R4 ;[DEST] = 77777
12192 023220 000257 ;CLEAR CODES
12193 023222 000265 ;N:C = 0101
12194
12195 023224 005503 I0315: ADC R3 ;TEST THE ADC
12196
12197 023226 100003 ;N:C = 1010 ?
12198 023230 001402 BPL E10315
12199 023232 102001 BEQ E10315
12200 023234 103002 BVC E10315
12201 BCC A0315
12202 023236 104005 E10315: ERRORS ;ADC FAILED TO ALTER THE CODES PROPERLY
12203 023240 023214 R0315 ;ERROR LOOP RETURN
12204 023242 020403 A0315: CMP R4,R3 ;RESULT OK ?
12205 023244 001402 BEQ 00315 ;BR IF YES
12206
12207 023246 104000 E20315: ERROR ;ADC DELIVERED THE WRONG RESULT
12208 023250 023214 R0315 ;ERROR LOOP RETURN
12209
12210 023252 000004 00315: SCOPE ;CALL SCOPE LOOP UTILITY
12211
    
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12212 ; *****
12213 ; .SBTTL T0316 ADC DMO TEST - <N:C> = 1011
12214 ; *****
12215 ;MICROPROGRAMMING / LOGIC INFORMATION
12216 ;ROM SEQ: [104,373,360,001] FC 1,7,8
12217 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
12218 ;EXEC: [104]ALUC=LLLLL :[373] D = 000000
12219 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0101
12220 ;SYNC: B05J2 (-) T = 1 USEC
12221 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=0L / K3-4 OVLAP INSTR H / K3-4 ADC L
12222
12223 T0316: MOV #0316,R0 ;LOAD R0 WITH TEST NO.
12224 T0316: MOV #I0316,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12225 T0316: MOV #177703,R2 ;DEST ADDR = R3
12226 T0316: CLR R4 ;RESULT S / B = 000000
12227 R0316: MOV #-1,R3 ;[DEST] = 177777
12228 T0316: CCC ;CLEAR CODES
12229 T0316: 273 ;N:C = 1011
12230
12231 I0316: ADC R3 ;TEST THE ADC
12232
12233 BMI E10316 ;N:C = 0101 ?
12234 BNE E10316
12235 BVS E10316
12236 BCS A0316
12237
12238 E10316: ERRORS ;ADC FAILED TO ALTER THE CODES PROPERLY
12239 R0316 ;ERROR LOOP RETURN
12240 A0316: CMP R4,R3 ;RESULT OK ?
12241 A0316: BEQ 00316 ;BR IF YES
12242
12243 E20316: ERROR ;ADC DELIVERED THE WRONG RESULT
12244 R0316 ;ERROR LOOP RETURN
12245
12246 00316: SCOPE ;CALL SCOPE LOOP UTILITY
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12254 ; *****
12255 ; .SBTTL T0317 ADC DMO TEST - <N:C> = 1010
12256 ; *****
12257 ;MICROPROGRAMMING / LOGIC INFORMATION
12258 ;ROM SEQ: (104,373,360,001) FC 1,7,8
12259 ;ACT BUTS: 37(004)100,104 / 31(104)360,360 / 27(373)000,001
12260 ;EXEC: (104)ALUC=LLLLL : (373) D = 177777
12261 ;CODES: (373) SPS=1, (360) SPS=3 / N:C = 1000
12262 ;SYNC: B05J2 (-) T = 1 USEC
12263 ;KEY SIG: / K3-3 DM=0L / K3-4 OVLAP INSTR H / K3-4 ADC L
12264
12265 T0317: MOV #0317,R0 ;LOAD R0 WITH TEST NO.
12266 MOV #I0317,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12267 MOV #177703,R2 ;DEST ADDR = R3
12268 MOV #-1,R4 ;RESULT S / B = 177777
12269 R0317: MOV #-1,R3 ;[DEST] = 177777
12270 CCC ;CLEAR CODES
12271 272 ;N:C = 1010
12272
12273 I0317: ADC R3 ;TEST THE ADC
12274 BPL E10317 ;N:C = 1000 ?
12275 BEQ E10317
12276 BVS E10317
12277 BCC A0317
12278
12279 E10317: ERRORS ;ADC FAILED TO ALTER THE COLES PROPERLY
12280 R0317 ;ERROR LOOP RETURN
12281 A0317: CMP R4,R3 ;RESULT OK ?
12282 BEQ 00317 ;BR IF YES
12283
12284 E20317: ERROR ;ADC DELIVERED THE WRONG RESULT
12285 R0317 ;ERROR LOOP RETURN
12286
12287 00317: SCOPE ;CALL SCOPE LOOP UTILITY
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023412 012700 000320
023416 013701 023440
023422 012702 177703
023426 005004
023430 012703 000001
023434 000257
023436 000273
023440 005603
023442 100403
023444 001002
023446 102401
023450 103002
023452 104005
023454 023430
023456 020403
023460 001402
023462 104000
023464 023430
023466 000004

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; *****  
; .SBTTL T0320 SBC DMO TEST - <N:C> = 1011  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [104,373,360,001] FC 1,7,8  
;ACT BUTS:     37[004]100,104 / 31[104]360,360 / 27[373]000,001  
;EXEC:         [104]ALUC=LHMH :[373] D = 000000  
;CODES:        [373] SPS=1, [360] SPS=3 / N:C = 0100  
;SYNC:         B05J2 (-) T = 1 USEC  
;KEY SIG:      K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 SBC L  
T0320:  MOV      #0320,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @#I0320,R1       ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      #177703,R2      ;DEST ADDR = R3  
        CLR      R4               ;RESULT S / B = 000000  
R0320:  MOV      #1,R3           ;[DEST0321  
        CCC      273             ;CLEAR CODES  
        ;N:C = 1011  
I0320:  SBC      R3              ;TEST THE SBC  
        BMI      E10320          ;N:C = 0100 ?  
        BNE      E10320  
        BVS      E10320  
        BCC      A0320  
E10320: ERRORS  
R0320:  MOV      R0320  
A0320:  CMP      R4,R3          ;SBC FAILED TO ALTER THE CODES PROPERLY  
        BEQ      00320          ;ERROR LOOP RETURN  
        ;RESULT OK ?  
        ;BR IF YES  
E20320: ERROR  
R0320:  MOV      R0320          ;SBC DELIVERED THE WRONG RESULT  
        ;ERROR LOOP RETURN  
00320:  SCOPE                   ;CALL SCOPE LOOP UTILITY
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12340 ; *****
12341 .SBTTL T0321 SBC DMO TEST - <N:C> = 0101
12342 ; *****
12343
12344 ;MICROPROGRAMMING / LOGIC INFORMATION
12345
12346 ;ROM SEQ: [104,373,360,001] FC 1,7,8
12347
12348 ;ACT BUTS: 37[004]100,104 / 31[104]360,360 / 27[373]000,001
12349
12350 ;EXEC: [104]ALUC=LHHH :[373] D = 077777
12351
12352 ;CODES: [373] SPS=1, [360] SPS=3 / N:C = 0010
12353
12354 ;SYNC: B05J2 (-) T = 1 USEC
12355
12356 ;KEY SIG: K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 SBC L
12357
12358 023470 012700 000321 T0321: MOV #0321,R0 ;LOAD R0 WITH TEST NO.
12359 023474 013701 023520 MOV #I0321,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12360 023500 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
12361 023504 012704 077777 MOV #077777,R4 ;RESULT S / B = 077777
12362 023510 012703 100000 R0321: MOV #100000,R3 ;[DEST] = 100000
12363 023514 000257 CCC ;CLEAR CODES
12364 023516 000265 265 ;N:C = 0101
12365
12366 023520 005603 I0321: SBC R3 ;TEST THE SBC
12367
12368 023522 100403 BMI E10321 ;N:C = 0010 ?
12369 023524 001402 BEQ E10321
12370 023526 102001 BVC E10321
12371 023530 103002 BCC A0321
12372
12373 023532 104005 E10321: ERRORS ;SBC FAILED TO ALTER THE CODES PROPERLY
12374 023534 023510 R0321 ;ERROR LOOP RETURN
12375 023536 020403 A0321: CMP R4,R3 ;RESULT OK ?
12376 023540 001402 BEQ 00321 ;BR IF YES
12377
12378 023542 104000 E20321: EPROR ;SBC DELIVERED THE WRONG RESULT
12379 023544 023510 R0321 ;ERROR LOOP RETURN
12380
12381 023546 000004 00321: SCOPE ;CALL SCOPE LOOP UTILITY
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023550 012700 000322
023554 013701 023600
023560 012702 177703
023564 012704 000001
023570 012703 000001
023574 000257
023576 000276

023600 005603

023602 100403
023604 001402
023606 102401
023610 103002

023612 104005
023614 023570
023616 020403
023620 001402

023622 104000
023624 023570

023626 000004

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; *****  
          .SBTTL T0322 SBC DMO TEST - <N:C> = 1110  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [104,373,360,001] FC 1,7,8  
;ACT BUTS:     37[004]100,104 / 31[104]360,360 / 27[373]000,001  
;EXEC:         [104]ALUC=LLLLL :[373] D = 000001  
;CODES:        [373] SPS=1, [360] SPS=3 / N:C = 0000  
;SYNC:         B05J2 (-) T = 1 USEC  
;KEY SIG:      K3-3 DM=OL / K3-4 OVLAP INSTR H / K3-4 SBC L  
  
T0322:  MOV      #0322,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @#I0322,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      #177703,R2     ;DEST ADDR = R3  
        MOV      #1,R4          ;RESULT S / B = 1  
R0322:  MOV      #1,R3          ;[DEST] = 1  
        CCC  
        276                    ;CLEAR CODES  
        ;N:C = 1110  
  
I0322:  SBC      R3            ;TEST THE SBC  
        BMI      E10322        ;N:C = 0000 ?  
        BEQ      E10322  
        BVS      E10322  
        BCC      A0322  
  
E10322: ERRORS  
        R0322  
A0322:  CMP      R4,R3        ;SBC FAILED TO ALTER THE CODES PROPERLY  
        BEQ      00322        ;ERROR LOOP RETURN  
        ;RESULT OK ?  
        ;BR IF YES  
  
E20322: ERROR  
        R0322                ;SBC DELIVERED THE WRONG RESULT  
        ;ERROR LOOP RETURN  
  
00322:  SCOPE                ;CALL SCOPE LOOP UTILITY
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023630 012700 000323
023634 013701 023656
023640 012702 177703
023644 012704 177777
023650 005003
023652 000257
023654 000267
023656 005603
023660 100003
023662 001402
023664 102401
023666 103402
023670 104005
023672 023650
023674 020403
023676 001402
023700 104000
023702 023650
023704 000004

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; *****  
.SBTTL T0323 SBC DMO TEST - <N:C> = 0111  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [104,373,360,001] FC 1,7,8  
;ACT BUTS:     37[004]100,104 / 31[104]360,360 / 27[373]000,001  
;EXEC:         [104]ALUC=LHHHH :[373] D = 177777  
;CODES:        [373] SPS=1, [360] SPS=3 / N:C 1001  
;SYNC:         B05J2 (-) T = 1 USEC  
;KEY SIG:      K3-3 DM=0L / K3-4 OVLAP INSTR H / K3-4 SBC L  
T0323:  MOV      #0323,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @#I0323,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      #177703,R2     ;DEST ADDR = R3  
        MOV      #-1,R4         ;RESULT S / B = 177777  
R0323:  CLR      R3              ;[DEST] = 000000  
        CCC      267            ;CLEAR CODES  
        ;N:C = 0111  
I0323:  SBC      R3              ;TEST THE SBC  
        BPL      E10323         ;N:C = 1001 ?  
        BEQ      E10323  
        BVS      E10323  
        BCS      A0323  
E10323: ERRORS R0323           ;SBC FAILED TO ALTER THE CODES PROPERLY  
        R0323                 ;ERROR LOOP RETURN  
A0323:  CMP      R4,R3          ;RESULT OK ?  
        BEQ      00323         ;BR IF YES  
E20323: ERROR  R0323           ;SBC DELIVERED THE WRONG RESULT  
        R0323                 ;ERROR LOOP RETURN ADDRESS  
00323:  SCOPE  
        ;CALL THE SCOPE LOOP UTILITY
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12468 ; *****
12469 ; .SBTTL T0324 TST DM1 TEST - <N:C> = 1011
12470 ; *****
12471 ;MICROPROGRAMMING / LOGIC INFORMATION
12472 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12473 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12474 ;EXEC: [220]ALUC=LLLLL :[211] D = 000000
12475 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100
12476 ;SYNC: B05J2 (-) T = 2 USEC
12477 ;KEY SIG: K3-3 DM=1L / K3-4 TST L / K1-7 D(15:00)=0 H
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12486 023706 012700 000324 T0324: MOV #0324,R0 ;LOAD R0 WITH TEST NO.
12487 023712 013701 023732 MOV #I0324,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12488 023716 012702 067602 MOV #M0324,R2 ;DEST ADDR = M0324
12489 023722 005004 CLR R4 ;RESULT S / B = 000000
12490 023724 005012 R0324: CLR (R2) ;[DEST] = 000000
12491 023726 000257 CCC ;CLEAR CODES
12492 023730 000273 273 ;N:C=1011
12493
12494 023732 005712 I0324: TST (R2) ;TEST THE TST
12495
12496 023734 100403 BMI E10324 ;N:C = 0100 ?
12497 023736 001002 BNE E10324
12498 023740 102401 BVS E10324
12499 023742 103002 BCC A0324
12500
12501 023744 104005 E10324: ERROR5 ;TST FAILED TO ALTER CODES PROPERLY
12502 023746 023724 R0324 ;ERROR LOOP RETURN
12503
12504 023750 020412 A0324: CMP R4,(R2) ;RESULT OK ?
12505 023752 001403 BEQ 00324 ;BR IF YES
12506
12507 023754 011203 MOV (R2),R3 ;GET THE WAS DATA
12508 023756 104000 E20324: ERROR ;TST ALTERED THE [DEST]
12509 023760 023724 R0324 ;ERROR LOOP RETURN
12510
12511 023762 000004 00324: SCOPE ;CALL SCOPE LOOP UTILITY
12512
12513
    
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12514 ; *****
12515 ; .SBTTL T0325 TST DM1 TEST - <N:C> = 0100
12516 ; *****
12517 ;MICROPROGRAMMING / LOGIC INFORMATION
12518 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12519 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12520 ;EXEC: [220]ALUC=LLLLL : [211] D = 177777
12521 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 1000
12522 ;SYNC: B05J2 (-) T = 2 USEC
12523 ;KEY SIG: K3-3 DM=1L / K3-4 TST L
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12532 023764 012700 000325 T0325: MOV #0325,R0 ;LOAD R0 WITH TEST NO.
12533 023770 013701 024014 MOV #I0325,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12534 023774 012702 067602 MOV #M0325,R2 ;DEST ADDR = M0325
12535 024000 005004 CLR R4
12536 024002 005104 COM R4 ;RESULT S / B = 177777
12537 024004 012712 177777 R0325: MOV #-1,(R2) ;[DEST] = 177777
12538 024010 000257 CCC ;CLEAR CODES
12539 024012 000264 264 ;N:C=0100
12540
12541 024014 005712 I0325: TST (R2) ;TEST THE TST
12542
12543 024016 100003 BPL E10325 ;N:C = 1000 ?
12544 024020 001402 BEQ E10325
12545 024022 102401 BVS E10325
12546 024024 103002 BCC A0325
12547
12548 024026 114005 E10325: ERROR5 ;TST FAILED TO ALTER CODES PROPERLY
12549 024030 024004 R0325 ;ERROR LOOP RETURN
12550
12551 024032 020412 A0325: CMP R4,(R2) ;RESULT OK ?
12552 024034 001403 BEQ 00325 ;BR IF YES
12553
12554 024036 011203 MOV (R2),R3 ;GET THE WAS DATA
12555 024040 104000 E20325: ERROR ;TST ALTERED THE [DEST]
12556 024042 024004 R0325 ;ERROR LOOP RETURN
12557
12558 024044 000004 00325: SCOPE ;CALL SCOPE LOOP UTILITY
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024046 012700 000326
024052 013701 024074
024056 012702 067602
024062 005004
024064 012712 177777
024070 000257
024072 000273

024074 005012

024076 100403
024100 001002
024102 102401
024104 103002

024106 104005
024110 024064
024112 020412
024114 001403

024116 011203
024120 104000
024122 024064

024124 000004

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; *****  
; .SBTTL T0326 CLR DMI TEST - (N:C) = 1011  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8  
;ACT BUTS: 3710041100,161 / 3312661220,220 / 1613671016,016  
;EXEC: [220]ALUC=HLLMH :[211] D = 000000  
;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100  
;SYNC: B05J2 (-) T = 2 USEC  
;KEY SIG: K3-3 DM=1L / K3-4 CLR L  
T0326: MOV #0326,R0 ;LOAD R0 WITH TEST NO.  
MOV #I0326,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #M0326,R2 ;DEST ADDR = M0326  
CLR R4 ;RESULT S / B = 000000  
R0326: MOV #-1,(R2) ;[DEST] = 177777  
CCC ;CLEAR CODES  
273 ;N:C = 1011  
  
I0326: CLR (R2) ;TEST THE CLR  
  
BMI E10326 ;N:C = 0100 ?  
BNE E10326  
BVS E10326  
BCC A0326  
  
E10326: ERRORS ;CLR FAILED TO ALTER THE CODES PROPERLY  
R0326 ;ERROR LOOP RETURN  
A0326: CMP R4,(R2) ;RESULT OK ?  
BEQ 00326 ;BR IF YES  
  
E20326: MOV (R2),R3 ;GET THE WAS DATA  
ERROR ;CLR DELIVERED THE WRONG RESULT  
R0326 ;ERROR LOOP RETURN  
  
00326: SCOPE ;CALL SCOPE LOOP UTILITY
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C10

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12604 ; *****
12605 ; .SBTTL T0327 CLR DM2 TEST - <N:C> = 0000
12606 ; *****
12607 ; MICROPROGRAMMING / LOGIC INFORMATION
12608 ; ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12609 ; ACT BUTS: 37[004]100,161 / 33[266]220,220 / 16[367]016,016
12610 ; EXEC: [220]ALUC=MLLHH :[211] D = 000000
12611 ; CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100
12612 ; SYNC: B05J2 (-) T = 2 USEC
12613 ; KEY SIG: K3-3 DM=1L / K3-4 CLR L
12614
12615 T0327: MOV #0327,R0 ;LOAD R0 WITH TEST NO.
12616 MOV #I0327,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12617 MOV #M0327,R2 ;DEST ADDR = M0327
12618 CLR R4 ;RESULT S / B = 000000
12619 R0327: MOV #D0327+2,(R2) ;[DEST] = 177777
12620 CCC ;CLEAR CODES
12621
12622 I0327: CLR (R2)+ ;TEST THE CLR
12623
12624 BMI E10327 ;N:C = 0100 ?
12625 BNE E10327
12626 BVS E10327
12627 BCC A0327
12628
12629 E10327: ERRORS ;CLR FAILED TO ALTER THE CODES PROPERLY
12630 R0327 ;ERROR LOOP RETURN
12631 A0327: CMP #M0327+2,R2 ;DID CLR INCREMENT DEST REG
12632 BEQ B0327 ;BR IF YES
12633
12634 E20327: ERRORS ;CLR FAILED TO UPDATE DEST REG
12635 R0327 ;ERROR LOOP RETURN
12636
12637 B0327: CMP R4,-(R2) ;RESULT OK ?
12638 BEQ 00327 ;BR IF YES
12639
12640 E30327: MOV (R2),R3 ;GET THE WAS DATA
12641 ERROR ;CLR DELIVERED THE WRONG RESULT
12642 R0327 ;ERROR LOOP RETURN
12643
12644 00327: SCOPE ;CALL SCOPE LOOP UTILITY
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E10

.MAIN. NACY11 27(732) 15-OCT-76 14:58 PAGE 329
 DBQEAB.CMB T0330 COM DM1 TEST - <N:C> = 0110

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12698 ; *****
12699 ; .SBTTL T0331 COM DM1 TEST - <N:C> = 1001
12700 ; *****
12701 ;MICROPROGRAMMING / LOGIC INFORMATION
12702 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12703 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12704 ;EXEC: [220]ALUC=MLLLL :[211] D = 000000
12705 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0101
12706 ;SYNC: B05J2 (-) T = 2 USEC
12707 ;KEY SIG: K3-3 DM=1L / K3-4 COM L
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12716 024300 012700 000331 T0331: MOV #0331,R0 ;LOAD R0 WITH TEST NO.
12717 024304 013701 024326 ;LOAD R1 WITH TEST INSTRUCTION WORD
12718 024310 012702 067602 ;DEST ADDR = MBUF0
12719 024314 005004 ;RESULT S / B = 000000
12720 024316 012712 177777 R0331: MOV #-1,(R2) ;[DEST] = 177777
12721 024322 000257 ;CLEAR CODES
12722 024324 000271 ;N:C = 1001
12723
12724 024326 005112 I0331: COM (R2) ;TEST THE COM
12725
12726 024330 100403 ;N:C = 0101 ?
12727 024332 001002 BMI E10331
12728 024334 102401 BNE E10331
12729 024336 103402 BVS E10331
12730 A0331 BCS A0331
12731 024340 104005 E10331: ERRORS ;COM FAILED TO ALTER THE CODES PROPERLY
12732 024342 024316 R0331 ;ERROR LOOP RETURN
12733 024344 020412 A0331: CMP R4,(R2) ;RESULT OK ?
12734 024346 001403 BEQ 00331 ;BR IF YES
12735
12736 024350 011203 ;GET THE WAS DATA
12737 024352 104000 E20331: ERROR ;COM DELIVERED THE WRONG RESULT
12738 024354 024316 R0331 ;ERROR LOOP RETURN
12739
12740 024356 000004 00331: SCOPE ;CALL SCOPE LOOP UTILITY
12741
  
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F10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 330
 DBQEAB.CMB T0331 COM DM1 TEST - <N:C> = 1001

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024360 012700 000332
 024364 013701 024406
 024370 012702 067602
 024374 005004
 024376 012712 177777
 024402 000257
 024404 000273
 024406 005212
 024410 100403
 024412 001002
 024414 102401
 024416 103402
 024420 104005
 024422 024376
 024424 020412
 024426 001403
 024430 011203
 024432 104000
 024434 024376
 024436 000004

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; *****
; .SBTTL T0332 INC DM1 TEST - <N:C> = 1011
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [161,266,267,220,211,367,275,016] FC 1,3,9,8
;ACT BUTS:     37(004)100,161 / 33(266)220,220 / 16(367)016,016
;EXEC:         [220]ALUC=LLLLL : [211] D = 000000
;CODES:        [211] SPS=1, [367] SPS=3 / N:C = 0101
;SYNC:         B05J2 (-) T = 2 USEC
;KEY SIG:      K3-3 DM=1L / K3-4 INC L / K3-8 CINDO L

T0332:  MOV      #0332,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0332,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #M0UFO,R2      ;DEST ADDR = M0UFO
        CLR      R4              ;RESULT S / B = 000000
R0332:  MOV      #-1,(R2)        ;[DEST] = 177777
        CUC
        273                    ;CLEAR CODES
                                ;N:C = 1011

I0332:  INC      (R2)            ;TEST THE INC
                                ;N:C = 0101 ?

        BMI      E10332
        BNE      E10332
        BVS      E10332
        BCS      A0332

E10332:  ERRORS
R0332:  R0332
A0332:  CMP      R4,(R2)        ;INC FAILED TO ALTER THE CODES PROPERLY
        BEQ      00332         ;ERROR LOOP RETURN
                                ;RESULT OK ?
                                ;BR IF YES

E20332:  MOV      (R2),R3        ;GET THE WAS DATA
        ERROR
R0332:  R0332
                                ;INC DELIVERED THE WRONG RESULT
                                ;ERROR LOOP RETURN

00332:  SCOPE                    ;CALL SCOPE LOOP UTILITY
  
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G10

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 331
 DBQEAB.CMB T0332 INC DM1 TEST - <N:C> = 1011

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12786 ; *****
12787 ; .SBTTL T0333 INC DM1 TEST - <N:C> = 0100
12788 ; *****
12789
12790 ;MICROPROGRAMMING / LOGIC INFORMATION
12791
12792 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12793
12794 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12795
12796 ;EXEC: [220]ALUC=LLLLL : [211] D = 100000
12797
12798 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 1010
12799
12800 ;SYNC: B05J2 (-) T = 2 USEC
12801
12802 ;KEY SIG: K3-3 DM=1L / K3-4 INC L / K3-8 CIN00 L
12803
12804 024440 012700 000333 T0333: MOV #0333,R0 ;LOAD R0 WITH TEST NO.
12805 024444 013701 024470 ;LOAD R1 WITH TEST INSTRUCTION WORD
12806 024450 012702 067602 ;DEST ADDR = MBUF0
12807 024454 012704 100000 ;RESULT S / B = 100000
12808 024460 012712 077777 R0333: MOV #77777,(R2) ;[DEST] = 77777
12809 024464 000257 ;CLEAR CODES
12810 024466 000264 ;N:C = 0100
12811
12812 024470 005212 I0333: INC (R2) ;TEST THE INC
12813
12814 024472 100003 ;N:C = 1010 ?
12815 024474 001402 BPL E10333
12816 024476 102001 BEQ E10333
12817 024500 103002 BVC E10333
12818 BCC A0333
12819 024502 104005 E10333: ERRORS ;INC FAILED TO ALTER THE CODES PROPERLY
12820 024504 024460 R0333 ;ERROR LOOP RETURN
12821 024506 020412 A0333: CMP R4,(R2) ;RESULT OK ?
12822 024510 001403 BEQ 00333 ;BR IF YES
12823
12824 024512 011203 ;GET THE WAS DATA
12825 024514 104000 E20333: ERROR ;INC DELIVERED THE WRONG RESULT
12826 024516 024460 R0333 ;ERROR LOOP RETURN
12827
12828 024520 000004 00333: SCOPE ;CALL SCOPE LOOP UTILITY
12829

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H10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 332
DBQEAB.CMB T0333 INC DM1 TEST - <N:C> = 0100

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12830 ; *****
12831 ; .SBTTL T0334 DEC DM1 TEST - <N:C> = 1011
12832 ; *****
12833 ; MICROPROGRAMMING / LOGIC INFORMATION
12834 ; ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12835 ; ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12836 ; EXEC: [220]ALUC=LHMMH : [211] D = 000000
12837 ; CODES: [211] SPS=1, [367] SPS=3 / N:C = 0101
12838 ; SYNC: B05J2 (-) T = 2 USEC
12839 ; KEY SIG: K3-3 DM=1L / K3-4 DEC L
12840
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12848 024522 012700 000334 T0334: MOV #0334,R0 ;LOAD R0 WITH TEST NO.
12849 024526 013701 024562 MOV @#I0334,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12850 024532 032737 000100 066642 BIT #100,@#BPTLOC ;BREAKPOINT HALT SET
12851 024540 001401 BEQ .+4 ;BR IF NOT
12852 024542 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
12853 024544 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
12854 024550 005004 CLR R4 ;RESULT S / B = 000000
12855 024552 012712 000001 R0334: MOV #1,(R2) ;[DEST] = 1
12856 024556 000257 CCC ;CLEAR CODES
12857 024560 000273 273 ;N:C = 1011
12858
12859 024562 005312 I0334: DEC (R2) ;TEST THE DEC
12860
12861 024564 100403 BMI E10334 ;N:C = 0101 ?
12862 024566 001002 BNE E10334
12863 024570 102401 BVS E10334
12864 024572 103402 BCS A0334
12865
12866 024574 104005 E10334: ERROR5 ;DEC FAILED TO ALTER THE CODES PROPERLY
12867 024576 024552 R0334 ;ERROR LOOP RETURN
12868 024600 020412 A0334: CMP R4,(R2) ;RESULT OK ?
12869 024602 001403 BEQ 00334 ;BR IF YES
12870
12871 024604 011203 MOV (R2),R3 ;GET THE WAS DATA
12872 024606 104000 E20334: ERROR ;DEC DELIVERED THE WRONG RESULT
12873 024610 024552 R0334 ;ERROR LOOP RETURN
12874
12875 024612 000004 00334: SCOPE ;CALL SCOPE LOOP UTILITY
12876
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12877 ; *****
12878 ; .SBTTL T0335 DEC DMI TEST - <N:C> = 1100
12879 ; *****
12880 ;MICROPROGRAMMING / LOGIC INFORMATION
12881
12882 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12883
12884 ;ACT BUTS: 37[004]100,161 / 33[266]220,220 / 16[367]016,016
12885
12886 ;EXEC: [220]ALUC=LHMH :[211] D = 77777
12887
12888 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0010
12889
12890 ;SYNC: B05J2 (-) T = 2 USEC
12891
12892 ;KEY SIG: K3-3 DM=1L / K3-4 DEC L
12893
12894
12895 024614 012700 000335 T0335: MOV #0335,R0 ;LOAD R0 WITH TEST NO.
12896 024620 013701 024644 ;LOAD R1 WITH TEST INSTRUCTION WORD
12897 024624 012702 067602 ;DEST ADDR = MBUFO
12898 024630 012704 077777 ;RESULT S / B = 77777
12899 024634 012712 100000 R0335: MOV #100000,(R2) ;[DEST] = 100000
12900 024640 000257 ;CLEAR CODES
12901 024642 000274 ;N:C = 1100
12902
12903 024644 005312 I0335: DEC (R2) ;TEST THE DEC
12904
12905 024646 100403 ;N:C = 0010 ?
12906 024650 001402 BMI E10335
12907 024652 102001 BEQ E10335
12908 024654 103002 BVC E10335
12909 BCC A0335
12910 024656 104005 E10335: ERRORS ;DEC FAILED TO ALTER THE CODES PROPERLY
12911 024660 024634 R0335 ;ERROR LOOP RETURN
12912 024662 020412 A0335: CMP R4,(R2) ;RESULT OK ?
12913 024664 001403 BEQ 00335 ;BR IF YES
12914
12915 024666 011203 E20335: MOV (R2),R3 ;GET THE WAS DATA
12916 024670 104000 ERROR ;DEC DELIVERED THE WRONG RESULT
12917 024672 024634 R0335 ;ERROR LOOP RETURN
12918
12919 024674 000004 00335: SCOPE ;CALL SCOPE LOOP UTILITY
12920

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12921 ; *****
12922 ; .SBTTL T0336 DEC DMI TEST - <N:C> = 0000
12923 ; *****
12924 ;MICROPROGRAMMING / LOGIC INFORMATION
12925 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12926 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12927 ;EXEC: [220]ALUC=LHMH : [211] D = 177777
12928 ;CODES: [211] SPS=1, [367] SPS=3 / N:C 1000
12929 ;SYNC: B05J2 (-) T = 2 USEC
12930 ;KEY SIG: K3-3 DM=1L / K3-4 DEC L
12931
12932 T0336: MOV #0336,R0 ;LOAD R0 WITH TEST NO.
12933 MOV @#I0336,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12934 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
12935 MOV #-1,R4 ;RESULT S / B = 177777
12936 R0336: CLR (R2) ;[DEST] = 000000
12937 CCC ;CLEAR CODES
12938
12939 I0336: DEC (R2) ;TEST THE DEC
12940 BPL E10336 ;N:C = 1000 ?
12941 BEQ E10336
12942 BVS E10336
12943 BCC A0336
12944
12945 E10336: ERROR5 ;DEC FAILED TO ALTER THE CODES PROPERLY
12946 R0336 ;ERROR LOOP RETURN
12947 A0336: CMP R4,(R2) ;RESULT OK ?
12948 BEQ 00336 ;BR IF YES
12949
12950 MOV (R2),R3 ;GET THE WAS DATA
12951 E20336: ERROR ;DEC DELIVERED THE WRONG RESULT
12952 R0336 ;ERROR LOOP RETURN
12953
12954 00336: SCOPE ;CALL SCOPE LOOP UTILITY
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K10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 335
DBQEAB.CMB T0336 DEC DM1 TEST - <N:C> = 0000

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12964 ; *****
12965 ; .SBTTL T0337 ASL DM1 TEST - <N:C> = 1000
12966 ; *****
12967
12968 ;MICROPROGRAMMING / LOGIC INFORMATION
12969
12970 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
12971
12972 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
12973
12974 ;EXEC: [220]ALUC=LHLL :[211] D = 000000
12975
12976 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0111
12977
12978 ;SYNC: B05J2 (-) T = 2 USEC
12979
12980 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF (L) L / K3-5 ROTSHF H
12981
12982 024754 012700 000337 T0337: MOV #0337,R0 ;LOAD R0 WITH TEST NO.
12983 024760 013701 025002 MOV #I0337,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
12984 024764 012702 067602 MOV #M0337,R2 ;DEST ADDR = M0337
12985 024770 005004 CLR R4 ;RESULT S / B = 000000
12986 024772 012712 100000 R0337: MOV #100000,(R2) ;[DEST] = 100000
12987 024776 000257 CCC ;CLEAR CODES
12988 025000 000270 SEN ;N:C = 1000
12989
12990 025002 006312 I0337: ASL (R2) ;TEST THE ASL
12991
12992 025004 100403 BMI E10337 ;N:C = 0111 ?
12993 025006 001002 BNE E10337
12994 025010 102001 BVC E10337
12995 025012 103402 BCS A0337
12996
12997 025014 104005 E10337: ERRORS ;ASL FAILED TO ALTER THE CODES PROPERLY
12998 025016 024772 R0337 ;ERROR LOOP RETURN
12999 025020 020412 A0337: CMP R4,(R2) ;RESULT OK ?
13000 025022 001403 BEQ 00337 ;BR IF YES
13001
13002 025024 011203 MOV (R2),R3 ;GET THE WAS DATA
13003 025026 104000 E20337: ERROR ;ASL DELIVERED THE WRONG RESULT
13004 025030 024772 R0337 ;ERROR LOOP RETURN
13005
13006 025032 000004 00337: SCOPE ;CALL SCOPE LOOP UTILITY
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 13026 025034 012700 000340
 13027 025040 013701 025064
 13028 025044 012702 067602
 13029 025050 012704 100000
 13030 025054 012712 040000
 13031 025060 000257
 13032 025062 000265
 13033
 13034 025064 006312
 13035
 13036 025066 100003
 13037 025070 001402
 13038 025072 102001
 13039 025074 103002
 13040
 13041 025076 104005
 13042 025100 025054
 13043 025102 020412
 13044 025104 001403
 13045
 13046 025106 011203
 13047 025110 104000
 13048 025112 025054
 13049
 13050 025114 000004
 13051

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; *****
; .SBTTL T0340 ASL QM1 TEST - <N:C> = 0101
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [161,266,267,220,211,367,375,016] FC 1,3,9,8
;ACT BUTS:     37[004]100,161 / 33[266]220,220 / 16[367]016,016
;EXEC:         [220]ALUC=LHLL :[211] D = 100000
;CODES:        [211] SPS=1, [367] SPS=3 / N:C = 1010
;SYNC:         B05J2 (-) T = 2 USEC
;KEY SIG:      K3-3 DM=1L / K3-6 ROTSHF (L) L / K3-5 ROTSHF H

T0340:  MOV      #0340,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0340,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #M0340,R2      ;DEST ADDR = M0340
        MOV      #100000,R4      ;RESULT S / B = 100000
R0340:  MOV      #40000,(R2)      ;[DEST] = 40000
        CCC
        265                      ;CLEAR CODES
        ;N:C = 0101

I0340:  ASL      (R2)            ;TEST THE ASL
        BPL      E10340          ;N:C = 1010 ?
        BEQ      E10340
        BVC      E10340
        BCC      A0340

E10340:  ERRORS
R0340:  MOV      (R2),R3          ;GET THE WAS DATA
A0340:  CMP      R4,(R2)          ;ASL DELIVERED THE WRONG RESULT
        BEQ      00340          ;ERROR LOOP RETURN
        ;RESULT OK ?
        ;BR IF YES

E20340:  ERROR
R0340:  MOV      (R2),R3          ;GET THE WAS DATA
        ;ASL DELIVERED THE WRONG RESULT
        ;ERROR LOOP RETURN

00340:  SCOPE                    ;CALL SCOPE LOOP UTILITY
  
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M10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 337
 DBQEAB.CMB T0340 ASL DMI TEST - <N:C> = 0101

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13052 ; *****
13053 ; .SBTTL T0341 ASL DMI TEST - <N:C> = 0010
13054 ; *****
13055 ;MICROPROGRAMMING / LOGIC INFORMATION
13056 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13057 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
13058 ;EXEC: [220]ALUC=LHLL :[211] D = 000000
13059 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100
13060 ;SYNC: B05J2 (-) T = 2 USEC
13061 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF (L) L / K3-5 ROTSHF F
13062
13063 T0341: MOV #0341,R0 ;LOAD R0 WITH TEST NO.
13064 T0341: MOV #I0341,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13065 T0341: MOV #M0341,R2 ;DEST ADDR = M0341
13066 T0341: CLR R4 ;RESULT S / B = 000000
13067 T0341: CLR (R2) ;[DEST] = 000000
13068 T0341: CCC ;CLEAR CODES
13069 T0341: SEV ;N:C = 0010
13070
13071 T0341: ASL (R2) ;TEST THE ASL
13072
13073 T0341: BMI E10341 ;N:C = 0100 ?
13074 T0341: BNE E10341
13075 T0341: BVS E10341
13076 T0341: BCC A0341
13077
13078 E10341: ERROR5 ;ASL FAILED TO ALTER THE CODES PROPERLY
13079 R0341: ;ERROR LOOP RETURN
13080 A0341: CMP R4,(R2) ;RESULT OK ?
13081 A0341: BEQ 00341 ;BR IF YES
13082
13083 E20341: MOV (R2),R3 ;GET THE WAS DATA
13084 E20341: ERROR R0341 ;ASL DELIVERED THE WRONG RESULT
13085 E20341: ;ERROR LOOP RETURN
13086
13087 00341: SCOPE ;CALL SCOPE LOOP UTILITY
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13096 ; *****
13097 ; .SBTTL T0342 ROL DM1 TEST - <N:C> = 1101
13098 ; *****
13099
13100 ;MICROPROGRAMMING / LOGIC INFURMATION
13101
13102 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13103
13104 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
13105
13106 ;EXEC: [220]ALUC=LHLL :[211] D = 052525
13107
13108 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0011
13109
13110 ;SYNC: B05J2 (-) T = 2 USEC
13111
13112 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF (L) L / K3-5 ROTSHF H / K3-8 ROT (L) H
13113
13114 025174 012700 000342 T0342: MOV #0342,R0 ;LOAD R0 WITH TEST NO.
13115 025200 013701 025224 ;LOAD R1 WITH TEST INSTRUCTION WORD
13116 025204 012702 067602 ;DEST ADDR = MBUFO
13117 025210 012704 052525 ;RESULT S / B = 52525
13118 025214 012712 125252 R0342: MOV #125252,(R2) ;[DEST] = 125252
13119 025220 000257 ;CLEAR CODES
13120 025222 000275 ;N:C = 1101
13121
13122 025224 006112 I0342: ROL (R2) ;TEST THE ROL
13123
13124 025226 100403 ;N:C = 0011 ?
13125 025230 001402 BMI E10342
13126 025232 102001 BEQ E10342
13127 025234 103402 BVC E10342
13128 BCS A0342
13129 025236 104005 E10342: ERRORS ;ROL FAILED TO ALTER THE CODES PROPERLY
13130 025240 025214 R0342 ;ERROR LOOP RETURN
13131 025242 020412 A0342: CMP R4,(R2) ;RESULT OK ?
13132 025244 001403 BEQ 00342 ;BR IF YES
13133
13134 025246 011203 E20342: MOV (R2),R3 ;GET THE WAS DATA
13135 025250 104000 ;ROL DELIVERED THE WRONG RESULT
13136 025252 025214 R0342 ;ERROR LOOP RETURN
13137
13138 025254 000004 00342: SCOPE ;CALL SCOPE LOOP UTILITY
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025256 012700 000343
025262 013701 025306
025266 012702 067602
025272 012704 125253
025276 012712 052525
025302 000257
025304 000265

025306 006112

025310 100003
025312 001402
025314 102001
025316 103002

025320 104005
025322 025276
025324 020412
025326 001403

025330 011203
025332 104000
025334 025276

025336 000004

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; *****  
; .SBTTL T0343 ROL DM1 TEST - (N:C) = 0101  
; *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; ROM SEQ: [161,266,267,220,211,367,075,016] FC 1,3,9,8  
; ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016  
; EXEC: [220]ALUC=LHLL :[211] D = 125253  
; CODES: [211] SPS=1, [367] SPS=3 / N:C = 1010  
; SYNC: BG5J2 (-) T = 2 USEC  
; KEY SIG: K3-3 DM=1L / K3-6 ROTSHF (L) L / K3-5 ROTSHF H / K3-8 ROT (L) H  
  
T0343: MOV #0343,R0 ;LOAD R0 WITH TEST NO.  
MOV #I0343,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #M0343,R2 ;DEST ADDR = M0343  
MOV #125253,R4 ;RESULT S / B = 125253  
R0343: MOV #52525,(R2) ;[DEST] = 52525  
CCC ;CLEAR CODES  
265 ;N:C = 0101  
  
I0343: ROL (R2) ;TEST THE ROL  
  
BPL E10343 ;N:C = 1010 ?  
BEQ E10343  
BVC E10343  
BCC A0343  
  
E10343: ERRORS ;ROL FAILED TO ALTER THE CODES PROPERLY  
R0343 ;ERROR LOOP RETURN  
A0343: CMP R4,(R2) ;RESULT OK ?  
BEQ 00343 ;BR IF YES  
  
MOV (R2),R3 ;GET THE WAS DATA  
E20343: ERROR ;ROL DELIVERED THE WRONG RESULT  
R0343 ;ERROR LOOP RETURN  
  
00343: SCOPE ;CALL SCOPE LOOP UTILITY
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C11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 340
 DBQEAB.CMB T0343 ROL DMI TEST - (N:C) = 0101

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13184 ; *****
13185 ; .5BTTL T0344 ROL DMI TEST - (N:C) = 0010
13186 ; *****
13187
13188 ;MICROPROGRAMMING / LOGIC INFORMATION
13189
13190 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13191
13192 ;ACT BUTS: 37[004]100,161 / 33[266]220,220 / 16[367]016,016
13193
13194 ;EXEC: [220]ALUC=LHLL :[211] D = 000000
13195
13196 ;CODES: [211] SPS=1, [367] SPS=3 / N:C =0100
13197
13198 ;SYNC: B05J2 (-) T = 2 USEC
13199
13200 ;KEY SIG: K3-3 DM=1L / K3-6 ROTSHF (L) L / K3-5 ROTSHF H / K3-8 ROT (L) H
13201
13202 025340 012700 000344 T0344: MOV #0344,R0 ;LOAD R0 WITH TEST NO.
13203 025344 013701 025364 ;LOAD R1 WITH TEST INSTRUCTION WORD
13204 025350 012702 067602 ;DEST ADDR = MBUF0
13205 025354 005004 ;RESULT S / B = 000000
13206 025356 005012 R0344: CLR #MBUF0,R2 ;[DEST] = 000000
13207 025360 000257 R4 ;CLEAR CODES
13208 025362 000262 ;N:C = 0010
13209
13210 025364 006112 I0344: ROL (R2) ;TEST THE ROL
13211
13212 025366 100403 BMI E10344 ;N:C = 0100 ?
13213 025370 001002 BNE E10344
13214 025372 102401 BVS E10344
13215 025374 103002 BCC A0344
13216
13217 025376 104005 E10344: ERRORS ;ROL FAILED TO ALTER THE CODES PROPERLY
13218 025400 025356 R0344 ;ERROR LOOP RETURN
13219 025402 020412 A0344: CMP R4,(R2) ;RESULT OK ?
13220 025404 001403 BEQ 00344 ;BR IF YES
13221
13222 025406 011203 E20344: MOV (R2),R3 ;GET THE WAS DATA
13223 025410 104000 ERROR R0344 ;ROL DELIVERED THE WRONG RESULT
13224 025412 025356 ;ERROR LOOP RETURN
13225
13226 025414 000004 00344: SCOPE ;CALL SCOPE LOOP UTILITY
13227

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13228 ; *****
13229 ; .SBTTL T0345 ADC DMI TEST - <N:C> = 0101
13230 ; *****
13231 ; MICROPROGRAMMING / LOGIC INFORMATION
13232 ; ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13233 ; ACT BUTS: 37[004]100,161 / 33[266]220,220 / 16[367]016,016
13234 ; EXEC: [220]ALUC=LLLLL :[211] D = 100000
13235 ; CODES: [211] SPS=1, [367] SPS=3 / N:C =1010
13236 ; SYNC: B05J2 (-) T = 2 USEC
13237 ; KEY SIG: K3-8 CIN00 L / K3-3 DM=1L / K3-4 ADC L
13238
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13246 025416 012700 000345 T0345: MOV #0345,R0 ;LOAD R0 WITH TEST NO.
13247 025422 013701 025446 ;LOAD R1 WITH TEST INSTRUCTION WORD
13248 025426 012702 067602 ;DEST ADDR = MBUF0
13249 025432 012704 100000 ;RESULT S / B = 100000
13250 025436 012712 077777 R0345: MOV #100000,R4 ;[DEST] = 77777
13251 025442 000257 ;CLEAR CODES
13252 025444 000265 ;N:C = 0101
13253
13254 025446 005512 I0345: ADC (R2) ;TEST THE ADC
13255
13256 025450 100003 ;N:C = 1010 ?
13257 025452 001402 BPL E10345
13258 025454 102001 BEQ E10345
13259 025456 103002 BVC E10345
13260 BCC A0345
13261 025460 104005 E10345: ERRORS ;ADC FAILED TO ALTER THE CODES PROPERLY
13262 025462 025436 R0345 ;ERROR LOOP RETURN
13263 025464 020412 A0345: CMP R4,(R2) ;RESULT OK ?
13264 025466 001403 BEQ 00345 ;BR IF YES
13265
13266 025470 011203 ;GET THE WAS DATA
13267 025472 104000 E20345: ERROR ;ADC DELIVERED THE WRONG RESULT
13268 025474 025436 R0345 ;ERROR LOOP RETURN
13269
13270 025476 000004 00345: SCOPE ;CALL SCOPE LOOP UTILITY
13271

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13272 ; *****
13273 ; .SBTTL T0346 ADC DMI TEST - <N:C> = 1011
13274 ; *****
13275 ;MICROPROGRAMMING / LOGIC INFORMATION
13276 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13277 ;ACT BUTS: 37[004]100,161 / 33[266]220,220 / 16[367]016,016
13278 ;EXEC: [220]ALUC=LHMLL :[211] D = 000000
13279 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0101
13280 ;SYNC: B05J2 (-) T = 2 USEC
13281 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=1L / K3-4 ADC L
13282
13283 T0346: MOV #0346,R0 ;LOAD R0 WITH TEST NO.
13284 MOV @#I0346,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13285 MOV #M0346,R2 ;DEST ADDR = M0346
13286 CLR R4 ;RESULT S / B = 000000
13287 R0346: MOV #-1,(R2) ;[DEST] = 177777
13288 CCC ;CLEAR CODES
13289 273 ;N:C = 1011
13290
13291 I0346: ADC (R2) ;TEST THE ADC
13292 ;N:C = 0101 ?
13293 BMI E10346
13294 BNE E10346
13295 BVS E10346
13296 BCS R0346
13297
13298 E10346: ERRORS ;ADC FAILED TO ALTER THE CODES PROPERLY
13299 R0346 ;ERROR LOOP RETURN
13300 A0346: CMP R4,(R2) ;RESULT OK ?
13301 BEQ 00346 ;BR IF YES
13302
13303 MOV (R2),R3 ;GET THE WAS DATA
13304 E20346: ERROR ;ADC DELIVERED THE WRONG RESULT
13305 R0346 ;ERROR LOOP RETURN
13306
13307 00346: SCOPE ;CALL SCOPE LOOP UTILITY
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025500 012700 000346
025504 013701 025526
025510 012702 067602
025514 005004
025516 012712 177777
025522 000257
025524 000273
025526 005512
025530 100403
025532 001002
025534 102401
025536 103402
025540 104005
025542 025516
025544 020412
025546 001403
025550 011203
025552 104000
025554 025516
025556 000004

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13315 ; *****
13316 ; .SBTTL T0347 ADC DMI TEST - (N:C) = 1010
13317 ; *****
13318 ;MICROPROGRAMMING / LOGIC INFORMATION
13319 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13320 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
13321 ;EXEC: [220]ALUC=LHLL :[211] D = 177777
13322 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 1000
13323 ;SYNC: BOSJ2 (-) T = 2 USEC
13324 ;KEY SIG: / K3-3 DM=1L / K3-4 ADC L
13325
13326 T0347: MOV #0347,R0 ;LOAD R0 WITH TEST NO.
13327 MOV #I0347,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13328 MOV #M0347,R2 ;DEST ADDR = M0347
13329 MOV #-1,R4 ;RESULT S / B = 177777
13330 R0347: MOV #-1,(R2) ;[DEST] = 177777
13331 CCC ;CLEAR CODES
13332 272 ;N:C = 1010
13333
13334 I0347: ADC (R2) ;TEST THE ADC
13335 BPL E10347 ;N:C = 1000 ?
13336 BEQ E10347
13337 BVS E10347
13338 BCC A0347
13339
13340 E10347: ERRORS ;ADC FAILED TO ALTER THE CODES PROPERLY
13341 R0347 ;ERROR LOOP RETURN
13342 A0347: CMP R4,(R2) ;RESULT OK ?
13343 BEQ 00347 ;BR IF YES
13344
13345 E20347: MOV (R2),R3 ;GET THE WAS DATA
13346 ERROR ;ADC DELIVERED THE WRONG RESULT
13347 R0347 ;ERROR LOOP RETURN
13348
13349 00347: SCOPE ;CALL SCOPE LOOP UTILITY
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G11

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 344
 DBQEAB.CMB T0347 ADC DM1 TEST - <N:C> = 1010

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13359 ; *****
13360 ; .SBTTL T0350 SBC DM1 TEST - <N:C> = 1011
13361 ; *****
13362
13363 ;MICROPROGRAMMING / LOGIC INFORMATION
13364
13365 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13366
13367 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
13368
13369 ;EXEC: [220]ALUC=LHHHH :[211] D = 000000
13370
13371 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100
13372
13373 ;SYNC: B05J2 (-) T = 2 USEC
13374
13375 ;KEY SIG: K3-3 DM=1L / K3-4 SBC L
13376
13377 025642 012700 000350 T0350: MOV #0350,R0 ;LOAD R0 WITH TEST NO.
13378 025646 013701 025670 ;LOAD R1 WITH TEST INSTRUCTION WORD
13379 025652 012702 067602 ;DEST ADDR = MBUFO
13380 025656 005004 ;RESULT S / B = 000000
13381 025660 012712 000001 R0350: MOV #1,(R2) ;[DEST0351]
13382 025664 000257 ;CLEAR CODES
13383 025666 000273 ;N:C = 1011
13384
13385 025670 005612 I0350: SBC (R2) ;TEST THE SBC
13386
13387 025672 100403 ;N:C = 0100 ?
13388 025674 001002 BMI E10350
13389 025676 102401 BNE E10350
13390 025700 103002 BVS E10350
13391 BCC A0350
13392 025702 104005 E10350: ERRORS ;SBC FAILED TO ALTER THE CODES PROPERLY
13393 025704 025660 R0350 ;ERROR LOOP RETURN
13394 025706 020412 A0350: CMP R4,(R2) ;RESULT OK ?
13395 025710 001403 BEQ 00350 ;BR IF YES
13396
13397 025712 011203 ;GET THE WAS DATA
13398 025714 104000 E20350: ERROR ;SBC DELIVERED THE WRONG RESULT
13399 025716 025660 R0350 ;ERROR LOOP RETURN
13400
13401 025720 000004 00350: SCOPE ;CALL SCOPE LOOP UTILITY
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H11

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 345
DBQEAB.CMB T0350 SBC DM1 TEST - <N:C> = 1011

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025722 012700 000351
025726 013701 025752
025732 012702 067602
025736 012704 077777
025742 012712 100000
025746 000257
025750 000265
025752 005612
025754 100403
025756 001402
025760 102001
025762 103002
025764 104005
025766 025742
025770 020412
025772 001403
025774 011203
025776 104000
026000 025742
026002 000004

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; *****  
; .SBTTL T0351 SBC DM1 TEST - <N:C> = 0101  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8  
;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016  
;EXEC: [220]ALUC=LH#LL :[211] D = 077777  
;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0010  
;SYNC: B05J2 (-) T = 2 USEC  
;KEY SIG: K3-3 DM=1L / K3-4 SBC L  
T0351: MOV #0351,R0 ;LOAD R0 WITH TEST NO.  
MOV @#I0351,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #M0UFO,R2 ;DEST ADDR = M0UFO  
MOV #077777,R4 ;RESULT S / B = 077777  
R0351: MOV #100000,(R2) ;[DEST] = 100000  
CCC ;CLEAR CODES  
265 ;N:C = 0101  
I0351: SBC (R2) ;TEST THE SBC  
BMI E10351 ;N:C = 0010 ?  
BEQ E10351  
BVC E10351  
BCC A0351  
E10351: ERRORS ;SBC FAILED TO ALTER THE CODES PROPERLY  
R0351 ;ERROR LOOP RETURN  
A0351: CMP R4,(R2) ;RESULT OK ?  
BEQ 00351 ;BR IF YES  
E20351: MOV (R2),R3 ;GET THE WAS DATA  
ERROR ;SBC DELIVERED THE WRONG RESULT  
R0351 ;ERROR LOOP RETURN  
00351: SCOPE ;CALL SCOPE LOOP UTILITY
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13447 ; *****
13448 ; .SBTTL T0352 SBC DMI TEST - <N:C> = 1110
13449 ; *****
13450 ;MICROPROGRAMMING / LOGIC INFORMATION
13451 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13452 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
13453 ;EXEC: [220]ALUC=LLLLL :[211] D = 000001
13454 ;CODES: [211] SPS=1, [367] SPS=3 / N:C 0001
13455 ;SYNC: B05J2 (-) T = 0001
13456 ;KEY SIG: K3-3 DM=1L / K3-4 SBC L
13457
13458 T0352: MOV #0352,R0 ;LOAD R0 WITH TEST NO.
13459 ;MOV @#I0352,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13460 ;MOV #MBUFO,R2 ;DEST ADDR = MBUFO
13461 ;MOV #1,R4 ;RESULT S / B = 1
13462 R0352: MOV #1,(R2) ;[DEST] = 1
13463 ;CCC ;CLEAR CODES
13464 ;276 ;N:C = 1110
13465
13466 I0352: SBC (R2) ;TEST THE SBC
13467 ;BMI E10352 ;N:C = 0000 ?
13468 ;BEQ E10352
13469 ;BVS E10352
13470 ;BCC A0352
13471
13472 E10352: ERRORS ;SBC FAILED TO ALTER THE CODES PROPERLY
13473 R0352 ;ERROR LOOP RETURN
13474 A0352: CMP R4,(R2) ;RESULT OK ?
13475 ;BEQ 00352 ;BR IF YES
13476
13477 E20352: MOV (R2),R3 ;GET THE WAS DATA
13478 ;ERROR R0352 ;SBC DELIVERED THE WRONG RESULT
13479 ;ERROR LOOP RETURN
13480
13481 00352: SCOPE ;CALL SCOPE LOOP UTILITY
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026066 012700 000353
026072 013701 026114
026076 012702 067602
026102 012704 177777
026106 005012
026110 000257
026112 000267

026114 005612

026116 100003
026120 001402
026122 102401
026124 103402

026126 104005
026130 026106
026132 020412
026134 001403

026136 011203
026140 104000
026142 026106

026144 000004

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; *****  
.SBTTL T0353 SBC DMI TEST - <N:C> = 0111  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [161,266,267,220,211,367,375,016] FC 1,3,9,8  
;ACT BUTS:     37[004]100,161 / 33[266]220,220 / 16[367]016,016  
;EXEC:         [220]ALUC=LHLL :[211] D = 177777  
;CODES:        [211] SPS=1, [367] SPS=3 / N:C = 1001  
;SYNC:         B05J2 (-) T = 2 USEC  
;KEY SIG:      K3-3 DM=1L / K3-4 SBC L  
  
T0353:  MOV      #0353,R0          ;LOAD R0 WITH TEST NO.  
        MOV      2#I0353,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      #M0353,R2      ;DEST ADDR = M0353  
        MOV      #-1,R4         ;RESULT S / B = 177777  
R0353:  CLR      (R2)           ;[DEST] = 000000  
        CCC      267           ;CLEAR CODES  
        ;N:C = 0111  
  
I0353:  SBC      (R2)          ;TEST THE SBC  
        BPL      E10353        ;N:C = 1001 ?  
        BEQ      E10353  
        BVS      E10353  
        BCS      A0353  
  
E10353: ERROR5  
R0353:  R0353  
A0353:  CMP      R4,(R2)       ;SBC FAILED TO ALTER THE CODES PROPERLY  
        BEQ      00353        ;ERROR LOOP RETURN  
        ;RESULT OK ?  
        ;BR IF YES  
  
E20353: MOV      (R2),R3      ;GET THE WAS DATA  
        ERROR   R0353        ;SBC DELIVERED THE WRONG RESULT  
        R0353  
        ;ERROR LOOP RETURN  
  
00353:  SCOPE  
        ;CALL SCOPE LOOP UTILITY
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K11

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13534 ; *****  
13535 ; .SBTTL T0354 NEGB - MODE 0 TEST - <N:C> = 0110  
13536 ; *****  
13537 ;MICROPROGRAMMING / LOGIC INFORMATION  
13538 ;ROM SEQ: [105,372,361,001] FC 1,7,8  
13539 ;ACT BUTS: 37[004]100,105 / 31[105]360,361 / 27[372]000,001  
13540 ;EXEC: [372]ALUC=LLHHL :[361]D= 000376  
13541 ;CODES: [36']SPS=3 / N:C=1001  
13542 ;SYNC: B05J2 (-) T= 1 USEC  
13543 ;KEY SIG: K3-4 NEG L / K3-4 OVLAP INSTR H / K3-8 CIN00 L  
13544 ;K3-3 DM=0 L / K3-6 BYTE INSTR H  
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13552  
13553 026146 012700 000354 T0354: MOV #0354,R0 ;LOAD R0 WITH TEST NO.  
13554 026152 013701 026176 MOV #I0354,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
13555 026156 012702 177703 MOV #177703,R2 ;DEST ADDR = R3  
13556 026162 012704 177776 MOV #177776,R4 ;RESULT S / B = 376 (LO BYTE)  
13557 026166 012703 177402 R0354: MOV #177402,R3 ;[DEST] = 177402  
13558 026172 000257 CCC ;CLEAR FLAGS  
13559 026174 000266 266 ;N:C = 0110  
13560  
13561 026176 105403 I0354: NEGB R3 ;TEST THE NEGB  
13562  
13563 026200 100003 BPL E10354 ;N:C = 1001  
13564 026202 001402 BEQ E10354  
13565 026204 102401 BVS E10354  
13566 026206 103402 BCS A0354  
13567  
13568 026210 104000 E10354: ERROR ;NEGB FAILED TO ALTER CODES PROPERLY  
13569 026212 026166 R0354 ;ERROR LOOP RETURN ADDRESS  
13570  
13571 026214 020403 A0354: CMP R4,R3 ;CORRECT RESULT ?  
13572 026216 001402 BEQ 00354 ;BR IF YES  
13573  
13574 026220 104000 E20354: ERROR ;NEGB DELIVERED THE WRONG RESULT  
13575 026222 026166 R0354 ;ERROR LOOP RETURN ADDRESS  
13576  
13577 026224 000004 00354: SCOPE ;CALL THE SCOPE LOOP UTILITY
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13578 ; *****
13579 .SBTTL T0355 NEGB - MODE 0 TEST - <N:C> = 0011
13580 ; *****
13581 ;MICROPROGRAMMING / LOGIC INFORMATION
13582
13583 ;ROM SEQ: [105,372,361,001] FC 1,7,8
13584
13585 ;ACT BUTS: 37(004)100,105 / 31(105)360,361 / 27(372)000,001
13586
13587 ;EXEC: [372]ALUC=LLHHL :[361]D=000400
13588
13589 ;CODES: [361]SPS=3 / N:C=0100
13590
13591 ;SYNC: B05J2 (-) T= 1 USEC
13592
13593 ;KEY SIG: K3-4 NEG L / K3-4 OVLAP INSTR H / K3-8 CIN00 L
13594 ;K3-3 DM=0 L / K3-6 BYTE INSTR H
13595
13596
13597 026226 012700 000355 T0355: MOV #0355,R0 ;LOAD R0 WITH TEST NO.
13598 026232 013701 026256 MOV #I0355,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13599 026236 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
13600 026242 012704 177400 MOV #177400,R4 ;RESULT S / B = 000 (LO BYTE)
13601 026246 012703 177400 R0355: MOV #177400,R3 ;[DEST] = 177400
13602 026252 000257 CCC ;CLEAR FLAGS
13603 026254 000263 263 ;N:C = 0011
13604
13605 026256 105403 I0355: NEGB R3 ;TEST THE NEGB
13606
13607 026260 100403 BMI E10355 ;N:C = 0100
13608 026262 001002 BNE E10355
13609 026264 102401 BVS E10355
13610 026266 103002 BCC A0355
13611
13612 026270 104000 E10355: ERROR ;NEGB FAILED TO ALTER CODES PROPERLY
13613 026272 026246 R0355 ;ERROR LOOP RETURN ADDRESS
13614
13615 026274 020403 A0355: CMP R4,R3 ;CORRECT RESULT ?
13616 026276 001402 BEQ 00355 ;BR IF YES
13617
13618 026300 104000 E20355: ERROR ;NEGB DELIVERED THE WRONG RESULT
13619 026302 026246 R0355 ;ERROR LOOP RETURN ADDRESS
13620
13621 026304 000004 00355: SCOPE ;CALL THE SCOPE LOOP UTILITY
13622

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M11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 350
DBQEAB.CMB T0355 NEGB - MODE 0 TEST - <N:C> = 0011

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13623 ; *****
13624 ; .SBTTL T0356 NEGB - MODE 0 TEST - <N:C> = 1101
13625 ; *****
13626
13627 ;MICROPROGRAMMING / LOGIC INFORMATION
13628
13629 ;ROM SEQ: [105,372,361,001] FC 1,7,8
13630
13631 ;ACT BUTS: 37(004)100,105 / 31(105)360,361 / 27(372)000,001
13632
13633 ;EXEC: [372]ALUC=LLHHL :[361]D=000200
13634
13635 ;CODES: [361]SPS=3 / N:C=1011
13636
13637 ;SYNC: B05J2 (-) T= 1 USEC
13638
13639 ;KEY SIG: K3-4 NEG L / K3-4 OVLAP INSTR H / K3-8 CIN00 L
13640 ;K3-3 DM=0 L / K3-6 BYTE INSTR H
13641
13642 026306 012700 000356 T0356: MOV #0356,R0 ;LOAD R0 WITH TEST NO.
13643 026312 013701 026336 MOV @#10356,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13644 026316 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
13645 026322 012704 177600 MOV #177600,R4 ;RESULT S / B = 200 (LO BYTE)
13646 026326 012703 177600 R0356: MOV #177600,R3 ;[DEST] = 177600
13647 026332 000257 CCC ;CLEAR FLAGS
13648 026334 000275 275 ;N:C = 1101
13649
13650 026336 105403 I0356: NEGB R3 ;TEST THE NEGB
13651
13652 026340 100003 BPL E10356 ;N:C = 1011
13653 026342 001402 BEQ E10356
13654 026344 102001 BVC E10356
13655 026346 103402 BCS A0356
13656
13657 026350 104000 E10356: ERROR ;NEGB FAILED TO ALTER CODES PROPERLY
13658 026352 026326 R0356 ;ERROR LOOP RETURN ADDRESS
13659
13660 026354 020403 A0356: CMP R4,R3 ;CORRECT RESULT ?
13661 026356 001402 BEQ 00356 ;BR IF YES
13662
13663 026360 104000 E20356: ERROR ;NEGB DELIVERED THE WRONG RESULT
13664 026362 026326 R0356 ;ERROR LOOP RETURN ADDRESS
13665
13666 026364 000004 00356: SCOPE ;CALL THE SCOPE LOOP UTILITY
13667
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13668 ; *****
13669 .SBTTL T0357 CLR8 - MODE 0 TEST - <N:C> = 1011
13670 ; *****
13671 ;MICROPROGRAMMING / LOGIC INFORMATION
13672 ;ROM SEQ: [104,373,361,001] FC 1,7,8
13673 ;ACT BUTS: 37(004)100,104 / 31(105)360,361 / 27(372)000,001
13674 ;EXEC: [104]ALHC=HLLHH :[373]D=000000
13675 ;CODES: [373]SPS=1,[361]SPS=3 / N:C=0100
13676 ;SYNC: B05J2 (-) T= 1 USEC
13677 ;KEY SIG: K3-4 CLR L / K3-6 BYTE INSTR H / K3-4 OVLAP INSTR H / K3-3 DM=0 L
13678
13679 T0357: MOV #0357,R0 ;LOAD R0 WITH TEST NO.
13680 MOV @#I0357,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13681 MOV #177703,R2 ;DEST ADDR = R3
13682 MOV #177400,R4 ;RESULT S / B = 000 (LO BYTE)
13683 R0357: MOV #-1,R3 ;[DEST] = 177777
13684 CCC ;CLEAR FLAGS
13685 273 ;N:C = 1011
13686
13687 I0357: CLR8 R3 ;TEST THE CLR8
13688 BMI E10357 ;N:C = 0100 ?
13689 BNE E10357
13690 BVS E10357
13691 BCC A0357
13692
13693 E10357: ERROR ;CLR8 FAILED TO SET CODES PROPERLY
13694 R0357 ;ERROR LOOP RETURN ADDRESS
13695
13696 A0357: CMP R4,R3 ;RESULT CORRECT ?
13697 BEQ 00357 ;BR IF YES
13698
13699 E20357: ERROR ;CLR8 DELIVERED THE WRONG RESULT
13700 R0357 ;ERROR LOOP RETURN ADDRESS
13701
13702 00357: SCOPE ;CALL THE SCOPE LOOP UTILITY
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13711 ; *****
13712 ; .SBTTL T0360 CLRB - MODE 0 TEST - (N:C) = 0100
13713 ; *****
13714 :MICROPROGRAMMING / LOGIC INFORMATION
13715 ;RCM SEQ: [104,373,361,001] FC 1,7,0
13716 ;ACT BUTS: 37(004)100,104 / 31(360,361 / 27(373)000,001
13717 ;EXEC: [104]ALUC=MLLHM :[373]D=000000
13718 ;CODES: [373]SPS=1,[361]SPS=3 / N:C=0100
13719 ;SYNC: B05J2 (-) T= 1 USEC
13720 ;KEY SIG: K3-4 CLR L / K3-4 OVLAP INSTR H / K3-6 BYTE INSTR H / K3-8 CIN00 L
13721 ; K3-3 DM=0 L
13722
13723 T0360: MOV #0360,R0 ;LOAD R0 WITH TEST NO.
13724 MOV #I0360,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13725 MOV #177703,R2 ;DEST ADDR = R3
13726 MOV #177400,R4 ;RESULT S / B = 000 (LO BYTE)
13727 R0360: MOV #-1,R3 ;[DEST] = 177777
13728 CCC ;CLEAR FLAGS
13729 SEZ ;N:C = 0100
13730
13731 I0360: CLRB R3 ;TEST THE CLRB
13732 BMI E10360 ;N:C = 0100 ?
13733 BNE E10360
13734 BVS E10360
13735 BCC A0360
13736
13737 E10360: ERROR ;CLRB FAILED TO SET CODES PROPERLY
13738 R0360 ;ERROR LOOP RETURN ADDRESS
13739
13740 A0360: CMP R4,R3 ;RESULT CORRECT ?
13741 BEQ 00360 ;BR IF YES
13742
13743 E20360: ERROR ;CLRB DELIVERED THE WRONG RESULT
13744 R0360 ;ERROR LOOP RETURN ADDRESS
13745
13746 00360: SCOPE ;CALL THE SCOPE LOOP UTILITY
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13756 ; *****
13757 ; .SBTTL T0361 CLR8 TEST - DM2 - ODD ADDRESS
13758 ; *****
13759 ; MICROPROGRAMMING / LOGIC INFORMATION
13760 ; ROM SEQ: [162,260,267,237,270,222,253,075,374,375,016] FC 1,3,9,8
13761 ; ACT BUTS: 37(004)100,162 / 33(260)220,237 / 34(237)220,222 / 16(374)016,016
13762 ; EXEC: [222]ALUC=HLLMH :[375] D = 000000
13763 ; CODES: [253] SP=1, [075] SP=3 / N:C = 0100
13764 ; SYNC: B05J2 (-) T = 1.9 USEC
13765 ; KEY SIG: K3-6 BYTE INSTR H / K1-6 BA00(1) H / K3-7 ODD BYTE H / K3-3 DM=2L
13766
13767 T0361: MOV #0361,R0 ;LOAD R0 WITH TEST NO.
13768 MOV #I0361,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13769 MOV #MBUFD+1,R2 ;DEST ADDR = MBUFD+1
13770 MOV #377,R4 ;RESULT S / B = 377
13771 MOV #MBUFD,R5 ;POINT R5 TO CHECK RESULT
13772 R0361: MOV R2,R3 ;R3 CONTAINS DEST ADDR
13773 MOV #-1,(R5) ;[DEST] = 177777
13774 CCC ;SCOPE SYNC
13775
13776 I0361: CLR8 (R3)+ ;TEST THE CLR8
13777
13778 CMP #MBUFD+2,R3 ;DID DEST REG GET INCREMENTED ?
13779 BEQ A0361 ;BR IF YES
13780
13781 E10361: ERRORS R0361 ;CLR8 FAILED TO UPDATE DEST REG
13782 ;ERROR LOOP RETURN ADDRESS
13783
13784 A0361: CMP R4,(R5) ;CORRECT RESULT ?
13785 BEQ 00361 ;BR IF YES
13786
13787 E20361: MOV (R5),R3 ;GET THE WAS DATA
13788 ERROR R0361 ;CLR8 DELIVERED WRONG RESULT
13789 ;ERROR LOOP RETURN ADDRESS
13790
13791 00361: SCOPE ;CALL SCOPE LOOP UTILITY
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13800 ; *****
13801 .SBTTL T0362 CLR8 TEST - DM1 - ODD ADDRESS
13802 ; *****
13803
13804 ;MICROPROGRAMMING / LOGIC INFORMATION
13805
13806 ;ROM SEQ:      !161,266,267,237,270,222,253,075,374,375,016! FC 1,3,9,8
13807
13808 ;ACT BUTS:     37!004!100,161 / 33!266!1220,237 / 34!237!1220,222 / 16!374!016,016
13809
13810 ;EXEC:         [222]ALUC=HLLMH :[375] D = 000000
13811
13812 ;CODES:        [253] SPS=1, [075] SPS=3 / N:C = 0100
13813
13814 ;SYNC:         B05J2 (-) T = 1.9 USEC
13815
13816 ;KEY SIG:      K3-6 BYTE INSTR H / K1-6 BA00 (1) H / K3-7 ODD BYTE H / K3-3 DM=2L
13817
13818 026612 012700 000362 T0362: MOV #0362,R0 ;LOAD R0 WITH TEST NO.
13819 026616 013701 026646      MOV #I0362,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13820 026622 012702 067603      MOV #MBUFD+1,R2 ;DEST ADDR = MBUFD+1
13821 026626 012704 000377      MOV #377,R4 ;RESULT S / B = 377
13822 026632 012705 067602      MOV #MBUFD,R5 ;POINT R5 TO CHECK RESULT
13823 026636 010203      R0362: MOV R2,R3 ;R3 CONTAINS DEST ADDR
13824 026640 012715 177777      MOV #-1,(R5) ;[DEST] = 177777
13825 026644 000257      CCC ;SCOPE SYNC
13826
13827 026646 105013 I0362: CLR8 (R3) ;TEST THE CLR8
13828
13829 026650 020415      CMP R4,(R5) ;CORRECT RESULT ?
13830 026652 001403      BEQ 00362 ;BR IF YES
13831
13832 026654 011503      MOV (R5),R3 ;GET THE WAS DATA
13833 026656 104000 E0362: ERROR ;CLR8 DELIVERED WRONG RESULT
13834 026660 026636 R0362 ;ERROR LOOP RETURN ADDRESS
13835
13836 026662 000004 00362: SCOPE ;CALL SCOPE LOOP UTILITY

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13837 ; *****
13838 ; .SBTTL T0363 CLRB TEST - DM2 - EVEN ADDRESS
13839 ; *****
13840 ;MICROPROGRAMMING / LOGIC INFORMATION
13841 ;ROM SEQ: [162,260,267,220,211,367,375,016] FC 1,3,9,8
13842 ;ACT BUTS: 37(004)100,162 / 33(260)220,220 / 16(367)016,016
13843 ;EXEC: [220]ALUC=MLLHM :[211] D = 000000
13844 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100
13845 ;SYNC: BOSJ2 (-) T = 1.9 USEC
13846 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 DM=1L / K3-4 CLR L
13847
13848 T0363: MOV #0363,R0 ;LOAD R0 WITH TEST NO.
13849 MOV #I0363,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13850 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
13851 MOV #177400,R4 ;RESULT S / B = 177400
13852 R0363: MOV R2,R3 ;R3 CONTAINS DEST ADDR
13853 MOV #-1,(R2) ;[DEST] = 177777
13854 CCC ;SCOPE SYNC
13855
13856 I0363: CLRB (R3)+ ;TEST THE CLRB
13857
13858 CMP #MBUF0+1,R3 ;DID DEST REG GET INCREMENTED ?
13859 BEQ A0363 ;BR IF YES
13860
13861 E10363: ERRORS ;CLRB FAILED TO UPDATE DEST REG
13862 R0363 ;ERROR LOOP RETURN ADDRESS
13863
13864 A0363: CMP R4,(R2) ;CORRECT RESULT ?
13865 BEQ 00363 ;BR IF YES
13866
13867 E20363: MOV (R2),R3 ;GET THE WAS DATA
13868 ERROR ;CLRB DELIVERED WRONG RESULT
13869 R0363 ;ERROR LOOP RETURN ADDRESS
13870
13871 00363: SCOPE ;CALL SCOPE LOOP UTILITY
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13857 026674 012702 067602
13858 026700 012704 177400
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13875 026736 104000
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13878 026742 000004

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13879 ; *****
13880 ; .SBTTL T0364 CLRB TEST - DM1 - EVEN ADDRESS
13881 ; *****
13882
13883 ;MICROPROGRAMMING / LOGIC INFORMATION
13884
13885 ;ROM SEQ: [161,266,267,220,211,367,375,016] FC 1,3,9,8
13886
13887 ;ACT BUTS: 37(004)100,161 / 33(266)220,220 / 16(367)016,016
13888
13889 ;EXEC: [220]ALUC=HLLHM :[367] D = 000000
13890
13891 ;CODES: [211] SPS=1, [367] SPS=3 / N:C = 0100
13892
13893 ;SYNC: B05J2 (-) T = 1.8 USEC
13894
13895 ;KEY SIG: K3-6 BYTE INSTR H
13896
13897 026744 012700 000364 T0364: MOV #0364,R0 ;LOAD R0 WITH TEST NO.
13898 026750 013701 026774 ;MOV #I0364,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13899 026754 012702 067602 ;MOV #MBUFO,R2 ;DEST ADDR = MBUFO
13900 026760 012704 177400 ;MOV #177400,R4 ;RESULT S / B = 177400
13901 026764 010203 R0364: MOV R2,R3 ;R3 CONTAINS DEST ADDR
13902 026766 012712 177777 ;MOV #-1,(R2) ;[DEST] = 177777
13903 026772 000257 ;CCC ;SCOPE SYNC
13904
13905 026774 105013 I0364: CLRB (R3) ;TEST THE CLRB
13906
13907 026776 020412 ;CMP R4,(R2) ;CORRECT RESULT ?
13908 027000 001403 ;BEQ 00364 ;BR IF YES
13909
13910 027002 011203 ;MOV (R2),R3 ;GET THE WAS DATA
13911 027004 104000 E0364: ERROR ;CLRB DELIVERED WRONG RESULT
13912 027006 026764 R0364 ;ERROR LOOP RETURN ADDRESS
13913
13914 027010 000004 00364: SCOPE ;CALL SCOPE LOOP UTILITY
    
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13915 ; *****
13916 ; .SBTTL T0365 NEGB TEST - DM2 - ODD ADDRESS
13917 ; *****
13918 ;MICROPROGRAMMING / LOGIC INFORMATION
13919 ;ROM SEQ: [162,260,267,237,270,223,253,075,374,375,016] FC 1,3,9,8
13920 ;ACT BUTS: 37(004)100,162 / 33(260)220,237 / 34(237)220,223 / 16(374)016,016
13921 ;EXEC: [223]ALUC=LLHML :[375] D = C00400
13922 ;CODES: [253] SPS=1, [075] SPS=3 / N:C = 0001
13923 ;SYNC: B05J2 (-) T = 1.9 USEC
13924 ;KEY SIG: K3-6 BYTE INSTR H / K1-6 BA00(1) H / K3-7 ODD BYTE H / K3-9 CIN00
13925
13926 T0365: MOV #0365,R0 ;LOAD R0 WITH TEST NO.
13927 T0365: MOV @#I0365,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13928 T0365: MOV #MBUFO+1,R2 ;DEST ADDR = MBUFO+1
13929 T0365: MOV #777,R4 ;RESULT S / B = 777
13930 T0365: MOV #MBUFO,R5 ;POINT R5 TO CHECK RESULT
13931 T0365: MOV R2,R3 ;R3 CONTAINS DEST ADDR
13932 T0365: MOV #-1,(R5) ;[DEST] = 177777
13933 T0365: CCC ;SCOPE SYNC
13934
13935 I0365: NEGB (R3)+ ;TEST THE NEGB
13936
13937 E10365: ERROR5 ;NEGB FAILED TO UPDATE DEST REG
13938 E10365: R0365 ;ERROR LOOP RETURN ADDRESS
13939
13940 A0365: CMP R4,(R5) ;CORRECT RESULT ?
13941 A0365: BEQ 00365 ;BR IF YES
13942
13943 E20365: MOV (R5),R3 ;GET THE WAS DATA
13944 E20365: ERROR ;NEGB DELIVERED WRONG RESULT
13945 E20365: R0365 ;ERROR LOOP RETURN ADDRESS
13946
13947 00365: SCOPE ;CALL SCOPE LOOP UTILITY
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13958 ; *****
13959 .SBTTL T0366 NEGB TEST - DM1 - ODD ADDRESS
13960 ; *****
13961 ;MICROPROGRAMMING / LOGIC INFORMATION
13962 ;ROM SEQ: [161,266,267,237,270,223,253,075,374,375,016] FC 1,3,9,8
13963 ;ACT BUTS: 37[004]100,161 / 33[266]220,237 / 34[237]220,223 / 16[374]016,016
13964 ;EXEC: [223]ALUC=LLHML :[375] D = 000400
13965 ;CODES: [253] SPS=1, [075] SPS=3 / N:C = 0001
13966 ;SYNC: B05J2 (-) T = 1.9 USEC
13967 ;KEY SIG: K3-6 BYTE INSTR H / K1-6 BA00 (1) H / K3-7 ODD BYTE H / K3-8 CIN00
13968
13969
13970
13971
13972
13973
13974
13975
13976 027076 012700 000366 T0366: MOV #0366,R0 ;LOAD R0 WITH TEST NO.
13977 027102 013701 027132 MOV #I0366,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
13978 027106 012702 067603 MOV #M0366+1,R2 ;DEST ADDR = M0366+1
13979 027112 012704 000777 MOV #777,R4 ;RESULT S / B = 777
13980 027116 012705 067602 MOV #M0366,R5 ;POINT R5 TO CHECK RESULT
13981 027122 010203 R0366: MOV R2,R3 ;R3 CONTAINS DEST ADDR
13982 027124 012715 177777 MOV #-1,(R5) ;[DEST] = 177777
13983 027130 000257 CCC ;SCOPE SYNC
13984
13985 027132 105413 I0366: NEGB (R3) ;TEST THE NEGB
13986
13987 027134 020415 CMP R4,(R5) ;CORRECT RESULT ?
13988 027136 001403 BEQ 00366 ;BR IF YES
13989
13990 027140 011503 MOV (R5),R3 ;GET THE WAS DATA
13991 027142 104000 E0366: ERROR ;NEGB DELIVERED WRONG RESULT
13992 027144 027122 R0366 ;ERROR LOOP RETURN ADDRESS
13993
13994 027146 000004 00366: SCOPE ;CALL SCOPE LOOP UTILITY

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13995 ; *****
13996 ; .SBTTL T0367 NEGB TEST - DM2 - EVEN ADDRESS
13997 ; *****
13998 ; MICROPROGRAMMING / LOGIC INFORMATION
14000 ; ROM SEQ: [162,260,267,221,367,375,016] FC 1,3,9,8
14001 ; ACT BUTS: 37(004)100,162 / 33(260)220,221 / 16(367)016,016
14002 ; EXEC: [221]ALUC=LLHML : (367) D = 000001
14003 ; CODES: [367] SPS=3 / N:C = 0001
14004 ; SYNC: B05J2 (-) T = 1.8 USEC
14005 ; KEY SIG: K3-6 BYTE INSTR H / K3-8 CIN00 L / K3-4 NEG L / K3-3 DM=2L
14006
14007 T0367: MOV #0367,R0 ;LOAD R0 WITH TEST NO.
14008 MOV @#I0367,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14009 MOV #M0367,R2 ;DEST ADDR = M0367
14010 MOV #177401,R4 ;RESULT S / B = 177401
14011 R0367: MOV R2,R3 ;R3 CONTAINS DEST ADDR
14012 MOV #-1,(R2) ;[DEST] = 177777
14013 CCC ;SCOPE SYNC
14014
14015 I0367: NEGB (R3)+ ;TEST THE NEGB
14016
14017 CMP #M0367+1,R3 ;DID DEST REG GET INCREMENTED ?
14018 BEQ A0367 ;BR IF YES
14019
14020 E10367: ERRORS ;NEGB FAILED TO UPDATE DEST REG
14021 R0367 ;ERROR LOOP RETURN ADDRESS
14022
14023 A0367: CMP R4,(R2) ;CORRECT RESULT ?
14024 BEQ 00367 ;BR IF YES
14025
14026 E20367: MOV (R2),R3 ;GET THE WAS DATA
14027 ERROR ;NEGB DELIVERED WRONG RESULT
14028 R0367 ;ERROR LOOP RETURN ADDRESS
14029
14030 O0367: SCOPE ;CALL SCOPE LOOP UTILITY
14031
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14034
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14036
    027150 012700 000367
    027154 013701 027200
    027160 012702 067602
    027164 012704 177401
    027170 010203
    027172 012712 177777
    027176 000257
    027200 105423
    027202 022703 067603
    027206 001402
    027210 104005
    027212 027170
    027214 020412
    027216 001403
    027220 011203
    027222 104000
    027224 027170
    027226 000004
    
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14037 ; *****
14038 ; .SBTTL T0370 NEGB TEST - DM1 - EVEN ADDRESS
14039 ; *****
14040
14041 ;MICROPROGRAMMING / LOGIC INFORMATION
14042
14043 ;ROM SEQ: [161,266,267,221,367,375,016] FC 1,3,9,8
14044
14045 ;ACT BUTS: 37(004)100,161 / 33(266)220,221 / 16(367)016,016
14046
14047 ;EXEC: [221]ALUC=LLHHL :[367] D = 000001
14048
14049 ;CODES: [367] SPS=3 / N:C = 0001
14050
14051 ;SYNC: B05J2 (-) T = 1.8 USEC
14052
14053 ;KEY SIG: K3-6 BYTE INSTR H / K3-8 CIN00 L / K3-4 NEG L / K3-3 DM=2L
14054
14055 027230 012700 000370 T0370: MOV #0370,R0 ;LOAD R0 WITH TEST NO.
14056 027234 013701 027260 MOV #I0370,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14057 027240 012702 067602 MOV #M0370,R2 ;DEST ADDR = M0370
14058 027244 012704 177401 MOV #177401,R4 ;RESULT S / B = 177401
14059 027250 010203 R0370: MOV R2,R3 ;R3 CONTAINS DEST ADDR
14060 027252 012712 177777 MOV #-1,(R2) ;[DEST] = 177777
14061 027256 000257 CCC ;SCOPE SYNC
14062
14063 027260 105413 I0370: NEGB (R3) ;TEST THE NEGB
14064
14065 027262 020412 CMP R4,(R2) ;CORRECT RESULT ?
14066 027264 001403 BEQ 00370 ;BR IF YES
14067
14068 027266 011203 MOV (R2),R3 ;GET THE WAS DATA
14069 027270 104000 E0370: ERROR ;NEGB DELIVERED WRONG RESULT
14070 027272 027250 R0370 ;ERROR LOOP RETURN ADDRESS
14071
14072 027274 000004 00370: SCOPE ;CALL SCOPE LOOP UTILITY
  
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14073 ; *****
14074 ; .SBTTL TO371 ADD TEST - SMO,DMO - <N:C> = 1010
14075 ; *****
14076 ;MICROPROGRAMMING / LOGIC INFORMATION
14077 ;ROM SEQ: (102,364,300,001) FC 1,7,8
14078 ;ACT BUTS: 37(004)100,102 / 31(102)360,360 / 27(364)000,001
14079 ;EXEC: (364)ALUC=LHLLH : (360) D = 000000
14080 ;CODES: (360) SPS=3 / N:C = 0101
14081 ;SYNC: B05J2 (-) T = 1 USEC
14082 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=0L / K3-3 DM=0L
14083
14084
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14090
14091 027276 012700 000371 TO371: MOV #0371,R0 ;LOAD R0 WITH TEST NO.
14092 027302 013701 027330 MOV #I0371,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14093 027306 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
14094 027312 005004 CLR R4 ;RESULT S / B = 000000
14095 027314 012705 177777 MOV #-1,R5 ;SRC OPR = 177777
14096 027320 012703 000001 R0371: MOV #+1,R3 ;[DEST0372
14097 027324 000257 CCC ;CLEAR FLAGS
14098 027326 000272 272 ;N:C = 1010
14099
14100 027330 060503 I0371: ADD R5,R3 ;TEST THE ADD
14101
14102 027332 100403 BMI E10371 ;N:C = 0101
14103 027334 001002 BNE E10371
14104 027336 102401 BVS E10371
14105 027340 103402 BCS A0371
14106
14107 027342 104005 E10371: ERRORS ;ADD FAILED TO ALTER CODES PROPERLY
14108 027344 027320 R0371 ;ERROR LOOP RETURN ADDRESS
14109
14110 027346 020403 A0371: CMP R4,R3 ;CORRECT RESULT ?
14111 027350 001402 BEQ 00371 ;BR IF YES
14112
14113 027352 104000 E20371: ERROR ;ADD DELIVERED THE WRONG RESULT
14114 027354 027320 R0371 ;ERROR LOOP RETURN ADDRESS
14115
14116 027356 000004 00371: SCOPE ;CALL SCOPE LOOP UTILITY

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14117 ; *****
14118 ; .SBTTL T0372 ADD TEST - SMO,DMO - <N:C> = 0101
14119 ; *****
14120
14121 ;MICROPROGRAMMING / LOGIC INFORMATION
14122
14123 ;ROM SEQ: [102,364,360,001] FC 1,7,8
14124
14125 ;ACT BUTS: 37[004]100,102 / 31[102]360,360 / 27[364]000,001
14126
14127 ;EXEC: [364]ALUC=LHLLH :[360] D = 100006
14128
14129 ;CODES: [360] SPS=3 / N:C = 1010
14130
14131 ;SYNC: B05J2 (-) T = 1 USEC
14132
14133 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=0L / K3-3 DM=0L
14134
14135 027360 012700 000372 T0372: MOV #0372,R0 ;LOAD R0 WITH TEST NO.
14136 027364 013701 027414 MOV #I0372,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14137 027370 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
14138 027374 012704 100006 MOV #100006,R4 ;RESULT S / B = 100006
14139 027400 012705 077777 MOV #77777,R5 ;SRC OPR = 77777
14140 027404 012703 000007 R0372: MOV #7,R3 ;[DEST] = 7
14141 027410 000257 CCC ;CLEAR FLAGS
14142 027412 000265 265 ;N:C = 0101
14143
14144 027414 060503 I0372: ADD R5,R3 ;TEST THE ADD
14145
14146 027416 100003 BPL E10372 ;N:C = 1010
14147 027420 001402 BEQ E10372
14148 027422 102001 BVC E10372
14149 027424 103002 BCC A0372
14150
14151 027426 104005 E10372: ERRORS ;ADD FAILED TO ALTER CODES PROPERLY
14152 027430 027404 R0372 ;ERROR LOOP RETURN ADDRESS
14153
14154 027432 020403 A0372: CMP R4,R3 ;CORRECT RESULT ?
14155 027434 001402 BEQ 00372 ;BR IF YES
14156
14157 027436 104000 E20372: ERROR ;ADD DELIVERED THE WRONG RESULT
14158 027440 027404 R0372 ;ERROR LOOP RETURN ADDRESS
14159
14160 027442 000004 00372: SCOPE ;CALL SCOPE LOOP UTILITY

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14161 ; *****
14162 ; .SBTTL T0373 ADD SM1,DMO TEST
14163 ; *****
14164 ;
14165 ;MICROPROGRAMMING / LOGIC INFORMATION
14166 ;
14167 ;ROM SEQ: [141,247,250,120,371,360,000] FC 1,2,8
14168 ;
14169 ;ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,360 / 27(371)000,000
14170 ;
14171 ;EXEC: [371]ALUC=LHLLH :[360] D = #DWTA
14172 ;
14173 ;CODES: [360] SPS=3
14174 ;
14175 ;SYNC: B05J2 (-) T = 2 USEC
14176 ;
14177 ;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=0L / K3-3 SM=1L
14178 ;
14179 027444 012700 000373 T0373: MOV #0373,R0 ;LOAD R0 WITH THE TEST NO.
14180 027450 013701 027474 MOV #I0373,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14181 027454 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
14182 027460 012704 067612 MOV #DWTA,R4 ;RESULT S / B = #DWTA
14183 027464 012705 067566 R0373: MOV #ATA,R5 ;SOURCE ADDR = ATA
14184 027470 005003 CLR R3 ;[DEST] = 0
14185 027472 000257 CCC ;SCOPE SYNC
14186 ;
14187 027474 061503 I0373: ADD (R5),R3 ;TEST THE ADD - SM1,DMO
14188 ;
14189 027476 020403 CMP R4,R3 ;RESULT = #DWTA?
14190 027500 001402 BEQ A0373 ;BR IF YES
14191 ;
14192 027502 104000 E10373: ERROR ;ADD DELIVERED WRONG RESULT
14193 027504 027464 R0373 ;ERROR LOOP RETURN
14194 ;
14195 027506 022705 067566 A0373: CMP #ATA,R5 ;DID ADD CHANGE REG.
14196 027512 001402 BEQ 00373 ;BR IF NOT
14197 ;
14198 027514 104005 E20373: ERROR5 ;REG GOT MODIFIED
14199 027516 027464 R0373 ;ERROR LOOP RETURN
14200 ;
14201 027520 000004 00373: SCOPE ;CALL SCOPE LOOP UTILITY
14202 ;
  
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14203 ; *****
14204 ; .SBTTL T0374 ADD SM2,DMO TEST
14205 ; *****
14206 ;MICROPROGRAMMING / LOGIC INFORMATION
14207 ;ROM SEQ: [142,240,250,120,371,360,000] FC 1,2,8
14208 ;ACT RUTS: 37(004)100,142 / 35(240)120,120 / 31(120)360,360 / 27(371)000,000
14209 ;EXEC: [371]ALUC=LHLLH :[360] D = #DWTA
14210 ;CODES: [360] SPS=3
14211 ;SYNC: B05J2 (-) T = USEC
14212 ;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=2L / K5-5 BCON (1+2) H
14213
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14219
14220
14221 027522 012700 000374 T0374: MOV #0374,R0 ;LOAD R0 WITH THE TEST NO.
14222 027526 013701 027564 MOV #I0374,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14223 027532 032737 000200 066642 BIT #200,#BPTLOC ;BREAKPOINT HALT SET ??
14224 027540 001401 BEQ .+4 ;BR IF NOT
14225 027542 000000 HALT ;BREAK- DEPRESS CONTINUE TO RESTART
14226 027544 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
14227 027550 012704 067612 MOV #DWTA,R4 ;RESULT S / B = #DWTA
14228 027554 012705 067566 R0374: MOV #ATA,R5 ;SOURCE ADDR = ATA
14229 027560 005003 CLR R3 ;[DEST] = 0
14230 027562 000257 CCC ;SCOPE SYNC
14231
14232 027564 062503 I0374: ADD (R5)+,R3 ;TEST THE ADD - SM2,DMO
14233
14234 027566 020403 CMP R4,R3 ;RESULT = #DWTA
14235 027570 001402 BEQ A0374 ;BR IF YES
14236
14237 027572 104000 E10374: ERROR ;ADD DELIVERED WRONG RESULT
14238 027574 027554 R0374 ;ERROR LOOP RETURN
14239
14240 027576 022705 067570 A0374: CMP #ATA+2,R5 ;DID ADD AUTO INCREMENT SOURCE REG?
14241 027602 001402 BEQ 00374 ;BR IF YES
14242
14243 027604 104005 E20374: ERROR5 ;ADD FAILED TO UPDATE SOURCE REG.
14244 027606 027554 R0374 ;ERROR LOOP RETURN
14245
14246 027610 000004 00374: SCOPE ;CALL SCOPE LOOP UTILITY
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027612 012700 000375
027616 013701 027646
027622 012702 177703
027626 012704 067612
027632 012705 067576
027636 010437 067602
027642 005033
027644 000257

027646 063503

027650 020437 067602
027654 001402

027656 104000
027660 027632

027662 022705 067600
027666 001402

027670 104005
027672 027632

027674 000004

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; *****  
; .SBTTL T0375 ADD SM3,DMD TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [143,245,246,247,250,120,371,360,000] FC 1,2,8  
;ACT BUTS: 37(004)100,143 / 35(247)120,120 / 31(120)360,360 / 27(37)1000,000  
;EXEC: [371]ALUC=LHLLH :[360] D = #DWT A  
;CODES: [360] SPS=3  
;SYNC: B05J2 (-) T = 2.75 USEC  
;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=DL / K3-3 SM=2L / K5-5 BC01 H  
T0375: MOV #0375,R0 ;LOAD R0 WITH THE TEST NO.  
MOV #10375,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #177703,R2 ;DEST ADDR = R3  
MOV #DWT A,R4 ;RESULT S / B = #DWT A  
R0375: MOV #ATA+10,R5 ;RS POINTS TO SOURCE ADDR  
MOV R4,#MBUFO ;[SOURCE] = #DWT A  
CLR R2 ;[DEST] = 0  
CCC ;SCOPE SYNC  
I0375: ADD @ (R5)+,R3 ;TEST THE ADD - SM3,DMD  
CMP R4,#MBUFO ;RESULT = #DWT A?  
BEQ R0375 ;BR IF YES  
E10375: ERROR ;ADD DELIVERED WRONG RESULT  
R0375 ;ERROR LOOP RETURN  
R0375: CMP #ATA+12,R5 ;DID ADD AUTO INCREMENT SOURCE REG?  
BEQ R0375 ;BR IF YES  
E20375: ERROR ;ADD FAILED TO UPDATE SOURCE REG.  
R0375 ;ERROR LOOP RETURN  
00375: SCOPE ;CALL SCOPE LOOP UTILITY
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14291 ; *****
14292 ; .SBTTL T0376 ADD SM4,DMO TEST
14293 ; *****
14294 ;MICROPROGRAMMING / LOGIC INFORMATION
14295 ;ROM SEQ: [144,240,250,120,371,360,000] FC 1,2,8
14296 ;ACT BUTS: 37(004)100,144 / 35(240)120,120 / 31(120)360,360 / 27(371)000,000
14297 ;EXEC: [371]ALUC=LALLH :[360] D = #DWT A
14298 ;CODES: [360] SPS=3
14299 ;SYNC: B05J2 (-) T = 2 USEC
14300 ;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=4L / K5-5 BCON (1+2) H
14301
14302 T0376: MOV #0376,R0 ;LOAD R0 WITH THE TEST NO.
14303 MOV @#I0376,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14304 MOV #177703,R2 ;DEST ADDR = R3
14305 MOV #DWT A,R4 ;RESULT S / B = #DWT A
14306 R0376: MOV #ATA+2,R5 ;SOURCE ADDR = ATA
14307 CLR R3 ;[DEST] = 0
14308 CCC ;SCOPE SYNC
14309
14310 I0376: ADD -(R5),R3 ;TEST THE ADD - SM4,DMO
14311
14312 CMP R4,R3 ;RESULT = #DWT A?
14313 BEQ R0376 ;BR IF YES
14314
14315 E10376: ERROR ;ADD DELIVERED WRONG RESULT
14316 R0376 ;ERROR LOOP RETURN
14317
14318 R0376: CMP #ATA,R5 ;DID SOURCE REG GET DECREMENTED?
14319 BEQ R0376 ;BR IF YES
14320
14321 E20376: ERRORS ;ADD FAILED TO UPDATE SOURCE REG
14322 R0376 ;ERROR LOOP RETURN
14323
14324 O0376: SCOPE ;CALL SCOPE LOOP UTILITY
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027754 012700 000377
027760 013701 030010
027764 012702 177703
027770 012704 067612
027774 012705 067600
030000 010437 067602
030004 005003
030006 000257

030010 065503

030012 020437 067602
030016 001402

030020 104000
030022 027774

030024 022705 067576
030030 001402

030032 104005
030034 027774

030036 000004

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; *****  
; .SBTTL T0377 ADD SMS,DMD TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [145,245,246,247,250,120,371,360,000] FC 1,2,8  
;ACT BUTS: 37[004]100,145 / 35[247]120,120 / 31[120]360,360 / 27[371]000,000  
;EXEC: [371]ALUC=LHLLH :[360] D = #DWT A  
;CODES: [360] SPS=3  
;SYNC: B05J2 (-) T = 2.75 USEC  
;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=5L / K5-5 BC01 H  
  
T0377: MOV #0377,R0 ;LOAD R0 WITH THE TEST NO.  
MOV @I0377,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #177703,R2 ;DEST ADDR = R3  
MOV #DWT A,R4 ;RESULT S / B = #DWT A  
R0377: MOV #ATA+12,R5 ;RS POINTS TO SOURCE ADDR  
MOV R4,@#M#BUFO ;[SOURCE] = #DWT A  
CLR R3 ;[DEST] = 0  
CCC ;SCOPE SYNC  
  
I0377: ADD @-(R5),R3 ;TEST THE ADD - SMS,DMD  
CMP R4,@#M#BUFO ;RESULT = #DWT A?  
BEQ A0377 ;BR IF YES  
  
E10377: ERROR ;ADD DELIVERED WRONG RESULT  
R0377 ;ERROR LOOP RETURN  
  
A0377: CMP #ATA+10,R5 ;DID ADD DECREMENT SOURCE REG?  
BEQ 00377 ;BR IF YES  
  
E20377: ERROR ;ADD FAILED TO UPDATE SOURCE REG.  
R0377 ;ERROR LOOP RETURN  
  
00377: SCOPE ;CALL SCOPE LOOP UTILITY
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030040 012700 000400
030044 013701 030070
030050 012703 177703
030054 012704 067602
030060 012705 067566
030064 005003
030066 000257

030070 066503 000010

030074 020403
030076 001402

030100 104000
030102 030060

030104 000004

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; *****  
; .SBTTL T0400 ADD SMS,DMO TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [146,241,242,247,250,120,371,360,000] FC 1,2,8  
;ACT BUTS: 37(004)100,146 / 35(247)120,120 / 31(120)360,360 / 27(37)1000,000  
;EXEC: [371]ALUC=LHLLH :[360] D = #MBUFO  
;CODES: [360] SPS=3  
;SYNC: B05J2 (-) T = 2.5 USEC  
;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=0L / K3-3 SM=6L / K3-4 OVLAP CYCLE L  
T0400: MOV #0400,R0 ;LOAD R0 WITH THE TEST NO.  
MOV #I0400,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #177703,R3 ;DEST ADDR = R3  
MOV #MBUFO,R4 ;RESULT S / B = MBUFO  
R0400: MOV #ATA,R5 ;BASE SOURCE ADDR = ATA  
CLR R3 ;[DEST] = 0  
CCC ;SCOPE SYNC  
  
I0400: ADD 10(R5),R3 ;TEST THE ADD - SMS,DMO  
  
CMP R4,R3 ;RESULT =MBUFO?  
BEQ 00400 ;BR IF YES  
  
E0400: ERROR ;ADD DELIVERED WRONG RESULT  
R0400 ;ERROR LOOP RETURN  
  
00400: SCOPE ;CALL SCOPE LOOP UTILITY
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030160 012700 000402
030164 013701 030210
030170 012702 067602
030174 012704 067612
030200 012705 067566
030204 005012
030206 000257

030210 061512

030212 020412
030214 001403

030216 011203
030220 104000
030222 030200

030224 000004

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; *****  
          .SBTTL T0402 ADD SM1,DM1 TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8  
;ACT BUTS:     37[004]100,141 / 35[247]120,161 / 33[266]220,225 / 16[367]016,016  
;EXEC:         [225]ALUC=LHLLH :[367] D = #DWTA  
;CODES:        [367] SPS=3  
;SYNC:         B05J2 (-) T = 2.6 USEC  
;KEY SIG:      K3-3 ADD+SUB L / K3-3 DM=1L / K3-3 SM=1L  
T0402:  MOV      #0402,R0          ;LOAD R0 WITH THE TEST NO.  
          MOV      J#I0402,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
          MOV      #M0402,R2      ;DEST ADDR = M0402  
          MOV      #DWTA,R4        ;RESULT S / B = #DWTA  
R0402:  MOV      #ATA,R5          ;SOURCE ADDR = ATA  
          CLR      (R2)            ;[DEST] = 0  
          CCC  
I0402:  ADD      (R5),(R2)         ;TEST THE ADD - SM1,DM1  
          CMP      R4,(R2)         ;RESULT = #DWTA?  
          BEQ      00402           ;BR IF YES  
E0402:  MOV      (R2),R3          ;GET WAS DATA  
          ERROR   R0402           ;ADD DELIVERED WRONG RESULT  
          R0402  
00402:  SCOPE  
          ;CALL SCOPE LOOP UTILITY
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14504 030226 012700 000403
14505 030232 013701 030256
14506 030236 012702 067602
14507 030242 012704 067612
14508 030246 012705 067566
14509 030252 005012
14510 030254 000257
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14512 030256 062512
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14514 030260 020412
14515 030262 001403
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14517 030264 011203
14518 030266 104000
14519 030270 030246
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14521 030272 000004
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; *****
; .SBTTL T0403 ADD SM2,DM1 TEST
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ: [142,240,250,161,266,267,225,367,375,016] FC 1,2,3,8
;ACT BUTS: 37(004)100,142 / 35(240)120,161 / 35(266)220,225 / 16(367)016,016
;EXEC: [225]ALUC=LHLLH :[367] D = #DWT A
;CODES: [367] SPS=3
;SYNC: B05J2 (-) T = 2.7 USEC
;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=1L
T0403: MOV #0403,R0 ;LOAD R0 WITH THE TEST NO.
MOV #I0403,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV #M0403,R2 ;DEST ADDR = M0403
MOV #DWT A,R4 ;RESULT S / B = #DWT A
R0403: MOV #ATA,R5 ;SOURCE ADDR = ATA
CLR (R2) ;[DEST] = 0
CCC ;SCOPE SYNC
I0403: ADD (R5)+,(R2) ;TEST THE ADD - SM2,DM1
CMP R4,(R2) ;RESULT = #DWT A?
BEQ 00403 ;BR IF YES
E0403: MOV (R2),R3 ;GET WAS DATA
ERROR ;ADD DELIVERED WRONG RESULT
R0403 ;ERROR LOOP RETURN
00403: SCOPE ;CALL SCOPE LOOP UTILITY

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030274 012700 000404
 030300 013701 030326
 030304 012702 067602
 030310 012704 067612
 030314 012705 067566
 030320 010203
 030322 005012
 030324 000257
 030326 061523
 030330 020412
 030332 001407
 030334 010337 067606
 030340 011203
 030342 104000
 030344 030314
 030346 013703 067606
 030352 022703 067604
 030356 001402
 030360 104005
 030362 030314
 030364 000004

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; *****
; .SBTTL T0404 ADD SM1,DM2 TEST
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [141,247,250,162,260,267,225,367,375,016] FC 1,2,3,8
;ACT BUTS:     37(004)100,141 / 35(247)120,162 / 33(260)220,225 / 16(367)016,016
;EXEC:         [225]ALUC=LHLLH :[367] D = #DWT A
;CODES:        [367] SPS=3
;SYNC:         B05J2 (-) T = 2.7 USEC
;KEY SIG:      K3-3 ADD+SUB L / K3-3 DM=2L / K3-3 SM=1L
T0404:  MOV      #0404,R0          ;LOAD R0 WITH THE TEST NO.
        MOV      @#I0404,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #M0404,R2      ;DEST ADDR = M0404
        MOV      #DWT A,R4      ;RESULT S / B = #DWT A
R0404:  MOV      #ATA ,R5        ;SOURCE ADDR = ATA
        MOV      R2,R3          ;[R3] = DEST ADDR
        CLR      (R2)          ;[DEST] = 0
        CCC          ;SCOPE SYNC
I0404:  ADD      (R5),(R3)+      ;TEST THE ADD - SM1,DM2
        CMP      R4,(R2)        ;RESULT = #DWT A?
        BEQ      A0404          ;BR IF YES
E10404: MOV      R3,@#M0404,R3   ;SAVE UPDATED DEST ADDR
        MOV      (R2),R3        ;GET WAS DATA
        ERROR    R0404          ;ADD DELIVERED WRONG RESULT
        R0404          ;ERROR LOOP RETURN
A0404:  MOV      @#M0404,R3      ;RESTORE UPDATED DEST ADDR
        CMP      #M0404+2,R3    ;DID ADD INCRMENT DEST REG
        BEQ      00404          ;BR IF YES
E20404: ERROR5  R0404          ;ADD FAILED TO UPDATE DEST REG
        R0404          ;ERROR LOOP RETURN
00404:  SCOPE          ;CALL SCOPE LOOP UTILITY
    
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14569 ; *****
14570 ; .SBTTL T0405 ADD SM2,DM2 TEST
14571 ; *****
14572 ;MICROPROGRAMMING / LOGIC INFORMATION
14573
14574 ;ROM SEQ: [142,240,250,162,260,267,225,367,375,016] FC 1,2,3,8
14575
14576 ;ACT BUTS: 37(004)100,142 / 35(240)120,162 / 33(260)220,225 / 16(367)016,016
14577
14578 ;EXEC: [225]ALUC=LHLLH :[367] D = #DWT A
14579
14580 ;CODES: [367] SPS=3
14581
14582 ;SYNC: B05J2 (-) T = 2.7 USEC
14583
14584 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=2L / K3-3 DM=2L
14585
14586
14587 030366 012700 000405 T0405: MOV #0405,R0 ;LOAD R0 WITH THE TEST NO.
14588 030372 013701 030420 MOV @#I0405,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14589 030376 012702 067602 MOV #M0405,R2 ;DEST ADDR = M0405
14590 030402 012704 067612 MOV #DWT A,R4 ;RESULT S / B = #DWT A
14591 030406 012705 067566 R0405: MOV #ATA,R5 ;SOURCE ADDR = ATA
14592 030412 010203 MOV R2,R3 ;[R3] = DEST ADDR
14593 030414 005012 CLR (R2) ;[DEST] = 0
14594 030416 000257 CCC ;SCOPE SYNC
14595
14596 030420 062523 I0405: ADD (R5)+,(R3)+ ;TEST THE ADD - SM2,DM2
14597
14598 030422 020412 CMP R4,(R2) ;RESULT = #DWT A
14599 030424 001407 BEQ A0405 ;BR IF YES
14600
14601 030426 010337 067606 MOV R3,@#M0405,R3 ;SAVE UPDATED DEST ADDR
14602 030432 011203 MOV (R2),R3 ;GET WAS DATA
14603 030434 104000 E10405: ERROR ;ADD DELIVERED WRONG RESULT
14604 030436 030406 R0405 ;ERROR LOOP RETURN
14605
14606 030440 013703 067606 A0405: MOV @#M0405,R3 ;RESTORE UPDATED DEST ADDR
14607 030444 022703 067604 CMP #M0405+2,R3 ;DID ADD INCREMENT DEST REG?
14608 030450 001402 BEQ 00405 ;BR IF YES
14609
14610 030452 104005 E20405: ERROR5 ;ADD FAILED TO UPDATE DEST REG
14611 030454 030406 R0405 ;ERROR LOOP RETURN
14612
14613 030456 000004 00405: SCOPE ;CALL SCOPE LOOP UTILITY
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14615 ; *****
14616 ; .SBTTL T0406 ADD SM1,DM3 TEST
14617 ; *****
14618 ;MICROPROGRAMMING / LOGIC INFORMATION
14619
14620 ;ROM SEQ: [141,247,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
14621
14622 ;ACT BUTS: 37(004)100,141 / 35(247)120,163 / 33(266)220,225 / 16(367)016,016
14623
14624 ;EXEC: [225]ALUC=LHLLH :[367] D = #DWTA
14625
14626 ;CODES: [367] SPS=3
14627
14628 ;SYNC: B05J2 (-) T = 4.5 USEC
14629
14630 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=3L
14631
14632
14633 030460 012700 000406 T0406: MOV #0406,R0 ;LOAD R0 WITH THE TEST NO.
14634 030464 013701 030514 MOV @#I0406,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14635 030470 012702 067602 MOV #MBOF0,R2 ;DEST ADDR = MBOF0
14636 030474 012704 067612 MOV #DWTA,R4 ;RESULT S / B = #DWTA
14637 030500 012705 067566 R0406: MOV #ATA,R5 ;SOURCE ADDR = ATA
14638 030504 012703 067576 MOV #ATA+10,R3 ;[R3] = ADDR OF DEST ADDR
14639 030510 005012 CLR (R2) ;[DEST] = 0
14640 030512 000257 CCC ;SCOPE SYNC
14641
14642 030514 061533 I0406: ADD (R5),@ (R3)+ ;TEST THE ADD - SM1,DM3
14643
14644 030516 020412 CMP R4,(R2) ;RESULT = #DWTA?
14645 030520 001407 BEQ A0406 ;BR IF YES
14646
14647 030522 010337 067606 MOV R3,@#MBOF1 ;SAVE R3
14648 030526 011203 MOV (R2),R3 ;GET WAS DATA
14649 030530 104000 E10406: ERROR ;ADD DELIVERED WRONG RESULT
14650 030532 030500 R0406 ;ERROR LOOP RETURN
14651
14652 030534 013703 067606 A0406: MOV @#MBOF1,R3 ;RESTORE R3
14653 030540 022703 067600 CMP #ATA+12,R3 ;DID ADD INCREMENT DEST REG
14654 030544 001402 BEQ 00406 ;BR IF YES
14655
14656 030546 104005 E20406: ERROR5 ;ADD FAILED TO UPDATE DEST REG
14657 030550 030500 R0406 ;ERROR LOOP RETURN
14658
14659 030552 000004 00406: SCOPE ;CALL SCOPE LOOP UTILITY
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14661 ; *****
14662 .SBTTL T0407 ADD SM2,DM3 TEST
14663 ; *****
14664 ;MICROPROGRAMMING / LOGIC INFORMATION
14665 ;ROM SEQ: [142,240,250,163,264,265,266,267,225,367,375,016] FC 1,2,3,8
14666 ;ACT BUTS: 37[004]100,142 / 35[240]120,163 / 33[266]220,225 / 16[367]016,016
14667 ;EXEC: [225]ALUC=LHLLH :[367] D = #DWTA
14668 ;CODES: [367] SPS=3
14669 ;SYNC: B05J2 (-) T = 3.6 USEC
14670 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=2L / K3-3 DM=3L
14671
14672 T0407: MOV #0407,R0 ;LOAD R0 WITH THE TEST NO.
14673 MOV @#I0407,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14674 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
14675 MOV #DWTA,R4 ;RESULT S / B = #DWTA
14676 R0407: MOV #ATA,R5 ;SOURCE ADDR = ATA
14677 MOV #ATA+10,R3 ;[R3] = ADDR OF DEST ADDR
14678 CLR (R2) ;[DEST] = 0
14679 CCC ;SCOPE SYNC
14680
14681 I0407: ADD (R5)+,@(R3)+ ;TEST THE ADD - SM2,DM3
14682
14683 CMP R4,(R2) ;RESULT = #DWTA?
14684 BEQ A0407 ;BR IF YES
14685
14686 E10407: MOV R3,@#MBUF1 ;SAVE R3
14687 MOV (R2),R3 ;GET WAS DATA
14688 ERROR ;ADD DELIVERED WRONG RESULT
14689 R0407 ;ERROR LOOP RETURN
14690
14691 A0407: MOV @#MBUF1,R3 ;RESTORE R3
14692 CMP #ATA+12,R3 ;DID ADD INCREMENT DEST REG
14693 BEQ 00407 ;BR IF YES
14694
14695 E20407: ERROR5 ;ADD FAILED TO UPDATE DEST REG
14696 R0407 ;ERROR LOOP RETURN
14697
14698 00407: SCOPE ;CALL SCOPE LOOP UTILITY
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M13

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 376
 DBQEAB.CMB T0407 ADD SM2,DM3 TEST

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14707 ; *****
14708 ; .SBTTL T0410 ADD SM1,DM4 TEST
14709 ; *****
14710 ;MICROPROGRAMMING / LOGIC INFORMATION
14711 ;ROM SEQ: [141,247,250,164,260,267,225,367,375,016] FC 1,2,3,8
14712 ;ACT BUTS: 37(004)100,141 / 35(247)120,164 / 33(260)220,225 / 16(367)016,016
14713 ;EXEC: [225]ALUC=LHLLH :[367] D = #DWTA
14714 ;CODES: [367] SPS=3
14715 ;SYNC: B05J2 (-) T = 2.6 USEC
14716 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=4L
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14725 030650 012700 000410 T0410: MOV #0410,R0 ;LOAD R0 WITH THE TEST NO.
14726 030654 013701 030704 ;LOAD R1 WITH TEST INSTRUCTION WORD
14727 030660 012702 067602 ;DEST ADDR = MBUFO
14728 030664 012704 067612 ;RESULT S / B = #DWTA
14729 030670 012705 067566 RO410: MOV #ATA,R5 ;SOURCE ADDR = ATA
14730 030674 012703 067604 ;R3 POINTS TO DEST ADDR +2
14731 030700 005012 ;[DEST] = 0
14732 030702 000257 ;SCOPE SYNC
14733
14734 030704 061543 IO410: ADD (R5),-(R3) ;TEST THE ADD - SM1,DM4
14735
14736 030706 020412 ;RESULT = #DWTA?
14737 030710 001407 BEQ A0410 ;BR IF YES
14738
14739 030712 010337 067606 ;SAVE R3
14740 030716 011203 ;GET WAS DATA
14741 030720 104000 E10410: ERROR ;ADD DELIVERED WRONG RESULT
14742 030722 030670 RO410 ;ERROR LOOP RETURN
14743
14744 030724 013703 067606 ;RESTORE R3
14745 030730 020302 A0410: CMP R3,R2 ;DID ADD INCREMENT DEST REG?
14746 030732 001402 BEQ 00410 ;BR IF YES
14747
14748 030734 104005 E20410: ERROR5 ;ADD FAILED TO UPDATE DEST REG.
14749 030736 030670 RO410 ;ERROR LOOP RETURN
14750
14751 030740 000004 00410: SCOPE ;CALL SCOPE LOOP UTILITY
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14753 ; *****
14754 ; .SBTTL TO411 ADD SM2,DM4 TEST
14755 ; *****
14756 ;MICROPROGRAMMING / LOGIC INFORMATION
14757 ;ROM SEQ: [142,240,250,164,260,267,225,367,375,016] FC 1,2,3,8
14758 ;ACT BUTS: 37(004)100,142 / 35(240)120,164 / 33(260)220,225 / 16(367)016,016
14759 ;EXEC: [225]ALUC=LHLLH :[367] D = #DWT A
14760 ;CODES: [367] SPS=3
14761 ;SYNC: B05J2 (-) T = 2.6 USEC
14762 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SMO=2L / K3-3 DM=4L
14763
14764 TO411: MOV #0411,R0 ;LOAD R0 WITH THE TEST NO.
14765 MOV @#I0411,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
14766 MOV #M0411,R2 ;DEST ADDR = M0411
14767 MOV #DWT A,R4 ;RESULT S / B = #DWT A
14768 R0411: MOV #ATA,R5 ;SOURCE ADDR = ATA
14769 MOV #M0411+2,R3 ;R3 POINTS TO DEST ADDR +2
14770 CLR (R2) ;[DEST] = 0
14771 CCC ;SCOPE SYNC
14772
14773 I0411: ADD (R5),-(R3) ;TEST THE ADD - SM2,DM4
14774
14775 CMP R4,(R2) ;RESULT = #DWT A?
14776 BEQ A0411 ;BR IF YES
14777
14778 MOV R3,@#M0411 ;SAVE R3
14779 MOV (R2),R3 ;GET WAS DATA
14780 E10411: ERROR ;ADD DELIVERED WRONG RESULT
14781 R0411 ;ERROR LOOP RETURN
14782
14783 MOV @#M0411,R3 ;RESTORE R3
14784 A0411: CMP R3,R2 ;DID ADD INCREMENT DEST REG?
14785 BEQ 00411 ;BR IF YES
14786
14787 E20411: ERROR5 ;ADD FAILED TO UPDATE DEST REG.
14788 R0411 ;ERROR LOOP RETURN
14789
14790 00411: SCOPE ;CALL SCOPE LOOP UTILITY
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14817 031034 012700 000412
14818 031040 013701 031070
14819 031044 012702 067602
14820 031050 012704 067612
14821 031054 012705 067566
14822 031060 012703 067600
14823 031064 005012
14824 031066 000257
14825
14826 031070 061553
14827
14828 031072 020412
14829 031074 001407
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14831 031076 010337 067606
14832 031102 011203
14833 031104 104000
14834 031106 031054
14835
14836 031110 013703 067606
14837 031114 022703 067576
14838 031120 001402
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14840 031122 104005
14841 031124 031054
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14843 031126 000004
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: *****  
      .SBTTL T0412 ADD SM1,DM5 TEST  
: *****  
  
:MICROPROGRAMMING / LOGIC INFORMATION  
  
:ROM SEQ:      [141,247,250,165,264,265,266,267,225,367,375,016] FC 1,2,3,8  
:ACT BUTS:     37(004)100,141 / 35(247)120,165 / 33(266)220,225 / 16(367)016,016  
:EXEC:         [225]ALUC=LMLLH :[367] D = #DWT A  
:CODES:        [367] SPS=3  
:SYNC:         B05J2 (-) T = 3.6 USEC  
:KEY SIG:      K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=5L  
  
T0412: MOV      #0412,R0          ;LOAD R0 WITH THE TEST NO.  
      MOV      @I0412,R1        ;LOAD R1 WITH TEST INSTRUCTION WORD  
      MOV      @M0412,R2        ;DEST ADDR = M0412  
      MOV      @DWT A,R4        ;RESULT S / B = #DWT A  
R0412: MOV      @ATA,R5         ;SOURCE ADDR = ATA  
      MOV      @ATA+12,R3       ;R3 CONTAINS ADDR OF DEST ADDR PLUS 2  
      CLR      (R2)            ;[DEST] = 0  
      CCC  
      ;SCOPE SYNC  
  
I0412: ADD      (R5),@-(R3)     ;TEST THE ADD - SM1,DM5  
  
      CMP      R4,(R2)         ;RESULT = #DWT A?  
      BEQ      A0412           ;BR IF YES  
  
E10412: MOV      R3,@M0412      ;SAVE R3  
      MOV      (R2),R3         ;GET WAS DATA  
      ERROR    R0412          ;ADD DELIVERED WRONG RESULT  
      ;ERROR LOOP RETURN  
  
A0412: MOV      @M0412,R3       ;RESTORE R3  
      CMP      @ATA+10,R3      ;DID ADD DECREMENT DEST REG?  
      BEQ      J0412           ;BR IF YES  
  
E20412: ERROR    R0412          ;ADD FAILED TO UPDATE DEST REG.  
      ;ERROR LOOP RETURN  
  
00412: SCOPE                    ;CALL SCOPE LOOP UTILITY
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031130 012700 000413
 031134 013701 031164
 031140 012702 067602
 031144 012704 067612
 031150 012705 067566
 031154 012703 067600
 031160 005012
 031162 000257

 031164 062553

 031166 020412
 031170 001407

 031172 010337 067606
 031176 011203
 031200 104000
 031202 031150

 031204 013703 067606
 031210 022703 067576
 031214 001402

 031216 104005
 031220 031150

 031222 000004

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; *****
; .SBTTL T0413 ADD SM2,DMS TEST
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [142,240,250,165,264,265,266,267,225,367,375,016] FC 1,2,3,8
;ACT BUTS:     37[004]100,142 / 35[240]120,165 / 33[266]220,225 / 16[367]016,016
;EXEC:         [225]ALUC=LHLLH :[367] D = #DWT A
;CODES:        [367] SPS = 3
;SYNC:         B05J2 (-) T = 3.6 USEC
;KEY SIG:      K3-3 ADD+SUB L / K3-3 SM=2L / K3-3 DM=5L
T0413:  MOV      #0413,R0          ;LOAD R0 WITH THE TEST NO.
        MOV      @#I0413,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #MBUF0,R2      ;DEST ADDR = MBUF0
        MOV      #DWT A,R4      ;RESULT S / B = #DWT A
R0413:  MOV      #ATA,R5        ;SOURCE ADDR = ATA
        MOV      #ATA+12,R3     ;R3 CONTAINS ADDR OF DEST ADDR PLUS 2
        CLR      (R2)          ;[DEST] = 0
        CCC          ;SCOPE SYNC
I0413:  ADD      (R5)+,@-(R3)    ;TEST THE ADD - SM2,DMS
        CMP      R4,(R2)        ;RESULT = #DWT A?
        BEQ      R0413         ;BR IF YES
E10413: MOV      R3,@#MBUF1      ;SAVE R3
        MOV      (R2),R3       ;GET WAS DATA
        ERROR   R0413         ;ADD DELIVERED WRONG RESULT
        R0413          ;ERROR LOOP RETURN
A0413:  MOV      @#MBUF1,R3     ;RESTORE R3
        CMP      #ATA+10,R3    ;DID ADD DECREMENT DEST REG?
        BEQ      00413        ;BR IF YES
E20413: ERROR5   R0413        ;ADD FAILED TO UPDATE DEST REG
        R0413          ;ERROR LOOP RETURN
00413:  SCOPE          ;CALL SCOPE LOOP UTILITY
    
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031224 012700 000414
031230 013701 031260
031234 012702 067606
031240 012704 067612
031244 012705 067566
031250 012703 067602
031254 005012
031256 000257

031260 061563 000004

031264 020412
031266 001403

031270 011203
031272 104000
031274 031244

031276 000004

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; *****  
; .SBTTL T0414 ADD SM1,DM6 TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [141,247,250,167,261,262,266,267,225,367,375,016] FC 1,2,3,8  
;ACT BUTS: 37(004)100,141 / 35(247)120,167 / 17(167)262,262 / 33(266)220,225  
; / 16(367)016,016  
;EXEC: [225]ALUC=LHLLH :[367] D = #DWT A  
;CODES: [367] SPS=3  
;SYNC: B05J2 (-) T = 3.25 USEC  
;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=6L  
T0414: MOV #0414,R0 ;LOAD R0 WITH THE TEST NO.  
MOV #I0414,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #MBUFD+4,R2 ;DEST ADDR = MBUFD+4  
MOV #DWT A,R4 ;RESULT S / B = #DWT A  
R0414: MOV #ATA,R5 ;SOURCE ADDR = ATA  
MOV #MBUFD,R3 ;[R3] = BASE DEST ADDR  
CLR (R2) ;[DEST] = 0  
CCC ;SCOPE SYNC  
I0414: ADD (R5),4(R3) ;TEST THE ADD - SM1,DM6  
CMP R4,(R2) ;RESULT = #DWT A?  
BEQ 00414 ;BR IF YES  
E0414: MOV (R2),R3 ;GET WAS DATA  
ERROR ;ADD DELIVERED WRONG RESULT  
R0414 ;ERROR LOOP RETURN  
00414: SCOPE ;CALL SCOPE LOOP UTILITY
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E14

.MAIN. MACY11 27(732) 15-OCT-'76 14:58 PAGE 381
 DBQEAB.CMB T0414 ADD SM1,DM6 TEST

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031300	012700	000415
031304	013701	031334
031310	012702	067606
031314	012704	067612
031320	012705	067566
031324	012703	067602
031330	005012	
031332	000257	
031334	062563	000004
031340	020412	
031342	001403	
031344	011203	
031346	104000	
031350	031320	
031352	000004	

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; *****
; .SBTTL T0415 ADD SM2,DM6 TEST
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [142,240,250,167,261,262,266,267,225,367,375,016] FC 1,2,3,8

;ACT BUTS:     37[004]100,142 / 35[240]120,167 / 17[167]262,262 / 33[266]220,225
; / 16[367]016,016

;EXEC:         [225]ALUC=LHLLH :[367] D = #DWTA

;CODES:        [367] SPS=3

;SYNC:         B05J2 (-) T = 3.25 USEC

;KEY SIG:      K3-3 ADD+SUB L / K3-3 SM= . / K3-3 DM=6L

T0415:  MOV      #0415,R0          ;LOAD R0 WITH THE TEST NO.
        MOV      @#I0415,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #MBUF0+4,R2    ;DEST ADDR = MBUF0+4
        MOV      #DWTA,R4       ;RESULT S / B = #DWTA
R0415:  MOV      #ATA,R5        ;SOURCE ADDR = ATA
        MOV      #MBUF0,R3     ;[R3] = BASE DEST ADDR
        CLR      (R2)          ;[DEST] = 0
        CCC                     ;SCOPE SYNC

I0415:  ADD      (R5)+,4(R3)     ;TEST THE ADD - SM2,DM6

        CMP      R4,(R2)        ;RESULT = #DWTA?
        BEQ     00415          ;BR IF YES

E0415:  MOV      (R2),R3        ;GET WAS DATA
        ERROR   R0415          ;ADD DELIVERED WRONG RESULT
        ERROR   R0415          ;ERROR LOOP RETURN

00415:  SCOPE                    ;CALL SCOPE LOOP UTILITY
  
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031354 012700 000416
031360 013701 031406
031364 012702 067602
031370 012704 067612
031374 012705 067566
031400 010503
031402 005012
031404 000257

031406 061573 000010

031412 020000
031414 011403

031416 011203
031420 104000
031422 031374

031424 000004

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; *****  
; .SBTTL T0416 ADD SM1,DM7 TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [141,247,250,167,261,263,264,265,266,267,225,367,375,016] FC 1,2,3,8  
;ACT BUTS: 37(004)100,141 / 35(247)120,167 / 17(167)262,263 / 33(266)220,225  
; / 16(367)016,016  
;EXEC: [225]ALUC=LHLLH :[367] D = #DWTA  
;CODES: [367] SPS=3  
;SYNC: B05J2 (-) T = 4.25 USEC  
;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=7L  
T0416: MOV #0416,R0 ;LOAD R0 WITH THE TEST NO.  
MOV #I0416,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #,BUFO,R2 ;DEST ADDR = MBUFO  
MOV #DWTA,R4 ;RESULT S / B = #DWTA  
R0416: MOV #ATA,R5 ;SOURCE ADDR = ATA  
MOV R5,R3 ;BASE DEST ADDR = ATA  
CLR (R2) ;[DEST] = 0  
CCC ;SCOPE SYNC  
I0416: ADD (R5),R10(R3) ;TEST THE ADD - SM1,DM7  
CMP R4,(R2) ;RESULT = #DWTA?  
BEQ 00416 ;BR IF YES  
E0416: MOV (R2),R3 ;GET WAS DATA  
ERROR ;ADD DELIVERED WRONG RESULT  
R0416 ;ERROR LOOP RETURN  
00416: SCOPE ;CALL SCOPE LOOP UTILITY
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15008 ; *****
15009 ; .SBTTL T0417 ADD SM2,DM7 TEST
15010 ; *****
15011
15012 ;MICROPROGRAMMING / LOGIC INFORMATION
15013
15014 ;ROM SEQ: [142,240,250,167,261,263,264,265,266,267,225,367,375,016] FC 1,2,3,8
15015
15016 ;ACT BUTS: 37[004]100,142 / 35[240]120,167 / 17[167]262,263 / 33[266]220,225
15017 ; / 16[367]016,016
15018
15019 ;EXEC: [225]ALUC=LHLLH :[367] D = #DWTA
15020
15021 ;CODES: [367] SPS=3
15022
15023 ;SYNC: B05J2 (-) T = 4.25 USEC
15024
15025 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=2L / K3-3 DM=7L
15026
15027 031426 012700 000417 T0417: MOV #0417 R0 ;LOAD R0 WITH THE TEST NO.
15028 031432 013701 031460 MOV #I0417 R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15029 031436 012702 067602 MOV #M0417 R2 ;DEST ADDR = M0417
15030 031442 012704 067612 MOV #DWTA R4 ;RESULT S / B = #DWTA
15031 031446 012705 067566 R0417: MOV #ATA R5 ;SOURCE ADDR = ATA
15032 031452 010503 MOV R5 R3 ;BASE DEST ADDR = ATA
15033 031454 005012 CLR (R2) ;[DEST] = 0
15034 031456 000257 CCC ;SCOPE SYNC
15035
15036 031460 062573 000010 I0417: ADD (R5)+, @I0(R3) ;TEST THE ADD - SM2,DM7
15037
15038 031464 020412 CMP R4, (R2) ;RESULT = #DWTA?
15039 031466 001403 BEQ 00417 ;BR IF YES
15040
15041 031470 011203 MOV (R2), R3 ;GET WAS DATA
15042 031472 104000 E0417: ERROR ;ADD DELIVERED WRONG RESULT
15043 031474 031446 R0417 ;ERROR LOOP RETURN
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15045 031476 000004 00417: SCOPE ;CALL SCOPE LOOP UTILITY
    
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031500 012700 000420
031504 013701 031524
031510 005004
031512 012702 177703
031516 005003
031520 000257
031522 000272

031524 074403

031526 100403
031530 001002
031532 102401
031534 103002

031536 104000
031540 031516

031542 020403
031544 001402

031546 104000
031550 031516

031552 000004

; *****
.SBTTL T0420 "XOR RA,RB" TEST - A=B=000000 N:C=1010
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [102,364,360,001] FC 1,7,8
;ACT BUTS: 37(004)100,102 / 31(102)360,360 / 27(364)000,001
;EXEC: [364]ALUC=HLHHL : [360]D=000000
;CODES: [360] SPS=3 / N:C=0100
;SYNC: B0SJ2 (-) / T=1 USEC
;KEY SIG: K3-5 XOR L / K3-3 DM=0 L / K3-4 OVLAP INSTR H

T0420: MOV #0420,R0 ;LOAD R0 WITH TEST NO.
MOV #I0420,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
CLR R4 ;RESULT AND MASK = 000000
MOV #177703,R2 ;DEST ADDR = R3
R0420: CLR R3 ;[DEST] = 000000
CCC ;SCOPE SYNC
272 ;MAKE N:C=1010

I0420: XOR R4,R3 ;TEST THE XOR

BMI E10420 ;N:C=0100 ??
BNE E10420
BVS E10420
BCC A0420

E10420: ERROR ;XOR FAILED TO SET FLAGS PROPERLY
R0420 ;ERROR LOOP RETURN ADDRESS

A0420: CMP R4,R3 ;RESULT CORRECT?
BEQ 00420 ;BR IF YES

E20420: ERROR ;XOR DELIVERED THE WRONG RESULT
R0420 ;ERROR LOOP RETURN ADDRESS

00420: SCOPE ;CALL THE SCOPE LOOP UTILITY

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 385
 DBQEAB.CMB T0420 "XOR RA,RB" TEST - A=B=000000 N:C=1010

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15090 ; *****
15091 ; .SBTTL T0421 "XOR RA,RB" TEST - A=B=177777 N:C=0101
15092 ; *****
15093 ;MICROPROGRAMMING / LOGIC INFORMATION
15094 ;ROM SEQ: [102,364,360,001] FC 1,7,8
15095 ;ACT BUTS: 37[004]100,102 / 31[102]360,360 / 27[364]1000,001
15096 ;EXEC: [364]ALUC=HLHHL : [360]D=000000
15097 ;CODES: [360] SPS=3 / N:C=0101
15098 ;SYNC: B05J2 (-) / T=1 USEC
15099 ;KEY SIG: K3-5 XOR L / K3-3 DM=0 L / K3-4 OVLAP INSTR H
15100
15101 T0421: MOV #0421,R0 ;LOAD R0 WITH TEST NO.
15102 MOV #I0421,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15103 CLR R4 ;RESULT = 000000
15104 MOV #-1,R5 ;MASK = 177777
15105 MOV #177703,R2 ;DEST ADDR = R3
15106 R0421: MOV R5,R3 ;[DEST]=177777
15107 CCC ;SCOPE SYNC
15108 265 ;MAKE N:C=0101
15109
15110 I0421: XOR R5,R3 ;TEST THE XOR
15111 BMI E10421 ;N:C=0101 ??
15112 BNE E10421
15113 BVS E10421
15114 BCS A0421
15115
15116 E10421: ERROR ;XOR FAILED TO SET FLAGS PROPERLY
15117 R0421 ;ERROR LOOP RETURN ADDRESS
15118
15119 A0421: CMP R4,R3 ;RESULT CORRECT?
15120 BEQ 00421 ;BR IF YES
15121
15122 E20421: ERROR ;XOR DELIVERED THE WRONG RESULT
15123 R0421 ;ERROR LOOP RETURN ADDRESS
15124
15125 00421: SCOPE ;CALL THE SCOPE LOOP UTILITY
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15135 ; *****
15136 ; .SBTTL T0422 "XOR RA, RB" TEST - A=125252, B=052525 N:C=0110
15137 ; *****
15138 ; MICROPROGRAMMING / LOGIC INFORMATION
15139 ; ROM SEQ: [102,364,360,001] FC 1,7,8
15140 ; ACT BUTS: 37(004)100,102 / 31(102)360,360 / 27(364)000,001
15141 ; EXEC: [364]ALUC=HLHHL : [360]D=177777
15142 ; CODES: [360] SPS=3 / N:C=1000
15143 ; SYNC: B05J2 (-) / T=1 USEC
15144 ; KEY SIG: K3-5 XOR L / K3-3 DM=0 L / K3-4 OVLAP INSTR H
15145
15146 T0422: MOV #0422, R0 ; LOAD R0 WITH TEST NO.
15147 MOV #I0422, R1 ; LOAD R1 WITH TEST INSTRUCTION WORD
15148 MOV #-1, R4 ; RESULT S/B = 177777
15149 MOV #177703, R2 ; DEST ADDR = R3
15150 MOV #125252, R5 ; MASK=125252
15151 R0422: MOV #052525, R3 ; [DEST] = 052525
15152 CCC ; SCOPE SYNC
15153 266 ; MAKE N:C=0110
15154
15155 I0422: XOR R5, R3 ; TEST THE XOR
15156
15157 BPL E10422 ; N:C=1000 ??
15158 BEQ E10422
15159 BVS E10422
15160 BCC A0422
15161
15162 E10422: ERROR ; XOR FAILED TO SET FLAGS PROPERLY
15163 R0422 ; ERROR LOOP RETURN ADDRESS
15164
15165 A0422: CMP R4, R3 ; RESULT CORRECT?
15166 BEQ 00422 ; BR IF YES
15167
15168 E20422: ERROR ; XOR DELIVERED THE WRONG RESULT
15169 R0422 ; ERROR LOOP RETURN ADDRESS
15170
15171 00422: SCOPE ; CALL THE SCOPE LOOP UTILITY
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 387
3QEAB.CMB T0422 "XOR RA, RB" TEST - A=125252, B=052525 N:C=0110

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15180 ; *****
15181 ; .SBTTL T0423 "XOR RA, RB" TEST - A=052525, B=125252 N:C=1001
15182 ; *****
15183
15184 ; MICROPROGRAMMING / LOGIC INFORMATION
15185
15186 ; ROM SEQ: [102,364,360,001] FC 1,7,8
15187
15188 ; ACT BUTS: 37(004)100,102 / 31(102)360,360 / 27(364)000,001
15189
15190 ; EXEC: [364]ALUC=HLHL : [360]D=000000
15191
15192 ; CODES: [360] SPS=3 / N:C=1001
15193
15194 ; SYNC: B05J2 (-) / T=1 USEC
15195
15196 ; KEY SIG: K3-5 XOR L / K3-3 DM=0 L / K3-4 OVLAP INSTR H
15197
15198 031720 012700 000423 T0423: MOV #0423, R0 ; LOAD R0 WITH TEST NO.
15199 031724 013701 031754 MOV #10423, R1 ; LOAD R1 WITH TEST INSTRUCTION WORD
15200 031730 012704 177777 MOV #-1, R4 ; RESULT S/B = 177777
15201 031734 012702 177703 MOV #177703, R2 ; DEST ADDR = R3
15202 031740 012705 052525 MOV #52525, R5 ; MASK=052525
15203 031744 012703 125252 R0423: MOV #125252, R3 ; [DEST] = 125252
15204 031750 000257
15205 031752 000271 ; SCOPE SYNC
15206 ; MAKE N:C=1001
15207 031754 074503 I0423: XOR R5, R3 ; TEST THE XOR
15208
15209 031756 100003 BPL E10423 ; N:C=1001 ??
15210 031760 001402 BEQ E10423
15211 031762 102401 BVS E10423
15212 031764 103402 BCS A0423
15213
15214 031766 104000 E10423: ERROR ; XOR FAILED TO SET FLAGS PROPERLY
15215 031770 031744 R0423 ; ERROR LOOP RETURN ADDRESS
15216
15217 031772 020403 A0423: CMP R4, R3 ; RESULT CORRECT?
15218 031774 001402 BEQ 00423 ; BR IF YES
15219
15220 031776 104000 E20423: ERROR ; XOR DELIVERED THE WRONG RESULT
15221 032000 031744 R0423 ; ERROR LOOP RETURN ADDRESS
15222
15223 032002 000004 00423: SCOPE ; CALL THE SCOPE LOOP UTILITY
15224
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15225 ; *****
15226 ; .SBTTL T0424 "XOR RA, (RB)" TEST - A=B=000000 N:C=1010
15227 ; *****
15228 ;MICROPROGRAMMING / LOGIC INFORMATION
15229 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
15230 ;ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
15231 ;EXEC: [224]ALUC=HLHHL : (367)D=000000
15232 ;CODES: [367] SPS=3 / N:C=0100
15233 ;SYNC: B05J2 (-) / T=2.6 USEC
15234 ;KEY SIG: K3-5 XOR L / K3-3 DM=1L
15235
15236 T0424: MOV #0424, R0 ;LOAD R0 WITH TEST NO.
15237 MOV #I0424, R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15238 CLR R4 ;RESULT S / B = 000000
15239 CLR R5 ;MASK = 000000
15240 MOV #MBUFO, R2 ;DEST ADDR = MBUFO
15241 CLR (R2) ;[DEST] = 000000
15242 CCC ;SCOPE SYNC
15243 272 ;MAKE N:C=1010
15244
15245 I0424: XOR R5, (R2) ;TEST THE XOR
15246 BMI E10424 ;N:C = 0100 ??
15247 BNE E10424
15248 BVS E10424
15249 BCC A0424
15250
15251 E10424: ERROR ;XOR FAILED TO ALTER CODES PROPERLY
15252 00424 R0424 ;ERROR LOOP RETURN ADDRESS
15253
15254 A0424: CMP R4, (R2) ;RESULT CORRECT?
15255 BEQ 00424 ;BR IF YES
15256
15257 E20424: MOV (R2), R3 ;GET THE WAS DATA
15258 ERROR R0424 ;XOR DELIVERED THE WRONG RESULT
15259 032024 ;ERROR LOOP RETURN ADDRESS
15260
15261 00424: SCOPE ;CALL THE SCOPE LOOP UTILITY
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15271 ; *****
15272 ; .SBTTL T0425 "XOR RA,(RB)" TEST - A=B=177777 N:C=0101
15273 ; *****
15274 ;
15275 ;MICROPROGRAMMING / LOGIC INFORMATION
15276 ;
15277 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
15278 ;
15279 ;ACT BUTS: 37[004]100,161 / 33[266]220,224 / 16[367]016,016
15280 ;
15281 ;EXEC: [224]ALUC=HLHHL :[367]D=000000
15282 ;
15283 ;CODES: [367] SPS=3 / N:C=0101
15284 ;
15285 ;SYNC: B05J2 (-) / T=2.6 USEC
15286 ;
15287 ;KEY SIG: K3-5 XOR L / K3-3 DM=1L
15288 ;
15289 032064 012700 000425 T0425: MOV #0425,R0 ;LOAD R0 WITH TEST NO.
15290 032070 013701 032116 MOV #I0425,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15291 032074 005004 CLR R4 ;RESULT S / B = 000000
15292 032076 012705 177777 MOV #-1,R5 ;MASK = 177777
15293 032102 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
15294 032106 012712 177777 R0425: MOV #-1,(R2) ;[DEST] = 177777
15295 032112 000257 CCC ;SCOPE SYNC
15296 032114 000265 265 ;MAKE N:C=0101
15297 ;
15298 032116 074512 I0425: XOR R5,(R2) ;TEST THE XOR
15299 ;
15300 032120 100403 BMI E10425 ;N:C = 0101 ??
15301 032122 001002 BNE E10425
15302 032124 102401 BVS E10425
15303 032126 103402 BCS A0425
15304 ;
15305 032130 104000 E10425: ERROR ;XOR FAILED TO ALTER CODES PROPERLY
15306 032132 032106 R0425 ;ERROR LOOP RETURN ADDRESS
15307 ;
15308 032134 020412 A0425: CMP R4,(R2) ;RESULT CORRECT?
15309 032136 001403 BEQ 00425 ;BR IF YES
15310 ;
15311 032140 011203 MOV (R2),R3 ;GET THE WAS DATA
15312 032142 104000 E20425: ERROR ;XOR DELIVERED THE WRONG RESULT
15313 032144 032106 R0425 ;ERROR LOOP RETURN ADDRESS
15314 ;
15315 032146 000004 00425: SCOPE ;CALL THE SCOPE LOOP UTILITY
15316 ;

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15317 ; *****
15318 .SBTTL T0426 "XOR RA,(RB)" TEST - A=125252,B=052525 N:C=0110
15319 ; *****
15320 ;MICROPROGRAMMING / LOGIC INFORMATION
15321 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
15322 ;ACT BUTS: 37[004]100,161 / 33[266]220,224 / 16[367]016,016
15323 ;EXEC: [224]ALUC=HLHHL :[367]D=00177777
15324 ;CODES: [367] SPS=3 / N:C=1000
15325 ;SYNC: B05J2 (-) / T=2.6 USEC
15326 ;KEY SIG: K3-5 XOR L / K3-3 DM=1L
15327
15328 T0426: MOV #0426,R0 ;LOAD R0 WITH TEST NO.
15329 MOV #I0426,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15330 MOV #-1,R4 ;RESULT S/B = 177777
15331 MOV #125252,R5 ;MASK = 125252
15332 MOV #M0426,R2 ;DEST ADDR = M0426
15333 R0426: MOV #052525,(R2) ;[DEST] = 052525
15334 CCC ;SCOPE SYNC
15335 266 ;MAKE N:C=0110
15336
15337 I0426: XOR R5,(R2) ;TEST THE XOR
15338 BPL E10426 ;N:C = 1000 ??
15339 BEQ E10426
15340 BVS E10426
15341 BCC A0426
15342
15343 E10426: ERROR ;XOR FAILED TO ALTER CODES PROPERLY
15344 R0426 ;ERROR LOOP RETURN ADDRESS
15345
15346 A0426: CMP R4,(R2) ;RESULT CORRECT?
15347 BEQ 00426 ;BR IF YES
15348
15349 E20426: MOV (R2),R3 ;GET THE WAS DATA
15350 ERROR ;XOR DELIVERED THE WRONG RESULT
15351 R0426 ;ERROR LOOP RETURN ADDRESS
15352
15353 00426: SCOPE ;CALL THE SCOPE LOOP UTILITY
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15363 : *****
15364 : .SBTTL T0427 "XOR RA,(RB)" TEST - A=052525,B=125252 N:C=1001
15365 : *****
15366 :
15367 : MICROPROGRAMMING / LOGIC INFORMATION
15368 :
15369 : ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
15370 :
15371 : ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
15372 :
15373 : EXEC: [224]ALUC=HLHHL : [367]IC=177777
15374 :
15375 : CODES: [367] SPS=3 / N:C=1001
15376 :
15377 : SYNC: B05J2 (-) / T=2.6 USEC
15378 :
15379 : KEY SIG: K3-5 XOR L / K3-3 DM=1L
15380 :
15381 032236 012700 000427 T0427: MOV #0427,R0 ;LOAD R0 WITH TEST NO.
15382 032242 013701 032272 ;LOAD R1 WITH TEST INSTRUCTION WORD
15383 032246 012704 177777 ;RESULT S/B = 177777
15384 032252 012705 052525 ;MASK = 052525
15385 032256 012702 067602 ;DEST ADDR = MBUFO
15386 032262 012712 125252 R0427: MOV #125252,(R2) ;[DEST] = 125252
15387 032266 000257 ;SCOPE SYNC
15388 032270 000271 ;MAKE N:C=1001
15389 :
15390 032272 074512 I0427: XOR R5,(R2) ;TEST THE XOR
15391 :
15392 032274 100003 ;N:C = 1001 ??
15393 032276 001402 BPL E10427
15394 032300 102401 BEQ E10427
15395 032302 103402 BVS E10427
15396 :
15397 032304 104000 BCS A0427
15398 032306 032262 E10427: ERROR ;XOR FAILED TO ALTER CODES PROPERLY
15399 : R0427 ;ERROR LOOP RETURN ADDRESS
15400 032310 020412 A0427: CMP R1,(R2) ;RESULT CORRECT?
15401 032312 001403 BEQ C0427 ;BR IF YES
15402 :
15403 032314 011203 MOV (R2),R3 ;GET THE WAS DATA
15404 032316 104000 E20427: ERROR ;XOR DELIVERED THE WRONG RESULT
15405 032320 032262 R0427 ;ERROR LOOP RETURN ADDRESS
15406 :
15407 032322 000004 00427: SCOPE ;CALL THE SCOPE LOOP UTILITY
15408 :
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032324 012700 000430
032330 013701 032354
032334 012702 177703
032340 005004
032342 012703 052525
032346 010305
032350 000257
032352 000273
032354 160503
032356 100403
032360 001002
032362 102401
032364 103002
032366 104000
032370 032342
032372 020304
032374 001402
032376 104000
032400 032342
032402 000004

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; *****  
          .SBTTL T0430 SUB TEST SMO, DMO - (SRC) = (DEST) = +, +  
; *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; ROM SEQ:      [103,363,360,001] FC 1,7,8  
; ACT BUTS:     37(004)100,103 / 27(363)000,001  
; EXEC:         [363]ALUC=LLMHL : [360] D = 000000  
; CODES:        [360] SPS=3 / N:C = 0100  
; SYNC:         B05J2 (-) T = 1 USEC  
; KEY SIG:      K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=OL / K3-4 OVLAP INSTR H  
;               ; K3-8 CINDO L  
T0430:  MOV      #0430, R0          ; LOAD R0 WITH TEST NO.  
        MOV      2#I0430, R1      ; LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      #177703, R2      ; R2 CONTAINS DEST ADDR  
        CLR      R4                ; RESULT S / B = 0  
R0430:  MOV      #052525, R3      ; [R3] = DEST OP = 52525  
        MOV      R3, R5           ; [R5] = SRC OP = 52525  
        CCC      273              ; CLEAR FLAGS  
        ; MAKE N:C = 1011  
I0430:  SUB      R5, R3           ; TEST THE SUB  
        BMI      E10430  
        BNE      E10430          ; DID N:C = 0100  
        BVS      E10430  
        BCC      A0430  
E10430: ERROR      R0430          ; SUB FAILED TO ALTER CODES PROPERLY  
        ; ERROR LOOP RETURN  
A0430:  CMP      R3, R4           ; WAS RESULT = 0?  
        BEQ      00430          ; BR IF YES  
E20430: ERROR      R0430          ; SUB DELIVERED WRONG RESULT  
        ; ERROR LOOP RETURN  
00430:  SCOPE  
        ; CALL SCOPE LOOP UTILITY
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15458 : *****
15459 : .SBTTL T0431 SUB TEST SMO,DMD - (SRC) = (DEST) = -,-
15460 : *****
15461 ; MICROPROGRAMMING / LOGIC INFORMATION
15462 ; ROM SEQ: [103,363,360,001] FC 1,7,8
15463 ; ACT BUTS: 37(004)100,103 / 27(363)000,001
15464 ; EXEC: [363]ALUC=LLHML :[360] D = 000000
15465 ; CODES: [360] SPS=3 / N:C = 0100
15466 ; SYNC: B05J2 (-) T = 1 USEC
15467 ; KEY SIG: K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=OL / K3-4 OVLAP INSTR H
15468 ; K3-8 CINDO L
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15477 032404 012700 000431 T0431: MOV #0431,R0 ;LOAD R0 WITH TEST NO.
15478 032410 013701 032434 MOV #10431,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15479
15480 032414 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
15481 032420 005004 R4 ;RESULT S / B = 0
15482 032422 012703 125252 R0431: MOV #125252,R3 ;[R3] = DEST OP = 125252
15483 032426 010305 MOV R3,R5 ;[R5] = SOURCE OP = 125252
15484 032430 000257 CCC ;CLEAR FLAGS
15485 032432 000273 273 ;MAKE N:C = 1011
15486
15487 032434 160503 I0431: SUB R5,R3 ;TEST THE SUB
15488
15489 032436 100403 BMI E10431
15490 032440 001002 BNE E10431 ;N:C = 0100?
15491 032442 102401 BVS E10431
15492 032444 103002 BCC A0431
15493
15494 032446 104000 E10431: ERROR ;SUB FAILED TO ALTER CODES PROPERLY
15495 032450 032422 R0431 ;ERROR LOOP RETURN
15496
15497 032452 020304 A0431: CMP R3,R4 ;RESULT = 0?
15498 032454 001402 BEQ 00431 ;BR IF YES
15499
15500 032456 104000 E20431: ERROR ;SUB DELIVERED WRONG RESULT
15501 032460 032422 R0431 ;ERROR LOOP RETURN
15502
15503 032462 000004 00431: SCOPE ;CALL SCOPE LOOP UTILITY
15504
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E15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 394
 DBQEAB.CMB T0431 SUB TEST SMO,DMO - (SRC) = (DEST) = -,-

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15506 ; *****
15507 ; .SBTTL T0432 SUB TEST SMO,DMO - (SRC) = (DEST) = -,+
15508 ; *****
15509 ;MICROPROGRAMMING / LOGIC INFORMATION
15510
15511 ;ROM SEQ: (103,363,360,001) FC 1,7,8
15512
15513 ;ACT BUTS: 37(004)100,103 / 27(363)000,001
15514
15515 ;EXEC: (363)ALUC=LLMHL : (360) D = 000002
15516
15517 ;CODES: (360) SPS=3 / N:C = 0001
15518
15519 ;SYNC: B05J2 (-) T = 1 USEC
15520
15521 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=0L / K3-3 DM=0L / K3-4 OVLAP INSTR H
15522 ; K3-8 CIN00 L
15523
15524
15525 032464 012700 000432 T0432: MOV #0432,R0 ;LOAD R0 WITH TEST NO.
15526 032470 013701 032520 MOV #010432,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15527
15528 032474 012702 177703 MOV #177703,R2 ;R2 CONTAINS DEST ADDR
15529 032500 012704 000002 MOV #2,R4 ;RESULT S / B = 2
15530 032504 012703 000001 R0432: MOV #1,R3 ;[R3] = DEST OP = 1
15531 032510 012705 177777 MOV #-1,R5 ;[R5] = SRC OP = -1
15532 032514 000257 CCC ;CLEAR FLAGS
15533 032516 000276 276 ;MAKE N:C = 1110
15534
15535 032520 160503 I0432: SUB R5,R3 ;TEST THE SUB
15536
15537 032522 100403 BMI E10432
15538 032524 001402 BEQ E10432 ;N:C = 0001
15539 032526 102401 BVS E10432
15540 032530 103402 BCS A0432
15541
15542 032532 104000 E10432: ERROR ;SUB FAILED TO ALTER CODES PROPERLY
15543 032534 032504 R0432 ;ERROR LOOP RETURN
15544
15545 032536 020304 A0432: CMP R3,R4 ;RESULT = +2?
15546 032540 001402 BEQ 00432 ;BR IF YES
15547
15548 032542 104000 E20432: ERROR ;SUB DELIVERED WRONG RESULT
15549 032544 032504 R0432 ;ERROR LOOP RETURN
15550
15551 032546 000004 00432: SCOPE ;CALL SCOPE LOOP UTILITY
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; *****
; .SBTTL T0433 SUB TEST SMO,DMO (SRC) = -(DEST) = +,-
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [103,363,360,001] FC 1,7,8
;ACT BUTS:     37[004]100,103 / 27[363]000,001
;EXEC:         [363]ALUC=LLHHL :[360] D = 177776
;CODES:        [360] SPS=3 / N:C = 1000
;SYNC:         B05J2 (-) T = 1 USEC
;KEY SIG:      K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=OL / K3-4 OVLAP INSTR H
;              ; K3-B CIN00 L

T0433:  MOV      #0433,R0          ;LOAD R0 WITH TEST NO.
        MOV      2#I0433,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #177703,R2     ;R2 CONTAINS DEST ADDR
R0433:  MOV      #-2,R4          ;RESULT S / B = -2
        MOV      #-1,R3         ;[R3] = [DEST] = -1
        MOV      #1,R5          ;[R5] = [SOURCE] = +1
        CCC                     ;CLEAR FLAGS
        267                    ;MAKE N:C = 0111

I0433:  SUB      R5,R3           ;TEST THE SUB
        BPL      E10433
        BEQ      E10433         ;N:C = 1000
        BVS      E10433
        BCC      A0433

E10433: ERROR
        R0433                  ;SUB DID NOT ALTER CODES PROPERLY
        ;ERROR LOOP RETURN

A0433:  CMP      R4,R3          ;RESULT = -2?
        BEQ      00433         ;BR IF YES

E20433: ERROR
        R0433                  ;SUB DELIVERED WRONG RESULT
        ;ERROR LOOP RETURN

00433:  SCOPE                   ;CALL SCOPE LOOP UTILITY

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032550 012700 000433
032554 013701 032604
032560 012702 177703
032564 012704 177776
032570 012703 177777
032574 012705 000001
032600 000257
032602 000267
032604 160503
032606 100003
032610 001402
032612 102401
032614 103002
032616 104000
032620 032570
032622 020403
032624 001402
032626 104000
032630 032570
032632 000004

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G15

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 396
 DBQEAB.CMB T0433 SUB TEST SMO,DMO (SRC) = -(DEST) = +,-

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15602 ; *****
15603 ; .SBTTL T0434 SUB TEST SMO,DMO - "V" BIT SETS
15604 ; *****
15605 ;MICROPROGRAMMING / LOGIC INFORMATION
15606 ;ROM SEQ: [103,363,360,001] FC 1,7,8
15607 ;ACT BUTS: 37(004)100,103 / 27(363)1000,001
15608 ;EXEC: [363]ALUC=LLHHL :[360] D = 77777
15609 ;CODES: [360] SPS=3 / N:C = 0011
15610 ;SYNC: B05J2 (-) T = 1 USEC
15611 ;KEY SIG: K3-3 ADD+SUB L / K3-3 DM=OL / K3-3 SM=OL / K3-4 OVLAP INSTR H
15612 ; K3-8 CINOO L
15613
15614 T0434: MOV #0434,R0 ;LOAD R0 WITH TEST NO.
15615 MOV #10434,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15616
15617 R0434: MOV #177703,R2 ;DEST ADDR = 177703
15618 MOV #77777,R4 ;RESULT = 77777
15619 MOV #100000,R3 ;[R3] = DEST OP = 100000
15620 MOV #1,R5 ;[R5] = SRC OP = 1
15621 CCC ;CLEAR FLAGS
15622 274 ;MAKE N:C = 1100
15623
15624 I0434: SUB R5,R3 ;TEST THE SUB
15625
15626 BMI E10434
15627 BEQ E10434 ;N:C = 0011 ("V" BIT SHOULD SET)
15628 BVC E10434
15629 BCC A0434
15630
15631 E10434: ERROR ;SUB FAILED TO ALTER CODES PROPERLY
15632 R0434 ;ERROR LOOP RETURN
15633
15634 A0434: CMP R3,R4 ;RESULT = 77777?
15635 BEQ 00434 ;BR IF YES
15636
15637 E20434: ERROR ;SUB DELIVERED WRONG RESULT
15638 R0434 ;ERROR LOOP RETURN
15639
15640 00434: SCOPE ;CALL SCOPE LOOP UTILITY
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H15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 397
DBQEAB.CMB T0434 SUB TEST SMO,DMO - "V" BIT SETS

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15650 ; *****
15651 ; .SBTTL T0435 SUB TEST - SMO,DM1 - <N:C> = 0110
15652 ; *****
15653 ;MICROPROGRAMMING / LOGIC INFORMATION
15654 ;ROM SEQ: [161,266,267,226,365,367,375,016] FC 1,3,8
15655 ;ACT BUTS: 37[004]100,161 / 33[266]220,226 / 16[367]016,016
15656 ;EXEC: [365]ALUC=LLHML :[367] D = 177777
15657 ;CODES: [367] SPS=3 / N:C = 1001
15658 ;SYNC: B05J2 (-) T = 2.7 USEC
15659 ;KEY SIG: K3-8 CIN00 L / K3-3 ADD+SUB L / K3-3 SM=0L / K3-3 DM=1L
15660
15661 T0435: MOV #0435,R0 ;LOAD R0 WITH TEST NO.
15662 MOV #I0435,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15663 MOV #MBOFO,R2 ;DEST ADDR = MBOFO
15664 MOV #-1,R4 ;RESULT S / B = 177777
15665 MOV #+1,R5 ;SRC OPR = +1
15666 R0435: CLR (R2) ;[DEST] = 000000
15667 CCC ;CLEAR FLAGS
15668 266 ;N:C = 0110
15669
15670 I0435: SUB R5,(R2) ;TEST THE SUB
15671 BPL E10435 ;N:C = 1001
15672 BEQ E10435
15673 BVS E10435
15674 BCS A0435
15675
15676 E10435: ERROR5 ;SUB FAILED TO ALTER CODES PROPERLY
15677 R0435 ;ERROR LOOP RETURN ADDRESS
15678
15679 A0435: CMP R4,(R2) ;CORRECT RESULT ?
15680 BEQ 00435 ;BR IF YES
15681
15682 E20435: MOV (R2),R3 ;GET THE WAS DATA
15683 ERROR ;SUB DELIVERED THE WRONG RESULT
15684 R0435 ;ERROR LOOP RETURN ADDRESS
15685
15686 00435: SCOPE ;CALL SCOPE LOOP UTILITY
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15695 ; *****
15696 ; .SBTTL T0436 SUB TEST - SMO,DM1 - <N:C> = 1010
15697 ; *****
15698 ;MICROPROGRAMMING / LOGIC INFORMATION
15700 ;ROM SEQ: 1616,266,267,226,365,367,375,016} FC 1,3,8
15701 ;ACT BUTS: 37{004}100,161 / 33{266}220,226 / 16{367}016,016
15702 ;EXEC: {365}ALUC=LLHHL :{367} D = 000000
15703 ;CODES: {367} SPS=3 / N:C = 0100
15704 ;SYNC: B05J2 (-) T = 2.7 USEC
15705 ;KEY SIG: K3-8 CIN00 L / K3-3 ADD+SUB L / K3-3 SM=0L / K3-3 DM=1L
15706
15707 T0436: MOV #0436,R0 ;LOAD R0 WITH TEST NO.
15708 MOV @#I0436,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15709 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
15710 CLR R4 ;RESULT S / B = 000000
15711 MOV #-1,R5 ;SRC OPR = 177777
15712 R0436: MOV #-1,(R2) ;{DEST} = 177777
15713 CCC ;CLEAR FLAGS
15714 272 ;N:C = 1010
15715
15716 I0436: SUB R5,(R2) ;TEST THE SUB
15717 SMI E10436 ;N:C = 0100
15718 BNE E10436
15719 BVS E10436
15720 BCC A0436
15721
15722 E10436: ERROR5 ;SUB FAILED TO ALTER CODES PROPFRLY
15723 R0436 ;ERROR LOOP RETURN ADDRESS
15724
15725 A0436: CMP R4,(R2) ;CORRECT RESULT ?
15726 BEQ 00436 ;BR IF YES
15727
15728 E20436: MOV (R2),R3 ;GET THE WAS DATA
15729 ERROR ;SUB DELIVERED THE WRONG RESULT
15730 R0436 ;ERROR LOOP RETURN ADDRESS
15731
15732 00436: SCOPE ;CALL SCOPE LOOP UTILITY
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15740 ; *****
15741 .SEITL T0437 SUB TEST - SMO,DM1 - <N:C> = 0000
15742 ; *****
15743 ;MICROPROGRAMMING / LOGIC INFORMATION
15744 ;ROM SEQ: [161,266,267,226,365,367,375,016] FC 1,3,8
15745 ;ACT BUTS: 37(004)100,161 / 33(266)220,226 / 16(367)016,016
15746 ;EXEC: [365]ALUC=LLHHL :[367] D = 77777
15747 ;CODES: [367] SPS=3 / N:C = 0010
15748 ;SYNC: B05J2 (-) T = 2.7 USEC
15749 ;KEY SIG: K3-8 CIN00 L / K3-3 ADD+SUB L / K3-3 SM=0L / K3-3 DM=1L
15750
15751 T0437: MOV #0437,R0 ;LOAD R0 WITH TEST NO.
15752 MOV #I0437,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15753 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
15754 MOV #77777,R4 ;RESULT S / B = 77777
15755 MOV #+1,R5 ;SRC OPR = +1
15756 R0437: MOV #100000,(R2) ;[DEST] = 100000
15757 CCC ;CLEAR FLAGS
15758
15759 I0437: SUB R5,(R2) ;TEST THE SUB
15760 BMI E10437 ;N:C = 0010
15761 BEQ E10437
15762 BVC E10437
15763 BCC A0437
15764
15765 E10437: ERRORS ;SUB FAILED TO ALTER CODES PROPERLY
15766 R0437 ;ERROR LOOP RETURN ADDRESS
15767
15768 A0437: CMP R4,(R2) ;CORRECT RESULT ?
15769 BEQ 00437 ;BR IF YES
15770
15771 E20437: MOV (R2),R3 ;GET THE WAS DATA
15772 ERROR ;SUB DELIVERED THE WRONG RESULT
15773 R0437 ;ERROR LOOP RETURN ADDRESS
15774
15775 00437: SCOPE ;CALL SCOPE LOOP UTILITY
15776
15777
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15782
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K15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 400
 DBQEAB.CMB T0437 SUB TEST - SMO,DM1 - <N:C> = 0000

```

15784 ; *****
15785 ; .SBTTL T0440 SUB TEST - SM1,DM0 - <N:C> = 0110
15786 ; *****
15787
15788 ;MICROPROGRAMMING / LOGIC INFORMATION
15789
15790 ;ROM SEQ: [141,247,250,121,370,360,000] FC 1,2,8
15791
15792 ;ACT BUTS: 37(004)100,141 / 35(247)120,121 / 27(370)000,000
15793
15794 ;EXEC: [370]ALUC=LLHHL :[360] D = 177777
15795
15796 ;CODES: [360] SPS=3 / N:C = 1001
15797
15798 ;SYNC: B05J2 (-) T = 2.7 USEC
15799
15800 ;KEY SIG: K3-8 CIN00 L / K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=0L
15801
15802 033154 012700 000440 T0440: MOV #0440,R0 ;LOAD R0 WITH TEST NO.
15803 033160 013701 033206 ;LOAD R1 WITH TEST INSTRUCTION WORD
15804 033164 012702 177703 ;DEST ADDR = R3
15805 033170 012704 177777 ;RESULT S / B = 177777
15806 033174 012705 070140 ;SRC ADDR = DWTB+2
15807 033200 005003 R0440: CLR R3 ;[DEST] = 000000
15808 033202 000257 ;CLEAR FLAGS
15809 033204 000266 ;N:C = 0110
15810
15811 033206 161503 I0440: SUB (R5),R3 ;TEST THE SUB
15812
15813 033210 100003 ;N:C = 1001
15814 033212 001402 BPL E10440
15815 033214 102401 BEQ E10440
15816 033216 103402 BVS E10440
15817 ;BCS A0440
15818 033220 104005 E10440: ERRORS ;SUB FAILED TO ALTER CODES PROPERLY
15819 033222 033200 R0440 ;ERROR LOOP RETURN ADDRESS
15820
15821 033224 020403 A0440: CMP R4,R3 ;CORRECT RESULT ?
15822 033226 001402 BEQ 00440 ;BR IF YES
15823
15824 033230 104000 E20440: ERROR ;SUB DELIVERED THE WRONG RESULT
15825 033232 033200 R0440 ;ERROR LOOP RETURN ADDRESS
15826
15827 033234 000004 00440: SCOPE ;CALL SCOPE LOOP UTILITY
  
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15828 ; *****
15829 .SBTTL T0441 SUB TEST - SM1,DM0 - <N:C> = 1010
15830 ; *****
15831 ;MICROPROGRAMMING / LOGIC INFORMATION
15832 ;ROM SEQ: [141,247,250,121,370,360,000] FC 1,2,8
15833
15834 ;ACT BUTS: 37(004)100,141 / 35(247)120,121 / 27(370)000,000
15835
15836 ;EXEC: [370]ALUC=LLHHL :[360] D = 000000
15837
15838 ;CODES: [360] SPS=3 / N:C = 0100
15839
15840 ;SYNC: B05J2 (-) T = 2.7 USEC
15841
15842 ;KEY SIG: K3-8 CIN00 L / K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=0L
15843
15844
15845
15846 033236 012700 000441 T0441: MOV #0441,R0 ;LOAD R0 WITH TEST NO.
15847 033242 013701 033266 MOV #10441,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15848 033246 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
15849 033252 005004 CLR R4 ;RESULT S / B = 000000
15850 033254 012705 067614 MOV #DWTA+2,R5 ;SRC ADDR = DWTA+2
15851 033260 011503 R0441: MOV (R5),R3 ;[DEST] = 177777
15852 033262 000257 CCC ;CLEAR FLAGS
15853 033264 000272 272 ;N:C = 1010
15854
15855 033266 161503 I0441: SUB (R5),R3 ;TEST THE SUB
15856
15857 033270 100403 BMI E10441 ;N:C = 0100
15858 033272 001002 BNE E10441
15859 033274 102401 BVS E10441
15860 033276 103002 BCC A0441
15861
15862 033300 104005 E10441: ERRORS ;SUB FAILED TO ALTER CODES PROPERLY
15863 033302 033260 R0441 ;ERROR LOOP RETURN ADDRESS
15864
15865 033304 020403 A0441: CMP R4,R3 ;CORRECT RESULT ?
15866 033306 001402 BEQ 00441 ;BR IF YES
15867
15868 033310 104000 E20441: ERROR ;SUB DELIVERED THE WRONG RESULT
15869 033312 033260 R0441 ;ERROR LOOP RETURN ADDRESS
15870
15871 033314 000004 00441: SCOPE ;CALL SCOPE LOOP UTILITY

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M15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 402
 DBQEAB.CMB T0441 SUB TEST - SM1,DMO - <N:C> = 1010

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15872 ; *****
15873 .SBTTL T0442 SUB TEST - SM1,DMO - <N:C> = 0000
15874 ; *****
15875
15876 ;MICROPROGRAMMING / LOGIC INFORMATION
15877
15878 ;ROM SEQ: [141,247,250,121,370,360,000] FC 1,2,8
15879
15880 ;ACT BUTS: 37(004)100,141 / 35(247)120,121 / 27(370)000,000
15881
15882 ;EXEC: [370]ALUC=LLHHL :[360] D = 077777
15883
15884 ;CODES: [360] SPS=3 / N:C = 0010
15885
15886 ;SYNC: B05J2 (-) T 2.7 USEC
15887
15888 ;KEY SIG: K3-8 CIN00 L / K3-3 ADD+SUB L / K3-3 SM=1L / K3-3 DM=0L
15889
15890 033316 012700 000442 T0442: MOV #0442,R0 ;LOAD R0 WITH TEST NO.
15891 033322 013701 033354 MOV #I0442,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15892 033326 012702 067602 MOV #M0442,R2 ;DEST ADDR = M0442
15893 033332 012704 077777 MOV #77777,R4 ;RESULT S / B = 77777
15894 033336 012705 067606 MOV #M0442,R5 ;SRC ADDR =M0442
15895 033342 012703 100000 R0442: MOV #100000,R3 ;[DEST] = 100000
15896 033346 012715 000001 MOV #+1,(R5) ;SRC OPR = +1
15897 033352 000257 CCC ;CLEAR FLAGS
15898
15899 033354 161503 I0442: SUB (R5),R3 ;TEST THE SUB
15900
15901 033356 100403 BMI E10442 ;N:C = 0010
15902 033360 001402 BEQ E10442
15903 033362 102001 BVC E10442
15904 033364 103002 BCC A0442
15905
15906 033366 104005 E10442: ERR05 ;SUB FAILED TO ALTER CODES PROPERLY
15907 033370 033342 R0442 ;ERROR LOOP RETURN ADDRESS
15908
15909 033372 020403 A0442: CMP R4,R3 ;CORRECT RESULT ?
15910 033374 001402 BEQ 00442 ;BR IF YES
15911
15912 033376 104000 E20442: ERR0R ;SUB DELIVERED THE WRONG RESULT
15913 033400 033342 R0442 ;ERROR LOOP RETURN ADDRESS
15914
15915 033402 000004 00442: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

N15

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 403
 DBQEAB.CMB T0442 SUB TEST - SM1,DM0 - <N:C> = 0000

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15916 ; *****
15917 .SBTTL T0443 SUB SM1.DM1 TEST - <N:C> = 0110
15918 ; *****
15919
15920 ;MICROPROGRAMMING / LOGIC INFORMATION
15921
15922 ;ROM SEQ: [141,247,250,161,266,267,227,365,367,375,016] FC 1,2,3,8
15923
15924 ;ACT BUTS: 37(004)100,141 / 35(247)120,161 / 33(266)220,227 / 16(367)016,016
15925
15926 ;EXEC: [365]ALUC=LLHHL :[367]D=177777
15927
15928 ;CODES: [367]SPS=3 / N:C=1001
15929
15930 ;SYNC: B05J2 (-) T=3.4 USEC
15931
15932 ;KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1 L / K3-3 DM=1 L / K3-8 CIN00 L
15933
15934 033404 012700 000443 T0443: MOV #0443,R0 ;LOAD R0 WITH TEST NO.
15935 033410 013701 033444 MOV @#I0443,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15936 033414 012702 067602 MOV #M0443,R2 ;DEST ADDR = M0443
15937 033420 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
15938 033424 012705 067606 MOV #M0443,R5 ;SOURCE ADDR = M0443
15939 033430 012715 000001 R0443: MOV #+1,(R5) ;[SOURCE] = 000001
15940 033434 012712 000000 MOV #0,(R2) ;[DEST] = 000000
15941 033440 000257 CCC ;CLEAR FLAGS
15942 033442 000266 266 ;N:C = 0110
15943
15944 033444 161512 I0443: SUB (R5),(R2) ;TEST THE SUB
15945
15946 033446 100003 BPL E10443 ;N:C = 1001 ?
15947 033450 001402 BEQ E10443
15948 033452 102401 BVS E10443
15949 033454 103402 BCS A0443
15950
15951 033456 104005 E10443: ERROR5 ;SUB FAILED TO ALTER CODES PROPERLY
15952 033460 033430 R0443 ;ERROR LOOP RETURN ADDRESS
15953
15954 033462 020412 A0443: CMP R4,(R2) ;CORRECT RESULT ?
15955 033464 001403 BEQ 00443 ;BR IF YES
15956
15957 033466 011203 MOV (R2),R3 ;GET THE WAS DATA
15958 033470 104000 E20443: ERROR ;SUB DELIVERED THE WRONG RESULT
15959 033472 033430 R0443 ;ERROR LOOP RETURN ADDRESS
15960
15961 033474 000004 00443: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
```

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15962 ; *****
15963 ; .SBTTL T0444 SUB SM1,DM2 TEST - (N:C) = 0110
15964 ; *****
15965 ; MICROPROGRAMMING / LOGIC INFORMATION
15966 ; ROM SEQ: [141,247,250,162,260,267,227,365,367,375,016] FC 1,2,3,8
15968 ; ACT BUTS: 37(004)100,141 / 35(247)120,162 / 33(260)220,227 / 16(367)016,016
15969 ; EXEC: [365]ALUC=LLHML :[367]D=177777
15970 ; CODES: [367]SPS=3 / N:C=1001
15971 ; SYNC: 805J2 (-) T=3.4 USEC
15972 ; KEY SIG: K3-3 ADD+SUB L / K3-3 SM=1 L / K3-3 DM=2 / K3-8 CIN00 L
15973 ; K5-5 BCON(1+2) H
15974
15975
15976
15977
15978
15979
15980
15981 033476 012700 000444 T0444: MOV #0444,R0 ;LOAD R0 WITH TEST NO.
15982 033502 013701 033552 MOV #10444,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
15983 033506 032737 000400 066642 BIT #400,#BPTLOC ;BREAKPOINT HALT SET ??
15984 033514 001401 BEQ .+4 ;BR IF NOT
15985 033516 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
15986 033520 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
15987 033524 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
15988 033530 012705 067606 MOV #MBUF1,R5 ;SOURCE ADDR = MBUF1
15989 033534 012715 000001 R0444: MOV #+1,(R5) ;[SOURCE] = 000001
15990 033540 012712 000000 MOV #0,(R2) ;[DEST] = 000000
15991 033544 010203 MOV R2,R3 ;R3 GETS DEST ADDR
15992 033546 000257 CCC ;CLEAR FLAGS
15993 033550 000266 266 ;N:C = 0110
15994
15995 033552 161523 I0444: SUB (R5),(R3)+ ;TEST THE SUB
15996
15997 033554 100003 BPL E10444 ;N:C = 1001 ?
15998 033556 001402 BEQ E10444
15999 033560 102401 BVS E10444
16000 033562 103402 BCS A0444
16001
16002 033564 104005 E10444: ERRORS ;SUB FAILED TO ALTER CODES PROPERLY
16003 033566 033534 R0444 ;ERROR LOOP RETURN ADDRESS
16004
16005 033570 020412 A0444: CMP R4,(R2) ;CORRECT RESULT ?
16006 033572 001403 BEQ 00444 ;BR IF YES
16007
16008 033574 011203 E20444: MOV (R2),R3 ;GET THE WAS DATA
16009 033576 104000 ERROR ;SUB DELIVERED THE WRONG RESULT
16010 033600 033534 R0444 ;ERROR LOOP RETURN ADDRESS
16011
16012 033602 000004 00444: SCOPE ;CALL THE SCOPE LOOP UTILITY

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16013 ; *****
16014 ; .SBTTL T0445 NEG DM2 TEST
16015 ; *****
16016 ;MICROPROGRAMMING / LOGIC INFORMATION
16017
16018 ;ROM SEQ: [162,260,267,221,367,375,016] FC 1,3,9,8
16019
16020 ;ACT BUTS: 37(004)100,162 / 33(260)220,221 / 16(367)016,016
16021
16022 ;EXEC: [221]ALUC=LLHML :[367] D = 125252
16023
16024 ;CODES: [367] SPS=3 / N:C = 1001
16025
16026 ;SYNC: B05J2 (-) T = 2 USEC
16027
16028 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=2L / K3-4 NEG L / K5-5 BCON(1+2)H
16029
16030
16031 033604 012700 000445 T0445: MOV #0445,R0 ;LOAD R0 WITH THE TEST NO.
16032 033610 013701 033634 ;LOAD R1 WITH TEST INSTRUCTION WORD
16033 033614 012702 067602 ;DEST ADDR = MBUFO
16034 033620 012704 125252 ;RESULT S / B = 125252
16035 033624 010205 R0445: MOV #125252,R4 ;[R5] = DEST ADDR
16036 033626 012712 052526 ;[DEST] = 52526
16037 033632 000257 ;SCOPE SYNC
16038
16039 033634 005425 I0445: NEG (R5)+ ;TEST THE NEG - MODE 2
16040
16041 033636 020412 ;RESULT = 125252?
16042 033640 001403 BEQ A0445 ;BR IF YES
16043
16044 033642 011203 MOV (R2),R3 ;GET THE WAS DATA
16045 033644 104000 E10445: ERROR ;NEG DELIVERED WRONG RESULT
16046 033646 033624 R0445 ;ERROR LOOP RETURN
16047
16048 033650 022705 067604 A0445: CMP #MBUFO+2,R5 ;DID REG. GET AUTO INCREMENTED?
16049 033654 001402 BEQ 00445 ;BR IF YES
16050
16051 033656 104005 E20445: ERROR5 ;NEG FAILED TO UPDATE REG.
16052 033660 033624 R0445 ;ERROR LOOP RETURN
16053
16054 033662 000004 00445: SCOPE ;CALL SCOPE LOOP UTILITY
16055
    
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16056 ; *****
16057 ; .SBTTL T0446 NEG DM3 TEST
16058 ; *****
16059 ;MICROPROGRAMMING / LOGIC INFORMATION
16060 ;ROM SEQ: [163,264,265,266,267,221,367,375,016] FC 1,3,9,8
16061 ;ACT BUTS: 37(004)100,163 / 33(266)221,221 / 16(367)016,016
16062 ;EXEC: [221]ALUC=LLHML :[367] D = 125252
16063 ;CODES: [367] SPS=3 / N:C = 1001
16064 ;SYNC: B05J2 (-) T = 2.75 USEC
16065 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=3L / K3-4 NEG L / K5-5 BCO1 H
16066
16067 T0446: MOV #0446,R0 ;LOAD R0 WITH THE TEST NO.
16068 MOV #10446,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16069 MOV #M0446,R2 ;DEST ADDR = M0446
16070 MOV #125252,R4 ;RESULT S / B = 125252
16071 R0446: MOV #ATA+10,R5 ;[ATA+10] = M0446
16072 MOV #52526,(R2) ;[DEST] = 52526
16073 CCC ;SCOPE SYNC
16074
16075 I0446: NEG @ (R5)+ ;TEST THE NEG - MODE 3
16076
16077 CMP R4,(R2) ;RESULT = 125252?
16078 BEQ A0446 ;BR IF YES
16079
16080 MOV (R2),R3 ;GET WAS DATA
16081 E10446: ERROR ;NEG DELIVERED WRONG RESULT
16082 R0446 ;ERROR LOOP RETURN
16083
16084 A0446: CMP #ATA+12,R5 ;DID REG GET AUTO INCREMENTED?
16085 BEQ 00446 ;BR IF YES
16086
16087 E20446: ERROR5 ;NEG FAILED TO UPDATE REG.
16088 R0446 ;ERROR LOOP RETURN
16089
16090 00446: SCOPE ;CALL SCOPE LOOP UTILITY
16091
16092
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16095
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16098

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16115
16116
16117 033746 012700 000447
16118 033752 013701 034000
16119 033756 012702 067602
16120 033762 012704 125252
16121 033766 012705 067604
16122 033772 012712 052526
16123 033776 000257
16124
16125 034000 005445
16126
16127 034002 020412
16128 034004 001403
16129
16130 034006 011203
16131 034010 104000
16132 034012 033766
16133
16134 034014 020502
16135 034016 001402
16136
16137 034020 104005
16138 034022 033766
16139
16140 034024 000004
16141

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: *****  
      .SBTTL T0447 NEG DM4 TEST  
: *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [164,260,267,221,367,375,061] FC 1,3,9,8  
;ACT BUTS:     37[004]100,164 / 33[260]220,221 / 16[367]016,016  
;EXEC:         [221]ALUC=LLHHL :[367] D = 125252  
;CODES:        [367] SPS=3 / N:C = 1001  
;SYNC:         B05J2 (-) T = 2 USEC  
;KEY SIG:      K3-8 CINDO L / K3-3 DM=4L / K3-4 NEG L / K5-5 BCON(1+2) H  
T0447:  MOV      #0447,R0          ;LOAD R0 WITH THE TEST NO.  
        MOV      @#I0447,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      #MBUFD,R2       ;DEST ADDR = MBUFD  
        MOV      #125252,R4      ;RESULT S / B = 125252  
R0447:  MOV      #MBUFD+2,R5     ;[R5] = DEST ADDR + 2  
        MOV      #52526,(R2)     ;[DEST] = 52526  
        CCC  
        ;SCOPE SYNC  
I0447:  NEG      -(R5)          ;TEST THE NEG - MODE 4  
        CMP      R4,(R2)        ;RESULT = 125252?  
        BEQ      R0447          ;BR IF YES  
E10447: MOV      (R2),R3        ;GET WAS DATA  
        ERROR   R0447          ;NEG DELIVERED WRONG RESULT  
        ;ERROR LOOP RETURN  
R0447:  CMP      R5,R2          ;DID REG GET AUTO INCREMENTED?  
        BEQ      R0447          ;BR IF YES  
E20447: ERROR   R0447          ;NEG FAILED TO UPDATE REG  
        ;ERROR LOOP RETURN  
00447:  SCOPE  
        ;CALL SCOPE LOOP UTILITY
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F16

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16142 ; *****
16143 ; .SBTTL T0450 NEG DM5 TEST
16144 ; *****
16145 ;MICROPROGRAMMING / LOGIC INFORMATION
16146 ;ROM SEQ: [165,264,265,266,267,221,367,375,016] FC 1,3,9,8
16147 ;ACT BUTS: 37(004)100,165 / 33(266)220,221 / 16(367)016,016
16148 ;EXEC: [221]ALUC=LLHML :[367] D = 125252
16149 ;CODES: [367] SPS=3 / N:C = 1001
16150 ;SYNC: B05J2 (-) T = 2 USEC
16151 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=5L / K3-4 NEG L / K5-5 BC01 H
16152
16153
16154
16155
16156
16157
16158
16159
16160 034026 012700 000450 T0450: MOV #0450,R0 ;LOAD R0 WITH THE TEST NO.
16161 034032 013701 034060 ;LOAD R1 WITH TEST INSTRUCTION WORD
16162 034036 012702 067602 ;DEST ADDR = MBUF0
16163 034042 012704 125252 ;RESULT S / B = 125252
16164 034046 012705 067600 R0450: MOV #ATA+12,R5 ;[R5] = (ADR OF MBUF0) +2
16165 034052 012712 052526 ;[DEST] = 52526
16166 034056 000257 ;SCOPE SYNC
16167
16168 034060 005455 I0450: NEG @-(R5) ;TEST THE NEG - MODE 5
16169
16170 034062 020412 ;RESULT = 125252?
16171 034064 001403 BEQ A0450 ;BR IF YES
16172
16173 034066 011203 ;GET WAS DATA
16174 034070 104000 E10450: ERROR ;NEG DELIVERED WRONG RESULT
16175 034072 034046 R0450 ;ERROR LOOP RETURN
16176
16177 034074 022705 067576 A0450: CMP #ATA+10,R5 ;DID NEG UPDATE REG
16178 034100 001402 BEQ 00450 ;BR IF YES
16179
16180 034102 104005 ;NEG FAILED TO UPDATE REG
16181 034104 034046 E20450: ERROR ;ERROR LOOP RETURN
16182
16183 034106 000004 00450: SCOPE ;CALL SCOPE LOOP UTILITY
16184

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16185 : *****
16186 : .SBTTL T0451 NEG DMS TEST
16187 : *****
16188
16189 ;MICROPROGRAMMING / LOGIC INFORMATION
16190
16191 ;ROM SEQ: [166,261,262,266,267,221,367,375,016] FC 1,3,9,8
16192
16193 ;ACT BUTS: 37(004)100,166 / 33(266)220,221 / 16(367)016,016
16194
16195 ;EXEC: [221]ALUC=LLHML :[367] D = 125252
16196
16197 ;CODES: [367] SPS=3 / N:C = 1001
16198
16199 ;SYNC: B05J2 (-) T = 2.5 USEC
16200
16201 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=6L / K3-4 NEG L / K5-5 BC01 H
16202 ; K3-4 OVLAP CYCLE L
16203
16204 034110 012700 000451 T0451: MOV #0451,R0 ;LOAD R0 WITH THE TEST NO.
16205 034114 013701 034142 ;LOAD R1 WITH TEST INSTRUCTION WORD
16206 034120 012702 067602 ;DEST ADDR = M0451
16207 034124 012704 125252 ;RESULT S / B = 125252
16208 034130 012705 067600 R0451: MOV #M0451-2,R5 ;[R5] = BASE ADDR
16209 034134 012712 052526 ;[DEST] = 52526
16210 034140 000257 CCC ;SCOPE SYNC
16211
16212 034142 005465 000002 I0451: NEG 2(R5) ;TEST THE NEG - MODE 6
16213
16214 034146 020412 ;RESULT = 125252?
16215 034150 001403 BEQ 00451 ;BR IF YES
16216
16217 034152 011203 ;GET WAS DATA
16218 034154 104000 E0451: ERROR ;NEG DELIVERED WRONG RESULT
16219 034156 034130 R0451 ;ERROR LOOP RETURN
16220
16221 034160 000004 00451: SCOPE ;CALL SCOPE LOOP UTILITY
16222

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H16

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16223 ; *****
16224 ; .SBTTL T0452 NEG DM7 TEST
16225 ; *****
16226 ;MICROPROGRAMMING / LOGIC INFORMATION
16227
16228 ;ROM SEQ: [166,261,263,264,265,266,267,221,367,375,016] FC 1,3,9,8
16229
16230 ;ACT BUTS: 37(004)100,166 / 33(266)220,221 / 16(367)016,016
16231
16232 ;EXEC: [221]ALUC=LLHHL :[367] D = 125252
16233
16234 ;CODES: [367] SPS=3 / N:C = 1001
16235
16236 ;SYNC: B05J2 (-) T = 3.5 USEC
16237
16238 ;KEY SIG: K3-8 CIN00 L / K3-3 DM=7L / K3-4 NEG L / K5-5 BC01 H
16239 ; K3-4 OVLAP CYCLE L
16240
16241
16242 034162 012700 000452 T0452: MOV #0452,R0 ;LOAD R0 WITH THE TEST NO.
16243 034166 013701 034214 ;LOAD R1 WITH TEST INSTRUCTION WORD
16244 034172 012702 067602 ;DEST ADDR = M0452
16245 034176 012704 125252 ;RESULT S / B = 125252
16246 034202 012705 067566 R0452: MOV #ATA,R5 ;[R5] = BASE ADDR
16247 034206 012712 052526 ;[DEST] = 52526
16248 034212 000257 CCC ;SCOPE SYNC
16249
16250 034214 005475 000010 I0452: NEG @10(R5) ;TEST THE NEG - MODE 7
16251
16252 034220 020412 CMP R4,(R2) ;RESULT = 125252?
16253 034222 001403 BEQ 00452 ;BR IF YES
16254
16255 034224 011203 MOV (R2),R3 ;GET WAS DATA
16256 034226 104000 E0452: ERROR ;NEG DELIVERED WRONG RESULT
16257 034230 034202 R0452 ;ERROR LOOP RETURN
16258
16259 034232 000004 00452: SCOPE ;CALL SCOPE LOOP UTILITY
16260
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16278
16279 034234 012700 000453
16280 034240 013701 034270
16281 034244 005004
16282 034246 005104
16283 034250 012702 067602
16284 034254 012705 067614
16285 034260 010203
16286 034262 005012
16287 034264 000257
16288 034266 000264
16289
16290 034270 011513
16291
16292 034272 100003
16293 034274 001402
16294 034276 102401
16295 034300 103002
16296
16297 034302 104005
16298 034304 034260
16299
16300 034306 020412
16301 034310 001404
16302
16303 034312 005003
16304 034314 051203
16305 034316 104000
16306 034320 034260
16307
16308 034322 000004
16309

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; *****  
; .SBTTL T0453 MOV SM1,DM1 TEST - <N:C> = 0100  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [141,247,250,171,257,200,125,375,016] FC 1,2,4,8  
;ACT BUTS: 37(004)100,141 / 35(247)120,171 / 22(171)200,200 / 16(125)016,016  
;EXEC: [200]ALUC=LLLLL :[125] D = 177777  
;CODES: [125] SPS=3 / N:C = 1000  
;SYNC: B05J2 (..) T = 3.25 USEC  
;KEY SIG: K3-3 SM=1L / K3-3 DM=1L / K3-3 MOV L  
T0453: MOV #0453,R0 ;LOAD R0 WITH TEST NO.  
;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #10453,R1 ;RESULT S / B = 177777  
CLR R4  
COM R4  
MOV #MBUFO,R2 ;DEST ADDR = MBUFO  
MOV #DWT+2,R5 ;SOURCE ADDR = DWT+2  
R0453: MOV R2,R3 ;BASE DEST ADDR = MBUFO  
CLR (R2) ;MAKE [DEST] = 000000  
CCC ;CLEAR FLAGS  
264 ;N:C = 0100  
I0453: MOV (R5),(R3) ;TEST THE MOV - SM1,DM1  
;N:C = 1000 ?  
BPL E10453  
BEQ E10453  
BVS E10453  
BCC A0453  
E10453: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY  
R0453 ;ERROR LOOP RETURN  
A0453: CMP R4,(R2) ;RESULT CORRECT ??  
BEQ 00453 ;BR IF YES  
CLR R3 ;GET THE WAS DATA  
BIS (R2),R3  
E20453: ERROR ;MOV DELIVERED THE WRONG RESULT  
R0453 ;ERROR LOOP RETURN  
00453: SCOPE ;CALL SCOPE LOOP UTILITY
```

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16310 ; *****
16311 .SBTTL T0454 MOV SM2,DM1 TEST - <N:C> = 0100
16312 ; *****
16313
16314 ;MICROPROGRAMMING / LOGIC INFORMATION
16315
16316 ;ROM SEQ: [142,240,250,171,257,200,125,375,016] FC 1,2,4,8
16317
16318 ;ACT BUTS: 37[004]100,142 / 35[240]120,171 / 22[171]200,200 / 16[125]016,016
16319
16320 ;EXEC: [200]ALUC=LLLLL :[125] D = 177777
16321
16322 ;CODES: [125] SPS=3 / N:C = 1000
16323
16324 ;SYNC: B05J2 (-) T = 3.25 USEC
16325
16326 ;KEY SIG: K3-3 SM=2L / K3-3 DM=1L / K3-3 MOV L / K5-5 BCON (1+2) H
16327
16328 034324 012700 000454 T0454: MOV #0454,R0 ;LOAD R0 WITH TEST NO.
16329 034330 013701 034360 MOV #I0454,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16330 034334 005004 CLR R4 ;RESULT S / B = 177777
16331 034336 005104 COM R4
16332 034340 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
16333 034344 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA+2
16334 034350 010203 R0454: MOV R2,R3 ;BASE DEST ADDR = MBUFO
16335 034352 005012 CLR (R2) ;MAKE [DEST] = 000000
16336 034354 000257 CCC ;CLEAR FLAGS
16337 034356 000264 264 ;N:C = 0100
16338
16339 034360 012513 I0454: MOV (R5)+,(R3) ;TEST THE MOV - SM2,DM1
16340
16341 034362 100003 BPL E10454 ;N:C = 10C3 ?
16342 034364 001402 BEQ E10454
16343 034366 102401 BVS E10454
16344 034370 103002 BCC A0454
16345
16346 034372 104005 E10454: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16347 034374 034350 R0454 ;ERROR LOOP RETURN
16348
16349 034376 020412 A0454: CMP R4,(R2) ;RESULT CORRECT ??
16350 034400 001404 BEQ 00454 ;BR IF YES
16351
16352 034402 005003 CLR R3 ;GET THE WAS DATA
16353 034404 051203 BIS (R2),R3
16354 034406 104000 E20454: ERROR ;MOV DELIVERED THE WRONG RESULT
16355 034410 034350 R0454 ;ERROR LOOP RETURN
16356
16357 034412 000004 00454: SCOPE ;CALL SCOPE LOOP UTILITY

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K16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 413
 DBQEAB.CMB T0454 MOV SM2,DM1 TEST - <N:C> = 0100

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16358 ; *****
16359 ; .SBTTL T0455 MOV SM1,DM1 TEST - <N:C> = 1011
16360 ; *****
16361 ;MICROPROGRAMMING / LOGIC INFORMATION
16362
16363 ;ROM SEQ: [142,247,250,171,257,200,125,375,016] FC 1,2,4,8
16364 ;ACT BUTS: 37(004)100,142 / 35(247)120,171 / 22(171)200,200 / 16(125)016,016
16365 ;EXEC: [200]ALUC=LLLLL :[125] D = 000000
16366 ;CODES: [125] SPS=3 / N:C = 0101
16367 ;SYNC: B05J2 (-) T = 3.25 USEC
16368 ;KEY SIG: K3-3 SM=1L / K3-3 DM=1L / K3-3 MOV L
16369
16370 T0455: MOV #0455,R0 ;LOAD R0 WITH TEST NO.
16371 MOV #10455,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16372 CLR ;RESULT S / B = 000000
16373 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
16374 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
16375 R0455: MOV R2,R3 ;BASE DEST ADDR = MBUFO
16376 CLR (R2) ;MAKE [DEST] = 177777
16377 COM (R2)
16378 CCC ;CLEAR FLAGS
16379 273 ;N:C = 1011
16380
16381 I0455: MOV (R5),(R3) ;TEST THE MOV - SM1,DM1
16382 BMI E10455 ;N:C = 0101 ?
16383 BNE E10455
16384 BVS E10455
16385 BCS A0455
16386
16387 E10455: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16388 R0455 ;ERROR LOOP RETURN
16389
16390 A0455: CMP R4,(R2) ;RESULT CORRECT ??
16391 BEQ 00455 ;BR IF YES
16392
16393 E20455: CLR R3 ;GET THE WAS DATA
16394 BIS (R2),R3
16395 ERROR ;MOV DELIVERED THE WRONG RESULT
16396 R0455 ;ERROR LOOP RETURN
16397
16398 00455: SCOPE ;CALL SCOPE LOOP UTILITY
16399
16400
16401
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16404
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16406
  
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16407 ; *****
16408 ; .SBTTL T0456 MOV SM2,DM1 TEST - <N:C> = 1011
16409 ; *****
16410 ;MICROPROGRAMMING / LOGIC INFORMATION
16411 ;ROM SEQ: [142,240,250,171,257,200,125,375,016] FC 1,2,4,8
16412 ;ACT BUTS: 37(004)100,142 / 35(240)120,171 / 22(171)200,200 / 16(125)016,016
16413 ;EXEC: [200]ALUC=LLLLL : [125] D = 000000
16414 ;CODES: [125] SP=3 / N:C = 0101
16415 ;SYNC: B05J2 (-) T = 3.25 USEC
16416 ;KEY SIG: K3-3 SM=2L / K3-3 DM=1L / K3-3 MOV L / K5-5 BCON (1+2) H
16417
16418 T0456: MOV #0456,R0 ;LOAD R0 WITH TEST NO.
16419 MOV @#I0456,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16420 CLR R4 ;RESULT S / B = 000000
16421 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
16422 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
16423 R0456: MOV R2,R3 ;BASE DEST ADDR = MBUFO
16424 CLR (R2) ;MAKE [DEST] = 177777
16425 COM (R2)
16426 CCC ;CLEAR FLAGS
16427 273 ;N:C = 1011
16428
16429 I0456: MOV (R5)+,(R3) ;TEST THE MOV - SM2,DM1
16430
16431 BMI E10456 ;N:C = 0101 ?
16432 BNE E10456
16433 BVS E10456
16434 BCS A0456
16435
16436 E10456: ERROR5 ;MOV FAILED TO ALTER CODES PROPERLY
16437 R0456 ;ERROR LOOP RETURN
16438
16439 A0456: CMP R4,(R2) ;RESULT CORRECT ??
16440 BEQ 00456 ;BR IF YES
16441
16442 CLR R3 ;GET THE WAS DATA
16443 BIS (R2),R3
16444 E20456: ERROR ;MOV DELIVERED THE WRONG RESULT
16445 R0456 ;ERROR LOOP RETURN
16446
16447 00456: SCOPE ;CALL SCOPE LOOP UTILITY
16448
16449
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M16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 415
 DBQEAB.CMB T0456 MOV SM2,DM1 TEST - <N:C> = 1011

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16456 ; *****
16457 .SBTTL T0457 MOV SM1,DM2 TEST - <N:C> = 0100
16458 ; *****
16459
16460 ;MICROPROGRAMMING / LOGIC INFORMATION
16461
16462 ;RCM SEQ: [141,247,250,172,257,200,125,375,016] FC 1,2,4,8
16463
16464 ;ACT BUTS: 37(004)100,141 / 35(247)120,172 / 22(172)200,200 / 16(125)016,016
16465
16466 ;EXEC: [200]ALUC=LLLLL :[125] D = 177777
16467
16468 ;CODES: [125] SPS=3 / N:C = 1000
16469
16470 ;SYNC: B05J2 (-) T = 3.25 USEC
16471
16472 ;KEY SIG: K3-3 SM=1L / K3-3 DM=2L / K3-3 MOV L / K5-5 BCON (1+2) H
16473
16474 034574 012700 000457 T0457: MOV #0457,R0 ;LOAD R0 WITH TEST NO.
16475 034600 013701 034630 MOV #10457,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16476 034604 005004 CLR R4 ;RESULT S / B = 177777
16477 034606 005104 COM R4
16478 034610 012702 067602 MOV #MBUFG,R2 ;DEST ADDR = MBUFG
16479 034614 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA
16480 034620 010203 R0457: MOV R2,R3 ;BASE DEST ADDR = MBUFG
16481 034622 005012 CLR (R2) ;MAKE [DEST] = 000000
16482 034624 000257 CCC ;CLEAR FLAGS
16483 034626 000264 264 ;N:C = 0100
16484
16485 034630 011523 I0457: MOV (R5),(R3)+ ;TEST THE MOV - SM1,DM2
16486
16487 034632 100003 BPL E10457 ;N:C = 1000 ?
16488 034634 001402 BEQ E10457
16489 034636 102401 BVS E10457
16490 034640 103002 BCC A0457
16491
16492 034642 104005 E10457: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16493 034644 034620 R0457 ;ERROR LOOP RETURN
16494
16495 034646 022703 067604 A0457: CMP #MBUFG+2,R3 ;DID MOV INCREMENT DEST REG ?
16496 034652 001402 BEQ B0457 ;BR IF YES
16497
16498 034654 104005 E20457: ERRORS ;MOV FAILED TO UPDATE DEST REG
16499 034656 034620 R0457 ;ERROR LOOP RETURN
16500
16501 034660 020412 B0457: CMP R4,(R2) ;RESULT CORRECT ??
16502 034662 001404 BEQ 00457 ;BR IF YES
16503
16504 034664 005003 CLR R3 ;GET THE WAS DATA
16505 034666 051203 BIS (R2),R3
16506 034670 104000 E30457: ERROR ;MOV DELIVERED THE WRONG RESULT
16507 034672 034620 R0457 ;ERROR LOOP RETURN
16508
16509 034674 000004 00457: SCOPE ;CALL SCOPE LOOP UTILITY
16510

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16511 : *****
16512 : .SBTTL T0460 MOV SM2,DM2 TEST - (N:C) = 0100
16513 : *****
16514 :
16515 ;MICROPROGRAMMING / LOGIC INFORMATION
16516 :
16517 ;ROM SEQ: [142,240,250,172,257,200,125,375,016] FC 1,2,4,8
16518 :
16519 ;ACT BUTS: 37(004)100,142 / 35(240)120,172 / 22(172)200,200 / 16(125)016,016
16520 :
16521 ;EXEC: [200]ALUC=LLLLL : [125] D = 177777
16522 :
16523 ;CODES: [125] SPS=3 / N:C = 1000
16524 :
16525 ;SYNC: B05J2 (-) T = 3.25 USEC
16526 :
16527 ;KEY SIG: K3-3 SM=2L / K3-3 DM=2L / K3-3 MOV L / K5-5 BCOM (1+2) H
16528 :
16529 034676 012700 000460 T0460: MOV #0460,R0 ;LOAD R0 WITH TEST NO.
16530 034702 013701 034732 MOV #10460,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16531 034706 005004 CLR R4 ;RESULT S / B = 177777
16532 034710 005104 COM R4
16533 034712 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
16534 034716 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA
16535 034722 010203 R0460: MOV R2,R3 ;BASE DEST ADDR = MBUFD
16536 034724 005012 CLR (R2) ;MAKE (DEST) = 000000
16537 034726 000257 CCC ;CLEAR FLAGS
16538 034730 000264 264 ;N:C = 0100
16539 :
16540 034732 012523 I0460: MOV (R5)+,(R3)+ ;TEST THE MOV - SM2,DM2
16541 :
16542 034734 100003 BPL E10460 ;N:C = 1000 ?
16543 034736 001402 BEQ E10460
16544 034740 102401 BVS E10460
16545 034742 103002 BCC A0460
16546 :
16547 034744 104005 E10460: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16548 034746 034722 R0460 ;ERROR LOOP RETURN
16549 :
16550 034750 022703 067604 A0460: CMP #MBUFD+2,R3 ;DID MOV INCREMENT DEST REG ?
16551 034754 001402 BEQ B0460 ;BR IF YES
16552 :
16553 034756 104005 E20460: ERRORS ;MOV FAILED TO UPDATE DEST REG
16554 034760 034722 R0460 ;ERROR LOOP RETURN
16555 :
16556 034762 020412 B0460: CMP R4,(R2) ;RESULT CORRECT ??
16557 034764 001404 BEQ 00460 ;BR IF YES
16558 :
16559 034766 005003 CLR R3 ;GET THE WAS DATA
16560 034770 051203 BIS (R2),R3
16561 034772 104000 E30460: ERROR ;MOV DELIVERED THE WRONG RESULT
16562 034774 034722 R0460 ;ERROR LOOP RETURN
16563 :
16564 034776 000004 00460: SCOPE ;CALL SCOPE LOOP UTILITY
16565 :

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C01

MAIN MACY11 27(732) 15-OCT-76 14:58 PAGE 417
 DBQEAB.CMB T0460 MOV SM2,DM2 TEST - <N:C> = 0100

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16566 ; *****
16567 ; .SBTTL T0461 MOV SM1,DM2 TEST - <N:C> = 1011
16568 ; *****
16569
16570 ; MICROPROGRAMMING / LOGIC INFORMATION
16571
16572 ; ROM SEQ: [141,247,250,172,257,200,125,375,016] FC 1,2,4,8
16573
16574 ; ACT BUTS: 37(004)100,141 / 35(247)120,172 / 22(172)200,200 / 16(125)016,016
16575
16576 ; EXEC: [200]ALUC=LLLLL : [125] D = 000000
16577
16578 ; CODES: [125] SPS=3 / N:C = 0101
16579
16580 ; SYNC: B05J2 (-) T = 3.25 USEC
16581
16582 ; KEY SIG: K3-3 SM=1L / K3-3 DM=2L / K3-3 MOV L / K5-5 BCON (1+2) H
16583
16584 035000 012700 J00461 T0461: MOV #0461,R0 ;LOAD R0 WITH TEST NO.
16585 035004 013701 035034 MOV #10461,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16586 035010 005004 CLR R4 ;RESULT S / B = 000000
16587 035012 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
16588 035016 012705 067612 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
16589 035022 010203 R0461: MOV R2,R3 ;BASE DEST ADDR = MBUFD
16590 035024 005012 CLR (R2) ;MAKE [DEST] = 177777
16591 035026 005112 COM (R2)
16592 035037 000257 CCC ;CLEAR FLAGS
16593 035032 000273 273 ;N:C = 1011
16594
16595 035034 011523 I0461: MOV (R5),(R3)+ ;TEST THE MOV - SM1,DM2
16596
16597 035036 100403 BMI E10461 ;N:C = 0101 ?
16598 035040 001002 BNE E10461
16599 035042 102401 BVS E10461
16600 035044 103402 BCS A0461
16601
16602 035046 104005 E10461: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16603 035050 035022 R0461 ;ERROR LOOP RETURN
16604
16605 035052 022703 067604 A0461: CMP #MBUFD+2,R3 ;DID MOV INCREMENT DEST REG ?
16606 035056 001402 BEQ B0461 ;BR IF YES
16607
16608 035060 104005 E20461: ERRORS ;MOV FAILED TO UPDATE DEST REG
16609 035062 035022 R0461 ;ERROR LOOP RETURN
16610
16611 035064 020412 B0461: CMP R4,(R2) ;RESULT CORRECT ??
16612 035066 001404 BEQ 00461 ;BR IF YES
16613
16614 035070 005003 CLR R3 ;GET THE WAS DATA
16615 035072 051203 BIS (R2),R3
16616 035074 104000 E30461: ERROR ;MOV DELIVERED THE WRONG RESULT
16617 035076 035022 R0461 ;ERROR LOOP RETURN
16618
16619 035100 000004 00461: SCOPE ;CALL SCOPE LOOP UTILITY
16620

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16621 ; *****
16622 ; .SBTTL T0462 MOV SM2,DM2 TEST - (N:C) = 1011
16623 ; *****
16624 ;MICROPROGRAMMING / LOGIC INFORMATION
16625 ;ROM SEQ: [142,240,250,172,257,200,125,375,016] FC 1,2,4,8
16626 ;ACT BUTS: 37(004)100,142 / 35(240)120,172 / 22(172)200,200 / 16(125)016,016
16627 ;EXEC: [200]ALUC=LLLLL :[125] D = 000000
16628 ;CODES: [125] SPS=3 / N:C = 0101
16629 ;SYNC: B05J2 (-) T = 3.25 USEC
16630 ;KEY SIG: K3-3 SM=2L / K3-3 DM=2L / K3-3 MOV L / K5-5 BCON (1+2) H
16631
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16636
16637
16638
16639 035102 012700 000462 T0462: MOV #0462,R0 ;LOAD R0 WITH TEST NO.
16640 035106 013701 035136 MOV #10462,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16641 035112 005004 CLR R4 ;RESULT S / B = 000000
16642 035114 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
16643 035120 012705 067612 MOV #DWTAR,R5 ;SOURCE ADDR = DWTAR
16644 035124 010203 R0462: MOV R2,R3 ;BASE DEST ADDR = MBUFD
16645 035126 005012 CLR (R2) ;MAKE [DEST] = 177777
16646 035130 005112 COM (R2)
16647 035132 000257 CCC ;CLEAR FLAGS
16648 035134 000273 273 ;N:C = 1011
16649
16650 035136 012523 I0462: MOV (R5)+,(R3)+ ;TEST THE MOV - SM2,DM2
16651
16652 035140 100403 BMI E10462 ;N:C = 0101 ?
16653 035142 001002 BNE E10462
16654 035144 102401 BVS E10462
16655 035146 103402 BCS A0462
16656
16657 035150 104005 E10462: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16658 035152 035124 R0462 ;ERROR LOOP RETURN
16659
16660 035154 022703 067604 R0462: CMP #MBUFD+2,R3 ;DID MOV INCREMENT DEST REG ?
16661 035160 001402 BEQ B0462 ;BR IF YES
16662
16663 035162 104005 E20462: ERRORS ;MOV FAILED TO UPDATE DEST REG
16664 035164 035124 R0462 ;ERROR LOOP RETURN
16665
16666 035166 020412 B0462: CMP R4,(R2) ;RESULT CORRECT ??
16667 035170 001404 BEQ B0462 ;BR IF YES
16668
16669 035172 005003 CLR R3 ;GET THE WAS DATA
16670 035174 051203 BIS (R2),R3
16671 035176 104000 E30462: ERROR ;MOV DELIVERED THE WRONG RESULT
16672 035200 035124 R0462 ;ERROR LOOP RETURN
16673
16674 035202 000004 O0462: SCOPE ;CALL SCOPE LOOP UTILITY
16675
    
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E01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 419
 DBQEAB.CMB T0462 MOV SM2,DM2 TEST - <N:C> = 1011

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16676 ; *****
16677 ; .SBTTL T0463 MOV SM1,DM3 TEST - <N:C> = 0100
16678 ; *****
16679 ;MICROPROGRAMMING / LOGIC INFORMATION
16680 ;ROM SEQ: [141,247,250,173,207,2010,200,125,375,016] FC 1,2,4,8
16681 ;ACT BUTS: 37(004)100,141 / 35(247)120,173 / 22(207)200,200 / 16(125)016,016
16682 ;EXEC: [200]ALUC=LLLLL : [125] D = 177777
16683 ;CODES: [125] SPS=3 / N:C = 1000
16684 ;SYNC: BOSJ2 (-) T = 4 USEC
16685 ;KEY SIG: K3-3 SM=1L / K3-3 DM=3L / K3-3 MOV L / K5-5 BCD1 H
16686
16687 T0463: MOV #0463,R0 ;LOAD R0 WITH TEST NO.
16688 MOV #10463,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16689 CLR R4 ;RESULT S / B = 177777
16690 COM R4
16691 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
16692 MOV #DMTA+2,R5 ;SOURCE ADDR = DMTA+2
16700 R0463: MOV #ATA+10,R3 ;BASE DEST ADDR = ATA+10
16701 CLR (R2) ;MAKE [DEST] = 000000
16702 CCC ;CLEAR FLAGS
16703 264 ;N:C = 0100
16704
16705 I0463: MOV (R5),2(R3)+ ;TEST THE MOV - SM1,DM3
16706
16707 BPL E10463 ;N:C = 1000 ?
16708 BEQ E10463
16709 BVS E10463
16710 BCC A0463
16711
16712 E10463: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16713 R0463 ;ERROR LOOP RETURN
16714
16715 A0463: CMP #ATA+12,R3 ;DID MOV INCREMENT DEST REG ?
16716 BEQ B0463 ;BR IF YES
16717
16718 E20463: ERRORS ;MOV FAILED TO UPDATE DEST REG
16719 R0463 ;ERROR LOOP RETURN
16720
16721 B0463: CMP R4,(R2) ;RESULT CORRECT ??
16722 BEQ 00463 ;BR IF YES
16723
16724 CLR R3 ;GET THE WAS DATA
16725 BIS (R2),R3
16726 E30463: ERROR ;MOV DELIVERED THE WRONG RESULT
16727 R0463 ;ERROR LOOP RETURN
16728
16729 00463: SCOPE ;CALL SCOPE LOOP UTILITY
16730

```

F01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 420
 DBQEAB.CMB T0463 MOV SM1,DM3 TEST - <N:C> = 0100

```

16731 ; *****
16732 ; .SBTTL T0464 MOV SM2,DM3 TEST - <N:C> = 0100
16733 ; *****
16734 ;
16735 ;MICROPROGRAMMING / LOGIC INFORMATION
16736 ;
16737 ;ROM SEQ: [142,240,250,173,207,210,200,125,375,016] FC 1,2,4,8
16738 ;
16739 ;ACT BUTS: 37(004)100,142 / 35(240)120,173 / 22(207)200,200 / 16(125)016,016
16740 ;
16741 ;EXEC: [200]ALUC=LLLLL : [125] D = 177777
16742 ;
16743 ;CODES: [125] SPS=3 / N:C = 1000
16744 ;
16745 ;SYNC: B05J2 (-) T = 4 USEC
16746 ;
16747 ;KEY SIG: K3-3 SM=2L / K3-3 DM=3L / K3-3 MOV L / K5-5 BCD1 H
16748 ; K5-5 BCON (1+2) H
16749 ;
16750 035310 012700 000464 T0464: MOV #0464,R0 ;LOAD R0 WITH TEST NO.
16751 035314 013701 035346 MOV #10464,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16752 035320 005004 CLR R4 ;RESULT S / B = 177777
16753 035322 005104 COM R4
16754 035324 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
16755 035330 012705 067614 MOV #DMA+2,R5 ;SOURCE ADDR = DMA+2
16756 035334 012703 067576 R0464: MOV #ATA+10,R3 ;BASE DEST ADDR = ATA+10
16757 035340 005012 CLR (R2) ;MAKE (DEST) = 000000
16758 035342 000257 CCC ;CLEAR FLAGS
16759 035344 000264 264 ;N:C = 0100
16760 ;
16761 035346 012533 I0464: MOV (R5)+,(R3)+ ;TEST THE MOV - SM2,DM3
16762 ;
16763 035350 100003 BPL E10464 ;N:C = 1000 ?
16764 035352 001402 BEQ E10464
16765 035354 102401 BVS E10464
16766 035356 103002 BCC A0464
16767 ;
16768 035360 104005 E10464: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16769 035362 035334 R0464 ;ERROR LOOP RETURN
16770 ;
16771 035364 022703 067600 R0464: CMP #ATA+12,R3 ;DID MOV INCREMENT DEST REG ?
16772 035370 001402 BEQ B0464 ;BR IF YES
16773 ;
16774 035372 104005 E20464: ERRORS ;MOV FAILED TO UPDATE DEST REG
16775 035374 035334 R0464 ;ERROR LOOP RETURN
16776 ;
16777 035376 020412 B0464: CMP R4,(R2) ;RESULT CORRECT ??
16778 035400 001404 BEQ 00464 ;BR IF YES
16779 ;
16780 035402 005003 CLR R3 ;GET THE WAS DATA
16781 035404 051203 BJS (R2),R3
16782 035406 104000 E30464: ERROR ;MOV DELIVERED THE WRONG RESULT
16783 035410 035334 R0464 ;ERROR LOOP RETURN
16784 ;
16785 035412 000004 00464: SCOPE ;CALL SCOPE LOOP UTILITY
16786 ;
  
```

G01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 421
 DBQEAB.CMB T0464 MOV SM2,DM3 TEST - <N:C> = 0100

```

16787 ; *****
16788 ; .SBTTL T0465 MOV SM1,DM3 TEST - <N:C> = 1011
16789 ; *****
16790
16791 ;MICROPROGRAMMING / LOGIC INFORMATION
16792
16793 ;ROM SEQ: [141,247,250,173,207,210,200,125,375,016] FC 1,2,4,8
16794
16795 ;ACT BUTS: 37(004)100,141 / 35(247)120,173 / 22(207)200,200 / 16(125)016,016
16796
16797 ;EXEC: [200]ALUC-LLLLL : [125] D = 000000
16798
16799 ;CODES: [125] SPS=3 / N:C = 0101
16800
16801 ;SYNC: B05J2 (-) T = 4 USEC
16802
16803 ;KEY SIG: K3-3 SM=1L / K3-3 DM=3L / K3-3 MOV L / K5-5 BC01 H
16804
16805 035414 012700 000465 T0465: MOV #0465,R0 ;LOAD R0 WITH TEST NO.
16806 035420 013701 035452 MOV @#10465,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16807 035424 005004 CLR R4 ;RESULT S / B = 000000
16808 035426 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
16809 035432 012705 067612 MOV #DWA,R5 ;SOURCE ADDR = DWA
16810 035436 012703 067576 R0465: MOV #ATA+10,R3 ;BASE DEST ADDR = ATA+10
16811 035442 005012 CLR (R2) ;MAKE [DEST] = 177777
16812 035444 005112 COM (R2)
16813 035446 000257 CCC ;CLEAR FLAGS
16814 035450 000273 273 ;N:C = 1011
16815
16816 035452 011533 I0465: MOV (R5),@ (R3)+ ;TEST THE MOV - SM1,DM3
16817
16818 035454 100403 BMI E10465 ;N:C = 0101 ?
16819 035456 001002 BNE E10465
16820 035460 102401 BVS E10465
16821 035462 103402 BCS A0465
16822
16823 035464 104005 E10465: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16824 035466 035436 P 165 ;ERROR LOOP RETURN
16825
16826 035470 022703 067600 R0465: CMP #ATA+12,R3 ;DID MOV INCREMENT DEST REG ?
16827 035474 001402 BEQ B0465 ;BR IF YES
16828
16829 035476 104005 E20465: ERRORS ;MOV FAILED TO UPDATE DEST REG
16830 035500 035436 R0465 ;ERROR LOOP RETURN
16831
16832 035502 020412 B0465: CMP R4,(R2) ;RESULT CORRECT ??
16833 035504 001404 BEQ 00465 ;BR IF YES
16834
16835 J35506 005003 CLR R3 ;GET THE WAS DATA
16836 035510 051203 BIS (R2),R3
16837 035512 104000 E30465: ERROR ;MOV DELIVERED THE WRONG RESULT
16838 035514 035436 R0465 ;ERROR LOOP RETURN
16839
16840 035516 000004 00465: SCOPE ;CALL SCOPE LOOP UTILITY
16841

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H01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 422
DBQEAB.CMB T0465 MOV SM1,DM3 TEST - <N:C> = 1011

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16842 ; *****
16843 .SBTTL T0466 MOV SM2,DM3 TEST - <N:C> = 1011
16844 ; *****
16845 ;MICROPROGRAMMING / LOGIC INFORMATION
16846 ;ROM SEQ: [142,240,250,173,207,210,200,125,375,016] FC 1,2,4,8
16847 ;ACT BUTS: 37(004)100,142 / 35(240)120,173 / 22(207)200,200 / 16(125)016,016
16848 ;EXEC: [200]ALUC=LLLLL : [125] D = 000000
16849 ;CODES: [125] SPS=3 / N:C = 0101
16850 ;SYNC: B05J2 (-) T = 4 USEC
16851 ;KEY SIG: K3-3 SM=2L / K3-3 DM=3L / K3-3 MOV L / K5-5 BCO1 H
16852 ; K5-5 BCON (1+2) H
16853
16854
16855
16856
16857
16858
16859
16860
16861 035520 012700 000466 T0466: MOV #T0466,R0 ;LOAD R0 WITH TEST NO.
16862 035524 013701 035556 MOV #I0466,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16863 035530 005004 CLR R4 ;RESULT S / B = 000000
16864 035532 012702 067602 MOV #M0466,R2 ;DEST ADDR = M0466
16865 035536 012705 067612 MOV #D0466,R5 ;SOURCE ADDR = D0466
16866 035542 012703 067576 R0466: MOV #ATA+10,R3 ;BASE DEST ADDR = ATA+10
16867 035546 005012 CLR (R2) ;MAKE [DEST] = 177777
16868 035550 005112 COM (R2)
16869 035552 000257 CCC ;CLEAR FLAGS
16870 035554 000273 273 ;N:C = 1011
16871
16872 035556 012533 I0466: MOV (R5)+,@(R3)+ ;TEST THE MOV - SM2,DM3
16873
16874 035560 100403 BMI E10466 ;N:C = 0101 ?
16875 035562 001002 BNE E10466
16876 035564 102401 BVS E10466
16877 035566 103402 BCS A0466
16878
16879 035570 104005 E10466: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16880 035572 035542 R0466 ;ERROR LOOP RETURN
16881
16882 035574 022703 067600 A0466: CMP #ATA+12,R3 ;DID MOV INCREMENT DEST REG ?
16883 035600 001402 BEQ B0466 ;BR IF YES
16884
16885 035602 104005 E20466: ERRORS ;MOV FAILED TO UPDATE DEST REG
16886 035604 035542 R0466 ;ERROR LOOP RETURN
16887
16888 035606 020412 B0466: CMP R4,(R2) ;RESULT CORRECT ??
16889 035610 001404 BEQ 00466 ;BR IF YES
16890
16891 035612 005003 CLR R3 ;GET THE WAS DATA
16892 035614 051203 BIS (R2),R3
16893 035616 104000 E30466: ERROR ;MOV DELIVERED THE WRONG RESULT
16894 035620 035542 R0466 ;ERROR LOOP RETURN
16895
16896 035622 000004 , 00466: SCOPE ;CALL SCOPE LOOP UTILITY
16897
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I01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 423
 DBQEAB.CMB T0465 MOV SM2,DM3 TEST - <N:C> = 1011

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16898 ; *****
16899 ; .SBTTL T0467 MOV SM1,DM4 TEST - <N:C> = 0100
16900 ; *****
16901 ;MICROPROGRAMMING / LOGIC INFORMATION
16902 ;ROM SEQ: [141,247,250,174,257,200,125,375,016] FC 1,2,4,8
16903 ;ACT BUTS: 37(004)100,141 / 35(247)120,174 / 22(174)200,200 / 16(125)016,016
16904 ;EXEC: [200]ALUC=LLLLL :[125] D = 177777
16905 ;CODES: [125] SPS=3 / N:C = 1000
16906 ;SYNC: B05J2 (-) T = 3.2 USEC
16907 ;KEY SIG: K3-3 SM=1L / K3-3 DM=4L / K3-3 MOV L / K5-5 BCON (1+2) H
16908
16909
16910
16911
16912
16913
16914
16915
16916 035624 012700 000467 T0467: MOV #0467,R0 ;LOAD R0 WITH TEST NO.
16917 035630 013701 035662 MOV #10467,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16918 035634 005004 CLR R4 ;RESULT S / B = 177777
16919 035636 005104 COM R4
16920 035640 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
16921 035644 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA+2
16922 035650 012703 067604 R0467: MOV #MBUFD+2,R3 ;BASE DEST ADDR = MBUFD+2
16923 035654 005012 CLR (R2) ;MAKE [DEST] = 000000
16924 035656 000257 CCC ;CLEAR FLAGS
16925 035660 000264 264 ;N:C = 0100
16926
16927 035662 011543 I0467: MOV (R5),-(R3) ;TEST THE MOV - SM1,DM4
16928
16929 035664 100003 BPL E10467 ;N:C = 1000 ?
16930 035666 001402 BEQ E10467
16931 035670 102401 BVS E10467
16932 035672 103002 BCC A0467
16933
16934 035674 104005 E10467: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16935 035676 035650 R0467 ;ERROR LOOP RETURN
16936
16937 035700 020203 A0467: CMP R2,R3 ;DID MOV DECREMENT DEST REG ?
16938 035702 001402 BEQ B0467 ;BR IF YES
16939
16940 035704 104005 E20467: ERRORS ;MOV FAILED TO UPDATE DEST REG
16941 035706 035650 R0467 ;ERROR LOOP RETURN
16942
16943 035710 020412 B0467: CMP R4,(R2) ;RESULT CORRECT ??
16944 035712 001404 BEQ 00467 ;BR IF YES
16945
16946 035714 005003 CLR R3 ;GET THE WAS DATA
16947 035716 051203 BIS (R2),R3
16948 035720 104000 E30467: ERROR ;MOV DELIVERED THE WRONG RESULT
16949 035722 035650 R0467 ;ERROR LOOP RETURN
16950
16951 035724 000004 00467: SCOPE ;CALL SCOPE LOOP UTILITY
16952

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16953 ; *****
16954 ; .SBTTL T0470 MOV SM2,DM4 TEST - <N:C> = 0100
16955 ; *****
16956
16957 ;MICROPROGRAMMING / LOGIC INFORMATION
16958
16959 ;ROM SEQ: [142,240,250,174,257,200,125,375,016] FC 1,2,4,8
16960
16961 ;ACT BUTS: 37(004)100,142 / 35(240)140,174 / 22(174)200,200 / 16(125)016,016
16962
16963 ;EXEC: [200]ALUC=LLLLL :[125] D = 177777
16964
16965 ;CODES: [125] SPS=3 / N:C = 1000
16966
16967 ;SYNC: B05J2 (-) T = 3.2 USEC
16968
16969 ;KEY SIG: K3-3 SM=2L / K3-3 DM=4L / K3-3 MOV L / K5-5 BCON (1+2) H
16970
16971 035726 012700 000470 T0470: MOV #0470,R0 ;LOAD R0 WITH TEST NO.
16972 035732 013701 035764 MOV #I0470,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
16973 035736 005004 CLR R4 ;RESULT S / B = 177777
16974 035740 005104 COM R4
16975 035742 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
16976 035746 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA+2
16977 035752 012703 067604 R0470: MO\ #MBUFO+2,R3 ;BASE DEST ADDR = MBUFO+2
16978 035756 005012 CLR (R2) ;MAKE [DEST] = 000000
16979 035760 000257 CCC ;CLEAR FLAGS
16980 035762 000264 264 ;N:C = 0100
16981
16982 035764 012543 I0470: MOV (R5)+,-(R3) ;TEST THE MOV - SM2,DM4
16983
16984 035766 100003 BPL E10470 ;N:C = 1000 ?
16985 035770 001402 BEQ E10470
16986 035772 102401 BVS E10470
16987 035774 103002 BCC A0470
16988
16989 035776 104005 E10470: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
16990 036000 035752 R0470 ;ERROR LOOP RETURN
16991
16992 036002 020203 A0470: CMP R2,R3 ;DID MOV INCREMENT DEST REG ?
16993 036004 001402 BEQ B0470 ;BR IF YES
16994
16995 036006 104005 E20470: ERRORS ;MOV FAILED TO UPDATE DEST REG
16996 036010 035752 R0470 ;ERROR LOOP RETURN
16997
16998 036012 020412 B0470: CMP R4,(R2) ;RESULT CORRECT ??
16999 036014 001404 BEQ 00470 ;BR IF YES
17000
17001 036016 005003 CLR R3 ;GET THE WAS DATA
17002 036020 051203 BIS (R2),R3
17003 036022 104000 E30470: ERROR ;MOV DELIVERED THE WRONG RESULT
17004 036024 035752 R0470 ;ERROR LOOP RETURN
17005
17006 036026 000004 00470: SCOPE ;CALL SCOPE LOOP UTILITY
17007
    
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K01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 425
 DBGEAB.CMB T0470 MOV SM2,DM4 TEST - <N:C> = 0100

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17008 ; *****
17009 ; .SBTTL T0471 MOV SM1,DM4 TEST - <N:C> = 1011
17010 ; *****
17011 ;
17012 ;MICROPROGRAMMING / LOGIC INFORMATION
17013 ;
17014 ;ROM SEQ: [141,247,250,174,257,200,125,375,016] FC 1,2,4,8
17015 ;
17016 ;ACT BUTS: 37(004)100,141 / 35(247)120,174 / 22(174)200,200 / 16(125)016,016
17017 ;
17018 ;EXEC: [200]ALUC=LLLLL : [125] D = 000000
17019 ;
17020 ;CODES: [125] SPS=3 / N:C = 0101
17021 ;
17022 ;SYNC: B05J2 (-) T = 3.2 USEC
17023 ;
17024 ;KEY SIG: K3-3 SM=1L / K3-3 DM=4L / K3-3 MOV L / K5-5 BCON (1+2) H
17025 ;
17026 036030 012700 000471 T0471: MOV #0471,R0 ;LOAD R0 WITH TEST NO.
17027 036034 013701 036066 MOV #10471,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17028 036040 005004 CLR R4 ;RESULT S / B = 000000
17029 036042 012702 067602 MOV #MBOFO,R2 ;DEST ADDR = MBOFO
17030 036046 012705 067612 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
17031 036052 012703 067604 R0471: MOV #MBOFO+2,R3 ;BASE DEST ADDR = MBOFO+2
17032 036056 005012 CLR (R2) ;MAKE [DEST] = 177777
17033 036060 005112 COM (R2)
17034 036062 000257 CCC ;CLEAR FLAGS
17035 036064 000273 273 ;N:C = 1011
17036 ;
17037 036066 011543 I0471: MOV (RS),-(R3) ;TEST THE MOV - SM1,DM4
17038 ;
17039 036070 100403 BMI E10471 ;N:C = 0101 ?
17040 036072 001002 BNE E10471
17041 036074 102401 BVS E10471
17042 036076 103402 BCS A0471
17043 ;
17044 036100 104005 E10471: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17045 036102 036052 R0471 ;ERROR LOOP RETURN
17046 ;
17047 036104 020203 A0471: CMP R2,R3 ;DID MOV INCREMENT DEST REG ?
17048 036106 001402 BEQ B0471 ;BR IF YES
17049 ;
17050 036110 104005 E20471: ERRORS ;MOV FAILED TO UPDATE DEST REG
17051 036112 036052 R0471 ;ERROR LOOP RETURN
17052 ;
17053 036114 020412 B0471: CMP R4,(R2) ;RESULT CORRECT ??
17054 036116 001404 BEQ 00471 ;BR IF YES
17055 ;
17056 036120 005003 CLR R3 ;GET THE WAS DATA
17057 036122 051203 BIS (R2),R3
17058 036124 104000 E30471: ERROR ;MOV DELIVERED THE WRONG RESULT
17059 036126 036052 R0471 ;ERROR LOOP RETURN
17060 ;
17061 036130 000004 00471: SCOPE ;CALL SCOPE LOOP UTILITY
17062 ;
  
```

L01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 426
 DBQEAB.CMB T0471 MOV SM1,DM4 TEST - <N:C> = 1011

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17063 ; *****
17064 ; .SBTTL T0472 MOV SM2,DM4 TEST - <N:C> = 1011
17065 ; *****
17066
17067 ;MICROPROGRAMMING / LOGIC INFORMATION
17068
17069 ;ROM SEQ: [142,240,250,174,257,200,125,375,016] FC 1,2,4,8
17070
17071 ;ACT BUTS: 37[004]100,142 / 35[240]120,174 / 22[174]200,200 / 16[125]016,016
17072
17073 ;EXEC: [200]ALUC=LLLLL :[125] D = 000000
17074
17075 ;CODES: [125] SPS=3 / N:C = 0101
17076
17077 ;SYNC: B05J2 (-) T = 3.2 USEC
17078
17079 ;KEY SIG: K3-3 SM=2L / K3-3 DM=4L / K3-3 MOV L / K5-5 BCON (1+2) H
17080
17081 036132 012700 000472 T0472: MOV #0472,R0 ;LOAD R0 WITH TEST NO.
17082 036136 013701 036170 MOV #10472,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17083 036142 005004 CLR R4 ;RESULT S / B = 000000
17084 036144 012702 067602 MOV #MBOFD,R2 ;DEST ADDR = MBOFD
17085 036150 012705 067612 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
17086 036154 012703 067604 R0472: MOV #MBOFD+2,R3 ;BASE DEST ADDR = MBOFD+2
17087 036160 005012 CLR (R2) ;MAKE [DEST] = 177777
17088 036162 005112 COM (R2)
17089 036164 000257 CCC ;CLEAR FLAGS
17090 036166 000273 273 ;N:C = 1011
17091
17092 036170 012543 I0472: MOV (R5)+,-(R3) ;TEST THE MOV - SM2,DM4
17093
17094 036172 100403 BMI E10472 ;N:C = 0101 ?
17095 036174 001002 BNE E10472
17096 036176 102401 BVS E10472
17097 036200 103402 BCS A0472
17098
17099 036202 104005 E10472: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17100 036204 036154 R0472 ;ERROR LOOP RETURN
17101
17102 036206 020203 A0472: CMP R2,R3 ;DID MOV INCREMENT DEST REG ?
17103 036210 001402 BEQ B0472 ;BR IF YES
17104
17105 036212 104005 E20472: ERRORS ;MOV FAILED TO UPDATE DEST REG
17106 036214 036154 R0472 ;ERROR LOOP RETURN
17107
17108 036216 020412 B0472: CMP R4,(R2) ;RESULT CORRECT ??
17109 036220 001404 BEQ 00472 ;BR IF YES
17110
17111 036222 005003 CLR R3 ;GET THE WAS DATA
17112 036224 051203 BIS (R2),R3
17113 036226 104000 E30472: ERROR ;MOV DELIVERED THE WRONG RESULT
17114 036230 036154 R0472 ;ERROR LOOP RETURN
17115
17116 036232 000004 00472: SCOPE ;CALL SCOPE LOOP UTILITY
17117

```

MO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 427
 DBQEAB.CMB T0472 MOV SM2,DM4 TEST - <N:C> = 1011

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17118 ; *****
17119 ; .SBTTL T0473 MOV SM1,DM5 TEST - <N:C> = 0100
17120 ; *****
17121 ; MICROPROGRAMMING / LOGIC INFORMATION
17122 ; ROM SEQ: [141,247,250,175,207,210,200,125,375,016] FC 1,2,4,8
17123 ; ACT BUTS: 37[004]100,141 / 35[247]120,175 / 22[207]200,200 / 16[125]016,016
17124 ; EXEC: [200]ALUC=LLLLL : [125] D = 177777
17125 ; CODES: [125] SPS=3 / N:C = 1000
17126 ; SYNC: B05J2 (-) T = 4 USEC
17127 ; KEY SIG: K3-3 SM=1L / K3-3 DM=5L / K3-3 MOV L / K5-5 BC01 H
17128
17129
17130
17131
17132
17133
17134
17135
17136 036234 012700 000473 T0473: MOV #0473,R0 ;LOAD R0 WITH TEST NO.
17137 036240 013701 036272 MOV #10473,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17138 036244 005004 CLR R4 ;RESULT S / B = 177777
17139 036246 005104 COM R4
17140 036250 012702 067602 MOV #MBOFD,R2 ;DEST ADDR = MBOFD
17141 036254 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA+2
17142 036260 012703 067600 R0473: MOV #ATA+12,R3 ;BASE DEST ADDR = ATA+12
17143 036264 005012 CLR (R2) ;MAKE [DEST] = 000000
17144 036266 000257 CCC ;CLEAR FLAGS
17145 036270 000264 264 ;N:C = 0100
17146
17147 036272 011553 I0473: MOV (R5),2-(R3) ;TEST THE MOV - SM1,DM5
17148
17149 036274 100C03 BPL E10473 ;N:C = 0100 ?
17150 036276 001402 BEQ E10473
17151 036300 102401 BVS E10473
17152 036302 103002 BCC A0473
17153
17154 036304 104005 E10473: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17155 036306 036260 R0473 ;ERROR LOOP RETURN
17156
17157 036310 022703 067576 A0473: CMP #ATA+10,R3 ;DID MOV DECREMENT DEST REG ?
17158 036314 001402 BEQ B0473 ;BR IF YES
17159
17160 036316 104005 E20473: ERRORS ;MOV FAILED TO UPDATE DEST REG
17161 036320 036260 R0473 ;ERROR LOOP RETURN
17162
17163 036322 020412 B0473: CMP R4,(R2) ;RESULT CORRECT ??
17164 036324 001404 BEQ 00473 ;BR IF YES
17165
17166 036326 005003 CLR R3 ;GET THE WAS DATA
17167 036330 051203 BIS (R2),R3
17168 036332 104000 E30473: ERROR ;MOV DELIVERED THE WRONG RESULT
17169 036334 036260 R0473 ;ERROR LOOP RETURN
17170
17171 U36336 000004 00473: SCOPE ;CALL SCOPE LOOP UTILITY
17172

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NO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 428
 DBQEAB.CMB T0473 MOV SM1,DMS TEST - <N:C> = 0100

```

17173 ; *****
17174 ; .SBTTL T0474 MOV SM2,DMS TEST - <N:C> = 0100
17175 ; *****
17176
17177 ;MICROPROGRAMMING / LOGIC INFORMATION
17178
17179 ;ROM SEQ: [142,240,250,175,207,210,200,125,375,016] FC 1,2,4,8
17180
17181 ;ACT BUTS: 37(004)100,142 / 35(240)120,175 / 22(207)200,200 / 16(125)016,016
17182
17183 ;EXEC: [200]ALUC=LLLLL : [125] D = 177777
17184
17185 ;CODES: [125] SPS=3 / N:C = 1000
17186
17187 ;SYNC: B05J2 (-) T = 4 USEC
17188
17189 ;KEY SIG: K3-3 SM=2L / K3-3 DM=5L / K3-3 MOV L / K5-5 BCO1 H
17190 ; K5-5 BCON (1+2) H
17191
17192 036340 012700 000474 T0474: MOV #0474,R0 ;LOAD R0 WITH TEST NO.
17193 036344 013701 036376 MOV #10474,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17194 036350 005004 CLR R4 ;RESULT S / B = 177777
17195 036352 005104 COM R4
17196 036354 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
17197 036360 012705 067614 MOV #DWT+2,R5 ;SOURCE ADDR = DWT+2
17198 036364 012703 067600 R0474: MOV #ATA+12,R3 ;BASE DEST ADDR = ATA+12
17199 036370 005012 CLR (R2) ;MAKE (DEST) = 00000
17200 036372 000257 CCC ;CLEAR FLAGS
17201 036374 000264 264 ;N:C = 1000
17202
17203 036376 012553 I0474: MOV (R5)+,2-(R3) ;TEST THE MOV - SM2,DMS
17204
17205 036400 100003 BPL E10474 ;N:C = 1000 ?
17206 036402 001402 BEQ E10474
17207 036404 102401 BVS E10474
17208 036406 103002 BCC A0474
17209
17210 036410 104005 E10474: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17211 036412 036364 R0474 ;ERROR LOOP RETURN
17212
17213 036414 022703 067576 A0474: CMP #ATA+10,R3 ;DID MOV DECREMENT DEST REG ?
17214 036420 001402 BEQ B0474 ;BR IF YES
17215
17216 036422 104005 E20474: ERRORS ;MOV FAILED TO UPDATE DEST REG
17217 036424 036364 R0474 ;ERROR LOOP RETURN
17218
17219 036426 020412 B0474: CMP R4,(R2) ;RESULT CORRECT ??
17220 036430 001404 BEQ 00474 ;BR IF YES
17221
17222 036432 005003 CLR R3 ;GET THE WAS DATA
17223 036434 051203 BIS (R2),R3
17224 036436 104000 E30474: ERROR ;MOV DELIVERED THE WRONG RESULT
17225 036440 036364 R0474 ;ERROR LOOP RETURN
17226
17227 036442 000004 00474: SCOPE ;CALL SCOPE LOOP UTILITY
17228
  
```

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17229 ; *****
17230 ; .SBTTL T0475 MOV SM1,DMS TEST - (N:C) = 1011
17231 ; *****
17232 ; MICROPROGRAMMING / LOGIC INFORMATION
17233 ; ROM SEQ: [141,247,250,175,207,210,200,125,375,016] FC 1,2,4,8
17234 ; ACT BLTS: 37(004)100,141 / 35(247)120,175 / 22(207)200,200 / 16(125)016,016
17235 ; EXEC: [200]ALUC=LLLLL : [125] D = 000000
17236 ; CODES: [125] SPS=3 / N:C = 0101
17237 ; SYNC: B05J2 (-) T = 4 USEC
17238 ; KEY SIG: K3-3 SM=1L / K3-3 DM=5L / K3-3 MOV L / K5-5 BCO1 H
17239
17240
17241
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17245
17246
17247 036444 012700 000475 T0475: MOV #0475,R0 ;LOAD R0 WITH TEST NO.
17248 036450 013701 036502 MOV #I0475,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17249 036454 005004 CLR R4 ;RESULT S / B = 000000
17250 036456 012702 067602 MOV #M0475,R2 ;DEST ADDR = M0475
17251 036462 012705 067612 MOV #D0475,R5 ;SOURCE ADDR = D0475
17252 036466 012703 067600 R0475: MOV #ATA+12,R3 ;BASE DEST ADDR = ATA+12
17253 036472 005012 CLR (R2) ;MAKE [DEST] = 177777
17254 036474 005112 COM (R2)
17255 036476 000257 CCC ;CLEAR FLAGS
17256 036500 000273 273 ;N:C = 1011
17257
17258 036502 011553 I0475: MOV (R5),#-(R3) ;TEST THE MOV - SM1,DMS
17259
17260 036504 100403 BMI E10475 ;N:C = 0101 ?
17261 036506 001002 BNE E10475
17262 036510 102401 BVS E10475
17263 036512 103402 BCS A0475
17264
17265 036514 104005 E10475: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17266 036516 036466 R0475 ;ERROR LOOP RETURN
17267
17268 036520 022703 067576 A0475: CMP #ATA+10,R3 ;DID MOV DECREMENT DEST REG ?
17269 036524 001402 BEQ B0475 ;BR IF YES
17270
17271 036526 104005 E20475: ERRORS ;MOV FAILED TO UPDATE DEST REG
17272 036530 036466 R0475 ;ERROR LOOP RETURN
17273
17274 036532 020412 B0475: CMP R4,(R2) ;RESULT CORRECT ??
17275 036534 001404 BEQ B0475 ;BR IF YES
17276
17277 036536 005003 CLR R3 ;GET THE WAS DATA
17278 036540 051203 BIS (R2),R3
17279 036542 104000 E30475: ERROR ;MOV DELIVERED THE WRONG RESULT
17280 036544 036466 R0475 ;ERROR LOOP RETURN
17281
17282 036546 000004 O0475: SCOPE ;CALL SCOPE LOOP UTILITY
17283
    
```



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17284 ; *****
17285 ; .SBTTL T0476 MOV SM2,DMS TEST - (N:C) = 1011
17286 ; *****
17287 ; MICROPROGRAMMING / LOGIC INFORMATION
17288 ; ROM SEQ: [142,240,250,175,207,210,200,125,375,016] FC 1,2,4,8
17289 ; ACT BUTS: 37(004)100,142 / 35(240)120,175 / 22(207)200,200 16(125)016,016
17290 ; EXEC: [200]ALUC=LLLLL : [125] D = 000000
17291 ; CODES: [125] SPS=3 / N:C = 0101
17292 ; SYNC: BOSJ2 (-) T = 4 USEC
17293 ; KEY SIG: K3-3 SM=2L / K3-3 DM=5L / K3-3 MOV L / K5-5 BCOI H
17294 ; K5-5 BCON (1+2) H
17295
17296
17297
17298
17299
17300
17301
17302
17303 036550 012700 000476 T0476: MOV #0476,R0 ;LOAD R0 WITH TEST NO.
17304 036554 013701 036606 MOV #I0476,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17305 036560 005004 CLR R4 ;RESULT S / B = 000000
17306 036562 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
17307 036566 012705 067612 MOV #DWTAR5 ;SOURCE ADDR = DWTAR5
17308 036572 012703 067600 R0476: MOV #ATA+12,R3 ;BASE DEST ADDR = ATA+12
17309 036576 005012 CLR (R2) ;MAKE [DEST] = 177777
17310 036600 005112 COM (R2)
17311 036602 000257 CCC ;CLEAR FLAGS
17312 036604 000273 273 ;N:C = 1011
17313
17314 036606 011553 I0476: MOV (R5),#-(R3) ;TEST THE MOV - SM2,DMS
17315
17316 036610 100403 BMI E10476 ;N:C = 0101 ?
17317 036612 001302 BNE E10476
17318 036614 102401 BVS E10476
17319 036516 103402 BCS A0476
17320
17321 036620 104005 E10476: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17322 036622 036572 R0476 ;ERROR LOOP RETURN
17323
17324 036624 022703 067576 A0476: CMP #ATA+10,R3 ;DID MOV DECREMENT DEST REG ?
17325 036630 001402 BEQ B0476 ;BR IF YES
17326
17327 036632 104005 E20476: ERRORS ;MOV FAILED TO UPDATE DEST REG
17328 036634 036572 R0476 ;ERROR LOOP RETURN
17329
17330 036636 020412 B0476: CMP R4,(R2) ;RESULT CORRECT ??
17331 036640 001404 BEQ 00476 ;BR IF YES
17332
17333 036642 005003 CLR R3 ;GET THE WAS DATA
17334 036644 051203 BIS (R2),R3
17335 036646 104000 E30476: ERROR ;MOV DELIVERED THE WRONG RESULT
17336 036650 036572 R0476 ;ERROR LOOP RETURN
17337
17338 036652 000004 00476: SCOPE ;CALL SCOPE LOOP UTILITY
17339

```

17340 : *****
17341 : .SBTTL T0477 MOV SM1,DM6 TEST - <N:C> = 0100
17342 : *****
17343

; MICROPROGRAMMING / LOGIC INFORMATION

; ROM SEQ: [141,247,250,177,206,212,200,125,375,016] FC 1,2,4,8
; ACT BUTS: 37(004)100,141 / 35(247)120,177 / 17(177)212,212 / 21(206)200,200
; / 16(125)016,016
; EXEC: (200)ALUC=LLLLL : (125) D = 177777
; CODES: (125) SPS=3 / N:C = 1000
; SYNC: B05J2 (-) T = 4 USEC
; KEY SIG: K3-3 SM=1L / K3-3 DM=6L K3-3 MOV L

17358
17359 036654 012700 000477
17360 036660 013701 036712
17361 036664 005004
17362 036666 005104
17363 036670 012702 067610
17364 036674 012705 067614
17365 036700 012703 067602
17366 036704 005012
17367 036706 000257
17368 036710 000264
17369
17370 036712 011563 000006
17371
17372 036716 100003
17373 036720 001402
17374 036722 102401
17375 036724 103002
17376
17377 036726 104005
17378 036730 036700
17379
17380 036732 020412
17381 036734 001404
17382
17383 036736 005003
17384 036740 051203
17385 036742 104000
17386 036744 036700
17387
17388 036746 000004
17389

T0477: MOV #0477,R0 ;LOAD R0 WITH TEST NO.
MOV #T0477,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
CLR R4 ;RESULT S / B = 177777
COM R4
MOV #M0477+6,R2 ;DEST ADDR = M0477+6
MOV #DM0477+2,R5 ;SOURCE ADDR = DM0477+2
R0477: MOV #M0477,R3 ;BASE DEST ADDR = M0477
CLR (R2) ;MAKE (DEST) = 000000
CCC ;CLEAR FLAGS
264 ;N:C = 0100

I0477: MOV (R5),6(R3) ;TEST THE MOV - SM1,DM6

E10477: BPL E10477 ;N:C = 1000 ?
BEQ E10477
BVS E10477
BCC A0477

E10477: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
R0477 ;ERROR LOOP RETURN

A0477: CMP R4,(R2) ;RESULT CORRECT ??
BEQ 00477 ;BR IF YES

E20477: CLR R3 ;GET THE WAS DATA
BIS (R2),R3
ERROR R0477 ;MOV DELIVERED THE WRONG RESULT
R0477 ;ERROR LOOP RETURN

00477: SCOPE ;CALL SCOPE LOOP UTILITY

E02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 432
 DBQEAB.CMB T0477 MOV SM1,DM6 TEST - <N:C> = 0100

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17390 ; *****
17391 ; .SBTTL T0500 MOV SM2,DM6 TEST - <N:C> = 0100
17392 ; *****
17393
17394 ;MICROPROGRAMMING / LOGIC INFORMATION
17395
17396 ;ROM SEQ: [142,240,250,177,206,212,200,125,375,016] FC 1,2,4,8
17397
17398 ;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,212 / 21(206)200,200
17399 ; / 16(125)016,016
17400
17401 ;EXEC: (200)ALUC=LLLLL : (125) D = 177777
17402
17403 ;CODES: (125) SPS=3 / N:C = 1000
17404
17405 ;SYNC: B05J2 (-) T = 4 USEC
17406
17407 ;KEY SIG: K3-3 SM=1L / K3-3 DM=6L / K3-3 MOV L / K5-5 BCON (1+2) H
17408
17409 036750 012700 000500 T0500: MOV .J500,R0 ;LOAD R0 WITH TEST NO.
17410 036754 013701 037006 ;LOAD R1 WITH TEST INSTRUCTION WORD
17411 036760 005004 CLR R4 ;RESULT S / B = 177777
17412 036762 005104 COM R4
17413 036764 012702 067610 MOV #M0UF0+6,R2 ;DEST ADDR = M0UF0+6
17414 036770 012705 067614 MOV #DWT0+2,R5 ;SOURCE ADDR = DWT0+2
17415 036774 012703 067602 R0500: MOV #M0UF0,R3 ;BASE DEST ADDR = M0UF0
17416 037000 005012 CLR (R2) ;MAKE (DEST) = 000000
17417 037002 000257 CCC ;CLEAR FLAGS
17418 037004 000264 264 ;N:C = 0100
17419
17420 037006 012563 000006 I0500: MOV (R5)+,6(R3) ;TEST THE MOV - SM2,DM6
17421
17422 037012 100003 BPL E10500 ;N:C = 1000 ?
17423 037014 001402 BEQ E10500
17424 037016 102401 BVS E10500
17425 037020 103002 BCC A0500
17426
17427 037022 104005 E10500: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17428 037024 036774 R0500 ;ERROR LOOP RETURN
17429
17430 037026 020412 A0500: CMP R4,(R2) ;RESULT CORRECT ??
17431 037030 001404 BEQ 00500 ;BR IF YES
17432
17433 037032 005003 CLR R3 ;GET THE WAS DATA
17434 037034 051203 BIS (R2),R3
17435 037036 104000 E20500: ERROR ;MOV DELIVERED THE WRONG RESULT
17436 037040 036774 R0500 ;ERROR LOOP RETURN
17437
17438 037042 000004 00500: SCOPE ;CALL SCOPE LOOP UTILITY
17439

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17440 ; *****
17441 ; .SBTTL T0501 MOV SM1,DM6 TEST - <N:C> = 1011
17442 ; *****
17443 ;
17444 ;MICROPROGRAMMING / LOGIC INFORMATION
17445 ;
17446 ;ROM SEQ: [141,247,250,177,206,212,200,125,375,016] FC 1,2,4,8
17447 ;
17448 ;ACT BUTS: 37(004)100,141 / 35(247)120,177 / 17(177)212,212 / 21(206)200,200
17449 ; / 16(125)016,016
17450 ;
17451 ;EXEC: [200]ALUC=LLLLL :[125] D = 000000
17452 ;
17453 ;CODES: [125] SPS=3 / N:C = 0101
17454 ;
17455 ;SYNC: B05J2 (-) T = 4 USEC
17456 ;
17457 ;KEY SIG: K3-3 SM=1L / K3-3 DM=6L / K3-3 MOV L
17458 ;
17459 037044 012700 000501 T0501: MOV #0501,R0 ;LOAD R0 WITH TEST NO.
17460 037050 013701 037102 MOV #10501,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17461 037054 005004 CLR R4 ;RESULT S / B = 000000
17462 037056 012702 067610 MOV #MBUFO+6,R2 ;DEST ADDR = MBUFO+6
17463 037062 012705 067612 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
17464 037066 012703 067602 R0501: MOV #MBUFO,R3 ;BASE DEST ADDR = MBUFO
17465 037072 005012 CLR (R2) ;MAKE [DEST] = 177777
17466 037074 005112 COM (R2)
17467 037076 000257 CCC ;CLEAR FLAGS
17468 037100 000273 273 ;N:C = 1011
17469 ;
17470 037102 011563 000006 I0501: MOV (R5),6(R3) ;TEST THE MOV - SM1,DM6
17471 ;
17472 037106 100403 BMI E10501 ;N:C = 0101 ?
17473 037110 001002 BNE E10501
17474 037112 102401 BVS E10501
17475 037114 103402 BCS A0501
17476 ;
17477 037116 104005 E10501: ERROR5 ;MOV FAILED TO ALTER CODES PROPERLY
17478 037120 037066 R0501 ;ERROR LOOP RETURN
17479 ;
17480 037122 020412 A0501: CMP R4,(R2) ;RESULT CORRECT ??
17481 037124 001404 BEQ 00501 ;BR IF YES
17482 ;
17483 037126 005003 CLR R3 ;GET THE WAS DATA
17484 037130 051203 BIS (R2),R3
17485 037132 104000 E20501: ERROR ;MOV DELIVERED THE WRONG RESULT
17486 037134 037066 R0501 ;ERROR LOOP RETURN
17487 ;
17488 037136 000004 00501: SCOPE ;CALL SCOPE LOOP UTILITY
17489 ;
    
```

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17490 ; *****
17491 ; .SBTTL T0502 MOV SM2,DM6 TEST - <N:C> = 1011
17492 ; *****
17493 ;MICROPROGRAMMING / LOGIC INFORMATION
17494 ;ROM SEQ: [142,240,250,177,206,212,200,125,375,016] FC 1,2,4,8
17495 ;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,212 / 21(206)200,200
17496 ; / 16(125)016,016
17497 ;EXEC: [200]ALUC=LLLLL :[125] D = 000000
17498 ;CODES: [125] SPS=3 / N:C = 0101
17499 ;SYNC: B05J2 (-) T = 4 USEC
17500 ;KEY SIG: K3-3 SM=2L / K3-3 DM=6L / K3-3 MOV L / K5-5 BCON (1+2) H
17501
17502 T0502: MOV #0502,R0 ;LOAD R0 WITH TEST NO.
17503 MOV #10502,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17504 CLR R4 ;RESULT S / B = 000000
17505 MOV #MBUFO+6,R2 ;DEST ADDR = MBUFO+6
17506 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
17507 R0502: MOV #MBUFO,R3 ;BASE DEST ADDR = MBUFO
17508 CLR (R2) ;MAKE [DEST] = 177777
17509 COM (R2)
17510 CCC ;CLEAR FLAGS
17511 273 ;N:C = 1011
17512
17513 I0502: MOV (R5)+,6(R3) ;TEST THE MOV - SM2,DM6
17514 BMI E10502 ;N:C = 0101 ?
17515 BNE E10502
17516 BVS E10502
17517 BCS A0502
17518
17519 E10502: ERROR5 ;MOV FAILED TO ALTER CODES PROPERLY
17520 R0502 ;ERROR LOOP RETURN
17521
17522 R0502: CMP R4,(R2) ;RESULT CORRECT ??
17523 BEQ 00502 ;BR IF YES
17524
17525 E20502: CLR R3 ;GET THE WAS DATA
17526 BIS (R2),R3
17527 ERROR ;MOV DELIVERED THE WRONG RESULT
17528 R0502 ;ERROR LOOP RETURN
17529
17530 00502: SCOPE ;CALL SCOPE LOOP UTILITY
17531
17532
17533
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17535
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17537
17538
17539
    
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H02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 435
 DBQEAB.CMB T0502 MOV SM2,DM6 TEST - (N:C) = 1011

```
17540 ; *****
17541 ; .SBTTL T0503 MOV SM1,DM7 TEST - (N:C) = 0100
17542 ; *****
17543
```

```
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ: [141,247,250,177,206,213,207,210,200,125,375,016] FC 1,2,4,8
;ACT BUTS: 37(004)100,141 / 35(247)120,177 / 17(177)212,213 / 22(207)200,200
; / 16(125)016,016
;EXEC: [200]ALUC=LLLLL : [125] D = 177777
;CODES: [125] SPS=3 / N:C = 1000
;SYNC: B05J2 (-) T = 5 USEC
;KEY SIG: K3-3 SM=1L / K3-3 DM=7L / K3-3 MOV L
```

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17558
17559 037234 012700 000503
17560 037240 013701 037272
17561 037244 005004
17562 037246 005104
17563 037250 012702 067602
17564 037254 012705 067614
17565 037260 012703 067566
17566 037264 005012
17567 037266 000257
17568 037270 000264
17569
17570 037272 011573 000010
17571
17572 037276 100003
17573 037300 001402
17574 037302 102401
17575 037304 103002
17576
17577 037306 104005
17578 037310 037260
17579
17580 037312 020412
17581 037314 001404
17582
17583 037316 005003
17584 037320 051203
17585 037322 104000
17586 037324 037260
17587
17588 037326 000004
17589
```

```
T0503: MOV #0503,R0 ;LOAD R0 WITH TEST NO.
MOV #I0503,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
CLR R4 ;RESULT S / B = 177777
COM R4
MOV #MBUFO,R2 ;DEST ADDR = MBUFO
MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA+2
R0503: MOV #ATA,R3 ;BASE DEST ADDR = ATA
CLR (R2) ;MAKE [DEST] = 000000
CCC ;CLEAR FLAGS
264 ;N:C = 0100

I0503: MOV (R5),#I0(R3) ;TEST THE MOV - SM1,DM7
;N:C = 1000 ?

E10503: ERRORS
R0503 ;MOV FAILED TO ALTER CODES PROPERLY
;ERROR LOOP RETURN

A0503: CMP R4,(R2) ;RESULT CORRECT ??
BEQ 00503 ;BR IF YES

E20503: CLR R3 ;GET THE WAS DATA
BIS (R2),R3
ERROR
R0503 ;MOV DELIVERED THE WRONG RESULT
;ERROR LOOP RETURN

00503: SCOPE ;CALL SCOPE LOOP UTILITY
```

```

17590 : *****
17591 : .SBTTL T0504 MOV SM2,DM7 TEST - <N:C> = 0100
17592 : *****
17593 :
17594 ;MICROPROGRAMMING / LOGIC INFORMATION
17595 :
17596 ;ROM SEQ: [142,240,250,177,206,213,207,210,200,125,375,016] FC 1,2,4,8
17597 :
17598 ;ACT BUTS: 37(004)100,142 / 35(240)120,177 / 17(177)212,213 / 21(207)200,200
17599 ; / 16(125)016,016
17600 :
17601 ;EXEC: [200]ALUC=LLLLL : [125] D = 177777
17602 :
17603 ;CODES: [125] SPS=3 / N:C = 1000
17604 :
17605 ;SYNC: B05J2 (-) T = 5 USEC
17606 :
17607 ;KEY SIG: K3-3 SM=2L / K3-3 DM=7L / K3-3 MOV L / K5-5 BCON (1+2) H
17608 :
17609 037330 012700 000504 T0504: MOV #0504,R0 ;LOAD R0 WITH TEST NO.
17610 037334 013701 037400 MOV #I0504,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17611 037340 032737 001000 066642 BIT #1000,#BPTLOC ;BREAKPOINT HALT SET ??
17612 037346 001401 BEQ .+4 ;BR IF NOT
17613 037350 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
17614 037352 005004 CLR R4 ;RESULT S / B = 177777
17615 037354 005104 COM R4
17616 037356 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
17617 037362 012705 067614 MOV #DWTA+2,R5 ;SOURCE ADDR = DWTA+2
17618 037366 012703 067566 R0504: MOV #ATA,R3 ;BASE DEST ADDR = ATA
17619 037372 005012 CLR (R2) ;MAKE [DEST] = 000000
17620 037374 000257 CCC ;CLEAR FLAGS
17621 037376 000264 264 ;N:C = 0100
17622 :
17623 037400 011573 000010 I0504: MOV (R5),#10(R3) ;TEST THE MOV - SM2,DM7
17624 :
17625 037404 100003 BPL E10504 ;N:C = 1000 ?
17626 037406 001402 BEQ E10504
17627 037410 102401 BVS E10504
17628 037412 103002 BCC A0504
17629 :
17630 037414 104005 E10504: ERROR5 ;MOV FAILED TO ALTER CODES PROPERLY
17631 037416 037366 R0504 ;ERROR LOOP RETURN
17632 :
17633 037420 020412 A0504: CMP R4,(R2) ;RESULT CORRECT ??
17634 037422 001404 BEQ 00504 ;BR IF YES
17635 :
17636 037424 005003 CLR R3 ;GET THE WAS DATA
17637 037426 051203 BIS (R2),R3
17638 037430 104000 E20504: ERROR ;MOV DELIVERED THE WRONG RESULT
17639 037432 037366 R0504 ;ERROR LOOP RETURN
17640 :
17641 037434 000004 00504: SCOPE ;CALL SCOPE LOOP UTILITY
17642 :
    
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J02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 437
 DBQEAB.CMB T0504 MOV SM2,DM7 TEST - (N:C) = 0100

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17643 ; *****
17644 ; .SBTTL T0505 MOV SM1,DM7 TEST - (N:C) = 1011
17645 ; *****
17646 ;MICROPROGRAMMING / LOGIC INFORMATION
17647
17648 ;ROM SEQ: [141,247,250,177,206,213,207,210,200,125,375,016] FC 1,2,4,8
17649
17650 ;ACT BLTS: 37(004)100,141 / 35(247)120,177 / 17(177)1212,213 / 22(207)200,200
17651 ; / 16(125)016,016
17652
17653 ;EXEC: [200]ALUC=LLLLL : [125] D = 000000
17654
17655 ;CODES: [125] SPS= 3 / N:C = 0101
17656
17657 ;SYNC: B05J2 (-) T = 5 USEC
17658
17659 ;KEY SIG: K3-3 SM=1L / K3-3 DM=7L / K3-3 MOV L
17660
17661
17662 037436 012700 000505 T0505: MOV #0505,R0 ;LOAD R0 WITH TEST NO.
17663 037442 013701 037474 MOV #I0505,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17664 037446 005004 CLR R4 ;RESULT S / B = 000000
17665 037450 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
17666 037454 012705 067612 MOV #DWTA,R5 ;SOURCE ADDR = DWTA
17667 037460 012703 067566 R0505: MOV #ATA,R3 ;BASE DEST ADDR = ATA
17668 037464 005012 CLR (R2) ;MAKE [DEST] = 177777
17669 037466 005112 COM (R2)
17670 037470 000257 CCC ;CLEAR FLAGS
17671 037472 000273 273 ;N:C = 1011
17672
17673 037474 011573 000010 I0505: MOV (R5),#I0(R3) ;TEST THE MOV - SM1,DM7
17674
17675 037500 100403 BMI E10505 ;N:C = 0101 ?
17676 037502 001002 BNE E10505
17677 037504 102401 BVS E10505
17678 037506 103402 BCS A0505
17679
17680 037510 104005 E10505: ERRORS ;MOV FAILED TO ALTER CODES PROPERLY
17681 037512 037460 R0505 ;ERROR LOOP RETURN
17682
17683 037514 020412 A0505: CMP R4,(R2) ;RESULT CORRECT ??
17684 037516 001404 BEQ 00505 ;BR IF YES
17685
17686 037520 005003 CLR R3 ;GET THE WAS DATA
17687 037522 051203 BIS (R2),R3
17688 037524 104000 E20505: ERROR ;MOV DELIVERED THE WRONG RESULT
17689 037526 037460 R0505 ;ERROR LOOP RETURN
17690
17691 037530 000004 00505: SCOPE ;CALL SCOPE LOOP UTILITY
17692
  
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K02

.MAIN. MACY11 27:732) 15-OCT-76 14:58 PAGE 438
 DBGEAB.CMB T0505 MOV SM1,DM7 TEST - <N:C> = 1011

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17693 : *****
17694 .SBTTL T0506 MOV SM2,DM7 TEST - <N:C> = 1011
17695 ; *****
17696 ;MICROPROGRAMMING / LOGIC INFORMATION
17697 ;ROM SEQ: [142,240,250,177,206,213,207,210,200,125,375,016] FC 1,2,4,8
17698 ;ACT BUTS: 37[004]100,142 / 35[240]120,177 / 17[177]1212,213 / 22[207]200,200
17699 ; / 16[125]016,016
17700 ;EXEC: [200]ALUC=LLLLL :[125] D = 000000
17701 ;CODES: [125] SPS=3 / N:C = 0101
17702 ;SYNC: B05J2 (-) T = 5 USEC
17703 ;KEY SIG: K3-3 SM=2L / K3-3 DM=7L / K3-3 MOV L / K5-5 BCON (1+2) H
17704
17705 T0506: MOV #0506,R0 ;LOAD R0 WITH TEST NO.
17706 MOV #I0506,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17707 CLR R4 ;RESULT S / B = 000000
17708 MOV #M0506,R2 ;DEST ADDR = M0506
17709 MOV #D0506,R5 ;SOURCE ADDR = D0506
17710 R0506: MOV #ATA,R3 ;BASE DEST ADDR = ATA
17711 CLR (R2) ;MAKE [DEST] = 177777
17712 COM (R2)
17713 CCC ;CLEAR FLAGS
17714 273 ;N:C = 1011
17715
17716 I0506: MOV (R5),#I0(R3) ;TEST THE MOV - SM2,DM7
17717
17718 BMI E10506 ;N:C = 0101 ?
17719 BNE E10506
17720 BVS E10506
17721 BCS A0506
17722
17723 E10506: ERROR5 ;MOV FAILED TO ALTER CODES PROPERLY
17724 R0506 ;ERROR LOOP RETURN
17725
17726 A0506: CMP R4,(R2) ;RESULT CORRECT ??
17727 BEQ 00506 ;BR IF YES
17728
17729 E20506: CLR R3 ;GET THE WAS DATA
17730 BIS (R2),R3
17731 ERROR ;MOV DELIVERED THE WRONG RESULT
17732 R0506 ;ERROR LOOP RETURN
17733
17734 00506: SCOPE ;CALL SCOPE LOOP UTILITY
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17743 ; *****
17744 .SBTTL T0507 MOV SM0,DM1 TEST
17745 ; *****
17746
17747 ;MICROPROGRAMMING / LOGIC INFORMATION
17748
17749 ;ROM SEQ: [171,257,201,125,375,016] FC 1,4,8
17750
17751 ;ACT BUTS: 37[004]100,171 / 22[171]200,201 / 16[125]016,016
17752
17753 ;EXEC: [201]ALUC=LLLLL :[125]D=TEST NO.
17754
17755 ;CODES: [125] SPS=3 / N:C=X000
17756
17757 ;SYNC: B05J2 (-) T=2.42 USEC
17758
17759 ;KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=1 L
17760
17761 037626 012700 000507 T0507: MOV #0507,R0 ;LOAD R0 WITH TEST NO.
17762 037632 013701 037652 MOV #I0507,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17763 037636 012702 067602 MOV #M0507,R2 ;DEST ADDR = M0507
17764 037642 010004 MOV R0,R4 ;RESULT S / B = #T0507
17765 037644 010205 R0507: MOV R2,R5 ;R5 GETS DEST ADDR
17766 037646 005012 CLR (R2) ;[DEST] = 000000
17767 037650 000257 CCC ;SCOPE SYNC
17768
17769 037652 010015 I0507: MOV R0,(R5) ;TEST THE MOV
17770
17771 037654 020412 CMP R4,(R2) ;RESULT CORRECT ?
17772 037656 001403 BEQ 00507 ;BR IF YES
17773
17774 037660 011203 MOV (R2),R3 ;GET THE WAS DATA
17775 037662 104000 ERROR R0507 ;MOV DELIVERED THE WRONG RESULT
17776 037664 037644 ;ERROR LOOP RETURN ADDRESS
17777
17778 037666 000004 00507: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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17779 ; *****
17780 ; .SBTTL T0510 MOV SMO,DM2 TEST
17781 ; *****
17782 ; MICROPROGRAMMING / LOGIC INFORMATION
17783 ; ROM SEQ: [172,257,201,125,375,016] FC 1,4,8
17784 ; ACT BUTS: 37(004)100,172 / 22(172)200,201 / 16(125)016,016
17785 ; EXEC: [201]ALUC=LLLLL : [125]D= TEST NO.
17786 ; CODES: [125]SPS=3 / N:C=X000
17787 ; SYNC: B05J2 (-) T=2.5 USEC
17788 ; KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=2 L / K5-5 BCON(1+2) H
17789 ; K3-8 CIN00 L
17790
17791 T0510: MOV #0510,R0 ; LOAD R0 WITH TEST NO.
17792 MOV #I0510,R1 ; LOAD R1 WITH TEST INSTRUCTION WORD
17793 MOV #M0510,R2 ; DEST ADDR = M0510
17794 R0510: MOV R0,R4 ; RESULT S / B = #T0510
17795 CLR R2,R5 ; R5 GETS DEST ADDR
17796 CCC (R2) ; [DEST] = 000000
17797 ; SCOPE SYNC
17798
17799 I0510: MOV R0,(R5)+ ; TEST THE MOV
17800
17801 CMP R4,(R2) ; RESULT CORRECT ?
17802 BEQ 00510 ; BR IF YES
17803
17804 E0510: MOV (R2),R3 ; GET THE WAS DATA
17805 ERROR R0510 ; MOV DELIVERED THE WRONG RESULT
17806 R0510 ; ERROR LOOP RETURN ADDRESS
17807
17808 00510: SCOPE ; CALL THE SCOPE LOOP UTILITY
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    037670 012700 000510
    037674 013701 037714
    037700 012702 067602
    037704 010004
    037706 010205
    037710 005012
    037712 000257
    037714 010025
    037716 020412
    037720 001403
    037722 011203
    037724 104000
    037726 037706
    037730 000004
    
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17817 ; *****
17818 .SBTTL T0511 MOV SMO,DM3 TEST
17819 ; *****
17820 ;MICROPROGRAMMING / LOGIC INFORMATION
17821 ;ROM SEQ: [173,207,210,201,125,375,016] FC 1,4,8
17822 ;ACT BLTS: 37(004)100,173 / 22(207)200,201 / 16(125)016,016
17823 ;EXEC: [201]ALUC=LLLLL : [125]D= TEST NO.
17824 ;CODES: [125]SPS=3 / N:C=X000
17825 ;SYNC: B05J2 (-) T=3.2 USEC
17826 ;KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=3 L / K5-5 BCO1 H
17827
17828 T0511: MOV #0511,R0 ;LOAD R0 WITH TEST NO.
17829 MOV @#I0511,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17830 MOV #M0511,R2 ;DEST ADDR = M0511
17831 MOV R0,R4 ;RESULT S / B = #T0511
17832 R0511: MOV #ATA+10,R5 ;BASE DEST ADDR = ATA+10
17833 CLR (R2) ;[DEST] = 000000
17834 CCC ;SCOPE SYNC
17835
17836 I0511: MOV R0,@(R5)+ ;TEST THE MOV
17837
17838 CMP R4,(R2) ;CORRECT RESULT
17839 BEQ 00511 ;BR IF YES
17840
17841 E0511: MOV (R2),R3 ;GET THE WAS DATA
17842 ERROR R0511 ;MOV DELIVERED THE WRONG RESULT
17843 R0511 ;ERROR LOOP RETURN ADDRESS
17844
17845 00511: SCOPE ;CALL THE SCOPE LOOP UTILITY
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17854 ; *****
17855 ; .SBTTL TOS12 MOV SMO,DM4 TEST
17856 ; *****
17857 ; MICROPROGRAMMING / LOGIC INFORMATION
17858 ; ROM SEQ: [174,257,201,125,375,016] FC 1,4,8
17859 ; ACT BUTS: 37(004)100,174 / 22(174)200,201 / 16(125)016,016
17860 ; EXEC: [201]ALUC=LLLLL : [125]D= TEST NO.
17861 ; CODES: [125]SPS=3 / N:C=X000
17862 ; SYNC: B05J2 (-) T=2.5 USEC
17863 ; KE' SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=4 L / K5-5 BCON(1+2) H
17864 ; K3-8 CIN00 L
17865
17866 TOS12: MOV #0512,R0 ;LOAD R0 WITH TEST NO.
17867 MOV #I0512,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17868 MOV #M0512,R2 ;DEST ADDR = M0512
17869 MOV R0,R4 ;RESULT S / B = #TOS12
17870 R0512: MOV #M0512+2,R5 ;R5 CONTAINS BASE DEST ADDR
17871 CLR (R2) ;[DEST] = 000000
17872 CCC ;SCOPE SYNC
17873
17874 I0512: MOV R0,-(R5) ;TEST THE MOV
17875
17876 CMP R4,(R2) ;CORRECT RESULT ?
17877 BEQ 00512 ;BR IF YES
17878
17879 E0512: MOV (R2),R3 ;GET THE WAS DATA
17880 ERROR R0512 ;MOV DELIVERED THE WRONG RESULT
17881 R0512 ;ERROR LOOP RETURN ADDRESS
17882
17883 O0512: SCOPE ;CALL THE SCOPE LOOP UTILITY
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040042 012700 000513
 040046 013701 040070
 040052 012702 067602
 040056 010004
 040060 012705 067600
 040064 005012
 040066 000257
 040070 010055
 040072 020412
 040074 001403
 040076 011203
 040100 104000
 040102 040060
 040104 000004

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; *****
; .SBTTL T0513 MOV SMO,DM5 TEST
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [175,207,210,201,125,375,016] FC 1,4,8

;ACT BUTS:     37[004]100,175 / 22[207]200,201 / 16[125]016,016

;EXEC:         [201]ALUC=LLLLL :[125]D= TEST NO.

;CODES:        [125]SPS=3 / N:C=X000

;SYNC:         B05J2 (-) T= 3.2 USEC

;KEY SIG:      K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=5 L / K5-5 BC01 H

T0513: MOV #0513,R0 ;LOAD R0 WITH TEST NO.
        MOV #I0513,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV #MBUFO,R2 ;DEST ADDR = MBUFO
        MOV R0,R4 ;RESULT S / B = #T0513
R0513: MOV #A1A+12,R5 ;R5 CONTAINS BASE DEST ADDR
        CLR (R2) ;[DEST] = 000000
        CCC ;SCOPE SYNC

I0513: MOV R0,#-(R5) ;TEST THE MOV

        CMP R4,(R2) ;CORRECT RESULT ?
        BEQ 00513 ;BR IF YES

E0513: MOV (R2),R3 ;GET THE WAS DATA
        ERROR R0513 ;MOV DELIVERED THE WRONG RESULT
        R0513 ;ERROR LOOP RETURN ADDRESS

00513: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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040106 012700 000514
040112 013701 040134
040116 012702 067606
040122 010004
040124 012705 067602
040130 005012
040132 000257

040134 010065 000004

040140 020412
040142 001403

040144 011203
040146 104000
040150 040130

040152 000004

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; *****  
.SBTTL TOS14 MOV SMO,DM6 TEST  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [176,206,212,201,125,375,016] FC 1,4,8  
;ACT BUTS: 37(004)100,176 / 17(176)212,212 / 21(206)200,201  
; / 16(125)016,016  
;EXEC: [201]ALUC=LLLLL : [125]D= TEST NO.  
;CODES: [125]SPS=3 / N:C=X000  
;SYNC: B05J2 (-) T= 2.84 USEC  
;KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=6 L / K5-5 BCO1 H  
;K4-4 OVLAP CYCLE L  
  
TOS14: MOV #0514,R0 ;LOAD R0 WITH TEST NO.  
MOV #TOS14,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #MBUF1,R2 ;DEST ADDR = MBUF1  
MOV R0,R4 ;RESULT S / B = #TOS14  
MOV #MBUFO,R5 ;BASE DEST ADDR = MBUFO  
RDS14: CLR (R2) ;[DEST] = 000000  
CCC ;SCOPE SYNC  
  
IOS14: MOV R0,4(R5) ;TEST THE MOV  
  
CMP R4,(R2) ;RESULT CORRECT ?  
BEQ 00514 ;BR IF YES  
  
EOS14: MOV (R2),R3 ;GET THE WAS DATA  
ERROR ;MOV DELIVERED THE WRONG RESULT  
RDS14 ;ERROR LOOP RETURN ADDRESS  
  
OOS14: SCOPE ;CALL THE SCOPE LOOP UTILITY
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E03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 445
DBQEAB.CMB TOS14 MOV SMO,DM6 TEST

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17967 : *****
17968 : .SBTTL TOS15 MOVB TEST - SMO,DMO - EXTEND 1'S
17969 : *****
17970
17971 ;MICROPROGRAMMING / LOGIC INFORMATION
17972
17973 ;ROM SEQ: [170,204,003,204,001] FC 1,4
17974
17975 ;ACT BUTS: 37(004)100,170 / 20(170)000,003 / 27(003)000,001
17976
17977 ;EXEC: [170]ALUC=LLLLL :[204] AND TIME D = 177652
17978
17979 ;CODES: [204] SPS=3 / N:C = 1000
17980
17981 ;SYNC: BOSJ2 (-) T = 1.8 USEC
17982
17983 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K3-3 SM=OL / K3-3 DM=OL
17984
17985 040154 012700 000515 TOS15: MOV #0515,R0 ;LOAD R0 WITH TEST NO.
17986 040160 013701 040206 MOV #E10515,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
17987 040164 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
17988 040170 012704 177652 MOV #177652,R4 ;RESULT S / B = 177652
17989 040174 012705 000252 MOV #252,R5 ;SOURCE OP = 252
17990 040200 005003 ROS15: CLR R3 ;[DEST] = 000000
17991 040202 000257 CCC ;CLEAR FLAGS
17992 040204 000266 266 ;N:C = 0110
17993
17994 040206 110503 IOS15: MOVB R5,R3 ;TEST THE MOVB
17995
17996 040210 100003 BPL E10515 ;N:C = 1000 ?
17997 040212 001402 BEQ E10515
17998 040214 102401 BVS E10515
17999 040216 103002 BCC A0515
18000
18001 040220 104005 E10515: ERRORS ;MOVB FAILED TO ALTER CODES PROPERLY
18002 040222 040200 ROS15 ;ERROR LOOP RETURN ADDRESS
18003
18004 040224 020403 A0515: CMP R4,R3 ;RESULT CORRECT ?
18005 040226 001402 BEQ 00515 ;BR IF YES
18006
18007 040230 104000 E20515: ERROR ;MOVB DELIVERED THE WRONG RESULT
18008 040232 040200 ROS15 ;ERROR LOOP RETURN ADDRESS
18009
18010 040234 000004 00515: SCOPE ;CALL SCOPE LOOP UTILITY
18011
18012
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F03

MAIN. MACY11 27:732) 15-OCT-76 14:58 PAGE 446
 DBQEAB.CMB T0515 MOV8 TEST - SMO,DMO - EXTEND 1'S

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18013 ; *****
18014 ; .SBTTL T0516 MOV8 TEST - SMO,DMO - EXTEND 0'S
18015 ; *****
18016 ;
18017 ; MICROPROGRAMMING / LOGIC INFORMATION
18018 ;
18019 ; ROM SEQ: [170,204,003,204,001] FC 1,4
18020 ;
18021 ; ACT BUTS: 37(004)100,170 / 20(170)000,003 / 27(003)000,001
18022 ;
18023 ; EXEC: [170]ALUC=LLLLL : [204] D = 000000
18024 ;
18025 ; CODES: [204] SPS=3 / N:C = 0101
18026 ;
18027 ; SYNC: B05J2 (-) T = 1.8 USEC
18028 ;
18029 ; KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L
18030 ;
18031 040236 012700 000516 T0516: MOV #0516,R0 ;LOAD R0 WITH TEST NO.
18032 040242 013701 040270 MOV #I0516,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18033 040246 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
18034 040252 005004 CLR R4 ;RESULT S / B = 000000
18035 040254 012705 177400 MOV #177400,R5 ;SOURCE OP = 177400
18036 040260 005003 R0516: CLR R3 ;[DEST] = 177777
18037 040262 005103 COM R3
18038 040264 000257 CCC ;CLEAR FLAGS
18039 040266 000271 271 ;N:C = 1001
18040 ;
18041 040270 110503 I0516: MOV8 R5,R3 ;TEST THE MOV8
18042 ;
18043 040272 100403 BMI E10516 ;N:C = 0101 ?
18044 040274 001002 BNE E10516
18045 040276 102401 BVS E10516
18046 040300 103402 BCS A0516
18047 ;
18048 040302 104005 E10516: ERRORS ;MOV8 FAILED TO ALTER CODES PROPERLY
18049 040304 040260 R0516 ;ERROR LOOP RETURN ADDRESS
18050 ;
18051 040306 020403 A0516: CMP R4,R3 ;RESULT CORRECT ?
18052 040310 001402 BEQ 00516 ;BR IF YES
18053 ;
18054 040312 104000 E20516: ERROR ;MOV8 DELIVERED THE WRONG RESULT
18055 040314 040260 R0516 ;ERROR LOOP RETURN ADDRESS
18056 ;
18057 040316 000004 00516: SCOPE ;CALL SCOPE LOOP UTILITY
18058 ;
18059 ;
  
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G03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 447
 DBQEAB.CMB T0516 MOV8 TEST - SMO,DMO - EXTEND 0'S

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18060 ; *****
18061 ; .SBTTL T0517 MOV8 TEST - SMI,DMO - SOURCE ADDR EVEN
18062 ; *****
18063 ;MICROPROGRAMMING / LOGIC INFORMATION
18064 ;ROM SEQ: [141,247,250,160,204,003,204,000] FC 1,2,4
18065 ;ACT BUTS: 37(004)140,141 / 35(247)120,160 / 20(160)000,003 / 27(003)000,000
18066 ;EXEC: [160]ALUC=LLLLL :[204] 2ND TIME D = 000000
18067 ;CODES: [204] SPS=3 / N:C = 0100
18068 ;SYNC: B05J2 (-) T = 2 USEC
18069 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K3-3 SM=1L / K3-3 DM=0L
18070
18071
18072
18073
18074
18075
18076
18077
18078 040320 012700 000517 T0517: MOV #0517,R0 ;LOAD R0 WITH TEST NO.
18079 040324 013701 040350 MOV #I0517,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18080 040330 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
18081 040334 005004 CLR R4 ;RESULT S / B = 000000
18082 040336 012705 070152 MOV #DBTA,R5 ;SOURCE ADDR = DBTA
18083 040342 005003 R0517: CLR R3 ;[DEST] = 177777
18084 040344 005103 COM R3
18085 040346 000257 CCC ;SCOPE SYNC
18086
18087 040350 111503 I0517: MOV8 (R5),R3 ;TEST THE MOV8
18088
18089 040352 020403 CMP R4,R3 ;RESULT CORRECT ?
18090 040354 001402 BEQ 00517 ;BR IF YES
18091
18092 040356 104000 E0517: ERROR ;MOV8 DELIVERED THE WRONG RESULT
18093 040360 040342 R0517 ;ERROR LOOP RETURN ADDRESS
18094
18095 040362 000004 00517: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

H03

MAIN. MACY11 27,732) 15-OCT-76 14:58 PAGE 448
DBQEAB.CMB TOS:7 MOV8 TEST - SM1,DMO - SOURCE ADDR EVEN

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18096 ; *****
18097 ; .SBTTL T0520 MOV8 TEST - SM1,DMO - SOURCE ADDR ODD
18098 ; *****
18099 ;MICROPROGRAMMING / LOGIC INFORMATION
18100 ;ROM SEQ: [141,247,250,137,251,160,204,003,204,000] FC 1,2,4
18101 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 20(160)000,003 / 27(003)000,000
18102 ;EXEC: [160]ALUC=LLLLL :[204](2ND TIME) D = 000125
18103 ;CODES: [204] SPS=3 / N:C = 0000
18104 ;SYNC: B05J2 (-) T = 2 USEC
18105 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K3-7 ODD BYTE H / K1-6 BA00 (1) H
18106 T0520: MOV #0520,R0 ;LOAD R0 WITH TEST NO.
18107 MOV #I0520,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18108 MOV #177703,R2 ;DEST ADDR = R3
18109 MOV #125,R4 ;RESULT S / B = 125
18110 MOV #DBTA+3,R5 ;SOURCE ADDR = DBTA+3
18111 R0520: MOV #177400,R3 ;[DEST] = 177400
18112 CCC ;SCOPE SYNC
18113 I0520: MOV8 (R5),R3 ;TEST THE MOV8
18114 CMP R4,R3 ;RESULT CORRECT ?
18115 BEQ 00520 ;BR IF YES
18116 E0520: ERROR ;MOV8 DELIVERED THE WRONG RESULT
18117 R0520 ;ERROR LOOP RETURN ADDRESS
18118 00520: SCOPE ;CALL SCOPE LOOP UTILITY
18119
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18131 ; *****
18132 ; .SBTTL T0521 MOV8 TEST - SM2,DMO - SOURCE ADDR ODD
18133 ; *****
18134 ;
18135 ;MICROPROGRAMMING / LOGIC INFORMATION
18136 ;
18137 ;ROM SEQ: [142,240,250,137,251,160,204,003,204,000] FC 1,2,4
18138 ;
18139 ;ACT BUTS: 37[004]100,142 / 35[240]120,137 / 36[137]120,160 / 20[160]000,003
18140 ; / 27[003]000,000
18141 ;
18142 ;EXEC: [160]ALUC=LLLLL :[204] 2ND TIME D = 177777
18143 ;
18144 ;CODES: [204] SPS=3 / N:C = 1000
18145 ;
18146 ;SYNC: B05J2 (-) T = 2.1 USEC
18147 ;
18148 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BCON (1+2) H / K3-7 ODD BYTE
18149 ; K1-6 BA00 (1) H
18150 ;
18151 040432 012700 000521 T0521: MOV #0521,R0 ;LOAD R0 WITH TEST NO.
18152 040436 013701 040462 MOV @#I0521,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18153 040442 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
18154 040446 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
18155 040452 012705 070153 R0521: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
18156 040456 005003 CLR R3 ;[DEST] = 000000
18157 040460 000257 CCC ;SCOPE SYNC
18158 ;
18159 040462 112503 I0521: MOV8 (R5)+,R3 ;TEST THE MOV8
18160 ;
18161 040464 020403 CMP R4,R3 ;RESULT CORRECT ?
18162 040466 001402 BEQ A0521 ;BR IF YES
18163 ;
18164 040470 104000 E10521: ERROR ;MOV8 DELIVERED THE WRONG RESULT
18165 040472 040452 R0521 ;ERROR LOOP RETURN ADDRESS
18166 ;
18167 040474 022705 070154 A0521: CMP #DBTA+2,R5 ;DID MOV8 INCREMENT SRC REG ?
18168 040500 001402 BEQ C0521 ;BR IF YES
18169 ;
18170 040502 104005 E20521: ERROR5 ;MOV8 FAILED TO UPDATE SRC REG
18171 040504 040452 R0521 ;ERROR LOOP RETURN ADDRESS
18172 ;
18173 040506 000004 C0521: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

J03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 450
 DBQEAB.CMB T0521 MOV8 TEST - SM2,DMO - SOURCE ADDR ODD

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18174 ; *****
18175 ; .SBTTL T0522 MOV8 TEST - SM2,DMO - SOURCE ADDR EVEN
18176 ; *****
18177 ;
18178 ;MICROPROGRAMMING / LOGIC INFORMATION
18179 ;
18180 ;ROM SEQ: [142,240,250,160,204,003,204,000] FC 1,2,4
18181 ;
18182 ;ACT BUTS: 37(004)100,142 / 35(240)120,160 / 20(160)000,003 / 27(003)000,000
18183 ;
18184 ;EXEC: [160]ALUC=LLLLL : [204]2ND TIME D = 000000
18185 ;
18186 ;CODES: [204] SPS=3 / N:C - 0100
18187 ;
18188 ;SYNC: B05J2 (-) T = 2.1 USEC
18189 ;
18190 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BCON (1+2) H
18191 ;
18192 040510 012700 000522 T0522: MOV #0522,R0 ;LOAD R0 WITH TEST NO.
18193 040514 013701 040540 MOV #10522,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18194 040520 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
18195 040524 005004 CLR R4 ;RESULT S / B = 000000
18196 040526 012705 070152 R0522: MOV #DBTA,R5 ;SOURCE ADDR = DBTA
18197 040532 012703 177400 MOV #177400,R3 ;[DEST] = 177400
18198 040536 000257 CCC ;SCOPE SYNC
18199 ;
18200 040540 112503 I0522: MOV8 (R5)+,R3 ;TEST THE MOV8
18201 ;
18202 040542 020403 CMP R4,R3 ;RESULT CORRECT ?
18203 040544 001402 BEQ A0522 ;BR IF YES
18204 ;
18205 040546 104000 E10522: ERROR ;MOV8 DELIVERED THE WRONG RESULT
18206 040550 040526 R0522 ;ERROR LOOP RETURN ADDRESS
18207 ;
18208 040552 022705 070153 A0522: CMP #DBTA+1,R5 ;DID MOV8 INCREMENT SRC REG ?
18209 040556 001402 BEQ 00522 ;BR IF YES
18210 ;
18211 040560 104005 E20522: ERROR5 ;MOV8 FAILED TO UPDATE SOURCE REG
18212 040562 040526 R0522 ;ERROR LOOP RETURN ADDRESS
18213 ;
18214 040564 000004 G0522: SCOPE ;CALL SCOPE LOOP UTILITY
  
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K03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 451
DBGARB.CMB T0522 MOV8 TEST - SM2,DM0 - SOURCE ADDR EVEN

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18215 ; *****
18216 ; .SBTTL T0523 MOV8 TEST - SM1,DM1 - SRC ADR ODD / DST ADR EVEN
18217 ; *****
18218
18219 ;MICROPROGRAMMING / LOGIC INFORMATION
18220
18221 ;ROM SEQ: [141,247,250,137,251,171,257,202,205,125,375,016] FC 1,2,4,8
18222
18223 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,171 / 22(171)200,202
18224 ; / 16(125)016,016
18225
18226 ;EXEC: [202]ALUC=LLLLL : [125] D = 177777
18227
18228 ;CODES: [125] SPS=3 / N:C = 1000
18229
18230 ;SYNC: B05J2 (-) T = 3.2 USEC
18231
18232 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K3-3 SM=1L / K3-3 DM=1L
18233 ; K1-6 BA00(1) H / K3-7 ODD BYTE H
18234
18235 040566 012700 000523 T0523: MOV #0523,R0 ;LOAD R0 WITH TEST NO.
18236 040572 013701 040616 ;MOV #I0523,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18237 040576 012702 067602 ;MOV #M0UFO,R2 ;DEST ADDR = M0UFO
18238 040602 012704 000377 ;MOV #377,R4 ;RESULT S / B = 377
18239 040606 012705 070153 ;MOV #DBTA+1,R5 ;SRC ADDR = DBTA +1
18240 040612 005012 R0523: CLR (R2) ;[DEST] = 000000
18241 040614 000257 ;CCC ;CLEAR FLAGS - SCOPE SYNC
18242
18243 040616 111512 I0523: MOV8 (R5),(R2) ;TEST THE MOV8
18244
18245 040620 020412 ;CMP R4,(R2) ;CORRECT RESULT ?
18246 040622 001403 ;BEQ 00523 ;BR IF YES
18247
18248 040624 011203 ;MOV (R2),R3 ;GET THE WAS DATA
18249 040626 104000 E0523: ERROR ;MOV8 DELIVERED WRONG RESULT
18250 040630 040612 R0523 ;ERROR LOOP RETURN ADDRESS
18251
18252 040632 000004 00523: SCOPE ;CALL SCOPE LOOP UTILITY
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L03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 452
 DBQEAB.CMB T0523 MOV8 TEST - SM1,DM1 - SRC ADR ODD / DST ADR EVEN

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18253 : *****
18254 : .SBTTL T0524 MOV8 TEST - SM1,DM2 - SRC ADR ODD / DST ADR EVEN
18255 : *****
18256 ;MICROPROGRAMMING / LOGIC INFORMATION
18257 ;ROM SEQ: [141,247,250,137,251,172,257,202,205,125,375,016] FC 1,2,4,8
18258 ;ACT BUTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,172 / 22[172]200,202
18259 ; / 16[125]016,016
18260 ;EXEC: [202]ALUC=LLLLL :[125] D = 177777
18261 ;CODES: [125] SPS=3 / N:C = 1000
18262 ;SYNC: B05J2 (-) T = 3.7 USEC
18263 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BCON (1+2) H / K3-7 ODD BYTE
18264 ; K1-6 BA00(1) H
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18272
18273 040634 012700 000524 T0524: MOV #0524,R0 ;LOAD R0 WITH TEST NO.
18274 040640 013701 040666 MOV @#I0524,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18275 040644 012702 067602 MOV #M0UFO,R2 ;DEST ADDR = M0UFO
18276 040650 012704 000377 MOV #377,R4 ;RESULT S / B = 377
18277 040654 012705 070153 MOV #DBTA+1,R5 ;SRC ADDR = DBTA +1
18278 040660 005012 R0524: CLR (R2) ;[DEST] = 000000
18279 040662 010203 MOV R2,R3 ;[R3] = DEST ADDR
18280 040664 000257 CCC ;CLEAR FLAGS - SCOPE SYNC
18281
18282 040666 111523 I0524: MOV8 (R5),(R3)+ ;TEST THE MOV8
18283
18284 040670 020412 CMP R4,(R2) ;CORRECT RESULT ?
18285 040672 001403 BEQ A0524 ;BR IF YES
18286
18287 040674 011203 MOV (R2),R3 ;GET THE WAS DATA
18288 040676 104000 E10524: ERROR ;MOV8 DELIVERED WRONG RESULT
18289 040700 040660 R0524 ;ERROR LOOP RETURN ADDRESS
18290
18291 040702 022703 067603 A0524: CMP #M0UFO+1,R3 ;DID MOV8 INCREMENT THE DEST REG ?
18292 040706 001402 BEQ 00524 ;BR IF YES
18293
18294 040710 104005 E20524: ERROR5 ;MOV8 FAILED TO UPDATE DEST REG
18295 040712 040660 R0524 ;ERROR LOOP RETURN ADDRESS
18296
18297 040714 000004 00524: SCOPE ;CALL SCOPE LOOP UTILITY
  
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M03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 453
 DBQEAB.CMB T0524 MOV8 TEST - SM1,DM2 - SRC ADR ODD / DST ADR EVEN

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18298 ; *****
18299 ; .SBTTL T0525 MOV8 TEST - SM1,DM3 - SRC ADR ODD / DST ADR EVEN
18300 ; *****
18301 ;
18302 ;MICROPROGRAMMING / LOGIC INFORMATION
18303 ;
18304 ;ROM SEQ: [141,247,250,137,251,173,207,210,202,205,125,375,016] FC 1,2,4,8
18305 ;
18306 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,173 / 22(207)200,202
18307 ; / 16(125)016,016
18308 ;
18309 ;EXEC: [202]ALUC=LLLLL :[125] D = 177777
18310 ;
18311 ;CODES: [125] SPS=3 / N:C = 1000
18312 ;
18313 ;SYNC: B05J2 (-) T = 4 USEC
18314 ;
18315 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BC01 H / K3-7 ODD BYTE H
18316 ; K1-6 BADD (1) H
18317 ;
18318 040716 012700 000525 T0525: MOV #0525,R0 ;LOAD R0 WITH TEST NO.
18319 040722 013701 040752 MOV @#I0525,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18320 040726 012702 067602 MOV #M8UFO,R2 ;DEST ADDR = M8UFO
18321 040732 012704 000377 MOV #377,R4 ;RESULT S / B = 377
18322 040736 012705 070153 MOV #DBTA+1,R5 ;SRC ADDR = DBTA +1
18323 040742 005012 R0525: CLR (R2) ;[DEST] = 000000
18324 040744 012703 067576 MOV #ATA+10,R3 ;BASE DEST ADDR = ATA +10
18325 040750 000257 CCC ;CLEAR FLAGS - SCOPE SYNC
18326 ;
18327 040752 111533 I0525: MOV8 (R5),@ (R3)+ ;TEST THE MOV8
18328 ;
18329 040754 022703 067600 CMP #ATA+12,R3 ;DID DEST REG GET INCREMENTED ?
18330 040760 001402 BEQ A0525 ;BR IF YES
18331 ;
18332 040762 104005 E10525: ERROR5 ;MOV8 FAILED TO UPDATE DEST REG
18333 040764 040742 R0525 ;ERROR LOOP RETURN ADDRESS
18334 ;
18335 040766 020412 A0525: CMP R4,(R2) ;CORRECT RESULT ?
18336 040770 001403 BEQ 00525 ;BR IF YES
18337 ;
18338 040772 011203 E20525: MOV (R2),R3 ;GET THE WAS DATA
18339 040774 104000 ERROR ;MOV8 DELIVERED WRONG RESULT
18340 040776 040742 R0525 ;ERROR LOOP RETURN ADDRESS
18341 ;
18342 ;
18343 041000 000004 00525: SCOPE ;CALL SCOPE LOOP UTILITY

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N03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 454
 DBQEAB.CMB T0525 MOV8 TEST - SM1,DM3 - SRC ADR ODD / DST ADR EVEN

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18344 : *****
18345 : .SBTTL T0526 MOV8 TEST - SM1,DM4 - SRC ADR ODD / DST ADR EVEN
18346 : *****
18347 ;MICROPROGRAMMING / LOGIC INFORMATION
18348 ;ROM SEQ: [141,247,250,137,251,174,257,202,205,125,375,016] FC 1,2,4,8
18349 ;ACT BUTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,174 / 22[174]200,202
18350 ; / 16[125]016,016
18351 ;EXEC: [202]ALUC=LLLLL :[125] D = 177777
18352 ;CODES: [125] SPS=3 / N:C = 1000
18353 ;SYNC: B05J2 (-) T = 3.1 USEC
18354 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BCON (1+2) H / K3-7 ODD BYTE
18355 ; K1-6 BA00(1) H
18356
18357 T0526: MOV #0526,R0 ;LOAD R0 WITH TEST NO.
18358 MOV #10526,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18359 MOV #M8UFO,R2 ;DEST ADDR = M8UFO
18360 MOV #377,R4 ;RESULT S / B = 377
18361 MOV #DBTA+1,R5 ;SRC ADDR = DBTA +1
18362 R0526: CLR (R2) ;[DEST] = 000000
18363 MOV #M8UFO+1,R3 ;INITIAL DEST ADDR = M8UFO+1
18364 CCC ;CLEAR FLAGS - SCOPE SYNC
18365
18366 I0526: MOV8 (R5),-(R3) ;TEST THE MOV8
18367
18368 CMP R3,R2 ;DID MOV8 DECREMENT DEST REG ?
18369 BEQ A0526 ;BR IF YES
18370
18371 E10526: ERROR5 ;MOV8 FAILED TO UPDATE DEST REG
18372 R0526 ;ERROR LOOP RETURN ADDRESS
18373
18374 A0526: CMP R4,(R2) ;CORRECT RESULT ?
18375 BEQ 00526 ;BR IF YES
18376
18377 E20526: MOV (R2),R3 ;GET THE WAS DATA
18378 ERROR ;MOV8 DELIVERED WRONG RESULT
18379 R0526 ;ERROR LOOP RETURN ADDRESS
18380
18381 00526: SCOPE ;CALL SCOPE LOOP UTILITY
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041064 012700 000527
041070 013701 041120
041074 012702 067602
041100 012704 000377
041104 012705 070153
041110 005012
041112 012703 067600
041116 000257

041120 111553

041122 022703 067576
041126 001402

041130 104005
041132 041110

041134 020412
041136 001403

041140 011203
041142 104000
041144 041110

041146 000004

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; *****  
; .SBTTL T0527 MOV8 TEST - SM1,DM5 - SRC ADR ODD / DST ADR EVEN  
; *****  
; MICROPROGRAMMING LOGIC INFORMATION  
; ROM SEQ: [141,247,250,137,251,175,207,210,202,205,125,375,016] FC 1,2,4,8  
; ACT BLTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,175 / 22[207]200,202  
; / 16[125]016,016  
; EXEC: [202]ALUC=LLLLL :[125] D = 177777  
; CODES: [125] SPS=3 / N:C = 1000  
; SYNC: B05J2 (-) T = 4 USEC  
; KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BCD1 H / K3-7 ODD BYTE H  
; K1-6 BA00(1) H  
  
T0527: MOV #0527,R0 ;LOAD R0 WITH TEST NO.  
MOV #I0527,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV #MBUFD,R2 ;DEST ADDR = MBUFD  
MOV #377,R4 ;RESULT S / B = 377  
MOV #DBTA+1,R5 ;SRC ADDR = DBTA +1  
R0527: CLR (R2) ;[DEST] = 000000  
MOV #ATA+12,R3 ;INITIAL DEST ADDR = ATA +12  
CCC ;CLEAR FLAGS - SCOPE SYNC  
  
I0527: MOV8 (R5),2-(R3) ;TEST THE MOV8  
  
CMP #ATA+10,R3 ;DID MOV8 DECREMENT DEST REG ?  
BEQ A0527 ;BR IF YES  
  
E10527: ERRORS ;MOV8 FAILED TO UPDATE DEST REG  
R0527 ;ERROR LOOP RETURN ADDRESS  
  
A0527: CMP R4,(R2) ;CORRECT RESULT ?  
BEQ 00527 ;BR IF YES  
  
E20527: MOV (R2),R3 ;GET THE WAS DATA  
ERROR ;MOV8 DELIVERED WRONG RESULT  
R0527 ;ERROR LOOP RETURN ADDRESS  
  
00527: SCOPE ;CALL SCOPE LOOP UTILITY
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18434 ; *****
18435 ; .SBTTL T0530 MOV8 TEST - SM1,DMS - SRC ADR ODD / DST ADR EVEN
18436 ; *****
18437 ;MICROPROGRAMMING / LOGIC INFORMATION
18438
18439 ;ROM SEQ: [141,247,250,137,251,177,206,212,202,205,125,375,016] FC 1,2,4,8
18440
18441 ;ACT BUTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,177 / 17[177]1212,212
18442 ; / 21[206]200,202 / 16[125]016,016
18443
18444 ;EXEC: [202]ALUC=LLLLL :[125] D = 177777
18445
18446 ;CODES: [125] SPS=3 / N:C = 1000
18447
18448 ;SYNC: B05J2 (-) T = 4.4 USEC
18449
18450 ;KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BC01 H / K3-7 ODD BYTE H
18451 ; K1-6 BA0C(1) H
18452
18453
18454 041150 012700 000530 T0530: MOV #0530,R0 ;LOAD R0 WITH TEST NO.
18455 041154 013701 041204 ;MOV #I0530,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18456 041160 012702 067602 ;MOV #MBUFO,R2 ;DEST ADDR = MBUFO
18457 041164 012704 000377 ;MOV #377,R4 ;RESULT S / B = 377
18458 041170 012705 070153 ;MOV #DBTA+1,R5 ;SRC ADDR = DBTA +1
18459 041174 005012 R0530: CLR (R2) ;[DEST] = 000000
18460 041176 012703 067610 ;MOV #MBUFO+6,R3 ;BASE DEST ADDR = MBUFO+6
18461 041202 000257 CCC ;CLEAR FLAGS - SCOPE SYNC
18462
18463 041204 111563 177772 I0530: MOV8 (R5),-6(R3) ;TEST THE MOV8
18464
18465 041210 020412 ;CMP R4,(R2) ;CORRECT RESULT ?
18466 041212 001403 BEQ 00530 ;BR IF YES
18467
18468 041214 011203 ;MOV (R2),R3 ;GET THE WAS DATA
18469 041216 104000 E0530: ERROR ;MOV8 DELIVERED WRONG RESULT
18470 041220 041174 R0530 ;ERROR LOOP RETURN ADDRESS
18471
18472 041222 000004 O0530: SCOPE ;CALL THE SCOPE LOOP UTILITY

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18473 ; *****
18474 ; .SBTTL T0531 MOV8 TEST - SM1,DM7 - SRC ADR ODD / DST ADR EVEN
18475 ; *****
18476 ; MICROPROGRAMMING / LOGIC INFORMATION
18477 ; ROM SEQ: [141,247,250,137,251,177,206,213,207,210,202,205,125,375,016] FC 1,2,4,8
18478 ; ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,177 / 17(177)212,213
18479 ; / 21(206)XNU / 22(207)200,202 / 16(125)016,016
18480 ; EXEC: [202]ALUC=LLLLL : [125] D = 177777
18481 ; CODES: [125] SPS=3 / N:C - 1000
18482 ; SYNC: B05J2 (-) T = 4.8 USEC
18483 ; KEY SIG: K3-6 BYTE INSTR H / K3-3 MOV L / K5-5 BCO1 H / K3-7 ODD BYTE H
18484 ; K1-6 BA00 (1) H
18485
18486 T0531: MOV #0531,R0 ;LOAD R0 WITH TEST NO.
18487 MOV #I0531,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18488 MOV #M0531,R2 ;DEST ADDR = M0531
18489 MOV #377,R4 ;RESULT S / B = 377
18490 MOV #DATA+1,R5 ;SRC ADDR = DATA +1
18491 ROS31: CLR (R2) ;[DEST] = 000000
18492 MOV #ATA,R3 ;BASE DEST ADDR = ATA
18493 CCC ;CLEAR FLAGS - SCOPE SYNC
18494
18495 I0531: MOV8 (R5),D10(R3) ;TEST THE MOV8
18496
18497 CMP R4,(R2) ;CORRECT RESULT ?
18498 BEQ 00531 ;BR IF YES
18499
18500 E0531: MOV (R2),R3 ;GET THE WAS DATA
18501 ERROR ROS31 ;MOV8 DELIVERED WRONG RESULT
18502 ;ERROR LOOP RETURN ADDRESS
18503
18504 O0531: SCOPE ;CALL SCOPE LOOP UTILITY
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E04

.MAIN. MACY11 27,732) 15-OCT-76 14:58 PAGE 458
 DBDEAB.CMB T0531 MOV8 TEST - SM1,DM7 - SRC ADR ODD / DST ADR EVEN

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18515 ; *****
18516 ; .SBTTL T0532 MOV8 SM0,DM1 TEST
18517 ; *****
18518 ;
18519 ;MICROPROGRAMMING / LOGIC INFORMATION
18520 ;
18521 ;ROM SEQ: [171,257,203,205,125,375,016] FC 1,4,8
18522 ;
18523 ;ACT BUTS: 37[004]100,171 / 22[171]200,203 / 16[125]016,016
18524 ;
18525 ;EXEC: [203]ALUC=LLLLL :[125]D=177777
18526 ;
18527 ;CODES: [125]SPS=3 / N:C=1000
18528 ;
18529 ;SYNC: B05J2 (-) T=2.6 USEC
18530 ;
18531 ;KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
18532 ;
18533 041300 012700 000532 T0532: MOV #0532,R0 ;LOAD R0 WITH TEST NO.
18534 041304 013701 041332 ;MOV #I0532,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18535 041310 012702 067602 ;MOV #MBUFD,R2 ;DEST ADDR = MBUFD
18536 041314 012704 000377 ;MOV #377,R4 ;RESULT S / B = 377
18537 041320 012703 177777 ;MOV #-1,R3 ;R3 CONTAINS SOURCE OP
18538 041324 010205 R0532: MOV R2,R5 ;R5 CONTAINS DEST ADDR
18539 041326 005012 ;CLR (R2) ;[DEST] = 000000
18540 041330 000257 ;CCC ;SCOPE SYNC
18541 ;
18542 041332 110315 I0532: MOV8 R3,(R5) ;TEST THE MOV8
18543 ;
18544 041334 020412 ;CMP R4,(R2) ;RESULT CORRECT ?
18545 041336 001403 ;BEQ 00532 ;BR IF YES
18546 ;
18547 041340 011203 E0532: MOV (R2),R3 ;GET THE WAS DATA
18548 041342 104000 ;ERROR R0532 ;MOV8 DELIVERED THE WRONG RESULT
18549 041344 041324 ;R0532 ;ERROR LOOP RETURN ADDRESS
18550 ;
18551 041346 000004 00532: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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18552 : *****
18553 : .SBTTL T0533 MOV8 SMO,DM2 TEST
18554 : *****
18555 :
18556 : MICROPROGRAMMING / LOGIC INFORMATION
18557 :
18558 ;ROM SEQ: [172,257,203,205,125,375,016] FC 1,4,8
18559 :
18560 ;ACT BUTS: 37(004)100,172 / 22(172)200,203 / 16(125)016,016
18561 :
18562 ;EXEC: [203]ALUC=LLLLL : [125]D=177777
18563 :
18564 ;CODES: [125]SPS=3 / N:C=1000
18565 :
18566 ;SYNC: B05J2 (-) T=2.6 USEC
18567 :
18568 ;KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
18569 ; K5-5 BCON(1+2) H
18570 :
18571 041350 012700 000533 T0533: MOV #0533,R0 ;LOAD R0 WITH TEST NO.
18572 041354 013701 041402 MOV #T0533,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18573 041360 012702 067602 MOV #M0533,R2 ;DEST ADDR = M0533
18574 041364 012704 000377 MOV #377,R4 ;RESULT S / B = 377
18575 041370 012703 177777 MOV #-1,R3 ;R3 CONTAINS SOURCE OP
18576 041374 010205 R0533: MOV R2,R5 ;R5 CONTAINS DEST ADDR
18577 041376 005012 CLR (R2) ;[DEST] = 000000
18578 041400 000257 CCC ;SCOPE SYNC
18579 :
18580 041402 110325 I0533: MOV8 R3,(R5)+ ;TEST THE MOV8
18581 :
18582 041404 020412 CMP R4,(R2) ;RESULT CORRECT ?
18583 041406 001403 BEQ 00533 ;BR IF YES
18584 :
18585 041410 011203 E0533: MOV (R2),R3 ;GET THE WAS DATA
18586 041412 104000 ERROR ;MOV8 DELIVERED THE WRONG RESULT
18587 041414 041374 R0533 ;ERROR LOOP RETURN ADDR
18588 :
18589 041416 000004 O0533: SCOPE ;CALL THE SCOPE LOOP UTILITY
18590 :
  
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18591 ; *****
18592 ; .SBTTL T0534 MOV8 SMO,DM3 TEST
18593 ; *****
18594
18595 ;MICROPROGRAMMING / LOGIC INFORMATION
18596
18597 ;ROM SEQ: [173,207,210,203,205,125,375,016] FC 1,4,8
18598
18599 ;ACT BUTS: 37(004)100,173 / 22(207)200,203 / 16(125)016,016
18600
18601 ;EXEC: [203]ALUC=LLLLL :[125]D=177777
18602
18603 ;CODES: [125]SPS=3 / N:C=1000
18604
18605 ;SYNC: 805J2 (-) T=3.4 USEC
18606
18607 ;KEY SIG: K3-3 MOV L / K3-6 BYTE INSTR H / K3-3 SM=0 L / K3-3 DM=3 L
18608
18609 041420 012700 000534 T0534: MOV #0534,R0 ;LOAD R0 WITH TEST NO.
18610 041424 013701 041454 MOV #I0534,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18611 041430 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
18612 041434 012704 000377 MOV #377,R4 ;RESULT S / B = 377
18613 041440 012703 177777 MOV #-1,R3 ;SOURCE OP IN R3
18614 041444 012705 057576 R0534: MOV #ATA+10,R5 ;BASE DEST ADDR = ATA+10
18615 041450 005012 CLR (R2) ;[DEST] = 000000
18616 041452 000257 CCC ;SCOPE SYNC
18617
18618 041454 110335 I0534: MOV8 R3,2(R5)+ ;TEST THE MOV8
18619
18620 041456 020412 CMP R4,(R2) ;RESULT CORRECT ?
18621 041460 001403 BEQ 00534 ;BR IF YES
18622
18623 041462 011203 MOV (R2),R3 ;GET THE WAS DATA
18624 041464 104000 E0534: ERROR ;MOV8 DELIVERED THE WRONG RESULT
18625 041466 041444 R0534 ;ERROR LOOP RETURN ADDRESS
18626
18627 041470 000004 00534: SCOPE ;CALL THE SCOPE LOOP UTILITY
    
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; *****
; .SBTTL T0535 MOV8 SMO,DM4 TEST
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ: [174,257,203,205,125,375,016] FC 1,4,8
; ACT BUTS: 37(004)100,174 / 22(174)200,203 / 16(125)016,016
; EXEC: [203]ALUC=LLLLL :[(125)D=177777
; CODES: [(125)SPS=3 / N:C=1000
; SYNC: B05J2 (-) T=2.6 USEC
; KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=4 L / K3-6 BYTE INSTR H
; K5-5 BCON(1+2) H

041472 012700 000535
041476 013701 041526
041502 012702 067602
041506 012704 177400
041512 012703 177777
041516 012705 067604
041522 005012
041524 000257

041526 110345

041530 020412
041532 001403

041534 011203
041536 104000
041540 041516

041542 000004

T0535: MOV #0535,R0 ;LOAD R0 WITH TEST NO.
MOV #I0535,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV #M0535,R2 ;DEST ADDR = M0535
MOV #177400,R4 ;RESULT S / B = 177400
MOV #-1,R3 ;R3 CONTAINS SOURCE OP
R0535: MOV #M0535+2,R5 ;BASE DEST ADDR = M0535+2
CLR (R2) ;[DEST] = 000000
CCC ;SCOPE SYNC

I0535: MOV8 R3,-(R5) ;TEST THE MOV8

CMP R4,(R2) ;RESULT CORRECT ?
BEQ 00535 ;BR IF YES

E0535: MOV (R2),R3 ;GET THE WAS DATA
ERROR ;MOV8 DELIVERED THE WRONG RESULT
R0535 ;ERROR LOOP RETURN ADDRESS

O0535: SCOPE ;CALL THE SCOPE LOOP UTILITY


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18667 ; *****
18668 ; .SBTTL T0536 MOV8 SMO,DM6 TEST
18669 ; *****
18670 ; MICROPROGRAMMING / LOGIC INFORMATION
18671 ; ROM SEQ: [176,206,212,203,205,125,375,016] FC 1,4,8
18672 ; ACT BUTS: 37(004)100,176 / 17(176)212,212 / 21(206)200,203 / 16(125)016,016
18673 ; EXEC: [203]ALUC=LLLLL :[125]D=177777
18674 ; CODES: [125]SPS=3 / N:C=1000
18675 ; SYNC: B05J2 (-) T=3 USEC
18676 ; KEY SIG: K3-3 MOV L / K3-3 SM=0 L / K3-3 DM=6 L / K3-6 BYTE INSTR H
18677 ; K3-4 OVLAP CYCLE L
18678
18679 T0536: MOV #0536,R0 ;LOAD R0 WITH TEST NO.
18680 MOV @#I0536,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18681 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
18682 MOV #377,R4 ;RESULT S / B = 377
18683 MOV #-1,R3 ;R3 CONTAINS SOURCE OP
18684 R0536: MOV #MBUFD+2,R5 ;BASE DEST ADDR = MBUFD+2
18685 CLR (R2) ;[DEST] = 000000
18686 CCC ;SCOPE SYNC
18687
18688 I0536: MOV8 R3,-2(R5) ;TEST THE MOV8
18689
18690 CMP R4,(R2) ;RESULT CORRECT ?
18691 BEQ 00536 ;BR IF YES
18692
18693 E0536: MOV (R2),R3 ;GET THE WAS DATA
18694 ERROR ;MOV8 DELIVERED THE WRONG RESULT
18695 R0536 ;ERROR LOOP RETURN ADDRESS
18696
18697 00536: SCOPE ;CALL THE SCOPE LOOP UTILITY
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18705 ; *****
18706 ; .SBTTL T0537 BIS TEST - SMO,DMO - <N:C> = 0111
18707 ; *****
18708 ;MICROPROGRAMMING / LOGIC INFORMATION
18709 ;ROM SEQ: [102,364,360,001] FC 1,7,8
18710 ;ACT BUTS: 37[004]100,102 / 31[102]360,360 / 27[364]000,001
18711 ;EXEC: [364]ALUC=LLLLH :[360] D = 177777
18712 ;CODES: [360] SPS=3 / N:C = 1001
18713 ;SYNC: B05J2 (-) T = 1 USEC
18714 ;KEY SIG: K3-4 OVLAP INSTR H / K3-3 BIS L / K3-3 SM=OL / K3-3 DM=OL
18715
18716 T0537: MOV #0537,R0 ;LOAD R0 WITH TEST NO.
18717 ;MOV #10537,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18718 ;MOV #177703,R2 ;DEST ADDR = 177703
18719 ;MOV #-1,R4 ;RESULT S / B = 177777
18720 ;MOV #125252,R5 ;SRC OPR = 125252
18721 ;R0537: MOV #52525,R3 ;[DEST] = 52525
18722 ;CCC ;CLEAR FLAGS
18723 ;267 ;N:C = 0111
18724
18725 I0537: BIS R5,R3 ;TEST THE BIS
18726 ;BPL E10537 ;N:C = 1001 ?
18727 ;BEQ E10537
18728 ;BVS E10537
18729 ;BCS A0537
18730
18731 E10537: ERRORS ;BIS FAILED TO ALTER CODES PROPERLY
18732 ;R0537 ;ERROR LOOP RETURN ADDRESS
18733
18734 R0537: CMP R4,R3 ;CORRECT RESULT ?
18735 ;BEQ 00537 ;BR IF YES
18736
18737 E20537: ERROR ;BIS DELIVERED THE WRONG RESULT
18738 ;R0537 ;ERROR LOOP RETURN ADDRESS
18739
18740 00537: SCOPE ;CALL SCOPE LOOP UTILITY
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K04

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 464
DBQEAB.CMB T0537 BIS TEST - SMO,DMO - (N:C) = 0111

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18749 ; *****
18750 ; .SBTTL T0540 BIS TEST - SMO,DMO - (N:C) = 1000
18751 ; *****
18752 ;
18753 ;MICROPROGRAMMING / LOGIC INFORMATION
18754 ;
18755 ;ROM SEQ: [102,364,360,001] FC 1,7,8
18756 ;
18757 ;ACT BUTS: 37(004)100,102 / 31(102)360,360 / 27(364)000,001
18758 ;
18759 ;EXEC: [364]ALUC=LLLLH : [360] D = 000000
18760 ;
18761 ;CODES: [360] SPS=3 / N:C = 0100
18762 ;
18763 ;SYNC: B05J2 (-) T = 1 USEC
18764 ;
18765 ;KEY SIG: K3-4 OVLAP INSTR H / K3-3 BIS L / K3-3 SM=OL / K3-3 DM=OL
18766 ;
18767 041704 012700 000540 T0540: MOV #0540,R0 ;LOAD R0 WITH TEST NO.
18768 041710 013701 041732 ;LOAD R1 WITH TEST INSTRUCTION WORD
18769 041714 012702 177703 ;DEST ADDR = 177703
18770 041720 005004 ;RESULT S / B = 000000
18771 041722 005005 ;SRC OPR = 000000
18772 041724 005003 R0540: CLR R4 ;[DEST] = 000000
18773 041726 000257 ;CLEAR FLAGS
18774 041730 000270 ;N:C = 1000
18775 ;
18776 041732 050503 I0540: BIS R5,R3 ;TEST THE BIS
18777 ;
18778 041734 100403 ;N:C = 0100
18779 041736 001002 BMI E10540
18780 041740 102401 BNE E10540
18781 041742 103002 BVS E10540
18782 ;
18783 041744 104005 E10540: ERROR5 ;BIS FAILED TO ALTER CODES PROPERLY
18784 041746 041724 R0540 ;ERROR LOOP RETURN ADDRESS
18785 ;
18786 041750 020403 A0540: CMP R4,R3 ;CORRECT RESULT ?
18787 041752 001402 BEQ 00540 ;BR IF YES
18788 ;
18789 041754 104000 E20540: ERROR ;BIS DELIVERED THE WRONG RESULT
18790 041756 041724 R0540 ;ERROR LOOP RETURN ADDRESS
18791 ;
18792 041760 000004 00540: SCOPE ;CALL SCOPE LOOP UTILITY
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18793 ; *****
18794 ; .SBTTL T0541 BIC TEST - SMO,DMO - <N:C> = 0111
18795 ; *****
18796 ;MICROPROGRAMMING / LOGIC INFORMATION
18797 ;ROM SEQ: [102,364,360,001] FC 1,7,8
18798 ;ACT BUTS: 37(004)100,102 / 31(102)360,360 / 27(364)000,001
18799 ;EXEC: [364]ALUC=HLLHL :[360] D = 100000
18800 ;CODES: [360] SPS=3 / N:C = 1001
18801 ;SYNC: B05J2 (-) T = 1 USEC
18802 ;KEY SIG: K3-4 OVLAP INSTR H / K3-3 BIC L / K3-3 SM=OL / K3-3 DM=OL
18803
18804 T0541: MOV #0541,R0 ;LOAD R0 WITH TEST NO.
18805 MOV @#I0541,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18806 MOV #177703,R2 ;DEST ADDR = 177703
18807 MOV #100000,R4 ;RESULT S / B = 100000
18808 MOV #77777,R5 ;SRC OPR = 77777
18809 R0541: MOV #-1,R3 ;[DEST] = 177777
18810 CCC ;CLEAR FLAGS
18811 267 ;N:C = 0111
18812
18813 I0541: BIC R5,R3 ;TEST THE BIC
18814
18815 BPL E10541 ;N:C = 1001 ?
18816 BEQ E10541
18817 dVS E10541
18818 BCS A0541
18819
18820 E10541: ERRORS ;BIC FAILED TO ALTER CODES PROPERLY
18821 R0541 ;ERROR LOOP RETURN ADDRESS
18822
18823 A0541: CMP R4,R3 ;CORRECT RESULT ?
18824 BEQ 00541 ;BR IF YES
18825
18826 E20541: ERROR ;BIC DELIVERED THE WRONG RESULT
18827 R0541 ;ERROR LOOP RETURN ADDRESS
18828
18829 00541: SCOPE ;CALL SCOPE LOOP UTILITY
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 466
 DBQEAB.CMB T0541 BIC TEST - SMO,DMO - <N:C> = 0111

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18837 ; *****
18838 ; .SBTTL T0542 BIC TEST - SMO,DMO - <N:C> = 1000
18839 ; *****
18840 ;MICROPROGRAMMING / LOGIC INFORMATION
18841 ;ROM SEQ: [102,364,360,001] FC 1,7,8
18842
18843 ;ACT BLTS: 37[004]100,102 / 31[102]360,360 / 27[364]000,001
18844
18845 ;EXEC: [364]ALUC=MLLHL :[360] D = 000000
18846
18847 ;CODES: [360] SPS=3 / N:C = 0100
18848
18849 ;SYNC: B05J2 (-) T = 1 USEC
18850
18851 ;KEY SIG: K3-4 OVLAP INSTR H / K3-3 BIC L / K3-3 SM=OL / K3-3 DM=OL
18852
18853
18854
18855 042046 012700 000542 T0542: MOV #0542,R0 ;LOAD R0 WITH TEST NO.
18856 042052 013701 042074 MOV #I0542,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18857 042056 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
18858 042062 005004 CLR R4 ;RESULT S / B = 000000
18859 042064 005005 CLR R5 ;SRC OPR = 000000
18860 042066 005003 R0542: CLR R3 ;[DEST] = 000000
18861 042070 000257 CCC ;CLEAR FLAGS
18862 042072 000270 SEN ;N:C = 1000
18863
18864 042074 040503 I0542: BIC R5,R3 ;TEST THE BIC
18865
18866 042076 100403 BMI E10542 ;N:C = 0100
18867 042100 001002 BNE E10542
18868 042102 102401 BVS E10542
18869 042104 103002 BCC A0542
18870
18871 042106 104005 E10542: ERRORS ;BIC FAILED TO ALTER CODES PROPERLY
18872 042110 042066 R0542 ;ERROR LOOP RETURN ADDRESS
18873
18874 042112 020403 A0542: CMP R4,R3 ;CORRECT RESULT ?
18875 042114 001402 BEQ 005-2 ;BR IF YES
18876
18877 042116 104000 E20542: ERROR ;BIC DELIVERED THE WRONG RESULT
18878 042120 042066 R0542 ;ERROR LOOP RETURN ADDRESS
18879
18880 042122 000004 00542: SCOPE ;CALL SCOPE LOOP UTILITY

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18881 ; *****
18882 ; .SBTTL T0543 BIT TEST - SMO,DMO - <N:C> = 0111
18883 ; *****
18884 ;MICROPROGRAMMING / LOGIC INFORMATION
18885 ;ROM SEQ: [102,364,362,001] FC 1,7,8
18886 ;ACT BUTS: 37[004]100,102 / 31[102]360,362 / 27[364]000,001
18887 ;EXEC: [364]ALUC=MHLHM :[362] D = 100000
18888 ;CODES: [362] SPS=3 / N:C = 1001
18889 ;SYNC: B05J2 (-) T = 1 USEC
18890 ;KEY SIG: K3-4 OVLAP INSTR H / K3-3 BIT L / K3-3 SM=OL / K3-3 DM=OL
18891 ; K4-4 ALLOW CLK L
18892
18893
18894
18895
18896
18897
18898
18899
18900 042124 012700 000543 T0543: MOV #0543,R0 ;LOAD R0 WITH TEST NO.
18901 042130 013701 042160 MOV @#I0543,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18902 042134 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
18903 042140 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
18904 042144 012705 100000 MOV #100000,R5 ;SRC OPR = 100000
18905 042150 012703 100000 R0543: MOV #!00000,R3 ;[DEST] = 100000
18906 042154 000257 CCC ;CLEAR FLAGS
18907 042156 000267 267 ;N:C = 0111
18908
18909 042160 030503 I0543: BIT R5,R3 ;TEST THE BIT
18910
18911 042162 100003 BPL E10543 ;N:C = 1001
18912 042164 001402 BEQ E10543
18913 042166 102401 BVS E10543
18914 042170 103402 BCS A0543
18915
18916 042172 104005 E10543: ERRORS ;BIT FAILED TO ALTER CODES PROPERLY
18917 042174 042150 R0543 ;ERROR LOOP RETURN ADDRESS
18918
18919 042176 020403 A0543: CMP R4,R3 ;CORRECT RESULT ?
18920 042200 001403 BEQ 00543 ;BR IF YES
18921
18922 042202 011203 E20543: MOV (R2),R3 ;GET THE WAS DATA
18923 042204 104000 ERROR ;BIT DELIVERED A RESULT
18924 042206 042150 R0543 ;ERROR LOOP RETURN ADDRESS
18925
18926 042210 000004 00543: SCOPE ;CALL SCOPE LOOP UTILITY
  
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18927 : *****
18928 : .SBTTL TOS44 BIT TEST - SMO,DMO - (N:C) = 1000
18929 : *****
18930
18931 ;MICROPROGRAMMING / LOGIC INFORMATION
18932
18933 ;ROM SEQ: [102,364,362,001] FC 1,7,8
18934
18935 ;ACT BUTS: 37(1004)100,102 / 31(102)360,362 / 27(364)000,001
18936
18937 ;EXEC: [364]ALUC=MHLHM :[362] D = 000000
18938
18939 ;CODES: [362] SPS=3 / N:C = 0100
18940
18941 ;SYNC: B05J2 (-) T = 1 USEC
18942
18943 ;KEY SIG: K3-3 BIT L / K3-3 SM=OL / K3-3 DM=OL / K3-4 OVLAP INSTR H
18944 ; K4-4 ALLOW CLY L
18945
18946 042212 012700 000544 TOS44: MOV #0544,R0 ;LOAD R0 WITH TEST NO.
18947 042216 013701 042256 MOV #10544,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18948 042222 032737 002000 066642 BIT #2000,#BPTLOC ;BREAKPOINT HALT SET ??
18949 042230 001401 BEQ .+4 ;BR IF NOT
18950 042232 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
18951 042234 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
18952 042240 012704 125252 MOV #125252,R4 ;RESULT S / B = 125252
18953 042244 012705 052525 MOV #52525,R5 ;SRC OPR = 52525
18954 042250 010403 ROS44: MOV R4,R3 ;[DEST] = 125252
18955 042252 000257 CCC ;CLEAR FLAGS
18956 042254 000270 SEN ;N:C = 1000
18957
18958 042256 030503 IOS44: BIT R5,R3 ;TEST THE BIT
18959
18960 042260 100403 BMI E10544 ;N:C = 0100
18961 042262 001002 BNE E10544
18962 042264 102401 BVS E10544
18963 042266 103002 BCC A0544
18964
18965 042270 104005 E10544: ERROR5 ;BIT FAILED TO ALTER CODES PROPERLY
18966 042272 042250 ROS44 ;ERROR LOOP RETURN ADDRESS
18967
18968 042274 020403 A0544: CMP R4,R3 ;CORRECT RESULT ?
18969 042276 001402 BEQ 00544 ;BR IF YES
18970
18971 042300 104000 E20544: ERROR ;BIT DELIVERED A RESULT
18972 042302 042250 ROS44 ;ERROR LOOP RETURN ADDRESS
18973
18974 042304 000004 00544: SCOPE ;CALL SCOPE LOOP UTILITY

```

```

18975 ; *****
18976 ; .SBTTL T0545 CMP TEST - SMO,DMO - <N:C> = 0110
18977 ; *****
18978 ;MICROPROGRAMMING / LOGIC INFORMATION
18979 ;RCM SEQ: [102,364,362,001]FC 1,7,8
18980 ;ACT BITS: 37[004]100,102 / 31[102]360,362 / 27[364]000,001
18981 ;EXEC: [364]ALUC=LLMHL :[362] D = 177777
18982 ;CODES: [362] SPS=3 / N:C = 1001
18983 ;SYNC: B05J2 (-) T = 1 USEC
18984 ;KEY SIG: K3-8 CIN00 L / K3-3 CMP L / K3-3 SM=0L / K3-3 DM=0L
18985 ; K3-4 OVLAP INSTR H / K4-4 ALLOW CLK L
18986
18987
18988
18989
18990
18991
18992
18993
18994 042306 012700 000545 T0545: MOV #0545,R0 ;LOAD R0 WITH TEST NO.
18995 042312 013701 042340 MOV #I0545,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
18996 04231F 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
18997 042322 012704 000001 MOV #+1,R4 ;RESULT 5 / 6 = +1
18998 042326 005005 CLR R5 ;SRC OPR = 000000
18999 042330 012703 000001 R0545: MOV #+1,R3 ;[DEST0546
19000 042334 000257 CCC ;CLEAR FLAGS
19001 042336 000266 266 ;N:C = 0110
19002
19003 042340 020503 I0545: CMP R5,R3 ;TEST THE CMP
19004
19005 042342 100003 BPL E10545 ;N:C = 1001
19006 042344 001402 BEQ E10545
19007 042346 102401 BVS E10545
19008 042350 103402 BCS A0545
19009
19010 042352 104005 E10545: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
19011 042354 042330 R0545 ;ERROR LOOP RETURN ADDRESS
19012
19013 042356 020403 R0545: CMP R4,R3 ;CORRECT RESULT ?
19014 042360 001402 BEQ 00545 ;BR IF YES
19015
19016 042362 104000 E20545: ERROR ;CMP DELIVERED A RESULT
19017 042364 042330 R0545 ;ERROR LOOP RETURN ADDRESS
19018
19019 042366 000C04 00545: SCOPE ;CALL SCOPE LOOP UTILITY

```



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19020 ; *****
19021 ; .SBTTL T0546 CMP TEST - SMO,DMD - (N:C) = 1010
19022 ; *****
19023 ;MICROPROGRAMMING / LOGIC INFORMATION
19024 ;ROM SEQ: [102,364,362,001] FC 1,7,8
19025 ;ACT BUTS: 37(004)100,102 / 31(102)360,362 / 27(364)000,001
19026 ;EXEC: (364)ALUC=LLHML : (362) D = 000000
19027 ;CODES: (362) SPS=3 / N:C = 0100
19028 ;SYNC: BOSJ2 (-) T = 1 USEC
19029 ;KEY SIG: K3-8 CIN00 L / K3-3 CMP L / K3-3 SM=OL / K3-3 DM=JL
19030 ; K3-4 OVLAP INSTR H / K4-4 ALLOW CLK L
19031
19032
19033
19034
19035
19036
19037
19038
19039 042370 012700 000546 T0546: MOV #0546,R0 ;LOAD R0 WITH TEST NO.
19040 042374 013701 042422 MOV #10546,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19041 042400 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
19042 042404 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
19043 042410 012705 177777 MOV #-1,R5 ;SRC OPR = 177777
19044 042414 010403 R0546: MOV R4,R3 ;[DEST] = 177777
19045 042416 000257 CCC ;CLEAR FLAGS
19046 042420 000272 272 ;N:C = 1010
19047
19048 042422 020503 I0546: CMP R5,R3 ;TEST THE CMP
19049
19050 042424 100403 BMI E10546 ;N:C = 0100
19051 042426 001002 BNE E10546
19052 042430 102401 BVS E10546
19053 042432 103002 BCC A0546
19054
19055 042434 104005 E10546: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
19056 042436 042414 R0546 ;ERROR LOOP RETURN ADDRESS
19057
19058 042440 020403 A0546: CMP R4,R3 ;CORRECT RESULT ?
19059 042442 001402 BEQ 00546 ;BR IF YES
19060
19061 042444 104000 E20546: ERROR ;CMP DELIVERED A RESULT
19062 042446 042414 R0546 ;ERROR LOOP RETURN ADDRESS
19063
19064 042450 000004 00546: SCOPE ;CALL SCOPE LOOP UTILITY

```

E05

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 471
 DBQEAS.CMB T0546 CMP TEST - SMO,DMO - <N:C> = 1010

```

19065 ; *****
19066 ; .SBTTL T0547 CMP TEST - SMO,DMO - <N:C> = 0000
19067 ; *****
19068 ;
19069 ;MICROPROGRAMMING / LOGIC INFORMATION
19070 ;
19071 ;ROM SEQ: [102,364,362,001] FC 1,7,8
19072 ;
19073 ;ACT BUTS: 37(004)100,102 / 31(102)360,362 / 27(364)1000,001
19074 ;
19075 ;EXEC: [364]ALUC=LLHHL :[362] D = 077777
19076 ;
19077 ;CODES: [362] SPS=3 / N:C = 0010
19078 ;
19079 ;SYNC: B05J2 (-) T = 1 USEC
19080 ;
19081 ;KEY SIG: K3-8 CINDO L / K3-3 CMP L / K3-3 SM=OL / K3-3 DM=OL
19082 ; K3-4 OVLAP INSTR H / K3-4 ALLOW CLK L
19083 ;
19084 042452 012700 000547 T0547: MOV #0547,R0 ;LOAD R0 WITH TEST NO.
19085 042456 013701 042504 MOV #I0547,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19086 042462 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
19087 042466 012704 000001 MOV #+1,R4 ;RESULT S / B = +1
19088 042472 012705 100000 MOV #100000,R5 ;SRC OPR = 100000
19089 042476 012703 000001 R0547: MOV #+1,R3 ;[DESTO550
19090 042502 000257 CCC ;CLEAR FLAGS
19091 ;
19092 042504 020503 I0547: CMP R5,R3 ;TEST THE CMP
19093 ;
19094 042506 100403 BMI E10547 ;N:C = 0010
19095 042510 001402 BEQ E10547
19096 042512 102001 BVC E10547
19097 042514 103002 BCC A0547
19098 ;
19099 042516 104005 E10547: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
19100 042520 042476 R0547 ;ERROR LOOP RETURN ADDRESS
19101 ;
19102 042522 020403 A0547: CMP R4,R3 ;CORRECT RESULT ?
19103 042524 001402 BEQ 00547 ;BR IF YES
19104 ;
19105 042526 104000 E20547: ERROR ;CMP DELIVERED A RESULT
19106 042530 042476 R0547 ;ERROR LOOP RETURN ADDRESS
19107 ;
19108 042532 000004 00547: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

F05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 472
 DBQEAB.CMB T0547 CMP TEST - SMO,DMO - <N:C> = 0000

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19109 ; *****
19110 ; .SBTTL T0550 BIS TEST - SMO,DM1 - <N:C> = 0111
19111 ; *****
19112 ; MICROPROGRAMMING / LOGIC INFORMATION
19113 ; ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,7,8
19114 ; ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
19115 ; EXEC: [224]ALUC=LLLLH :[367] D = 177777
19116 ; CODES: [367] SPS=3 / N:C = 1001
19117 ; SYNC: B05J2 (-) T = 2.8 USEC
19118 ; KEY SIG: K3-3 BIS L / K3-3 SM=0L / K3-3 DM=1L
19119
19120
19121
19122
19123
19124
19125
19126
19127 042534 012700 000550 T0550: MOV #0550,R0 ;LOAD R0 WITH TEST NO.
19128 042540 013701 042570 MOV #I0550,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19129 042544 012702 067602 MOV #M0550,R2 ;DEST ADDR = M0550
19130 042550 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
19131 042554 012705 125252 MOV #125252,R5 ;SRC OPR = 125252
19132 042560 012712 052525 R0550: MOV #52525,(R2) ;[DEST] = 52525
19133 042564 000257 CCC ;CLEAR FLAGS
19134 042566 000267 267 ;N:C = 0111
19135
19136 042570 050512 I0550: BIS R5,(R2) ;TEST THE BIS
19137
19138 042572 100003 BPL E10550 ;N:C = 1001
19139 042574 001402 BEQ E10550
19140 042576 102401 BVS E10550
19141 042600 103402 BCS A0550
19142
19143 042602 104005 E10550: ERRORS ;BIS FAILED TO ALTER CODES PROPERLY
19144 042604 042560 R0550 ;ERROR LOOP RETURN ADDRESS
19145
19146 042606 020412 A0550: CMP R4,(R2) ;CORRECT RESULT ?
19147 042610 001403 BEQ 00550 ;BR IF YES
19148
19149 042612 011203 MOV (R2),R3 ;GET THE WAS DATA
19150 042614 104000 E20550: ERROR ;BIS DELIVERED THE WRONG RESULT
19151 042616 042560 R0550 ;ERROR LOOP RETURN ADDRESS
19152
19153 042620 000004 00550: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

G05

.MAIN. MACY11 27,732) 15-OCT-76 14:58 PAGE 473
 DBQEAB.CMB T0550 BIS TEST - SMO,DMI - (N:C) = 0111

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19154 ; *****
19155 ; .SBTTL T0551 BIS TEST - SMO,DMI - (N:C) = 1000
19156 ; *****
19157
19158 ;MICROPROGRAMMING / LOGIC INFORMATION
19159
19160 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,7,8
19161
19162 ;ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
19163
19164 ;EXEC: [224]ALUC=LLLLH :[367] D = 000000
19165
19166 ;CODES: [367] SPS=3 / N:C = 0!00
19167
19168 ;SYNC: B05J2 (-) T = 2.8 USEC
19169
19170 ;KEY SIG: K3-3 BIS L / K3-3 SM=0L / K3-3 DM=1L
19171
19172 042622 012700 000551 T0551: MOV #0551,R0 ;LOAD R0 WITH TEST NO.
19173 042626 013701 042650 MOV #I0551,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19174 042632 012702 067602 MOV #M0551,R2 ;DEST ADDR = M0551
19175 042636 005004 CLR R4 ;RESULT S / B = 000000
19176 042640 005005 CLR R5 ;SRC OPR = 000000
19177 042642 005012 R0551: CLR (R2) ;[DEST] = 000000
19178 042644 000257 CCC ;CLEAR FLAGS
19179 042646 000270 SEN ;N:C = 1000
19180
19181 042650 050512 I0551: BIS R5,(R2) ;TEST THE BIS
19182
19183 042652 100403 BMI E10551 ;N:C = 0100
19184 042654 001002 BNE E10551
19185 042656 102401 BVS E10551
19186 042660 103002 BCC A0551
19187
19188 042662 104005 E10551: ERROR5 ;BIS FAILED TO ALTER CODES PROPERLY
19189 042664 042642 R0551 ;ERROR LOOP RETURN ADDRESS
19190
19191 042666 020412 A0551: CMP R4,(R2) ;CORRECT RESULT ?
19192 042670 001403 BEQ 00551 ;BR IF YES
19193
19194 042672 011203 MOV (R2),R3 ;GET THE WAS DATA
19195 042674 104000 E20551: ERROR ;BIS DELIVERED THE WRONG RESULT
19196 042676 042642 R0551 ;ERROR LOOP RETURN ADDRESS
19197
19198 042700 000004 00551: SCOPE ;CALL SCOPE LOOP UTILITY
  
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H05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 474
DBQEAB.CMB T0551 BIS TEST - SMO,DM1 - <N:C> = 1000

```
19199 ; *****
19200 ; .SBTTL T0552 BIC TEST - SMO,DM1 - <N:C> = 0111
19201 ; *****
19202 ;
19203 ; MICROPROGRAMMING / LOGIC INFORMATION
19204 ;
19205 ; ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,7,8
19206 ;
19207 ; ACT BUTS: 37(1004)100,161 / 33(266)220,224 / 16(367)016,016
19208 ;
19209 ; EXEC: [224]ALUC=HLLHL : [367] D = 100000
19210 ;
19211 ; CODES: [367] SPS=3 / N:C = 1001
19212 ;
19213 ; SYNC: B05J2 (-) T = 2.7 USEC
19214 ;
19215 ; KEY SIG: K3-3 BIC L / K3-3 SM=0L / K3-3 DM=1L
19216 ;
19217 042702 012700 000552 T0552: MOV #0552,R0 ;LOAD R0 WITH TEST NO.
19218 042706 013701 042736 MOV #I0552,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19219 042712 012702 067602 MOV #M0552,R2 ;DEST ADDR = M0552
19220 042716 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
19221 042722 012705 077777 MOV #77777,R5 ;SRC OPR = 77777
19222 042726 012712 177777 R0552: MOV #-1,(R2) ;[DEST] = 177777
19223 042732 000257 CCC ;CLEAR FLAGS
19224 042734 000267 267 ;N:C = 0111
19225 ;
19226 042736 040512 I0552: BIC R5,(R2) ;TEST THE BIC
19227 ;
19228 042740 100003 BPL E10552 ;N:C = 1001
19229 042742 001402 BEQ E10552
19230 042744 102401 BVS E10552
19231 042746 103402 BCS A0552
19232 ;
19233 042750 104005 E10552: ERROR5 ;BIC FAILED TO ALTER CODES PROPERLY
19234 042752 042726 R0552 ;ERROR LOOP RETURN ADDRESS
19235 ;
19236 042754 020412 A0552: CMP R4,(R2) ;CORRECT RESULT ?
19237 042756 001403 BEQ 00552 ;BR IF YES
19238 ;
19239 042760 011203 MOV (R2),R3 ;GET THE WAS DATA
19240 042762 104000 E20552: ERROR ;BIC DELIVERED THE WRONG RESULT
19241 042764 042726 R0552 ;ERROR LOOP RETURN ADDRESS
19242 ;
19243 042766 000004 00552: SCOPE ;CALL SCOPE LOOP UTILITY
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19244 ; *****
19245 ; .SBTTL T0553 BIC TEST - SMO,DMI - <N:C> = 1000
19246 ; *****
19247 ;
19248 ;MICROPROGPAMMING / LOGIC INFORMATION
19249 ;
19250 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,7,8
19251 ;
19252 ;ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
19253 ;
19254 ;EXEC: [224]ALUC=HLLHL :[367] D = 000000
19255 ;
19256 ;CODES: [367] SPS=3 / N:C = 0100
19257 ;
19258 ;SYNC: B05J2 (-) T = 2.7 USEC
19259 ;
19260 ;KEY SIG: K3-3 BIC L / K3-3 SM=OL / K3-3 DM=1L
19261 ;
19262 042770 012700 000553 T0553: MOV #0553,R0 ;LOAD R0 WITH TEST NO.
19263 042774 013701 043016 MOV #I0553,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19264 043000 012702 067602 MOV #M0553,R2 ;DEST ADDR = M0553
19265 043004 005004 CLR R4 ;RESULT S / B = 000000
19266 043006 005005 CLR R5 ;SRC OPR = 000000
19267 043010 005012 R0553: CLR (R2) ;[DEST] = 000000
19268 043012 000257 CCC ;CLEAR FLAGS
19269 043014 000270 SEN ;N:C = 1000
19270 ;
19271 043016 040512 I0553: BIC R5,(R2) ;TEST THE BIC
19272 ;
19273 043020 100403 BMI E10553 ;N:C = 0100
19274 043022 001002 BNE E10553
19275 043024 102401 BVS E10553
19276 043026 103002 BCC A0553
19277 ;
19278 043030 104005 E10553: ERROR5 ;BIC FAILED TO ALTER CODES PROPERLY
19279 043032 043010 R0553 ;ERROR LOOP RETURN ADDRESS
19280 ;
19281 043034 020412 A0553: CMP R4,(R2) ;CORRECT RESULT ?
19282 043036 001403 BEQ 00553 ;BR IF YES
19283 ;
19284 043040 011203 E20553: MOV (R2),R3 ;GET THE WAS DATA
19285 043042 104000 ERROR ;BIC DELIVERED THE WRONG RESULT
19286 043044 043010 R0553 ;ERROR LOOP RETURN ADDRESS
19287 ;
19288 043046 000004 00553: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

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19289 ; *****
19290 ; .SBTTL T0554 BIT TEST - SMO,DMI - (N:C) = 0111
19291 ; *****
19292 ;MICROPROGRAMMING / LOGIC INFORMATION
19293
19294 ;ROM SEQ: [161,266,267,224,367,375,C16] FC 1,3,7,8
19295
19296 ;ACT BUTS: 37[004]100,161 / 33[266]220,224 / 16[367]016,016
19297
19298 ;EXEC: [224]ALUC=MHLHH :[367] D = 100000
19299
19300 ;CODES: [367] SPS=3 / N:C = 1001
19301
19302 ;SYNC: B05J2 (-) T = 2.7 USEC
19303
19304 ;KEY SIG: K3-3 BIT L / K3-3 SM=OL / K3-3 DM=OL / K4-4 ALLOW CLK L
19305
19306
19307 043050 012700 000554 T0554: MOV #U554,R0 ;LOAD R0 WITH TEST NO.
19308 043054 013701 043104 MOV #I0554,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19309 043060 012702 067602 MOV #M0554,R2 ;DEST ADDR = M0554
19310 043064 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
19311 043070 012705 100000 MOV #100000,R5 ;SRC OPR = 100000
19312 043074 012712 100000 R0554: MOV #100000,(R2) ;[DEST] = 100000
19313 043100 000257 CCC ;CLEAR FLAGS
19314 043102 000267 267 ;N:C = 0111
19315
19316 043104 030512 I0554: BIT R5,(R2) ;TEST THE BIT
19317
19318 043106 100003 BPL E10554 ;N:C = 1001
19319 043110 001402 BEQ E10554
19320 043112 102401 BVS E10554
19321 043114 103402 BCS A0554
19322
19323 043116 104005 E10554: ERRORS ;BIT FAILED TO ALTER CODES PROPERLY
19324 043120 043074 R0554 ;ERROR LOOP RETURN ADDRESS
19325
19326 043122 020412 A0554: CMP R4,(R2) ;CORRECT RESULT ?
19327 043124 001403 BEQ 00554 ;BR IF YES
19328
19329 043126 011203 MOV (R2),R3 ;GET THE WAS DATA
19330 043130 104000 E20554: ERROR ;BIT DELIVERED A RESULT
19331 043132 043074 R0554 ;ERROR LOOP RETURN ADDRESS
19332
19333 043134 000004 00554: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

K05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 477
 DBQEAB.CMB T0554 BIT TEST - SMO,DMI - <N:C> = 0111

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19334 ; *****
19335 ; .SBTTL T0555 BIT TEST - SMO,DMI - <N:C> = 1000
19336 ; *****
19337
19338 ;MICROPROGRAMMING / LOGIC INFORMATION
19339
19340 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,7,8
19341
19342 ;ACT BUTS: 37[004]100,161 / 33[266]220,224 / 16[367]016,016
19343
19344 ;EXEC: [224]ALUC=HMLHM :[367] D = 000000
19345
19346 ;CODES: [367] SPS=3 / N:C = 0100
19347
19348 ;SYNC: B05J2 (-) T = 2.7 USEC
19349
19350 ;KEY SIG: K3-3 BIT L / K3-3 SM=0L / K3-3 DM=1L / K4-4 ALLOW CLK L
19351
19352 043136 012700 000555 T055: MOV #0555,R0 ;LOAD R0 WITH TEST NO.
19353 043142 013701 043172 ;LOAD R1 WITH TEST INSTRUCTION WORD
19354 043146 012702 067602 MOV #M0555,R1 ;DEST ADDR = M0555
19355 043152 012704 052525 MOV #52525,R4 ;RESULT S / B = 52525
19356 043156 012705 125252 MOV #125252,R5 ;SRC OPR = 125252
19357 043162 012712 052525 R055: MOV #52525,(R2) ;[DEST] = 52525
19358 043166 000257 CCC ;CLEAR FLAGS
19359 043170 000270 SEN ;N:C = 1000
19360
19361 043172 030512 I055: BIT R5,(R2) ;TEST THE BIT
19362
19363 043174 100403 BMI E10555 ;N:C = 0100
19364 043176 001002 BNE E10555
19365 043200 102401 BVS E10555
19366 043202 103002 BCC A0555
19367
19368 043204 104005 E10555: ERRORS ;BIT FAILED TO ALTER CODES PROPERLY
19369 043206 043162 R0555 ;ERROR LOOP RETURN ADDRESS
19370
19371 043210 020412 A0555: CMP R4,(R2) ;CORRECT RESULT ?
19372 043212 001403 BEQ 00555 ;BR IF YES
19373
19374 043214 011203 MOV (R2),R3 ;GET THE WAS DATA
19375 043216 104000 E20555: ERROR ;BIT DELIVERED A RESULT
19376 043220 043162 R0555 ;ERROR LOOP RETURN ADDRESS
19377 043222 000004 00555: SCOPE ;CALL SCOPE LOOP UTILITY
  
```



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19378 ; *****
19379 ; .SBTTL T0556 CMP TEST - SMO,DM1 - <N:C> = 1010
19380 ; *****
19381 ;MICROPROGRAMMING / LOGIC INFORMATION
19382 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
19383 ;ACT BUTS: 37[004]100,161 / 33[266]220,224 / 16[367]016,016
19384 ;EXEC: [224]ALUC=LLHHL :[367] D = 000000
19385 ;CODES: [367] SPS=3 / N:C = 0100
19386 ;SYNC: B05J2 (-) T = 2.7 USEC
19387 ;KEY SIG: K3-8 CIN00 L / K3-3 CMP L / K3-3 SM=0L / K3-3 DM=1L
19388 ; K4-4 ALLOW CLK L
19389
19390 T0556: MOV #0556,R0 ;LOAD R0 WITH TEST NO.
19391 MOV #I0556,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19392 MOV #M0556,R2 ;DEST ADDR = M0556
19393 MOV #-1,R4 ;RESULT S / B = -1
19394 MOV #-1,R5 ;SRC OPR = 177777
19395 R0556: MOV #-1,(R2) ;[DEST] = 177777
19396 CCC ;CLEAR FLAGS
19397 272 ;N:C = 1010
19398
19399 I0556: CMP R5,(R2) ;TEST THE CMP
19400 BMI E10556 ;N:C = 0100
19401 BNE E10556
19402 BVS E10556
19403 BCC A0556
19404
19405 E10556: ERROR5 ;CMP FAILED TO ALTER CODES PROPERLY
19406 R0556 ;ERROR LOOP RETURN ADDRESS
19407
19408 A0556: CMP R4,(R2) ;CORRECT RESULT ?
19409 BEQ 00556 ;BR IF YES
19410
19411 E20556: MOV (R2),R3 ;GET THE WAS DATA
19412 ERROR ;CMP DELIVERED A RESULT
19413 R0556 ;ERROR LOOP RETURN ADDRESS
19414
19415 00556: SCOPE ;CALL SCOPE LOOP UTILITY
19416
19417
19418
19419
19420
19421
19422
19423
    
```

M05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 479
 DBQEAB.CMB T0556 CMP TEST - SMO,DM1 - <N:C> = 1010

```

19424 : *****
19425 : .SBTTL T0557 CMP TEST - SMO,DM1 - <N:C> = 0110
19426 : *****
19427
19428 ;MICROPROGRAMMING / LOGIC INFORMATION
19429
19430 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
19431
19432 ;ACT BUTS: 37[004]100,161 / 33[266]220,224 / 16[367]016,016
19433
19434 ;EXEC: [224]ALUC=LLHHL :[367] D = 177777
19435
19436 ;CODES: [367] SPS=3 / N:C = 1001
19437
19438 ;SYNC: B05J2 (-) T = 2.7 USEC
19439
19440 ;KEY SIG: K3-8 CIN00 L / K3- CMP L / K3-3 SM=0L / K3-3 DM=1L
19441 ; K4-4 ALLOW CLK L
19442
19443 043312 012700 000557 T0557: MOV #0557,R0 ;LOAD R0 WITH TEST NO.
19444 043316 013701 043344 MOV #I0557,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19445 043322 012702 067602 MOV #M0557,R2 ;DEST ADDR = M0557
19446 043326 012704 000001 MOV #+1,R4 ;RESULT S / B = +1
19447 043332 005005 CLR R5 ;SRC OPR = 000000
19448 043334 012712 000001 R0557: MOV #+1,(R2) ;[DEST0560
19449 043340 000257 CCC ;CLEAR FLAGS
19450 043342 000266 266 ;N:C = 0110
19451
19452 043344 020512 I0557: CMP R5,(R2) ;TEST THE CMP
19453
19454 043346 100003 BPL E10557 ;N:C = 1001
19455 043350 001402 BEQ E10557
19456 043352 102401 BVS E10557
19457 043354 103402 BCS A0557
19458
19459 043356 104005 E10557: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
19460 043360 043334 R0557 ;ERROR LOOP RETURN ADDRESS
19461
19462 043362 020412 A0557: CMP R4,(R2) ;CORRECT RESULT ?
19463 043364 001403 BEQ 00557 ;BR IF YES
19464
19465 043366 011203 MOV (R2),R3 ;GET THE WAS DATA
19466 043370 104000 E20557: ERROR ;CMP DELIVERED A RESULT
19467 043372 043334 R0557 ;ERROR LOOP RETURN ADDRESS
19468
19469 043374 000004 00557: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

N05

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 480
 DBQEAB.CMB T0557 CMP TEST - SMO,DM1 - <N:C> = 0110

```

19470 ; *****
19471 ; .SBTTL T0560 CMP TEST - SMO,DM1 - <N:C> = 0000
19472 ; *****
19473 ;MICROPROGRAMMING / LOGIC INFORMATION
19474
19475 ;ROM SEQ: [161,266,267,224,367,375,016] FC 1,3,8
19476
19477 ;ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
19478
19479 ;EXEC: [224]ALUC=LLHHL :[367] D = 077777
19480
19481 ;CODES: [367] SPS=3 / N:C = 0010
19482
19483 ;SYNC: B05J2 (-) T = 2.7 USEC
19484
19485 ;KEY SIG: K3-8 CIN00 L / K3-3 CMP L / K3-3 SM=0L / K3-3 DM=1L
19486 ; K4-4 ALLOW CLK L
19487
19488
19489 043376 012700 000560 T0560: MOV #0560,R0 ;LOAD R0 WITH TEST NO.
19490 043402 013701 043430 ;LOAD R1 WITH TEST INSTRUCTION WORD
19491 043406 012702 067602 ;DEST ADDR = MBUFO
19492 043412 012704 000001 ;RESULT S / B = +1
19493 043416 012705 100000 ;SRC OPR = 100000
19494 043422 012712 000001 R0560: MOV #100000,R5 ;[DEST056]
19495 043426 000257 ;CLEAR FLAGS
19496
19497 043430 020512 I0560: CMP R5,(R2) ;TEST THE CMP
19498
19499 043432 100403 ;N:C = 0010
19500 043434 001402 BMI E10560
19501 043436 102001 BEQ E10560
19502 043440 103002 BVC E10560
19503 BCC A0560
19504 043442 104005 E10560: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
19505 043444 043422 R0560 ;ERROR LOOP RETURN ADDRESS
19506
19507 043446 020412 A0560: CMP R4,(R2) ;CORRECT RESULT ?
19508 043450 001403 BEQ 00560 ;BR IF YES
19509
19510 043452 011203 ;GET THE WAS DATA
19511 043454 104000 E20560: MOV (R2),R3 ;CMP DELIVERED A RESULT
19512 043456 043422 R0560 ;ERROR LOOP RETURN ADDRESS
19513
19514 043460 000004 00560: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

```

19515 ; *****
19516 ; .SBTTL T0561 BIS TEST - SM1,DM0 - (N:C) = 0111
19517 ; *****
19518 ;MICROPROGRAMMING / LOGIC INFORMATION
19519
19520 ;ROM SEQ: [141,247,250,120,371,360,000] FC 1,2,8
19521
19522 ;ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,360 / 27(37)1000,000
19523
19524 ;EXEC: [371]ALUC=LLLLH :[360] D = 177777
19525
19526 ;CODES: [360] SPS=3 / N:C = 1001
19527
19528 ;SYNC: B05J2 (-) T = 2.8 USEC
19529
19530 ;KEY SIG: K3-3 BIS L / K3-3 SM=1L / K3-3 DM=0L
19531
19532
19533 043462 012700 000561 T0561: MOV #0561,R0 ;LOAD R0 WITH TEST NO.
19534 043466 013701 043516 ;MOV #I0561,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19535 043472 012702 177703 ;MOV #177703,R2 ;DEST ADDR = 177703
19536 043476 012704 177777 ;MOV #-1,R4 ;RESULT S / B = 177777
19537 043502 012705 067622 ;MOV #DWT+10,R5 ;SRC ADDR = DWT+10
19538 043506 012703 052525 R0561: MOV #52525,R3 ;[DEST] = 52525
19539 043512 000257 ;CCC ;CLEAR FLAGS
19540 043514 000267 ;267 ;N:C = 0111
19541
19542 043516 051503 I0561: BIS (R5),R3 ;TEST THE BIS
19543
19544 043520 100003 ;BPL E10561 ;N:C = 1001
19545 043522 001402 ;BEQ E10561
19546 043524 102401 ;BVS E10561
19547 043526 103402 ;BCS A0561
19548
19549 043530 104005 E10561: ERRORS ;BIS FAILED TO ALTER CODES PROPERLY
19550 043532 043506 R0561 ;ERROR LOOP RETURN ADDRESS
19551
19552 043534 020403 A0561: CMP R4,R3 ;CORRECT RESULT ?
19553 043536 001402 ;BEQ 00561 ;BR IF YES
19554
19555 043540 104000 E20561: ERROR ;BIS DELIVERED THE WRONG RESULT
19556 043542 043506 R0561 ;ERROR LOOP RETURN ADDRESS
19557
19558 043544 000004 00561: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

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19559 ; *****
19560 ; .SBTTL T0562 BIS TEST - SMI,DMO - <N:C> = 1000
19561 ; *****
19562 ; MICROPROGRAMMING / LOGIC INFORMATION
19563 ; ROM SEQ: [141,247,250,120,371,360,000] FC 1,2,8
19564 ; ACT BUTS: 37[004]100,141 / 35[247]120,120 / 31[120]360,360 / 27[37]1000,000
19565 ; EXEC: [371]ALUC=LLLLH :[360] D = 000000
19566 ; CODES: [360] SPS=3 / N:C =0100
19567 ; SYNC: B05J2 (-) T = 2.8 USEC
19568 ; KEY SIG: K3-3 BIS L / K3-3 SM=1L / K3-3 DM=0L
19569
19570
19571
19572
19573
19574
19575
19576
19577 043546 012700 000562 T0562: MOV #0562,R0 ;LOAD R0 WITH TEST NO.
19578 043552 013701 043576 MOV #I0562,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19579 043556 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
19580 043562 005004 CLR R4 ;RESULT S / B =000000
19581 043564 012705 067612 MOV #DWTAR,R5 ;SRC ADDR = DWTAR
19582 043570 005003 R0562: CLR R3 ;[DEST] = 000000
19583 043572 000257 CCC ;CLEAR FLAGS
19584 043574 000270 SEN ;N:C = 1000
19585
19586 043576 051503 I0562: BIS (R5),R3 ;TEST THE BIS
19587
19588 043600 100403 BMI E10562 ;N:C = 0100
19589 043602 001002 BNE E10562
19590 043604 102401 BVS E10562
19591 043606 103002 BCC A0562
19592
19593 043610 104005 E10562: ERRORS ;BIS FAILED TO ALTER CODES PROPERLY
19594 043612 043570 R0562 ;ERROR LOOP RETURN ADDRESS
19595
19596 043614 020403 A0562: CMP R4,R3 ;CORRECT RESULT ?
19597 043616 001402 BEQ 00562 ;BR IF YES
19598
19599 043620 104000 E20562: ERROR ;BIS DELIVERED THE WRONG RESULT
19600 043622 043570 R0562 ;ERROR LOOP RETURN ADDRESS
19601
19602 043624 000004 00562: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

```

19603 ; *****
19604 ; .SBTTL T0563 BIC TEST - SM1,DMO - <N:C> = 0111
19605 ; *****
19606
19607 ;MICROPROGRAMMING / LOGIC INFORMATION
19608
19609 ;ROM SEQ: [141,247,250,120,371,360,000] FC 1,2,8
19610
19611 ;ACT BUTS: 37[004]100,141 / 35[247]120,120 / 31[120]360,360 / 27[37]1000,000
19612
19613 ;EXEC: [371]ALUC=HLLHL :[360] D = 100000
19614
19615 ;CODES: [360] SPS=3 / N:C = 1001
19616
19617 ;SYNC: B05J2 (-) T = 2.5 USEC
19618
19619 ;KEY SIG: K3-3 BIC L / K3-3 SM=1L / K3-3 DM=0L
19620
19621 043626 012700 000563 T0563: MOV #0563,R0 ;LOAD R0 WITH TEST NO.
19622 043632 013701 043666 MOV @#I0563,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19623 043636 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
19624 043642 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
19625 043646 012705 067606 MOV #MBUF1,R5 ;SRC ADDR = MBUF1
19626 043652 012703 177777 R0563: MOV #-1,R3 ;[DEST] = 177777
19627 043656 012715 077777 MOV #77777,(R5) ;SRC OPR = 77777
19628 043662 000257 CCC ;CLEAR FLAGS
19629 043664 000267 267 ;N:C = 0111
19630
19631 043666 041503 I0563: BIC (R5),R3 ;TEST THE BIC
19632
19633 043670 100003 BPL E10563 ;N:C = 1001 ?
19634 043672 001402 BEQ E10563
19635 043674 102401 BVS E10563
19636 043676 103402 BCS A0563
19637
19638 043700 104005 E10563: ERRORS ;BIC FAILED TO ALTER CODES PROPERLY
19639 043702 043652 R0563 ;ERROR LOOP RETURN ADDRESS
19640
19641 043704 020403 A0563: CMP R4,R3 ;CORRECT RESULT ?
19642 043706 001402 BEQ 00563 ;BR IF YES
19643
19644 043710 104000 E20563: ERROR ;BIC DELIVERED THE WRONG RESULT
19645 043712 043652 R0563 ;ERROR LOOP RETURN ADDRESS
19646
19647 043714 000004 00563: SCOPE ;CALL SCOPE LOOP UTILITY

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E06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 484
 DBQEAB.CMB T0563 BIC TEST - SM1,DMO - <N:C> = 0111

```

19648 ; *****
19649 ; .SBTTL T0564 BIC TEST - SM1,DMO - <N:C> = 1000
19650 ; *****
19651 ; MICROPROGRAMMING / LOGIC INFORMATION
19652 ; ROM SEQ: [141,247,250,120,371,360,000] FC 1,2,8
19653 ; ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,360 / 27(37)1000,000
19654 ; EXEC: [371]ALUC=HLLHL :[360] D = 000000
19655 ; CODES: [360] SPS=3 / N:C = 0100
19656 ; SYNC: B05J2 (-) T = 2.5 USEC
19657 ; KEY SIG: K3-3 BIC L / K3-3 SM=1L / K3-3 DM=0L
19658
19659
19660
19661
19662
19663
19664
19665
19666 043716 012700 000564 T0564: MOV #0564,R0 ;LOAD R0 WITH TEST NO.
19667 043722 013701 043746 MOV #10564,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19668 043726 012702 177703 MOV #177703,R2 ;DEST ADDR = 177703
19669 043732 005004 CLR R4 ;RESULT S / B = 000000
19670 043734 012705 067612 MOV #DWTA,R5 ;SRC ADDR = DWTA
19671 043740 005003 R0564: CLR R3 ;[DEST] = 000000
19672 043742 000257 CCC ;CLEAR FLAGS
19673 043744 000270 SEN ;N:C = 1000
19674
19675 043746 041503 I0564: BIC (R5),R3 ;TEST THE BIC
19676
19677 043750 100403 BMI E10564 ;N:C = 0100
19678 043752 001002 BNE E10564
19679 043754 102401 BVS E10564
19680 043756 103002 BCC A0564
19681
19682 043760 104005 E10564: ERRORS ;BIC FAILED TO ALTER CODES PROPERLY
19683 043762 043740 R0564 ;ERROR LOOP RETURN ADDRESS
19684
19685 043764 020403 A0564: CMP R4,R3 ;CORRECT RESULT ?
19686 043766 001402 BEQ 00564 ;BR IF YES
19687
19688 043770 104000 E20564: ERROR ;BIC DELIVERED THE WRONG RESULT
19689 043772 043740 R0564 ;ERROR LOOP RETURN ADDRESS
19690
19691 043774 000004 00564: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

```

19692 ; *****
19693 ; .SBTTL T0565 BIT TEST - SM1,DMO - (N:C) = 0111
19694 ; *****
19695 ;MICROPROGRAMMING / LOGIC INFORMATION
19696 ;ROM SEQ: [141,247,250,120,371,362,000] FC 1,2,8
19697 ;ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,362 / 27(37)1000,000
19698 ;EXEC: [371]ALUC=HMLHH :[362] D = 100000
19699 ;CODES: [362] SPS=3 / N:C = 1001
19700 ;SYNC: B05J2 (-) T = 2.5 USEC
19701 ;KEY SIG: K3-3 BIT L / K3-3 SM=1L / K3-3 DM=0L / K4-4 ALLOW CLK L
19702
19703
19704
19705
19706
19707
19708
19709
19710 043776 012700 000565 T0565: MOV #0565,R0 ;LOAD R0 WITH TEST NO.
19711 044002 013701 044030 ;LOAD R1 WITH TEST INSTRUCTION WORD
19712 044006 012702 177703 ;DEST ADDR = 177703
19713 044012 012704 100000 ;RESULT S / B = 100000
19714 044016 012705 067614 ;SRC ADDR = DWTA+2
19715 044022 010403 R0565: MOV #DWTA+2,R5 ;[DEST] = 100000
19716 044024 000257 ;CLEAR FLAGS
19717 044026 000267 ;N:C = 0111
19718
19719 044030 031503 I0565: BIT (R5),R3 ;TEST THE BIT
19720
19721 044032 100003 ;N:C = 1001 ?
19722 044034 001402 BPL E10565
19723 044036 102401 BEQ E10565
19724 044040 103402 BVS E10565
19725 BCS A0565
19726 044042 104005 E10565: EPRORS ;BIT FAILED TO ALTER CODES PROPERLY
19727 044044 044022 R0565 ;ERROR LOOP RETURN ADDRESS
19728
19729 044046 020403 A0565: CMP R4,R3 ;CORRECT RESULT ?
19730 044050 001402 BEQ 00565 ;BR IF YES
19731
19732 044052 104000 E20565: ERROR ;BIT DELIVERED A RESULT
19733 044054 044022 R0565 ;ERROR LOOP RETURN ADDRESS
19734
19735 044056 000004 00565: SCOPE ;CALL SCOPE LOOP UTILITY
    
```



```

19736 ; *****
19737 ; .SBTTL T0566 BIT TEST - SM1,DMO - (N:C) = 1000
19738 ; *****
19739
19740 ;MICROPROGRAMMING / LOGIC INFORMATION
19741
19742 ;ROM SEQ: [141,247,250,120,371,362,000] FC 1,2,8
19743
19744 ;ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,362 / 27(37)1000,000
19745
19746 ;EXEC: [371]ALUC=HHLHM :[362] D = 000000
19747
19748 ;CODES: [362] SPS=3 / N:C = 0100
19749
19750 ;SYNC: B05J2 (-) T = 2.5 USEC
19751
19752 ;KEY SIG: K3-3 BIT L / K3-3 SM=1L / K3-3 DM=0L / K4-4 ALLOW CLK L
19753
19754 044060 012700 000566 T0566: MOV #0566,R0 ;LOAD R0 WITH TEST NO.
19755 044064 013701 044112 ;LOAD R1 WITH TEST INSTRUCTION WORD
19756 044070 012702 177703 ;DEST ADDR = R3
19757 044074 012704 052525 ;RESULT S / B = 52525
19758 044100 012705 067622 ;SRC ADDR = DWTA+10
19759 044104 010403 R0566: MOV #DWTA+10,R5 ;[DEST] = 52525
19760 044106 000257 ;CLEAR FLAGS
19761 044110 000270 ;N:C = 1000
19762
19763 044112 031503 I0566: BIT (R5),R3 ;TEST THE BIT
19764
19765 044114 100403 ;N:C = 0100
19766 044116 001002 BMI E10566
19767 044120 102401 BNE E10566
19768 044122 103002 BVS E10566
19769 ;
19770 044124 104005 E10566: ERRORS ;BIT FAILED TO ALTER CODES PROPERLY
19771 044126 044104 R0566 ;ERROR LOOP RETURN ADDRESS
19772
19773 044130 020403 R0566: CMP R4,R3 ;CORRECT RESULT ?
19774 044132 001402 BEQ 00566 ;BR IF YES
19775
19776 044134 104000 E20566: ERROR ;BIT DELIVERED A RESULT
19777 044136 044104 R0566 ;ERROR LOOP RETURN ADDRESS
19778 044140 000004 00566: SCOPE ;CALL SCOPE LOOP UTILITY
    
```

H06

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 487
DBQEAR.CMB T0565 BIT TEST - SM1,DM0 - <N:C> = 1000

```
19779 ; *****
19780 ; .SBTTL T0567 CMP TEST - SM1,DM0 - <N:C> = 0110
19781 ; *****
19782
19783 ;MICROPROGRAMMING / LOGIC INFORMATION
19784
19785 ;ROM SEQ: [141,247,250,120,371,362,000] FC 1,2,8
19786
19787 ;ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,362 / 27(37)1000,000
19788
19789 ;EXEC: [371]ALUC=LLHHL :[362] D = 177777
19790
19791 ;CODES: [362] SPS=3 / N:C = 1001
19792
19793 ;SYNC: B05J2 (-) T = 2.7 USEC
19794
19795 ;KEY SIG: K3-8 CIN00 L / K3-3 CMP L / K3-3 SM=1L / K3-3 DM=0L
19796 ; K4-4 ALLOW CLK L
19797
19798 044142 012700 000567 T0567: MOV #0567,R0 ;LOAD R0 WITH TEST NO.
19799 044146 013701 044174 MOV #I0567,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19800 044152 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
19801 044156 012704 000001 MOV #+1,R4 ;RESULT S / B = +1
19802 044162 012705 067612 MOV #DWT9,R5 ;SRC ADDR = DWT9
19803 044166 010403 R0567: MOV R4,R3 ;I0567
19804 044170 000257 CCC ;CLEAR FLAGS
19805 044172 000266 266 ;N:C = 0110
19806
19807 044174 021503 I0567: CMP (R5),R3 ;TEST THE CMP
19808
19809 044176 100003 BPL E10567 ;N:C = 1001
19810 044200 001402 BEQ E10567
19811 044202 102401 BVS E10567
19812 044204 103402 BCS A0567
19813
19814 044206 104005 E10567: ERROR5 ;CMP FAILED TO ALTER CODES PROPERLY
19815 044210 044166 R0567 ;ERROR LOOP RETURN ADDRESS
19816
19817 044212 020403 A0567: CMP R4,R3 ;CORRECT RESULT ?
19818 044214 001402 BEQ 00567 ;BR IF YES
19819
19820 044216 104000 E20567: ERROR ;CMP DELIVERED A RESULT
19821 044220 044166 R0567 ;ERROR LOOP RETURN ADDRESS
19822
19823 044222 000004 00567: SCOPE ;CALL SCOPE LOOP UTILITY
```

```

19824 : *****
19825 : .SBTTL T0570 CMP TEST - SM1,DMO - (N:C) = 1010
19826 : *****
19827 ;MICROPROGRAMMING / LOGIC INFORMATION
19828 ;ROM SEQ: [141,247,250,120,371,362,000] FC 1,2,8
19829 ;ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,362 / 27(37)1000,000
19830 ;EXEC: [371]ALUC=LLHHL :[362] D = 000000
19831 ;CODES: [362] SPS=3 / N:C = 0100
19832 ;SYNC: B05J2 (-) T = 2.7 USEC
19833 ;KEY SIG: K3-8 CINOD L / K3-3 CMP L / K3-3 SM=1L / K3-3 DM=OL
19834 ; K4-4 ALLOW CLK L
19835
19836 T0570: MOV #0570,R0 ;LOAD R0 WITH TEST NO.
19837 MOV #I0570,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19838 MOV #177703,R2 ;DEST ADDR = R3
19839 MOV #-1,R4 ;RESULT S / B = 177777
19840 MOV #DWTA+2,R5 ;SRC ADDR = DWTA+2
19841 MOV R4,R3 ;[DEST] = 177777
19842 CCC ;CLEAR FLAGS
19843 272 ;N:C = 1010
19844
19845 I0570: CMP (R5),R3 ;TEST THE CMP
19846 BMI E10570 ;N:C = 0100
19847 BNE E10570
19848 BVS E10570
19849 BCC A0570
19850
19851 E10570: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
19852 R0570 ;ERROR LOOP RETURN ADDRESS
19853
19854 A0570: CMP R4,R3 ;CORRECT RESULT ?
19855 BEQ 00570 ;BR IF YES
19856
19857 E20570: ERROR ;CMP DELIVERED A RESULT
19858 R0570 ;ERROR LOOP RETURN ADDRESS
19859
19860 00570: SCOPE ;CALL SCOPE LOOP UTILITY
19861
19862
19863
19864
19865
19866
19867
19868

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JOB

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 489
 DBQEAB.CMB T0570 CMP TEST - SM1,DMO - (N:C) = 1010

```

19869 : *****
19870 : .SBTTL T0571 CMP TEST - SM1,DMO - (N:C) = 0000
19871 : *****
19872 ;MICROPROGRAMMING / LOGIC INFORMATION
19873 ;ROM SEQ: [141,247,250,120,371,362,000] FC 1,2,8
19874 ;ACT BUTS: 37[004]100,141 / 35[247]120,120 / 31[120]360,362 / 27[37]1000,000
19875 ;EXEC: [371]ALUC=LLMHL :[362] D = 077777
19876 ;CODES: [362] SPS=3 / N:C = 0010
19877 ;SYNC: B05J2 (-) T = 2.7 USEC
19878 ;KEY SIG: K3-8 CIN00 L / K3-3 CMP L / K3-3 SM=1L / K3-3 DM=0L
19879 ; K4-4 ALLOW CLK L
19880
19881 T0571: MOV #0571,R0 ;LOAD R0 WITH TEST NO.
19882 MOV #10571,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19883 MOV #177703,R2 ;DEST ADDR = R3
19884 MOV #+1,R4 ;RESULT S / B = +1
19885 MOV #MBUF1,R5 ;SRC ADDR = MBUF1
19886 R0571: MOV #+1,R3 ;[DEST0572
19887 MOV #100000,(R5) ;SRC OPR = 100000
19888 CCC ;CLEAR FLAGS
19889
19890 I0571: CMP (R5),R3 ;TEST THE CMP
19891 BMI E10571 ;N:C = 0010
19892 BEQ E10571
19893 BVC E10571
19894 BCC A0571
19895
19896 E10571: ERROR5 ;CMP FAILED TO ALTER CODES PROPERLY
19897 R0571 ;ERROR LOOP RETURN ADDRESS
19898
19899 A0571: CMP R4,R3 ;CORRECT RESULT ?
19900 BEQ 00571 ;BR IF YES
19901
19902 E20571: ERROR ;CMP DELIVERED A RESULT
19903 R0571 ;ERROR LOOP RETURN ADDRESS
19904
19905 00571: SCOPE ;CALL SCOPE LOOP UTILITY
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K06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 490
 DBQEAB.CMB T0571 CMP TEST - SM1,DM0 - <N:C> = 0000

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19914 : *****
19915 : .SBTTL T0572 BIS SM1,DM1 TEST - <N:C> = 0111
19916 : *****
19917 ; MICROPROGRAMMING / LOGIC INFORMATION
19918 ; ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
19919 ; ACT BLTS: 37(004)100,141 / 35(247)120,161 / 33(266)220,225 / 16(367)016,016
19920 ; EXEC: (225)ALUC=L L L L H : (367)D=177777
19921 ; CODES: (367)SPS=3 / N:C=1001
19922 ; SYNC: B05J2 (-) T= 3.4 USEC
19923 ; KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=1 L
19924
19925 T0572: MOV #0572,R0 ; LOAD R0 WITH TEST NO.
19926 MOV #I0572,R1 ; LOAD R1 WITH TEST INSTRUCTION WORD
19927 MOV #M0572,R2 ; DEST ADDR = M0572
19928 MOV #-1,R4 ; RESULT S / B = 1777777
19929 MOV #DWT0+10,R5 ; SOURCE ADDR = DWT0+10
19930 R0572: MOV #052525,(R2) ; [DEST] = 052525
19931 CCC ; CLEAR FLAGS
19932 267 ; N:C = 0111
19933
19934 I0572: BIS (R5),(R2) ; TEST THE BIS
19935
19936 BPL E10572 ; N:C = 1001?
19937 BEQ E10572
19938 BVS E10572
19939 BCS A0572
19940
19941 E10572: ERRORS ; BIS FAILED TO ALTER CODES PROPERLY
19942 R0572 ; ERROR LOOP RETURN ADDRESS
19943
19944 A0572: CMP R4,(R2) ; CORRECT RESULT ?
19945 BEQ 00572 ; BR IF YES
19946
19947 E20572: MOV (R2),R3 ; GET THE WAS DATA
19948 ERROR ; BIS DELIVERED THE WRONG RESULT
19949 R0572 ; ERROR LOOP RETURN ADDRESS
19950
19951 00572: SCOPE ; CALL THE SCOPE LOOP UTILITY
19952
19953
19954
19955
19956
19957
19958

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19959 ; *****
19960 ; .SBTTL T0573 BIS SM1,DM1 TEST - <N:C> = 1000
19961 ; *****
19962 ;MICROPROGRAMMING / LOGIC INFORMATION
19963 ;ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
19964 ;ACT BUTS: 37[004]100,141 / 35[247]120,161 / 33[266]220,225 / 16[367]016,016
19965 ;EXEC: [225]ALUC=LLLLH :[367]D=000000
19966 ;CODES: [367]SPS=3 / N:C=0100
19967 ;SYNC: B05J2 (-) T=3.4 USEC
19968 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=1 L
19969
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19976
19977 044462 012700 000573 T0573: MOV #0573,R0 ;LOAD R0 WITH TEST NO.
19978 044466 013701 044516 MOV #I0573,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
19979 044472 012702 067602 MOV #M0573,R2 ;DEST ADDR = M0573
19980 044476 012704 000000 MOV #0,R4 ;RESULT S / B = 000000
19981 044502 012705 067612 MOV #D0573,R5 ;SOURCE ADDR = D0573
19982 044506 012712 000000 R0573: MOV #0,(R2) ;[DEST] = 000000
19983 044512 000257 CCC ;CLEAR FLAGS
19984 044514 000270 SEN ;N:C = 1000
19985
19986 044516 051512 I0573: BIS (R5),(R2) ;TEST THE BIS
19987
19988 044520 100403 BMI E10573 ;N:C = 0100 ?
19989 044522 001002 BNE E10573
19990 044524 102401 BVS E10573
19991 044526 103002 BCC A0573
19992
19993 044530 104005 E10573: ERRORS ;BIS FAILED TO ALTER CODES PROPERLY
19994 044532 04.506 R0573 ;ERROR LOOP RETURN ADDRESS
19995
19996 044534 020412 A0573: CMP R4,(R2) ;CORRECT RESULT ?
19997 044536 001403 BEQ 00573 ;BR IF YES
19998
19999 044540 011203 E20573: MOV (R2),R3 ;GET THE WAS DATA
20000 044542 104000 ERROR ;BIS DELIVERED THE WRONG RESULT
20001 044544 044506 R0573 ;ERROR LOOP RETURN ADDRESS
20002
20003 044546 000004 00573: SCOPE ;CALL THE SCOPE LOOP UTILITY
    
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M06

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 492
 DBQEAB.CMB T0573 BIS SM1,DM1 TEST - <N:C> = 1000

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20004 ; *****
20005 ; .SBTTL T0574 BIC SM1,DM1 TEST - <N:C> = 0111
20006 ; *****
20007
20008 ;MICROPROGRAMMING / LOGIC INFORMATION
20009
20010 ;ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
20011
20012 ;ACT BUTS: 37[004]100,141 / 35[247]120,161 / 33[266]220,225 / 16[367]016,016
20013
20014 ;EXEC: [225]ALUC=HLLHL :[367]D=100000
20015
20016 ;CODES: [367]SPS=3 / N:C=1001
20017
20018 ;SYNC: B05J2 (-) T= 3.4 USEC
20019
20020 ;KEY SIG: K3-3 BIC L / K3-3 SM=1 L / K3-3 DM=1 L
20021
20022 044550 012700 000574 T0574: MOV #0574,R0 ;LOAD R0 WITH TEST NO.
20023 044554 013701 044610 MOV #I0574,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20024 044560 012702 067602 MOV #M0574,R2 ;DEST ADDR = M0574
20025 044564 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
20026 044570 012705 067606 MOV #M0574,R5 ;SOURCE ADDR = M0574
20027 044574 012715 077777 R0574: MOV #77777,(R5) ;[SOURCE] = 77777
20028 044600 012712 177777 MOV #-1,(R2) ;[DEST] = 177777
20029 044604 000257 CCC ;CLEAR FLAGS
20030 044606 000267 267 ;N:C = 0111
20031
20032 044610 041512 I0574: BIC (R5),(R2) ;TEST THE BIC
20033
20034 044612 100003 BPL E10574 ;N:C = 1001 ?
20035 044614 001402 BEQ E10574
20036 044616 102401 BVS E10574
20037 044620 103402 BCS A0574
20038
20039 044622 104005 E10574: ERRORS ;BIC FAILED TO ALTER CODES PROPERLY
20040 044624 044574 R0574 ;ERROR LOOP RETURN ADDRESS
20041
20042 044626 020412 A0574: CMP R4,(R2) ;CORRECT RESULT ?
20043 044630 001403 BEQ 00574 ;BR IF YES
20044
20045 044632 011203 MOV (R2),R3 ;GET THE WAS DATA
20046 044634 104000 E20574: ERROR ;BIC DELIVERED THE WRONG RESULT
20047 044636 044574 R0574 ;ERROR LOOP RETURN ADDRESS
20048
20049 044640 000004 00574: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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20050 ; *****
20051 ; .SBTTL T0575 BIC SM1,DM1 TEST - <N:C> = 1000
20052 ; *****
20053 ; MICROPROGRAMMING / LOGIC INFORMATION
20054 ; ROM SEQ: [141,247,250,162,266,267,225,367,375,016] FC 1,2,3,8
20055 ; ACT BUTS: 37[004]100,141 / 35[247]120,161 / 33[266]220,225 / 16[367]016,016
20056 ; EXEC: [225]ALUC=HLLHL : [367]D=000000
20057 ; CODES: [367]SPS=3 / N:C=0100
20058 ; SYNC: B05J2 (-) T= 3.4 USEC
20059 ; KEY SIG: K3-3 BIC L / K3-3 SM=1 L / K3-3 DM=1 L
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20068 044642 012700 000575 T0575: MOV #0575,R0 ;LOAD R0 WITH TEST NO.
20069 044646 013701 044702 MOV #I0575,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20070 044652 012702 067602 MOV #M0575,R2 ;DEST ADDR = M0575
20071 044656 012704 000000 MOV #0,R4 ;RESULT S / B = 000000
20072 044662 012705 067606 MOV #M0575,R5 ;SOURCE ADDR = M0575
20073 044666 012715 000000 R0575: MOV #0,(R5) ;[SOURCE] = 000000
20074 044672 012712 000000 MOV #0,(R2) ;[DEST] = 000000
20075 044676 000257 CCC ;CLEAR FLAGS
20076 044700 000270 SEN ;N:C = 1000
20077
20078 044702 041512 I0575: BIC (R5),(R2) ;TEST THE BIC
20079
20080 BMI E10575 ;N:C = 0100 ?
20081 044706 001002 BNE E10575
20082 044710 102401 BVS E10575
20083 044712 103002 BCC A0575
20084
20085 044714 104005 E10575: ERROR5 ;BIC FAILED TO ALTER CODES PROPERLY
20086 044716 044666 R0575 ;ERROR LOOP RETURN ADDRESS
20087
20088 044720 020412 A0575: CMP R4,(R2) ;CORRECT RESULT ?
20089 044722 001403 BEQ 00575 ;BR IF YES
20090
20091 044724 011203 MOV (R2),R3 ;GET THE WAS DATA
20092 044726 104000 E20575: ERROR R0575 ;BIC DELIVERED THE WRONG RESULT
20093 044730 044666 R0575 ;ERROR LOOP RETURN ADDRESS
20094
20095 044732 000004 00575: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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; *****
; .SATTL T0576 BIT SM1,DM1 TEST - <N:C> = 1000
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
;ACT BUTS:     37[004]100,141 / 35[247]120,161 / 33[266]220,225 / 16[367]016,016
;EXEC:         [225]ALUC=MHLWH :[367]D=000000
;CODES:        [367]SPS=3      /      N:C=0100
;SYNC:         B05J2 (-)      T=3.4 USEC
;KEY SIG:      K3-3 BIT L / K3-3 SM=1 L / K3-3 DM=1 L / K4-4 ALLOW CLK L

T0576:  MOV      #0576,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0576,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      #MBUF0,R2      ;DEST ADDR = MBUF0
        MOV      #125252,R4     ;RESULT S / B = 125252
        MOV      #MBUF1,R5     ;SOURCE ADDR = MBUF1
R0576:  MOV      #52525,(R5)     ;[SOURCE] = 052525
        MOV      #125252,(R2)  ;[DEST] = 125252
        CCC
        SEN                    ;CLEAR FLAGS
                                ;N:C = 1000

I0576:  BIT      (R5),(R2)      ;TEST THE BIT
                                ;N:C = 0100 ?

        BMI      E10576
        BNE      E10576
        BVS      E10576
        BCC      A0576

E10576:  ERRORS
R0576:  ;BIT FAILED TO ALTER CODES PROPERLY
        ;ERROR LOOP RETURN ADDRESS

A0576:  CMP      R4,(R2)        ;CORRECT RESULT ?
        BEQ      00576         ;BR IF YES

E20576:  MOV      (R2),R3      ;GET THE WAS DATA
        ERROR
R0576:  ;BIT DELIVERED A RESULT
        ;ERROR LOOP RETURN ADDRESS

00576:  SCOPE                  ;CALL THE SCOPE LOOP UTILITY

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044734 012700 000576
044740 013701 044774
044744 012702 067602
044750 012704 125252
044754 012705 067606
044760 012715 052525
044764 012712 125252
044770 000257
044772 000270
044774 031512
044776 100403
045000 001002
045002 102401
045004 103002
045006 104005
045010 044760
045012 020412
045014 001403
045016 011203
045020 104000
045022 044760
045024 000004

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20142 ; *****
20143 ; .SBTTL TOS77 BIT SM1,DM1 TEST - <N:C> = 0111
20144 ; *****
20145 ;MICROPROGRAMMING / LOGIC INFORMATION
20146 ;ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
20147 ;ACT BUTS: 37(004)100,141 / 35(247)120,161 / 33(266)220,225 / 16(367)016,016
20148 ;EXEC: [225]ALUC=MHLHM :[367]D=100000
20149 ;CODES: [367]SPS=3 / N:C=1001
20150 ;SYNC: B05J2 (-) T=3.4 USEC
20151 ;KEY SIG: K3-3 BIT L / K3-3 SM=1 L / K3-3 DM=1 L / K4-4 ALLOW CLK L
20152
20153
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20156
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20158
20159
20160 045026 012700 000577 TOS77: MOV #0577,R0 ;LOAD R0 WITH TEST NO.
20161 045032 013701 045066 MOV #I0577,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20162 045036 012702 067602 MOV #M0577,R2 ;DEST ADDR = M0577
20163 045042 012704 100000 MOV #100000,R4 ;RESULT S / B = 100000
20164 045046 012705 067606 MOV #M0577,R5 ;SOURCE ADDR = M0577
20165 045052 012715 100000 R0577: MOV #100000,(R5) ;[SOURCE] = 100000
20166 045056 012712 100000 MOV #100000,(R2) ;[DEST] = 100000
20167 045062 000257 CCC ;CLEAR FLAGS
20168 045064 000267 267 ;N:C = 0111
20169
20170 045066 031512 I0577: BIT (R5),(R2) ;TEST THE BIT
20171
20172 045070 100003 BPL E10577 ;N:C = 1001 ?
20173 045072 001402 BEQ E10577
20174 045074 102401 BVS E10577
20175 045076 103402 BCS A0577
20176
20177 045100 104005 E10577: ERRORS ;BIT FAILED TO ALTER CODES PROPERLY
20178 045102 045052 R0577 ;ERROR LOOP RETURN ADDRESS
20179
20180 045104 020412 A0577: CMP R4,(R2) ;CORRECT RESULT ?
20181 045106 001403 BEQ 00577 ;BR IF YES
20182
20183 045110 011203 MOV (R2),R3 ;GET THE WAS DATA
20184 045112 104000 E20577: ERROR ;BIT DELIVERED A RESULT
20185 045114 045052 R0577 ;ERROR LOOP RETURN ADDRESS
20186
20187 045116 000004 00577: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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20188 : *****
20189 : .SBTTL T0600 CMP SM1,DM1 TEST - (N:C) = 1010
20190 : *****
20191 ;MICROPROGRAMMING / LOGIC INFORMATION
20192 ;ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
20193 ;ACT BUTS: 37(004)100,141 / 35(247)120,161 / 33(266)220,225 / 16(367)016,016
20194 ;EXEC: [225]ALUC=L.4HL : [367]D=000000
20195 ;CODES: [367]SPS=3 / N:C=0100
20196 ;SYNC: B05J2 (-) T=3.4 USEC
20197 ;KEY SIG: K3-3 CMP L / K3-3 SM=1 L / K3-3 DM=1 L / K3-8 CIN00 L
20198 ; K4-4 ALLOW CLK L
20199
20200
20201
20202
20203
20204
20205
20206
20207 045120 012700 000600 T0600: MOV #0600,R0 ;LOAD R0 WITH TEST NO.
20208 045124 013701 045156 MOV #I0600,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20209 045130 012702 067602 MOV #M0600,R2 ;DEST ADDR = M0600
20210 045134 012704 177777 MOV #-1,R4 ;RESULT S / B = 177777
20211 045140 012705 067606 MOV #M0600,R5 ;SOURCE ADDR =
20212 045144 012715 177777 R0600: MOV #-1,(R5) ;[SOURCE] = 177777
20213 045150 010412 MOV R4,(R2) ;[DEST] = 177777
20214 045152 000257 CCC ;CLEAR FLAGS
20215 045154 000272 272 ;N:C = 1010
20216
20217 045156 021512 I0600: CMP (R5),(R2) ;TEST THE CMP
20218
20219 045160 100403 BMI E10600 ;N:C = 0100
20220 045162 001002 BNE E10600
20221 045164 102401 BVS E10600
20222 045166 103002 BCC A0600
20223
20224 045170 104005 E10600: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
20225 045172 045144 R0600 ;ERROR LOOP RETURN ADDRESS
20226
20227 045174 020412 A0600: CMP R4,(R2) ;CORRECT RESULT ?
20228 045176 001403 BEQ 00600 ;BR IF YES
20229
20230 045200 011203 MOV (R2),R3 ;GET THE WAS DATA
20231 045202 104000 E20600: ERROR ;CMP DELIVERED A RESULT
20232 045204 045144 R0600 ;ERROR LOOP RETURN ADDRESS
20233
20234 045206 000004 00600: SCOPE ;CALL THE SCOPE LOOP UTILITY

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E07

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 497
 CBQEAB.CMB T0600 CMP SMI,DMI TEST - <N:C> = 1010

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20235 ; *****
20236 ; .SBTTL T0601 CMP SMI,DMI TEST - <N:C> = 0110
20237 ; *****
20238
20239 ;MICROPROGRAMMING / LOGIC INFORMATION
20240
20241 ;ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
20242
20243 ;ACT BUTS: 37(004)100,141 / 35(247)120,161 / 33(266)220,225 / 16(367)016,016
20244
20245 ;EXEC: [225]ALUC=LLHHL :[367]D=177777
20246
20247 ;CODES: [367]SPS=3 / N:C=1001
20248
20249 ;SYNC: B05J2 (-) T=3.4 USEC
20250
20251 ;KEY SIG: K3-3 CMP L / K3-3 SM=1 L / K3-3 DM=1 L / K3-8 CIN00 L
20252 ; K4-4 ALLOW CLK L
20253
20254 045210 012700 000601 T0601: MOV #0601,R0 ;LOAD R0 WITH TEST NO.
20255 045214 013701 045250 MOV #I0601,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20256 045220 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
20257 045224 012704 000001 MOV #+1,R4 ;RESULT S / B = 000001
20258 045230 012705 067606 MOV #MBUF1,R5 ;SOURCE ADDR = MBUF1
20259 045234 012715 000000 R0601: MOV #0,(R5) ;[SOURCE] = 000000
20260 045240 012712 000001 MOV #+1,(R2) ;[DEST] = 000001
20261 045244 000257 CCC ;CLEAR FLAGS
20262 045246 000266 266 ;N:C = 0110
20263
20264 045250 021512 I0601: CMP (R5),(R2) ;TEST THE CMP
20265
20266 045252 100003 BPL E10601 ;N:C = 1001 ?
20267 045254 001402 BEQ E10601
20268 045256 102401 BVS E10601
20269 045260 103402 BCS A0601
20270
20271 045262 104005 E10601: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
20272 045264 045234 R0601 ;ERROR LOOP RETURN ADDRESS
20273
20274 045266 020412 A0601: CMP R4,(R2) ;CORRECT RESULT ?
20275 045270 001403 BEQ 00601 ;BR IF YES
20276
20277 045272 011203 MOV (R2),R3 ;GET THE WAS DATA
20278 045274 104000 E20601: ERROR ;CMP DELIVERED A RESULT
20279 045276 045234 R0601 ;ERROR LOOP RETURN ADDRESS
20280
20281 045300 000004 00601: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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20282 ; *****
20283 .SBTTL T0602 CMP SM1,DM1 TEST - <N:C> = 0000
20284 ; *****
20285
20286 ;MICROPROGRAMMING / LOGIC INFORMATION
20287
20288 ;ROM SEQ: [141,247,250,161,266,267,225,367,375,016] FC 1,2,3,8
20289
20290 ;ACT BUTS: 37(004)100,141 / 35(247)120,161 / 33(266)220,225 / 16(367)016,016
20291
20292 ;EXEC: [225]ALUC=LLHHL :[367]D=077777
20293
20294 ;CODES: [367]SPS=3 / N:C=0010
20295
20296 ;SYNC: B05J2 (-) T=3.4 USEC
20297
20298 ;KEY SIG: K3-3 CMP L / K3-3 SM=1 L / K3-3 DM=1 L / K3-8 CIN00 L
20299 ; K4-4 ALLOW CLK L
20300
20301 045302 012700 000602 T0602: MOV #0602,R0 ;LOAD R0 WITH TEST NO.
20302 045306 013701 045340 MOV #I0602,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20303 045312 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
20304 045316 012704 000C01 MOV #+1,R4 ;RESULT S / B = 000001
20305 045322 012705 067606 MOV #MBUF1,R5 ;SOURCE ADDR = MBUF1
20306 045326 012715 100000 R0602: MOV #100000,(R5) ;[SOURCE] = 100000
20307 045332 012712 000001 MOV #+1,(R2) ;[DEST] = 000001
20308 045336 000257 CCC ;N:C = 0000
20309
20310 045340 021512 I0602: CMP (R5),(R2) ;TEST THE CMP
20311
20312 045342 100403 BMI E10602 ;N:C = 0010 ?
20313 045344 001402 BEQ E10602
20314 045346 102001 BVC E10602
20315 045350 103002 BCC A0602
20316
20317 045352 104005 E10602: ERRORS ;CMP FAILED TO ALTER CODES PROPERLY
20318 045354 045326 R0602 ;ERROR LOOP RETURN ADDRESS
20319
20320 045356 020412 A0602: CMP R4,(R2) ;CORRECT RESULT ?
20321 045360 001403 BEQ 00602 ;BR IF YES
20322
20323 045362 011203 MOV (R2),R3 ;GET THE WAS DATA
20324 045364 104000 E20602: ERROR ;CMP DELIVERED A RESULT
20325 045366 045326 R0602 ;ERROR LOOP RETURN ADDRESS
20326
20327 045370 000004 00602: SCOPE ;CALL THE SCOPE LOOP UTILITY
20328
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20330 ; *****
20331 ; .SBTTL T0603 BISB SM1 DMO TEST - SOURCE ADDR ODD
20332 ; *****
20333
20334 ; MICROPROGRAMMING / LOGIC INFORMATION
20335
20336 ; ROM SEQ: [141,247,250,137,251,120,371,360,000] FC 1,2,8
20337
20338 ; ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,120 / 31(120)360,360
20339 ; / 27(371)1000,000
20340
20341 ; EXEC: [371]ALUC=LLLLH : [360]D=177777
20342
20343 ; CODES: [360]SPS=3 / N:C=1000
20344
20345 ; SYNC: B05J2 (-) T=2.8 USEC
20346
20347 ; KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=0 L / K1-6 BA00(1) H
20348 ; K3-7 ODD BYTE H / K3-6 BYTE INSTR H
20349
20350 045372 012700 000603 T0603: MOV #0603,R0 ;LOAD R0 WITH TEST NO.
20351 045376 013701 045422 MOV #I0603,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20352 045402 012702 177703 MOV #177703,R2 ;DEST ADDR = R3
20353 045406 012704 000377 MOV #377,R4 ;RESULT S / B = 377
20354 045412 012705 070153 R0603: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20355 045416 005003 CLR R3 ;[DEST] = 000000
20356 045420 000257 CCC ;SCOPE SYNC
20357
20358 045422 151503 I0603: BISB (R5),R3 ;TEST THE BISB
20359
20360 045424 020403 CMP R4,R3 ;RESULT CORRECT ?
20361 045426 001402 BEQ 00603 ;BR IF YES
20362
20363 045430 104000 E0603: ERROR ;BISB DELIVERED THE WRONG RESULT
20364 045432 045412 R0603 ;ERROR LOOP RETURN ADDRESS
20365
20366 045434 000004 00603: SCOPE ;CALL THE SCOPE LOOP UTILITY
20367
  
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20368 ; *****
20369 .SBTTL T0604 BISB SM1,DM1 TEST - SOURCE ADDR ODD
20370 ; *****
20371
20372 ;MICROPROGRAMMING / LOGIC INFORMATION
20373
20374 ;ROM SEQ: [141,247,250,137,251,161,266,267,225,367,375,016] FC 1,2,3,8
20375
20376 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,161 / 33(266)220,225
20377 ; / 16(367)016,016
20378
20379 ;EXEC: [225]ALUC=LLLLH :[367]D=177777
20380
20381 ;CODES: [367]SPS=3 / N:C=1000
20382
20383 ;SYNC: B05J2 (-) T=3.8 USEC
20384
20385 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
20386 ; K3-7 ODD BYTE H / K1-6 BA00(1) H
20387
20388 045436 012700 000604 T0604: MOV #0604,R0 ;LOAD R0 WITH TEST NO.
20389 045442 013701 045500 MOV #I0604,K1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20390 045446 032737 004000 766642 BIT #4000,#BPTLOC ;BREAKPOINT HALT SET ??
20391 045454 001401 BEQ .+4 ;BR IF NOT
20392 045456 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
20393 045460 012702 067602 MOV #MBUFD,R2 ;DEST ADDR = MBUFD
20394 045464 012704 000377 MOV #377,R4 ;RESULT S / B = 377
20395 045470 012705 070153 R0604: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20396 045474 005012 CLR (R2) ;[DEST] = 000000
20397 045476 000257 CCC ;SCOPE SYNC
20398
20399 045500 151512 I0604: BISB (R5),(R2) ;TEST THE BISB
20400
20401 045502 020412 CMP R4,(R2) ;CORRECT RESULT
20402 045504 001403 BEQ 00604 ;BR IF YES
20403
20404 045506 011203 MOV (R2),R3 ;GET THE WAS DATA
20405 045510 104000 E0604: ERROR ;BISB DELIVERED THE WRONG RESULT
20406 045512 045470 R0604 ;ERROR LOOP RETURN ADDRESS
20407
20408 045514 000004 O0604: SCOPE ;CALL THE SCOPE LOOP UTILITY

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20409 : *****
20410 : .SBTTL T0605 BISB SM1,DM2 TEST - SOURCE ADDR ODD
20411 : *****
20412 ;MICROPROGRAMMING / LOGIC INFORMATION
20413 ;ROM SEQ: [141,247,250,137,251,162,260,267,225,367,375,016] FC 1,2,3,8
20414 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,162 / 33(260)220,225
20415 ; / 16(367)016,016
20416 ;EXEC: [225]ALUC=LLLLH :[367]D=177777
20417 ;CODES: [367]SPS=3 / N:C=1000
20418 ;SYNC: B05J2 (-) T=3.8 USEC
20419 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=2 L / K3-6 BYTE INSTR H
20420 ; / K1-6 BA00(1) H / K3-7 ODD BYTE H / K5-5 BCCN(1+2) H
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20429 045516 012700 000605 T0605: MOV #0605,R0 ;LOAD R0 WITH TEST NO.
20430 045522 013701 045550 MOV #I0605,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20431 045526 012702 067602 MOV #M0605,R2 ;DEST ADDR = M0605
20432 045532 012704 000377 MOV #377,R4 ;RESULT S / B = 377
20433 045536 012705 070153 R0605: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20434 045542 005012 CLR (R2) ;[DEST] = 000000
20435 045544 010203 MOV R2,R3 ;DEST ADDR IN R3
20436 045546 000257 CCC ;SCOPE SYNC
20437
20438 045550 151523 I0605: BISB (R5),(R3)+ ;TEST THE BISB
20439
20440 045552 020412 CMP R4,(R2) ;CORRECT RESULT
20441 045554 001403 BEQ 00605 ;BR IF YES
20442
20443 045556 011203 MOV (R2),R3 ;GET THE WAS DATA
20444 045560 104000 E0605: ERROR ;BISB DELIVERED THE WRONG RESULT
20445 045562 045536 R0605 ;ERROR LOOP RETURN ADDRESS
20446
20447 045564 000004 00605: SCOPE ;CALL THE SCOPE LOOP UTILITY

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; *****
; .SBTTL T0606 BISB SM1,DM3 TEST - SOURCE ADDR ODD
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [141,247,250,137,251,163,264,265,266,267,225,367,375,016] FC 1,2,3,8

;ACT BUTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,163 / 33[266]220,225
; / 16[367]016,016

;EXEC: [225]ALUC=LLLLH : [367]D=177777

;CODES: [367]SPS=3 / N:C=1000

;SYNC: B05J2 (-) T=4.5 USEC

;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=3 L / K3-6 BYTE INSTR H
; / K3-7 ODD BYTE H / K1-6 BA00(1) H / K5-5 BCO1 H

045566 012700 000606
045572 013701 045622
045576 012702 067602
045602 012704 000377
045606 012705 070153
045612 005012
045614 012703 067576
045620 000257
045622 151533
045624 020412
045626 001403
045630 011203
045632 104000
045634 045606
045636 000004

T0606: MOV #0606,R0 ;LOAD R0 WITH TEST NO.
MOV #I0606,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV #MBUF0,R2 ;DEST ADDR = MBUF0
MOV #377,R4 ;RESULT S / B = 377
R0606: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
CLR (R2) ;[DEST] = 000000
MOV #ATA+10,R3 ;BASE DEST ADDR = ATA+10
CCC ;SCOPE SYNC
I0606: BISB (R5),2(R3)+ ;TEST THE BISB
CMP R4,(R2) ;CORRECT RESULT
BEQ 00606 ;BR IF YES
E0606: MOV (R2),R3 ;GET THE WAS DATA
ERROR R0606 ;BISB DELIVERED THE WRONG RESULT
R0606 ;ERROR LOOP RETURN ADDRESS
00606: SCOPE ;CALL THE SCOPE LOOP UTILITY

K07

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 503
DBQEAB.CMB T0605 BISB SM1,DM3 TEST - SOURCE ADDR ODD

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20487 ; *****
20488 .SBTTL T0607 BISB SM1,DM4 TEST - SOURCE ADDR ODD
20489 ; *****
20490
20491 ;MICROPROGRAMMING / LOGIC INFORMATION
20492
20493 ;ROM SEQ: [141,247,250,137,251,164,260,267,225,367,375,016] FC 1,2,3,8
20494
20495 ;ACT BUTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,164 / 33[260]220,225
20496 ; / 16[367]016,016
20497
20498 ;EXEC: [225]ALUC=LLLLH : [367]D=177777
20499
20500 ;CODES: [367]SPS=3 / N:C=1000
20501
20502 ;SYNC: B05J2 (-) T=3.8 USEC
20503
20504 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=4 L / K3-6 BYTE INSTR H
20505 ; / K1-6 BA00(1) H / K3-7 ODD BYTE H / K5-5 BCON(1+2) H
20506
20507 045640 012700 000607 T0607: MOV #0607,R0 ;LOAD R0 WITH TEST NO.
20508 045644 013701 045674 MOV #I0607,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20509 045650 012702 067602 MOV #MBUFO,R2 ;DEST ADDR = MBUFO
20510 045654 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
20511 045660 012705 070153 R0607: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20512 045664 012703 067604 MOV #MBUFO+2,R3 ;BASE DEST ADDR = MBUFO+2
20513 045670 005012 CLR (R2) ;[DEST] = 000000
20514 045672 000257 CCC ;SCOPE SYNC
20515
20516 045674 151543 I0607: BISB (R5),-(R3) ;TEST THE BISB
20517
20518 045676 020412 CMP R4,(R2) ;CORRECT RESULT
20519 045700 001403 BEQ 00607 ;BR IF YES
20520
20521 045702 011203 MOV (R2),R3 ;GET THE WAS DATA
20522 045704 104000 E0607: ERROR ;BISB DELIVERED THE WRONG RESULT
20523 045706 045660 R0607 ;ERROR LOOP RETURN ADDRESS
20524
20525 045710 000004 O0607: SCOPE ;CALL THE SCOPE LOOP UTILITY
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20526 ; *****
20527 ; .SBTTL T0610 BISB SM1,DM5 TEST - SOURCE ADDR ODD
20528 ; *****
20529
20530 ;MICROPROGRAMMING / LOGIC INFORMATION
20531
20532 ;ROM SEQ: [141,247,250,137,251,165,264,265,266,267,225,367,375,016] FC 1,2,3,8
20533
20534 ;ACT BUTS: 37[004]100,141 / 35[247]120,137 / 36[137]120,165 / 33[266]220,225
20535 ; / 16[367]016,016
20536
20537 ;EXEC: [225]ALUC=LLLLH :[367]D=177777
20538
20539 ;CODES: [367]SPS=3 / N:C=1000
20540
20541 ;SYNC: B05J2 (-) T= 4.5 USEC
20542
20543 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=5 L / K3-6 BYTE INSTR H
20544 ; K1-6 BA00(1) H / K3-7 ODD BYTE H / K5-5 BC01 H
20545
20546 045712 012700 000610 T0610: MOV #0610,R0 ;LOAD R0 WITH TEST NO.
20547 045716 013701 045746 MOV @#I0610,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20548 045722 012702 067602 MOV #M0610,R2 ;DEST ADDR = M0610
20549 045726 012704 000377 MOV #377,R4 ;RESULT S / B = 377
20550 045732 012705 070153 R0610: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20551 045736 012703 067600 MOV #ATA+12,R3 ;BASE DEST ADDR = ATA+12
20552 045742 005012 CLR (R2) ;[DEST] = 000000
20553 045744 000257 CCC ;SCOPE SYNC
20554
20555 045746 151553 I0610: BISB (R5),@-(R3) ;TEST THE BISB
20556
20557 045750 020412 CMP R4,(R2) ;CORRECT RESULT
20558 045752 001403 BEQ 00610 ;BR IF YES
20559
20560 045754 011203 MOV (R2),R3 ;GET THE WAS DATA
20561 045756 104000 E0610: ERROR ;BISB DELIVERED THE WRONG RESULT
20562 045760 045732 R0610 ;ERROR LOOP RETURN ADDRESS
20563
20564 045762 000004 O0610: SCOPE ;CALL THE SCOPE LOOP UTILITY

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 505
 DBQEAB.CMB T0610 BISB SM1,DM5 TEST - SOURCE ADDR ODD

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20565 : *****
20566 : .SBTTL T0611 BISB SM1,DM6 TEST - SOURCE ADDR ODD
20567 : *****
20568 ;MICROPROGRAMMING / LOGIC INFORMATION
20569
20570 ;ROM SEQ: [141,247,250,137,251,167,261,262,266,267,225,367,375,016] FC 1,2,3,8
20571
20572 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,167 / 17(167)262,262
20573 ; / 33(266)220,225 / 16(367)016,016
20574
20575 ;EXEC: [225]ALUC=L L L L L H : [367]D=177777
20576
20577 ;CODES: [367]SPS=3 / N:C=1000
20578
20579 ;SYNC: B05J2 (-) T=4.6 USEC
20580
20581 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=6 L / K3-6 BYTE INSTR H
20582 ; K3-7 ODD BYTE H / K1-6 BA00(1) H
20583
20584
20585 045764 012700 000611 T0611: MOV #0611,R0 ;LOAD R0 WITH TEST NO.
20586 045770 013701 046020 MOV #I0611,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20587 045774 012702 067602 MOV #M0611,R2 ;DEST ADDR = M0611
20588 046000 012704 000377 MOV #377,R4 ;RESULT S / B = 377
20589 046004 012705 070153 R0611: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20590 046010 012703 067610 MOV #M0611+6,R3 ;BASE DEST ADDR = M0611+6
20591 046014 005012 CLR (R2) ;[DEST] = 000000
20592 046016 000257 CCC ;SCOPE SYNC
20593
20594 046020 151563 177772 I0611: BISB (R5),-6(R3) ;TEST THE BISB
20595
20596 046024 020412 CMP R4,(R2) ;CORRECT RESULT
20597 046026 001403 BEQ 00611 ;BR IF YES
20598
20599 046030 011203 MOV (R2),R3 ;GET THE WAS DATA
20600 046032 104000 E0611: ERROR ;BISB DELIVERED THE WRONG RESULT
20601 046034 046004 R0611 ;ERROR LOOP RETURN ADDRESS
20602
20603 046036 000004 O0611: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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20604 ; *****
20605 ; .SBTTL T0612 BISS SM1,DM7 TEST - SOURCE ADDR ODD
20606 ; *****
20607
20608 ;MICROPROGRAMMING / LOGIC INFORMATION
20609
20610 ;ROM SEQ: [141,247,250,137,251,167,261,263,264,265,266,267,225,367,375,016] FC 1,2
20611
20612 ;ACT BUTS: 37[004]100,141 / 35[247]:20,137 / 36[137]120,167 / 17[167]262,263
20613 ; / 33[266]220,225 / 16[367]016,016
20614
20615 ;EXEC: [225]ALUC=LLLLH :[367]D=177777
20616
20617 ;CODES: [367]SPS=3 / N:C=1000
20618
20619 ;SYNC: B05J2 (-) T=5.2 USEC
20620
20621 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=7 L / K3-6 BYTE INSTR H
20622 ; K3-7 ODD BYTE H / K1-6 BA00(1) H
20623
20624 046040 012700 000612 T0612: MOV #0612,R0 ;LOAD R0 WITH TEST NO.
20625 046044 013701 046074 MOV @#I0612,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20626 046050 012702 067602 MOV #M0612,R2 ;DEST ADDR = M0612
20627 046054 012704 000377 MOV #377,R4 ;RESULT S / B = 377
20628 046060 012705 070153 R0612: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20629 046064 012703 067566 MOV #ATA,R3 ;BASE DEST ADDR = ATA
20630 046070 005012 CLR (R2) ;[DEST] = 000000
20631 046072 000257 CCC ;SCOPE SYNC
20632
20633 046074 151573 000010 I0612: BISS (R5),@I0(R3) ;TEST THE BISS
20634
20635 046100 020412 CMP R4,(R2) ;CORRECT RESULT
20636 046102 001403 BEQ 00612 ;BR IF YES
20637
20638 046104 011203 MOV (R2),R3 ;GET THE WAS DATA
20639 046106 104000 E0612: ERROR ;BISS DELIVERED THE WRONG RESULT
20640 046110 046060 R0612 ;ERROR LOOP RETURN ADDRESS
20641
20642 046112 000004 O0612: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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046114 012700 000613
046120 013701 046142
046124 012702 067602
046130 012704 000377
046134 010203
046136 005012
046140 000257

046142 150423

046144 020412
046146 001403

046150 011203
046152 104000
046154 046134

046156 000004

: *****
: .SBTTL T0613 BISB SMO,DM2 TEST - DEST ADDR EVEN
: *****
: MICROPROGRAMMING / LOGIC INFORMATION
: ROM SEQ: (162,260,267,224,367,375,016) FC 1,3,8
: ACT BUTS: 37(004)100,162 / 33(260)220,224 / 16(367)016,016
: EXEC: (224)ALUC=LLLLH : (367)D=003377
: CODES: (367)SPS=3 / N:C=1000
: SYNC: B05J2 (-) T=2.7 USEC
: KEY SIG: K3-3 BIS L / K3-3 SM=0 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
: K5-5 BCON(1+2) H

T0613: MOV #0613,R0 ;LOAD R0 WITH TEST NO.
MOV #I0613,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV #M0613,R2 ;DEST ADDR = M0613
MOV #377,R4 ;RESULT S / B = 377
R0613: MOV R2,R3 ;DEST ADDR IN R3
CLR (R2) ;[DEST] = 000000
CCC ;SCOPE SYNC

I0613: BISB R4,(R3)+ ;TEST THE BISB

CMP R4,(R2) ;CORRECT RESULT
BEQ 00613 ;BR IF YES

EC613: MOV (R2),R3 ;GET THE WAS DATA
ERROR ;BISB DELIVERED THE WRONG RESULT
R0613 ;ERROR LOOP RETURN ADDRESS

00613: SCOPE ;CALL THE SCOPE LOOP UTILITY

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20680 : *****
20681 : .SBTTL T0614 B1SB SMO,DM1 TEST - DEST ADDR ODD
20682 : *****
20683 ;MICROPROGRAMMING / LOGIC INFORMATION
20684 ;ROM SEQ: [161,266,267,237,270,230,254,074,366,375,016] FC 1,3,8
20685 ;ACT BUTS: 37[004]100,161 / 33[266]220,237 / 34[237]220,230 / 16[366]016,016
20686 ;EXEC: [230]ALUC=LLLLH :[375]D=177777
20687 ;CODES: [254]SPS=1,[074]SPS=3 / N:C=1000
20688 ;SYNC: B05J2 (-) T=3 USEC
20689 ;KEY SIG: K3-3 B1S L / K3-3 SM=0 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
20690 ; K3-7 ODD BYTE H / K1-6 BA00(1) H
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20698
20699 046160 012700 000614 T0614: MOV #0614,R0 ;LOAD R0 WITH TEST NO.
20700 046164 013701 046214 MOV #I0614,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20701 046170 012702 067602 MOV #MBUF0,R2 ;DEST ADDR = MBUF0
20702 046174 012704 177400 MOV #177400,R4 ;RESULT S / B = 177400
20703 046200 012705 000377 MOV #377,R5 ;[R5]=SOURCE CPR = 377
20704 046204 012703 067603 R0614: MOV #MBUF0+1,R3 ;ODD DEST ADDR IN R3
20705 046210 005012 CLR (R2) ;[DEST] = 000000
20706 046212 000257 CCC ;SCOPE SYNC
20707
20708 J46214 150513 I0614: B1SB R5,(R3) ;TEST THE B1SB
20709
20710 046216 020412 CMP R4,(R2) ;CORRECT RESULT
20711 046220 001403 BEQ 03614 ;BR IF YES
20712
20713 046222 011203 MOV (R2),R3 ;GET THE WAS DATA
20714 046224 104000 E0614: ERROR ;B1SB DELIVERED THE WRONG RESULT
20715 046226 046204 R0614 ;ERROR LOOP RETURN ADDRESS
20716
20717 046230 000004 O0614: SCOPE ;CALL THE SCOPE LOOP UTILITY

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046232 012700 000615
 046236 013701 046260
 046242 012702 067602
 046246 012704 000377
 046252 010203
 046254 005012
 046256 000257
 046260 150413
 046262 020412
 046264 001403
 046266 011203
 046270 104000
 046272 046252
 046274 000004

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; *****
; .SBTTL T0615 BISB SMO,DM1 TEST - DEST ADDR EVEN
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ: [151,266,257,224,367,375,016] FC 1,3,8
;ACT BUTS: 37(004)100,161 / 33(266)220,224 / 16(367)016,016
;EXEC: [224]ALUC=LLL!H :[367]D=000377
;CODES: [367]SPS=3 / N:C=1000
;SYNC: B05J2 (-) T=2.6 USEC
;KEY SIG: K3-3 BIS L / K3-3 SM=0 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
T0615: MOV #0615,R0 ;LOAD R0 WITH TEST NO.
;LOAD R1 WITH TEST INSTRUCTION WORD
MOV #I0615,R1 ;DEST ADDR = MBUFO
MOV #MBUFO,R2 ;RESULT S / B = 377
MOV #377,R4 ;DEST ADDR IN R3
R0615: MOV R2,R3 ;[DEST] = 000000
CLR (R2) ;SCOPE SYNC
CCC
I0615: BISB R4,(R3) ;TEST THE BISB
CMP R4,(R2) ;CORRECT RESULT
BEQ 00615 ;BR IF YES
E0615: MOV (R2),R3 ;GET THE WAS DATA
ERRGR ;BISB DELIVERED THE WRONG RESULT
R0615 ;ERROR LOOP RETURN ADDRESS
00615: SCOPE ;CALL THE SCOPE LOOP UTILITY
    
```


E08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 510
 DBQEAB.CMB T0615 BISS SMO,DM1 TEST - DEST ADDR EVEN

```

20754 ; *****
20755 ; .SBTTL T0616 BISS SM1,DM1 TEST - DEST ADDR ODD
20756 ; *****
20757 ;MICROPROGRAMMING / LOGIC INFORMATION
20758
20759 ;ROM SEQ: [141,247,250,137,251,161,266,257,237,270,231,254,074,366,375,016] FC 1.2
20760
20761 ;ACT BUTS: 37(004)100,141 / 35(247)120,137 / 36(137)120,161 / 33(266)220,237
20762 ; / 34(237)220,231 / 16(366)016,016
20763
20764 ;EXEC: [231]ALUC=LLLLH :[375]D=177777
20765
20766 ;CODES: [254]SPS=1,[074]SPS=3 / N:C=1000
20767
20768 ;SYNC: BC5J2 (-) T=4.2 USEC
20769
20770 ;KEY SIG: K3-3 BIS L / K3-3 SM=1 L / K3-3 DM=1 L / K3-6 BYTE INSTR H
20771 ; K3-7 ODD BYTE H / K1-6 BA00(1) H
20772
20773
20774 046276 012700 000616 T0616: MOV #0616,R0 ;LOAD R0 WITH TEST NO.
20775 046302 013701 046332 ;LOAD R1 WITH TEST INSTRUCTION WORD
20776 046306 012702 067602 ;DEST ADDR = MBUFD
20777 046312 012704 177400 ;RESULT S / B = 177400
20778 046316 012705 070153 R0616: MOV #DBTA+1,R5 ;SOURCE ADDR = DBTA+1
20779 046322 012703 067603 ;MBUFD+1,R3 ;ODD DEST ADDR IN R3
20780 046326 005012 ;[DEST] = 000000
20781 046330 000257 ;SCOPE SYNC
20782
20783 046332 151513 I0616: BISS (R5),(R3) ;TEST THE BISS
20784
20785 046334 020412 ;CORRECT RESULT
20786 046336 001403 BEQ 00616 ;BR IF YES
20787
20788 046340 011203 ;GET THE WAS DATA
20789 046342 104000 E0616: ERROR ;BISS DELIVERED THE WRONG RESULT
20790 046344 046316 R0616 ;ERROR LOOP RETURN ADDRESS
20791
20792 046346 000004 O0616: SCOPE ;CALL THE SCOPE LOOP UTILITY
  
```

F08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 511
 DBQEAB.CMB T0616 BISB SM1,DM1 TEST - DEST ADDR ODD

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20793 ; *****
20794 ; .SBTTL T0617 JMP MODE 1 TEST, FLAGS = 1111
20795 ; *****
20796
20797 ;MICROPROGRAMMING / LOGIC INFORMATION
20798
20799 ;ROM SEQ: [151,300,306,313,016] FC 1,5
20800
20801 ;ACT BUTS: 37(004)100,151 / 15(151)306,306 / 16(306)016,016
20802
20803 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0617
20804
20805 ;CODES: N:C = 1111 (NO CHANGE)
20806
20807 ;SYNC: B05J2 (-) T = 1.8 USEC
20808
20809 ;KEY SIG: K3-3 DM=1L / K3-5 JMP L / K3-5 JMP+JSR H
20810
20811 046350 012700 000617 T0617: MOV #0617,R0 ;LOAD R0 WITH TEST NO.
20812 046354 013701 046366 MOV #10617,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20813
20814 046360 012702 046376 R0617: MOV #A0617,R2 ;R2 CONTAINS JUMP ADDRESS
20815 046364 000277 SCC ;MAKE N:C = 1111
20816
20817 046366 000112 I0617: JMP (R2) ;TEST THE JMP - GO TO A0617
20818
20819 046370 104006 E10617: ERROR6 ;JMP FAILED TO LOAD PC
20820 046372 046360 R0617 ;ERROR LOOP RETURN
20821 046374 000406 BR 00617 ;GO CALL SCOPE
20822
20823 046376 103003 A0617: BCC E20617 ;BR IF JMP CLEARED "C"
20824 046400 102002 BVC E20617 ;BR IF JMP CLEARED "V"
20825 046402 001001 BNE E20617 ;BR IF JMP CLEARED "Z"
20826 046404 100402 BMI 00617 ;BR IF "N" STILL SET
20827
20828 046406 104006 E20617: ERROR6 ;JMP ALTERED CODES - CLEARED ONE
20829 046410 046360 R0617 ;ERROR LOOP RETURN
20830
20831 046412 000004 00617: SCOPE ;CALL SCOPE LOOP UTILITY
20832
20833

```

```

20834 : *****
20835 : .SBTTL T0620 JMP MODE 1 TEST, FLAGS = 0000
20836 : *****
20837
20838 ;MICROPROGRAMMING / LOGIC INFORMATION
20839
20840 ;ROM SEQ: [151,300,306,313,016] FC 1,5
20841
20842 ;ACT BUTS: 37(004)100,151 / 15(151)306,306 / 16(306)016,016
20843
20844 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0620
20845
20846 ;CODES: N:C = 0000 (NO CHANGE)
20847
20848 ;SYNC: B05J2 (-) T = 1.8 USEC
20849
20850 ;KEY SIG: K3-3 DM=1L / K3-5 JMP L / K3-5 JMP+JSR H
20851
20852 046414 012700 000620 T0620: MOV #0620,R0 ;LOAD R0 WITH TEST NO.
20853 046420 013701 046432 MOV #I0620,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20854
20855 046424 012702 046442 R0620: MOV #A0620,R2 ;R2 CONTAINS JMP ADDRESS
20856 046430 000257 CCC ;MAKE N:C = 0000
20857
20858 046432 000112 I0620: JMP (R2) ;TEST THE JMP - GO TO A0620
20859
20860 046434 104006 E10620: ERR0F5 ;JMP FAILED TO LOAD PC
20861 046436 046424 R0620 ;ERROR LOOP RETURN
20862 046440 000406 BR 00620 ;GO CALL SCOPE
20863
20864 046442 103403 A0620: BCS E20620 ;BR IF JMP SET "C"
20865 046444 102402 BVS E20620 ;BR IF JMP SET "V"
20866 046446 001401 BEQ E20620 ;BR IF JMP SET "Z"
20867 046450 100002 BPL 00620 ;BR IF "N" STILL CLEAR
20868
20869 046452 104006 E20620: ERR0R6 ;JMP ALTERED CODES - SET ONE
20870 046454 046424 R0620 ;ERROR LOOP RETURN
20871
20872 046456 000004 00620: SCOPE ;CALL SCOPE LOOP UTILITY
20873
20874
    
```

```

20875 : *****
20876 : .SBTTL T0621 JMP MODE 2 TEST; FLAGS = 1111
20877 : *****
20878 046460 012700 000621 T0621: MOV #0621,R0 ;LOAD R0 WITH TEST NO.
20879 ;MICROPROGRAMMING / LOGIC INFORMATION
20880
20881 ;ROM SEQ: [152,235,300,306,313,016] FC 1,5
20882
20883 ;ACT BUTS: 37(004)100,152 / 15(235)306,306 / 16(306)016,016
20884
20885 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0621
20886
20887 ;CODES: N:C = 1111 (NO CHANGE)
20888
20889 ;SYNC: B05J2 (-) T = 2.1 USEC
20890
20891 ;KEY SIG: K3-3 DM=2L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BC01 H
20892
20893 046464 013701 046476 MOV #10621,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20894
20895 046470 012702 046506 R0621: MOV #A0621,R2 ;R2 CONTAINS JUMP ADDRESS
20896 046474 000277 SCC ;SET N:C = 1111
20897
20898 046476 000122 IQ621: JMP (R2)+ ;TEST THE JMP - GO TO A0621
20899
20900 046500 104006 E10621: ERROR6 ;JMP FAILED TO LOAD PC
20901 046502 046470 R0621 ;ERROR LOOP RETURN
20902 046504 000413 BR 00621 ;GO TO SCOPE EXIT
20903
20904 046506 103003 A0621: BCC E20621 ;BR IF JMP CLEARED "C"
20905 046510 102002 BVC E20621 ;BR IF JMP CLEARED "V"
20906 046512 001001 BNE E20621 ;BR IF JMP CLEARED "Z"
20907 046514 100402 BMI B0621 ;BR IF "N" STILL SET
20908
20909 046516 104006 E20621: ERROR6 ;JMP ALTERED CODES - CLEARED
20910 046520 046470 R0621 ;ERROR LOOP RETURN
20911
20912 046522 022702 046510 B0621: CMP #A0621+2,R2 ;DID R2 GET AUTO-INCREMENTED?
20913 046526 001402 BEQ 00621 ;BR IF YES
20914
20915 046530 104006 E30621: ERROR6 ;JMP FAILED TO UPDATE REGISTER (R2)
20916 046532 046470 R0621 ;ERROR LOOP RETURN
20917
20918 046534 000004 00621: SCOPE ;CALL SCOPE LOOP UTILITY
20919
20920
    
```

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 514
 DBQEAB.CMB T0621 JMP MODE 2 TEST; FLAGS = 1111

```

20921 ; *****
20922 ; .SBTTL T0622 JMP MODE 2 TEST; FLAGS = 0000
20923 ; *****
20924
20925 ; MICROPROGRAMMING / LOGIC INFORMATION
20926
20927 ; ROM SEQ: [152,235,300,306,313,016] FC 1,5
20928
20929 ; ACT BLTS: 37(004)100,152 / 15(235)306,306 / 16(306)016,016
20930
20931 ; EXEC: [306]ALUC=LLLLL :[313] D = #A0622
20932
20933 ; CODES: N:C = 0000 (NO CHANGE)
20934
20935 ; SYNC: B05J2 (-) T = 2.1 USEC
20936
20937 ; KEY SIG: K3-3 DM=2L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BC01 H
20938
20939 046536 012700 000622 T0622: MOV #0622,R0 ;LOAD R0 WITH TEST NO.
20940 046542 013701 046554 MOV #I0622,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20941
20942 046546 012702 046564 R0622: MOJ #A0622,R2 ;R2 CONTAINS JUMP ADDRESS
20943 046552 000257 CCC ;MAKE N:C = 0000
20944
20945 046554 000122 I0622: JMP (R2)+ ;TEST THE JMP - GO TO A0622
20946
20947 046556 104006 E10622: ERROR6 ;JMP FAILED TO LOAD PC
20948 046560 046546 R0622 ;ERROR LOOP RETURN
20949 046562 000406 BR 07622 ;GO TO SCOPE EXIT
20950
20951 046564 103403 A0622: BCS E20622 ;BR IF JMP SET "C"
20952 046566 102402 BVS E2C622 ;BR IF JMP SET "V"
20953 046570 001401 BEQ E2C622 ;BR IF JMP SET "Z"
20954 046572 100002 BPL 00622 ;BR IF "N" IS CLEAR
20955
20956 046574 104006 E20622: ERROR6 ;JMP ALTERED CODES - SET
20957 046576 046546 R0622 ;ERROR LOOP RETURN
20958
20959 046600 000004 00622: SCOPE ;CALL SCOPE LOOP UTILITY
20960
20961
    
```

JOB

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 515
 DBGEAB.CMB T0622 JMP MODE 2 TEST; FLAGS = 0000

```

20962 ; *****
20963 ; .SBTTL T0623 JMP TEST MODE 3; FLAGS = 1111
20964 ; *****
20965 ;MICROPROGRAMMING / LOGIC INFORMATION
20966 ;ROM SEQ: [153,303,306,313,016] FC 1,5
20967 ;ACT BUTS: 37(004)100,153 / 15(153)306,306 / 16(306)016,016
20968 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0623
20969 ;CODES: N:C = 1111 (NO CHANGE)
20970 ;SYNC: B05J2 (-) T = 2.3 USEC
20971 ;KEY SIG: K3-3 DM=3L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BCO1 H
20972
20973
20974
20975
20976
20977
20978
20979
20980 046602 012700 000623 T0623: MOV #0623,R0 ;LOAD R0 WITH TEST NO.
20981 046606 013701 046620 MOV #I0623,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
20982
20983 046612 012702 046660 R0623: MOV #JMP3,R2 ;R2 CONTAINS ADDRESS OF JUMP ADDRESS
20984 046616 000277 SCC ;SET N:C = 1111
20985
20986 046620 000132 I0623: JMP @ (R2)+ ;TEST THE JMP - GO TO A0623
20987
20988 046622 104006 E10623: ERROR6 ;JMP FAILED TO LOAD PC
20989 046624 046612 R0623 ;ERROR LOOP RETURN
20990 046626 000417 BR 00623 ;GO TO SCOPE EXIT
20991
20992 046630 103003 A0623: BCC E20623 ;BR IF JMP CLEARED "C"
20993 046632 102002 BVC E20623 ;BR IF JMP CLEARED "V"
20994 046634 001001 BNE E20623 ;BR IF JMP CLEARED "Z"
20995 046636 100402 BMI B0623 ;BR IF "N" STILL SET
20996
20997 046640 104006 E20623: ERROR6 ;JMP ALTERED CODES - CLEAR
20998 046642 046612 R0623 ;ERROR LOOP RETURN
20999
21000 046644 022702 046662 B0623: CMP #JMP3+2,R2 ;DID JMP UPDATE R2?
21001 046650 001406 BEQ 00623 ;BR IF YES
21002
21003 046652 104006 E30623: ERROR6 ;JMP FAILED TO UPDATE REGISTER
21004 046654 046612 R0623 ;ERROR LOOP RETURN
21005 046656 000403 BR 00623 ;GO TO SCOPE EXIT
21006 046660 046630 JMP3: A0623 ;JMP3 CONTAINS JUMP ADDRESS
21007 046662 104006 E40623: ERROR6 ;ERROR CALL OCCURS IF MODE3 HAPPENS
21008 046664 046612 R0623 ;ERROR LOOP RETURN
21009 ;TO EXECUTE AS MODE 1 OR 2 AND
21010 ;A0623 IS LEGAL INSTRUCTION
21011
21012 046666 000004 00623: SCOPE ;CALL SCOPE LOOP UTILITY
21013
21014

```

K08

MAIN. MACY11 27:732) 15-OCT-76 14:58 PAGE 516
 DBQEAB.CMB T0623 JMP TEST MODE 3; FLAGS = 1111

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21015 ; *****
21016 .SBTTL T0624 JMP TEST MODE 3; FLAGS = 0000
21017 ; *****
21018 ;MICROPROGRAMMING / LOGIC INFORMATION
21019
21020 ;ROM SEQ: [153,303,306,313,016] FC 1,5
21021
21022 ;ACT BUTS: 37(004)100,153 / 15(153)306,306 / 16(306)016,016
21023
21024 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0624
21025
21026 ;CODES: N:C = 0000 (NO CHANGE)
21027
21028 ;SYNC: B05J2 (-) T = 2.3 USEC
21029
21030 ;KEY SIG: K3-3 DM=3L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BCO1 H
21031
21032
21033 046670 012700 000624 T0624: MOV #0624,R0 ;LOAD R0 WITH TEST NO.
21034 046674 013701 046706 MOV @#I0624,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21035
21036 046700 012702 046734 R0624: MOV #JMP3A,R2 ;R2 CONTAINS ADDRESS OF JUMP ADDRESS
21037 046704 000257 CCC ;MAKE N:C = 0000
21038
21039 046706 000132 I0624: JMP @ (R2)+ ;TEST THE JMP - GO TO A0624
21040
21041 046710 104006 E10624: ERROR6 ;JMP FAILED TO LOAD THE PC
21042 046712 046700 R0624 ;ERROR LOOP RETURN
21043 046714 000412 BR 00624 ;GO TO SCOPE EXIT
21044
21045 046716 103403 A0624: BCS E20624 ;BR IF JMP SET "C"
21046 046720 102402 BVS E20624 ;BR IF JMP SET "V"
21047 046722 001401 BEQ E20624 ;BR IF JMP SET "Z"
21048 046724 100006 BPL 00624 ;BR IF "N" STILL CLEAR
21049
21050 046726 104006 E20624: ERROR6 ;JMP ALTERED CODES - SET
21051 046730 046700 R0624 ;ERROR LOOP RETURN
21052 046732 000403 BR 00624 ;GO TO SCOPE EXIT
21053
21054 046734 046716 JMP3A: A0624 ;JUMP ADDRESS IN JMP3A
21055 046736 104006 E30624: ERROR6 ;JMP MODE 3 EXECUTED LIKE MODE 1 OR 2
21056 046740 046700 R0624 ;ERROR LOOP RETURN
21057
21058 046742 000004 00624: SCOPE ;CALL SCOPE LOOP UTILITY
21059
21060
  
```

```

21061 ; *****
21062 ; .SBTTL T0625 JMP TEST MODE 4; FLAGS = 1111
21063 ; *****
21064 ;MICROPROGRAMMING / LOGIC INFORMATION
21065 ;ROM SEQ: [154,300,306,313,016] FC 1,5
21066 ;ACT BUTS: 37(004)100,154 / 15(154)306,306 / 16(306)016,016
21067 ;EXEC: [306]ALUC=LLLLL :[313] D = #E20625-2
21068 ;CODES: h:C = 1111 (NO CHANGE)
21069 ;SYNC: B05J2 (-) T = 1.9 USEC
21070 ;KEY SIG: K3-3 DM=4L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BCO1 H
21071
21072
21073
21074
21075
21076
21077
21078
21079 046744 012700 000625 T0625: MOV #0625,R0 ;LOAD R0 WITH TEST NO.
21080 046750 013701 046762 R0625: MOV @#I0625,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21081 046754 012702 046774 R0625: MOV #E20625,R2 ;[R2] = JMP ADDRESS PLUS 2
21082 046760 000277 ;MAKE N:C = 1111
21083
21084 046762 000142 I0625: JMP -(R2) ;TEST THE JMP - GO TO E20625 MINUS 2
21085
21086 046764 104006 E10625: ERROR6 ;JMP FAILED TO LOAD PC
21087 046766 046754 R0625 ;ERROR LOOP RETURN
21088 046770 000417 BR 00625 ;GO TO SCOPE EXIT
21089
21090 046772 000403 E20625: BR A0625 ;GO TEST FLAGS - JMP LOADED PC OK
21091 046774 104006 ERROR6 ;JMP FAILED TO AUTO-DECREMENT R2
21092 046776 046754 R0625 ;ERROR LOOP RETURN
21093 047000 000413 BR 00625 ;GO TO SCOPE EXIT
21094
21095 047002 103003 A0625: BCC E30625 ;BR IF JMP CLEARED "C"
21096 047004 102002 BVC E30625 ;BR IF JMP CLEARED "V"
21097 047006 001001 BNE E30625 ;BR IF JMP CLEARED "Z"
21098 047010 100402 BMI B0625 ;BR IF "N" STILL SET
21099
21100 047012 104006 E30625: ERROR6 ;JMP ALTERED FLAGS
21101 047014 046754 R0625 ;ERROR LOOP RETURN
21102
21103 047016 022702 046772 B0625: CMP #E20625-2,R2 ;DID JMP UPDATE R2 PROPERLY?
21104 047022 001402 BEQ 00625 ;BR IF YES
21105
21106 047024 104006 E40625: ERROR6 ;JMP FAILED TO UPDATE REGISTER
21107 047026 046754 R0625 ;ERROR LOOP RETURN
21108
21109 047030 000004 00625: SCOPE ;CALL SCOPE LOOP UTILITY
21110
21111

```


M08

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 518
 DBQEAB.CMB T0625 JMP TEST MODE 4; FLAGS = 1111

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21112 ; *****
21113 ; .SBTTL T0626 JMP TEST MODE 4; FLAGS = 0000
21114 ; *****
21115 ;MICROPROGRAMMING / LOGIC INFORMATION
21116 ;ROM SEQ: [154,300,306,313,016] FC 1,5
21117 ;ACT BUTS: 37(004)100,154 / 15(154)306,306 / 16(306)016,016
21118 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0626
21119 ;CODES: N:C = 0000 (NO CHANGE)
21120 ;SYNC: B05J2 (-) T = 1.9 USEC
21121 ;KEY SIG: K3-3 DM=4L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BCD1 H
21122
21123
21124
21125
21126
21127
21128
21129
21130 047032 012700 000626 T0626: MOV #0626,R0 ;LOAD R0 WITH TEST NO.
21131 047036 013701 047050 MOV #I0626,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21132
21133 047042 012702 047062 R0626: MOV #A0626+2,R2 ;[R2] = JUMP ADDRESS PLUS 2
21134 047046 000257 CCC ;MAKE N:C = 0000
21135
21136 047050 000142 I0626: JMP -(R2) ;TEST THE JMP - TO TO A0626
21137
21138 047052 104006 E10626: ERROR6 ;JMP FAILED TO LOAD PC
21139 047054 047042 R0626 ;ERROR LOOP RETURN
21140 047056 000406 BR 00626 ;GO TO SCOPE EXIT
21141
21142 047060 103403 A0626: BCS E20626 ;BR IF JMP SET "C"
21143 047062 102402 BVS E20626 ;BR IF JMP SET "V"
21144 047064 001401 BEQ E20626 ;BR IF JMP SET "Z"
21145 047066 100002 BPL 00626 ;BR IF "N" STILL CLEAR
21146
21147 047070 104006 E20626: ERROR6 ;JMP ALTERED CODES - SET
21148 047072 047042 R0626 ;ERROR LOOP RETURN
21149
21150 047074 000004 00626: SCOPE ;CALL SCOPE LOOP UTILITY
21151
21152

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```

21153 ; *****
21154 ; .SBTTL T0627 JMP TEST MODE 5; FLAGS = 1111
21155 ; *****
21156 ;MICROPROGRAMMING / LOGIC INFORMATION
21157 ;ROM SEQ: [155,303,306,313,016] FC 1,5
21158 ;ACT BUTS: 37(004)100,155 / 15(155)306,306 / 16(306)016,016
21159 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0627
21160 ;CODES: N:C = 1111 (NO CHANGE)
21161 ;SYNC: B05J2 (-) T = 2.3 USEC
21162 ;KEY SIG: K3-3 DM=5L / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BCD1 H
21163
21164
21165
21166
21167
21168
21169
21170
21171 047076 012700 000627 T0627: MOV #0627,R0 ;LOAD R0 WITH TEST NO.
21172 047102 013701 047114 MOV #I0627,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21173
21174 047106 012702 047156 R0627: MOV #JMP5,R2 ;JMP CONTAINS ADDR+2 OF JUMP ADDRESS
21175 047112 000277 SCC
21176
21177 047114 000152 I0627: JMP @-(R2) ;TEST THE JMP - GO TO A0627
21178
21179 047116 104006 E10627: ERROR6 ;JMP FAILED TO LOAD PC
21180 047120 047106 R0627 ;ERROR LOOP RETURN
21181 047122 000417 BR 00627 ;GO TO SCOPE OXIT
21182
21183 047124 103003 A0627: BCC E20627 ;BR IF JMP CLEARED "C"
21184 047126 102002 BVC E20627
21185 047130 001001 BNE E20627
21186 047132 100402 BMI B0627
21187
21188 047134 104006 E20627: ERROR6 ;JMP ALTERED CODES - CLEARED
21189 047136 047106 R0627 ;ERROR LOOP RETURN
21190
21191 047140 022702 047154 B0627: CMP #JMP5-2,R2 ;DID R2 GET AUTO-DECREMENTED
21192 047144 001406 BEQ 00627 ;BR IF YES
21193
21194 047146 104006 E30627: ERROR6 ;JMP FAILED TO UPDATE REGISTER
21195 047150 047106 R0627 ;ERROR LOOP RETURN
21196 047152 000403 BR 00627 ;GO TO SCOPE EXIT
21197 047154 047124 A0627 ;THIS LOCATION CONTAINS JMP ADDRESS
21198 047156 104006 JMP5: ERROR6 ;JMP EXECUTED LIKE A MODE 1 OR 2
21199 047160 047106 R0627 ;ERROR LOOP RETURN
21200
21201 047162 000004 00627: SCOPE ;CALL SCOPE LOOP UTILITY
21202
21203
  
```

```

21204 ; *****
21205 ; .SBTTL T0630 JMP TEST MODE 5; FLAG = 0000
21206 ; *****
21207
21208 ;MICROPROGRAMMING / LOGIC INFORMATION
21209
21210 ;RCM SEQ: [155,303,306,313,016] FC 1,5
21211
21212 ;ACT BUTS: 37[004]100,155 / 15[155]306,306 / 16[306]016,016
21213
21214 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0630
21215
21216 ;CODES: N:C = 0000 (NO CHANGE)
21217
21218 ;SYNC: B05J2 (-) T = 2.3 USEC
21219
21220 ;KEY SIG: K3-3 DM=SL / K3-5 JMP L / K3-5 JMP+JSR H / K5-5 BC01 H
21221
21222 047164 012700 000630 T0630: MOV #0630,R0 ;LOAD R0 WITH TEST NO.
21223 047170 013701 047202 MOV #I0630,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21224
21225 047174 012702 047232 RC630: MOV #JMP5A,R2 ;[R2] = ADDR +2 OF JUMP ADDRESS
21226 047200 000257 CCC ;SET N:C = 0000
21227
21228 047202 000152 I0630: JMP @-(R2) ;TEST THE JMP - GO TO A0630
21229
21230 047204 104006 E10630: ERROR6 ;JMP FAILED TO LOAD PC
21231 047206 047174 R0630 ;ERROR LOOP RETURN
21232 047210 000412 BR 00630 ;GO TO SCOPE EXIT
21233
21234 047212 103403 A0630: BCS E20630 ;BR IF JMP SET "C"
21235 047214 102402 BVS E20630 ;BR IF JMP SET "V"
21236 047216 001401 BEQ E20630 ;BR IF JMP SET "Z"
21237 047220 100006 BPL 00630 ;BR IF "N" STILL CLEAR
21238
21239 047222 104006 E20630: ERROR6 ;JMP ALTERED THE CODES - SET
21240 047224 047174 R0630 ;ERROR LOOP RETURN
21241 047226 000403 BR 00630 ;GO TO SCOPE EXIT
21242
21243 047230 047212 JMP5A: A0630 ;THIS LOCATION CONTAINS JUMP ADDRESS
21244 047232 104006 ERROR6 ;JMP EXECUTED LIKE A MODE 1 OR 2
21245 047234 047174 R0630 ;ERROR LOOP RETURN
21246
21247 047236 000004 00630: SCOPE ;CALL SCOPE LOOP UTILITY
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21250 : *****
21251 : .SBTTL T0631 JMP TEST MODE 6; FLAGS = 1111
21252 : *****
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21254 ;MICROPROGRAMMING / LOGIC INFORMATION
21255
21256 ;ROM SEQ: (156,304,305,300,306,313,016) FC 1,5
21257
21258 ;ACT BUTS: 37(004)100,156 / 15(305)306,306 / 16(306)016,016
21259
21260 ;EXEC: (306)ALUC=LLLLL : (313) D = #A0631
21261
21262 ;CODES: N:C = 1111 (NO CHANGE)
21263
21264 ;SYNC: B05J2 (-) T = 2.4 USEC
21265
21266 ;KEY SIG: K3-3 DM=6L / K3-5 JMP L / K3-5 JMP+JSR H
21267
21268 047240 012700 000631 T0631: MOV #0631,R0 ;LOAD R0 WITH TEST NO.
21269 047244 013701 047256 MOV #I0631,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21270
21271 047250 012702 047306 R0631: MOV #E30631,R2 ;[R2] = BASE ADDRESS TO BE INDEXED
21272 047254 000277 SCC ;MAKE N:C = 1111
21273
21274 047256 000162 177762 I0631: JMP A0631-E30631(R2) ;TEST THE JMP - GO TO A0631
21275
21276 047262 104006 E10631: ERROR6 ;JMP FAILED TO LOAD THE PC
21277 047264 047250 R0631 ;ERROR LOOP RETURN
21278 047266 000411 BR 00631 ;GO TO SCOPE EXIT
21279
21280 047270 103003 A0631: BCC E20631 ;BR IF JMP CLEARED "C"
21281 047272 102002 BVC E20631
21282 047274 001001 BNE E20631
21283 047276 100405 BMI 00631 ;BR IF "N" STILL SET
21284
21285 047300 104006 E20631: ERROR6 ;JMP ALTERED CODES - CLEARED
21286 047302 047250 R0631 ;ERROR LOOP RETURN
21287 047304 000402 BR 00631 ;GO TO SCOPE EXIT
21288
21289 047306 104006 E30631: ERROR6 ;JMP EXECUTED LIKE A MODE 1 OR 2 OR
21290 047310 047250 R0631 ;ERROR LOOP RETURN
21291 ;FAILED TO INDEX [R2]
21292
21293 047312 000004 00631: SCOPE ;CALL SCOPE LOOP UTILITY
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: *****
.SBTTL T0632 JMP TEST MODE 6; FLAGS = 0000
: *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [156,304,305,300,306,313,016] FC 1,5
;ACT BUTS: 37(004)100,156 / 15(305)1306,306 / 16(306)016,016
;EXEC: [306]ALUC=LLLLL :[313] D = #A0632
;CODES: N:C = 0000 (NO CHANGE)
;SYNC: B05J2 (-) T = 2.4 USEC
;KEY SIG: K3-3 DM=6L / K3-5 JMP L / K3-5 JMP+JSR H

T0632: MOV #0632,R0 ;LOAD R0 WITH TEST NO.
MOV #I0632,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
R0632: MOV #E30632,R2 ;[R2] = BASE ADDRESS FOR JUMP
CCC ;MAKE N:C = 0000
I0632: JMP A0632-E30632(R2) ;TEST THE JMP - GO TO A0632
E10632: ERROR6 ;JMP FAILED TO LOAD PC
R0632 ;ERROR LOOP RETURN
BR 00632 ;GO TO SCOPE EXIT
A0632: BCS E20632 ;BR IF JMP SET "C"
BVS E20632 ;BR IF JMP SET "V"
BEQ E20632 ;BR IF JMP SET "Z"
BPL 00632 ;BR IF "N" STILL CLEAR
E20632: ERROR6 ;JMP ALTERED CODES
R0632 ;ERROR LOOP RETURN
BR 00632 ;GO TO SCOPE EXIT
E30632: ERROR6 ;JMP EXECUTED LIKE A MODE 1 OR 2, OR
R0632 ;ERROR LOOP RETURN
;FAILED TO INDEX [R2]
00632: SCOPE ;CALL SCOPE LOOP UTILITY

E09

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 523
 C80EAB.CMB T0632 JMP TEST MODE 6; FLAGS = 0000

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21342 : *****
21343 : .SBTTL T0633 JMP TEST MODE 7; FLAGS = 1111
21344 : *****
21345 ;MICROPROGRAMMING / LOGIC INFORMATION
21346 ;ROM SEQ: [157,301,302,303,306,313,016] FC 1,5
21347 ;ACT BUTS: 37(1004)100,157 / 15(302)306,306 / 16(306)016,016
21348 ;EXEC: [360]ALUC=LLLLL :[313] D = #A0633
21349 ;CODES: N:C = 1111 (NO CHANGE)
21350 ;SYNC: B05J2 (-) T = 3 USEC
21351 ;KEY SIG: K3-3 DM=7L / K3-5 JMP L / K3-5 JMP+JSR H
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21360 047370 012700 000633 T0633: MOV #0633,R0 ;LOAD R0 WITH TEST NO.
21361 047374 013701 047406 MOV #I0633,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21362
21363 047400 012702 047420 R0633: MOV #E20633,R2 ;[R2] = BASE ADDRESS
21364 047404 000277 SCC ;MAKE N:C = 1111
21365
21366 047406 000172 000024 I0633: JMP @JMP7-E20633(R2) ;TEST THE JMP - GO TO A0633
21367
21368 047412 104006 E10633: ERROR6 ;JMP FAILED TO LOAD PC
21369 047414 047400 R0633 ;ERROR LOOP RETURN
21370 047416 000415 BR 00633 ;GO TO SCOPE EXIT
21371
21372 047420 104006 E20633: ERROR6 ;JMP FAILED TO INDEX OR ACTED LIKE MODE 1 OR 2
21373 047422 047400 R0633 ;ERROR LOOP RETURN
21374 047424 000412 BR 00633 ;GO TO SCOPE EXIT
21375
21376 047426 103003 A0633: BCC E30633 ;BR IF JMP CLEARED "C"
21377 047430 102002 BVC E30633 ;BR IF JMP CLEARED "V"
21378 047432 00:001 BNE E30633 ;BR IF JMP CLEARED "Z"
21379 047434 100406 BMI 00633 ;BR IF "N" STILL SET
21380
21381 047436 104006 E30633: ERROR6 ;JMP ALTERED CODES - CLEARED
21382 047440 047400 R0633 ;ERROR LOOP RETURN
21383 047442 000403 BR 00633 ;GO TO SCOPE EXIT
21384
21385 047444 047426 JMP7: A0633 ;THIS LOCATION CONTAINS JMP ADDRESS
21386
21387 047446 104006 E40633: ERROR6 ;JMP EXECUTED LIKE MODE 6
21388 047450 047400 R0633 ;ERROR LOOP RETURN
21389
21390 047452 000004 00633: SCOPE ;CALL SCOPE LOOP UTILITY
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21393 : *****
21394 : .SBTTL T0634 JMP TEST MODE 7; FLAGS = 0000
21395 : *****
21396
21397 ;MICROPROGRAMMING / LOGIC INFORMATION
21398
21399 ;ROM SEQ: (157,301,302,303,306,313,016) FC 1,5
21400
21401 ;ACT BUTS: 37(004)100,157 / 15(302)306,306 / 16(306)016,016
21402
21403 ;EXEC: [306]ALUC=LLLLL : [313] D = #A0634
21404
21405 ;CODES: N:C = 0000 (NO CHANGE)
21406
21407 ;SYNC: B05J2 (-) T = 3 USEC
21408
21409 ;KEY SIG: K3-3 DM=7L / K3-5 JMP L / K3-5 JMP+JSR H
21410
21411 047454 012700 000634 T0634: MOV #0634,R0 ;LOAD R0 WITH TEST NO.
21412 047460 013701 047472 MOV #I0634,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21413
21414 047464 012702 047504 R0634: MOV #E20634,R2 ;[R2] = BASE ADDRESS
21415 047470 000257 CCC ;MAKE N:C = 0000
21416
21417 047472 000172 000024 I0634: JMP @JMP7A-E20634(R2) ;TEST THE JMP - GO TO A0634
21418
21419 047476 104006 E10634: ERROR6 ;JMP FAILED TO LOAD PC
21420 047500 047464 R0634 ;ERROR LOOP RETURN
21421 047502 000415 BR 00634 ;GO TO SCOPE EXIT
21422
21423 047504 104006 E20634: ERROR6 ;JMP FAILED TO INDEX
21424 047506 047464 R0634 ;ERROR LOOP RETURN
21425 047510 000412 BR 00634 ;GO TO SCOPE EXIT
21426
21427 047512 103403 A0634: BCS E30634 ;BR IF JMP SET "C"
21428 047514 102402 BVS E30634 ;BR IF JMP SET "V"
21429 047516 001401 BEQ E30634 ;BR IF JMP SET "Z"
21430 047520 100006 BPL 00634 ;BR IF "N" STILL CLEAR
21431
21432 047522 104006 E30634: ERROR6 ;JMP ALTERED CODES - SET
21433 047524 047464 R0634 ;ERROR LOOP RETURN
21434 047526 000403 BR 00634 ;GO TO SCOPE EXIT
21435
21436 047530 047512 JMP7A: A0634 ;THIS LOCATION CONTAINS JUMP ADDRESS
21437
21438 047532 104006 E40634: ERROR6 ;JMP EXECUTED LIKE A MODE 6
21439 047534 047464 R0634 ;ERROR LOOP RETURN
21440
21441 047536 000004 00634: SCOPE ;CALL SCOPE LOOP UTILITY
    
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047540 012700 000635
 047544 013701 047560
 047550 010605
 047552 012702 047566
 047556 000257
 C 17560 004412
 047562 104005
 047564 047552
 047566 005726
 047570 020605
 047572 001404
 047574 005746
 047576 104005
 047600 047552
 047602 010506
 047604 000004

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; *****
; .SBTTL T0635 JSR MODE 1 TEST - LOAD PC / PUSH SP
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [151,300,307,310,311,312,306,313,016] FC 1,5
;ACT BUTS:     37[004]100,151 / 15[151]306,307 / 16[306]016,016
;EXEC:         [306]ALUC=LLLLL :[313] D = #A0635
;CODES:        N / A
;SYNC:         B05J2 (-) T = 3 USEC
;KEY SIG:      K3-3 DM=1L / K3-5 JMP+JSR H / K3-5 JSR H

T0635:  MOV      #0635,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0635,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R5          ;SAVE THE SP
R0635:  MOV      #A0635,R2       ;DEST ADDR = A0635
        CCC
        ;SCOPE SYNC

I0635:  JSR      R4,(R2)         ;TEST THE JSR - GO TO A0635

E10635:  ERRORS R0635          ;JSR FAILED TO LOAD THE PC
        ;ERROR LOOP RETURN

A0635:  TST      (SP)+           ;POP THE SP
        CMP      SP,R5         ;DID JSR PUSH THE SP ?
        BEQ      00635         ;BR IF YES

E20635:  TST      -(SP)         ;RESTORE ERROR SP
        ERRORS R0635          ;JSR FAILED TO PUSH THE SP
        ;ERROR LOOP RETURN

00635:  MOV      R5,SP          ;RESTORE SP IN CASE OF EPKOR
        SCOPE                   ;CALL SCOPE LOOP UTILITY
  
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047606 012700 000636
047612 013701 047636
047616 010605
047620 012702 047644
047624 005066 177776
047630 012704 125252
047634 000257

047636 004412

047640 104005
047642 047620

047644 022726 125252
047650 001402

047652 104005
047654 047620

047656 022704 047640
047662 001402

047664 104005
047666 047620

047670 010506
047672 000004

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; *****  
; .SBTTL T0636 JSR MODE 1 TEST - CHECK RN AND OLD PC  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [151,300,307,310,311,312,306,313,016] FC 1,5  
;ACT BUTS: 37[004]100,151 / 15[151]306,307 / 16[306]016,016  
;EXEC: [310] D = 125252 / [312] D = #E10636 / [313] D = #A0636  
;CODES: N / A  
;SYNC: B05J2 (-) T = 3 USEC  
;KEY SIG: K3-3 DM=1L / K3-5 JSR H / K3-5 JMP+JSR H  
T0636: MOV #0636,R0 ;LOAD R0 WITH TEST NO.  
MOV #E10636,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV SP,R5 ;SAVE THE SP  
R0636: MOV #A0636,R2 ;DEST ADDR = A0636  
CLR -2(SP) ;INIT STACK LOC TO GET [R4]  
MOV #125252,R4 ;INIT RN = 125252  
CCC ;SCOPE SYNC  
I0636: JSR R4,(R2) ;TEST THE JSR - GO TO A0636  
E10636: ERRORS ;JSR FAILED TO LOAD THE PC  
R0636 ;ERROR LOOP RETURN  
A0636: CMP #125252,(SP)+ ;DID JSR SAVE REG ON STACK  
BEQ C0636 ;BR IF IT DID  
E20636: ERRORS ;JSR FAILED TO SAVE REG ON STACK  
R0636 ;ERROR LOOP RETURN  
C0636: CMP #E10636,R4 ;DID OLD PC GET SAVED ?  
BEQ B0636 ;BR IF YES  
E30636: ERRORS ;JSR FAILED TO SAVE TH OLD PC  
R0636 ;ERROR LOOP RETURN  
B0636: MOV R5,SP ;RESTORE SP IN CASE ERROR SCREWED IT UP  
O0636: SCOPE ;CALL SCOPE LOOP UTILITY
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.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 527
DBQERB.CMB T0635 JSR MODE 1 TEST - CHECK RN AND OLD PC

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21528 ; *****
21529 ; .SBTTL T0637 JSR MODE 1 TEST - (N:C) = 0000
21530 ; *****
21531 047674 012700 000637 T0637: MOV #0637,R0 ;LOAD R0 WITH TEST NO.
21532 ;MICROPROGRAMMING / LOGIC INFORMATION
21533
21534 ;ROM SEQ: (151,300,307,310,311,312,306,313,016) FC 1,5
21535
21536 ;ACT BUTS: 37(004)100,151 / 15(151)306,307 / 16(306)016,016
21537
21538 ;EXEC: (306)ALUC=LLLLL :(313) D = #A0637
21539
21540 ;CODES: N:C = 0000 (NO CHANGE)
21541
21542 ;SYNC: B05J2 (-) T = 3 USEC
21543
21544 ;KEY SIG: K3-3 DM=1L / K3-5 JSR H / K3-5 JMP+JSR H
21545
21546 047700 013701 047714 MOV #I0637,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21547 047704 010605 MOV SP,R5 ;SAVE THE SP
21548 047706 012702 047722 R0637: MOV #A0637,R2 ;DEST ADDR = A0637
21549 047712 000257 CCC ;N:C = 0000
21550
21551 047714 004412 I0637: JSR R4,(R2) ;TEST THE JSR - GO TO A0637
21552
21553 047716 104005 E10637: ERRORS ;JSR FAILED TO LOAD THE PC
21554 047720 047706 R0637 ;ERROR LOOP RETURN
21555
21556 047722 100403 A0637: BMI E20637 ;N:C = 0000 ?
21557 047724 001402 BEQ E20637
21558 047726 102401 BVS E20637
21559 047730 103002 BCC B0637
21560
21561 047732 104005 E20637: ERRORS ;JSR FAILED - ALTERED FLAGS
21562 047734 047706 R0637 ;ERROR LOOP RETURN
21563
21564 047736 010506 B0637: MOV R5,SP ;RESET SP IN CASE OF ERROR
21565 047740 000004 00637: SCOPE ;CALL SCOPE LOOP UTILITY

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21566 : *****
21567 .SBTTL T0640 JSR MODE 1 TEST - (N:C) = 1111
21568 : *****
21569 047742 012700 000640 †0640: MOV #0640,R0 ;LOAD R0 WITH TEST NO.
21570 ;MICROPROGRAMMING / LOGIC INFORMATION
21571 ;ROM SEQ: [151,300,307,311,312,306,313,016] FC 1,5
21572 ;ACT BUTS: 37(004)100,151 / 15(151)306,307 / 16(306)016,016
21573 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0640
21574 ;CODES: N:C = 1111 (NO CHANGE)
21575 ;SYNC: B05J2 (-) T = 3 USEC
21576 ;KEY SIG: K3-3 DM=1L / K3-5 JSR H / K3-5 JMP+JSR H
21577
21578 047746 013701 047762 MOV #10640,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21579 047752 010605 MOV SP,R5 ;SAVE THE SP
21580 047754 012702 047770 R0640: MOV #A0640,R2 ;DEST ADDR = A0640
21581 047760 000277 SCC ;N:C = 1111
21582
21583 047762 004412 I0640: JSR R4,(R2) ;TEST THE JSR - GO TO A0640
21584
21585 047764 104005 E10640: ERRORS ;JSR FAILED TO LOAD THE PC
21586 047766 047754 R0640 ;ERROR LOOP RETURN
21587
21588 047770 100003 A0640: BPL E20640 ;N:C = 1111 ?
21589 047772 001002 BNE E20640
21590 047774 102001 BVC E20640
21591 047776 103402 BCS B0640
21592
21593 050000 104005 E20640: ERRORS ;JSR ALTERED FLAGS
21594 050002 047754 R0640 ;ERROR LOOP RETURN
21595
21596 050004 010506 B0640: MOV R5,SP ;RESET SP IN CASE OF ERROR
21597 050006 000004 00640: SCOPE ;CALL SCOPE LOOP UTILITY
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 529
 DBGARB.CMB T0640 JSR MODE 1 TEST - <N:C> = 1111

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21604 ; *****
21605 ; .SBTTL T0641 JSR MODE 2 TEST
21606 ; *****
21607
21608 ;MICROPROGRAMMING / LOGIC INFORMATION
21609
21610 ;ROM SEQ:      [152,235,300,307,310,311,312,306,313,016] FC 1,5
21611
21612 ;ACT BUTS:     37[004]100,152 / 15[235]306,307 / 16[306]016,016
21613
21614 ;EXEC:         [306]ALUC=LLLLL :[313] D = #A0641
21615
21616 ;CODES:        N / A
21617
21618 ;SYNC:         B05J2 (-) T = 3.25 USEC
21619
21620 ;KEY SIG:      K3-3 DM=2L / K3-5 JSR H / K3-5 JMP+JSR H / K5-5 BC01 H
21621
21622 050010 012700 000641 T0641: MOV #0641,R0 ;LOAD R0 WITH TEST NO.
21623 050014 013701 050032      MOV @#10641,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21624 050020 010605      MOV SP,R5 ;SAVE THE SP
21625 050022 010506 R0641: MOV R5,SP ;RESET SP FOR ERROR LOOPS
21626 050024 012702 050040      MOV #A0641,R2 ;DEST ADDR = A0641
21627 050030 000257      CCC ;SCOPE SYNC
21628
21629 050032 004422 I0641: JSR R4,(R2)+ ;TEST THE JSR - GO TO A0641
21630
21631 050034 104005 E10641: ERRORS ;JSR FAILED TO LOAD THE PC
21632 050036 050022 R0641 ;ERROR LOOP RETURN
21633
21634 050040 005726 A0641: TST (SP)+ ;RESET SP
21635 050042 020605      CMP SP,R5 ;DID JSR PUSH STACK ?
21636 050044 001404      BFG 00641 ;BR IF YES
21637
21638 050046 005746 E20641: TST -(SP) ;RESET SP TO ERROR VALUE
21639 050050 104005      ERRORS ;JSR FAILED TO PUSH SP
21640 050052 050022 R0641 ;ERROR LOOP RETURN
21641
21642 050054 010506      MOV R5,SP ;RESTORE SP JUST IN CASE
21643
21644 050056 000004 00641: SCOPE ;CALL SCOPE LOOP UTILITY

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21645 ; *****
21646 ; .SBTTL T0642 JSR MODE 3 TEST
21647 ; *****
21648
21649 ;MICROPROGRAMMING / LOGIC INFORMATION
21650
21651 ;ROM SEQ: [153,303,307,310,311,312,306,313,016] FC 1,5
21652
21653 ;ACT BUTS: 37(004)100,153 / 15(153)306,307 / 16(313)016,016
21654
21655 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0642
21656
21657 ;CODES: N / A
21658
21659 ;SYNC: B05J2 (-) T = 3.5 USEC
21660
21661 ;KEY SIG: K3-3 DM=3L / K3-5 JSR H / K3-5 JMP+JSR H / K5-5 BC01 H
21662
21663 050060 012700 000642 T0642: MOV #0642,R0 ;LOAD R0 WITH TEST NO.
21664 050064 013701 050102 MOV @#I0642,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21665 050070 010605 MOV SP,R5 ;SAVE THE SP
21666 050072 010506 R0642: MOV R5,SP ;RESET SP FOR ERROR LOOPS
21667 050074 012702 050126 MOV #JSR3,R2 ;DEST ADDR = [JSR3]
21668 050100 000257 CCC ;SCOPE SYNC
21669
21670 050102 004432 I0642: JSR R4,@(R2)+ ;TEST THE JSR - GO TO A0642 VIA JSR3
21671
21672 050104 104005 E10642: ERRORS ;JSR FAILED TO LOAD THE PC
21673 050106 050072 R0642 ;ERROR LOOP RETURN
21674
21675 050110 005726 A0642: TST (SP)+ ;RESET SP
21676 050112 020605 CMP SP,R5 ;DID JSR PUSH STACK ?
21677 050114 001410 BEQ 00642 ;BR IF YES
21678
21679 050116 005746 E20642: TST -(SP) ;RESET SP TO ERROR VALUE
21680 050120 104005 ERRORS ;JSR FAILED
21681 050122 050072 R0642 ;ERROR LOOP RETURN
21682 050124 000403 BR 80642 ;GO EXIT
21683
21684 050126 050110 JSR3: A0642 ;CONTAINS JUMP ADDR
21685 050130 104005 E30642: ERRORS ;JSR EXECUTED LIKE A MODE 1 OR 2
21686 050132 050072 R0642 ;ERROR LOOP RETURN
21687
21688 050134 010506 B0642: MOV R5,SP ;RESTORE SP JUST IN CASE
21689
21690 050136 000004 00642: SCOPE ;CALL SCOPE LOOP UTILITY

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M09

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21691 ; *****
21692 ; .SBTTL T0643 JSR MODE 4 TEST
21693 ; *****
21694 ;
21695 ;MICROPROGRAMMING / LOGIC INFORMATION
21696 ;
21697 ;ROM SEQ: [154,300,307,311,312,306,313,016] FC 1,5
21698 ;ACT BUTS: 37(004)100,154 / 15(154)306,307 / 16(306)016,016
21699 ;
21700 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0643
21701 ;
21702 ;CODES: N / A
21703 ;
21704 ;SYNC: B05J2 (-) T = 3.1 USEC
21705 ;
21706 ;KEY SIG: K3-3 DM=4L / K3-5 JSR H / K3-5 JMP+JSR H / K5-5 BCO1 H
21707 ;
21708 ;
21709 050140 012700 000643 T0643: MOV #0643,R0 ;LOAD R0 WITH TEST NO.
21710 050144 013701 050162 MOV #I0643,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21711 050150 010605 MOV SP,R5 ;SAVE THE SP
21712 050152 010506 R0643: MOV R5,SP ;RESET SP FOR ERROR LOOPS
21713 050154 012702 050172 MOV #E20643,R2 ;DEST ADDR = A0643+2
21714 050160 000257 CCC ;SCOPE SYNC
21715 ;
21716 050162 004442 I0643: JSR R4,-(R2) ;TEST THE JSR - GO TO A0643
21717 ;
21718 050164 104005 E10643: ERRORS ;JSR FAILED TO LOAD THE PC
21719 050166 050152 R0643 ;ERROR LOOP RETURN
21720 ;
21721 050170 000402 A0643: BR B0643 ;JUMPED OK - GO CHECK SP
21722 050172 104005 E20643: ERRORS ;JSR FAILED TO DECREMENT DEST REG
21723 050174 050152 R0643 ;ERROR LOOP RETURN
21724 ;
21725 050176 005726 B0643: TST (SP)+ ;RESET SP
21726 050200 020605 CMP SP,R5 ;DID JSR PUSH STACK ?
21727 050202 001404 BEQ 00643 ;BR IF YES
21728 ;
21729 050204 005746 E30643: TST -(SP) ;RESET SP TO ERROR VALUE
21730 050206 104005 ERRORS ;JSR FAILED TO PUSH SP
21731 050210 050152 R0643 ;ERROR LOOP RETURN
21732 ;
21733 050212 010506 C0643: MOV R5,SP ;RESTORE SP JUST IN CASE
21734 ;
21735 050214 000004 00643: SCOPE ;CALL SCOPE LOOP UTILITY
  
```

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21736 ; *****
21737 ; .SBTTL T0644 JSR MODE 5 TEST
21738 ; *****
21739
21740 ;MICROPROGRAMMING / LOGIC INFORMATION
21741
21742 ;ROM SEQ: [155,303,307,310,311,312,306,313,016] FC 1,5
21743
21744 ;ACT BUTS: 37[004]100,155 / 15[155]306,307 / 16[306]016,016
21745
21746 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0644
21747
21748 ;CODES: N / A
21749
21750 ;SYNC: B05J2 (-) T = 3.5 USEC
21751
21752 ;KEY SIG: K3-3 DM=5L / K3-5 JSR H / K3-5 JMP+JSR H / K5-5 BC01 H
21753
21754 050216 012700 000644 T0644: MOV #0644,R0 ;LOAD R0 WITH TEST NO.
21755 050222 013701 050252 MOV @#I0644,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21756 050226 032737 010000 066642 BIT #10000,@#BPTLOC ;BREAKPOINT HALT SET ??
21757 050234 001401 BEQ .+4 ;BR IF NOT
21758 050236 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
21759 050240 010605 MOV SP,R5 ;SAVE THE SP
21760 050242 010506 R0644: MOV R5,SP ;RESET SP FOR ERROR LOOPS
21761 050244 012702 050300 MOV #E30644,R2 ;DEST ADDR = [E30644 - 2]
21762 050250 000257 CCC ;SCOPE SYNC
21763
21764 050252 004452 I0644: JSR R4,@-(R2) ;TEST THE JSR - GO TO A0644
21765
21766 050254 104005 E10644: ERRORS ;JSR FAILED TO LOAD THE PC
21767 050256 050242 R0644 ;ERROR LOOP RETURN
21768
21769 050260 005726 A0644: TST (SP)+ ;RESET SP
21770 050262 020605 CMP SP,R5 ;DID JSR PUSH STACK ?
21771 050264 001410 BEQ 00644 ;BR IF YES
21772
21773 050266 005746 E20644: TST -(SP) ;RESET SP TO ERROR VALUE
21774 050270 104005 ERRORS ;JSR FAILED TO PUSH SP
21775 050272 050242 R0644 ;ERROR LOOP RETURN
21776 050274 000403 BR 80644 ;GO EXIT
21777
21778 050276 050260 E30644: A0644 ;CONTAINS JUMP ADDRESS
21779 050300 104005 ERRORS ;JSR EXECUTED LIKE A MODE 1 OR 2
21780 050302 050242 R0644 ;ERROR LOOP RETURN
21781
21782 050304 010506 B0644: MOV R5,SP ;RESTORE SP JUST IN CASE
21783
21784 050306 000004 00644: SCOPE ;CALL SCOPE LOOP UTILITY

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050310 012700 000645
050314 013701 050332
050320 010605
050322 010506
050324 012702 050336
050330 000257
050332 004462 000004
050336 104005
050340 050322
050342 005726
050344 020605
050346 001404
050350 005746
050352 104005
050354 050322
050356 010506
050360 000004

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: *****  
: .SBTTL T0645 JSR MODE 6 TEST  
: *****  
; MICROPROGRAMMING / LOGIC INFORMATION  
; RCM SEQ: [156,304,305,300,307,310,311,312,306,313,016] FC 1,5  
; ACT BUTS: 37(004)100,156 / 15(305)306,307 / 16(306)016,016  
; EXEC: [306]ALUC=LLLLL : [313] D = #A0645  
; CODES: N / A  
; SYNC: B05J2 (-) T = 3.5 USEC  
; KEY SIG: K3-3 DM=6L / K3-5 JSR H / K3-5 JMP+JSR H  
T0645: MOV #0645,R0 ;LOAD R0 WITH TEST NO.  
MOV #E10645,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV SP,R5 ;SAVE THE SP  
R0645: MOV R5,SP ;RESET SP FOR ERROR LOOPS  
MOV #E10645,R2 ;[R2] = BASE DEST ADDR  
CCC ;SCOPE SYNC  
I0645: JSR R4,A0645-E10645(R2) ;TEST THE JSR - GO TO A0645  
E10645: ERRORS R0645 ;JSR FAILED TO LOAD THE PC OR INDEX FAILED  
;ERROR LOOP RETURN  
A0645: TST (SP)+ ;RESET SP  
CMP SP,R5 ;DID JSR PUSH STACK ?  
BEQ 00645 ;BR IF YES  
E20645: TST -(SP) ;RESET SP TO ERROR VALUE  
ERRORS R0645 ;JSR FAILED TO PUSH STACK  
MOV R5,SP ;ERROR LOOP RETURN  
;RESET SP JUST IN CASE  
00645: SCOPE ;CALL SCOPE LOOP UTILITY
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21826 ; *****
21827 ; .SBTTL T0646 JSR MODE 7 TEST
21828 ; *****
21829
21830 ;MICROPROGRAMMING / LOGIC INFORMATION
21831
21832 ;ROM SEQ: [157,301,302,303,307,310,311,312,306,313,016] FC 1,5
21833
21834 ;ACT BUTS: 37[004]100,157 / 15[302]306,307 / 16[306]016,016
21835
21836 ;EXEC: [306]ALUC=LLLLL :[313] D = #A0646
21837
21838 ;CODES: N / A
21839
21840 ;SYNC: B05J2 (-) T = 4.1 USEC
21841
21842 ;KEY SIG: K3-3 DM=7L / K3-5 JSR H / K3-5 JMP+JSR H
21843
21844 050362 012700 000646 T0646: MOV #0646,R0 ;LOAD R0 WITH TEST NO.
21845 050366 013701 050404 MOV #E10646,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21846 050372 010605 MOV SP,R5 ;SAVE THE SP
21847 050374 010506 R0646: MOV R5,SP ;RESET SP FOR ERROR LOOPS
21848 050376 012702 05041C MOV #E10646,R2 ;BASE DEST ADDR = E10646
21849 050402 000257 CCC ;SCOPE SYNC
21850
21851 050404 004472 000022 I0646: JSR R4,#JSR7-E10646(R2);TEST THE JSR - GO TO A0646 VIA JSR7
21852
21853 050410 104005 E10646: ERRORS ;JSR FAILED TO LOAD THE PC
21854 ;OR INDEX FAILED
21855 050412 050374 R0646 ;ERROR LOOP RETURN
21856
21857 050414 005726 A0646: TST (SP)+ ;RESET SP
21858 050416 020605 CMP SP,R5 ;DID JSR PUSH STACK ?
21859 050420 001410 BEQ 00646 ;BR IF YES
21860
21861 050422 005746 E20646: TST -(SP) ;RESET SP TO ERROR VALUE
21862 050424 104005 ERRORS ;JSR FAILED TO PUSH STACK
21863 050426 050374 R0646 ;ERROR LOOP RETURN
21864 050430 000403 BR 80646 ;SKIP TO EXIT
21865
21866 050432 050414 JSR7: A0646 ;CONTAINS JUMP ADDR
21867 050434 104005 E30646: ERRORS ;JSR WORKED LIKE A MODE 1 OR 2
21868 050436 050374 R0646 ;ERROR LOOP RETURN
21869
21870 050440 010506 B0646: MOV R5,SP ;RESTORE SP JUST IN CASE
21871
21872 050442 000004 00646: SCOPE ;CALL SCOPE LOOP UTILITY
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; *****
; .SBTTL T0647 SOB TEST, (R1) = 1, NO BRANCH
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: (130,342,343,345,347,016) FC 1,7

;ACT BUTS: 37(004)100,130 / 12(342)344,345 / 16(345)016,016

;EXEC: (130)ALUC=LHMMH : (343) D = 000000

;CODES: N / A

;SYNC: B05J2 (-) T = 2 USEC

;KEY SIG: K3-6 SOB L / K1-7 D(15:00)=0 H

050444 012700 000647
050450 013701 050472

T0647: MOV #0647,R0 ;LOAD R0 WITH TEST NO.
MOV #I0647,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD

050454 012702 000001
050450 000403

R0647: MOV #1,R2 ;SET SOB COUNTER = 1
BR I0647-2 ;GO DO THE SOB

050462 104006
050464 050454
050466 000402

E0647: ERROR6 ;SOB SHOULDN'T HAVE BRANCHED HERE
R0647 ;ERROR LOOP RETURN
BR 00647 ;GO TO SCOPE CALL

050470 000257
050472 077205

I0647: CCC ;SYNC INSTR.
SOB R2,E0647 ;TEST THE SOB

050474 000004

00647: SCOPE ;CALL SCOPE LOOP UTILITY

E10

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 536
 DBQEAB.CMB T0647 SOB TEST. (R) = 1, NO BRANCH

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; *****
; .SBTTL T0650 SOB TEST, (R) = 5, BRANCH 4 TIMES
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [130,342,343,344,346,016] FC 1,7

;ACT BUTS:     37(004)100,130 / 12(342)344,344 / 16(344)016,016

;EXEC:         [130]ALUC=LHMH : [343] D = 000004 (1ST TIME)
;              [346]ALUC=LLHHL : [016] D = #A0650
;CODES:        N / A

;SYNC:         B05J2 (-) T = 2.36 USEC

;KEY SIG:      K3-6 SOB L / K2-7 DAD3 (1) H / K3-8 CIN00 L

T0650:  MOV      #0650,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0650,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD

R0650:  MOV      #5,R2           ;SET SOB COUNTER = 5
        MOV      #-5,R5         ;SET UP R5 TO COUNT 5 BRANCHES
        BR       I0650-2        ;GO DO THE SOB

A0650:  INC      R5              ;COUNT ONE BRANCH
        BEQ     E20650          ;BR IF TOO MANY LOOPS BY SOB

I0650:  CCC      R2,A0650        ;SCOPE SYNC
        SOB     R2,A0650        ;TEST THE SOB
        BR      SOB2            ;SKIP NEXT TWO WORDS

SOB1:   BR       SOB3           ;USED BY LAST SOB TEST TO TEST MAX OFFSET

SOB2:   TST     R2              ;R2 SHOULD CONTAIN 0
        BEQ     00650          ;BR IF IT DOES

E10650: ERROR6
        R0650
        BR      00650          ;SOB COUNTER NOT ZERO
;ERROR LOOP RETURN
;GO TO SCOPE CALL
E20650: ERROR6
        R0650
;SOB MADE TOO MANY BRANCHES
;ERROR LOOP RETURN
00650:  SCOPE
;CALL SCOPE LOOP UTILITY
  
```

F10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 537
 DBDEAB.CMB T0650 SOB TEST, [R] = 5, BRANCH 4 TIMES

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21954 : *****
21955 : .SBTTL T0651 SOB TEST, [R] = 1, FLAGS = 1111
21956 : *****
21957 ;MICROPROGRAMMING / LOGIC INFORMATION
21958
21959 ;ROM SEQ: [130,342,343,345,347,016] FC 1,7
21960
21961 ;ACT BUTS: 37[004]100,130 / 12[342]344,345 / 16[345]016,016
21962
21963 ;EXEC: [130]ALUC=LHMH :[343] D = 000000
21964
21965 ;CODES: N:C = 1111 (NO CHANGE)
21966
21967 ;SYNC: B05J2 (-) T = 2 USEC
21968
21969 ;KEY SIG: K3-6 SOB L / K1-7 D(15:00)=0 H
21970
21971
21972 050556 012700 000651 T0651: MOV #0651,R0 ;LOAD R0 WITH TEST NO.
21973 050562 013701 050574 MOV #I0651,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
21974
21975 050566 012702 000001 R0651: MOV #1,R2 ;SET SOB COUNTER = 1
21976 050572 000277 SCC ;MAKE N:C = 1111
21977
21978 050574 077202 I0651: SOB R2,I0651-2 ;TEST THE SOB
21979
21980 050576 103003 BCC E0651 ;BR IF C = 0
21981 050600 102002 BVC E0651 ;BR IF V = 0
21982 050602 001001 BNE E0651 ;BR IF Z = 0
21983 050604 100402 BMI 00651 ;BR IF N = 1
21984
21985 050606 104006 E0651: ERROR6 ;SOB ALTERED CODES - CLEARED ONE
21986 050610 050566 R0651 ;ERROR LOOP RETURN
21987
21988 050612 000004 00651: SCOPE ;CALL SCOPE LOOP UTILITY
21989
21990
  
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G10

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 538
 DBGEAB.CMB T0651 SOB TEST. (R) = 1, FLAGS = 1111

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21991 ; *****
21992 ; .SBTTL T0652 SOB TEST, (R) = 1, FLAGS = 0000
21993 ; *****
21994
21995 ;MICROPROGRAMMING / LOGIC INFORMATION
21996
21997 ;ROM SEQ: [130,342,343,345,347,016] FC 1,7
21998
21999 ;ACT BUTS: 37(004)100,130 / 12(342)344,345 / 16(345)016,016
22000
22001 ;EXEC: [130]ALUC=LHMMH :[343] D = 000000
22002
22003 ;CODES: N:C = 0000 (NO CHANGE)
22004
22005 ;SYNC: B05J2 (-) T = 2 USEC
22006
22007 ;KEY SIG: K3-6 SOB L / K1-7 D(15:00)=0 H
22008
22009 050614 012700 000652 T0652: MOV #0652,R0 ;LOAD R0 WITH TEST NO.
22010 050620 013701 050632 MOV #I0652,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22011
22012 050624 012702 000001 R0652: MOV #1,R2 ;SET SOB COUNTER = 1
22013 050630 000257 CCC ;MAKE N:C = 0000
22014
22015 050632 077202 I0652: SOB R2,I0652-2 ;TEST THE SOB
22016
22017 050634 103403 BCS E0652 ;BR IF C = 1
22018 050636 102402 BVS E0652 ;BR IF V = 1
22019 050640 001401 BEQ E0652 ;BR IF Z = 1
22020 050642 100002 BPL 00652 ;BR IF N = 0
22021
22022 050644 104006 E0652: ERROR6 ;SOB ALTERED CODES - SET ONE
22023 050646 050624 R0652 ;ERROR LOOP RETURN
22024
22025 050650 000004 00652: SCOPE ;CALL SCOPE LOOP UTILITY
22026
22027
  
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H10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 539
DBQEAB.CMB T0652 SOB TEST. (R) = 1, FLAGS = 0000

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22028 ; *****
22029 ; .SBTTL T0653 SOB TEST, (R) = 5, FLAGS = 1111
22030 ; *****
22031 ;MICROPROGRAMMING / LOGIC INFORMATION
22032 ;ROM SEQ: (130,342,343,344,346,016) FC 1,7
22033 ;ACT BUTS: 37(004)100,130 / 12(342)344,344 / 16(344)016,016
22034 ;EXEC: (130)ALUC=LHMMH : (343) D = 000004 (1ST TIME9
22035 ; (346)ALUC=LLMHL : (016) D = #I0653
22036 ;CODES: N:C = 1111 (NO CHANGE)
22037 ;SYNC: B05J2 (-) T = 2.36 USEC
22038 ;KEY SIG: K3-6 SOB L / K2-7 DAD3 (1) H / K3-8 CIN00 L
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22045
22046 050652 012700 000653 T0653: MOV #0653,R0 ;LOAD R0 WITH TEST NO.
22047 050656 013701 050670 MOV #I0653,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22048
22049 050662 012702 000005 R0653: MOV #5,R2 ;SET SOB COUNTER = 5
22050 050666 000277 SCC ;MAKE N:C = 1111
22051
22052 050670 077201 I0653: SOB R2,I0653 ;TEST THE SOB
22053
22054 050672 103003 BCC E0653 ;BR IF C = 0
22055 050674 102002 BVC E0653 ;BR IF V = 0
22056 050676 001001 BNE E0653 ;BR IF Z = 0
22057 050700 100402 BMI 00653 ;BR IF N = 1
22058
22059 050702 104006 E0653: ERROR6 ;SOB ALTERED CODES - CLEARED ONE
22060 050704 050662 R0653 ;ERROR LOOP RETURN
22061
22062 050706 000004 00653: SCOPE ;CALL SCOPE LOOP UTILITY
22063
22064
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22065 : *****
22066 : .SBTTL T0654 SOB TEST, [R] = 5, FLAGS = 0000
22067 : *****
22068 ;MICROPROGRAMMING / LOGIC INFORMATION
22069
22070 ;ROM SEQ: [130,342,343,344,346,016] FC 1,7
22071
22072 ;ACT BLTS: 37[004]100,130 / 12[342]344,344 / 16[344]016,016
22073
22074 ;EXEC: [130]ALUC=LHMH :[343] D = 000004 (1ST TIME)
22075 ; [346]ALUC=LLHHL :[016] D = #I0654
22076 ;CODES: N:C = 0000 (NO CHANGE)
22077
22078 ;SYNC: B05J2 (-) T = 2.36 USEC
22079
22080 ;KEY SIG: K3-6 SOB L / K2-7 DAD3 (1) H / K3-8 CIN00 L
22081
22082
22083 050710 012700 000654 T0654: MOV #0654,R0 ;LOAD R0 WITH TEST NO.
22084 050714 013701 050726 MOV @#I0654,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22085
22086 050720 012702 000005 R0654: MOV #5,R2 ;SET SOB COUNTER = 5
22087 050724 000257 SOB3: CCC ;MAKE N:C = 0000
22088
22089 050726 077277 I0654: SOB R2,S0B1 ;TEST THE SOB
22090
22091 050730 103403 BCS E0654 ;BR IF C = 1
22092 050732 102402 BVS E0654 ;BR IF V = 1
22093 050734 001401 BEQ E0654 ;BR IF Z = 1
22094 050736 100002 BPL 00654 ;BR IF N = 0
22095
22096 050740 104006 E0654: ERROR6 ;SOB ALTERED CODES - SET ONE
22097 050742 050720 R0654 ;ERROR LOOP RETURN
22098
22099 050744 000004 00654: SCOPE ;CALL SCOPE LOOP UTILITY
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22102 ; *****
22103 ; .SBTTL T0655 RTS TEST - <N:C> = 1111
22104 ; *****
22105 ;MICROPROGRAMMING / LOGIC INFORMATION
22106 ;ROM SEQ: [124,323,324,325,016] FC 1,6
22107 ;ACT BUTS: 37(004)100,124 / 16(324)016,016
22108 ;EXEC: [323] D = #A0655 / [325] D = 177777
22109 ;CODES: N:C = 1111 (NO CHANGE)
22110 ;SYNC: B05J2 (-) T = 2.5 USEC
22111 ;KEY SIG: K3-6 RTS L / K5-5 BC01 H
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22120 050746 012700 000655 T0655: MOV #0655,R0 ;LOAD R0 WITH TEST NO.
22121 050752 013701 051000 ;MOV #I0655,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22122 050756 010605 ;MOV SP,R5 ;SAVE THE SP
22123 050760 012704 177777 R0655: MOV #-1,R4 ;R3 SHOULD GET 177777
22124 050764 010506 ;MOV R5,SP ;RESET SP FOR ERROR LOOP
22125 050766 012703 051010 ;MOV #A0655,R3 ;RTS SHOULD LOAD PC FROM (R3)
22126 050772 012746 177777 ;MOV #-1,-(SP) ;RTS SHOULD LOAD R3 WITH 177777
22127 050776 000277 ;SCC ;N:C = 1111
22128
22129 051000 000203 I0655: RTS R3 ;TEST THE RTS - GO TO A0655
22130
22131 051002 104005 E10655: ERROR5 ;RTS FAILED TO LOAD THE PC
22132 051004 050760 R0655 ;ERROR LOOP RETURN ADDRESS
22133 051006 000420 BR D0655 ;GO TO EXIT - SCHOOLS OUT
22134
22135 051010 100003 A0655: BPL E20655 ;N:C = 1111 ?
22136 051012 051002 BNE E20655
22137 051014 102001 BVC E20655
22138 051016 103402 BCS B0655
22139
22140 051020 104005 E20655: ERROR5 ;RTS ALTERED CODES - CLEARED ONE
22141 051022 050760 R0655 ;ERROR LOOP RETURN
22142
22143 051024 020403 B0655: CMP R4,R3 ;DID R3 GET LOADED FROM STACK ?
22144 051026 001402 BEQ C0655 ;BR IF YES
22145
22146 051030 104000 E30655: ERROR ;RTS FAILED TO LOAD REG
22147 051032 050760 R0655 ;ERROR LOOP RETURN
22148
22149 051034 020506 C0655: CMP R5,SP ;DID RTS POP THE STACK POINTER ?
22150 051036 001405 BEQ D0655 ;BR IF YES
22151
22152 051040 010504 ;MOV R5,R4 ;[R4] = S / B SP
22153 051042 010603 ;MOV SP,R3 ;[R3] = WAS SP
22154 051044 104000 E40655: ERROR ;RTS FAILED TO POP SP
22155 051046 050760 R0655 ;ERROR LOOP RETURN
22156
22157 051050 010506 D0655: MOV R5,SP ;FIX THE SP
    
```


K10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 542
DBQEAB.CMB T0655 RTS TEST - <N:C> = 1111

22158 051052 000004
22159

00655: SCOPE

;CALL THE SCOPE LOOP UTILITY

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22160 ; *****
22161 ; .SBTTL T0656 RTS TEST - <N:C> = 0000
22162 ; *****
22163
22164 ;MICROPROGRAMMING / LOGIC INFORMATION
22165
22166 ;ROM SEQ: [124,323,324,325,016] FC 1,6
22167
22168 ;ACT BUTS: 37[004]100,124 / 16[324]016,016
22169
22170 ;EXEC: [323] D = #A0656 / [325] D = 177777
22171
22172 ;CODES: N:C = 0000 (NO CHANGE)
22173
22174 ;SYNC: B05J2 (-) T = 2.5 USEC
22175
22176 ;KEY SIG: K3-6 RTS L / K5-5 BCO1 H
22177
22178 051054 012700 000656 T0656: MOV #0656,R0 ;LOAD R0 WITH TEST NO.
22179 051060 013701 051106 MOV #I0656,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22180 051064 010605 MOV SP,R5 ;SAVE THE SP
22181 051066 012704 177777 R0656: MOV #-1,R4 ;R3 SHOULD GET 177777
22182 051072 010506 MOV R5,SP ;RESET SP FOR ERROR LOOP
22183 051074 012703 051116 MOV #A0656,R3 ;RTS SHOULD LOAD PC FROM [R3]
22184 051100 012746 177777 MOV #-1,-(SP) ;RTS SHOULD LOAD R3 WITH 177777
22185 051104 000257 CCC ;N:C = 0000
22186
22187 051106 000203 I0656: RTS R3 ;TEST THE RTS - GO TO A0656
22188
22189 051110 104005 E10656: ERRORS ;RTS FAILED TO LOAD THE PC
22190 051112 051066 R0656 ;ERROR LOOP RETURN ADDRESS
22191 051114 000420 BR D0656 ;GO TO EXIT - SCHOOLS OUT
22192
22193 051116 100403 A0656: BMI E20656 ;N:C = 0000 ?
22194 051120 001402 BEQ E20656
22195 051122 102401 BVS E20656
22196 051124 103002 BCC B0656
22197
22198 051126 104005 E20656: ERRORS ;RTS ALTERED CODES - CLEARED ONE
22199 051130 051066 R0656 ;ERROR LOOP RETURN
22200
22201 051132 020403 B0656: CMP R4,R3 ;DID R3 GET LOADED FROM STACK ?
22202 051134 001402 BEQ C0656 ;BR IF YES
22203
22204 051136 104000 E30656: ERROR ;RTS FAILED TO LOAD REG
22205 051140 051066 R0656 ;ERROR LOOP RETURN
22206
22207 051142 020506 C0656: CMP R5,SP ;DID RTS POP THE STACK POINTER ?
22208 051144 001405 BEQ O0656 ;BR IF YES
22209
22210 051146 010504 MOV R5,R4 ;[R4] = S / B SP
22211 051150 010603 MOV SP,R3 ;[R3] = WAS SP
22212 051152 104000 E40656: ERROR ;RTS FAILED TO POP SP
22213 051154 051066 R0656 ;ERROR LOOP RETURN
22214
22215 051156 010506 D0656: MOV R5,SP ;FIX THE SP
    
```

M10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 544
DBGERR.CMB T0655 RTS TEST - <N:C> = 0000

22216 051160 000004
22217

00656: SCOPE

;CALL THE SCOPE LOOP UTILITY

N10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 545
 DBQEAB.CMB T0656 RTS TEST - (N:C) = 0000

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22218 ; *****
22219 ; .SBTTL T0657 RTT TEST - (N:C) = 1111
22220 ; *****
22221 ; MICROPROGRAMMING / LOGIC INFORMATION
22222
22223 ; ROM SEQ: [101,320,321,322,017,015,013] FC 1,6,10
22224
22225 ; ACT BUTS: 37(004)100,101 / 26(017)010,013
22226
22227 ; EXEC: [320] D = #A0657 / [322] D = 340
22228
22229 ; CODES: [322] SPS=7 / N:C = 0000
22230
22231 ; SYNC: B05J2 (-) T = 3 USEC
22232
22233 ; KEY SIG: K3-6 RTT H / K3-6 RTI+RTT L / K5-5 BCO1 H
22234
22235
22236 051162 012700 000657 T0657: MOV #0657,R0 ;LOAD R0 WITH TEST NO.
22237 051166 013701 051220 MOV @#I0657,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22238 051172 010605 MOV SP,R5 ;SAVE THE SP
22239 051174 010506 R0657: MOV R5,SP ;RESET SP FOR ERROR LOOP
22240 051176 012704 000340 MOV #340,R4 ;[R4] = S / B PSW AT HTIS POINT
22241 051202 012746 000340 MOV #340,-(SP) ;NEW PSW S / B = 340
22242 051206 012746 051230 MOV #A0657,-(SP) ;NEW PC S / B = A0657
22243 051212 005037 177776 CLR @#PSW ;CLEAR THE PSW
22244 051216 000277 SCC ;N:C = 1111
22245
22246 051220 000006 I0657: RTT ;TEST THE RTT - GO TO A0657
22247
22248 051222 104005 E10657: ERRORS ;RTT FAILED TO LOAD THE PC
22249 051224 051174 R0657 ;ERROR LOOP RETURN ADDRESS
22250 051226 000414 BR C0657 ;GO TO EXIT - SCHOOL'S OUT
22251
22252 051230 013703 177776 A0657: MOV @#PSW,R3 ;SAVE THE PSW
22253 051234 020403 CMP R4,R3 ;WAS PSW = 340 ?
22254 051236 001402 BEQ B0657 ;BR IF IT WAS
22255
22256 051240 104000 E20657: ERROR ;RTT FAILED TO LOAD PSW PROPERLY
22257 ;[R3] = WAS PSW
22258 ;[R4] = S / B PSW
22259 051242 051174 R0657 ;ERROR LOOP RETURN ADDRESS
22260
22261 051244 020506 B0657: CMP R5,SP ;DID RTT UPDATE THE SP ?
22262 051246 001405 BEQ C0657 ;BR IF YES
22263
22264 051250 010504 MOV R5,R4 ;[R4] = S / B SP
22265 051252 010603 MOV SP,R3 ;[R3] = WAS SP
22266 051254 104000 E30657: ERROR ;RTT FAILED TO UPDATE SP
22267 051256 051174 R0657 ;ERROR LOOP RETURN ADDRESS
22268
22269 051260 010506 C0657: MOV R5,SP ;FIX THE SP
22270 051262 000004 O0657: SCOPE ;CALL THE SCOPE LOOP UTILITY
22271

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051264 012700 000660
051270 013701 051324
051274 010605
051276 010506
051300 012704 000017
051304 012746 000017
051310 012746 051334
051314 012737 000340 177776
051322 000257
051324 000006
051326 104005
051330 051276
051332 000414
051334 013703 177776
051340 020403
051342 001402
051344 104000
051346 051276
051350 020506
051352 001405
051354 010504
051356 010603
051360 104000
051362 051276
051364 010506
051366 000004

```

: *****
: .SBTTL T0660 RTT TEST - (N:C) = 0000
: *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      (101,320,321,322,017,015,013) FC 1,6,10
;ACT BUTS:     37(004)100,101 / 26(017)010,013
;EXEC:         (320) D = #A0660 / (322) D = 000017
;CODES:       (322) SPS=7 / N:C = 1111
;SYNC:        B05J2 (-) T = 3 USEC
;KEY SIG:     K3-6 RTI+RTT L / K3-6 RTT H / K5-5 BCD1 H

T0660:  MOV      #0660,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0660,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R5          ;SAVE THE SP
R0660:  MOV      R5,SP          ;RESET SP FOR ERROR LOOP
        MOV      #017,R4        ;[R4] = S / B PSW AT HTIS POINT
        MOV      #017,-(SP)     ;NEW PSW S / B = 017
        MOV      #A0660,-(SP)   ;NEW PC S / B = A0660
        MOV      #340,@#PSW    ;MAKE [PSW] = 340
        CCC                    ;N:C = 0000

I0660:  RTT                    ;TEST THE RTT - GO TO A0660

E10660:  ERRORS                ;RTT FAILED TO LOAD THE PC
        R0660                 ;ERROR LOOP RETURN ADDRESS
        BR        C0660        ;GO TO EXIT - SCHOOL'S OUT

A0660:  MOV      @#PSW,R3        ;SAVE THE PSW
        CMP      R4,R3          ;WAS PSW = 017 ?
        BEQ      B0660        ;BR IF IT WAS

E20660:  ERROR                  ;RTT FAILED TO LOAD PSW PROPERLY
        ;[R3] = WAS PSW
        ;[R4] = S / B PSW
        R0660                 ;ERROR LOOP RETURN ADDRESS

B0660:  CMP      R5,SP          ;DID RTT UPDATE THE SP ?
        BEQ      00660        ;BR IF YES

E30660:  MOV      R5,R4          ;[R4] = S / B SP
        MOV      SP,R3          ;[R3] = WAS SP
        ERROR                ;RTT FAILED TO UPDATE SP
        R0660                 ;ERROR LOOP RETURN ADDRESS

C0660:  MOV      R5,SP          ;FIX THE SP
00660:  SCOPE                    ;CALL THE SCOPE LOOP UTILITY
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22326 : *****
22327 : .SBTTL T0661 MARK INSTRUCTION TEST - (N:C)=0000
22328 : *****
22329
22330 : MICROPROGRAMMING / LOGIC INFORMATION
22331
22332 : ROM SEQ: [112,353,354,355,356,357,016] FC 1,5
22333
22334 : ACT BUTS: 37(004)100,112 / 16(356)016,016
22335
22336 : EXEC: [355] D = #80661+2 / [356] D = 125252 / [357] D = #A0661
22337
22338 : CODES: N:C = 0000 (NO CHANGE)
22339
22340 : SYNC: B05J2 (-) T = 2.6 USEC
22341
22342 : KEY SIG: K3-6 MARK L / K5-5 BCO1 H
22343
22344 051370 012700 000661 T0661: MOV #0661,R0 ;LOAD R0 WITH TEST NC.
22345 051374 013701 051420 MOV #I0661,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22346 051400 010604 MOV SP,R4 ;SAVE SP
22347 051402 012703 125252 MOV #125252,R3 ;[RS] SHOULD BE 125252
22348 051406 012705 051444 R0661: MOV #A0661,R5 ;MARK GOES TO A0661 VIA [RS]
22349 051412 010337 051432 MOV R3,#B0661 ;INITIALIZE WORD LOADED INTO R5
22350 051416 000257 CCC ;N:C=0000
22351
22352 051420 006404 I0661: MARK+4 ;TEST THE MARK
22353
22354 051422 010406 MOV R4,SP ;RESET SP
22355 051424 104005 E10661: ERRORS ;MARK FAILED TO EXECUTE
22356 051426 051406 R0661 ;ERROR LOOP RETURN ADDRESS
22357
22358 051430 000435 BR 00661 ;GO TO SCOPE EXIT
22359
22360 051432 125252 B0661: 125252 ;THIS WORD SHOULD GET LOADED INTO R5
22361
22362 051434 010406 MOV R4,SP ;RESET SP
22363 051436 104005 E20661: ERRORS ;MARK FAILED TO LOAD RC FROM [RS]
22364 051440 051406 R0661 ;ERROR LOOP RETURN ADDRESS
22365
22366 051442 000430 BR 00661 ;GO TO SCOPE EXIT
22367
22368 051444 100403 R0661: BMI D0661 ;N:C=0000?
22369 051446 001402 BEQ D0661
22370 051450 102401 BVS D0661
22371 051452 103005 BCC C0661
22372
22373 051454 013702 177776 D0661: MOV #PSW,R2 ;SAVE FLAGS IN R2
22374 051460 010406 MOV R4,SP ;RESET SP
22375 051462 104006 E30661: ERRORS ;MSRK SET A FLAG -(PSW) IN R2
22376 051464 051406 R0661 ;ERROR LOOP RETURN ADDRESS
22377
22378 051466 020627 051434 C0661: CMP SP,#B0661+2 ;DID MARK RESET SP?
22379 051472 001405 BEQ F0661 ;BR IF YES
22380 051474 010602 MOV SP,R2 ;PUT BAD SP IN R2
22381 051476 010406 MOV R4,SP ;RESET SP
  
```

22382	051500	104005	E40661:	ERROR5					
22383	051502	051406		R0661					; MARK FAILED TO RESET SP -[R2]=SP WAS
22384									; ERROR LOOP RETURN ADDRESS
22385	051504	000407		BR	00661				; GO TO SCOPE EXIT
22386									
22387	051506	020503	F0661:	CMP	R5,R3				; DID MARK RESTORE OLD R5
22388	051510	001404		BEQ	G0661				; BR IF YES
22389									
22390	051512	010502		MOV	R5,R2				; [R2]=WAS R5
22391	051514	010406		MOV	R4,SP				; RESET SP
22392	051516	104007	E50661:	ERROR7					; MARK FAILED TO RESET R5
22393	051520	051406		R0661					; ERROR LOOP RETURN
22394									
22395	051522	010406	G0661:	MOV	R4,SP				; RESET SP
22396									
22397	051524	000004	J0661:	SCOPE					; CALL THE SCOPE LOOP UTILITY

E11

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 549
 DBQEAB.CMB T0661 MARK INSTRUCTION TEST - (N:C)=0000

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051526	012700	000662
051532	013701	051556
051536	010604	
051540	012703	125252
051544	012705	051602
051550	010337	051570
051554	000277	
051556	006404	
051560	010406	
051562	104005	
051564	051544	
051566	000435	
051570	125252	
051572	010406	
051574	104005	
051576	051544	
051600	000430	
051602	100003	
051604	001002	
051606	102001	
051610	103405	
051612	013702	177776
051616	010406	
051620	104006	
051622	051544	
051624	020627	051572
051630	001405	
051632	010602	
051634	010406	

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: *****
. SBTTL T0662 MARK INSTRUCTION TEST - (N:C)=1111
: *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:      (112,353,354,355,356,357,016) FC 1,5
; ACT BUTS:     37(004)100,112 / 16(356)016,016
; EXEC:         (355) D = #80662+2 / (356) D = 125252 / (357) D = #A0662
; CODES:        N:C = 1111 (NO CHANGE)
; SYNC:         B05J2 (-) T = 2.6 USEC
; KEY SIG:      K3-6 MARK L / K5-5 BCO1 H

T0662:  MOV      #0662,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I0662,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R4          ;SAVE SP
        MOV      #125252,R3     ;[R5] SHOULD BE 125252
R0662:  MOV      #A0662,R5       ;MARK GOES TO A0662 VIA [R5]
        MOV      R3,@#B0662     ;INITIALIZE WORD LOADED INTO R5
        SCC
        ;N:C=1111

I0662:  MARK+4                  ;TEST THE MARK

E10662: MOV      R4,SP          ;RESET SP
        ERRORS  R0662         ;MARK FAILED TO EXECUTE
        ;ERROR LOOP RETURN ADDRESS

        BR      00662         ;GO TO SCOPE EXIT

B0662:  125252                  ;THIS WORD SHOULD GET LOADED INTO R5

E20662: MOV      R4,SP          ;RESET SP
        ERRORS  R0662         ;MARK FAILED TO LOAD RC FROM [R5]
        ;ERROR LOOP RETURN ADDRESS

        BR      00662         ;GO TO SCOPE EXIT

A0662:  BPL      D0662         ;N:C=1111?
        BNE      D0662
        BVC      D0662
        BCS      C0662

D0662:  MOV      @#PSW,R2       ;SAVE FLAGS IN R2
        MOV      R4,SP        ;RESET SP
E30662: ERRORS  R0662         ;MSRK SET A FLAG -(PSW) IN R2
        ;ERROR LOOP RETURN ADDRESS

C0662:  CMP      SP,#B0662+2   ;DID MARK RESET SP?
        BEQ      F0662        ;BR IF YES
        MOV      SP,R2        ;PUT BAD SP IN R2
        MOV      R4,SP        ;RESET SP
  
```


22454	051636	104005	E40662:	ERROR5					
22455	051640	051544		R0662					;MARK FAILED TO RESET SP -[R2]=SP WAS
22456									;ERROR LOOP RETURN ADDRESS
22457	051642	000407		BR	00662				;GO TO SCOPE EXIT
22458									
22459	051644	020503	F0662:	CMP	R5,R3				;DID MARK RESTORE OLD R5
22460	051646	001404		BEQ	G0662				;BR IF YES
22461									
22462	051650	010502		MOV	R5,R2				;[R2]=WAS R5
22463	051652	010406		MOV	R4,SP				;RESET SP
22464	051654	104007	E50662:	ERROR7					;MARK FAILED TO RESET R5
22465	051656	051544		R0662					;ERROR LOOP RETURN
22466									
22467	051660	010406	G0662:	MOV	R4,SP				;RESET SP
22468									
22469	051662	000004	00662:	SCOPE					;CALL THE SCOPE LOOP UTILITY

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22470 ; *****
22471 ; .SBTTL T0663 BASIC KW11-L RESPONSE TEST
22472 ; *****
22473
22474 051664 012700 000663 T0663: MOV #0663,R0 ;LOAD R0 WITH TEST NO.
22475 051670 013701 051722 MOV @#I0663,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22476 051674 005737 066636 TST @#OPTION ;IS THE KW11 INSTALLED ??
22477 051700 100023 BPL 00663 ;BR IF NOT - SKIP THIS TEST
22478 051702 010605 MOV SP,R5 ;SAVE SP
22479 051704 012702 177546 MOV #LKCSR,R2 ;[R2] = LINE CLOCK ADDRESS
22480 051710 010506 R0663: MOV R5,SP ;RESET SP FOR ERROR LOOP
22481 051712 012737 051726 000004 MOV #A0663,@#4 ;GO TO A0663 IF BUS TIMEOUT
22482 051720 000257 CCC ;SCOPE SYNC
22483
22484 051722 005712 I0663: TST (R2) ;REFERENCE LKCSR ADDR
22485
22486 051724 000405 BR B0663 ;GO TO EXIT
22487
22488 051726 012737 065160 000004 A0663: MOV #BERR,@#4 ;RESTORE TIMEOUT VECTOR
22489 051734 104006 E0663: ERROR6 ;LKCSR FAILED TO RESPOND
22490 051736 051710 R0663 ;ERROR LOOP RETURN ADDRESS
22491
22492 051740 010506 B0663: MOV R5,SP ;RESET SP
22493 051742 012737 065160 000004 MOV #BERR,@#4 ;RESTORE TIMEOUT VECTOR
22494
22495 051750 000004 00663: SCOPE ;CALL THE SCOPE LOOP UTILITY
22496

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H11

.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 552
DBQEAB.CMB T0663 BASIC KW11-L RESPONSE TEST

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22497 ; *****  
22498 .SBTTL T0664 KW11-L TEST - LKCSR BIT 7 SET  
22499 ; *****  
22500  
22501 051752 012700 000664 T0664: MOV #0664,R0 ;LOAD R0 WITH TEST NO.  
22502 051756 013701 052002 MOV #I0664,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
22503 051762 005737 066636 TST #OPTION ;IS THE KW11-L INSTALLED ??  
22504 051766 100012 BPL 00664 ;BR IF NOT - SKIP THIS TEST  
22505 051770 012702 177546 MOV #LKCSR,R2 ;DEST ADDR = 177546  
22506 051774 012704 000200 MOV #200,R4 ;[LKCSR] S / B = 200  
22507 052000 000257 R0664: CCC ;SCOPE SYNC  
22508  
22509 052002 030412 I0664: BIT R4,(R2) ;TEST BIT 7 IN LKCSR  
22510  
22511 052004 001003 BNE 00664 ;BR IF IT'S SET  
22512  
22513 052006 011203 MOV (R2),R3 ;GET WAS DATA  
22514 052010 104000 E0664: ERROR ;BIT 7 NOT SET IN LKCSR  
22515 052012 052000 R0664 ;ERROR LOOP RETURN ADDRESS  
22516  
22517 052014 000004 O0664: SCOPE ;CALL THE SCOPE LOOP UTILITY  
22518
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22519          : *****
22520          : .SBTTL 10665 KW11-L TEST - LKCSR BIT 6 CLEAR
22521          : *****
22522
22523 052016 012700 000665      T0665: MOV      #0665,R0          ;LOAD R0 WITH TEST NO.
22524 052022 013701 052046      MOV      @#10665,R1        ;LOAD R1 WITH TEST INSTRUCTION WORD
22525 052026 005737 066636      TST      @#OPTION        ;IS THE KW11-L INSTALLED ??
22526 052032 100013              BPL      00665            ;BR IF NOT - SKIP THIS TEST
22527 052034 012702 177546      MOV      @LKCSR,R2       ;R2 POINTS TO LKCSR
22528 052040 012704 000200      MOV      #200,R4        ;[LKCSR] S / B = 200
22529 052044 000257              R0665: CCC                ;SCOPE SYNC
22530
22531 052046 032712 000100      I0665: BIT      #100,(R2)  ;TEST BIT 6 IN LKCSR
22532
22533 052052 001403              BEQ      00665            ;BR IF CLEAR
22534
22535 052054 011203              MOV      (R2),R3         ;GET WAS DATA
22536 052056 104000      E0665: ERROR        ;BIT 6 (INTR. ENAB.) IN LKCSR WAS SET
22537 052060 052044      R0665                ;ERROR LOOP RETURN ADDRESS
22538
22539 052062 000004      O0665: SCOPE          ;CALL THE SCOPE LOOP UTILITY
    
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22540 : *****
22541 : .SBTTL T0666 KW11-L TEST - LKCSR BIT 6 SET
22542 : *****
22543
22544 052064 012700 000666 T0666: MOV #0666,R0 ;LOAD R0 WITH TEST NO.
22545 052070 013701 052142 MOV #T0666,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22546 052074 005737 066636 TST #OPTION ;IS THE KW11 INSTALLED ??
22547 052100 100037 BPL 00666 ;BR IF NOT - SKIP THIS TEST
22548 052102 010605 MOV SP,R5 ;SAVE SP
22549 052104 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO LKCSR
22550 052110 012704 000300 MOV #300,R4 ;[LKCSR] S / B = 300
22551 052114 012737 052160 000100 R0666: MOV #A0666,#100 ;SET UP LCLK VECTOR IN CASE LOGIC
22552 052122 012737 000340 000102 MOV #340,#102 ;FAULT CAUSES ATL INTERRUPT
22553 052130 010506 MOV R5,SP ;RESET SP FOR ERROR LOOP
22554 052132 012737 000340 177776 MOV #340,#PSW ;SET PRIORITY TO LEVEL 7
22555 052140 000257 CCC ;SCOPE SYNC
22556
22557 052142 052712 000100 I0666: BIS #100,(R2) ;SET BIT 6 IN LKCSR
22558
22559 052146 020412 CMP R4,(R2) ;RESULT CORRECT?
22560 052150 001403 BEQ A0666 ;BR IF YES
22561
22562 052152 011203 MOV (R2),R3 ;GET WAS DATA
22563 052154 104000 E10666: ERROR ;BIT 6 FAILED TO SET IN LKCSR
22564 052156 052114 R0666 ;ERROR LOOP RETURN ADDRESS
22565
22566
22567 052160 042737 000102 000100 A0666: BIC #102,#100 ;RESTORE TRAP CATCHER IN KW11-L VECTOR
22568 052166 005037 000102 CLR #102
22569 052172 042712 000100 BIC #100,(R2) ;TURN OFF KW11-L INTR. ENAB.
22570 052176 010506 MOV R5,SP ;RESET SP
22571
22572 052200 000004 C0666: SCOPE ;CALL THE SCOPE LOOP UTILITY
22573

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22574 ; *****
22575 ; .SBTTL T0667 KW11-L BASIC INTERRUPT TEST
22576 ; *****
22577
22578
22579 052202 012700 000667 T0667: MOV #0667,R0 ;LOAD R0 WITH TEST NO.
22580 052206 013701 052256 MOV @#I0667,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22581 052212 005737 066636 TST @#OPTION ;IS THE KW11-L INSTALLED ??
22582 052216 100041 BPL 00667 ;BR IF NOT - SKIP THIS TEST
22583 052220 010605 MOV SP,R5 ;SAVE SP
22584 052222 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO LKCSR
22585 052226 010506 R0667: MOV R5,SP ;RESET SP FOR ERROR LOOP
22586 052230 005004 CLR R4 ;INITIALIZE TIMER
22587 052232 012737 052276 000100 MOV #A0667,@#100 ;SET UP LINE CLOCK VECTOR TO TO
22588 052240 012737 000340 000102 MOV #340,@#102 ;TO A0667 WITH PROCESSOR PRIORITY = 7
22589 052246 005012 CLR (R2) ;CLEAR LKCSR
22590 052250 005037 177776 CLR @#PSW ;SET PRIORITY TO LEVEL 000
22591 052254 000257 CCC ;SCOPE SYNC
22592
22593 052256 052712 000100 I0667: BIS #100,(R2) ;ENABLE LINE CLK INTERRUPT
22594
22595 052262 005304 DEC R4 ;WAIT FOR INTR - REPORT ERROR IF
22596 052264 001376 BNE .-2 ;R4 GOES TO 000000
22597
22598 052266 042712 000100 E0667: BIC #100,(R2) ;TURN OFF INTR. ENAB.
22599 052272 104006 ERROR6 ;KW11-L FAILED TO INTERRUPT
22600 052274 052226 R0667 ;ERROR LOOP RETURN ADDRESS
22601
22602 052276 042712 000100 A0667: BIC #100,(R2) ;TURN OFF INTR. ENAB.
22603 052302 012737 000102 000100 MOV #102,@#100 ;RESTORE TRAP CATCHER IN KW11-L VECTOR
22604 052310 005037 000102 CLR @#102
22605 052314 010506 MOV R5,SP ;RESET SP
22606 052316 005037 177776 CLR @#PSW ;RESET PRIORITY TO LEVEL 0
22607
22608 052322 000004 O0667: SCQPE ;CALL THE SCOPE LOOP UTILITY

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22609 ; *****
22610 ; .SBTTL T0670 RESET TEST - <N:C> = 1111
22611 ; *****
22612 ;
22613 ; MICROPROGRAMMING / LOGIC INFORMATION
22614 ;
22615 ; ROM SEQ: [127,025,040,043,016] FC 1,6
22616 ;
22617 ; ACT BUTS: 37(004)100,127 / 02(025)042,043
22618 ;
22619 ; EXEC: [025] BUT02 TRIGGERS RESET LOGIC ON K5-8
22620 ;
22621 ; CODES: N:C = 1111 (NO CHANGE)
22622 ;
22623 ; SYNC: B05J2 (-) T = 80 MILLISEC
22624 ;
22625 ; KEY SIG: K3-6 RESET L / K3-6 HALT+RESET L / K5-3 BUT02 H / K5-8 RESET RESTA
22626 ; K5-8 INIT*RESET H / K5-8 BUS INIT L / K5-8 P ENDRESET L /
22627 ; K2-8 CLKOFF(1) H
22628 ;
22629 ;
22630 052324 012700 000670 T0670: MOV #0670,R0 ;LOAD R0 WITH TEST NO.
22631 052330 013701 052362 MOV @#I0670,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22632 052334 012737 000001 066664 MOV #1,@#ITCNT ;NO ITERATIONS ON THIS TEST
22633 052342 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 XCSR
22634 052346 012737 000340 177776 R0670: MOV #340,@#PSW ;MAKE PRY. BITS ALL 1'S
22635 052354 052712 000004 BIS #4,(R2) ;SET THE DL11 MAINT. BIT
22636 052360 000277 SCC ;N:C = 1111
22637 ;
22638 052362 000005 I0670: RESET ;TEST THE RESET - IT SHOULD CLEAR THE DL11 MAINT BIT
22639 ;
22640 052364 013705 177776 MOV @#PSW,R5 ;SAVE THE PSW
22641 052370 032712 000004 BIT #4,(R2) ;DID MAINT. BIT CLEAR ??
22642 052374 001404 BEQ A0670 ;BR IF YES
22643 ;
22644 052376 042712 000004 E10670: BIC #4,(R2) ;MAKE SURE TO TURN OFF MAINT. BIT
22645 052402 104006 ERROR6 ;RESET FAILED TO CLEAR MAINT BIT
22646 052404 052346 R0670 ;ERROR LOOP RETURN ADDRESS
22647 ;
22648 052406 022705 000357 A0670: CMP #357,R5 ;DID RESET ALTER THE PSW ??
22649 052412 001405 BEQ B0670 ;BR IF NOT
22650 ;
22651 052414 012704 000357 MOV #357,R4 ;[R4] = S/B PSW
22652 052420 010503 MOV R5,R3 ;[R3] = WAS PSW
22653 052422 104000 E20670: ERROR ;RESET ALTERED THE PSW
22654 052424 052346 R0670 ;ERROR LOOP RETURN ADDRESS
22655 ;
22656 052426 005037 177776 B0670: CLR @#PSW ;CLEAR OUT THE PSW
22657 052432 042712 000004 BIC #4,(R2) ;MAKE SURE MAINT BIT IS OFF
22658 ;
22659 052436 000004 O0670: SCOPE ;CALL THE SCOPE LOOP UTILITY
22660 ;

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M11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 557
 DBQEAB.CMB T0670 RESET TEST - <N:C> = 1111

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22661 ; *****
22662 ; .SBTTL T0671 RESET TEST - <N:C> = 0000
22663 ; *****
22664
22665 ; MICROPROGRAMMING / LOGIC INFORMATION
22666
22667 ; ROM SEQ: [127,025,040,043,016] FC 1,6
22668
22669 ; ACT BUTS: 37(004)100,127 / 02(025)042,043
22670
22671 ; EXEC: [025] BUT02 TRIGGERS RESET LOGIC ON K5-8
22672
22673 ; CODES: N:C = 0000 (NO CHANGE)
22674
22675 ; SYNC: B05J2 (-) T = 80 MILLISEC
22676
22677 ; KEY SIG: K3-6 RESET L / K3-6 HALT+RESET L / K5-3 BUT02 H / K5-8 RESET RESTA
22678 ; K5-8 INIT*RESET H / K5-8 BUS INIT L / K5-8 P ENDRESET L /
22679 ; K2-8 CLKOFF (1) H
22680
22681 052440 012700 000671 T0671: MOV #0671,R0 ;LOAD R0 WITH TEST NO.
22682 052444 013701 052476 MOV @#I0671,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22683 052450 012737 000001 066664 MOV #1,@#ITCNT ;NO ITERATIONS ON THIS TEST
22684 052456 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 XCSR
22685 052462 012737 000000 177776 R0671: MOV #0,@#PSW ;MAKE PRTY. BITS ALL 0'S
22686 052470 052712 000004 BIS #4,(R2) ;SET THE DL11 MAINT. BIT
22687 052474 000257 CCC ;N:C = 0000
22688
22689 052476 000005 I0671: RESET ;TEST THE RESET - IT SHOULD CLEAR THE DL11 MAINT BIT
22690
22691 052500 013705 177776 MOV @#PSW,R5 ;SAVE THE PSW
22692 052504 032712 000004 BIT #4,(R2) ;DID MAINT. BIT CLEAR ??
22693 052510 001404 BEQ A0671 ;BR IF YES
22694
22695 052512 042712 000004 E10671: BIC #4,(R2) ;MAKE SURE TO TURN OFF MAINT. BIT
22696 052516 104006 ERROR6 ;RESET FAILED TO CLEAR MAINT BIT
22697 052520 052462 R0671 ;ERROR LOOP RETURN ADDRESS
22698
22699 052522 022705 000000 A0671: CMP #0,R5 ;DID RESET ALTER THE PSW ??
22700 052526 001405 BEQ B0671 ;BR IF NOT
22701
22702 052530 012704 000357 MOV #357,R4 ;[R4] = S/B PSW
22703 052534 010503 MOV R5,R3 ;[R3] = WAS PSW
22704 052536 104000 E20671: ERROR ;RESET ALTERED THE PSW
22705 052540 052462 R0671 ;ERROR LOOP RETURN ADDRESS
22706
22707 052542 005037 177776 B0671: CLR @#PSW ;CLEAR OUT THE PSW
22708 052546 042712 000004 BIC #4,(R2) ;MAKE SURE MAINT BIT IS OFF
22709
22710 052552 000004 00671: SCOPE ;CALL THE SCOPE LOOP UTILITY
22711

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N11

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22712 ; *****
22713 ; .SBTTL T0672 WAIT INSTRUCTION TEST - [PSW] = 151
22714 ; *****
22715 ; MICROPROGRAMMING / LOGIC INFORMATION
22716
22717 ; ROM SEQ: [114,015,012,020,021:
22718 ; INTR: 014,022,023,007, [TRAP MICROROUTINE]
22719 ; NO INTR. 017,015,012,020,021,017 ETC. FC 1,10,6,10
22720 ;
22721 ; ACT BUTS: 37(004)100,114 / 26(114)010,012 / 25(020)014,014 / 07(022)006,007
22722 ; EXEC BUT 25 IN LOC. 020 SHOULD CAUSE EXIT FROM WAIT LOOP
22723 ;
22724 ; CODES: N / A / N:C=1001 (NO CHANGE)
22725 ;
22726 ; SYNC: B05J2 (-) T=2.24 USEC + INTR. WAIT TIME
22727 ;
22728 ; KEY SIG: K4-5 BRPTR(1) L / K3-6 WAIT L / K4-6 BRQ H / K5-4 -BRV(0) H
22729
22730
22731
22732 052554 012700 000672 T0672: MOV #0672,R0 ;LOAD R0 WITH TEST NO.
22733 052560 013701 052642 MOV #I0672,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22734 052564 010605 MOV SP,R5 ;SAVE THE SP
22735 052566 012702 177564 MOV #XCSR,R2 ;R2 POINT TO DL11 XCSR
22736 052572 012737 052662 000064 R0672: MOV #A0672,#64 ;GO TO A0672 ON DL11 INTR.
22737 052600 012737 000200 000066 MOV #200,#66 ;AT LEVEL 4
22738 052606 010506 MOV R5,SP ;RESET SP FOR ERROR LOOP
22739 052610 005012 CLR (R2) ;INIT DL11 XCSR
22740 052612 005003 CLR R3 ;INIT TIMER
22741
22742 052614 105712 1$: TSTB (R2) ;DL11 XMIT READY SET ??
22743 052616 100403 BMI 2$ ;BR IF YES
22744 052620 005303 DEC R3 ;COUNT THE TIMER
22745 052622 001374 BNE 1$ ;BR IF NO TIMEOUT
22746 052624 000441 BR E40672 ;GO REPORT TIMEOUT
22747
22748 052626 012737 000140 177776 2$: MOV #140,#PSW ;SET PSW PRY BITS TO LEVEL 3
22749 052634 000277 SCC ;N:C=1111
22750 052636 152712 000100 BISB #100,(R2) ;ENAB. DL11 INTR - N:C=1001
22751
22752 052642 000001 I0672: WAIT ;TEST THE WAIT-GO TO A0672 ON INTR
22753
22754 052644 012737 000340 177776 MOV #340,#PSW ;LOCK OUT INTR
22755 052652 005012 CLR (R2) ;TURN OFF DL11 INTR ENAB
22756 052654 104006 E10672: ERROR6 ;WAIT FAILED TO EXECUTE PROPERLY
22757 052656 052572 R0672 ;ERROR LOOP RETURN ADDRESS
22758 052660 000425 BR C0672 ;GO EXIT THIS TEST
22759
22760 052662 042712 000100 A0672: BIC #100,(R2) ;TURN OFF DL11 INTR ENAB
22761 052666 022716 052644 CMP #I0672+2,(SP) ;DID WAIT GET FETCHED ??
22762 052672 001403 BEQ B0672 ;BR IF YES
22763
22764 052674 104006 E20672: ERROR6 ;WAIT NOT FETCHED PROPERLY
22765 052676 052572 R0672 ;ERROR LOOP RETURN ADDRESS
22766 052700 000415 BR C0672 ;GO EXIT THE TEST
22767

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MAIN MACY11 27.732) 15-OCT-76 14:58 PAGE 559
DB2E98.CMB T0672 WAIT INSTRUCTION TEST - [PSW] = 151

22768	052702	022766	000151	000002	90672:	CMP	#151,2(SP)	:DID "WAIT" ALTER THE PSW ??
22769	052710	001411				BEO	00672	:BR IF YES
22770								
22771	052712	012704	000151			MOV	#151,R4	: [R4] = S/B PSW
22772	052716	016603	000002			MOV	2(SP),R3	: [R3] = WAS PSW
22773	052722	104000			E30672:	ERROR		: "WAIT" ALTERED THE PSW
22774	052724	052572				R0672		: ERROR LOOP RETURN ADDRESS
22775	052726	000402				BR	00672	: GOT TO EXIT TEST
22776								
22777	052730	104006			E40672:	ERROR6		: DL11 FAILED TO SET READY ON TIME
22778	052732	052572				R0672		: ERROR LOOP RETURN ADDRESS
22779								
22780	052734	010506			00672:	MOV	R5,SP	: RESET THE SP
22781	052736	005037	177776			CLR	@PSW	: CLEAR OUT THE PSW
22782	052742	005012				CLR	(R2)	: TURN OFF DL11 INTR.
22783	052744	012737	000066	000064		MOV	#66,@#64	: RESTORE DL11 VECTOR WITH TRAPCATCHER
22784	052752	005037	000066			CLR	@#66	
22785								
22786	052756	000004			00672:	SCOPE		: CALL THE SCOPE LOOP UTILITY
22787								
22788								

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22789 : *****
22790 : .SBTTL T0673 WAIT INSTRUCTION TEST - [PSW] = 010
22791 : *****
22792
22793 ;MICROPROGRAMMING / LOGIC INFORMATION
22794
22795 ;ROM SEQ: [114,015,012,020,021:
22796 : INTR: 014,022,023,007,[TRAP MICROROUTINE]
22797 : NO INTR. 017,015,012,020,021,017 ETC. FC 1,10,6,10
22798
22799 ;ACT BUTS: 37(004)100,114 / 26(114)1010,012 / 25(020)1014,014 / 07(022)1006,007
22800
22801 ;EXEC BUT 25 IN LOC. 020 SHOULD CAUSE EXIT FROM WAIT LOOP
22802
22803 ;CODES: N / A / N:C=1000 (NO CHANGE)
22804
22805 ;SYNC: B05J2 (-) T=2.24 USEC + INTR. WAIT TIME
22806
22807 ;KEY SIG: K4-5 BRPTR(1) L / K3-6 WAIT L / K4-6 BRQ H / K5-4 -BRSV(0) H
22808
22809 052760 012700 000673 T0673: MOV #0673,R0 ;LOAD R0 WITH TEST NO.
22810 052764 013701 053046 MOV #I0673,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22811 052770 010605 MOV SP,R5 ;SAVE THE SP
22812 052772 012702 177564 MOV #XCSR,R2 ;R2 POINT TO DL11 XCSR
22813 052776 012737 053066 000064 R0673: MOV #A0673,#64 ;GO TO A0673 ON DL11 INTR.
22814 053004 012737 000200 000066 MOV #200,#66 ;AT LEVEL 4
22815 053012 010506 MOV R5,SP ;RESET SP FOR ERROR LOOP
22816 053014 005012 CLR (R2) ;INIT DL11 XCSR
22817 053016 005003 CLR R3 ;INIT TIMER
22818
22819 053020 105712 1S: TSTB (R2) ;DL11 XMIT READY SET ??
22820 053022 100403 BMI 2S ;BR IF YES
22821 053024 005303 DEC R3 ;COUNT THE TIMER
22822 053026 001374 BNE 1S ;BR IF NO TIMEOUT
22823 053030 000441 BR E40673 ;GO REPORT TIMEOUT
22824
22825 053032 012737 000000 177776 2S: MOV #0,#PSW ;SET PSW PRY BITS TO LEVEL 0
22826 053040 000257 CCC ;N:C=0000
22827 053042 152712 000100 BISR #100,(R2) ;ENAB. DL11 INTR - N:C=1000
22828
22829 053046 000001 I0673: WAIT ;TEST THE WAIT-GO TO A0673 ON INTR
22830
22831 053050 012737 000340 177776 MOV #340,#PSW ;LOCK OUT INTR
22832 053056 005012 CLR (R2) ;TURN OFF DL11 INTR ENAB
22833 053060 104006 E10673: ERROR6 ;WAIT FAILED TO EXECUTE PROPERLY
22834 053062 052776 R0673 ;ERROR LOOP RETURN ADDRESS
22835 053064 000425 BR C0673 ;GO EXIT THIS TEST
22836
22837 053066 042712 000100 A0673: BIC #100,(R2) ;TURN OFF DL11 INTR ENAB
22838 053072 022716 053050 CMP #I0673+2,(SP) ;DID WAIT GET FETCHED ??
22839 053076 001403 BEQ B0673 ;BR IF YES
22840
22841 053100 104006 E20673: ERROR6 ;WAIT NOT FETCHED PROPERLY
22842 053102 052776 R0673 ;ERROR LOOP RETURN ADDRESS
22843 053104 000415 BR C0673 ;GO EXIT THE TEST
22844

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22867 ; *****
22868 ; .SBTTL T0674 BR PRIORITY ARBITRATION TEST - LEVEL 0 USING KW11-L
22869 ; *****
22870
22871 053164 012700 0C0674 T0674: MOV #0674,R0 ;LOAD R0 WITH TEST NO.
22872 053170 013701 053240 MOV #10674,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22873 053174 005737 066636 TST #0PTION ;IS KW11-L INSTALLED ??
22874 053200 100041 BPL 00674 ;BR IF NOT - SKIP THIS TEST
22875 053202 010605 MOV SP,R5 ;SAVE THE SP
22876 053204 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO LCLK
22877 053210 012737 053260 000100 MOV #A0674,#100 ;GO TO A0674 ON LCLK INTR
22878 053216 012737 000340 000102 MOV #340,#102 ;LOCK OUT INTR IN LCLK SERV.
22879 053224 010506 R0674: MOV R5,SP ;RESET SP FOR ERROR LOOP
22880 053226 005004 CLR R4 ;INIT R4 AS TIMER
22881 053230 012737 000000 177776 MOV #0,#PSW ;SET CPU PRTY TO LEVEL 000
22882 053236 000257 CCC ;SCOPE SYNC
22883
22884 053240 052712 000100 I0674: BIS #100,(R2) ;ENABLE LCLK INTR
22885
22886 053244 005304 DEC R4 ;COUNT TIMER
22887 053246 001376 BNE .-2 ;LCLK SHOULD INTR BEFORE TIMEOUT
22888
22889 053250 042712 000100 E0674: BIC #100,(R2) ;TURN OFF INTR ENAB.
22890 053254 104006 ERROR6 ;KW11-L FAILED TO INTR AT LEVEL 0
22891 053256 053224 R0674 ;ERROR LOOP RETURN ADDRESS
22892
22893 053260 042712 000100 A0674: BIC #100,(R2) ;TURN OFF INTR. ENABLE
22894 053264 012737 000102 000100 MOV #102,#100 ;RESTORE TRAP CATCHER IN THE VECTOR
22895 053272 005037 000102 CLR #102
22896 053276 010506 MOV R5,SP ;RESET THE SP
22897 053300 005037 177776 CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
22898
22899 053304 000004 O0674: SCOPE ;CALL SCOPE LOOP UTILITY
22900
    
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22901      : *****
22902      : .SBTTL T0675 BR PRIORITY ARBITRATION TEST - LEVEL 1 USING KW11-L
22903      : *****
22904
22905 053306 012700 000675      T0675: MOV      #0675,R0      ;LOAD R0 WITH TEST NO.
22906 053312 013701 053362      MOV      @#I0675,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
22907 053316 005737 066636      TST      @#OPTION        ;IS KW11-L INSTALLED ??
22908 053322 100041                BPL      00675           ;BR IF NOT - SKIP THIS TEST
22909 053324 010605                MOV      SP,R5           ;SAVE THE SP
22910 053326 012702 177546      MOV      #LKCSR,R2       ;R2 POINTS TO KW11-L CSR
22911 053332 012737 053402 000100  MOV      #A0675,@#100    ;IF INTR OCCURS - GO TO A0675
22912 053340 012737 000340 000102  MOV      #340,@#102      ;WITH CPU PRIORITY AT LEVEL 7
22913 053346 010506                R0675: MOV      R5,SP      ;RESET SP FOR ERROR LOOPING
22914 053350 005004                CLR      R4              ;INITIALIZE R4 AS TIMER
22915 053352 012737 000040 177776  MOV      #40,@#PSW       ;SET CPU PRIORITY TO LEVEL 1
22916 053360 000257                CCC
22917
22918 053362 052712 000100      I0675: BIS      #100,(R2) ;ENABLE KW11-L INTERRUPTS
22919
22920 053366 005304                DEC      R4              ;COUNT THE TIMER - LCLK SHOULD PREVENT
22921 053370 001376                BNE      .-2             ;TIMER FROM GETTING BACK TO 000000
22922
22923 053372 042712 000100      E0675: BIC      #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
22924 053376 104006                ERROR6 ;KW11-L FAILED TO INTR AT LEVEL 1
22925 053400 053346                R0675  ;ERROR LOOP RETURN ADDRESS
22926
22927 053402 042712 000100      A0675: BIC      #100,(R2) ;TURN OFF INTR. ENABLE
22928 053406 012737 000102 000100  MOV      #102,@#100     ;RESTORE TRAP CATCHER IN THE VECTOR
22929 053414 005037 000102      CLR      @#102
22930 053420 010506                MOV      R5,SP           ;RESET THE SP
22931 053422 005037 177776      CLR      @#PSW          ;SET CPU PRIORITY BACK TO LEVEL 0
22932
22933 053426 000004      00675: SCOPE          ;CALL SCOPE LOOP UTILITY
22934
    
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G12

.MAIN. MACY11 27,732) 15-OCT-76 14:58 PAGE 564
 DBGEAB.CMB T0675 BR PRIORITY ARBITRATION TEST - LEVEL 1 USING KW11-L

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22935 ; *****
22936 ; .SBTTL T0675 BR PRIORITY ARBITRATION TEST - LEVEL 2 USING KW11-L
22937 ; *****
22938
22939 053430 012700 0C0676 T0676: MOV #0676,R0 ;LOAD R0 WITH TEST NO.
22940 053434 013701 053504 MOV @#10676,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22941 053440 005737 066636 TST @#OPTION ;IS KW11-L INSTALLED ??
22942 053444 100041 BPL 00676 ;BR IF NOT - SKIP THIS TEST
22943 053446 010605 MOV SP,R5 ;SAVE THE SP
22944 053450 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
22945 053454 012737 053524 000100 MOV #A0676,@#100 ;IF INTR OCCURS - GO TO A0676
22946 053462 012737 000340 000102 MOV #340,@#102 ;WITH CPU PRIORITY AT LEVEL 7
22947 053470 010506 R0676: MOV R5,SP ;RESET SP FOR ERROR LOOPING
22948 053472 005004 CLR R4 ;INITIALIZE R4 AS TIMER
22949 053474 012737 000100 177776 MOV #100,@#PSW ;SET CPU PRIORITY TO LEVEL 2
22950 053502 000257 CCC ;SCOPE SYNC
22951
22952 053504 052712 000100 I0676: BIS #100,(R2) ;ENABLE KW11-L INTERRUPTS
22953
22954 053510 005304 DEC R4 ;COUNT THE TIMER - LCLK SHOULD PREVENT
22955 053512 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
22956
22957 053514 042712 000100 E0676: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
22958 053520 104006 ERROR6 ;KW11-L FAILED TO INTR AT LEVEL 2
22959 053522 053470 R0676 ;ERROR LOOP RETURN ADDRESS
22960
22961 053524 042712 000100 A0676: BIC #100,(R2) ;TURN OFF INTR. ENABLE
22962 053530 012737 000102 000100 MOV #102,@#100 ;RESTORE TRAP CATCHER IN THE VECTOR
22963 053536 005037 000102 CLR @#102
22964 053542 010506 MOV R5,SP ;RESET THE SP
22965 053544 005037 177776 CLR @#PSW ;SET CPU PRIORITY BACK TO LEVEL 0
22966
22967 053550 000004 00676: SCOPE ;CALL SCOPE LOOP UTILITY
22968
  
```

H12

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 565
DBQEAB.CMB T0675 BR PRIORITY ARBITRATION TEST - LEVEL 2 USING KW11-L

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22969 ; *****
22970 ; .SBTTL T0677 BR PRIORITY ARBITRATION TEST - LEVEL 3 USING KW11-L
22971 ; *****
22972
22973 053552 012700 000677 T0677: MOV #0677,R0 ;LOAD R0 WITH TEST NO.
22974 053556 013701 053626 MOV #10677,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
22975 053562 005737 066636 TST #OPTION ;IS KW11-L INSTALLED ??
22976 053566 100041 BPL 00677 ;BR IF NOT - SKIP THIS TEST
22977 053570 010605 MOV SP,R5 ;SAVE THE SP
22978 053572 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
22979 053576 012737 053646 000100 MOV #A0677,#100 ;IF INTR OCCURS - GO TO A0677
22980 053604 012737 000340 000102 MOV #340,#102 ;WITH CPU PRIORITY AT LEVEL 7
22981 053612 010506 R0677: MOV R5,SP ;RESET SP FOR ERROR LOOPING
22982 053614 005004 CLR R4 ;INITIALIZE R4 AS TIMER
22983 053616 012737 000140 177776 MOV #140,#PSW ;SET CPU PRIORITY TO LEVEL 3
22984 053624 000257 CCC ;SCOPE SYNC
22985
22986 053625 052712 000100 I0677: BIS #100,(R2) ;ENABLE KW11-L INTERRUPTS
22987
22988 053632 005304 DEC R4 ;COUNT THE TIMER - LCLK SHOULD PREVENT
22989 053634 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
22990
22991 053636 042712 000100 E0677: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
22992 053642 104006 ERROR6 ;KW11-L FAILED TO INTR AT LEVEL 3
22993 053644 053612 R0677 ;ERROR LOOP RETURN ADDRESS
22994
22995 053646 042712 000100 A0677: BIC #100,(R2) ;TURN OFF INTR. ENABLE
22996 053652 012737 000102 000100 MOV #102,#100 ;RESTORE TRAP CATCHER IN THE VECTOR
22997 053660 005037 000102 CLR #102
22998 053664 010506 MOV R5,SP ;RESET THE SP
22999 053666 005037 177776 CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23000
23001 053672 000004 00677: SCOPE ;CALL SCOPE LOOP UTILITY
23002
```



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23003 ; *****
23004 ; .SBTTL T0700 BR PRIORITY ARBITRATION TEST - LEVEL 4 USING KW11-L
23005 ; *****
23006
23007 053E74 012700 000700 T0700: MOV #0700,R0 ;LOAD R0 WITH TEST NO.
23008 053700 013701 053750 MOV #10700,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23009 053704 005737 066636 TST #OPTION ;IS KW11-L INSTALLED ??
23010 053710 100041 BPL 00700 ;BR IF NOT - SKIP THIS TEST
23011 053712 010605 MOV SP,R5 ;SAVE THE SP
23012 053714 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
23013 053720 012737 053770 000100 MOV #A0700,#100 ;IF INTR OCCURS - GO TO A0700
23014 053726 012737 000340 000102 MOV #340,#102 ;WITH CPU PRIORITY AT LEVEL 7
23015 053734 010506 R0700: MOV R5,SP ;RESET SP FOR ERROR LOOPING
23016 053736 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23017 053740 012737 000200 177776 MOV #200,#PSW ;SET CPU PRIORITY TO LEVEL 4
23018 053746 000257 CCC ;SCOPE SYNC
23019
23020 053750 052712 000100 I0700: BIS #100,(R2) ;ENABLE KW11-L INTERRUPTS
23021
23022 053754 005304 DEC R4 ;COUNT THE TIMER - LCLK SHOULD PREVENT
23023 053756 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
23024
23025 053760 042712 000100 E0700: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
23026 053764 104006 ERROR6 ;KW11-L FAILED TO INTR AT LEVEL 4
23027 053766 053734 R0700 ;ERROR LOOP RETURN ADDRESS
23028
23029 053770 042712 000100 A0700: BIC #100,(R2) ;TURN OFF INTR. ENABLE
23030 053774 012737 000102 000100 MOV #102,#100 ;RESTORE TRAP CATCHER IN THE VECTOR
23031 054002 005037 000102 CLR #102
23032 054006 010506 MOV R5,SP ;RESET THE SP
23033 054010 005037 177776 CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23034
23035 054014 000004 00700: SCOPE ;CALL SCOPE LOOP UTILITY
23036
    
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23037 ; *****
23038 ; .SBTTL T0701 BR PRIORITY ARBITRATION TEST - LEVEL 5 USING KW11-L
23039 ; *****
23040
23041 054016 012700 000701 T0701: MOV #0701,R0 ;LOAD R0 WITH TEST NO.
23042 054022 013701 054072 MOV #10701,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23043 054026 005737 066636 TST #OPTION ;IS KW11-L INSTALLED ??
23044 054032 100041 BPL 00701 ;BR IF NOT - SKIP THIS TEST
23045 054034 010605 MOV SP,R5 ;SAVE THE SP
23046 054036 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
23047 054042 012737 054112 000100 MOV #A0701,#100 ;IF INTR OCCURS - GO TO A0701
23048 054050 012737 000340 000102 MOV #340,#102 ;WITH CPU PRIORITY AT LEVEL 7
23049 054056 010506 R0701: MOV R5,SP ;RESET SP FOR ERROR LOOPING
23050 054060 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23051 054062 012737 000240 177776 MOV #240,#PSW ;SET CPU PRIORITY TO LEVEL 5
23052 054070 000257 CCC ;SCOPE SYNC
23053
23054 054072 052712 000100 I0701: BIS #100,(R2) ;ENABLE KW11-L INTERRUPTS
23055
23056 054076 005304 DEC R4 ;COUNT THE TIMER - LCLK SHOULD PREVENT
23057 054100 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
23058
23059 054102 042712 000100 E0701: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
23060 054106 104005 ERROR6 ;KW11-L FAILED TO INTR AT LEVEL 5
23061 054110 054056 R0701 ;ERROR LOOP RETURN ADDRESS
23062
23063 054112 042712 000100 A0701: BIC #100,(R2) ;TURN OFF INTR. ENABLE
23064 054116 012737 000102 000100 MOV #102,#100 ;RESTORE TRAP CATCHER IN THE VECTOR
23065 054124 005037 000102 CLR #102
23066 054130 010506 MOV R5,SP ;RESET THE SP
23067 054132 005037 177776 CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23068
23069 054136 000004 00701: SCOPE ;CALL SCOPE LOOP UTILITY
23070

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23071 : *****
23072 : .SBTTL T0702 BR PRIORITY ARBITRATION TEST - LEVEL 0 USING DL11
23073 : *****
23074
23075 054140 012700 000702 T0702: MOV #0702,R0 ;LOAD R0 WITH TEST NO.
23076 054144 013701 054206 MOV @#10702,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23077 054150 010605 MOV SP,R5 ;SAVE THE SP
23078 054152 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 XCSR
23079 054156 012737 054226 000064 MOV #A0702,@#64 ;IF INTR OCCURS - GO TO A0702
23080 054164 012737 000340 000066 R0702: MOV #340,@#66 ;WITH CPU PRIORITY AT LEVEL 7
23081 054172 010506 MOV R5,SP ;RESET SP FOR ERROR LOOPING
23082 054174 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23083 054176 012737 000000 177776 MOV #0,@#PSW ;SET CPU PRIORITY TO LEVEL 0
23084 054204 000257 CCC ;SCOPE SYNC
23085
23086 054206 052712 000100 I0702: BIS #100,(R2) ;ENABLE DL11 INTERRUPTS
23087
23088 054212 005304 DEC R4 ;COUNT THE TIMER - DL11 SHOULD PREVENT
23089 054214 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
23090
23091 054216 042712 000100 E0702: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
23092 054222 104006 ERROR6 ;DL11 FAILED TO INTR AT LEVEL 0
23093 054224 054172 R0702 ;ERROR LOOP RETURN ADDRESS
23094
23095 054226 042712 000100 A0702: BIC #100,(R2) ;TURN OFF INTR. ENABLE
23096 054232 012737 000066 000064 MOV #66,@#64 ;RESTORE TRAP CATCHER IN THE VECTOR
23097 054240 005037 000066 CLR @#66
23098 054244 010506 MOV R5,SP ;RESET THE SP
23099 054246 005037 177776 CLR @#PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23100
23101 054252 000004 00702: SCOPE ;CALL SCOPE LOOP UTILITY
23102

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23103 ; *****
23104 ; .SBTTL T0703 BR PRIORITY ARBITRATION TEST - LEVEL 1 USING DL11
23105 ; *****
23106
23107 054254 012700 000703 T0703: MOV #0703,R0 ;LOAD R0 WITH TEST NO.
23108 054260 013701 054322 MOV @#I0703,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23109 054264 010605 MOV SP,R5 ;SAVE THE SP
23110 054266 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 XCSR
23111 054272 012737 054342 000064 MOV #A0703,@#64 ;IF INTR OCCURS - GO TO A0703
23112 054300 012737 000340 000066 MOV #340,@#66 ;WITH CPU PRIORITY AT LEVEL 7
23113 054306 010506 R0703: MOV R5,SP ;RESET SP FOR ERROR LOOPING
23114 054310 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23115 054312 012737 000040 177776 MOV #40,@#PSW ;SET CPU PRIORITY TO LEVEL 1
23116 054320 000257 CCC ;SCOPE SYNC
23117
23118 054322 052712 000100 I0703: BIS #100,(R2) ;ENABLE DL11 INTERRUPTS
23119
23120 054326 005304 DEC R4 ;COUNT THE TIMER - DL11 SHOULD PREVENT
23121 054330 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
23122
23123 054332 042712 000100 E0703: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
23124 054336 104006 ERROR6 ;DL11 FAILED TO INTR AT LEVEL 1
23125 054340 054306 R0703 ;ERROR LOOP RETURN ADDRESS
23126
23127 054342 042712 000100 A0703: BIC #100,(R2) ;TURN OFF INTR. ENABLE
23128 054346 012737 000066 000064 MOV #66,@#64 ;RESTORE TRAP CATCHER IN THE VECTOR
23129 054354 005037 000066 CLR @#66
23130 054360 010506 MOV R5,SP ;RESET THE SP
23131 054362 005037 177776 CLR @#PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23132
23133 054366 000004 00703: SCOPE ;CALL SCOPE LOOP UTILITY
23134

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M12

.MAIN. MACY11 27,732) 15-OCT-76 14:58 PAGE 570
 DBQEAB.CMB TC703 BR PRIORITY ARBITRATION TEST - LEVEL 1 USING DL11

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23135 ; *****
23136 ; .SBTTL T0704 BR PRIORITY ARBITRATION TEST - LEVEL 2 USING DL11
23137 ; *****
23138
23139 054370 012700 000704 T0704: MOV #0704,R0 ;LOAD R0 WITH TEST NO.
23140 054374 013701 054450 MOV @#I0704,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23141 054400 032737 020000 066642 BIT #20000,@#BPTLOC ;BREAKPOINT HALT SET ??
23142 054406 001401 BEQ .+4 ;BR IF NOT
23143 054410 000000 HALT ;BREAK-DEPRESS CONTINUE TO RESTART
23144 054412 010605 MOV SP,R5 ;SAVE THE SP
23145 054414 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 CSR
23146 054420 012737 054470 000064 MOV #A0704,@#64 ;IF INTR OCCURS - GO TO A0704
23147 054426 012737 000340 000066 MOV #340,@#66 ;WITH CPU PRIORITY AT LEVEL 7
23148 054434 010506 R0704: MOV R5,SP ;RESET SP FOR ERROR LOOPING
23149 054436 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23150 054440 012737 000100 177776 MOV #100,@#PSW ;SET CPU PRIORITY TO LEVEL 2
23151 054446 000257 CCC ;SCOPE SYNC
23152
23153 054450 052712 000100 I0704: BIS #100,(R2) ;ENABLE DL11 INTERRUPTS
23154
23155 054454 005304 DEC R4 ;COUNT THE TIMER - DL11 SHOULD PREVENT
23156 054456 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
23157
23158 054460 042712 000100 E0704: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
23159 054464 104006 ERROR6 ;DL11 FAILED TO INTR AT LEVEL 2
23160 054466 054434 R0704 ;ERROR LOOP RETURN ADDRESS
23161
23162 054470 042712 000100 A0704: BIC #100,(R2) ;TURN OFF INTR. ENABLE
23163 054474 012737 000066 000064 MOV #66,@#64 ;RESTORE TRAP CATCHER IN THE VECTOR
23164 054502 005037 000066 CLR @#66
23165 054506 010506 MOV R5,SP ;RESET THE SP
23166 054510 005037 177776 CLR @#PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23167
23168 054514 000004 00704: SCOPE ;CALL SCOPE LOOP UTILITY
23169

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23170 ; *****
23171 ; .SBTTL T0705 BR PRIORITY ARBITRATION TEST - LEVEL 3 USING DL11
23172 ; *****
23173
23174 054516 012700 000705 T0705: MOV #0705,R0 ;LOAD R0 WITH TEST NO.
23175 054522 013701 054564 MOV @#I0705,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23176 054526 010605 MOV SP,R5 ;SAVE THE SP
23177 054530 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 CSR
23178 054534 012737 054604 000064 MOV #A0705,@#64 ;IF INTR OCCURS - GO TO A0705
23179 054542 012737 000340 000066 MOV #340,@#66 ;WITH CPU PRIORITY AT LEVEL 7
23180 054550 010506 R0705: MOV R5,SP ;RESET SP FOR ERROR LOOPING
23181 054552 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23182 054554 012737 000140 177776 MOV #140,@#PSW ;SET CPU PRIORITY TO LEVEL 3
23183 054562 000257 CCC ;SCOPE SYNC
23184
23185 054564 052712 000100 I0705: BIS #100,(R2) ;ENABLE DL11 INTERRUPTS
23186
23187 054570 005304 DEC R4 ;COUNT THE TIMER - DL11 SHOULD PREVENT
23188 054572 001376 BNE .-2 ;TIMER FROM GETTING BACK TO 000000
23189
23190 054574 042712 000100 E0705: BIC #100,(R2) ;TURN OFF THE INTERRUPT ENABLE
23191 054600 104006 ERROR6 ;DL11 FAILED TO INTR AT LEVEL 3
23192 054602 054550 R0705 ;ERROR LOOP RETURN ADDRESS
23193
23194 054604 042712 000100 A0705: BIC #100,(R2) ;TURN OFF INTR. ENABLE
23195 054610 012737 000066 000064 MOV #66,@#64 ;RESTORE TRAP CATCHER IN THE VECTOR
23196 054616 005037 000066 CLR @#66
23197 054622 010506 MOV R5,SP ;RESET THE SP
23198 054624 005037 177776 CLR @#PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23199
23200 054630 000004 00705: SCOPE ;CALL SCOPE LOOP UTILITY
  
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23201 : *****
23202 : .SBTTL T0706 BR PRIORITY ARBITRATION TEST - LEVEL 7 USING KW11-
23203 : *****
23204
23205 054632 012700 000706 T0706: MOV #0706,R0 ;LOAD R0 WITH TEST NO.
23206 054636 013701 054706 MOV #10706,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23207 054642 005737 066636 TST #0PTION ;IS KW11-L INSTALLED ??
23208 054646 100042 BPL 00706 ;BR IF NOT - SKIP THIS TEST
23209 054650 010605 MOV SP,R5 ;SAVE THE SP
23210 054652 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
23211 054656 012737 054720 000100 MOV #A0706,#100 ;IF INTR OCCURS - GO TO A0706
23212 054664 012737 000340 000102 MOV #340,#102 ;WITH CPU PRIORITY AT LEVEL 7
23213 054672 010506 R0706: MOV R5,SP ;RESET SP FOR ERROR LOOP
23214 054674 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23215 054676 012737 000340 177776 MOV #340,#PSW ;SET CPU PRIORITY TO LEVEL 7
23216 054704 000257 CCC ;SCOPE SYNC
23217
23218 054706 052712 000100 I0706: BIS #100,(R2) ;ENABLE INTERRUPTS
23219
23220 054712 005304 DEC R4 ;COUNT UNTIL (R4) = 000000 - THEN
23221 054714 001376 BNE .-2 ;CONTINUE - NO INTERRUPT SHOULD OCCUR
23222 054716 000404 BR B0706 ;GO TO EXIT - ALL OK
23223
23224 054720 042712 000100 A0706: BIC #100,(R2) ;TURN OFF THE INTR ENABLE
23225 054724 104006 E0706: ERROR6 ;INTR OCCURRED WITH CPU AT LEVEL 7
23226 054726 054672 R0706 ;ERROR LOOP RETURN ADDRESS
23227
23228 054730 042712 000100 B0706: BIC #100,(R2) ;TURN OFF INTR ENABLE
23229 054734 012737 000102 000100 MOV #102,#100 ;RESET THE TRAP CATCHER IN THE VECTOR
23230 054742 005037 000102 CLR #102
23231 054746 010506 MOV R5,SP ;RESET SP JUST IN CASE
23232 054750 005037 177776 CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23233
23234 054754 000004 00706: SCOPE ;CALL SCOPE LOOP UTILITY
23235
    
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23236 ; *****
23237 ; .SBTTL T0707 BR PRIORITY ARBITRATION TEST - LEVEL 6 USING KW11-L
23238 ; *****
23239
23240 054756 012700 000707 T0707: MOV #0707,R0 ;LOAD R0 WITH TEST NO.
23241 054762 013701 055032 MOV #I0707,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23242 054766 005737 066636 TST #OPTION ;IS KW11-L INSTALLED ??
23243 054772 100042 BPL 00707 ;BR IF NOT - SKIP THIS TEST
23244 054774 010605 MOV SP,R5 ;SAVE THE SP
23245 054776 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
23246 055002 012737 055044 000100 MOV #A0707,#100 ;IF INTR OCCURS - GO TO A0707
23247 055010 012737 000340 000102 MOV #340,#102 ;WITH CPU PRIORITY AT LEVEL 7
23248 055016 010506 R0707: MOV R5,SP ;RESET SP FOR ERROR LOOP
23249 055020 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23250 055022 012737 000300 177776 MOV #300,#PSW ;SET CPU PRIORITY TO LEVEL 6
23251 055030 000257 CCC ;SCOPE SYNC
23252
23253 055032 052712 000100 I0707: BIS #100,(R2) ;ENABLE INTERRUPTS
23254
23255 055036 005304 DEC R4 ;COUNT UNTIL [R4] = 000000 - THEN
23256 055040 001376 BNE .-2 ;CONTINUE - NO INTERRUPT SHOULD OCCUR
23257 055042 000404 BR B0707 ;GO TO EXIT - ALL OK
23258
23259 055044 042712 000100 A0707: BIC #100,(R2) ;TURN OFF THE INTR ENABLE
23260 055050 104006 E0707: ERROR6 ;INTR OCCURRED WITH CPU AT LEVEL 6
23261 055052 055016 R0707 ;ERROR LOOP RETURN ADDRESS
23262
23263 055054 042712 000100 B0707: BIC #100,(R2) ;TURN OFF INTR ENABLE
23264 055060 012737 000102 000100 MOV #102,#100 ;RESET THE TRAP CATCHER IN THE VECTOR
23265 055066 005037 000102 CLR #102
23266 055072 010506 MOV R5,SP ;RESET SP JUST IN CASE
23267 055074 005037 177776 CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23268
23269 055100 000004 00707: SCOPE ;CALL SCOPE LOOP UTILITY
23270
    
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23271          : *****
23272          : .SBTTL T0710 BR PRIORITY ARBITRATION TEST - LEVEL 7 USING DL11
23273          : *****
23274
23275 055102 012700 0C0710          T0710: MOV      #0710,R0          ;LOAD R0 WITH TEST NO.
23276 055106 013701 055150          MOV      @#10710,R1        ;LOAD R1 WITH TEST INSTRUCTION WORD
23277 055112 010605                   MOV      SP,R5            ;SAVE THE SP
23278 055114 012702 177564          MOV      #XCSR,R2        ;R2 POINTS TO DL11 XCSR
23279 055120 012737 055162 000064   MOV      #A0710,@#64     ;IF INTR OCCURS - GO TO A0710
23280 055126 012737 000340 000066   MOV      #340,@#66       ;WITH CPU PRIORITY AT LEVEL 7
23281 055134 010506                   R0710: MOV      R5,SP      ;RESET SP FOR ERROR LOOP
23282 055136 005004                   CLR      R4              ;INITIALIZE R4 AS TIMER
23283 055140 012737 000340 177776   MOV      #340,@#PSW     ;SET CPU PRIORITY TO LEVEL 7
23284 055146 000257                   CCC                      ;SCOPE SYNC
23285
23286 055150 052712 000100          I0710: BIS      #100,(R2) ;ENABLE INTERRUPTS
23287
23288 055154 005304                   DEC      R4              ;COUNT UNTIL [R4] = 000000 - THEN
23289 055156 001376                   BNE     .-2              ;CONTINUE - NO INTERRUPT SHOULD OCCUR
23290 055160 000404                   BR      B0710           ;GO TO EXIT - ALL OK
23291
23292 055162 042712 000100          A0710: BIC      #100,(R2) ;TURN OFF THE INTR ENABLE
23293 055166 104006                   E0710: ERROR6          ;INTR OCCURRED WITH CPU AT LEVEL 7
23294 055170 055134                   R0710                   ;ERROR LOOP RETURN ADDRESS
23295
23296 055172 042712 000100          B0710: BIC      #100,(R2) ;TURN OFF INTR ENABLE
23297 055176 012737 000066 0C0064   MOV      #66,@#64       ;RESET THE TRAP CATCHER IN THE VECTOR
23298 055204 005037 000066                   CLR      @#66
23299 055210 010506                   MOV      R5,SP          ;RESET SP JUST IN CASE
23300 055212 005037 177776                   CLR      @#PSW         ;SET CPU PRIORITY BACK TO LEVEL 0
23301
23302 055216 000004                   J0710: SCOPE           ;CALL SCOPE LOOP UTILITY
23303
    
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E13

.MAIN. MACY11 27.732) 15-OCT-75 14:58 PAGE 575
 DBQEAB.CMB T0710 BR PRIORITY ARBITRATION TEST - LEVEL 7 USING DL11

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23304      ; *****
23305      ; .SBTTL T0711 BR PRIORITY ARBITRATION TEST - LEVEL 6 USING DL11
23306      ; *****
23307
23308 055220 012700 0C0711      T0711: MOV      #0711,R0      ;LOAD R0 WITH TEST NO.
23309 055224 013701 055266      MOV      @#I0711,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
23310 055230 010605      MOV      SP,R5      ;SAVE THE SP
23311 055232 012702 177564      MOV      #XCSR,R2      ;R2 POINTS TO DL11 XCSR
23312 055236 012737 055300 000064      MOV      #A0711,@#64      ;IF INTR OCCURS - GO TO A0711
23313 055244 012737 000340 000066      MOV      #340,@#66      ;WITH CPU PRIORITY AT LEVEL 7
23314 055252 010506      R0711: MOV      R5,SP      ;RESET SP FOR ERROR LOOP
23315 055254 0C5004      CLR      R4      ;INITIALIZE R4 AS TIMER
23316 055256 012737 0003C0 177776      MOV      #300,@#PSW      ;SET CPU PRIORITY TO LEVEL 6
23317 055264 000257      CCC
23318
23319 055266 052712 000100      I0711: BIS      #100,(R2)      ;ENABLE INTERRUPTS
23320
23321 055272 005304      DEC      R4      ;COUNT UNTIL [R4] = 000000 - THEN
23322 055274 001376      BNE      #-2      ;CONTINUE - NO INTERRUPT SHOULD OCCUR
23323 055276 000404      BR       B0711      ;GO TO EXIT - ALL OK
23324
23325 055300 042712 000100      A0711: BIC      #100,(R2)      ;TURN OFF THE INTR ENABLE
23326 055304 104006      E0711: ERROR6      ;INTR OCCURRED WITH CPU AT LEVEL 6
23327 055306 055252      R0711      ;ERROR LOOP RETURN ADDRESS
23328
23329 055310 042712 000100      B0711: BIC      #100,(R2)      ;TURN OFF INTR ENABLE
23330 055314 012737 000066 000064      MOV      #66,@#64      ;RESET THE TRAP CATCHER IN THE VECTOR
23331 055322 005037 000066      CLR      @#66
23332 055326 010506      MOV      R5,SP      ;RESET SP JUST IN CASE
23333 055330 005037 177776      CLR      @#PSW      ;SET CPU PRIORITY BACK TO LEVEL 0
23334
23335 055334 000004      00711: SCOPE      ;CALL SCOPE LOOP UTILITY
23336
  
```

F13

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 576
 DBQEAB.CMB T0711 BR PRIORITY ARBITRATION TEST - LEVEL 6 USING DL11

```

23337 ; *****
23338 ; .SBTTL T0712 BR PRIORITY ARBITRATION TEST - LEVEL 5 USING DL11
23339 ; *****
23340
23341 055236 012700 000712 T0712: MOV #0712,R0 ;LOAD R0 WITH TEST NO.
23342 055342 013701 055404 MOV @#I0712,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23343 055346 010605 MOV SP,R5 ;SAVE THE SP
23344 055350 012702 177564 MOV #XCSR,R2 ;R2 POINTS TO DL11 XCSR
23345 055354 012737 055416 000064 MOV #A0712,@#64 ;IF INTR OCCURS - GO TO A0712
23346 055362 012737 000340 000066 MOV #340,@#66 ;WITH CPU PRIORITY AT LEVEL 7
23347 055370 010506 R0712: MOV R5,SP ;RESET SP FOR ERROR LOOP
23348 0 372 005004 CLR R4 ;INITIALIZE R4 AS TIMER
23349 05 374 012737 000240 177776 MOV #240,@#PSW ;SET CPU PRIORITY TO LEVEL 5
23350 055402 000257 CCC ;SCOPE SYNC
23351
23352 055404 052712 000100 I0712: BIS #100,(R2) ;ENABLE INTERRUPTS
23353
23354 055410 005304 DEC R4 ;COUNT UNTIL (R4) = 000000 - THEN
23355 055412 001376 BNE .-2 ;CONTINUE - NO INTERRUPT SHOULD OCCUR
23356 055414 000404 BR B0712 ;GO TO EXIT - ALL OK
23357
23358 055416 042712 000100 A0712: BIC #100,(R2) ;TURN OFF THE INTR ENABLE
23359 055422 104006 E0712: ERROR6 ;INTR OCCURRED WITH CPU AT LEVEL 5
23360 055424 055370 R0712 ;ERROR LOOP RETURN ADDRESS
23361
23362 055426 042712 000100 B0712: BIC #100,(R2) ;TURN OFF INTR ENABLE
23363 055432 012737 000066 000064 MOV #66,@#64 ;RESET THE TRAP CATCHER IN THE VECTOR
23364 055440 005037 000066 CLR @#66
23365 055444 010506 MOV R5,SP ;RESET SP JUST IN CASE
23366 055446 005037 177776 CLR @#PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23367
23368 055452 000004 J0712: SCOPE ;CALL SCOPE LOOP UTILITY
23369
  
```

G13

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 577
 DBGEAB.CMB T0712 BR PRIORITY ARBITRATION TEST - LEVEL 5 USING DL11

```

23370 ; *****
23371 ; .SBTTL T0713 BR PRIORITY ARBITRATION TEST - LEVEL 4 USING DL11
23372 ; *****
23373
23374 055454 012700 0C0713 T0713: MOV #0713,R0 ;LOAD R0 WITH TEST NO.
23375 055460 013701 055522 ;MOV #I0713,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23376 055464 010605 ;MOV SP,R5 ;SAVE THE SP
23377 055466 012702 177564 ;MOV #XCSR,R2 ;R2 POINTS TO DL11 XCSR
23378 055472 012737 055534 000064 ;MOV #A0713,#64 ;IF INTR OCCURS - GO TO A0713
23379 055500 012737 000340 000066 ;MOV #340,#66 ;WITH CPU PRIORITY AT LEVEL 7
23380 055506 010506 R0713: MOV R5,SP ;RESET SP FOR ERROR LOOP
23381 055510 005004 ;CLR R4 ;INITIALIZE R4 AS TIMER
23382 055512 012737 000200 177776 ;MOV #200,#PSW ;SET CPU PRIORITY TO LEVEL 4
23383 055520 000257 ;CCC ;SCOPE SYNC
23384
23385 055522 052712 000100 I0713: BIS #100,(R2) ;ENABLE INTERRUPTS
23386
23387 055526 005304 ;DEC R4 ;COUNT UNTIL [R4] = 000000 - THEN
23388 055530 001376 ;BNE #-2 ;CONTINUE - NO INTERRUPT SHOULD OCCUR
23389 055532 000404 ;BR B0713 ;GO TO EXIT - ALL OK
23390
23391 055534 042712 000100 A0713: BIC #100,(R2) ;TURN OFF THE INTR ENABLE
23392 055540 104006 E0713: ERROR6 ;INTR OCCURRED WITH CPU AT LEVEL 4
23393 055542 055506 R0713 ;ERROR LOOP RETURN ADDRESS
23394
23395 055544 042712 000100 B0713: BIC #100,(R2) ;TURN OFF INTR ENABLE
23396 055550 012737 000066 000064 ;MOV #66,#64 ;RESET THE TRAP CATCHER IN THE VECTOR
23397 055556 005037 000066 ;CLR #66
23398 055562 010506 ;MOV R5,SP ;RESET SP JUST IN CASE
23399 055564 005037 177776 ;CLR #PSW ;SET CPU PRIORITY BACK TO LEVEL 0
23400
23401 055570 000004 J0713: SCOPE ;CALL SCOPE LOOP UTILITY
23402
23403
23404
  
```

H13

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 578
DBQEAB.CMB T0713 BR PRIORITY ARBITRATION TEST - LEVEL 4 USING DL11

```
23405 ; *****
23406 ; .SBTTL T0714 "CLR @#PSW" ALLOWS IMMEDIATE BR-BG-INTR SEQUENCE
23407 ; *****
23408
23409 ; THIS TEST VERIFIES THAT IF A "BR" REQUEST IS PENDING WHEN A "CLR @#PSW"
23410 ; IS EXECUTED TO LOWER THE CPU PRIORITY, THE REQUEST IS GRANTED BEFORE
23411 ; EXECUTION OF THE INSTRUCTION FOLLOWING THE "CLR"
23412
23413 055572 012700 000714 T0714: MOV #0714,R0 ;LOAD R0 WITH THE TEST NO.
23414 055576 013701 055672 MOV @#I0714,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23415 055602 005737 066636 TST @#OPTION ;IS THE KW11-L INSTALLED ??
23416 055606 100053 BPL 00714 ;SKIP THIS TEST IF NOT
23417 055610 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
23418 055614 010605 MOV SP,R5 ;SAVE THE SP
23419 055616 012737 055700 000100 MOV #A0714,@#100 ;SET UP LCLK VECTOR TO GO TO A0714
23420 055624 012737 000300 000102 MOV #300,@#102
23421 055632 010506 R0714: MOV R5,SP ;RESET THE SP FOR ERROR LOOPING
23422 055634 005004 CLR R4 ;INITIALIZE TIMER FO KW
23423 055636 005003 CLR R3 ;CLEAR SOFTWARE FLAG
23424 055640 012737 000340 177776 MOV #340,@#PSW ;LOCK OUT ALL INTRS
23425 055646 052712 000100 BIS #100,(R2) ;ENABLE LCLK INTRS
23426 055652 042712 000200 BIC #200,(R2) ;CLEAR LINE CLOCK READY
23427 055656 105712 15: TSTB (R2) ;LCLK READY TO INTR ??
23428 055660 100403 BMI 25 ;BR IF YES
23429 055662 005304 DEC R4 ;COUNT THE TIMER
23430 055664 001374 BNE 15 ;BR IF NO TIMEOUT
23431 055666 000412 BR B0714 ;GO REPORT TIMEOUT
23432 055670 000257 25: CCC ;SCOPE SYNC
23433
23434 055672 005037 177776 I0714: CLR @#PSW ;ALLOW INTRS - LCLK SHOULD INTERRUPT
23435 ;BEFORE FETCHING NEXT INSTRUCTION
23436 055676 005103 R0714: COM R3 ;SHOULD NOT BE FETCHED
23437 055700 005012 CLR (R2) ;DISABLE THE LCLK INTR
23438 055702 005703 TST R3 ;DID SOFTWARE FLAG GET SET ??
23439 055704 001406 BEQ C0714 ;BR IF NOT - IT WORKED OK
23440 055706 104006 E10714: ERROR6 ;LCLK FAILED TO INTR ONTIME
23441 055710 055632 R0714 ;ERROR LOOP RETURN ADDRESS
23442 055712 000403 BR C0714 ;GO EXIT
23443
23444 055714 005012 B0714: CLR (R2) ;DISABLE LCLK INTR
23445 055716 104006 E20714: ERROR6 ;KW11-L TIMED OUT
23446 055720 055632 R0714 ;ERROR LOOP RETURN ADDRESS
23447
23448 055722 010506 C0714: MOV R5,SP ;RESET THE SP
23449 055724 012737 000102 000100 MOV #102,@#100 ;RESTORE THE KW11-L TRAPCATCHER
23450 055732 005037 000102 CLR @#102
23451
23452 055736 000004 00714: SCOPE ;CALL THE SCOPE LOOP UTILITY
```

```

23453 ; *****
23454 ; .SBTTL T0715 "BR6 VS BR4" PRIORITY ARBITRATION TEST
23455 ; *****
23456
23457 ; THIS TEST VERIFIES THAT IF BOTH A "BR4" AND A "BR6" REQUEST ARE
23458 ; PENDING WHEN THE CPU PRIORITY IS LOWERED TO ALLOW INTRS. THAT "BR6"
23459 ; REQUEST IS GRANTED FIRST EVEN THOUGH THE "BR4" REQUEST MAY HAVE
23460 ; OCCURRED FIRST
23461
23462 05574C 012700 000715 T0715: MOV #0715,R0 ;LOAD R0 WITH THE TEST NO.
23463 055744 013701 056106 MOV #10715,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23464 055750 005737 066636 TST #OPTION ;IS THE LCLK INSTALLED ??
23465 055754 100133 BPL 00715 ;BR IF NOT - SKIP THIS TEST
23466 055756 012702 177546 MOV #LKCSR,R2 ;R2 POINTS TO KW11-L CSR
23467 055762 012703 177564 MOV #XCSR,R3 ;R3 POINTS TO DL11 XCSR
23468 055766 010605 MOV SP,R5 ;SAVE THE SP
23469 055770 012737 056116 000100 MOV #A0715,#100 ;SET UP THE LCLK VECTOR - GO TO A0715
23470 055776 012737 000300 000102 MOV #300,#102
23471 056004 012737 056152 000064 MOV #C0715,#64 ;SET UP THE DL11 VECTOR - GO TO C0715
23472 056012 012737 000200 000066 MOV #200,#66
23473 056020 010506 R0715: MOV R5,SP ;RESET SP FOR ERROR LOOPING
23474 056022 012737 000340 177776 MOV #340,#PSW ;LOCK OUT ALL INTRS
23475 056030 005037 067602 CLR #MBUFD ;INIT TIMER
23476 056034 005037 067606 CLR #MBUF1 ;CLEAR DL11 INTR FLAG
23477 056040 005004 CLR R4 ;INIT TIMER
23478 056042 052713 000100 BIS #100,(R3) ;ENABLE DL11 XMIT INTR
23479 056046 105713 1$ TSTB (R3) ;XMIT READY SET ??
23480 056050 100403 BMI 2$ ;BR IF YES
23481 056052 005304 DEC R4 ;COUNT THE TIMER
23482 056054 001374 BNE 1$ ;BR IF NO TIMEOUT
23483 056056 000444 BR F0715 ;GO REPORT TIMEOUT FOR DL11
23484
23485 056060 005004 2$ CLR R4 ;INIT THE TIMER AGAIN
23486 056062 052712 000100 BIS #100,(R2) ;ENABLE LCLK INTRS
23487 056066 042712 000200 BIC #200,(R2) ;CLEAR THE LINE CLOCK READY BIT
23488 056072 105712 3$ TSTB (R2) ;LCLK READY TO INTR
23489 056074 100403 BMI 4$ ;BR IF YES
23490 056076 005304 DEC R4 ;COUNT THE TIMER
23491 056100 001374 BNE 3$ ;BR IF NO TIMEOUT
23492 056102 000437 BR G0715 ;GO REPORT KW11-L TIMEOUT
23493 056104 000257 4$ CCC ;SCOPE SYNC
23494
23495 056106 005037 177776 I0715: CLR #PSW ;ALLOW INTRS - KW SHOULD INTR FIRST
23496
23497 056112 005137 067602 A0715: COM #MBUFD ;SET SOFTWARE FLAG IF FETCHED
23498 056116 005013 CLR (R3) ;DISABLE BOTH INTERRUPTS
23499 056120 005012 CLR (R2)
23500 056122 005737 067602 TST #MBUFD ;DID SOFTWARE FLAG GET SET ??
23501 056126 001403 BEQ B0715 ;BR IF NOT
23502
23503 056130 104007 E10715: ERROR7 ;KW11-L INTR OCCURRED TOO LATE
23504 056132 056020 R0715 ;ERROR LOOP RETURN ADDRESS
23505 056134 000426 BR H0715 ;GO TO EXIT
23506
23507 056136 005737 067606 B0715: TST #MBUF1 ;DID DL11 SOFTWARE FLAG SET ??
23508 056142 001423 BEQ H0715 ;BR IF NOT
    
```


K13

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 581
DBQEAB.CMB T0715 "BR6 VS BR4" PRIORITY ARBITRATION TEST

```
23541 ; *****
23542 ; ///////////////////////////////////////////////////COMBINED INSTRUCTION EXERCISER SECTION ///////////////////////////////////////////////////
23543 ; *****
23544 ; *****
23545 ; *****
23546 ; .SBTTL T0716 "BPT" TRAP LINKAGE TEST
23547 ; *****
23548
23549 056246 012700 000716 T0716: MOV #0716,R0 ;SAVE THE TEST NO. IN R0
23550 056252 013701 056272 MOV @#I0716,R1 ;LOAD INSTRUCTION TEST WORD INTO R1
23551 056256 010605 MOV SP,R5 ;SAVE THE SP
23552 056260 012737 056300 000014 MOV #A0716,@#14 ;GO TO A0716 ON "BPT" TRAP
23553 056266 010506 R0716: MOV R5,SP ;RESET THE SP FOR ERROR LOOPING
23554 056270 000257 CCC ;SCOPE SYNC
23555
23556 056272 000003 I0716: BPT ;TEST THE "BPT" - GO TO A0716
23557
23558 056274 104005 E0716: ERRORS ;BPT FAILED TO TRAP
23559 056276 056266 R0716 ;ERROR LOOP RETURN ADDRESS
23560
23561 056300 010506 A0716: MOV R5,SP ;RESET THE SP
23562 056302 012737 000016 000014 MOV #16,@#14 ;RESTORE THE VECTOR
23563
23564 056310 000004 00716: SCOPE ;CALL THE SCOPE LOOP UTILITY
23565
23566
23567 ; *****
23568 ; .SBTTL T0717 RED ZONE OVERFLOW TEST - MOV R,-(SP)
23569 ; *****
23570
23571 ;MICROPROGRAMMING / LOGIC INFORMATION
23572
23573 ;ROM SEQ: [174,257,200,JAMUPP,TRAP MICROROUTINE] FC 1,4,6,10
23574
23575 ;ACT BUTS: 37(004)100,174 / 22(174)200,200 / 01(332)122,123 / 26(123)010,013
23576
23577 ;EXEC: [200] BUS STOP TRIGGERS JAMUPP LOGIC
23578
23579 ;CODES: N / A
23580
23581 ;SYNC: B05J2 (-) T = 10 USEC
23582
23583 ;KEY SIG: K5-5 STACK04 H / K5-5 STPM2 H / K1-7 BOVFLW STOP H / K4-4 OVFLW ER
23584 ;K4-4 BUS STOP H / K4-3 JBERR (1) L / K4-3 JAMUPP L / K4-3 JAM CLK
23585
23586 056312 012700 000717 T0717: MOV #0717,R0 ;LOAD R0 WITH TEST NO.
23587 056316 013701 056356 MOV @#I0717,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23588 056322 010605 MOV SP,R5 ;SAVE SP
23589 056324 013704 000004 R0717: MOV @#4,R4 ;SAVE T.O. VECTOR
23590 056330 013703 000336 MOV @#336,R3 ;SAVE VECTOR AT 336
23591 056334 012737 056372 000004 MOV #A0717,@#4 ;GO TO A0717 ON OVFLW
23592 056342 012737 125252 000336 MOV #125252,@#336 ;INIT. [336]
23593 056350 012706 000340 MOV #340,SP ;SET SP TO CAUSE RED ZONE TRAP
23594 056354 000257 CCC ;SCOPE SYNC
23595
23596 056356 010046 I0717: MOV R0,-(SP) ;FORCE RED ZONE TRAP - GO TO A0717
```



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23623 ; *****
23624 ; .SBTTL T0720 YELLOW ZONE OVERFLOW TEST - MOV R,-(SP)
23625 ; *****
23626
23627 ;MICROPROGRAMMING / LOGIC INFORMATION
23628
23629 ;ROM SEQ: [174,257,201,125,375,017,015,010,TRAP MICROROUTINE] FC 1,4,8,10,6
23630
23631 ;ACT BUTS: 37(004)100,174 / 22(174)200,201 / 16(125)016,017 / 26(017)010,010
23632
23633 ;EXEC: K4-4 CLK BOVFL SETS K5-4 BOVFLW FLOP
23634
23635 ;CODES: N/A
23636
23637 ;SYNC: B05J2 (-) T= 10USEC
23638
23639 .KEY SIG: K4-4 CLK BOVFLW H / K4-4 CKOVF H / K1-7 BOVFL L
23640
23641 056440 012700 000720 J0720: MOV #0720,R0 ;LOAD R0 WITH TEST NO.
23642 056444 013701 056476 ;LOAD R1 WITH TEST INSTRUCTION WORD
23643 056450 010605 MOV #10720,R1 ;SAVE SP
23644 056452 012702 000376 MOV SP,R5 ;R2 POINTS TO STACK
23645 056456 013704 000004 R0720: MOV #376,R2 ;SAVE T.O. VECTOR
23646 056462 012737 056512 000004 MOV #4,R4 ;ON OVFLW - GO TO A0720
23647 056470 012706 000400 MOV #A0720,#4 ;SET SP TO CAUSE OVFLW
23648 056474 000257 CCC #400,SP ;SCOPE SYNC
23649
23650 056476 010046 I0720: MOV R0,-(SP) ;FORCE STACK OVFLW - GO TO A0720
23651
23652 056500 010437 000004 MOV R4,#4 ;RESTORE T.O. VECTOR
23653 056504 010506 MOV R5,SP ;RESET SP FOR ERROR CALL
23654 056506 104005 E10720: ERRORS ;STACK OVFLW FAILED TO TRAP
23655 056510 056456 R0720 ;ERROR LOOP RETURN ADDRESS
23656
23657 056512 010437 000004 A0720: MOV R4,#4 ;RESTORE T.O. VECTOR
23658 056516 020012 CMP R0,(R2) ;DID [R0] GET PUSHED?
23659 056520 001403 BEQ B0720 ;BR IF YES
23660
23661 056522 010506 E20720: MOV R5,SP ;RESET SP FOR ERROR CALL
23662 056524 104005 ERRORS ;MOV FAILED TO PUSH IN YELLOW ZONE
23663 056526 056456 R0720 ;ERROR LOOP RETURN ADDRESS
23664
23665 056530 005706 B0720: TST SP ;[SP]=0?
23666 056532 001003 BNE C0720 ;BR IF NOT
23667
23668 056534 010506 E30720: MOV R5,SP ;RESET SP FOR ERROR CALL
23669 056536 104005 ERRORS ;RED ZONE INSTEAD OF YELLOW ZONE
23670 056540 056456 R0720 ;ERROR LOOP RETURN ADDRESS
23671
23672 056542 010506 C0720: MOV R5,SP ;RESET SP
23673
23674 056544 000004 O0720: SCOPE ;CALL THE SCOPE LOOP UTILITY
    
```

```

23675 ; *****
23676 .SBTTL T0721 YELLOW ZONE OVERFLOW TEST - (CMP R0,-(SP))
23677 ; *****
23678
23679 056546 012700 000721 T0721: MOV #0721,R0 ;LOAD R0 WITH TEST NO.
23680 056552 013701 056600 MOV @#I0721,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23681 056556 010605 MOV SP,R5 ;SAVE THE SP
23682 056560 013704 000004 MOV @#4,R4 ;SAVE TRAP VECTOR
23683 056564 012737 056604 000004 R0721: MOV #A0721,@#4 ;GO TO A0721 IF TRAP SPRUNG
23684 056572 012706 000400 MOV #400,SP ;SET SP TO PUSH INTO "YELLOW ZONE"
23685 056576 000257 CCC ;SCOPE SYNC
23686
23687 056600 020046 I0721: CMP R0,-(SP) ;TEST THE CMP - NO TRAP SHOULD OCCUR
23688
23689 056602 000405 BR B0721 ;GO TO EXIT TEST
23690
23691 056604 010437 000004 A0721: MOV R4,@#4 ;RESTORE TRAP VECTOR
23692 056610 010506 MOV R5,SP ;RESET THE SP
23693 056612 104005 E0721: ERRORS ;CMP CAUSED OVERFLOW TRAP
23694 056614 056564 R0721 ;ERROR LOOP RETURN ADDRESS
23695
23696 056616 010437 000004 B0721: MOV R4,@#4 ;RESTORE THE VECTOR
23697 056622 010506 MOV R5,SP ;RESET THE SP
23698
23699 056624 000004 00721: SCOPE ;CALL THE SCOPE LOOP UTILITY
    
```

```

23700 : *****
23701 : .SBTTL T0722 YELLOW ZONE OVERFLOW TEST - (BIT RO,-(SP))
23702 : *****
23703
23704 056626 012700 000722 T0722: MOV #0722,R0 ;LOAD R0 WITH TEST NO.
23705 056632 013701 056660 ;LOAD R1 WITH TEST INSTRUCTION WORD
23706 056636 010605 ;SAVE THE SP
23707 056640 013704 000004 ;SAVE TRAP VECTOR
23708 056644 012737 056664 000004 R0722: MOV #A0722,R4 ;GO TO A0722 IF TRAP SPRUNG
23709 056652 012706 000400 ;SET SP TO PUSH INTO "YELLOW ZONE"
23710 056656 000257 ;SCOPE SYNC
23711
23712 056660 030046 I0722: BIT RO,-(SP) ;TEST THE BIT - NO TRAP SHOULD OCCUR
23713
23714 056662 000405 BR B0722 ;GO TO EXIT TEST
23715
23716 056664 010437 000004 A0722: MOV R4,R4 ;RESTORE TRAP VECTOR
23717 056670 010506 ;RESET THE SP
23718 056672 104005 E0722: ERRORS ;BIT CAUSED OVERFLOW TRAP
23719 056674 056644 R0722 ;ERROR LOOP RETURN ADDRESS
23720
23721 056676 010437 000004 B0722: MOV R4,R4 ;RESTORE THE VECTOR
23722 056702 010506 ;RESET THE SP
23723
23724 056704 000004 00722: SCOPE ;CALL THE SCOPE LOOP UTILITY

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23725 : *****
23726 : .SBTTL T0723 YELLOW ZONE OVERFLOW TEST - (TST -(SP))
23727 : *****
23728
23729 056706 012700 000723 T0723: MOV #0723,RO ;LOAD RO WITH TEST NO.
23730 056712 013701 056740 MOV #I0723,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
23731 056716 010605 MOV SP,R5 ;SAVE THE SP
23732 056720 013704 000004 MOV #4,R4 ;SAVE TRAP VECTOR
23733 056724 012737 056744 000004 R0723: MOV #A0723,#4 ;GO TO A0723 IF TRAP SPRUNG
23734 056732 012706 000400 MOV #400,SP ;SET SP TO PUSH INTO "YELLOW ZONE"
23735 056736 000257 CUC ;SCOPE SYNC
23736
23737 056740 005746 I0723: TST -(SP) ;TEST THE TST - NO TRAP SHOULD OCCUR
23738
23739 056742 000405 BR B0723 ;GO TO EXIT TEST
23740
23741 056744 010437 000004 A0723: MOV R4,#4 ;RESTORE TRAP VECTOR
23742 056750 010505 MOV R5,SP ;RESET THE SP
23743 056752 104005 E0723: ERRORS ;TST CAUSED OVERFLOW TRAP
23744 056754 056724 R0723 ;ERROR LOOP RETURN ADDRESS
23745
23746 056756 010437 000004 B0723: MOV R4,#4 ;RESTORE THE VECTOR
23747 056762 010506 MOV R5,SP ;RESET THE SP
23748
23749 056764 000004 00723: SCOPE ;CALL THE SCOPE LOOP UTILITY

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23750 : *****
23751 : .SBTTL T0724 ODD ADDRESS ERROR TEST - SUB RA,(RB) - (RB) = ODD
23752 : *****
23753
23754 ;MICROPROGRAMMING / LOGIC INFORMATION
23755
23756 ;RCM SEQ:
23757
23758 ;ACT BUTS:
23759
23760 ;EXEC:
23761
23762 ;CODES:
23763
23764 ;SYNC:
23765
23766 ;KEY SIG:
23767
23768 056766 012700 000724 T0724: MOV #0724,R0 ;LOAD R0 WITH TEST NO.
23769 056772 013701 057022 ;LOAD R1 WITH TEST INSTRUCTION WORD
23770 056776 010605 ;SAVE SP
23771 057000 013704 000004 R0724: MOV #4,R4 ;SAVE T.O. VECTOR
23772 057004 012737 057034 000004 ;ON ODD ADDR ERROR - GO TO A0724
23773 057012 010506 ;RESET SP FOR ERROR LOOP
23774 057014 012702 000001 ;R2 GETS ODD ADDRESS
23775 057020 000257 ;SCOPE SYNC
23776
23777 057022 160012 I0724: SUB R0,(R2) ;FORCE ODD ADDR ERROR - GO TO A0724
23778
23779 057024 010437 000004 ;RESTORE T.O. VECTOR
23780 057030 104005 E0724: MOV R4,#4 ;ODD ADDR FAILED TO TRAP
23781 057032 057000 R0724 ;ERROR LOOP RETURN ADDRESS
23782
23783 057034 010437 000004 A0724: MOV R4,#4 ;RESTORE T.O. VECTOR
23784 057040 010506 ;RESET SP
23785 057042 005037 000000 ;CLR LOC. 0 JUST IN CASE
23786
23787 057046 000004 00724: SCOPE ;CALL THE SCOPE LOOP UTILITY
23788

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E14

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 588
 DBQEAB.CMB T0724 ODD ADDRESS ERROR TEST - SUB RA,(RB) - (RB) = ODD

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23789          ; *****
23790          ; .SBTTL T0725 TEST FOR ODD ADDR. ERROR TRAP FOR DEST. DEFERRED MODES
23791          ; *****
23792
23793 057050 012700 000725 T0725: MOV      #0725,R0          ;LOAD R0 WITH TEST NO.
23794 057054 012702 067607          MOV      #MBUF1+1,R2      ;DEST ADDR=MBUF1+1 (ODD)
23795 057060 012737 057154 000004          MOV      #A0725,#4      ;GO TO A0725 ON ODA TRAP
23796
23797 057066 010205          R10725: MOV     R2,R5          ;[R5] = DEST. ADDR
23798 057070 013701 057076          MOV     @#I10725,R1      ;[R1] = TEST INSTR
23799 057074 000257          CCC                          ;SCOPE SYNC
23800
23801 057076 105435          I10725: NEGB   @ (R5)+      ;TEST DM=3 TRAP
23802
23803 057100 104006          E10725: ERROR6          ;ODA TRAP NOT SPRUNG IN ROM LOC. 163
23804 057102 057066          R10725          ;ERROR LOOP RETURN ADDRESS
23805
23806 057104 012705 067611          R20725: MOV     #MBUF1+3,R5 ;[R5] = DEST. ADDR
23807 057110 013701 057116          MOV     @#I20725,R1      ;[R1] = TEST INSTR
23808 057114 000257          CCC                          ;SCOPE SYNC
23809
23810 057116 105455          I20725: NEGB   @-(R5)      ;TEST DM=5 TRAP
23811
23812 057120 104006          E20725: ERROR6          ;ODA TRAP NOT SPRUNG IN ROM LOC. 165
23813 057122 057104          R20725          ;ERROR LOOP RETURN ADDRESS
23814
23815 057124 010205          R30725: MOV     R2,R5          ;[R5] = DEST ADDR
23816 057126 013701 057134          MOV     @#I30725,R1      ;[R1] = TEST INSTR
23817 057132 000257          CCC                          ;SCOPE SYNC
23818
23819 057134 105475 000000          I30725: NEGB   @0(R5)     ;TEST DM=7 TRAP
23820
23821 057140 104006          E30725: ERROR6          ;ODA TRAP NOT SPRUNG IN ROM LOC 263
23822 057142 057124          R30725          ;ERROR LOOP RETURN ADDRESS
23823
23824 057144 012737 065160 000004          MOV     #BERR,@#4        ;RESET T.O. VECTOR
23825 057152 000403          BR      00725            ;GO TO SCOPE EXIT
23826
23827 057154 062716 000004          A0725: ADD     #4,(SP)     ;MOV RETURN PC AROUND ERROR CALL
23828 057160 000002          RTI                          ;RETURN TO NEXT SUB-TEST
23829
23830 057162 000004          00725: SCOPE              ;CALL SCOPE LOOP UTILITY
23831
  
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F14

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 589
 DBQEAB.CMB T0725 TEST FOR ODD ADDR. ERROR TRAP FOR DEST. DEFERRED MODES

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23832 ; *****
23833 ; .SBTTL T0726 TEST FOR ODD ADDR ERROR TRAP FOR SOURCE DEFERRED MODES
23834 ; *****
23835
23836 057164 012700 0C0726 T0726: MOV #0726,R0 ;LOAD R0 WITH TEST NO.
23837 057170 012702 067607 MOV #MBUF1+1,R2 ;[R2] = SOURCE ADDR. (ODD)
23838 057174 012737 057270 000004 MOV #A0726,#4 ;GO TO A0726 ON TRAP
23839
23840 057202 010205 R10726: MOV R2,R5 ;[R5] = SOURCE ADDR.
23841 057204 013701 057212 MOV #I10726,R1 ;[R1] = TEST INSTR.
23842 057210 000257 CCC ;SCOPE SYNC
23843
23844 057212 113504 I10726: MOVB @ (R5)+,R4 ;TEST SM=3
23845
23846 057214 104006 E10726: ERROR6 ;ODA TRAP NOT SPRUNG IN ROM LOC. 143
23847 057216 057202 R10726 ;ERROR LOOP RETURN ADDRESS
23848
23849 057220 012705 067611 R20726: MOV #MBUF1+3,R5 ;[R5] = SOURCE ADDR
23850 057224 013701 057232 MOV #I20726,R1 ;[R1] = TEST INSTR
23851 057230 000257 CCC ;SCOPE SYNC
23852
23853 057232 115504 I20726: MOVB @-(R5),R4 ;TEST SM=5
23854
23855 057234 104006 E20726: ERROR6 ;ODA TRAP NOT SPRUNG IN ROM LOC 145
23856 057236 057220 R20726 ;ERROR LOOP RETURN ADDRESS
23857 057240 010205 R30726: MOV R2,R5 ;[R5] = SOURCE ADDR
23858 057242 013701 057250 MOV #I30726,R1 ;[R1] = TEST INSTR
23859 057246 000257 CCC ;SCOPE SYNC
23860
23861 057250 117504 000000 I30726: MOVB @0(R5),R4 ;TEST SM=7
23862
23863 057254 104006 E30726: ERROR6 ;ODA TRAP NOT SPRUNG IN ROM LOC 244
23864 057256 057240 R30726 ;ERROR LOOP RETURN ADDRESS
23865
23866 057260 012737 065160 000004 MOV #BERR,#4 ;RESET T.O. VECTOR
23867 057266 000403 BR 00726 ;GO TO SCOPE EXIT
23868
23869 057270 062716 000004 A0726: ADD #4,(SP) ;MOVE RETURN PC AROUND ERROR CALL
23870 057274 000002 RTI ;RETURN TO NEXT SUB-TEST
23871
23872 057276 000004 00726: SCOPE ;CALL SCOPE LOOP UTILITY
23873
23874
23875

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MAIN MACY11 27.732) 15-OCT-76 14:58 PAGE 590
 CBGENB.CMB T0726 TEST FOR ODD ADDR ERROR TRAP FOR SOURCE DEFERRED MODES

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23876 ; *****
23877 ; .SBTTL T0727 TEST FOR ODD ADDR ERROR TRAP FOR JMP DEST DEFERRED MODES
23878 ; *****
23879
23880 057300 012700 000727 T0727: MOV #0727,R0 ;LOAD R0 WITH TEST NO.
23881 057304 012702 057407 MOV #B0727+3,R2 ;DEST ADDR = B0727+3 (ODD)
23882 057310 012737 057412 000004 MOV #A0727,#4 ;GO TO A0727 ON ODA TRAP
23883
23884 057316 010205 R10727: MOV R2,R5 ;[R5] = DEST ADDR
23885 057320 013701 057326 MOV #I10727,R1 ;[R1] = TEST INSTR
23886 057324 000257 CCC ;SCOPE SYNC
23887
23888 057326 000135 I10727: JMP @ (R5)+ ;TEST JMP DM=3
23889
23890 057330 104006 E10727: ERROR6 ;ODA TRAP NOT SPRUNG IN ROM LOC '53
23891 057332 057316 R10727 ;ERROR LOOP RETURN ADDRESS
23892
23893 057334 012705 057407 R20727: MOV #B0727+3,R5 ;[R5] = DEST ADDR
23894 057340 013701 057346 MOV #I20727,R1 ;[R1] = TEST INSTR
23895 057344 000257 CCC ;SCOPE SYNC
23896
23897 057346 000155 I20727: JMP @-(R5) ;TEST JMP DM=5
23898
23899 057350 104006 E20727: ERROR6 ;ODA TRAP NOT SPRUNG IN ROM LOC 155
23900 057352 057334 R20727 ;ERROR LOOP RETURN ADDRESS
23901
23902 057354 010205 R30727: MOV R2,R5 ;[R5] = DEST ADDR
23903 057356 013701 057364 MOV #I30727,R1 ;[R1] = TEST INSTR
23904 057362 000257 CCC ;SCOPE SYNC
23905
23906 057364 000175 000000 I30727: JMP @ (R5) ;TEST JMP DM=7
23907
23908 057370 104006 E30727: ERROR6 ;ODA TRAP NOT SPRUNG IN LOC 302
23909 057372 057354 R30727 ;ERROR LOOP RETURN ADDRESS
23910
23911 057374 012737 065160 000004 MOV #BERR,#4 ;RESET BUS T.O. VECTOR
23912 057402 000421 BR 00727 ;GO TO SCOPE EXIT
23913
23914 057404 000000 B0727: HALT ;CATASTOPHIC ERROR - [PC] QUESTIONABLE.
23915 057406 000000 HALT ;RESTART PROGRAM - DO NOT CONTINUE.
23916 057410 000000 HALT
23917
23918 057412 032716 000001 A0727: BIT #1,(SP) ;TRAP DUE TO ODD PC?
23919 057416 001003 BNE C0727 ;BR IF YES
23920 057420 062716 000004 ADD #4,(SP) ;MOV RETURN PC AROUND ERROR CALL
23921 057424 000002 RTI ;RETURN TO NEXT SUB TEST
23922
23923 057426 011603 C0727: MOV (SP),R3 ;GET ODD PC OFF STACK INTO R3
23924 057430 062706 000004 ADD #4,SP ;FIX SP
23925
23926 057434 104007 E40727: ERROR7 ;PC TRAPPED WITH ODD ADDRESS
23927 057436 057300 T0727
23928
23929 057440 012737 065160 000004 MOV #BERR,#4 ;RESET T.O. VECTOR
23930
23931 057446 000004 00727: SCOPE ;CALL SCOPE LOOP UTILITY

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 591
DBQEAB.CMB T0727 TEST FOR ODD ADDR ERROR TRAP FOR JMP DEST DEFERRED MODES

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.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 592
 DBQEAB.CMB T0727 TEST FOR ODD ADDR ERROR TRAP FOR JMP DEST DEFERRED MODES

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23933 : *****
23934 : .SBTTL T0730 TEST FOR STACK OFLW FOR DEST MODES 1,2,4, AND 6.
23935 : *****
23936
23937 057450 012700 000730 T0730: MOV #0730,R0 ;LOAD R0 WITH TEST NO.
23938 057454 012737 057602 000004 MOV #A0730,#4 ;GO TO A0730 ON OVFLW TRAP
23939 057462 010605 MOV SP,R5 ;SAVE SP
23940 057464 012702 000376 MOV #376,R2 ;USE R2 TO SET UP SP TO CAUSE TRAP
23941
23942 057470 013701 057500 R10730: MOV @I10730,R1 ;[R1] = TEST INSTR.
23943 057474 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
23944 057476 000257 CCC ;SCOPE SYNC
23945
23946 057500 005016 I10730: CLR (SP) ;TEST DM1 - SHOULD SPRING TRAP
23947
23948 057502 010506 MOV R5,SP ;RESET SP
23949 057504 104006 E10730: ERROR6 ;DM1 FAILED TO CAUSE OVERFLOW TRAP
23950 057506 057470 R10730 ;ERROR LOOP RETURN ADDRESS
23951
23952 057510 013701 057520 R20730: MOV @I20730,R1 ;[R1] = TEST INSTR.
23953 057514 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
23954 057516 000257 CCC ;SCOPE SYNC
23955
23956 057520 005026 I20730: CLR (SP)+ ;TEST DM2 - SHOULD SPRING TRAP
23957
23958 057522 010506 MOV R5,SP ;RESET SP
23959 057524 104006 E20730: ERROR6 ;DM2 FAILED TO CAUSE OVERFLOW TRAP
23960 057526 057510 R20730 ;ERROR LOOP RETURN ADDRESS
23961
23962 057530 013701 057540 R30730: MOV @I30730,R1 ;[R1] = TEST INSTR.
23963 057534 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
23964 057536 000257 CCC ;SCOPE SYNC
23965
23966 057540 005046 I30730: CLR -(SP) ;TEST DM4 - SHOULD SPRING TRAP
23967
23968 057542 010506 MOV R5,SP ;RESET SP
23969 057544 104006 E30730: ERROR6 ;DM4 FAILED TO CAUSE OVERFLOW TRAP
23970 057546 057530 R30730 ;ERROR LOOP RETURN ADDRESS
23971
23972 057550 013701 057560 R40730: MOV @I40730,R1 ;[R1] = TEST INSTR.
23973 057554 010206 MOV R2,SP ;SET SP TO CAUSE ERROR
23974 057556 000257 CCC ;SCOPE SYNC
23975
23976 057560 005066 000000 I40730: CLR 0(SP) ;TEST DM6 - SHOULD SPRING TRAP
23977
23978 057564 010506 MOV R5,SP ;RESET SP
23979 057566 104006 E40730: ERROR6 ;DM6 FAILED TO CAUSE OVERFLOW TRAP
23980 057570 057550 R40730 ;ERROR LOOP RETURN ADDRESS
23981
23982 057572 012737 065160 000004 MOV #BERR,#4 ;RESET BUS T.O. VECTOR
23983 057600 000407 BR 00730 ;GO TO SCOPE EXIT
23984
23985 057602 011604 A0730: MOV (SP),R4 ;GET RETURN PC OFF STACK
23986 057604 062704 000006 ADD #6,R4 ;MOVE RETURN PC AROUND ERROR CALL
23987 057610 010506 MOV R5,SP ;RESET SP
23988 057612 005046 CLR -(SP) ;PUSH NEW PS ON STACK

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J14

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 593
DBQEAB.CMB T0730 TEST FOR STACK OFLW FOR DEST MODES 1,2,4, AND 6.

23989	057614	010446	MOV	R4,-(SP)	; PUSH RETURN PC ON STACK
23990	057616	000002	RTI		; RETURN TO NEXT SUB-TEST
23991					
23992	057620	000004	00730:	SCOPE	; CALL SCOPE LOOP UTILITY
23993					

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 594
 DBQEAB.CMB T0730 TEST FOR STACK OFLW FOR DEST MODES 1,2,4, AND 6.

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23994 ; *****
23995 ; .SBTTL T0731 TEST FOR STACK OVFLW FOR MOV DEST MODES 1,2,4, AND 6.
23996 ; *****
23997
23998 057622 012700 000731 T0731: MOV #0731,R0 ;LOAD R0 WITH TEST NO.
23999 057626 012737 057754 000004 MOV #A0731,0#4 ;GO TO A0731 ON STACK OVFLW TRAP
24000 057634 010605 MOV SP,R5 ;SAVE SP
24001 057636 012702 000376 MOV #376,R2 ;USE R2 TO SET UP SP TO CAUSE TRAP
24002
24003 057642 013701 057652 R10731: MOV 0#I10731,R1 ;[R1] = TEST INSTR.
24004 057646 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
24005 057650 000257 CCC ;SCOPE SYNC
24006
24007 057652 010016 I10731: MOV R0,(SP) ;TEST MOV DM1 - SHOULD SPRING TRAP
24008
24009 057654 010506 MOV R5,SP ;RESET SP
24010 057656 104006 E10731: ERROR6 ;MOV DM1 FAILED TO SPRING TRAP
24011 057660 057642 R10731 ;ERROR LOOP RETURN ADDRESS
24012
24013 057662 013701 057672 R20731: MOV 0#I20731,R1 ;[R1] = TEST INSTR.
24014 057666 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
24015 057670 000257 CCC ;SCOPE SYNC
24016
24017 057672 010026 I20731: MOV R0,(SP)+ ;TEST MOV DM2 - SHOULD SPRING TRAP
24018
24019 057674 010506 MOV R5,SP ;RESET SP
24020 057676 104006 E20731: ERROR6 ;MOV DM2 FAILED TO SPRING TRAP
24021 057700 057662 R20731 ;ERROR LOOP RETURN ADDRESS
24022
24023 057702 013701 057712 R30731: MOV 0#I30731,R1 ;[R1] = TEST INSTR.
24024 057706 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
24025 057710 000257 CCC ;SCOPE SYNC
24026
24027 057712 010046 I30731: MOV R0,-(SP) ;TEST MOV DM4 - SHOULD SPRING TRAP
24028
24029 057714 010506 MOV R5,SP ;RESET SP
24030 057716 104006 E30731: ERROR6 ;MOV DM4 FAILED TO SPRING TRAP
24031 057720 057702 R30731 ;ERROR LOOP RETURN ADDRESS
24032
24033 057722 013701 057732 R40731: MOV 0#I40731,R1 ;[R1] = TEST INSTR.
24034 057726 010206 MOV R2,SP ;SET UP SP TO CAUSE OVERFLOW
24035 057730 000257 CCC ;SCOPE SYNC
24036
24037 057732 010066 000000 I40731: MOV R0,0(SP) ;TEST MOV DM6 - SHOULD SPRING TRAP
24038
24039 057736 010506 MOV R5,SP ;RESET SP
24040 057740 104006 E40731: ERROR6 ;MOV DM6 FAILED TO CAUSE OVFLW TRAP
24041 057742 057722 R40731 ;ERROR LOOP RETURN ADDRESS
24042
24043 057744 012737 065160 000004 MOV #BERR,0#4 ;RESET T.O. VECTOR
24044 057752 000407 BR 00731 ;GO TO SCOPE EXIT
24045
24046 057754 011604 A0731: MOV (SP),R4 ;GET RETURN PC
24047 057756 062704 000006 ADD #6,R4 ;MOVE RETURN PC AROUND ERROR CALL
24048 057762 010506 MOV R5,SP ;RESET SP
24049 057764 005046 CLR -(SP) ;PUSH NEW PSW
  
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 595
DBQERB.CMB T0731 TEST FOR STACK OVFLW FOR MOV DEST MODES 1,2,4, AND 6.

24050	057766	010446	MOV	R4,-(SP)	; PUSH RETJRN PC
24051	057770	000002	RTI		; RETURN TO NEXT SUB-TEST
24052					
24053	057772	000004	00731:	SCOPE	; CALL SCOPE LOOP UTILITY
24054					

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 596
 DBQERB.CMB T0731 TEST FOR STACK OVFLW FOR MOV DEST MODES 1,2,4, AND 6.

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24055 : *****
24056 : .SBTTL T0732 TEST THAT JSR CAN CAUSE OVERFLOW TRAP
24057 : *****
24058
24059 057774 012700 000732 T0732: MOV #0732,R0 ;LOAD RC WITH TEST NO.
24060 050000 012737 060036 000004 MOV #A0732,@#4 ;GO TO A0732 ON OVERFLOW ERROR
24061 060006 010605 MOV SP,R5 ;SAVE SP
24062 060010 013701 060022 MOV @#10732,R1 ;LOAD R1 WITH TEST INSTR WORD
24063 060014 012706 000400 R0732: MOV #400,SP ;SET THE SP TO CAUSE TRAP
24064 060020 000257 CCC ;SCOPE SYNC
24065
24066 060022 004737 060042 I0732: JSR PC,@#B0732 ;TEST JSR - SHOULD SPRING TRAP
24067
24068 060026 010506 MOV R5,SP ;RESET SP
24069 060030 104005 E10732: ERRORS ;JSR PUSH DID NOT SPRING OVFL TRAP
24070 060032 060014 R0732 ;ERROR LOOP RETURN ADDRESS
24071
24072 060034 000405 BR C0732 ;GO TO SCOPE EXIT
24073
24074 060036 010506 A0732: MOV R5,SP ;RESET SP
24075 060040 000403 BR C0732 ;GO EXIT TEST - ALL OK
24076
24077 060042 010506 B0732: MOV R5,SP ;RESET SP
24078 060044 104005 E20732: ERRORS ;JSR PUSH FAILED TO SPRING OVFLW TRAP
24079 060046 060014 R0732 ;ERROR LOOP RETURN ADDRESS
24080
24081 060050 012737 065160 000004 C0732: MOV #BERR,@#4 ;RESET BUS T.O. VECTOR
24082
24083 060056 000004 00732: SCOPE ;CALL SCOPE LOOP UTILITY
24084

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24085 ; *****
24086 ; .SBTTL T0733 TEST THAT 1ST PUSH IN TRAP MICROROUTINE CAUSES OVFLW TRAP
24087 ; *****
24088
24089 060060 012700 000733 T0733: MOV #0733,R0 ;LOAD R0 WITH TEST NO.
24090 060064 013704 000014 MOV @#14,R4 ;SAVE BREAK POINT TRAP VECTOR
24091 060070 013701 060120 MOV @#I0733,R1 ;LOAD R1 WITH TEST INSTR
24092 060074 010605 MOV SP,R5 ;SAVE SP
24093 060076 012737 060132 000004 MOV #A0733,@#4 ;GO TO A0733 ON OVFLW TRAP
24094 060104 012737 060136 000014 MOV #B0733,@#14 ;GO TO B0733 IF BPT SERVICED
24095 060112 012706 000400 R0733: MOV #400,SP ;SET UP SP TO CAUSE OVFLW ON 1ST PUSH
24096 060116 000257 CCC ;SCOPE SYNC
24097
24098 060120 000003 I0733: BPT ;TEST THE BPT - SHOULD CAUSE OVERFLOW TRAP
24099
24100 060122 010506 MOV R5,SP ;RESET SP
24101 060124 104005 E10733: ERRORS ;BPT FAILED TO TRAP
24102 060126 060112 R0733 ;ERROR LOOP RETURN ADDRESS
24103
24104 060130 000405 BR C0733 ;GO TO SCOPE EXIT
24105
24106 060132 010506 A0733: MOV R5,SP ;RESET SP
24107 060134 000403 BR C0733 ;GO EXIT - ALL OK
24108
24109 060136 010506 B0733: MOV R5,SP ;RESET SP
24110 060140 104005 E20733: ERRORS ;OVFLW TRAP FAILED TO BUMP BPT SERVICE
24111 060142 060112 R0733 ;ERROR LOOP RETURN ADDRESS
24112
24113 060144 012737 065160 000004 C0733: MOV #BERR,@#4 ;RESET VECTORS
24114 060152 010437 000014 MOV R4,@#14
24115
24116 060156 000004 00733: SCOPE ;CALL SCOPE LOC^ UTILITY
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: *****
: .SBTTL T0734 TEST THAT 2ND PUSH IN TRAP MICROROUTINE CAUSES OVFLW TRAP
: *****
T0734: MOV      00734,R0          ;LOAD R0 WITH TEST NO.
        MOV      010734,R1     ;LOAD R1 WITH TEST INSTR WORD
        MOV      0114,R4       ;SAVE BPT VECTOR
        MOV      SP,R5         ;SAVE SP
        MOV      0A0734,004     ;GO TO A0734 ON STACK OVFLOW
        MOV      0B0734,014     ;GO TO B0734 IF BPT SERVICED
R0734:  MOV      0402,SP        ;SET SP TO CAUSE TRAP ON 2ND PUSH
        CCC

I0734:  BPT                    ;TEST THE BPT - SHOULD CAUSE OVERFLOW TRAP

E10734: MOV      R5,SP          ;RESET SP
        ERRORS R0734          ;BPT FAILED TO TRAP
        ERRORS R0734          ;ERROR LOOP RETURN ADDRESS

        BR      C0734         ;GO TO SCOPE EXIT

A0734:  MOV      R5,SP          ;RESET SP
        BR      C0734         ;GO EXIT - ALL OK

B0734:  MOV      R5,SP          ;RESET SP
E20734: ERRORS R0734          ;OVFLW TRAP FAILED TO BUMP BPT SERVICE
        ERRORS R0734          ;ERROR LOOP RETURN ADDRESS

060160 012700 000734 C0734: MOV      0E00R,004     ;RESET VECTORS
060164 013701 060220          MOV      R4,014
060170 013704 000014          ;CALL SCOPE LOOP UTILITY
060174 010605
060176 012737 060232 000004
060204 012737 060236 000014
060212 012706 000402
060216 000257
060220 000003
060222 010506
060224 104005
060226 060212
060230 000405
060232 010506
060234 000403
060236 010506
060240 104005
060242 060212
060244 012737 065160 000004 C0734: MOV
060252 010437 000014          MOV
060256 000004          J0734: SCOPE

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: *****
: .SBTTL T0735 ILLEGAL INSTRUCTION TEST - JSR RN,%R
: *****

;MICROPROGRAMMING / LOGIC INFORMATION

;RCM SEQ: [150,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6,10
;ACT BLTS: 37(004)100,150 / 01(332)122,123 / 26(123)010,013
;EXEC: [115] D = NEW PSW / [113] D = OLD PSW / [331] D = #I0735+2 / [333]
;CODES: [140] SPS=7 / N:C = [LOC 6]
;SYNC: B05J2 (-) T = 5.8 USEC
;KEY SIG: K3-6 ILL INSTR L / K5-5 STPM3 H / K3-3 DM=OL / K3-5 JMP+JSR H

060260 012700 000735
060264 013701 060314
060270 010605
060272 013704 000004
060276 012737 060326 000004
060304 010506
060306 012702 060322
060312 000257

060314 004302

060316 010437 000004
060322 104005
060324 060272

060326 010437 000004
060332 010506

060334 000004

T0735: MOV #0735,R0 ;LOAD R0 WITH TEST NO.
MOV #I0735,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV SP,R5 ;SAVE SP
R0735: MOV #4,R4 ;SAVE T.O. VECTOR
MOV #A0735,#4 ;ILLEGAL INSTR. TRAP GOES TO A0735
MOV R5,SP ;RESET SP FOR ERROR LOOP
MOV #E0735,R2 ;IN CASE JSR JUMPS TO [R2]
CCC ;SCOPE SYNC

I0735: JSR R3,R2 ;JSR MODE 0 FORCES TRAP - GO TO A0735

E0735: MOV R4,#4 ;RESTORE T.O. VECTOR
ERRORS ;JSR FAILED TO SPRING TRAP
R0735 ;ERROR LOOP RETURN ADDRESS

A0735: MOV R4,#4 ;RESTORE VECTOR
MOV R5,SP ;RESET SP

00735: SCOPE ;CALL THE SCOPE LOOP UTILITY

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060336 012700 000736
060342 013701 060372
060346 010605
060350 013704 000004
060354 012737 060404 000004
060362 010506
060364 012702 060400
060370 000257

060372 000102

060374 010437 000004
060400 104005
060402 060350

060404 010437 000004
060410 010506

060412 000004

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: *****  
      .SBTTL T0736 ILLEGAL INSTRUCTION TEST - JMP %R  
: *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ:      [150,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6,10  
;ACT BUTS:     37(004)100,150 / 01(332)122,123 / 26(123)010,013  
;EXEC:         [115] D = NEW PSW / [113] D = OLD PSW / [311] D = #I0736+2 / [333]  
;CODES:        [140] SPS=7 / N:C = [LOC 6]  
;SYNC:         B05J2 (-) T = 5.8 USEC  
;KEY SIG:      K3-6 ILL INSTR L / K5-5 STPM3 H / K3-3 DM=OL / K3-5 JMP+JSR H  
  
T0736:  MOV      #0736,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @#I0736,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      SP,R5           ;SAVE SP  
R0736:  MOV      @#4,R4          ;SAVE VECTOR POINTER AT LOC. 4  
        MOV      @A0736,@#4      ;ON TRAP - GO TO A0736  
        MOV      R5,SP          ;RESET SP FOR ERROR LOOP  
        MOV      #E0736,R2      ;IN CASE IT JUMPS TO ADDR IN RN  
        CCC                    ;SCOPE SYNC  
  
I0736:  JMP      R2              ;JMP MODE 0 FORCES TRAP - GO TO A0736  
  
E0736:  MOV      R4,@#4          ;RESTORE VECTOR POINTER AT LOC. 4  
        ERRORS  R0736          ;ILLEGAL INSTR TRAP FAILED  
        R0736                    ;ERROR LOOP RETURN ADDRESS  
  
A0736:  MOV      R4,@#4          ;RESTORE VECTOR POINTER AT LOC. 4  
        MOV      R5,SP          ;RESET SP  
  
00736:  SCOPE                    ;CALL THE SCOPE LOOP UTILITY
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; *****
; .SBTTL T0737 BUS TIMEOUT TRAP TEST - TST (R)
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:
; ACT BUTS:
; EXEC:
; CODES:
; SYNC:
; KEY SIG:
T0737: MOV #0737,R0 ;LOAD R0 WITH TEST NO.
MOV #T0737,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV SP,R5 ;SAVE SP
R0737: MOV #4,R4 ;SAVE ORIGINAL T.O. VECTOR POINTER
MOV #A0737,#4 ;ON T.O. TRAP - GO TO A0737
MOV #160000,R2 ;R3 ADDRESS CAUSES T.O.
MOV R5,SP ;RESET SP FOR ERROR LOOP
CC ;SCOPE SYNC
I0737: TST (R2) ;FORCE T.O. TRAP - GO TO A0737
E0737: MOV R4,#4 ;RESTORE T.O. VECTOR
ERRORS ;TIMEOUT TRAP FAILED
R0737: MOV R4,#4 ;ERROR LOOP RETURN ADDRESS
MOV R5,SP ;RESTORE T.O. VECTOR
;RESET SP
00737: SCOPE ;CALL THE SCOPE LOOP UTILITY

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060414 012700 000737
060420 013701 060450
060424 010505
060428 013704 000004
060432 012737 060462 000004
060440 012702 160000
060444 010506
060446 000257
060450 005712
060452 010437 000004
060456 104005
060460 060426
060462 010437 000004
060466 010506
060470 000004

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; *****
; .SBTTL T0740 "T" BIT TRAP TEST
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [104,373,362,002,015,010,216,215,115,326,327,113,330,331
:077,140,332,333,123,015,013] FC 1,7,8,10,6,10
;ACT BUTS: 37(004)100,104 / 31(104)360,362 / 27(373)000,002 / 26(002)010,010
:01(332)122,123 / 26(123)010,013
;EXEC: [362] BUFP = 002 ("T" BIT TRAP)
;CODES: N / A
;SYNC: B05J2 (-) T = 8 USEC
;KEY SIG: K5-2 PS(T)(1) H / K5-5 STPM3 H / K5-5 STPM2 H

T0740: MOV #0740,R0 ;LOAD R0 WITH TEST NO.
MOV #I0740,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV SP,R5 ;SAVE SP
R0740: MOV R5,SP ;RESET SP FOR ERROR LOOP
MOV #A0740,#14 ;GO TO A0740 WHEN "T" TRAP SPRUNG
MOV #20,-(SP) ;SET "T" BIT ON STACK
MOV #I0740,-(SP) ;SET UP NEW PC ON STACK
CCC ;SCOPE SYNC
RTT ;TURN ON "T" BIT - GO TO I0740
I0740: TST R0 ;SPRING "T" BIT TRAP - GO TO A0740
E10740: ERRORS ;NO "T" BIT TRAP OCCURRED
R0740 ;ERROR LOOP RETURN ADDRESS
BR B0740 ;GO EXIT
A0740: BIT #20,2(SP) ;"T" BIT SET IN OLD PSW?
BNE B0740 ;BR IF YES
E20740: ERROR ;"T" BIT NOT SAVED ON STACK
R0740 ;ERROR LOOP RETURN ADDRESS
B0740: MOV #16,#14 ;RESTORE "T" BIT TRAP CATCHER
CLR #16
MOV R5,SP ;RESET SP
00740: SCOPE ;CALL THE SCOPE LOOP UTILITY

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; *****
; .SBTTL T0741 TEST PUSH INTO PSW WITH [SP] = 000000
; *****

;THESE NEXT TWO TESTS VERIFY THAT A "RED ZONE" TRAP OCCURS IF A
;PUSH IS ATTEMPTED WITH THE [SP] INITIALLY EQUAL TO 000000,177572,
;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      [142,240,250,174,257,200,JAMUPP,336,317,215,115
;              : 326,327,113,330,331,077,140,332,333,123,015,013] FC 1,2,4,6,10
;ACT BUTS:     37[004]100,142 / 35[240]120,174 / 22[174]200,200 / 01[332]122,123
;              : / 26[123]010,013

;EXEC:         [200] BUS STOP TRIGGERS JAMUPP LOGIC

;CODES:        N / A

;SYNC:         B05J2 (-) T = 10 USEC

;KEY SIG:      K4-6 PROC ADRS H / K4-4 BUS STOP H / K4-4 OVFLW ERR L / K4-3 JBERR
;              : K4-3 JAMUPP L / K4-3 JAM CLK H / K4-3 PJAMSTART H / K5-5 STACK04

T0741:  MOV     #0741,R0          ;LOAD R0 WITH TEST NO.
        MOV     @#I0741,R1      ;LOAD R1 WITH COPY OF TEST INSTRUCTION
        MOV     SP,R5          ;SAVE THE SP
R0741:  MOV     @#4,R4          ;SAVE THE BUS ERROR VECTOR
        MOV     #A0741,@#4     ;"RED ZONE" TRAP GOES TO A0741
        CLR     SP             ;MAKE SP = 000000
        CCC                    ;SCOPE SYNC

I0741:  MOV     #-1,-(SP)      ;ATTEMPT PUSH INTO PSW - SHOULD CAUSE
; "RED ZONE" TRAP TO BE SPRUNG

        MOV     R4,@#4         ;RESTORE BUS ERROR VECTOR
        CLR     R4             ;[R4] = S / B SP
        MOV     SP,R3         ;[R3] = WAS SP
        MOV     R5,SP        ;RESET THE SP
E10741: ERROR R0741          ;TRAP NOT SPRUNG
        BR      00741         ;ERROR LOOP RETURN ADDRESS
;GO TO SCOPE EXIT - SCHOOL'S OUT

A0741:  CMP     #0,SP          ;WAS IT A RED ZONE TRAP ?
        BEQ    B0741         ;BR IF YES

        MOV     R4,@#4         ;RESTORE BUS ERROR VECTOR
        CLR     R4             ;[R4] = S / B SP
        MOV     SP,R3         ;[R3] = WAS SP
        MOV     R5,SP        ;RESET THE SP
E20741: ERROR R0741          ;TRAP SPRUNG BUT NOT RED ZONE
        BR      00741         ;ERROR LOOP RETURN ADDRESS

B0741:  MOV     R5,SP          ;FIX UP THE SP

00741:  SCOPE                  ;CALL THE SCOPE LOOP UTILITY
    
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060572 012700 000741
060576 013701 060622
060602 010605
060604 013704 000004
060610 012737 060646 000004
060616 005006
060620 000257
060622 012746 177777
060626 010437 000004
060632 005004
060634 010603
060636 010506
060640 104000
060642 060604
060644 000413
060646 022706 000000
060652 001407
060654 010437 000004
060660 005004
060662 010603
060664 010506
060666 104000
060670 060604
060672 010506
060674 000004
    
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.MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 604
 DBQEAB.CMB T0741 TEST PUSH INTO PSW WITH [SP] = 000000

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; *****
; .SBTTL T0742 TEST PUSH INTO SR WITH [SP] = 177572
; *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ:      [142,240,250,174,257,200,JAMUPP,336,317,215,115
;                : 326,327,113,330,331,077,140,332,333,123,015,013] FC 1,2,4,6,10
; ACT BUTS:     37[004]100,142 / 35[240]120,174 / 22[174]200,200 / 01[332]122,123
;                ; / 26[123]010,013
; EXEC:         [200] BUS STOP TRIGGERS JAMUPP LOGIC
; CODES:        N / A
; SYNC:         B05J2 (-) T = 10 USEC
; KEY SIG:      K4-6 PROC ADRS H / K4-4 BUS STOP / K4-4 OVFLW ERR L / K4-3 JBERR(1
;                ; 4-3 JAMUPP L / K4-3 JAM CLK H / K4-3 PJAMSTART H / K5-5 STACK04 H

24385 060676 012700 000742      T0742:  MOV      #0742,R0          ;LOAD R0 WITH TEST NO.
24386 060702 013701 060730      MOV      @#I0742,R1      ;LOAD R1 WITH COPY OF TEST INSTRUCTION
24387 060706 010605              MOV      SP,R5          ;SAVE THE SP
24388 060710 013704 000004      R0742:  MOV      @#4,R4          ;SAVE THE BUS ERROR VECTOR
24389 060714 012737 060754      MOV      #A0742,@#4      ;"RED ZONE" TRAP GOES TO A0742
24390 060722 012706 177572      MOV      #177572,SP     ;MAKE SP=177572
24391 060726 000257              CCC                    ;SCOPE SYNC
24392
24393 060730 012746 177777      I0742:  MOV      #-1,-(SP)  ;ATTEMPT PUSH INTO SR - SHOULD CAUSE
24394                                     ;"RED ZONE" TRAP TO BE SPRUNG
24395
24396 060734 010437 000004      MOV      R4,@#4          ;RESTORE BUS ERROR VECTOR
24397 060740 005004              CLR      R4              ;[R4] = S / B SP
24398 060742 010603              MOV      SP,R3          ;[R3] = WAS SP
24399 060744 010506              MOV      R5,SP          ;RESET THE SP
24400 060746 104000      E10742:  ERROR      ;TRAP NOT SPRUNG
24401 060750 060710      R0742    ;ERROR LOOP RETURN ADDRESS
24402 060752 000413              BR       00742          ;GO TO SCOPE EXIT - SCHOOL'S OUT
24403
24404 060754 022706 000000      A0742:  CMP      #0,SP        ;WAS IT A RED ZONE TRAP ?
24405 060760 001407              BEQ     B0742          ;BR IF YES
24406
24407 060762 010437 000004      MOV      R4,@#4          ;RESTORE BUS ERROR VECTOR
24408 060766 005004              CLR      R4              ;[R4] = S / B SP
24409 060770 010603              MOV      SP,R3          ;[R3] = WAS SP
24410 060772 010506              MOV      R5,SP          ;RESET THE SP
24411 060774 104000      E20742:  ERROR      ;TRAP SPRUNG BUT NOT RED ZONE
24412 060776 060710      R0742    ;ERROR LOOP RETURN
24413
24414 061000 010506      B0742:  MOV      R5,SP        ;FIX UP THE SP
24415
24416 061002 000004      00742:  SCOPE              ;CALL THE SCOPE LOOP UTILITY
  
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; *****  
.SBTTL T0743 TEST PUSH INTO SLR WITH [SP] = 177776  
; *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [142,240,250,174,257,200,JAMUPP,336,317,215,115  
: 326,327,113,330,331,077,140,332,333,123,015,013] FC 1,2,4,6,10  
;ACT BUTS: 37(004)100,142 / 35(240)120,174 / 22(174)200,200 / 01(332)122,123  
: / 26(123)010,013  
;EXEC: [200] BUS STOP TRIGGERS JAMUPP LOGIC  
;CODES: N / A  
;SYNC: B05J2 (-) T = 10 USEC  
;KEY SIG: K4-6 PROC ADRS H / K4-4 BUS STOP / K4-4 OVFLW ERR L / K4-3 JBERR(1  
:4-3 JAMUPP L / K4-3 JAM CLK H / K4-3 PJAMSTART H / K5-5 STACK04 H
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061004 012700 000743 T0743: MOV #0743,R0 ;LOAD R0 WITH TEST NO.  
061010 013701 061046 MOV #I0743,R1 ;LOAD R1 WITH COPY OF TEST INSTRUCTION  
061014 010605 MOV SP,R5 ;SAVE THE SP  
061016 032737 000004 066636 BIT #4,#OPTION ;IS KJ11 INSTALLED ??  
061024 001435 BEQ 00743 ;BR IF NOT - SKIP THIS TEST  
061026 013704 000004 R0743: MOV #4,R4 ;SAVE THE BUS ERROR VECTOR  
061032 012737 061072 000004 MOV #A0743,#4 ;"RED ZONE" TRAP GOES TO A0743  
061040 012706 177776 MOV #177776,SP ;MAKE SP=177776  
061044 000257 CCC ;SCOPE SYNC  
061046 012746 177777 I0743: MOV #-1,-(SP) ;ATTEMPT PUSH INTO SR - SHOULD CAUSE  
;"RED ZONE" TRAP TO BE SPRUNG  
061052 010437 000004 MOV R4,#4 ;RESTORE BUS ERROR VECTOR  
061056 005004 CLR R4 ;[R4] = S / B SP  
061060 010603 MOV SP,R3 ;[R3] = WAS SP  
061062 010506 MOV R5,SP ;RESET THE SP  
061064 104000 E!0743: ERROR ;TRAP NOT SPRUNG  
061066 061026 R0743 ;ERROR LOOP RETURN ADDRESS  
061070 000413 BR 00743 ;GO TO SCOPE EXIT - SCHOOL'S OUT  
061072 022706 000000 A0743: CMP #0,SP ;WAS IT A RED ZONE TRAP ?  
061076 001407 BEQ B0743 ;BR IF YES  
061100 010437 000004 MOV R4,#4 ;RESTORE BUS ERROR VECTOR  
061104 005004 CLR R4 ;[R4]= S / B SP  
061106 010603 MOV SP,R3 ;[R3] = WAS SP  
061110 010506 MOV R5,SP ;RESET THE SP  
061112 104000 E20743: ERROR ;TRAP SPRUNG BUT NOT RED ZONE  
061114 061026 R0743 ;ERROR LOOP RETURN  
061116 010506 B0743: MOV R5,SP ;FIX UP THE SP  
061120 000004 00743: SCOPE ;CALL THE SCOPE LOOP UTILITY
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 606
DBQEAB.CMB T0743 TEST PUSH INTO SLR WITH [SP] = 177776

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24472 061122 013737 000010 067606      MOV      2#10,2#MBUF1      ;SAVE RSVD INSTR VECTOR
24473 061130 013737 000012 067610      MOV      2#12,2#MBUF1+2
24474
24475 ; *****
24476 ; .SBTTL T0744 RSVD INSTRUCTION TEST - 000007 THRU 000077
24477 ; *****
24478
24479 ;MICROPROGRAMMING / LOGIC INFORMATION
24480
24481 ;ROM SEQ:      [100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6
24482
24483 ;ACT BUTS:     37[004]100,100 / 01[332]122,123 / 26[123]010,013
24484
24485 ;EXEC:        [!15] D = 000000 / [113] D = OLD PSW / [331] D = #I0744+2 / [333]
24486
24487 ;CODES:       [140] SPS=7 / N:C = 0000
24488
24489 ;SYNC:        B05J2 (-) T = 5.8 USEC
24490
24491 ;KEY SIG:     K3-6 RSVD INSTR L / K5-5 BC01 H / K5-3 BUT01 H / K5-3 BUT03 H
24492 ;             ; K5-3 BUT04 H
24493
24494 061136 012700 000744      T0744:  MOV      #0744,R0      ;LOAD R0 WITH TEST NO.
24495 061142 010605              MOV      SP,R5      ;SAVE THE SP
24496 061144 012737 061200 000010  MOV      #A0744,2#10  ;SET UP RSVD INSTR. TRAP VECTOR
24497 061152 005037 000012  MOV      2#12
24498 061156 012701 000007  CLR      2#7,R1      ;SET UP FIRST ONE IN GROUP
24499 061162 010506  R0744:  MOV      R5,SP      ;RESET SP FOR ERROR LOOP AND NEW INSTR
24500 061164 010137 061172  MOV      R1,2#I0744  ;LOAD NEW INSTR
24501 061170 000257  CCC      ;SCOPE SYNC
24502
24503 061172 000007  I0744:  000007      ;TEST THE RSVD INSTR - THIS LOCATION
24504 ;GETS CHANGED EACH PASS THROUGH
24505
24506 061174 104005  E0744:  ERRORS      ;RSVD INSTR. IN R1 FAILED TO TRAP
24507 061176 061162  R0744   ;ERROR LOOP RETURN
24508
24509 061200 005201  A0744:  INC      R1      ;GENERATE NEW RSVD INSTR
24510 061202 022701 000100  CMP      #100,R1    ;AT END OF THIS GROUP ??
24511 061206 001365  BNE     R0744     ;BR IF NOT
24512
24513 061210 010506  00744:  MOV      R5,SP    ;MAKE SURE TO RESET THE SP
24514 061212 000004  SCOPE   ;CALL THE SCOPE LOOP UTILITY

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 607
DBQEAB.CMB T0744 RSVD INSTRUCTION TEST - 000007 THRU 000077

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; *****
; .SBTTL T0745 RSVD INSTRUCTION TEST - 000210 THRU 000237
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ: [100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6
;ACT BUTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013
;EXEC: [115] D = 000000 / [113] D = OLD PSW / [331] D = #I0745+2 / [333]
;CODES: [140] SPS=7 / N:C = 0000
;SYNC: B05J2 (-) T = 5.8 USEC
;KEY SIG: K3-6 RSVD INSTR L / K5-5 BCO1 H / K5-3 BUT01 H / K5-3 BUT03 H
; K5-3 BUT04 H
;K5-5 STPM3 H

061214 012700 000745
061220 010605
061222 032737 040000 066642
061230 001401
061232 000000
061234 012737 061270 000010
061242 005037 000012
061246 012701 000210
061252 010506
061254 010137 061262
061260 000257

061262 000210

061264 104005
061266 061252

061270 005201
061272 022701 000240
061276 001365

061300 010506
061302 000004

T0745: MOV #0745,R0 ;LOAD R0 WITH TEST NO.
MOV SP,R5 ;SAVE THE SP
BIT #40000,#BPTLOC ;BREAKPOINT HALT SET ??
BEQ .+4 ;BR IF NOT
HALT ;BREAK-DEPRESS CONTINUE TO RESTART
MOV #A0745,#10 ;SET UP RSVD INSTR. TRAP VECTOR
CLR #12
MOV #210,R1 ;SET UP FIRST ONE IN GROUP
R0745: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
MOV R1,#I0745 ;LOAD NEW INSTR
CCC ;SCOPE SYNC

I0745: 000210 ;TEST THE RSVD INSTR - THIS LOCATION
;GETS CHANGED EACH PASS THROUGH

E0745: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP
R0745 ;ERROR LOOP RETURN

A0745: INC R1 ;GENERATE NEW RSVD INSTR
CMP #240,R1 ;AT END OF THIS GROUP ??
BNE R0745 ;BR IF NOT

00745: MOV R5,SP ;MAKE SURE TO RESET THE SP
SCOPE ;CALL THE SCOPE LOOP UTILITY

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 608
DBQEAB.CMB T0745 RSVD INSTRUCTION TEST - 000210 THRU 000237

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24560 ; *****
24561 ; .SBTTL T0746 RSVD INSTRUCTION TEST - 000065 THRU 000066
24562 ; *****
24563 ;
24564 ;MICROPROGRAMMING / LOGIC INFORMATION
24565 ;
24566 ;ROM SEQ: [100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6
24567 ;
24568 ;ACT BUTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013
24569 ;
24570 ;EXEC: [115] D = 000000 / [113] D = OLD PSW / [331] D = #I0746+2 / [333]
24571 ;
24572 ;CODES: [140] SPS=7 / N:C = 0000
24573 ;
24574 ;SYNC: B05J2 (-) T = 5.8 USEC
24575 ;
24576 ;KEY SIG: K3-6 RSVD INSTR L / K5-5 BCO1 H / K5-3 BUT01 H / K5-3 BUT03 H
24577 ; K5-3 BUT04 H
24578 ; K5-5 STPM3 H
24579 ;
24580 061304 012700 000746 T0746: MOV #0746,R0 ;LOAD R0 WITH TEST NO.
24581 061310 105737 066636 T0746: TSTB @#OPTION ;KTIID INSTALLED ??
24582 061314 100424 T0746: BMI 00746 ;SKIP THIS TEST IF YES
24583 061316 010605 T0746: MOV SP,R5 ;SAVE THE SP
24584 061320 012737 061354 000010 T0746: MOV #A0746,@#10 ;SET UP RSVD INSTR. TRAP VECTOR
24585 061326 005037 000012 T0746: CLR @#12
24586 061332 012701 000065 T0746: MOV #65,R1 ;SET UP FIRST ONE IN GROUP
24587 061336 010506 T0746: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
24588 061340 010137 061346 T0746: MOV R1,@#I0746 ;LOAD NEW INSTR
24589 061344 000257 T0746: CCC ;SCOPE SYNC
24590 ;
24591 061346 000065 I0746: 000065 ;TEST THE RSVD INSTR - THIS LOCATION
24592 ;GETS CHANGED EACH PASS THROUGH
24593 ;
24594 061350 104005 E0746: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP
24595 061352 061336 E0746: R0746 ;ERROR LOOP RETURN
24596 ;
24597 061354 005201 A0746: INC R1 ;GENERATE NEW RSVD INSTR
24598 061356 022701 000067 A0746: CMP #67,R1 ;AT END OF THIS GROUP ??
24599 061362 001365 A0746: BNE R0746 ;BR IF NOT
24600 ;
24601 061364 010506 00746: MOV R5,SP ;MAKE SURE TO RESET THE SP
24602 061366 000004 00746: SCOPE ;CALL THE SCOPE LOOP UTILITY
24603

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 609
 DBQEAB.CMB T0746 RSVD INSTRUCTION TEST - 000065 THRU 000066

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24604 ; *****
24605 ; .SBTTL T0747 RSVD INSTRUCTION TEST - 007000 THRU 007777
24606 ; *****
24607 ;MICROPROGRAMMING / LOGIC INFORMATION
24608 ;ROM SEQ: (100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013) FC 1,6
24609 ;ACT BUTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013
24610 ;EXEC: (115) D = 000000 / (113) D = OLD PSW / (331) D = #I0747+2 / (333)
24611 ;CODES: (140) SPS=7 / N:C = 0000
24612 ;SYNC: B05J2 (-) T = 5.8 USEC
24613 ;KEY SIG: K3-6 RSVD INSTR L / K5-5 BCO1 H / K5-3 BUT01 H / K5-3 BUT03 H
24614 ; K5-3 BUT04 H
24615 ; K5-5 STPM3 H
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24624 061370 012700 000747 T0747: MOV #0747,R0 ;LOAD R0 WITH TEST NO.
24625 061374 032737 000001 066636 BIT #1,3#OPTION ;KE11-E (EIS) INSTALLED ??
24626 061402 001024 BNE 00747 ;SKIP THIS TEST IF YES
24627 061404 010605 MOV SP,R5 ;SAVE THE SP
24628 061406 012737 061442 000010 MOV #A0747,2#10 ;SET UP RSVD INSTR. TRAP VECTOR
24629 061414 005037 000012 CLR 2#12
24630 061420 012701 007000 MOV #7000,R1 ;SET UP FIRST ONE IN GROUP
24631 061424 010506 R0747: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
24632 061426 010137 061434 MOV R1,2#I0747 ;LOAD NEW INSTR
24633 061432 000257 CCC ;SCOPE SYNC
24634
24635 061434 007000 I0747: 007000 ;TEST THE RSVD INSTR - THIS LOCATION
24636 ;GETS CHANGED EACH PASS THROUGH
24637
24638 061436 104005 E0747: ERROR5 ;RSVD INSTR. IN R1 FAILED TO TRAP
24639 061440 061424 R0747 ;ERROR LOOP RETURN
24640
24641 061442 005201 A0747: INC R1 ;GENERATE NEW RSVD INSTR
24642 061444 022701 010000 CMP #10000,R1 ;AT END OF THIS GROUP ??
24643 061450 001365 BNE R0747 ;BR IF NOT
24644
24645 061452 010506 00747: MOV R5,SP ;MAKE SURE TO RESET THE SP
24646 061454 000004 SCOPE ;CALL THE SCOPE LOOP UTILITY
24647

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 610
 DBQEAB.CMB T0747 RSVD INSTRUCTION TEST - 007000 THRU 007777

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24648 ; *****
24649 ; .SBTTL T0750 RSVD INSTRUCTION TEST - 070000 THRU 073777
24650 ; *****
24651 ;MICROPROGRAMMING / LOGIC INFORMATION
24652
24653 ;ROM SEQ: (100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013) FC 1,6
24654 ;ACT BUTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013
24655 ;EXEC: (115) D = 000000 / (113) D = OLD PSW / (331) D = #I0750+2 / (333)
24656 ;CODES: (140) SPS=7 / N:C = 0000
24657 ;SYNC: B05J2 (-) T = 5.8 USEC
24658 ;KEY SIG: K3-6 RSVD INSTR L / K5-5 BCO1 H / K5-3 BUT01 H / K5-3 BUT03 H
24659 ; K5-3 BUT04 H
24660 ;K5-5 STPM3 H
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24668 061456 012700 000750 T0750: MOV #0750,R0 ;LOAD R0 WITH TEST NO.
24669 061462 032737 000001 066636 BIT #1,#0PTION ;IS THE KE11-E INSTALLED ??
24670 061470 001024 BNE 00750 ;BR IF YES - SKIP THIS TEST
24671 061472 010605 MOV SP,R5 ;SAVE THE SP
24672 061474 012737 061530 000010 MOV #A0750,#10 ;SET UP RSVD INSTR. TRAP VECTOR
24673 061502 005037 000012 CLR #12
24674 061506 012701 070000 MOV #70000,R1 ;SET UP FIRST ONE IN GROUP
24675 061512 010506 R0750: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
24676 061514 010137 061522 MOV R1,#I0750 ;LOAD NEW INSTR
24677 061520 000257 CCC ;SCOPE SYNC
24678
24679 061522 070000 I0750: 070000 ;TEST THE RSVD INSTR - THIS LOCATION
24680 ;GETS CHANGED EACH PASS THROUGH
24681
24682 061524 104005 E0750: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP
24683 061526 061512 R0750 ;ERROR LOOP RETURN
24684
24685 061530 005201 A0750: INC R1 ;GENERATE NEW RSVD INSTR
24686 061532 022701 074000 CMP #74000,R1 ;AT END OF THIS GROUP ??
24687 061536 001365 BNE R0750 ;BR IF NOT
24688
24689 061540 010506 00750: MOV R5,SP ;MAKE SURE TO RESET THE SP
24690 061542 000004 SCOPE ;CALL THE SCOPE LOOP UTILITY
  
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: *****  
: .SBTTL T0751 RSVD INSTRUCTION TEST - 075000 THRU 075037  
: *****  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6  
;ACT BLTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013  
;EXEC: [115] D = 000000 / [113] D = OLD PSW / [331] D = #I0751+2 / [333]  
;CODES: [140] SPS=7 / N:C = 0000  
;SYNC: B05J2 (-) T = 5.8 USEC  
;KEY SIG: K3-6 RSVD INSTR L / K5-5 BC01 H / K5-3 BUT01 H / K5-3 BUT03 H  
: K5-3 BUT04 H  
:K5-5 STPM3 H
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T0751: MOV #0751,R0 ;LOAD R0 WITH TEST NO.  
BIT #2,#OPTION ;KEY-F (FIS) INSTALLED ??  
BNE 00751 ;SKIP TEST IF YES  
MOV SP,R5 ;SAVE THE SP  
MOV #A0751,#10 ;SET UP RSVD INSTR. TRAP VECTOR  
CLR #12  
MOV #75000,R1 ;SET UP FIRST ONE IN GROUP  
R0751: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR  
MOV R1,#I0751 ;LOAD NEW INSTR  
CCC ;SCOPE SYNC  
  
I0751: 75000 ;TEST THE RSVD INSTR - THIS LOCATION  
;GETS CHANGED EACH PASS THROUGH  
  
E0751: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP  
R0751 ;ERROR LOOP RETURN  
  
A0751: INC R1 ;GENERATE NEW RSVD INSTR  
CMP #75040,R1 ;AT END OF THIS GROUP ??  
BNE R0751 ;BR IF NOT  
  
00751: MOV R5,SP ;MAKE SURE TO RESET THE SP  
SCOPE ;CALL THE SCOPE LOOP UTILITY
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061544 012700 000751  
061550 032737 000002 066636  
061556 001024  
061560 010605  
061562 012737 061616 000010  
061570 005037 000012  
061574 012701 075000  
061600 010506  
061602 010137 061610  
061606 000257  
  
061610 075000  
  
061612 104005  
061614 061600  
  
061616 005201  
061620 022701 075040  
061624 001365  
  
061626 010506  
061630 000004
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: *****
: .SBTTL T0752 RSVD INSTRUCTION TEST - 075040 THRU 076777
: *****
; MICROPROGRAMMING / LOGIC INFORMATION
; ROM SEQ: [100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,6
; ACT BUTS: 37(004)100,100 / 01(332)1122,123 / 26(123)010,013
; EXEC: [115] D = 000000 / [113] D = OLD PSW / [331] D = #I0752+2 / [333]
; CODES: [140] SPS=7 / N:C = 0000
; SYNC: B05J2 (-) T = 5.8 USEC
; KEY SIG: K3-6 RSVD INSTR L / K5-5 BC01 H / K5-3 BUT01 H / K5-3 BUT03 H
: K5-3 BUT04 H
; K5-5 STPM3 H

061632 012700 000752
061636 010605
061640 012737 061674 000010
061646 005037 000012
061652 012701 075040
061656 010506
061660 010137 061666
061664 000257
061666 0750-C
061670 174005
061672 061656
061674 005201
061676 022701 077000
061702 001365
061704 010506
061706 000004

T0752: MOV #0752,R0 ;LOAD RO WITH TEST NO.
MOV SP,R5 ;SAVE THE SP
MOV #A0752,R#10 ;SET UP RSVD INSTR. TRAP VECTOR
CLR R#12
MOV #75040,R1 ;SET UP FIRST ONE IN GROUP
R0752: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
MOV R1,R#I0752 ;LOAD NEW INSTR
CCC ;SCOPE SYNC
I0752: 75040 ;TEST THE RSVD INSTR - THIS LOCATION
;GETS CHANGED EACH PASS THROUGH
E0752: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP
R0752 ;ERROR LOOP RETURN
A0752: INC R1 ;GENERATE NEW RSVD INSTR
CMP #77000,R1 ;AT END OF THIS GROUP ??
BNE R0752 ;BR IF NOT
00752: MOV R5,SP ;MAKE SURE TO RESET THE SP
SCOPE ;CALL THE SCOPE LOOP UTILITY

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; *****
; .SBTTL T0753 RSVD INSTRUCTION TEST - 106400 THRU 107777
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: (100,126,007,115,326,327,113,330,331,077,140,332,333,123,015,013) FC 1,6
;ACT BUTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013
;EXEC: (115) D = 000000 / (113) D = OLD PSW / (331) D = #I0753+2 / (333)
;CODES: (140) SPS=7 / N:C = 0000
;SYNC: B05J2 (-) T = 5.8 USEC
;KEY SIG: K3-6 RSVD INSTR L / K5-5 BC01 H / K5-3 BUT01 H / K5-3 BUT03 H
; K5-3 BUT04 H
;K5-5 STPM3 H

061710 012700 000753 T0753: MOV #0753,R0 ;LOAD R0 WITH TEST NO.
061714 032737 000200 066636 BIT #200,#OPTION ;IS THE KT11-D INSTALLED ??
061722 001024 BNE 00753 ;BR IF YES - SKIP THIS TEST
061724 010605 MOV SP,R5 ;SAVE THE SP
061726 012737 061762 000010 MOV #A0753,#10 ;SET UP RSVD INSTR. TRAP VECTOR
061734 005037 000012 CLR #12
061740 012701 106400 MOV #106400,R1 ;SET UP FIRST ONE IN GROUP
R0753: MOV R5,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
MOV R1,#I0753 ;LOAD NEW INSTR
CCC ;SCOPE SYNC
061754 106400 I0753: 106400 ;TEST THE RSVD INSTR - THIS LOCATION
;GETS CHANGED EACH PASS THROUGH
061756 104005 E0753: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP
061760 061744 R0753 ;ERROR LOOP RETURN
061762 005201 R0753: INC R1 ;GENERATE NEW RSVD INSTR
061764 022701 110000 CMP #110000,R1 ;AT END OF THIS GROUP ??
061770 001365 BNE R0753 ;BR IF NOT
061772 010506 MOV R5,SP ;MAKE SURE TO RESET THE SP
061774 000004 O0753: SCOPE ;CALL THE SCOPE LOOP UTILITY

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; *****
; .SBTTL T0754 RSVD INSTRUCTION TEST - 170000 THRU 177777
; *****

;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ: [100,126,007,1115,326,327,113,330,331,077,140,332,333,123,015,013] FC 1,
;ACT BUTS: 37(004)100,100 / 01(332)122,123 / 26(123)010,013
;EXEC: [115] D = 000000 / [113] D = OLD PSW / [331] D = #I0754+2 / [333]
;CODES: [140] SPS=7 / N:C = 0000
;SYNC: 80512 (-) T = 5.8 USEC
;KEY SIG: K3-6 RSVD INSTR L / K5-5 BCO1 H / K5-3 BUT01 H / K5-3 BUT03 H
; K5-3 BUT04 H
;K5-5 STPM3 H

061776 012700 000754
062002 010605
062004 012737 062040 000010
062012 005037 000012
062016 012701 170000
062022 010506
062024 010137 062032
062030 000257

062032 170000

062034 104005
062036 062022

062040 005201
062042 022701 000000
062046 001365

062050 010506
062052 000004
062054 013737 067606 000010
062062 013737 067610 000012

T0754: MOV #0754,R0 ;LOAD RO WITH TEST NO.
MOV SP,RS ;SAVE THE SP
MOV #A0754,2#10 ;SET UP RSVD INSTR. TRAP VECTOR
CLR 2#12
MOV #170000,R1 ;SET UP FIRST ONE IN GROUP
R0754: MOV RS,SP ;RESET SP FOR ERROR LOOP AND NEW INSTR
MOV R1,2#I0754 ;LOAD NEW INSTR
CCC ;SCOPE SYNC

I0754: 170000 ;TEST THE RSVD INSTR - THIS LOCATION
;GETS CHANGED EACH PASS THROUGH

E0754: ERRORS ;RSVD INSTR. IN R1 FAILED TO TRAP
R0754 ;ERROR LOOP RETURN

A0754: INC R1 ;GENERATE NEW RSVD INSTR
CMP #0,R1 ;AT END OF THIS GROUP ??
BNE R0754 ;BR IF NOT

00754: MOV RS,SP ;MAKE SURE TO RESET THE SP
SCOPE ;CALL THE SCOPE LOOP UTILITY
MOV 2#MBUF1,2#10 ;RESTORE RSVD INSTR VECTOR
MOV 2#MBUF1+2,2#12

G16

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 616
DBQEAB.CMB T0755 BUT SERVICE TEST IN ROM LOCATION 373 - (TST %R)

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; *****
;SBTTL T0756 BUT SERVICE TEST IN ROM LOCATION 366 - (BISB RA,(RB))
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: (161,266,267,270,230,254,074,366,375,017,015,
TRAP,MICROROUTINE) FC 1,3,8,10,6
;ACT BUTS: 37(004)100,161 / 33(266)220,237 / 34(237)220,230
16(366)016,017 / 26(017)010,010
;EXEC: (375) BUPP=017 ("T" BIT TRAP)
;CODES: N / A
;SYNC: B05J2 (-)
;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
; K5-5 STPM2 H

062152 012700 000756
062156 013701 062206
062162 010605
062164 010506
062166 012702 067603
062172 012746 000020
062176 012746 062206
062202 000257
062204 000006
062206 150012
062210 104005
062212 062164
062214 000004

T0756: MOV #0756,R0 ;LOAD R0 WITH TEST NO.
MOV #I0756,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV SP,R5 ;SAVE THE SP
R0756: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
MOV #MBUFC+1,R2 ;DEST ADDR = MBUFC
MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
MOV #I0756,-(SP) ;MAKE NEW PC = I0756
CCC ;SCOPE SYNC
RTT ;SET "T" BIT - GO TO I0756
I0756: BISB R0,(R2) ;BISB INSTRUCTION SHOULD SPRING TRAP
E0756: ERRORS ;BUT SERVICE IN 366 FAILED
R0756 ;ERROR LOOP RETURN
00756: SCOPE ;CALL SCOPE LOOP UTILITY

H16

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 617
DBQEAB.CMB T0756 BUT SERVICE TEST IN ROM LOCATION 366 - (BISB RA,(RB))

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062216	012700	000757
062222	013701	062252
062226	010605	
062230	010506	
062232	012702	067602
062236	012746	000020
062242	012746	062252
062246	000257	
062250	000006	
062252	006712	
062254	104005	
062256	062230	
062260	000004	

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; *****  
;SBTTL T0757 BUT SERVICE TEST IN ROM LOCATION 367 - (SXT (RN))  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ:      [161,266,267,234,367,375,017,015,TRAP MICROROUTINE]  
;              FC 1,3,8,10,6  
;ACT BLTS:     37(004)100,161 / 33(266)220,234 / 16(367)016,017  
;              26(017)010,010  
  
;EXEC:         [375] BUPP=017 ("T" BIT TRAP)  
  
;CODES:        N / ?  
  
;SYNC:         B05J2 (-)  
  
;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H  
;              K5-5 STPM2 H  
  
T0757:  MOV      #0757,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @I0757,R1       ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      SP,R5          ;SAVE THE SP  
R0757:  MOV      R5,SP          ;RESTORE SP FOR ERROR LOOPING  
        MOV      #MBUFO,R2      ;DEST ADDR = MBUFO  
        MOV      #20,-(SP)      ;SET "T" BIT IN THE NEW PSW  
        MOV      #I0757,-(SP)   ;MAKE NEW PC = I0757  
        CCC  
        RTT          ;SCOPE SYNC  
        ;SET "T" BIT - GO TO I0757  
  
I0757:  SXT      (R2)          ;SXT INSTRUCTION SHOULD SPRING TRAP  
  
E0757:  ERRORS  
        R0757      ;BUT SERVICE IN 367 FAILED  
        ;ERROR LOOP RETURN  
  
00757:  SCOPE          ;CALL SCOPE LOOP UTILITY
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062262 012700 000760
062266 013701 062312
062272 010605
062274 010506
062276 012746 000020
062302 012746 062312
062306 000257
062310 000006
062312 006702
062314 104005
062316 062274
062320 000004

```
: *****  
:SBTTL T0760 BUT SERVICE TEST IN ROM LOCATION 132 - (SXT %R)  
: *****  
  
:MICROPROGRAMMING / LOGIC INFORMATION  
  
:ROM SEQ:      (132,360,002,015,TRAP MICROROUTINE) FC 1,8,10,6  
:ACT BUTS:     37(004)100,132 / 27(132)000,002 / 26(002)010,010  
:EXEC:         (360) BUPP=002 ("T" BIT TRAP)  
:CODES:        N / A  
:SYNC:         B05J2 (-)  
:KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H  
:              K5-5 STPM2 H  
  
T0760:  MOV      #0760,R0          ;LOAD R0 WITH TEST NO.  
        MOV      #I0760,R1       ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      SP,R5           ;SAVE THE SP  
R0760:  MOV      R5,SP           ;RESTORE SP FOR ERROR LOOPING  
        MOV      #20,-(SP)       ;SET "T" BIT IN THE NEW PSW  
        MOV      #I0760,-(SP)    ;MAKE NEW PC = I0760  
        CCC  
        RTT          ;SCOPE SYNC  
                    ;SET "T" BIT - GO TO I0760  
  
I0760:  SXT      R2              ;SXT INSTRUCTION SHOULD SPRING TRAP  
  
E0760:  ERRORS  
        R0760      ;BUT SERVICE IN 132 FAILED  
                    ;ERROR LOOP RETURN  
  
00760:  SCOPE          ;CALL SCOPE LOOP UTILITY
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 619
 DBQEAB.CMB T0760 BUT SERVICE TEST IN ROM LOCATION 132 - (SXT %R)

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25021 ; *****
25022 ;SBTTL T0761 BUT SERVICE TEST IN ROM LOCATION 372 - (NEG %R)
25023 ; *****
25024
25025 ;MICROPROGRAMMING / LOGIC INFORMATION
25026
25027 ;ROM SEQ: [105,372,360,002,015,TRAP MICROROUTINE] FC 1,7,8,10,6
25028
25029 ;ACT BUTS: 37(004)100,105 / 31(105)360,360 / 27(372)000,002
25030 ;
25031
25032 ;EXEC: [360] BUPP=002 ("T" BIT TRAP)
25033
25034 ;CODES: N / A
25035
25036 ;SYNC: B05J2 (-)
25037
25038 ;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25039 ;
25040
25041 062322 012700 000761 T0761: MOV #0761,R0 ;LOAD R0 WITH TEST NO.
25042 062326 013701 062352 MOV #I0761,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25043 062332 010605 MOV SP,R5 ;SAVE THE SP
25044 062334 010506 R0761: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25045 062336 012746 000020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25046 062342 012746 062352 MOV #I0761,-(SP) ;MAKE NEW PC = I0761
25047 062346 000257 CCC ;SCOPE SYNC
25048 062350 000006 RTT ;SET "T" BIT - GO TO I0761
25049
25050 062352 005402 I0761: NEG R2 ;NEG INSTRUCTION SHOULD SPRING TRAP
25051
25052 062354 104005 E0761: ERRORS ;BUT SERVICE IN 372 FAILED
25053 062356 062334 RC761 ;ERROR LOOP RETURN
25054
25055 062360 000004 00761: SCOPE ;CALL SCOPE LOOP UTILITY
25056
    
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K16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 620
 DBQEAB.CMB T0761 BUT SERVICE TEST IN ROM LOCATION 372 - (NEG %R)

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25057      ; *****
25058      ; SBTTL T0762 BUT SERVICE TEST IN ROM LOCATION 370 - (SUB (RA),RB)
25059      ; *****
25060
25061      ; MICROPROGRAMMING / LOGIC INFORMATION
25062
25063      ; ROM SEQ:      [141,247,250,121,370,360,002,015,TRAP MICROROUTINE]
25064      ;              FC 1,2,8,10,6
25065
25066      ; ACT BUTS:    37(004)100,141 / 35(247)120,121 / 27(370)000,002
25067      ;              26(002)010,010
25068
25069
25070      ; EXQC: [360] BUPP=U02 ("T" BIT TRAP)
25071
25072      ; CODES:      N / A
25073
25074      ; SYNC:      B05J2 (-)
25075
25076      ; KEY SIG:    K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25077      ;
25078      T0762:  MOV      #0762,R0          ; LOAD R0 WITH TEST NO.
25079      062362 012700 C00762          ;
25080      062366 013701 062416          ; LOAD R1 WITH TEST INSTRUCTION WORD
25081      062372 010605          ; SAVE THE SP
25082      062374 010506          ; RESTORE SP FOR ERROR LOOPING
25083      062376 012703 067602          ; SOURCE ADDR = MBUFD
25084      062402 012746 000020          ; SET "T" BIT IN THE NEW PSW
25085      062406 012746 062416          ; MAKE NEW PC = I0762
25086      062412 000257          ; SCOPE SYNC
25087      062414 000006          ; SET "T" BIT - GO TO I0762
25088      062416 161302          I0762:  SUB      (R3),R2          ; SUB INSTRUCTION SHOULD SPRING TRAP
25089
25090      062420 104005          E0762:  ERRORS          ; BUT SERVICE IN 370 FAILED
25091      062422 062374          R0762          ; ERROR LOOP RETURN
25092
25093      062424 000004          00762:  SCOPE          ; CALL SCOPE LOOP UTILITY
25094

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L16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 621
 DBQEAB.CMB T0762 BUT SERVICE TEST IN ROM LOCATION 370 - (SUB (RA),RB)

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25095 ; *****
25096 ; SBTTL T0763 BUT SERVICE TEST IN ROM LOCATION 371 - (ADD (RA),RB)
25097 ; *****
25098
25099 ; MICROPROGRAMMING / LOGIC INFORMATION
25100
25101 ; ROM SEQ: [141,247,250,120,371,360,002,015,TRAP MICROROUTINE]
25102 ; FC 1,2,8,10,6
25103
25104 ; ACT BUTS: 37(004)100,141 / 35(247)120,120 / 31(120)360,360
25105 ; 27(371)000,002 / 26(002)010,010
25106
25107 ; EXEC: [360] BUPP=002 ("T" BIT TRAP)
25108
25109 ; CODES: N / A
25110
25111 ; SYNC: B05J2 (-)
25112
25113 ; KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25114 ; K5-5 STPM2 H
25115
25116 062426 012700 000763 T0763: MOV #0763,R0 ;LOAD R0 WITH TEST NO.
25117 062432 013701 062462 MOV #I0763,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25118 062436 010605 MOV SP,R5 ;SAVE THE SP
25119 062440 010506 R0763: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25120 062442 012705 C57602 MOV #MBUFO,R5 ;SOURCE ADDR = MBUFO
25121 062446 012746 000020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25122 062452 012746 062462 MOV #I0763,-(SP) ;MAKE NEW PC = I0763
25123 062456 000257 CCC ;SCOPE SYNC
25124 062460 000006 RTT ;SET "T" BIT - GO TO I0763
25125
25126 062462 061502 I0763: ADD (R5),R2 ;ADD INSTRUCTION SHOULD SPRING TRAP
25127
25128 062464 104005 E0763: ERRORS ;BUT SERVICE IN 371 FAILED
25129 062466 062440 R0763 ;ERROR LOOP RETURN
25130
25131 062470 000004 00763: SCOPE ;CALL SCOPE LOOP UTILITY
25132
  
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M16

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 622
 DBQEAB.CMB T0763 BUT SERVICE TEST IN ROM LOCATION 371 - (ADD (RA),RB)

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25133 ; *****
25134 ;SBTTL T0764 BUT SERVICE TEST IN ROM LOCATION 135 - (SWAB %R)
25135 ; *****
25136
25137 ;MICROPROGRAMMING / LOGIC INFORMATION
25138
25139 ;ROM SEQ: [134,135,360,002,015,TRAP MICROROUTINE] FC 1,7,8,10,6
25140
25141 ;ACT BUTS: 37(004)100,134 / 27(135)000,002 / 26(002)010,010
25142
25143 ;EXEC: [135] BUPP=002 ("T" BIT TRAP)
25144
25145 ;CODES: N / A
25146
25147 ;SYNC: B05J2 (-)
25148
25149 ;KE' SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25150 ;
25151
25152 062472 012700 000764 T0764: MOV #0764,R0 ;LOAD R0 WITH TEST NO.
25153 062476 013701 062522 MOV #I0764,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25154 062502 010605 MOV SP,R5 ;SAVE THE SP
25155 062504 010506 R0764: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25156 062506 012746 000020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25157 062512 012746 062522 MOV #I0764,-(SP) ;MAKE NEW PC = I0764
25158 062516 000257 CCC ;SCOPE SYNC
25159 062520 000006 RTT ;SET "T" BIT - GO TO I0764
25160
25161 062522 000302 I0764: SWAB R2 ;SWAB INSTRUCTION SHOULD SPRING TRAP
25162
25163 062524 104005 E0764: ERRORS ;BUT SERVICE IN 135 FAILED
25164 062526 062504 R0764 ;ERROR LOOP RETURN
25165
25166 062530 000004 00764: SCOPE ;CALL SCOPE LOOP UTILITY
25167

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801

MAIN. M00Y11 27.732) 15-OCT-76 14:58 PAGE 623
082EP8.C78 T0764 BUT SERVICE TEST IN ROM LOCATION 135 - (SWAB %R)

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062532 012700 000765
062536 013701 062562
062542 010605
062544 010506
062546 012746 000020
062552 012746 062562
062556 000257
062560 000006

062562 160304

062564 104005
062566 062544

062570 000004

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: *****  
:SBTTL T0765 BUT SERVICE TEST IN ROM LOCATION 363 - (SUB RA,RB)  
: *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ:      [103,363,360,002,015,TRAP MICROROUTINE] FC 1,7,8,10,6  
;ACT BUTS:     37(004)100,103 / 27(363)000,002 / 26(002)010,010  
;EXEC:         [360] BUPP=002 ("T" BIT TRAP)  
;CODES:        N / A  
;SYNC:         B05J2 (-)  
;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H  
;              K5-5 STPM2 H  
;  
  
T0765:  MOV      #0765,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @I0765,R1        ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      SP,R5            ;SAVE THE SP  
R0765:  MOV      R5,SP            ;RESTORE SP FOR ERROR LOOPING  
        MOV      #20,-(SP)        ;SET "T" BIT IN THE NEW PSW  
        MOV      #I0765,-(SP)    ;MAKE NEW PC = I0765  
        CCC  
        RTT          ;SCOPE SYNC  
                          ;SET "T" BIT - GO TO I0765  
  
I0765:  SUB      R3,R4            ;SUB INSTRUCTION SHOULD SPRING TRAP  
  
E0765:  ERRORS          ;BUT SERVICE IN 363 FAILED  
        R0765          ;ERROR LOOP RETURN  
  
00765:  SCOPE          ;CALL SCOPE LOOP UTILITY
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C01

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 624
 DBQCAR.CMB T0765 BUT SERVICE TEST IN ROM LOCATION 363 - (SUB RA,RB)

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25203 : *****
25204 : SBTTL T0766 BUT SERVICE TEST IN ROM LOCATION 364 - (ADD RA,RB)
25205 : *****
25206 ;MICROPROGRAMMING / LOGIC INFORMATION
25207
25208 ;ROM SEQ: [102,364,360,002,015,TRAP MICROROUTINE] FC 1,7,8,10,6
25209
25210 ;ACT BITS: 37(004)100,102 / 31(102)360,360 / 27(364)000,002
25211 ;
25212 ;
25213 ;EXEC: [360] BUP=002 ("T" BIT TRAP)
25214
25215 ;CODES: N / A
25216
25217 ;SYNC: B05J2 (-)
25218
25219 ;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25220 ;
25221 ;
25222 ;
25223 062572 012700 000766 T0766: MOV #0766,R0 ;LOAD R0 WITH TEST NO.
25224 062576 013701 062622 MOV #I0766,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25225 062602 010605 MOV SP,R5 ;SAVE THE SP
25226 062604 010506 R0766: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25227 062606 012746 000020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25228 062612 012746 062622 MOV #I0766,-(SP) ;MAKE NEW PC = I0766
25229 062616 000257 CCC ;SCOPE SYNC
25230 062620 000006 RTT ;SET "T" BIT - GO TO I0766
25231
25232 062622 060304 I0766: ADD R3,R4 ;ADD INSTRUCTION SHOULD SPRING TRAP
25233
25234 062624 104005 E0766: ERRORS ;BUT SERVICE IN 364 FAILED
25235 062626 062604 R0766 ;ERROR LOOP RETURN
25236
25237 062630 000004 00766: SCOPE ;CALL SCOPE LOOP UTILITY
25238
  
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D01

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 625
 DBQEAB.CMB T0765 BUT SERVICE TEST IN ROM LOCATION 364 - (ADD RA,RB)

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062632 012700 000767
062636 013701 062666
062642 010605
062644 012702 067602
062650 010506
062652 012746 000020
062656 012746 062666
062662 000257
062664 000006
062666 010012
062670 104005
062672 062650
062674 000004
  
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; *****
;SBTTL T0767 BUT SERVICE TEST IN ROM LOCATION 125 - (MOV RA,(RB))
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      (171,257,201,125,375,017,015,TRAP MICROROUTINE) FC 1,4,8,10,6

;ACT BUTS:     37(004)100,171 / 22(171)200,201 / 16(125)016,017
;
;EXEC:         (375) BUPP=017 ("T" BIT TRAP)

;CODES:        N / A

;SYNC:         BOSJ2 (-)

;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
;
T0767:  MOV      #0767,R0          ;LOAD R0 WITH TEST NO.
        MOV      #I0767,R1       ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R5           ;SAVE THE SP
        MOV      #M0767,R2       ;DEST ADDR = M0767
R0767:  MOV      R5,SP           ;RESTORE SP FOR ERROR LOOPING
        MOV      #20,-(SP)        ;SET "T" BIT IN THE NEW PSW
        MOV      #I0767,-(SP)    ;MAKE NEW PC = I0767
        CCC
        RTT
        ;SCOPE SYNC
        ;SET "T" BIT - GO TO I0767

I0767:  MOV      R0,(R2)         ;MOV INSTRUCTION SHOULD SPRING TRAP

E0767:  ERRORS
R0767   ;BUT SERVICE IN 125 FAILED
        ;ERROR LOOP RETURN

00767:  SCOPE
        ;CALL SCOPE LOOP UTILITY
  
```

E01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 626
DBQEAB.CMB T0767 BUT SERVICE TEST IN ROM LOCATION 125 - (MOV RA,(RB))

```
25276 ; *****
25277 ; SBTTL T0770 BUT SERVICE TEST IN ROM LOCATION 170 - (MOV RA,RB)
25278 ; *****
25279 ; MICROPROGRAMMING / LOGIC INFORMATION
25280 ; ROM SEQ: [170,204,002,015,TRAP MICROROUTINE] FC 1,4,10,6
25281 ; ACT BUTS: 37(004)100,170 / 20(170)1000,002 / 26(002)010,010
25282 ; EXEC: [204] BUPP=002 ("T" BIT TRAP)
25283 ; CODES: N / A
25284 ; SYNC: B05J2 (-)
25285 ; KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25286 ;
25287 T0770: MOV #0770,R0 ;LOAD R0 WITH TEST NO.
25288 MOV #I0770,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25289 MOV SP,R5 ;SAVE THE SP
25290 R0770: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25291 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25292 MOV #I0770,-(SP) ;MAKE NEW PC = I0770
25293 CCC ;SCOPE SYNC
25294 RTT ;SET "T" BIT - GO TO I0770
25295 062676 012700 000770
25296 062702 013701 062726
25297 062706 010605
25298 062710 010506
25299 062712 012746 000020
25300 062716 012746 062726
25301 062722 000257
25302 062724 000006
25303
25304 062726 010003
25305
25306 062730 104005
25307 062732 062710
25308
25309 062734 000004
25310
```

```

;LOAD R0 WITH TEST NO.
;LOAD R1 WITH TEST INSTRUCTION WORD
;SAVE THE SP
;RESTORE SP FOR ERROR LOOPING
;SET "T" BIT IN THE NEW PSW
;MAKE NEW PC = I0770
;SCOPE SYNC
;SET "T" BIT - GO TO I0770
;MOV INSTRUCTION SHOULD SPRING TRAP
;BUT SERVICE IN 170 FAILED
;ERROR LOOP RETURN
;CALL SCOPE LOOP UTILITY
```

F01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 627
DBQEAB.CMB T0770 BUT SERVICE TEST IN ROM LOCATION 170 - (MOV RA,RB)

```
25311 ; *****  
25312 ; SBTTL T0771 BUT SERVICE TEST IN ROM LOCATION 160 - (MOV (RA),RB)  
25313 ; *****  
25314 ;  
25315 ; MICROPROGRAMMING / LOGIC INFORMATION  
25316 ;  
25317 ; ROM SEQ: [141,247,250,160,204,002,015,TRAP MICROROUTINE]  
25318 ; FC 1,2,4,10,6  
25319 ;  
25320 ; ACT BUTS: 37(004)100,141 / 35(247)120,160 / 20(160)000,002  
25321 ; 26(002)010,010  
25322 ;  
25323 ; EXEC: [204] BUPP=002 ("T" BIT TRAP)  
25324 ;  
25325 ; CODES: N / A  
25326 ;  
25327 ; SYNC: BOSJ2 (-)  
25328 ;  
25329 ; KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H  
25330 ;  
25331 ;  
25332 062736 012700 000771 T0771: MOV #0771,R0 ; LOAD R0 WITH TEST NO.  
25333 062742 013701 062772 MOV #I0771,R1 ; LOAD R1 WITH TEST INSTRUCTION WORD  
25334 062746 010605 MOV SP,R5 ; SAVE THE SP  
25335 062750 012703 067612 MOV #DATA,R3 ; SOURCE ADDR = DATA  
25336 062754 010506 R0771: MOV RS,SP ; RESTORE SP FOR ERROR LOOPING  
25337 062756 012746 000020 MOV #20,-(SP) ; SET "T" BIT IN THE NEW PSW  
25338 062762 012746 062772 MOV #I0771,-(SP) ; MAKE NEW PC = I0771  
25339 062766 000257 CCC ; SCOPE SYNC  
25340 062770 000006 RTT ; SET "T" BIT - GO TO I0771  
25341 ;  
25342 062772 011304 I0771: MOV (R3),R4 ; MOV INSTRUCTION SHOULD SPRING TRAP  
25343 ;  
25344 062774 104005 E0771: ERRORS ; BUT SERVICE IN 160 FAILED  
25345 062776 062754 R0771 ; ERROR LOOP RETURN  
25346 ;  
25347 063000 000004 00771: SCOPE ; CALL SCOPE LOOP UTILITY  
25348
```

G01

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 628
 DBQEAB.CMB T0771 BUT SERVICE TEST IN ROM LOCATION 160 - (MOV (RA),RB)

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063002	012700	000772
063006	013701	063032
063012	010605	
063014	010506	
063016	012746	000020
063022	012746	063032
063026	000257	
063030	000006	
063032	110003	
063034	104005	
063036	063014	
063040	000004	

```

; *****
;SBTTL T0772 BUT SERVICE TEST IN ROM LOCATION 003 - (MOV (RA),RB)
; *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [170,204,003,204,002,015,TRAP MICROROUTINE] FC 1,4,10,6
;ACT BUTS:     37[004]100,170 / 20[170]000,003 / 27[003]000,002
;              26[002]010,010
;EXEC:         [204] END TIME THRU BUPP=002 ("T" BIT TRAP)
;CODES:        N / A
;SYNC:         805J2 (-)
;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
;              K5-5 STPM2 H
T0772:  MOV      #0772,R0          ;LOAD R0 WITH TEST NO.
        MOV      @I0772,R1       ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R5          ;SAVE THE SP
R0772:  MOV      R5,SP          ;RESTORE SP FOR ERROR LOOPING
        MOV      #20,-(SP)       ;SET "T" BIT IN THE NEW PSW
        MOV      #I0772,-(SP)   ;MAKE NEW PC = I0772
        CCC
        RTT
        ;SCOPE SYNC
        ;SET "T" BIT - GO TO I0772

I0772:  MOV      RO,R3          ;MOV B INSTRUCTION SHOULD SPRING TRAP

E0772:  ERRORS
        R0772
        ;BUT SERVICE IN 003 FAILED
        ;ERROR LOOP RETURN

00772:  SCOPE
        ;CALL SCOPE LOOP UTILITY
  
```

H01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 629
DBQEAB.CMB T0772 BUT SERVICE TEST IN ROM LOCATION 003 - (MOV B RA,RB)

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; *****
;SBTTL T0773 BUT SERVICE TEST IN ROM LOCATION 271 - (ROR %R)
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [106,271,274,002,015,TRAP MICROROUTINE] FC 1,9,10,6

;ACT BUTS: 37(004)100,106 / 27(271)000,002 / 26(002)010,010

;EXEC: [274] BUPP=002 ("T" BIT TRAP)

;CODES: N / A

;SYNC: B05J2 (-)

;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
; K5-5 STPM2 H

063042 012700 000773
063046 013701 063072
063052 010605
063054 010506
063056 012746 000020
063062 012746 063072
063066 000257
063070 000006

063072 006003

063074 104005
063076 063054

063100 000004

T0773: MOV #0773,R0 ;LOAD R0 WITH TEST NO.
MOV #I0773,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV SP,R5 ;SAVE THE SP
R0773: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
MOV #I0773,-(SP) ;MAKE NEW PC = I0773
CCC ;SCOPE SYNC
RTT ;SET "T" BIT - GO TO I0773

I0773: ROR R3 ;ROR INSTRUCTION SHOULD SPRING TRAP

E0773: ERRORS ;BUT SERVICE IN 271 FAILED
R0773 ;ERROR LOOP RETURN

00773: SCOPE ;CALL SCOPE LOOP UTILITY

I01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 630
DBQEAB.CMB T0773 BUT SERVICE TEST IN ROM LOCATION 271 - (ROR %R)

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; *****
;SBTTL T0774 BUT SERVICE TEST IN ROM LOCATION 273 - (ROR %R)
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ: [107,272,273,274,002,015,TRAP MICROROUTINE] FC 1,9,10,6
;ACT BUTS: [274] BUPP=002 ("T" BIT TRAP)
;EXEC: Z
;CODES: N / A
;SYNC: B05J2 (-)
;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
;

063102 012700 000774
063106 013701 063132
063112 010605
063114 010506
063116 012746 000020
063122 012746 063132
063126 000257
063130 000006
063132 106003
063134 104005
063136 063114
063140 000004

T0774: MOV #0774,R0 ;LOAD R0 WITH TEST NO.
MOV #I0774,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
MOV SP,R5 ;SAVE THE SP
R0774: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
MOV #I0774,-(SP) ;MAKE NEW PC = I0774
CCC ;SCOPE SYNC
RTT ;SET "T" BIT - GO TO I0774
I0774: RORB R3 ;RORB INSTRUCTION SHOULD SPRING TRAP
E0774: ERRORS ;BUT SERVICE IN 273 FAILED
R0774 ;ERROR LOOP RETURN
00774: SCOPE ;CALL SCOPE LOOP UTILITY

J01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 631
DBQEAB.CMB T0774 BUT SERVICE TEST IN ROM LOCATION 273 - (RORB %R)

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```
; *****  
;SBTTL T0775 BUT SERVICE TEST IN ROM LOCATION 277 - (ROR (RN))  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
;ROM SEQ: [161,266,267,232,275,277,376,017,015,TRAP MICROROUTINE]  
; FC 1,3,9,10,6  
;ACT BUTS: 37(004)100,161 / 33(266)220,232 / 16(277)016,017  
; 26(017)010,010  
;EXEC: [376] BUPP = 017 ("T" BIT TRAP)  
;CODES: N / A  
;SYNC: B05J2 (-)  
;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H  
; K5-5 STPM2 H
```

```
063142 012700 000775  
063146 013701 063176  
063152 010605  
063154 012703 067602  
063160 010506  
063162 012746 000020  
063166 012746 063176  
063172 000257  
063174 000006  
  
063176 006013  
063200 104005  
063202 063160  
063204 000004
```

```
T0775: MOV #0775,R0 ;LOAD R0 WITH TEST NO.  
MOV @#I0775,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD  
MOV SP,R2 ;SAVE THE SP  
MOV #MBUFO,R3 ;DEST ADDR = MBUFO  
R0775: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING  
MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW  
MOV #I0775,-(SP) ;MAKE NEW PC = I0775  
CCC ;SCOPE SYNC  
RTT ;SET "T" BIT - GO TO I0775  
  
I0775: ROR (R3) ;ROR INSTRUCTION SHOULD SPRING TRAP  
  
E0775: ERRORS ;BUT SERVICE IN 277 FAILED  
R0775 ;ERROR LOOP RETURN  
  
00775: SCOPE ;CALL SCOPE LOOP UTILITY
```

K01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 632
DBQEAB.CMB T0775 BUT SERVICE TEST IN ROM LOCATION 277 - (ROR (RN))

```
25493 ; *****
25494 ;SBTTL T0776 BUT SERVICE TEST IN ROM LOCATION 374 - (NEGB (RN))
25495 ; *****
25496
25497 ;MICROPROGRAMMING / LOGIC INFORMATION
25498
25499 ;ROM SEQ: [161,266,267,223,253,075,374,375,017,015,TRAP MICROROUTINE]
25500 ; FC 1,3,9,8,10,6
25501
25502 ;ACT BUTS: 37(004)100,161 / 33(266)220,223 / 16(374)016,017
25503 ;
25504
25505 ;EXEC: [375] BUPP=017 ("T" BIT TRAP)
25506
25507 ;CODES: N / A
25508
25509 ;SYNC: B05J2 (-)
25510
25511 ;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25512 ;
25513
25514 063206 012700 000776 T0776: MOV #0776,R0 ;LOAD R0 WITH TEST NO.
25515 063212 013701 063242 MOV #I0776,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25516 063216 010605 MOV SP,R5 ;SAVE THE SP
25517 063220 012703 067603 MOV #M0776+1,R3 ;DEST ADDR = M0776+1 (ODD)
25518 063224 010506 R0776: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25519 063226 012746 030020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25520 063232 012746 063242 MOV #I0776,-(SP) ;MAKE NEW PC = I0776
25521 063236 000257 CCC ;SCOPE SYNC
25522 063240 000006 RTT ;SET "T" BIT - GO TO I0776
25523
25524 063242 105413 I0776: NEGB (R3) ;NEGB INSTRUCTION SHOULD SPRING TRAP
25525
25526 063244 104005 E0776: ERRORS ;BUT SERVICE IN 374 FAILED
25527 063246 063224 R0776 ;ERROR LOOP RETURN
25528
25529 063250 000004 O0776: SCOPE ;CALL SCOPE LOOP UTILITY
25530
```

L01

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 633
DBQEAB.CMB T0775 BUT SERVICE TEST IN ROM LOCATION 374 - (NEGB (RN))

```
25531 ; *****
25532 ;SBTTL T0777 BUT SERVICE TEST IN ROM LOCATION 306 - (JMP (RN))
25533 ; *****
25534 ;MICROPROGRAMMING / LOGIC INFORMATION
25535 ;ROM SEQ: [151,300,306,313,017,015,TRAP MICROROUTINE] FC 1,5,10,6
25536 ;ACT BUTS: 37(004)100,151 / 15(151)306,306 / 16(306)016,017
25537 ;
25538 ;EXEC: [313] BUPP=017 ("T" BIT TRAP)
25539 ;CODES: N / A
25540 ;SYNC: B05J2 (-)
25541 ;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25542 ;
25543
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25549
25550
25551 063252 012700 000777 T0777: MOV #0777,R0 ;LOAD R0 WITH TEST NO.
25552 063256 013701 063306 MOV @#I0777,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25553 063262 010605 MOV SP,R5 ;SAVE THE SP
25554 063264 012702 063310 MOV #E0777,R2 ;DEST ADDR = E0777 FOR JMP
25555 063270 010506 R0777: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25556 063272 012746 000020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25557 063276 012746 063306 MOV #I0777,-(SP) ;MAKE NEW PC = I0777
25558 063302 000257 CCC ;SCOPE SYNC
25559 063304 000006 RTT ;SET "T" BIT - GO TO I0777
25560
25561 063306 000112 I0777: JMP (R2) ;JMP INSTRUCTION SHOULD SPRING TRAP
25562
25563 063310 104005 E0777: ERROR5 ;BUT SERVICE IN 306 FAILED
25564 063312 063270 R0777 ;ERROR LOOP RETURN
25565
25566 063314 000004 00777: SCOPE ;CALL SCOPE LOOP UTILITY
25567
```

MO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 634
 DBQEAB.CMB T0777 BUT SERVICE TEST IN ROM LOCATION 306 - (JMP (RN))

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25568 ; *****
25569 ; SBTTL T1000 BUT SERVICE TEST IN ROM LOCATION 110 - (BVS A)
25570 ; *****
25571
25572 ; MICROPROGRAMMING / LOGIC INFORMATION
25573
25574 ; ROM SEQ:      [110,347,017,015,TRAP MICROROUTINE] FC 1,7,10,6
25575
25576 ; ACT BUTS:    37[004]100,110 / 16[110]016,017 / 26[017]010,010
25577
25578 ; EXEC:        [347] BUPP=017 ("T" BIT TRAP)
25579
25580 ; CODES:       N / A
25581
25582 ; SYNC:        B05J2 (-)
25583
25584 ; KEY SIG:     K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25585 ;
25586
25587 063316 012700 001000 T1000: MOV #1000,R0 ;LOAD R0 WITH TEST NO.
25588 063322 013701 063346      MOV @#I1000,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25589 063326 010605      MOV SP,R5 ;SAVE THE SP
25590 063330 010506 R1000: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25591 063332 012746 000020      MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25592 063336 012746 063346      MOV #I1000,-(SP) ;MAKE NEW PC = I1000
25593 063342 000257      CCC ;SCOPE SYNC
25594 063344 000006      RTT ;SET "T" BIT - GO TO I1000
25595
25596 063346 102400 I1000: BVS E1000 ;BVS INSTRUCTION SHOULD SPRING TRAP
25597
25598 063350 104005 E1000: ERRORS ;BUT SERVICE IN 110 FAILED
25599 063352 063330 R1000 ;ERROR LOOP RETURN
25600
25601 063354 000004 O1000: SCOPE ;CALL SCOPE LOOP UTILITY
25602
  
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NO1

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 035
DBQEAB.CMB T1000 BUT SERVICE TEST IN ROM LOCATION 110 - (BVS A)

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25603 ; *****
25604 ; SBTTL T1001 BUT SERVICE TEST IN ROM LOCATION 340 - (BR A)
25605 ; *****
25606
25607 ; MICROPROGRAMMING / LOGIC INFORMATION
25608
25609 ; ROM SEQ: [111,340,341,017,015,TRAP MICROROUTINE] FC 1,7,10,6
25610
25611 ; ACT BUTS: 37(004)100,111 / 16(340)016,017 / 26(017)010,010
25612
25613 ; EXEC: [341] BUPP=017 ("T" BIT TRAP)
25614
25615 ; CODES: N / A
25616
25617 ; SYNC: B05J2 (-)
25618
25619 ; KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25620 ;
25621
25622 063356 012700 001001 T1001: MOV #1001,R0 ;LOAD R0 WITH TEST NO.
25623 063362 013701 063406 MOV @#I1001,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25624 063366 010605 MOV SP,R5 ;SAVE THE SP
25625 063370 010506 R1001: MOV R5,SP ;RESTORE SP FOR ERROR LOOPING
25626 063372 012746 000020 MOV #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25627 063376 012746 063406 MOV #I1001,-(SP) ;MAKE NEW PC = I1001
25628 063402 000257 CCC ;SCOPE SYNC
25629 063404 000006 RTT ;SET "T" BIT - GO TO I1001
25630
25631 063406 000400 I1001: BR E1001 ;BR INSTRUCTION SHOULD SPRING TRAP
25632
25633 063410 104005 E1001: ERRORS ;BUT SERVICE IN 340 FAILED
25634 063412 053370 R1001 ;ERROR LOOP RETURN
25635
25636 063414 000004 01001: SCOPE ;CALL SCOPE LOOP UTILITY
25637
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25666
25667
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25670
25671

063416 012700 001002
063422 013701 063444
063426 010605
063430 010506
063432 012746 000020
063436 012746 063444
063442 000006
063444 000257
063446 104005
063450 063430
063452 000004

```

: *****
:SBTTL T1002 BUT SERVICE TEST IN ROM LOCATION 350 - (CCC)
: *****
;MICROPROGRAMMING / LOGIC INFORMATION
;ROM SEQ:      [116,350,351,017,015,TRAP MICROROUTINE] FC 1,7,10,6
;ACT BUTS:     37(004)100,116 / 16(350)016,017 / 26(017)010,010
;EXEC [351] BUPP=017 ("T" BIT TRAP)
;CODES:        N / A
;SYNC:         B05J2 (-)
;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
;
T1002:  MOV      #I002,R0          ;LOAD R0 WITH TEST NO.
        MOV      @I1002,R1       ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R5          ;SAVE THE SP
R1002:  MOV      R5,SP          ;RESTORE SP FOR ERROR LOOPING
        MOV      #20,-(SP)       ;SET "T" BIT IN THE NEW PSW
        MOV      #I1002,-(SP)    ;MAKE NEW PC = I1002
        RTT                    ;SET "T" BIT - GO TO I1002
I1002:  CCC                    ;CCC INSTRUCTION SHOULD SPRING TRAP
E1002:  ERRORS                    ;BUT SERVICE IN 350 FAILED
        R1002                    ;ERROR LOOP RETURN
O1002:  SCOPE                    ;CALL SCOPE LOOP UTILITY

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063454 012700 001003
063460 013701 063502
063464 010605
063466 010506
063470 012746 000020
063474 012746 063502
063500 000006

063502 000277

063504 104005
063506 063466

063510 000004

```

; *****
;SBTTL T1003 BUT SERVICE TEST IN ROM LOCATION 117 - (SCC)
; *****

;MICROPROGRAMMING / LOGIC INFORMATION

;ROM SEQ:      (117,352,017,015,TRAP MICROROUTINE) FC 1,7,10,6
;ACT BUTS:     37(004)100,117 / 16(117)016,017 / 26(017)010,010
;EXEC:         (352) BUPP=017 ("T" BIT TRAP)
;CODES:        N / A
;SYNC:         B05J2 (-)
;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
;
T1003:  MOV      #1003,R0          ;LOAD R0 WITH TEST NO.
        MOV      @#I1003,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
        MOV      SP,R5          ;SAVE THE SP
R1003:  MOV      R5,SP          ;RESTORE SP FOR ERROR LOOPING
        MOV      #20,-(SP)       ;SET "T" BIT IN THE NEW PSH
        MOV      #I1003,-(SP)   ;MAKE NEW PC = I1003
        RTT                    ;SET "T" BIT - GO TO I1003

I1003:  SCC                    ;SCC INSTRUCTION SHOULD SPRING TRAP

E1003:  ERRORS                  ;BUT SERVICE IN 117 FAILED
        R1003                  ;ERROR LOOP RETURN

O1003:  SCOPE                    ;CALL SCOPE LOOP UTILITY

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063512 012700 001004
063516 013701 063546
063522 010605
063524 010506
063526 012746 063550
063532 012746 000020
063536 012746 063546
063542 000257
063544 000006

063546 000207

063550 104005
063552 063524

063554 000004

```
; *****  
;SBTTL T1004 BUT SERVICE TEST IN ROM LOCATION 324 - (RTS PC)  
; *****  
  
;MICROPROGRAMMING / LOGIC INFORMATION  
  
;ROM SEQ:      [124,323,324,325,017,015,TRAP MICROROUTINE] FC 1,6,10,6  
  
;ACT BUTS:     37(004)100,124 / 16(324)016,017 / 26(017)010,010  
  
;EXEC:         (325) 0UPP=017 ("T" BIT TRAP)  
  
;CODES:        N / A  
  
;SYNC:         B05J2 (-)  
  
;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H  
;              K5-5 STPM2 H  
;  
  
T1004:  MOV      #1004,R0          ;LOAD R0 WITH TEST NO.  
        MOV      @#I1004,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD  
        MOV      SP,R5          ;SAVE THE SP  
R1004:  MOV      RS,SP          ;RESTORE SP FOR ERROR LOOPING  
        MOV      #E1004,-(SP)    ;RTS WILL LOAD PC WITH E1004  
        MOV      #20,-(SP)      ;SET "T" BIT IN THE NEW PSW  
        MOV      #I1004,-(SP)   ;MAKE NEW PC = I1004  
        CCC  
        RTT          ;SCOPE SYNC  
        ;SET "T" BIT - GO TO I1004  
  
I1004:  RTS      PC          ;RTS INSTRUCTION SHOULD SPRING TRAP  
  
E1004:  ERRORS  
        R1004      ;BUT SERVICE IN 324 FAILED  
        ;ERROR LOOP RETURN  
  
O1004:  SCOPE          ;CALL SCOPE LOOP UTILITY
```

E02

.MAY. MACY11 27.732) 15-OCT-76 14:58 PAGE 639
 CBJERB.CMB T1004 BUT SERVICE TEST IN ROM LOCATION 324 - (RTS PC)

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25742 : *****
25743 : SBTTL T1005 BUT SERVICE TEST IN ROM LOCATION 345 - (SOB RN,A)
25744 : *****
25745
25746 ;MICROPROGRAMMING / LOGIC INFORMATION
25747
25748 ;ROM SEQ:      [130,342,343,345,347,017,015,TRAP MICROROUTINE] FC 1,7,10,6
25749
25750 ;ACT BUTS:     37(004)100,130 / 16(345)016,017 / 26(017)010,010
25751
25752 ;EXEC:         [347] BUPP=017 ("T" BIT TRAP)
25753
25754 ;CODES:        N / A
25755
25756 ;SYNC:         BOSJ2 (-)
25757
25758 ;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25759 ;
25760
25761 063556 012700 001005 T1005: MOV      #I005,R0 ;LOAD R0 WITH TEST NO.
25762 063562 013701 063626      MOV      @#I1005,R1 ;LOAD R1 WITH TEST INSTRUCTION WORD
25763 063566 032737 100000 066642      BIT      #100000,@#BPTLOC;BREAKPOINT HALT SET ??
25764 063574 001401          BEQ      .+4 ;BR IF NOT
25765 063576 000000          HALT     ;BREAK-DEPRESS CONTINUE TO RESTART
25766 063600 010605      MOV      SP,R5 ;SAVE THE SP
25767 063602 010506      MOV      R5,SP ;RESTORE SP FOR ERROR LOOPING
25768 063604 012703 000001      MOV      #1,R3 ;SOB COUNT = +1
25769 063610 012746 000020      MOV      #20,-(SP) ;SET "T" BIT IN THE NEW PSW
25770 063614 012746 063626      MOV      #I1005,-(SP) ;MAKE NEW PC = I1005
25771 063620 000257          CCC     ;SCOPE SYNC
25772 063622 000006          RTT     ;SET "T" BIT - GO TO I1005
25773 063624 000401          BR      E1005
25774
25775 063626 077302      I1005: SOB      R3,I1005-2 ;SOB INSTRUCTION SHOULD SPRING TRAP
25776
25777 063630 104005      E1005: ERRORS ;BUT SERVICE IN 345 FAILED
25778 063632 063602      R1005 ;ERROR LOOP RETURN
25779
25780 063634 000004      O1005: SCOPE ;CALL SCOPE LOOP UTILITY
25781
  
```

F02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 640
 DBQEAB.CMB T1005 BUT SERVICE TEST IN ROM LOCATION 345 - (SOB RN,A)

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25782 ; *****
25783 ;SBTTL T1006 BUT SERVICE TEST IN ROM LOCATION 344 - (SOB RA,A)
25784 ; *****
25785
25786 ;MICROPROGRAMMING / LOGIC INFORMATION
25787
25788 ;ROM SEQ:      [130,342,343,344,346,017,015,TRAP MICROROUTINE] FC 1,7,10,6
25789
25790 ;ACT BUTS:     37(004)100,130 / 16(344)016,017 / 26(017)010,010
25791
25792 ;EXEC:         [346] BUPP=017 ("T" BIT TRAP)
25793
25794 ;CODES:        N / A
25795
25796 ;SYNC:         B05J2 (-)
25797
25798 ;KEY SIG:      K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25799 ;
25800
25801 063636 012700 001006 T1006: MOV      #1006,R0          ;LOAD R0 WITH TEST NO.
25802 063642 013701 063700      MOV      2#I1006,R1      ;LOAD R1 WITH TEST INSTRUCTION WORD
25803 063646 010605              MOV      SP,R5          ;SAVE THE SP
25804 063650 010506 R1006: MOV      R5,SP      ;RESTORE SP FOR ERROR LOOPING
25805 063652 012703 000002      MOV      #2,R3         ;SOB COUNT = +2
25806 063656 012746 000020      MOV      #20,-(SP)     ;SET "T" BIT IN THE NEW PSW
25807 063662 012746 063700      MOV      #I1006,-(SP)  ;MAKE NEW PC = I1006
25808 063666 000257              CCC
25809 063670 000006              RTT
25810 063672 104005 E1006: ERRORS
25811 063674 063650 R1006
25812 063676 000403              BR       01006         ;GO TO SCOPE EXIT
25813
25814 063700 077304 I1006: SOB      R3,E1006      ;SOB INSTRUCTION SHOULD SPRING TRAP
25815
25816 063702 000240              NOP
25817 063704 000240              NOP          ;TO BE COMPATIBLE WITH "T" BIT SERV.
25818
25819 063706 000004 O1006: SCOPE
25820

```

;CALL SCOPE LOOP UTILITY

```

25821 : *****
25822 : SBTTL T1007 BUT SERVICE TEST IN ROM LOCATION 356 - (MARK 0)
25823 : *****
25824
25825 ;MICROPROGRAMMING / LOGIC INFORMATION
25826
25827 ;ROM SEQ: [112,353,354,355,356,357,017,015,TRAP MICROROUTINE]
25828 ; FC 1,5,10,6
25829
25830 ;ACT BUTS: 37(004)100,112 / 016(356)016,017 / 26(017)010,010
25831
25832 ;EXEC: [357] BUPP = 017 ("T" BIT TRAP)
25833
25834 ;CODES: N / A
25835
25836 ;SYNC: B05J2 (-)
25837
25838 ;KEY SIG: K5-2 PS (T) (1) H / K3-7 SERVICE H / K5-5 STPM3 H
25839 ; K5-5 STPM2 H
25840
25841
25842 063710 012700 001007 T1007: MOV #1007,R0 ;LOAD R0 WITH TEST NO.
25843 063714 013701 063744 ;LOAD R1 WITH TEST INSTRUCTION WORD
25844 063720 010604 ;SAVE THE SP
25845 063722 010406 R1007: MOV R4,SP ;RESTORE SP FOR ERROR LOOPING
25846 063724 012746 000020 ;SET "T" BIT IN THE NEW PSW
25847 063730 012746 063744 ;MAKE NEW PC = I1007
25848 063734 012705 063754 ;MARK GOES TO A1007 IF TRAP NOT SPRUNG
25849 063740 000257 ;SCOPE SYNC
25850 063742 000006 RTT ;SET "T" BIT - GO TO I1007
25851
25852 063744 006401 I1007: MARK+1 ;MRK INSTRUCTION SHOULD SPRING TRAP
25853
25854 063746 000000 ;"T" BIT SERVICE WILL PUSH THE "PSW"
25855 063750 000000 ;AND THE "PC" IN THESE LOCATIONS
25856 063752 000400 BR A1007 ;JUST IN CASE MARK FAILS
25857
25858 063754 010406 A1007: MOV R4,SP ;RESET THE SP
25859 063756 000401 BR E1007 ;GO REPORT ERROR
25860 063760 000402 BR B1007 ;"T" TRAP WORKED - GO TO EXIT
25861 063762 104005 E1007: ERRORS ;MRK FAILED TO SPRING "T" TRAP
25862 063764 063722 R1007 ;ERROR LOOP RETURN ADDRESS
25863
25864 063766 010406 B1007: MOV R4,SP ;RESET THE SP IF ALL OK
25865
25866 063770 000004 01007: SCOPE ;CALL SCOPE LOOP UTILITY
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; *****
; .SBTTL T1010 ALU ADD FUNCTION TEST
; *****

; THIS TEST VERIFIES THAT THE ALU ADD FUNCTION CAN RESPOND CORRECTLY
; TO THE 8 POSSIBLE COMBINATIONS THAT COULD OCCUR AT THE INPUTS OF
; EACH OF THE 16 BIT POSITIONS AS DESCRIBED BELOW:

	AIN	BIN	CIN
:	0	0	0
:	0	0	1
:	0	1	0
:	0	1	1
:	1	0	0
:	1	0	1
:	1	1	0
:	1	1	1

; THE TEST NO.S ALONG WITH THE CORRECT ANSWERS ARE STORED IN A TABLE
; TAGGED "ALUADD" AS SHOWN BELOW:

;	ALUADD	
:		NULL
:		SRC OP1
:		DST OP1
:		SUM1
:		SRC OP2
:		DST OP2
:		SUM2
:		ETC.

; UPON DETECTION OF AN ERROR THE PRINTOUT HAS THE FOLLOWING SIG-
; NIFICANCE IN COLUMNS 5-8:

:	COL5 [R1] = SOURCE OPR
:	COL6 [R2] = DEST OPR
:	COL7 [R3] = WAS SUM
:	COL8 [R4] = S / B SUM

; AFTER REPORTING THE ERROR THE ROUTINE WILL LOCK ON THE FAILING PAIR
; OF NO.S IF SW09=1 OR GO ON TO THE NEXT PAIR IF SW09=0.

063772	012700	001010
063776	012705	067626
064002	005725	
064004	022705	067710
064010	001416	
064012	012501	
064014	012503	
064016	000257	
064020	060103	
064022	021503	
064024	001766	

```

T1010: MOV      #1010,R0          ;LOAD R0 WITH TEST NO.
        MOV      #ALUADD,R5     ;R5 POINTS TO TABLE OF NO.S
L1010:  TST      (R5)+          ;POINT TO A SRC OP
        CMP      #ALUADD+62,R5 ;DONE ALL NO.S IN TABLE ?
        BEQ     01010         ;BR IF YES
        MOV      (R5)+,R1      ;LOAD SRC OP
        MOV      (R5)+,R3      ;LOAD DEST OP
        CCC
I1010:  ADD      R1,R3          ;TEST THE ADD FUNCTION
        CMP      (R5),R3       ;CORRECT SUM ?
        BEQ     L1010         ;GO ADD NEXT PAIR IF YES

```

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 643
 DBQEAB.CMB T1010 ALU ADD FUNCTION TEST

25927	064026	011504		MUV	(R5),R4	;GET S / B SUM
25928	064030	014502		MOV	-(R5),R2	;GET DEST OP
25929	064032	104000	E1010:	ERROR		;ALU ADD OPERATION FAILED
25930	064034	064042		R1010		;ERROR LOOP RETURN ADDRESS
25931						
25932	064036	005725		TST	(R5)+	;CORRECT R5 POINTER
25933	064040	000760		BR	L1010	;GO DO NEXT PAIR
25934						
25935	064042	024545	R1010:	CMP	-(R5),-(R5)	;RESET R5 TO POINT TO BAD GUYS
25936	064044	000756		BR	L1010	;GO REPEAT FAILING PAIR
25937						
25938	064046	000004	01010:	SCOPE		;CALL SCOPE LOOP UTILITY
25939						

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; *****
; .SBTTL T1011 ALU SUB FUNCTION TEST
; *****

; THIS TEST VERIFIES THAT THE ALU ADD FUNCTION CAN RESPOND CORRECTLY
; TO THE 8 POSSIBLE COMBINATIONS THAT COULD OCCUR AT THE INF'ITS OF
; EACH OF THE 16 BIT POSITIONS AS DESCRIBED BELOW:

	AIN	BIN	CIN
:	0	0	0
:	0	0	1
:	0	1	0
:	0	1	1
:	1	0	0
:	1	0	1
:	1	1	0
:	1	1	1

; THE TEST NO.S ALONG WITH THE CORRECT ANSWERS ARE STORED IN A TABLE
; TAGGED "ALUADD" AS SHOWN BELOW:

```

;ALUSUB:      NULL
;              SRC OP1
;              DST OP1
;              DIFF1
;              SRC OP2
;              DST OP2
;              DIFF2
;              ETC.

```

; UPON DETECTION OF AN ERROR THE PRINTOUT HAS THE FOLLOWING SIG-
; NIFICANCE IN COLUMNS 5-8:

```

; COL5 [R1] = SOURCE OPR
; COL6 [R2] = DEST OPR
; COL7 [R3] = WAS DIFFERENCE
; COL8 [R4] = S / B DIFFERENCE

```

; AFTER REPORTING THE ERROR THE ROUTINE WILL LOCK ON THE FAILING PAIR
; OF NO.S IF SW09=1 OR GO ON TO THE NEXT PAIR IF SW09=0.

```

064050 012700 001011
064054 012705 070054
064060 005725
064062 022705 070136
064066 001416
064070 012501
064072 012503
064074 000257
064076 160103
064100 021503
064102 001766

```

```

T1011:  MOV      #1011,R0          ; LOAD R0 WITH TEST NO.
        MOV      #ALUSUB,R5      ; R5 POINTS TO TABLE OF NO.S
L1011:  TST      (R5)+           ; POINT TO A SRC OP
        CMP      #ALUSUB+62,R5  ; DONE ALL NO.S IN TABLE ?
        BEQ      01011          ; BR IF YES
        MOV      (R5)+,R1       ; LOAD SRC OP
        MOV      (R5)+,R3       ; LOAD DEST OP
        CCC
I1011:  SUB      R1,R3           ; TEST THE SUB FUNCTION
        CMP      (R5),R3        ; CORRECT DIFF. ?
        BEQ      L1011         ; GO SUB NEXT PAIR IF YES

```

K02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 645
DBGERR.CMB T1011 ALU SUB FUNCTION TEST

25996	064104	011504		MOV	(R5),R4	;GET S / B DIFF
25997	064106	014502		MOV	-(R5),R2	;GET DEST OP
25998	064110	104000	E1011:	ERROR		;ALU SUB OPERATION FAILED
25999	064112	064120		R1011		;ERROR LOOP RETURN ADDRESS
26000						
26001	064114	005725		TST	(R5)+	;CORRECT R5 POINTER
26002	064116	000760		BR	L1011	;GO DO NEXT PAIR
26003						
26004	064120	024545	R1011:	CMP	-(R5),-(R5)	;RESET R5 TO POINT TO BAD GUYS
26005	064122	000756		BR	L1011	;GO REPEAT FAILING PAIR
26006						
26007	064124	000004	01011:	SCOPE		;CALL SCOPE LOOP UTILITY
26008						
26009						
26010						
26011						
26012						

26013 ; *****
26014 .SBTTL T1012 ALU "AND" FUNCTION TEST USING BIC INSTRUCTION
26015 ; *****

26016 ; THIS TEST VERIFIES THAT THE ALU "AND" FUNCTION RESPONDS CORRECTLY
26017 ; TO ALL POSSIBLE COMBINATIONS FOR EACH OF THE 16 BIT POSITIONS
26018 ; IT EXECUTES THE BIC INSTRUCTION FOR THE FOLLOWING PAIRS OF
26019 ; OPERANDS AND TESTS FOR THE INDICATED RESULT:

	;SOURCE OP	DEST. OP	RESULT
26021	;000000	000000	000000
26022	;177777	177777	000000
26023	;000000	177777	177777
26024	;177777	000000	000000
26025	;125252	125252	000000
26026	;052525	052525	000000
26027	;125252	052525	052525
26028	;052525	125252	125252

26029 ; THE 8 PAIRS OF NO.S AND THE ANSWERS ARE STORED IN A TEBLE TAGGED
26030 ; "ANDTAB" IN THE FOLLOWING PATTERN:

```

26031 ; ANDTAB:
26032 ; NULL
26033 ; SRC OP1
26034 ; DST OP1
26035 ; ANS1
26036 ; SRC OP2
26037 ; DST OP2
26038 ; ANS2
26039 ; ETC.

```

26040 ; WHEN AN ERROR IS REPORTED THE PRINTOUT IN COL. 5-8 HAS THE
26041 ; FOLLOWING SIGNIFICANCE:

```

26042 ; COL 5 [R1] = SOURCE OPR
26043 ; COL 6 [R2] = DEST OPR
26044 ; COL 7 [R3] = WAS ANSWER
26045 ; COL 8 [R4] = S / B ANSWER

```

26046 ; AFTER REPORTING THE ERROR THE ROUTINE WILL LOCK ON THE FAILING
26047 ; PAIR OF NO.S IF SW09=1 OR GO ON TO TEST THE NEXT PAIR IF SW09=0

```

26048 T1012: MOV #1012,R0 ;LOAD R0 WITH TEST NO.
26049 MOV #ANDTAB,R5 ;R5 POINTS TO TABLE OF TEST NO.S
26050 L1012: TST (R5)+ ;POINT TO A SOURCE OPR
26051 CMP #ANDTAB+62,R5 ;DONE ALL COMBINATIONS ?
26052 BEQ 01012 ;BR IF YES
26053 MOV (R5)+,R1 ;LOAD THE SRC OP
26054 MOV (R5)+,R3 ;LOAD THE DEST OP
26055 CCC ;SCOPE SYNC
26056 I1012: BIC R1,R3 ;TEST THE "AND"
26057 CMP R3,(R5) ;RESULT CORRECT ?
26058 BEQ L1012 ;BR IF YES - GET THE NEXT PAIR

```

```

26055 064126 012700 001012
26056 064132 012705 067710
26057 064136 005725
26058 064140 022705 067772
26059 064144 001416
26060 064146 012501
26061 064150 012503
26062 064152 000257
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26064 064154 040103
26065
26066 064156 020315
26067 064160 001766
26068

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M02

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 647
DBQEAB.CMB T1012 ALU "AND" FUNCTION TEST USING BIC INSTRUCTION

26069	064162	011504		MOV	(R5),R4	;GET THE S / B DATA
26070	064164	014502		MOV	-(R5),R2	;GET DEST OP
26071	064166	104000	E1012:	ERROR		;ALU "AND" FAILED
26072	064170	064176		R1012		;ERROR LOOP RETURN
26073						
26074	064172	005725		TST	(R5)+	;CORRECT R5 POINTER
26075	064174	000760		BR	L1012	;GO GET NEXT PAIR
26076						
26077	064176	024545	R1012:	CMP	-(R5),-(R5)	;RESET R5 TO POINT BACK TO BAD GUYS
26078	064200	000756		BR	L1012	;GO REPEAT THE BAD GUYS
26079						
26080	064202	000004	01012:	SCOPE		;CALL SCOPE LOOP UTILITY
26081						
26082						

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; *****
; .SBTTL T1013 ALU "OR" FUNCTION TEST USING BIS INSTRUCTION
; *****

; THIS TEST VERIFIES THAT THE ALU "OR" FUNCTION RESPONDS CORRECTLY
; TO ALL POSSIBLE COMBINATIONS FOR EACH OF THE 16 BIT POSITIONS
; IT EXECUTES THE BIS INSTRUCTION FOR THE FOLLOWING PAIRS OF
; OPERANDS AND TESTS FOR THE INDICATED RESULT:

;	SOURCE OP	DEST. OP	RESULT
;	000000	000000	000000
;	177777	177777	177777
;	000000	177777	177777
;	177777	000000	177777
;	125252	125252	125252
;	052525	052525	052525
;	125252	052525	177777
;	052525	125252	177777

; THE 8 PAIRS OF NO.S AND THE ANSWERS ARE STORED IN A TABLE TAGGED
; "ORTAB" IN THE FOLLOWING PATTERN:

; ORTAB: NULL
:
: SRC OP1
: DST OP1
: ANS1
: SRC OP2
: DST OP2
: ANS2
: ETC.
:

; WHEN AN ERROR IS REPORTED THE PRINTOUT IN COL. 5-8 HAS THE
; FOLLOWING SIGNIFICANCE:

: COL 5 [R1] = SOURCE OPR
: COL 6 [R2] = DEST OPR
: COL 7 [R3] = WAS ANSWER
: COL 8 [R4] = S / B ANSWER

; AFTER REPORTING THE ERROR THE ROUTINE WILL LOCK ON THE FAILING
; PAIR OF NO.S IF SW09=1 OR GO ON TO TEST THE NEXT PAIR IF SW09=0

```

T1013: MOV #1013,R0 ;LOAD R0 WITH TEST NO.
MOV #ORTAB,R5 ;R5 POINTS TO TABLE OF TEST NO.S
L1013: TST (R5)+ ;POINT TO A SOURCE OPR
CMP #ORTAE+62,R5 ;DONE ALL COMBINATIONS ?
BEQ 01013 ;BR IF YES
MOV (R5)+,R1 ;LOAD THE SRC OP
MOV (R5)+,R3 ;LOAD THE DEST OP
CCC ;SCOPE SYNC

I1013: BIS R1,R3 ;TEST THE "OR"

CMP R3,(R5) ;RESULT CORRECT ?
BEQ L1013 ;BR IF YES - GET THE NEXT PAIR

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064204	012700	C01C13
064210	012705	067772
064214	005725	
064216	022705	070054
064222	001416	
064224	012501	
064226	012503	
064230	000257	
064232	050103	
064234	020315	
064236	001766	

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 649
DBGE28.CMB T1013 ALU "OR" FUNCTION TEST USING BIS INSTRUCTION

28139	064240	011504		MOV	(R5),R4	:GET THE S / B DATA
28140	064242	014502		MOV	-(R5),R2	:GET DEST OP
28141	064244	104000	E1013:	ERROR		:ALU "OR" FAILED
28142	064246	064254		R1013		:ERROR LOOP RETURN
28143						
28144	064250	005725		TST	(R5)+	:CORRECT R5 POINTER
28145	064252	300760		BR	L1013	:GO GET NEXT PAIR
28146						
28147	064254	024545	R1013:	CMP	-(R5),-(R5)	:RESET R5 TO POINT BACK TO BAD GUYS
28148	064256	000756		BR	L1013	:GO REPEAT THE BAD GUYS
28149						
28150	064260	000004	01013:	SCOPE		:CALL SCOPE LOOP UTILITY
28151						
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26158 ; *****
26159 ; .SBTTL T1014 INC / DEC / ADD TEST - CYCLE NO.5 000000-077777
26160 ; *****
26161
26162 ; THIS TEST COMBINES THE INC / DEC / ADD INSTRUCTIONS IN THE FOLLOWING
26163 ; TEST SEQUENCE:
26164
26165 ; 1. BOTH SOURCE AND DEST OPS ARE ZEROED
26166 ; 2. THE TWO NO.S ARE ADDED AND THE RESULT COMPARED WITH 000000
26167 ; 3. THE SOURCE OP IS INCREMENTED
26168 ; 4. THE DEST OP IS DECREMENTED
26169 ; 5. STEPS 2,3, AND 4 ARE REPEATED UNTIL THE SOURCE OP GOES
26170 ; NEGATIVE
26171
26172 ; ON DETECTION OF A NON-ZERO RESULT THE ERROR IS REPORTED AND THEN IF:
26173
26174 ; 1. SW09=0 THE SCOPE LOOP UTILITY IAS CALLED TO REINITIALIZE
26175 ; THE TEST
26176 ; 2. SW09=1 THE ROUTINE LOCKS ON THE FAILING PAIR OF OPERANDS
26177 ; UNTIL THE ERROR GOES AWAY OR SW09 IS RESET
26178
26179 ; THE SIGNIFICANCE OF THE PRINTOUT IN COLUMNS 5 - 8:
26180
26181 ; COLUMN 5 [R1] SOURCE OP
26182 ; COLUMN 6 [R2] DEST OP
26183 ; COLUMN 7 [R3] WAS ANSWER
26184 ; COLUMN 8 [R4] S / B ANSWER (ALWAYS 000000)
26185
26186 064262 012700 001014 T1014: MOV #1014,R0 ;LOAD R0 WITH TEST NO.
26187 064266 005001 CLR R1 ;INITIALIZE REGS TO 000000
26188 064270 005002 CLR R2
26189 064272 005004 CLR R4
26190 064274 010203 R1014: MOV R2,R3 ;LOAD DEST OPERAND
26191 064276 000257 CCC ;SCOPE SYNC
26192
26193 064300 060103 I1014: ADD R1,R3 ;ADD THE TWO TEST NO.S
26194 ;RESULT S / B = 000000
26195
26196 064302 020403 CMP R4,R3 ;RESULT = (000000 ?
26197 064304 001403 BEQ A1014 ;BR IF YES
26198
26199 064306 104000 E1014: ERROR ;INCORRECT RESULT IN R3
26200 064310 064274 R1014 ;ERROR LOOP RETURN
26201
26202 064312 000404 BR 01014 ;GO TO SCOPE EXIT
26203
26204 064314 005201 A1014: INC R1 ;ADD 1 TO SOURCE OP
26205 064316 100402 BMI 01014 ;GET OUT IF IT WENT NEGATIVE
26206 064320 005302 DEC R2 ;SUB 1 FROM THE DEST OP
26207 064322 000764 BR R1014 ;GO ADD THE TWO NO.S
26208
26209 064324 000004 C1014: SCOPE ;CALL SCOPE LOOP UTILITY
    
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: *****
: .SBTTL T1015 INC / DEC / ADD TEST - CYCLE NO.S 077777-000000
: *****

: THIS TEST COMBINES THE INC / DEC / ADD INSTRUCTIONS IN THE FOLLOWING
: TEST SEQUENCE:

- : 1. BOTH SOURCE AND DEST OPS ARE ZEROED
- : 2. THE TWO NO.S ARE ADDED AND THE RESULT COMPARED WITH 000000
- : 3. THE SOURCE OP IS DECREMENTED
- : 4. THE DEST OP IS INCREMENTED
- : 5. STEPS 2,3, AND 4 ARE REPEATED UNTIL THE DEST. OP GOES
: NEGATIVE

: ON DETECTION OF A NON-ZERO RESULT THE ERROR IS REPORTED AND THEN IF:

- : 1. SW09=0 THE SCOPE LOOP UTILITY IAS CALLED TO REINITIALIZE
: THE TEST
- : 2. SW09=1 THE ROUTINE LOCKS ON THE FAILING PAIR OF OPERANDS
: UNTIL THE ERROR GOES AWAY OR SW09 IS RESET

: THE SIGNIFICANCE OF THE PRINTOUT IN COLUMNS 5 - 8:

: COLUMN 5 [R1] SOURCE OP
: COLUMN 6 [R2] DEST OP
: COLUMN 7 [R3] WAS ANSWER
: COLUMN 8 [R4] S / B ANSWER (ALWAYS 000000)

```

T1015: MOV #1015,R0 ;LOAD R0 WITH TEST NO.
        CLR R1 ;INITIALIZE REGS TO 000000
        CLR R2
        CLR R4
R1015: MOV R2,R3 ;LOAD DEST OPERAND
        CCC ;SCOPE SYNC
I1015: ADD R1,R3 ;ADD THE TWO TEST NO.S
        ;RESULT S / B = 000000
        CMP R4,R3 ;RESULT = 000000 ?
        BEQ A1015 ;BR IF YES
E1015: ERROR ;INCORRECT RESULT IN R3
        R1015 ;ERROR LOOP RETURN
        BR 01015 ;GO TO SCOPE EXIT
A1015: INC R2 ;ADD 1 TO DEST. OP
        BMI 01015 ;GET OUT IF IT WENT NEGATIVE
        DEC R1 ;SUB 1 FROM THE SOURCE OP
        BR R1015 ;GO ADD THE TWO NO.S
01015: SCOPE ;CALL SCOPE LOOP UTILITY
064326 012700 001015
064332 005001
064334 005002
064336 005004
064340 010203
064342 000257
064344 060103
064346 020403
064350 001403
064352 104000
064354 064340
064356 000404
064360 005202
064362 100402
064364 005301
064366 000764
064370 000004

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E03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 652
 DBQEAB.CMB T1015 INC / DEC / ADD TEST - CYCLE NO.5 077777-000000

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26263 ; *****
26264 ; .SBTTL END OF PASS SERVICE ROUTINE
26265 ; *****
26266
26267 064272 010037 066706 ENDP5: MOV RO, @#LAST ;SAVE LAST TEST NO. FOR
26268 ;MISSED TEST ERROR CHECK
26269 064376 004737 064564 JSR PC, @#MISS ;GO CHECK FOR MISSED TESTS
26270 064402 005237 066670 15: INC @#PASCNT ;UPDATE THE PASS COUNTER
26271 064406 032737 010000 177570 BIT @#SW12, @#SR ;INHIBIT END PASS PRINTOUT ?
26272 064414 001035 BNE @#S ;BR IF YES
26273 064416 104400 TYPE
26274 064420 067147 EOP1
26275 064422 013702 066670 MOV @#PASCNT, R2 ;CONVERT AND PRINT PASS COUNT
26276 064426 004737 065760 JSR PC, @#OTA
26277 064432 104400 TYPE
26278 064434 067136 DIGITS
26279 064436 104400 TYPE
26280 064440 067176 EOP2
26281 064442 013702 066666 MOV @#ERRCNT, R2 ;CONVERT AND PRINT ERROR COUNT
26282 064446 004737 065760 JSR PC, @#OTA
26283 064452 104400 TYPE
26284 064454 067136 DIGITS
26285 064456 005737 066672 TST @#PFCNT ;ANY POWER FAILS LOGGED THIS PASS?
26286 064462 001410 BEQ @#S ;BR IF NONE
26287 064464 013702 066672 MOV @#PFCNT, R2 ;GET THE PWR FAIL COUNT
26288 064470 004737 065760 JSR PC, @#OTA ;GO CONVERT PFCNT
26289 064474 104400 TYPE
26290 064476 067163 PFMESS
26291 064500 104400 TYPE ;TYPE "PFCNT = NNNNNN
26292 064502 067136 DIGITS
26293 064504 104400 25: TYPE
26294 064506 066726 CRLF
26295 064510 012737 000040 066662 65: MOV @#32, @#ICOUNT
26296 064516 012737 000040 066664 MOV @#32, @#ITCNT
26297 064524 012701 066674 PFRET: MOV @#PRIFLG, R1 ;R1 POINTS TO BEGINNING OF FLAGS
26298 064530 005021 15: CLR (R1)+ ;CLEAR A FLAG
26299 064532 022701 066722 CMP @#ONCE, R1 ;ALL DONE?
26300 064536 001374 BNE @#S ;BR IF NOT
26301 064540 000005 RESET ;CLEAR THE WORLD PRIOR TO RESTART
26302 064542 013702 000042 MOV @#42, R2 ;CHECK FOR XXDP/ACT11 HOOK
26303 064546 001404 BEQ @#DONE1 ;BR IF NO HOOK FOUND
26304 064550 004712 LOGICAL: JSR PC, (R2) ;RETURN TO XXDP OR ACT MONITOR
26305 064552 000240 NOP
26306 064554 000240 NOP
26307 064556 000240 NOP
26308 064560 000137 003034 DONE1: JMP @#BEGIN ;GO RESTART AT THE BEGINNING
  
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26309 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
26310 .SBTTL / / / / / UTILITIES / / / / /
26311 ;XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
26312 .SBTTL
26313 ; *****
26314 .SBTTL SUBROUTINE TO CHECK FOR AND REPORT MISSED TESTS
26315 ; *****
26316
26317 ;THERE IS A BYTE TABLE TAGGED "STABI" THAT IS MAINTAINED BY THE SCOPE
26318 ;LOOP SERVICE ROUTINE. EACH TIME A TEST IN THE "CIT" OR "IEX" SECTION
26319 ;IS ENTERED A CORRESPONDING BYTE IN THE TABLE IS SET TO 377.
26320 ;DURING THE "BIT" SECTION OF THE PROGRAM A "MOVB #377,STABI(RO)"
26321 ;IS USED TO FLAG EACH TEST ENTERED SINCE THE "SCOPE" TRAP HAS NOT BEEN
26322 ;VERIFIED YET.
26323 ;EACH ENTRY INDEX CORRESPONDS TO AN OCTAL TEST #. THE TABLE IS CLEARED
26324 ;UPON ENTRY INTO THE "CIT" SECTION AND MAINTAINED BY THE SCOPE LOOP
26325 ;SERVICE UNTIL END OF PASS SERVICE. THIS ROUTINE IS CALLED THEN TO
26326 ;SCAN THE TABLE AND REPORT ANY MISSED TESTS. THIS ERROR CHECKING CAN
26327 ;BE INHIBITED BY SETTING SW12 TO A"1". THE ERROR PRINTOUT HAS THE
26328 ;FORMAT SHOWN BELOW:
26329
26330
26331 ; MISSED TEST
26332 ; NNN
26333 ; MMM
26334 ; XXX
26335
26336 ; ETC
26337
26338 ; WHERE: THE HEADER IS PRINTED ONLY ONCE AND NNN,MMM,XXX,
26339 ; ETC ARE THE OCTAL NO.S OF THE MISSED TESTS.
26340
26341
26342 064564 032737 010000 177570 MISS: BIT #SW12,@#SR ;INHIBIT MISSED TEST PRINTOUT ?
26343 064572 001044 BNE 5$ ;BR IF YES
26344 064574 032737 020000 177570 BIT #SW13,@#SR ;INHIBIT PRINT ?
26345 064602 001040 BNE 5$ ;BR IF YES
26346 064604 013700 066704 MOV @#FIRST,RO ;USE TEST NO. AS INDEX TO ERROR TABLE
26347 064610 013701 066706 MOV @#LAST,R1 ;USE [R1] TO INDICATE END OF MISSED
26348 ;TEST ERROR TABLE
26349 064614 122760 000377 070162 2$: CMPB #377,STABI(RO) ;WAS TEST FLAG = 377 ?
26350 064622 001424 BEQ 4$ ;BR IF YES - TEST EXECUTED
26351 064624 005737 066710 TST @#MISFLG ;HEADER PRINTED ?
26352 064630 001004 BNE 3$ ;BR IF YES - PRINT ONLY ONCE
26353 064632 104400 TYPE ;GO TYPE "MISSED TESTS"
26354 064634 067477 MISHDR
26355 064636 005137 066710 COM @#MISFLG ;SET FLAG TO PREVENT PRINTING AGAIN
26356 064642 010002 3$: MOV RO,R2 ;GET THE TEST NO.
26357 064644 004737 065760 JSR PC,@#OTA ;GO CONVERT AND PRINT THE NO.
26358 064650 104400 TYPE
26359 064652 067136 DIGITS
26360 064654 104400 TYPE
26361 064656 066726 CRLF
26362 064660 022737 177777 066666 CMP #-1,@#ERRCNT ;MAX ERROR COUNT ??
26363 064666 001402 BEQ 4$ ;BR IF YES
26364 064670 005237 066666 INC @#ERRCNT ;COUNT THE ERROR
    
```


G03

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 654
DBQEAB.CMB SUBROUTINE TO CHECK FOR AND REPORT MISSED TESTS

26365	064674	020001	4\$:	CMP	RO,R1	:DONE ALL TABLE ENTRIES ?
26366	064676	001402		BEQ	5\$:BR IF YES
26367	064700	005200		INC	RO	:INDEX POINTS TO NEXT TEST FLAG
26368	064702	000744		BR	2\$:GO CHECK THE NEXT FLAG
26369	064704	000207	5\$:	RTS	PC	:RETURN TO END OF PASS SERVICE
26370						

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26371 ; *****
26372 ; .SBTTL POWER FAIL SUBROUTINE
26373 ; *****
26374
26375 064706 012737 064746 000024 PDWN: MOV #PUP,2#24 ;SET UP POWER FAIL VECTOR TO GO
26376 064714 012737 000340 C30026 MOV #340,2#26 ;TO PUP ON POWER UP - LEVEL 7
26377 064722 005237 066672 INC 2#PFCNT ;COUNT THE POWER FAIL
26378 064726 022737 177777 066666 CMP #-1,2#ERRCNT ;MAX ERROR COUNT ??
26379 064734 001402 BEQ 1$ ;BR IF YES
26380 064736 005237 066666 INC 2#ERRCNT ;COUNT THE ERROR
26381 064742 000000 1$: HALT ;PWR RESTART SHOULD GO TO "PUP"
26382 064744 000776 BR 1$ ;HANG IF CONTINUE DEPRESSED
26383
26384 064746 012737 000340 177776 PUP: MOV #340,2#PSW ;SET PRIORITY TO LEVEL 7 JUST IN CASE
26385 064754 012706 001000 MOV #BT001,SP ;RESET THE STACK POINTER
26386 064760 005037 067602 CLR 2#MBUF0 ;INIT STALL COUNTER
26387 064764 005337 067602 1$: DEC 2#MBUF0 ;COUNT ONE TIME
26388 064770 001375 BNE 1$ ;BR IF NOT BACK TO 000000
26389 064772 012737 064706 000024 MOV #PDWN,2#24 ;SET UP POWER FAIL VECTOR
26390 065000 012737 000340 000026 MOV #340,2#26 ;PRIORITY LEVEL 7
26391 065006 032737 010000 177570 BIT #SW12,2#SR ;INHIBIT POWER FAIL MESSAGE ?
26392 065014 001002 BNE 2$ ;BR IF YES
26393 065016 104400 TYPE ;GO PRINT POWER MESSAGE
26394 065020 067440 PFMSG
26395 065022 000137 064524 2$: JMP 2#PFRET ;GO CLEANUP AND ATTEMPT RESTART
26396
26397
26398 ; *****
26399 ; .SBTTL "T" BIT SERVICE ROUTINE
26400 ; *****
26401
26402 065026 062716 000004 TBSER: ADD #4,(SP) ;MOVE RETURN PC AROUND ERROR WORDS
26403 065032 042766 000020 000002 BIC #20,2(SP) ;TURN OFF THE "T" BIT
26404 065040 000006 RTT ;RETURN TO THE CALLING TEST
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26406

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; *****
; .SBTTL  RSVD INSTRUCTION TRAP SERVICE ROUTINE
; *****

; THIS ROUTINE SERVICES UNEXPECTED RESERVED INSTRUCTION TRAP ERRORS
; IT RESULTS IN PRINTING THE ERROR MESSAGE: "TRAPPED TO 10 PC=XXXXXX"
; WHERE XXXXXX IS THE ADDRESS CONTAINING THE INSTRUCTION WORD THAT
; SPRUNG THE TRAP. AFTER PRINTING THE ERROR MESSAGE AN ATTEMPT IS
; MADE TO RESTART THE PROGRAM AT THE BEGINNING.

; IF THE TRAP IS SPRUNG WHILE IN THE PROCESS OF TRYING TO SERVICE A
; PREVIOUS RSVD INSTRUCTION TRAP OR AN UNEXPECTED BUS ERROR THE PROGRAM
; WILL HALT. AFTER THE HALT THE STACK WILL CONTAIN INFORMATION RELATIVE
; TO THE TWO SUCCESSIVE TRAPS AS SHOWN BELOW:

;[SP]  PC+2    OF 2ND TRAP
;[SP]+2 PSW
;[SP]+4 PC+2    OF 1ST TRAP
;[SP]+6 PSW

; LOCATION "CATERR" CAN BE EXAMINED TO OBTAIN THE FOLLOWING
; INFORMATION:

; [CATERR]=401  RSVD INSTR TRAP COMBINED WITH A BUS ERROR
;                TRAP (PC AT TIME OF ERROR HALT INDICATES
;                WHICH OCCURRED FIRST)
; [CATERR]=2    TWO SUCCESSIVE BUS ERROR TRAPS
; [CATERR]=1000 TWO SUCCESSIVE RSVD INSTR TRAPS

; THE CONTENTS OF RO (DISPLAYED IN THE DATA LIGHTS) AT THE TIME OF THE
; HALT PROVIDES FURTHER INFORMATION AS TO THE LAST TEST BEING EXECUTED
; WHEN THE TRAPS OCCURRED.

; THESE TWO INSTRUCTIONS ARE USED BY THE BASIC INSTRUCTION
; TESTS TO VERIFY THE RSVD INSTR TRAP MECHANISM PRIOR TO ACTIVATING THE SERVICE
; ROUTINE

RSVTST: COM      RSVFLG      ;SET RSVD INSTR TRAP TEST FLAG
        RTI          ;RETURN TO BASIC TEST

RSERR:  TST       2#CATERR   ;ANY PENDING CATASTROPHIC ERRORS
        BNE       2$         ;BE IF YES
        INCB      2#1+CATERR ;SET RSVD INSTR FLAG
        BIT       #SW12,2#SR ;INHIBIT ERROR PRINT ?
        BNE       1$         ;BR IF YES
        TYPE      ;GO TYPE "TRAPPED TO 10 PC="

        MOV       (SP),R2    ;GET, CONVERT AND PRINT CONTENTS
        TST       -(R2)
        JSR       PC,2#OTA  ;OF THE OC

        TYPE      ;OUTPUT CR / LF
        CRLF
        CMP       #-1,2#ERRCNT ;MAX ERROR COUNT ??

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065042 005167 001644
065046 000002
065050 005737 066720
065054 001032
065056 105237 066721
065062 032737 010000 177570
065070 001020
065072 104400
065074 067520
065076 011602
065100 005742
065102 004737 065760
065106 104400
065110 067136
065112 104400
065114 066726
065116 022737 177777 066666

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 657
 DBQEAB.CMB RSVD INSTRUCTION TRAP SERVICE ROUTINE

26463	065124	001402		BEQ	1\$;BR IF YES
26464	065126	005237	066666	INC	2#ERRCNT	;COUNT THE ERROR
26465	065132	012706	001000	1\$: MOV	#BTOO1 SP	
26466	065136	000137	064524	JMP	2#PFRET	;GO ATTEMPT RESTART
26467	065142	105237	066721	2\$: INCB	2#1+CATERR	;INCREMENT RSVD INSTR FLAG
26468	065146	000000		HALT		;CATASTROPHIC ERROR HALT
26469	065150	000770		BR	1\$;DEPRESSING CONTINUE WILL CAUSE
26470						;ATTEMPT TO RESTART.
26471						

K03

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 658
 DBQEAB.CMB RSVD INSTRUCTION TRAP SERVICE ROUTINE

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; *****
; .SBTTL BUS ERPOP TRAP SERVICE ROUTINE
; *****

; THIS ROUTINE SERVICES UNEXPECTED BUS ERROR TRAPS (BUS TIMEOUT, ODD ADDRESS
; ERRORS, STACK OVERFLOW, AND ILLEGAL INSTRUCTIONS). IT RESULTS IN PRINTING THE
; ERROR MESSAGE: "TRAPPED TO 4 PC =XXXXXX" WHERE XXXXXX IS THE
; CONTENTS OF THE PC WHEN THE TRAP WAS SPRUNG. AFTER PRINTING THE
; ERROR MESSAGE AN ATTEMPT IS MADE TO RESTART THE PROGRAM AT
; THE BEGINNING.

; IF THE TRAP IS SPRUNG WHILE IN THE PROCESS OF TRYING TO SERVICE A PREVIOUS
; RSVD INSTR TRAP OR A PREVIOUS BUS ERPOP, THE PROGRAM WILL HALT.
; AFTER THE HALT THE STACK WILL CONTAIN INFORMATION RELATIVE TO THE
; TWO SUCCESSIVE TRAPS AS SHOWN BELOW:

; [SP] PC+2 OF 2ND TRAP
; [SP]+2 PSW
; [SP]+4 PC+2 OF 1ST TRAP
; [SP]+6 PSW

; LOCATION "CATERR" CAN BE EXAMINED TO OBTAIN THE FOLLOING
; INFORMATION:

; [CATERR]=401 RSVD INSTR TRAP COMBINED WITH A BUS ERROR
; TRAP (PC AT TIME OF ERROR HALT
; INDICATES WHICH OCCURRED FIRST)
; [CATERR]=2 TWO SUCCESSIVE BUS ERRORS
; [CATERR]=1000 TWO SUCCESSIVE RSVD INSTR TRAPS

; THE CONTENTS OF RD (DISPLAYED IN THE DATA LIGHTS) AT THE TIME OF
; THE HALT PROVIDED FURTHER INFORMATION AS TO THE TEST IN PROGRESS
; WHEN THE TRAPS OCCURRED.

; THE CONTENTS OF THE SP CAN BE USED TO INDICATE IF STACK OVERFLOW CAUSED
; THE BUSS ERROR TRAP(S) AS SHOWN BELOW:

; 400>[SP]>336 YELLOW ZONE
; [SP]=0 RED ZONE

; THESE TWO INSTRUCTIONS ARE USED BY THE BASIC INSTRUCTION TESTS TO
; VERIFY THAT THE BUS ERROR TRAP MECHANISM WORKS PRIOR TO ACTIVATING
; THE SERVICE ROUTINE

BETST: COM BERFLG ; SET BUS ERROR TRAP TEST FLAG
RTI ; RETURN TO BASIC TEST

BERR: TST @CATERR ; ANY CATASTROPHIC ERRORS PENDING?
BNE 2$ ; BR IF YES
INCB @CATERR ; SET CATASTROPHIC ERROR FLAG
BIT #SW12,@#SR ; INHIBIT ERROR PRINT
BNE 1$ ; BR IF YES
TYPE ; PRINT "TRAP TO 4" MESSAGE
BEMSG
MOV (SP),R2 ; GET TRAP PC FROM STACK
  
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065152 005167 001536
065156 000002
065160 005737 066720
065164 001031
065166 105237 066720
065172 032737 010000 177570
065200 001017
065202 104400
065204 067452
065206 011602
  
```



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26546 ; *****
26547 ; .SBTTL SCOPE SERVICE ROUTINE
26548 ; *****
26549
26550 ;THIS UTILITY IS CALLED BY AN IOT=SCOPE INSTRUCTION AT THE END
26551 ;OF EACH TEST IN THE COMPREHENSIVE INSTRUCTION TEST AND COM-
26552 ;BINED INSTRUCTION EXERCISER TEST SECTIONS OF THE PROGRAM.
26553 ;IT IS DESIGNED TO IMPLEMENT THE CONSOLE SWITCH OPTIONS DEFINED
26554 ;BELOW:
26555
26556 ; SW14 = 1 LOOP ON CURRENT TEST
26557
26558 ; SW11 = 1 INHIBIT SUB-TEST ITERATIONS
26559
26560 ; SW10 = 1 LOOP ON TEST SELECTED BY SR<09:00>
26561
26562
26563 065260 005137 066702 SCOPEA: COM @#SCOFLG ;THESE TWO ILSTRUCTIONS ARE
26564 065264 000002 RTI ;USED IN THE BASIC TESTS TO
26565 ;VERIFY THE IOT LINKAGE
26566
26567 065266 112760 000377 070162 SCOPEB: MOVB #377,STAB1(RO) ;SET FLAG IN MISSED TEST TABLE
26568 065274 032737 040000 177570 BIT @#SW14,@#SR ;LOOP ON CURRENT TEST ?
26569 065302 001403 BEQ 2$ ;BR IF NO - SW14=0
26570 065304 013716 066654 1$: MOV @#RETURN,(SP) ;SET UP RTN PC ON STK TC LOOP
26571 065310 000002 RTI ;RETURN TO CURRENT TEST
26572 065312 032737 002000 177570 2$: BIT @#SW10,@#SR ;LOOP ON SELECTED TEST ?
26573 065320 001412 BEQ 3$ ;BR IF NO - SW10=0
26574 065322 013737 177570 066700 MOV @#SR,@#SELTST ;GET CONTENTS OF SWITCHES
26575 065330 042737 176000 066700 BIC #176000,@#SELTST ;MASK OUT SR<15:10>
26576 065336 020037 066700 CMP RO,@#SELTST ;IS THIS THE SELECTED TEST ?
26577 065342 001760 BEQ 1$ ;BR IF YES
26578 065344 000407 BR 4$ ;GO EXIT TO NEXT TEST
26579 065346 032737 004000 177570 3$: BIT @#SW11,@#SR ;INHIBIT ITERATIONS ?
26580 065354 001003 BNE 4$ ;BR IF YES - SW11=1
26581 065356 005337 066664 DEC @#ITCNT ;COUNT ONE TIME
26582 065362 001350 BNE 1$ ;BR IF NOT DONE - DO IT AGIN
26583 065364 013737 066662 066664 4$: MOV @#ICOUNT,@#ITCNT ;RESET ITERATION COUNTER
26584 065372 011637 066654 MOV (SP),@#RETURN ;SET UP NEW SCOPE RETURN
26585 065376 000002 RTI ;RETURN TO DO NEXT SEQ. TEST
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; *****
; .SBTTL ERROR SERVICE ROUTINE
; *****

; THIS UTILITY IS CALLED BY AN ERRORX = EMTX INSTRUCTION OF THE
; FOLLOWING FORMAT:

; E'N: ERRORX
; R'N

; WHERE: X REPRESENTS THE CODING OF THE LOW BYTE IN THE EMT
; AND INDICATES THE NO. OF COLUMNS TO BE PRINTED:

; X=0 ALL 8 COLUMNS
; 7 1ST SEVEN COLUMNS
; 6 1ST SIX COLUMNS
; 5 1ST FIVE COLUMNS
; 4 1ST FOUR COLUMNS
; 3 1ST THREE COLUMNS
; 2 1ST TWO COLUMNS
; 1 1ST COLUMN ONLY

; R'N IS THE ADDRESS WHERE CONTROL IS RETURNED AFTER
; THE ERROR SERVICE IF SW09=1 (LOOP ON HARD ERROR).
; IF SWITCH 09 IS RESET CONTROL IS RETURNED TO
; E'N+4.

; IT IS DESIGNED TO SERVICE THE SWITCH OPTIONS DEFINED BELOW:

; SW15=1 HALT ON ERROR - TESTED AFTER
; PRINTING - DEPRESSING CONTINUE RESUMES NORMAL
; EXECUTION

; SW13=1 INHIBIT ALL ERROR PRINTOUTS EXCEPT:
; 1) BELL ON ERROR
; 2) FAULT #
; 3) INTRODUCTORY MESSAGE
; 4) ANY CATASTROPHIC ERROR MESSAGE

; SW09=1 LOCK ON HARD ERRORS

; THIS UTILITY ALSO CALLS THE OTA (OCTAL TO ASCII) AND TYPE (PRINT)
; UTILITIES TO FORMAT AND REPORT THE ERRORS

065400 005137 066676
065404 000002
065406 022737 177777 066666
065414 001402
065416 005237 066665
065422 010246
065424 016602 000002
065430 011237 066656

ERRA: COM @#ERRFLG
RTI
ERRB: CMP #-1,@#ERRCNT
BEQ 1\$
INC @#ERRCNT
1\$: MOV R2, -(SP)
MOV 2(SP), R2
MOV (R2), @#ERRTN

; THESE TWO INSTRUCTIONS ARE USED
; IN THE BASIC TESTS TO VERIFY THE EMT
; ERROR COUNT = 177777 ??
; BR IF YES - FREEZE ERRCNT
; COUNT THIS ERROR
; SAVE R2 ON THE STACK
; GET THE PC+2 OF ERROR CALL
; GET THE ERROR LOOP ADDRESS

26646	065434	014237	066640	MOV	-(R2),2#COLCNT	:GET THE ERROR EMT CALL
26647	065440	042737	177770 066640	BIC	#177770,2#COLCNT	:MASK OUT BITS (15:03)
26648	065446	032737	020000 177570	3\$: BIT	#SW13,2#SR	:INHIBIT ERROR PRINTOUT ?
26649	065454	001103		BNE	6\$:BR IF YES
26650	065456	005737	066716	TST	2#ERFLG1	:ERROR HEADER PRINTED FLAG SET ??
26651	065462	001006		BNE	4\$:BR IF IT IS-PRINTER HEADER ONCE PER PASS
26652	065464	104400		TYPE		:CALL THE TYPE UTILITY
26653	065466	066732		ERHDR1		:ADDR OF ERROR HEADER MSG 1
26654	065470	104400		TYPE		:CALL THE TYPE UTILITY
26655	065472	067034		ERHDR2		:ADDR OF ERROR HEADER MSG2
26656	065474	005137	066716	4\$: COM	2#ERFLG1	:FLAG THAT THE HEADER WAS PRINTED ONCE
26657	065500	104400		TYPE		:START WITH A CR / LF
26658	065502	066726		CRLF		
26659	065504	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN ONE
26660	065510	022737	000001 066640	CMP	#1,2#COLCNT	:WAS IT AN ERROR1 CALL ?
26661	065516	001460		BEQ	5\$:BR IF YES
26662						
26663	065520	016602	000004	MOV	4(SP),R2	:GET THE ERROR PSW
26664	065524	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN TWO
26665	065530	022737	000002 066640	CMP	#2,2#COLCNT	:WAS IT AN ERROR2 CALL ?
26666	065536	001450		BEQ	5\$:BR IF YES
26667						
26668	065540	010602		MOV	SP,R2	:GET THE CONTENTS OF THE SP
26669	065542	005722		TST	(R2)+	:CORRECT IT
26670	065544	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN 3
26671	065550	022737	000003 066640	CMP	#3,2#COLCNT	:WAS IT AN ERROR3 CALL ?
26672	065556	001440		BEQ	5\$:BR IF YES
26673						
26674	065560	010002		MOV	R0,R2	:GET THE TEST # IN R0
26675	065564	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN 4
26676	065566	022737	000004 066640	CMP	#4,2#COLCNT	:WAS IT AN ERROR4 CALL ?
26677	065574	001431		BEQ	5\$:BR IF YES
26678						
26679	065576	010102		MOV	R1,R2	:GET THE COPY OF THE INSTRUCTION
26680	065600	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN 5
26681	065604	022737	000005 066640	CMP	#5,2#COLCNT	:WAS IT AN ERRORS CALL ?
26682	065612	001422		BEQ	5\$:BR IF YES
26683						
26684	065614	012602		MOV	(SP)+,R2	:GET THE ORIGINAL R2 OFF STACK
26685	065616	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN 6
26686	065622	010246		MOV	R2,-(SP)	:MAINTAIN COMPATABILITY
26687	065624	022737	000006 066640	CMP	#6,2#COLCNT	:WAS IT AN ERROR6 CALL ?
26688	065632	001412		BEQ	5\$:BR IF YES
26689						
26690	065634	010302		MOV	R3,R2	:GET THE CONTENTS OF R3
26691	065636	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN 7
26692	065642	022737	000007 066640	CMP	#7,2#COLCNT	:WAS IT AN ERROR7 CALL ?
26693	065650	001403		BEQ	5\$:BR IF YES
26694						
26695	065652	010402		MOV	R4,R2	:GET THE CONTENTS OF R4
26696	065654	004737	065746	JSR	PC,2#8\$:GO OUTPUT COLUMN 8
26697	065660	104400		5\$: TYPE		:CALL THE TYPE UTILITY
26698	065662	066726		CRLF		:ADDRESS OF THE CR / LF MESSAGE
26699	065664	012602		6\$: MOV	(SP)+,R2	:RESTORE THE INTEGRITY OF R2
26700	065666	032737	002000 177570	BIT	#SW10,2#SR	:LOOP ON SELECTED TEST ???
26701	065674	001012		BNE	7\$:BR IF YES - SW09 PART OF TEST NO.

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 663
 DBQEAB.CMB ERROR SERVICE ROUTINE

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26702 065676 032737 001000 177570      BIT      #SW09,2#SR      ;LOOP ON HARD ERRORS ???
26703 065704 001406                      BEQ      7$          ;BR IF NOT - REWARD TO THE FIRST
26704                                     ;MAINTENANCE MAN WHO CALLS THE
26705                                     ;AUTHOR OF THIS PROGRAM IN
26706                                     ;MARLBORO MASS.
26707 065706 013716 066656          MOV      2#ERRTN,(SP) ;PUT ERROR RETURN ADDR ON STACK
26708 065712 042766 000020 000002      BIC      #20,2(SP)   ;CLEAR "T" BIT ON THE STACK IN CASE
26709                                     ;THIS ERROR OCCURRED IN "T" BIT TESTS
26710 065720 000002                      RTI                                     ;RETURN TO LOOP ON THIS ERROR CALL
26711 065722 005737 177570      7$:    TST      2#SR      ;HALT AFTER PRINTING ???
26712 065726 100001                      BPL      .+4         ;BR IF NOT
26713 065730 000000                      HALT                                     ;DEPRESS CONTINUE TO RESUME TEST
26714                                     ;AFTER THE HALT THE ADDRESS DISPLAY
26715                                     ;CONTAINS #(7$+10) AND THE DATA DISP-
26716                                     ;LAY CONTAINS THE NUMBER OF THE FAIL-
26717                                     ;ING TEST
26718 065732 062716 000002          ADD      #2,(SP)     ;MOVE RETURN PC AROUND RN
26719 065736 042766 000020 000002      BIC      #20,2(SP)   ;CLEAR "T" BIT ON STACK IN CASE THIS
26720                                     ;ERROR OCCURRED IN "T" BIT TESTS
26721 065744 000002                      RTI                                     ;RETURN TO INSTRUCTION AFTER ERROR
26722
26723                                     ;CONVERSION AND OUTPUT CALLS
26724
26725 065746 004737 065760      8$:    JSR      PC,2#OTA   ;CONVERT [R2] TO SIX ASCII CHARS.
26726 065752 104400                      TYPE                                     ;CALL THE TYPE UTILITY
26727 065754 067136                      DIGITS                                    ;ADDRESS OF THE ASCII BUFFER
26728 065756 000207                      RTS      PC          ;RETURN TO CALLER ABOVE
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26731

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26732 ; *****
26733 ; .SBTTL OCTAL TO ASCII CONVERSION ROUTINE
26734 ; *****
26735
26736 ; THIS ROUTINE CONVERTS THE 16 BIT OCTAL NUMBER IN R2 TO ITS 6 CHAR.
26737 ; ASCII EQUIVALENT AND STORES THE CHARACTERS IN AN EIGHT CHAR. BUFFER
26738 ; THAT STARTS AT THE ADDRESS TAGGED "DIGITS" - THE 7TH AND 8TH CHAR.
26739 ; POSITIONS ARE LOADED WITH A SPACE CHAR. FOLLOWED BY A ZERO TERMINATOR
26740 ; BYTE - THE ROUTINE IS CALLED VIA A "JSR PC,OTA"
26741
26742 065760 004737 066146 OTA: JSR PC,#SAVR ;GO SAVE THE REGISTERS R0 THRU R5
26743 065764 012704 067136 MOV #DIGITS,R4 ;SET UP R4 TO POINT TO ASCII BUFFER
26744 065770 005003 CLR R3 ;INITIALIZE R3 FOR USE AS INDEX REG.
26745 ; TO ASCII CONVERSION TABLE
26746 065772 010201 MOV R2,R1 ;SAVE ORIGINAL NUMBER IN R1
26747 065774 006302 15: ASL R2 ;MOST SIGNIFICANT BIT GOES INTO "C"
26748 065776 006103 ROL R3 ;R3 CONTAINS THE MOST SIGNIFICANT BIT
26749 066000 012700 000006 MOV #6,R0 ;COUNT SIX DIGITS CONVERSION
26750 066004 000404 BR 3$ ;CONVERT AND LOAD THE 1ST DIGIT
26751 066006 006302 25: ASL R2 ;SHIFT BITS OUT OF R2 INTO "C"
26752 066010 006103 ROL R3 ;SHIFT "C" INTO THE LSB POS. OF R3
26753 066012 005301 DEC R1 ;COUNT ONE BIT SHIFTED
26754 066014 001374 BNE 2$ ;BR UNTIL 3 BITS SHIFTED
26755 066016 012701 000003 35: MOV #3,R1 ;INITIALIZE BIT SHIFT COUNTER
26756 066022 116324 066644 MOVB DIGTAB(R3),(R4)+ ;MOVE CHAR. TO DIGIT BUFFER
26757 066026 005003 CLR R3 ;CLEAR INDEX TO CONVERSION TABLE
26758 066030 005300 DEC R0 ;COUNT ONE CHAR.
26759 066032 001365 BNE 2$ ;BR UNTIL 6 CHARS CONVERTED
26760 066034 004737 066166 JSR PC,#RESTR ;GO RESTORE THE REGS
26761 066040 000207 RTS PC ;RETURN TO CALLER
26762
26763
26764
26765
26766
26767

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26768 ; *****
26769 ; .SBTTL PRINT SUBROUTINE
26770 ; *****
26771 ; THIS ROUTINE IS CALLED TO PRINT ALL ASCII MESSAGES - IT IS CALLED VIA
26772 ; A TYPE = TRAP = 104400 INSTRUCTION AS SHOWN BELOW:
26773
26774 ; TYPE
26775 ; ADDP
26776
26777 ; WHERE "ADDR" IS THE STARTING ADDRESS OF THE MESSAGE BUFFER
26778 ; TO BE PRINTED - THE SUBROUTINE WILL CONTINUE TO PRINT CHAR-
26779 ; ACTERS UNTIL IT FINDS A "000" BYTE TERMINATOR
26780
26781 ; IF FILLER CHARACTERS ARE REQUIRED THE LOCATION TAGGED "FILLS" MUST
26782 ; CONTAIN THE FOLLOWING INFORMATION:
26783
26784 ; FILLS - ODD BYTE = NO. OF FILLERS REQUIRED
26785 ; FILLS - EVEN BYTE = FILLER CHARACTER DESIRED
26786
26787 ; THE DEFAULT VALUE OF FILLS IS 0,0
26788
26789 ; THESE TWO INSTRUCTIONS ARE
26790 066042 005137 066674 PRINA: COM 2#PRIFLG ; USED BY THE BASIC TESTS TO VERIFY
26791 066046 000002 RTI ; THE TRAP INSTRUCTION
26792
26793
26794 066050 010046 PRINT: MOV R0,-(SP) ; SAVE R0 ON THE STACK
26795 066052 017600 000002 MOV 2(SP),R0 ; SET R0 TO POINT TO THE MESSAGE BUFFER
26796 066056 062766 000002 000002 ADD #2,2(SP) ; ADJUST THE RETURN PC TO POINT TO THE
26797 ; INSTRUCTION FOLLOWING THE CALL
26798 066064 112046 1$: MOVB (R0)+,-(SP) ; PUSH CHAR. TO BE TYPED ON THE STACK
26799 ; AND UPDATE THE BUFFER POINTER
26800 066066 001003 BNE 2$ ; BRANCH IF NOT A 000 TERMINATOR
26801 066070 005726 TST (SP)+ ; POP TERMINATOR OFF THE STACK
26802 066072 012600 MOV (SP)+,R0 ; RESTORE THE ORIGINAL R0
26803 066074 000002 RTI ; RETURN TO CALLER
26804 066076 004737 066130 2$: JSR PC,2#5$ ; GO TYPE THE CHARACTER
26805 066102 122726 000012 3$: CMPB #12,(SP)+ ; WAS CHAR TYPED A LINE FEED ?
26806 066106 001366 BNE 1$ ; BRANCH IF NOT
26807 066110 013746 066660 MOV 2#FILLS,-(SP) ; GET THE FILLER COUNT AND CHARACTER
26808 066114 105366 000001 4$: DECB 1(SP) ; COUNT ONE FILLER OUT
26809 066120 002770 BLT 3$ ; BR IF NO MORE FILLERS NEEDED
26810 066122 004737 066130 JSR PC,2#5$ ; GO TYPE THE FILLER
26811 066126 000772 BR 4$ ; GO COUNT AND TEST FILLER COUNT
26812
26813 066130 105737 177564 5$: TSTB 2#XCSR ; OUTPUT DEVICE READY
26814 066134 100375 BPL 5$ ; BRANCH BACK IF NOT READY - NOTE THE
26815 ; PROGRAM WILL HANG HERE IN THE EVENT THAT
26816 ; THE DLI READY LOGIC FAILS DURING RUN
26817 066136 116637 000002 177566 MOVB 2(SP),2#XDBR ; OUTPUT THE CHARACTER
26818 066144 000207 RTS PC ; RETURN TO CALLER
  
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26819 ; *****
26820 ; .SBTTL SAVE REGISTER SUBROUTINE
26821 ; *****
26822
26823 ;THIS ROUTINE IS CALLED BY THE "OTA" UTILITY AND WILL SAVE GENERAL
26824 ;REGISTERS R0 THRU R5 ON THE PROCESSOR STACK
26825
26826 SAVR: MOV R5,-(SP) ;PUSH R5 ON THE STACK
26827 MOV R4,-(SP) ;PUSH R4
26828 MOV R3,-(SP) ;PUSH R3
26829 MOV R2,-(SP) ;PUSH R2
26830 MOV R1,-(SP) ;PUSH R1
26831 MOV R0,-(SP) ;PUSH R0
26832 MOV 14(SP),PC ;RETURN TO THE INSTRUCTION THAT
26833 ;FOLLOWS THE "JSR PC,SAVR" CALL
26834
26835
066146 010546
066150 010446
066152 010346
066154 010246
066156 010146
066160 010046
066162 016607 000014

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26836 ; *****
26837 ; .SBTTL RESTORE REGISTERS SUB-ROUTINE
26838 ; *****
26839
26840 ; THIS ROUTINE COMPLEMENTS THE SAVE REGISTER ROUTINE AND WILL RESTORE
26841 ; GENERAL REGISTERS R0 THRU R5 FROM THE STACK - IT IS CALLED VIA A
26842 ; JSR PC,RESTR.
26843
26844 066166 012666 000014 RESTR: MOV (SP)+,14(SP) ; REPOSITION THE RETURN PC ON THE STACK
26845 066172 012600 MOV (SP)+,R0 ; RESTORE R0 - R5
26846 066174 012601 MOV (SP)+,R1
26847 066176 012602 MOV (SP)+,R2
26848 066200 012603 MOV (SP)+,R3
26849 066202 012604 MOV (SP)+,R4
26850 066204 012605 MOV (SP)+,R5
26851 066206 000207 RTS PC ; RETURN TO THE INSTRUCTION THAT
26852 ; FOLLOWS THE "JSR RESTR" CALL
26853

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26854 ; *****
26855 ; .SBTTL ROUTINES TO CHECK FOR AND FLAG 11/40 OPTIONS
26856 ; *****
26857
26858 066210 005737 066670 TSTOPT: TST 2#PASCNT ;1ST PASS ??
26859 066214 001027 BNE 1$ ;BR IF NOT
26860 066216 005037 066636 CLR 2#OPTION ;CLEAR THE OPTION FLAG WORD
26861 066222 032737 010000 177570 BIT 2$W12,2#SR ;INHIBIT PRINTING ??
26862 066230 001002 BNE .+6 ;BR IF YES
26863 066232 104400 TYPE ;TYPE OPTIONS AVAIL. HEADER
26864 066234 067270 OPT1
26865 066236 004737 066276 JSR PC,2#CHKKT ;GO TEST FOR KT11-D OPTION
26866 066242 004737 066352 JSR PC,2#CHKKJ ;GO TEST FOR KJ11-A OPTION
26867 066246 004737 066426 JSR PC,2#CHKKF ;GO TEST FOR KE11-F OPTION
26868 066252 004737 066504 JSR PC,2#CHKKE ;GO TEST FOR KE11-E OPTION
26869 066256 004737 066562 JSR PC,2#CHKKW ;GO TEST FOR KW11-L OPTION
26870 066262 005737 066636 TST 2#OPTION ;ANY OPTIONS FOUND
26871 066266 001002 BNE 1$ ;BR IF YES
26872 066270 104400 TYPE ;GO TYPE "NONE"
26873 066272 067423 OPT7
26874 066274 000207 1$: RTS PC ;RETURN TO "CIT" START-UP
26875
26876 066276 013704 000004 CHKKT: MOV 2#4,R4 ;SAVE THE TIMEOUT VECTOR
26877 066302 012737 066340 000004 MOV 1$,2#4 ;GO TO 1$ IF TRAP OCCURS
26878 066310 005737 177572 TST 2#177572 ;REFERENCE KT11 SRD
26879 066314 052737 000200 066636 BIS 200,2#OPTION ;SET BIT7 IF KT IS THERE
26880 066322 032737 010000 177570 BIT 2$W12,2#SR ;INHIBIT PRINTING ?
26881 066330 001002 BNE .+6 ;BR IF YES
26882 066332 104400 TYPE ;GO TYPE "KT11-D"
26883 066334 067334 OPT2
26884 066336 000402 BR 2$
26885 066340 062706 000004 1$: ADD 2#4,SP ;FIX UP THE SP
26886 066344 010437 000004 2$: MOV R4,2#4 ;RESTORE THE TIMEOUT VECTOR
26887 066350 000207 RTS PC ;RETURN TO TSTOPT ROUTINE
26888
26889 066352 013704 000004 CHKKT: MOV 2#4,R4 ;SAVE THE TIMEOUT VECTOR
26890 066356 012737 066414 000004 MOV 1$,2#4 ;GO TO 1$ IF TRAP OCCURS
26891 066364 005737 177774 TST 2#177774 ;REFERENCE KJ11 REG.
26892 066370 052737 000004 066636 BIS 2#4,2#OPTION ;SET BIT2 IF KJ IS THERE
26893 066376 032737 010000 177570 BIT 2$W12,2#SR ;INHIBIT PRINTING ?
26894 066404 001002 BNE .+6 ;BR IF YES
26895 066406 104400 TYPE ;GO TYPE "KJ11-A"
26896 066410 067347 OPT3
26897 066412 000402 BR 2$
26898 066414 062706 000004 1$: ADD 2#4,SP ;FIX UP THE SP
26899 066420 010437 000004 2$: MOV R4,2#4 ;RESTORE THE TIMEOUT VECTOR
26900 066424 000207 RTS PC ;RETURN TO TSTOPT ROUTINE
26901
26902 066426 013704 000010 CHKKF: MOV 2#10,R4 ;SAVE THE RSVD INSTR VECTOR
26903 066432 012737 066472 000010 MOV 1$,2#10 ;GO TO 1$ IF TRAP OCCURS
26904 066440 012702 067602 MOV 2#MBUFO,R2 ;SET UP FOR FADD TRY
26905 066444 075002 FADD R2 ;TEST FOR THE KE11-F OPTION
26906 066446 052737 000002 066636 BIS 2#2,2#OPTION ;SET BIT1 IF IT RESPONDS
26907 066454 032737 010000 177570 BIT 2$W12,2#SR ;INHIBIT PRINTING ?
26908 066462 001002 BNE .+6 ;BR IF YES
26909 066464 104400 TYPE ;GO TYPE "KE11-F"

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26910	066466	067362			OPT4			
26911	066470	000402			BR	25		
26912	066472	062706	000004		15: ADD	#4,SP		;FIX UP THE SP
26913	066476	010437	000010		25: MOV	R4,#10		;RESTORE THE RSVD INSTR VECTOR
26914	066502	000207			RTS	PC		;RETURN TO TSTOPT ROUTINE
26915								
26916	066504	013704	000010		CHKKE: MOV	#10,R4		;SAVE THE RSVD INSTR VECTOR
26917	066510	012737	066550	000010	MOV	#15,#10		;GO TO 15 IF TRAP OCCURS
26918	066516	005001			CLR	R1		;SET UP TO TRY ASH INSTR.
26919	066520	005002			CLR	R2		
26920	066522	072201			ASH	R1,R2		;TRY A KE INSTR
26921	066524	052737	000001	066636	BIS	#1,#OPTION		;SET BIT0 IF KE IS THERE
26922	066532	032737	010000	177570	BIT	#SW12,#SR		;INHIBIT PRINTING ?
26923	066540	001002			BNE	+.6		;BR IF YES
26924	066542	104400			TYPE			;GO TYPE "KE11-E"
26925	066544	067375			OPT5			
26926	066546	000402			BR	25		
26927	066550	062706	000004		15: ADD	#4,SP		;FIX UP THE SP
26928	066554	010437	000010		25: MOV	R4,#10		;RESTORE THE RSVD INSTR VECTOR
26929	066560	000207			RTS	PC		;RETURN TO TSTOPT ROUTINE
26930								
26931	066562	013704	000004		CHKKW: MOV	#4,R4		;SAVE THE TIMEOUT VECTOR
26932	066566	012737	066624	000004	MOV	#15,#4		;GO TO 15 IF TRAP OCCURS
26933	066574	005737	177546		TST	#177546		;REFERENCE KW11-L CSR
26934	066600	052737	100000	066636	BIS	#100000,#OPTION		;SET BIT15 IF KW IS THERE
26935	066606	032737	010000	177570	BIT	#SW12,#SR		;INHIBIT PRINTING ?
26936	066614	001002			BNE	+.6		;BR IF YES
26937	066616	104400			TYPE			;GO TYPE "KW11-L"
26938	066620	067410			OPT6			
26939	066622	000402			BR	25		
26940	066624	062706	000004		15: ADD	#4,SP		;FIX UP THE SP
26941	066630	010437	000004		25: MOV	R4,#4		;RESTORE THE TIMEOUT VECTOR
26942	066634	000207			RTS	PC		;RETURN TO TSTOPT ROUTINE
26943								


```

26944 ;FLAGS, CONSTANTS, AND VARIABLES
26945
26946 066636 000000 OPTION: 0 ;SET UP ON ENTRY TO "CIT" SECTION TO
26947 ;SPECIFY OPTIONS INSTALLED:
26948 ;BIT15=1 KW11-L INSTALLED
26949 ;BIT07=1 KT11-D INSTALLED
26950 ;BIT02=1 KJ11-A INSTALLED
26951 ;BIT01=1 KE11-F INSTALLED
26952 ;BIT00=1 KE11-E INSTALLED
26953 066640 000000 COLCNT: 0 ;USED BY ERROR SERVICE TO STORE COLUMN COUNT
26954 066642 000000 BPTLOC: 0 ;STORES 16 USER DEFINED MAINTENANCE
26955 ;BREAKPOINTS
26956 066644 030460 DIGTAB: *01 ;OCTAL TO ASCII CONVERSION TABLE
26957 066646 031462 *23
26958 066650 032464 *45
26959 066652 033466 *67
26960 066654 000000 RETURN: 0 ;USED BY SCOPE TO STORE RETURN ADDRESS
26961 066656 000000 ERRTN: 0 ;USED BY ERROR SERV. TO STORE ERROR RETURN ADDR.
26962 066660 002400 FILLS: 02400 ;STORES FILL CHAR AND FILL COUNT
26963 066662 000001 ICOUNT: 1 ;ITERATION COUNTERS
26964 066664 000001 ITCNT: 1
26965 066666 000000 ERRCNT: 0 ;STORES TOTAL ERROR COUNT
26966 066670 000000 PASCNT: 0 ;STORES TOTAL NO. OF PASSES
26967 066672 000000 PFCNT: 0 ;KEEPS COUNT OF # OF PWRFAILS
26968 066674 000000 PRIFLG: 0 ;FLAG USED BY BASIC TESTS FOR TRAP TEST
26969 066676 000000 ERRFLG: 0 ;FLAG USED BY BASIC TESTS FOR EMT TEST
26970 066700 000000 SELTST: 0 ;STORES SR<8:0> FOR LOOP ON SELECTED TEST
26971 066702 000000 SCOFLG: 0 ;USED BY BASIC TESTS FOR IOT TEST
26972 066704 000000 FIRST: 0 ;CONTAINS FIRST TEST # LOGGED IN MISSED TEST TABLE
26973 066706 000000 LAST: 0 ;CONTAINS LAST TEST # LOGGED IN MISSED TEST TABLE
26974 066710 000000 MISFLG: 0 ;FLAGS MISSED TEST ERROR HEADER PRINTED
26975 066712 000000 RSVFLG: 0 ;FLAG USED BY BASIC TEST OF RSVD INSTR TRAP
26976 066714 000000 BERFLG: 0 ;FLAG USED BY BASIC TEST OF BUS ERROR TRAPS
26977 066716 000000 ERFLG1: 0 ;ALLOWS ONLY 1 ERROR HEADER PER PASS
26978 066720 000000 CATERR: 0 ;FLAGS USED BY BUS ERROR AND RSVD INSTR TRAP
26979 ;SERVICE ROUTINES
26980 066722 000000 ONCE: 0 ;FLAGS PROGRAM TITLE HAS BEEN PRINTED
  
```

```

26981 ;MESSAGE TABLES
26982
26983 .EVEN
26984 066724 000007 BELL: 7
26985 066726 005015 CRLF: 5015
26986 066730 000000 0
26987 066732 ERHDR1:
26988 066732 005015 024040 041520 .ASCIZ <15><12> (PC) (PS) (SP) TEST (IR) DEST WAS S / B '
26989 066740 020051 020040 024040
26990 066746 051520 020051 020040
26991 066754 024040 050123 020051
26992 066762 020040 052040 051505
26993 066770 020124 020040 024040
26994 066776 051111 020051 020040
26995 067004 042040 051505 020124
26996 067012 020040 053440 051501
26997 067020 020040 020040 051440
26998 067026 027440 041040 000040
26999 067034 ERHDR2:
27000 067034 005015 024040 033522 .ASCIZ <15><12>' (R7) (PSW) (R6) (R0) (R1) (R2) (R3) (R4)'<15><12>
27001 067042 020051 020040 024040
27002 067050 051520 024527 020040
27003 067056 024040 033122 020051
27004 067064 020040 024040 030122
27005 067072 020051 020040 024040
27006 067100 030522 020051 020040
27007 067106 024040 031122 020051
27008 067114 020040 024040 031522
27009 067122 020051 020040 024040
27010 067130 032122 006451 000012
27011 067136 030060 030060 030060 DIGITS: .ASCIZ '000000 '
27012 067144 020040 000
27013 067147 015 050012 051501 EOP1: .ASCIZ <15><12>'PASCNT = '
27014 067154 047103 020124 020075
27015 067162 000
27016 067163 040 050040 041506 PFMESS: .ASCIZ ' PFCNT = '
27017 067170 052116 036440 000040
27018 067176 020040 051105 041522 EOP2: .ASCIZ ' ERRCNT = '
27019 067204 052116 036440 000040
27020 067212 005015 041104 042521 IDENT1: .ASCIZ <15><12>'DBQEAB-KD11-A DIAGNOSTIC VERSION 001'<15><12>
27021 067220 026501 020102 020040
27022 067226 042113 030461 040455
27023 067234 042040 040511 047107
27024 067242 051517 044524 020103
27025 067250 020040 042526 051522
27026 067256 047511 020116 030060
27027 067264 006461 000012
27028 067270 005015 042120 030520 OPT1: .ASCIZ <15><12>'PDP11/40 INTERNAL OPTIONS FOUND'<15><12>
27029 067276 027461 030064 044440
27030 067304 052116 051105 040516
27031 067312 020114 050117 044524
27032 067320 047117 020123 047506
27033 067326 047125 006504 000012
27034 067334 005015 052113 030461 OPT2: .ASCIZ <15><12>'KT11-D'<15><12>
27035 067342 042055 005015 000
27036 067347 015 045412 030512 OPT3: .ASCIZ <15><12>'KJ11-A'<15><12>

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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 672
 DBQEAB.CMB ROUTINES TO CHECK FOR AND FLAG 11/40 OPTIONS

27037	067354	026461	006501	000012		
27038	067362	005015	042513	030461	OPT4:	.ASCIZ <15><12>'KE11-F'<15><12>
27039	067370	043055	005015	000		
27040	067375	015	045412	030505	OPT5:	.ASCIZ <15><12>'KE11-E'<15><12>
27041	067402	026461	006505	000012		
27042	067410	005015	053513	030461	OPT6:	.ASCIZ <15><12>'KW11-L'<15><12>
27043	067416	046055	005015	000		
27044	067423	015	047012	047117	OPT7:	.ASCIZ <15><12>'NONE FOUND'
27045	067430	020105	047506	047125		
27046	067436	000104				
27047	067440	005015	047520	042527	PFMSG:	.ASCIZ <15><12>'POWER' <15><12>
27048	067446	006522	000012			
27049	067452	005015	051124	050101	BEMSG:	.ASCIZ <15><12>'TRAPPED TO 4 PC = '
27050	067460	042520	020104	047524		
27051	067466	032040	050040	020103		
27052	067474	020075	000			
27053	067477	015	046412	051511	MISHDR:	.ASCIZ <15><12>'MISSED TESTS'<15><12>
27054	067504	042523	020104	042524		
27055	067512	052123	006523	000012		
27056	067520	005015	051124	050101	RSMSG:	.ASCIZ <15><12>'TRAPPED TO 10 PC = '
27057	067526	042520	020104	047524		
27058	067534	030440	020060	041520		
27059	067542	036440	000040			
27060						.EVEN

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 673
 DBQEAB.CMB ROUTINES TO CHECK FOR AND FLAG 11/40 OPTIONS

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27061 ;COMMON DATA STRUCTURES AND MISCELLANEOUS TABLES
27062
27063 067546 177400 OBUF: 177400 ;DL11 OUTPUT TEST BUFFER
27064 067550 177400 177400
27065 067552 177400 177400
27066 067554 177400 177400
27067
27068 067556 000004 IBUF: .BLKW 4 ;DL11 INPUT TEST BUFFER
27069
27070 067566 067612 ATA: DWTA
27071 067570 070136 DWTB
27072 067572 070152 DBTA
27073 067574 070156 DBTB
27074 067576 067602 MBUFO
27075 067600 067606 MBUF1
27076
27077 067602 000000 MBUFO: 0
27078 067604 000000 0
27079 067606 000000 MBUF1: 0
27080 067610 000000 0
27081 067612 000000 DWTA: 0
27082 067614 177777 -1
27083 067616 177400 177400
27084 067620 000377 377
27085 067622 125252 125252
27086 067624 052525 052525
27087
27088 ;THIS TABLE OF 8 ENTRIES IS USED BY THE ALU ADD TEST IN THE
27089 ;COMBINED INSTRUCTION TESTS
27090
27091 067626 000000 ALUADD: 000000 ;NULL
27092 067630 000000 000000 ;SRC OP1
27093 067632 000000 000000 ;DST OP1
27094 067634 000000 000000 ;ANS1
27095 067636 177777 177777 ;SRC OP2
27096 067640 177777 177777 ;DST OP2
27097 067642 177776 177776 ;ANS2
27098 067644 125252 125252 ;SRC OP3
27099 067646 052525 052525 ;DST OP3
27100 067650 177777 177777 ;ANS3
27101 067652 052525 052525 ;SRC OP4
27102 067654 125252 125252 ;DST OP4
27103 067656 177777 177777 ;ANS4
27104 067660 125252 125252 ;SRC OP5
27105 067662 125252 125252 ;DST OP5
27106 067664 052524 052524 ;ANS5
27107 067666 052525 052525 ;SRC OP6
27108 067670 052525 052525 ;DST OP6
27109 067672 125252 125252 ;ANS6
27110 067674 052525 052525 ;SRC OP7
27111 067676 125253 125253 ;DST OP7
27112 067700 000000 000000 ;ANS7
27113 067702 125253 125253 ;SRC OP8
27114 067704 052525 052525 ;DST OP8
27115 067706 000000 000000 ;ANS8
27116

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27117
27118 ;THIS TABLE OF 8 ENTRIES IS USED BY THE ALU "AND" TESTS IN THE
27119 ;COMBINED INSTRUCTION EXERCISER TESTS
27120
27121 067710 000000 ANDTAB: 000000 ;NULL ENTRY
27122 067712 000000 000000 ;SRC OP1
27123 067714 000000 000000 ;DEST OP1
27124 067716 000000 000000 ;ANS1
27125 067720 177777 177777 ;SRC OP2
27126 067722 177777 177777 ;DST OP2
27127 067724 000000 000000 ;ANS2
27128 067726 000000 000000 ;SRC OP3
27129 067730 177777 177777 ;DST OP3
27130 067732 177777 177777 ;ANS3
27131 067734 177777 177777 ;SRC OP4
27132 067736 000000 000000 ;DST OP4
27133 067740 000000 000000 ;ANS4
27134 067742 125252 125252 ;SRC OP5
27135 067744 125252 125252 ;DST OP5
27136 067746 000000 000000 ;ANS5
27137 067750 052525 052525 ;SRC OP6
27138 067752 052525 052525 ;DST OP6
27139 067754 000000 000000 ;ANS6
27140 067756 125252 125252 ;SRC OP7
27141 067760 052525 052525 ;DST OP7
27142 067762 052525 052525 ;ANS7
27143 067764 052525 052525 ;SRC OP8
27144 067766 125252 125252 ;DST OP8
27145 067770 125252 125252 ;ANS8
27146

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27147 ;THIS TABLE OF 8 ENTRIES IS USED BY THE ALU "OR" TEST IN THE
27148 ;COMBINED INSTRUCTION EXERCISER TEST
27149
27150 067772 000000 ORTAB: 000000 ;NULL ENTRY
27151 067774 000000 000000 ;SRC OP1
27152 067776 000000 000000 ;DEST OP1
27153 070000 000000 000000 ;ANS1
27154 070002 177777 177777 ;SRC OP2
27155 070004 177777 177777 ;DST OP2
27156 070006 177777 177777 ;ANS2
27157 070010 000000 000000 ;SRC OP3
27158 070012 177777 177777 ;DST OP3
27159 070014 177777 177777 ;ANS3
27160 070016 177777 177777 ;SRC OP4
27161 070020 000000 000000 ;DST OP4
27162 070022 177777 177777 ;ANS4
27163 070024 125252 125252 ;SRC OP5
27164 070026 125252 125252 ;DST OP5
27165 070030 125252 125252 ;ANS5
27166 070032 052525 052525 ;SRC OP6
27167 070034 052525 052525 ;DST OP6
27168 070036 052525 052525 ;ANS6
27169 070040 125252 125252 ;SRC OP7
27170 070042 052525 052525 ;DST OP7
27171 070044 177777 177777 ;ANS7
27172 070046 052525 052525 ;SRC OP8

```

27173 070050 125252 125252 ;DST OP8
27174 070052 177777 177777 ;ANS8

: THIS TABLE OF 8 ENTRIES IS USED BY THE ALU SUB TEST IN THE
: COMBINED INSTRUCTION EXERCISER TESTS

27175									
27176									
27177									
27178									
27179									
27180	070054	000000	ALLSUB: 000000						: NULL
27181	070056	000000	000000						: SRC OP1
27182	070060	052030	000000						: DST OP1
27183	070062	000000	000000						: ANS1
27184	070064	177777	177777						: SRC OP2
27185	070066	177777	177777						: DST OP2
27186	070070	000000	000000						: ANS2
27187	070072	125252	125252						: SRC OP3
27188	070074	052525	052525						: DST OP3
27189	070076	125253	125253						: ANS3
27190	070100	052525	052525						: SRC OP4
27191	070102	125252	125252						: DST OP4
27192	070104	052525	052525						: ANS4
27193	070106	125252	125252						: SRC OP5
27194	070110	125252	125252						: DST OP5
27195	070112	000000	000000						: ANS5
27196	070114	052525	052525						: SRC OP6
27197	070116	052525	052525						: DST OP6
27198	070120	000000	000000						: ANS6
27199	070122	052525	052525						: SRC OP7
27200	070124	125253	125253						: DST OP7
27201	070126	052526	052526						: ANS7
27202	070130	125253	125253						: SRC OP8
27203	070132	052525	052525						: DST OP8
27204	070134	125252	125252						: ANS8
27205									

27206	070136	000000	DWTB: 0						
27207	070140	000001	1						
27208	070142	000400	400						
27209	070144	177401	177401						
27210	070146	052526	52526						
27211	070150	125253	125253						

27212			.EVEN						
27213	070152		DBTA:						
27214	070152	000	.BYTE	000,377,252,125					
27215	070155	125							
27216	070156		DBTB:						
27217	070156	000	.BYTE	000,001,120,253					
27218	070161	253							

27219	070162	001022	STAB1:	.BLKB 530.					: RESERVE 530. BYTE TABLE FOR
27220									: LOGGING ANY MISSED TESTS
27221	071204	000000	STAB2:	0					
27222									
27223		000001	.END						

AO127	012110	7449	7455#
AO130	012206	7486	7497#
AO131	012334	7551	7556#
AO132	012412	7580	7591#
AO133	012530	7637	7644#
AO136	012766	7761	7766#
AO140	013156	7843	7849#
AO15	001256	3324	3329#
AO160	014252	8423	8428#
AO162	014354	8500	8505#
AO17	001340	3395	3400#
AO20	001372	3432	3437#
AO21	001422	3468	3473#
AO224	015724	9616	9621#
AO226	016036	9696	9701#
AO23	001512	3539	3544#
AO230	016156	9781	9786#
AO232	016352	9889	9894#
AO234	016504	9975	9980#
AO235	016564	10022	10027#
AO236	016644	10071	10076#
AO237	017006	10146	10151#
AO240	017062	10192	10197#
AO241	017142	10238	10243#
AO242	017222	10284	10289#
AO243	017300	10330	10335#
AO244	017354	10376	10381#
AO245	017434	10422	10427#
AO246	017514	10468	10473#
AO247	017572	10514	10519#
AO250	017652	10560	10565#
AO251	017730	10605	10610#
AO252	020010	10650	10655#
AO253	020066	10695	10700#
AO254	020146	10740	10745#
AO255	020226	10785	10790#
AO256	020306	10830	10835#
AO257	020366	10876	10881#
AO260	020450	10922	10927#
AO261	020530	10968	10973#
AO262	020612	11014	11019#
AO263	020674	11060	11065#
AO264	020750	11102	11107#
AO265	021040	11150	11155#
AO266	021120	11192	11197#
AO267	021212	11240	11245#
AO270	021272	11282	11287#
AO271	021364	11330	11335#
AO272	021440	11371	11376#
AO273	021526	11418	11423#
AO274	021616	11465	11470#
AO275	021674	11509	11514#
AO276	021752	11553	11557#
AO277	022026	11595	11599#
AO300	022106	11638	11642#
AO301	022164	11682	11686#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 679
 DB2EAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

AO302	022242	11725	11729#
AO303	022322	11768	11772#
AO304	022400	11811	11815#
AO305	022460	11854	11858#
AO306	022534	11896	11900#
AO307	022612	11939	11943#
AO310	022672	11982	11986#
AO311	022746	12025	12029#
AO312	023026	12069	12073#
AO313	023106	12113	12117#
AO314	023162	12157	12161#
AO315	023242	12200	12204#
AO316	023320	12243	12247#
AO317	023400	12285	12289#
AO32	001720	3751	3756#
AO320	023456	12328	12332#
AO321	023536	12371	12375#
AO322	023616	12414	12418#
AO323	023674	12456	12460#
AO324	023750	12499	12504#
AO325	024032	12546	12551#
AO326	024112	12591	12595#
AO327	024170	12634	12638#
AO33	001762	3790	3795#
AO330	024264	12684	12688#
AO331	024344	12729	12733#
AO332	024424	12773	12777#
AO333	024506	12817	12821#
AO334	024600	12864	12868#
AO335	024662	12908	12912#
AO336	024740	12951	12955#
AO337	025020	12995	12999#
AO34	002024	3827	3832#
AO340	025102	13039	13043#
AO341	025160	13083	13087#
AO342	025242	13127	13131#
AO343	025324	13171	13175#
AO344	025402	13215	13219#
AO345	025464	13259	13263#
AO346	025544	13303	13307#
AO347	025626	13346	13350#
AO350	025706	13390	13394#
AO351	025770	13434	13438#
AO352	026052	13478	13482#
AO353	026132	13521	13525#
AO354	026214	13566	13571#
AO355	026274	13610	13615#
AO356	026354	13655	13660#
AO357	026434	13699	13704#
AO360	026514	13743	13748#
AO361	026576	13786	13791#
AO363	026730	13866	13871#
AO365	027062	13945	13950#
AO367	027214	14024	14029#
AO371	027346	14105	14110#
AO372	027432	14149	14154#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 680
 DB02EAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

RO373	027506	14190	14195#
RO374	027576	14235	14240#
RO375	027662	14278	14283#
RO376	027740	14320	14325#
RO377	030024	14363	14368#
RO404	030352	14553	14561#
RO405	030444	14599	14607#
RO406	030540	14645	14653#
RO407	030634	14691	14699#
RO411	002172	3982	3987#
RO410	030730	14737	14745#
RO411	031022	14783	14791#
RO412	031114	14829	14837#
RO413	031210	14875	14883#
RO420	031542	15077	15082#
RO421	031622	15122	15127#
RO422	031706	15167	15172#
RO423	031772	15212	15217#
RO424	032050	15257	15262#
RO425	032134	15303	15308#
RO426	032222	15349	15354#
RO427	032310	15395	15400#
RO430	032372	15444	15449#
RO431	032452	15492	15497#
RO432	032536	15540	15545#
RO433	032622	15588	15593#
RO434	032706	15636	15641#
RO435	032770	15682	15687#
RO436	033054	15727	15732#
RO437	033140	15771	15776#
RO440	033224	15816	15821#
RO441	033304	15860	15865#
RO442	033372	15904	15909#
RO443	033462	15949	15954#
RO444	033570	16000	16005#
RO445	033650	16042	16048#
RO446	033732	16085	16091#
RO447	034014	16128	16134#
RO450	034074	16171	16177#
RO453	034306	16295	16300#
RO454	034376	16344	16349#
RO455	034466	16392	16397#
RO456	034556	16441	16446#
RO457	034646	16490	16495#
RO46	002374	4138	4143#
RO460	034750	16545	16550#
RO461	035052	16600	16605#
RO462	035154	16655	16660#
RO463	035260	16710	16715#
RO464	035364	16766	16771#
RO465	035470	16821	16826#
RO466	035574	16877	16882#
RO467	035700	16932	16937#
RO470	036002	16987	16992#
RO471	036104	17042	17047#
RO472	036206	17097	17102#

MAIN. MACY11 27.732) 15-OCT-76 14:58 PAGE 681
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

R0473	036310	17152	17157#
R0474	036414	17208	17213#
R0475	036520	17263	17268#
R0476	036624	17319	17324#
R0477	036732	17375	17380#
R0500	037026	17425	17430#
R0501	037122	17475	17480#
R0502	037216	17525	17530#
R0503	037312	17575	17580#
R0504	037420	17628	17633#
R0505	037514	17678	17683#
R0506	037610	17728	17733#
R0515	040224	17999	18004#
R0516	040306	18046	18051#
R0521	040474	18162	18167#
R0522	040552	18203	18208#
R0524	040702	18285	18291#
R0525	040766	18330	18335#
R0526	041050	18376	18381#
R0527	041134	18421	18426#
R0537	041672	18737	18742#
R0540	041750	18781	18786#
R0541	042034	18825	18830#
R0542	042112	18869	18874#
R0543	042176	18914	18919#
R0544	042274	18963	18968#
R0545	042356	19008	19013#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 687
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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 ERRCNT 066666
 ERRFLG 066676
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10839	10885	10931	10977	11023	11069	11117	11159	11207	11249	11297	11339	11386		
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12555	12599	12648	12692	12737	12781	12825	12872	12916	12959	13003	13047	13091		
13135	13179	13223	13267	13311	13354	13398	13442	13486	13529	13568	13574	13612		
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15397	15404	15446	15452	15494	15500	15542	15548	15590	15596	15638	15644	15691		
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16305	16354	16402	16451	16506	16561	16616	16671	16726	16782	16837	16893	16948		
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 692
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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E1013	064244	26141#			
E10130	012202	7494#	7505		
E10132	012406	7588#	7599		
E1014	064306	26199#			
E10146	013712	8092#			
E1015	064352	26251#			
E10154	001252	3326#			
E10160	014246	8425#			
E10162	014350	8502#			
E1017	001334	3392#	3393	3394	3397#
E1020	001366	3434#			
E1021	001416	3470#			
E10224	015720	9613#	9614	9615	9618#
E10226	016032	9693#	9694	9695	9698#
E1023	001506	3536#	3537	3538	3541#
E10230	016152	9778#	9779	9780	9783#
E10232	016346	9886#	9887	9888	9891#
E10234	016500	9972#	9973	9974	9977#
E10235	016560	10019#	10020	10021	10024#
E10236	016640	10068#	10069	10070	10073#
E10237	017002	10143#	10144	10145	10148#
E10240	017056	10189#	10190	10191	10194#
E10241	017136	10235#	10236	10237	10240#
E10242	017216	10281#	10282	10283	10286#
E10243	017274	10327#	10328	10329	10332#
E10244	017350	10373#	10374	10375	10378#
E10245	017430	10419#	10420	10421	10424#
E10246	017510	10465#	10466	10467	10470#
E10247	017566	10511#	10512	10513	10516#
E10250	017646	10557#	10558	10559	10562#
E10251	017724	10602#	10603	10604	10607#
E10252	020004	10647#	10648	10649	10652#
E10253	020062	10692#	10693	10694	10697#

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 694
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E10254	020142	10737	10738	10739	10742#
E10255	020222	10782	10783	10784	10787#
E10256	020302	10827	10828	10829	10832#
E10257	020362	10873	10874	10875	10878#
E10260	020444	10919	10920	10921	10924#
E10261	020524	10965	10966	10967	10970#
E10262	020606	11011	11012	11013	11016#
E10263	020670	11057	11058	11059	11062#
E10264	020744	11104#			
E10265	021034	11152#			
E10266	021114	11194#			
E10267	021206	11242#			
E10270	021266	11284#			
E10271	021360	11332#			
E10272	021434	11373#			
E10273	021522	11420#			
E10274	021612	11462	11463	11464	11467#
E10275	021670	11506	11507	11508	11511#
E10276	021746	11550	11551	11552	11555#
E10277	022022	11592	11593	11594	11597#
E10300	022102	11635	11636	11637	11640#
E10301	022160	11679	11680	11681	11684#
E10302	022236	11722	11723	11724	11727#
E10303	022316	11765	11766	11767	11770#
E10304	022374	11808	11809	11810	11813#
E10305	022454	11851	11852	11853	11856#
E10306	022530	11893	11894	11895	11898#
E10307	022606	11936	11937	11938	11941#
E10310	022666	11979	11980	11981	11984#
E10311	022742	12022	12023	12024	12027#
E10312	023022	12066	12067	12068	12071#
E10313	023102	12110	12111	12112	12115#
E10314	023156	12154	12155	12156	12159#
E10315	023236	12197	12198	12199	12202#
E10316	023314	12240	12241	12242	12245#
E10317	023374	12282	12283	12284	12287#
E1032	001714	3753#			
E10320	023452	12325	12326	12327	12330#
E10321	023532	12368	12369	12370	12373#
E10322	023612	12411	12412	12413	12416#
E10323	023670	12453	12454	12455	12458#
E10324	023744	12496	12497	12498	12501#
E10325	024026	12543	12544	12545	12548#
E10326	024106	12588	12589	12590	12593#
E10327	024164	12631	12632	12633	12636#
E1033	001756	3792#			
E10330	024260	12681	12682	12683	12686#
E10331	024340	12726	12727	12728	12731#
E10332	024420	12770	12771	12772	12775#
E10333	024502	12814	12815	12816	12819#
E10334	024574	12861	12862	12863	12866#
E10335	024656	12905	12906	12907	12910#
E10336	024734	12948	12949	12950	12953#
E10337	025014	12992	12993	12994	12997#
E1034	002020	3829#			
E10340	025076	13036	13037	13038	13041#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 695
 DBQERB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E10341	025154	13080	13081	13082	13085#
E10342	025236	131	13125	13126	13129#
E10343	025320	13128	13169	13170	13173#
E10344	025376	13212	13213	13214	13217#
E10345	025460	13256	13257	13258	13261#
E10346	025540	13300	13301	13302	13305#
E10347	025622	13343	13344	13345	13348#
E10350	025702	13387	13388	13389	13392#
E10351	025764	13431	13432	13433	13436#
E10352	026046	13475	13476	13477	13480#
E10353	026126	13518	13519	13520	13523#
E10354	026210	13563	13564	13565	13568#
E10355	026270	13607	13608	13609	13612#
E10356	026350	13652	13653	13654	13657#
E10357	026430	13696	13697	13698	13701#
E10360	026510	13740	13741	13742	13745#
E10361	026572	13788#			
E10363	026724	13868#			
E10365	027056	13947#			
E10367	027210	14026#			
E10371	027342	14102	14103	14104	14107#
E10372	027426	14146	14147	14148	14151#
E10373	027502	14192#			
E10374	027572	14237#			
E10375	027656	14280#			
E10376	027734	14322#			
E10377	030020	14365#			
E10404	030342	14557#			
E10405	030434	14603#			
E10406	030530	14649#			
E10407	030624	14695#			
E1041	002166	3984#			
E10410	030720	14741#			
E10411	031012	14787#			
E10412	031104	14833#			
E10413	031200	14879#			
E10420	031536	15074	15075	15076	15079#
E10421	031616	15119	15120	15121	15124#
E10422	031702	15164	15165	15166	15169#
E10423	031766	15209	15210	15211	15214#
E10424	032044	15254	15255	15256	15259#
E10425	032130	15300	15301	15302	15305#
E10426	032216	15346	15347	15348	15351#
E10427	032304	15392	15393	15394	15397#
E10430	032366	15441	15442	15443	15446#
E10431	032446	15489	15490	15491	15494#
E10432	032532	15537	15538	15539	15542#
E10433	032616	15585	15586	15587	15590#
E10434	032702	15633	15634	15635	15638#
E10435	032764	15679	15680	15681	15684#
E10436	033050	15724	15725	15726	15729#
E10437	033134	15768	15769	15770	15773#
E10440	033220	15813	15814	15815	15818#
E10441	033300	15857	15858	15859	15862#
E10442	033366	15901	15902	15903	15906#
E10443	033456	15946	15947	15948	15951#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 696
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E10444	033564	15997	15998	15999	16002#
E10445	033644	16045#			
E10446	033726	16088#			
E10447	034010	16131#			
E10450	034070	16174#			
E10453	034302	16292	16293	16294	16297#
E10454	034372	16341	16342	16343	16346#
E10455	034462	16389	16390	16391	16394#
E10456	034552	16438	16439	16440	16443#
E10457	034642	16487	16488	16489	16492#
E1046	002370	4140#			
E10460	034744	16542	16543	16544	16547#
E10461	035046	16597	16598	16599	16602#
E10462	035150	16652	16653	16654	16657#
E10463	035254	16707	16708	16709	16712#
E10464	035360	16763	16764	16765	16768#
E10465	035464	16818	16819	16820	16823#
E10466	035570	16874	16875	16876	16879#
E10467	035674	16929	16930	16931	16934#
E10470	035776	16984	16985	16986	16989#
E10471	036100	17039	17040	17041	17044#
E10472	036202	17094	17095	17096	17099#
E10473	036304	17149	17150	17151	17154#
E10474	036410	17205	17206	17207	17210#
E10475	036514	17260	17261	17262	17265#
E10476	036620	17316	17317	17318	17321#
E10477	036726	17372	17373	17374	17377#
E10500	037022	17422	17423	17424	17427#
E10501	037116	17472	17473	17474	17477#
E10502	037212	17522	17523	17524	17527#
E10503	037306	17572	17573	17574	17577#
E10504	037414	17625	17626	17627	17630#
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E10506	037604	17725	17726	17727	17730#
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E10524	040676	18288#			
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E10526	041044	18378#			
E10527	041130	18423#			
E10537	041666	18734	18735	18736	18739#
E10540	041744	18778	18779	18780	18783#
E10541	042030	18822	18823	18824	18827#
E10542	042106	18866	18867	18868	18871#
E10543	042172	18911	18912	18913	18916#
E10544	042270	18960	18961	18962	18965#
E10545	042352	19005	19006	19007	19010#
E10546	042434	19050	19051	19052	19055#
E10547	042516	19094	19095	19096	19099#
E10550	042602	19138	19139	19140	19143#
E10551	042662	19183	19184	19185	19188#
E10552	042750	19228	19229	19230	19233#
E10553	043030	19273	19274	19275	19278#
E10554	043116	19318	19319	19320	19323#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 697
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E10555	043204	19363	19364	19365	14368#
E10556	043272	19408	19409	19410	19413#
E10557	043356	19454	19455	19456	19459#
E10560	043442	19499	19500	19501	19504#
E10561	043530	19544	19545	19546	19549#
E10562	043610	19588	19589	19590	19593#
E10563	043700	19633	19634	19635	19638#
E10564	043760	19677	19678	19679	19682#
E10565	044042	19721	19722	19723	19726#
E10566	044124	19765	19766	19767	19770#
E10567	044206	19809	19810	19811	19814#
E10570	044270	19854	19855	19856	19859#
E10571	044356	19899	19900	19901	19904#
E10572	044442	19943	19944	19945	19948#
E10573	044524	19988	19989	19990	19993#
E10574	044622	20034	20035	20036	20039#
E10575	044714	20080	20081	20082	20085#
E10576	045006	20126	20127	20128	20131#
E10577	045100	20172	20173	20174	20177#
E10600	045170	20219	20220	20221	20224#
E10601	045262	20266	20267	20268	20271#
E10602	045352	20312	20313	20314	20317#
E10617	046370	20819#			
E10620	046434	20860#			
E10621	046504	20900#			
E10622	046576	20947#			
E10623	046622	20988#			
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E10625	046764	21086#			
E10626	047052	21138#			
E10627	047116	21179#			
E10630	047204	21230#			
E10631	047262	21276#			
E10632	047336	21322#			
E10633	047412	21368#			
E10634	047476	21419#			
E10635	047562	21468#			
E10636	047640	21509#	21518		
E10637	047716	21553#			
E10640	047764	21591#			
E10641	050034	21631#			
E10642	050104	21672#			
E10643	050164	21718#			
E10644	050254	21766#			
E10645	050336	21807	21810	21812#	
E10646	050410	21848	21851	21853#	
E10650	050542	21947#			
E10655	051002	22131#			
E10656	051110	22189#			
E10657	051222	22248#			
E10660	051326	22302#			
E10661	051424	22355#			
E10662	051562	22427#			
E10666	052154	22563#			
E10670	052402	22645#			
E10671	052516	22696#			

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 698
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E10672	052654	22756#
E10673	053060	22833#
E10714	055706	23440#
E10715	056130	23503#
E10717	056366	23600#
E10720	056506	23654#
E10725	057100	23803#
E10726	057214	23846#
E10727	057330	23890#
E10730	057504	23949#
E10731	057656	24010#
E10732	060030	24069#
E10733	060124	24101#
E10734	060224	24134#
E10740	060532	24292#
E10741	060640	24346#
E10742	060746	24400#
E10743	061064	24455#
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E20013	003420	4496#
E2002	001014	3004#
E20021	003772	4715#
E20022	004042	4755#
E20023	004110	4793#
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E20033	004602	5086#
E20034	004652	5123#
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E20036	004770	5199#
E20037	005044	5238#
E20040	005130	5280#
E20041	005202	5319#
E20046	005520	5502#
E20053	006010	5674#
E20054	006070	5716#
E20056	006222	5792#
E20057	006300	5831#
E20062	006510	5943#
E20063	006564	5984#
E20074	007310	6298#
E20077	007520	6414#
E20100	007606	6460#
E20101	007712	6514#
E20102	010016	6568#
E20103	010120	6622#
E20104	010236	6680#
E20105	010326	6723#
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E20107	010506	6808#
E20110	010574	6850#
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E20112	010752	6935#
E20113	011042	6978#
E20114	011120	7019#
E20115	011176	7060#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 699
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E20116	011274	7111#
E20117	011374	7166#
E20124	011710	7342#
E20125	011752	7377#
E20126	012036	7417#
E20130	012224	7502#
E20132	012430	7596#
E20146	013720	8097#
E2015	001262	3333#
E20160	014270	8434#
E20162	014370	8511#
E2017	001346	3404#
E2020	001376	3440#
E2021	001430	3477#
E20224	015730	9624#
E20226	016044	9705#
E20230	016162	9789#
E20232	016356	9897#
E20234	016510	9983#
E20235	016570	10030#
E20236	016650	10079#
E20237	017012	10154#
E20240	017066	10200#
E20241	017146	10246#
E20242	017226	10292#
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E20244	017360	10384#
E20245	017440	10430#
E20246	017520	10476#
E20247	017576	10522#
E20250	017656	10568#
E20251	017734	10613#
E20252	020014	10658#
E20253	020072	10703#
E20254	020152	10748#
E20255	020232	10793#
E20256	020314	10839#
E20257	020374	10885#
E20260	020456	10931#
E20261	020536	10977#
E20262	020620	11023#
E20263	020702	11069#
E20264	020756	11110#
E20265	021046	11159#
E20266	021126	11200#
E20267	021220	11249#
E20270	021300	11290#
E20271	021372	11339#
E20272	021446	11379#
E20273	021534	11427#
E20274	021622	11473#
E20275	021700	11517#
E20276	021756	11560#
E20277	022032	11602#
E20300	022112	11645#
E20301	022170	11689#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 700
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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E20303	022326	11775#
E20304	022404	11818#
E20305	022464	11861#
E20306	022540	11903#
E20307	022616	11946#
E20310	022676	11989#
E20311	022752	12032#
E20312	023032	12076#
E20313	023112	12120#
E20314	023166	12164#
E20315	023246	12207#
E20316	023324	12250#
E20317	023404	12292#
E2032	001726	3760#
E20320	023462	12335#
E20321	023542	12378#
E20322	023622	12421#
E20323	023700	12463#
E20324	023756	12508#
E20325	024040	12555#
E20326	024120	12599#
E20327	024176	12641#
E2033	001770	3799#
E20330	024272	12692#
E20331	024352	12737#
E20332	024432	12781#
E20333	024514	12825#
E20334	024606	12872#
E20335	024670	12916#
E20336	024746	12959#
E20337	025026	13003#
E2034	002032	3836#
E20340	025110	13047#
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E20342	025250	13135#
E20343	025332	13179#
E20344	025410	13223#
E20345	025472	13267#
E20346	025552	13311#
E20347	025634	13354#
E20350	025714	13398#
E20351	025776	13442#
E20352	026060	13486#
E20353	026140	13529#
E20354	026220	13574#
E20355	026300	13618#
E20356	026360	13663#
E20357	026440	13707#
E20360	026520	13751#
E20361	026604	13795#
E20363	026736	13875#
E20365	027070	13954#
E20367	027222	14033#
E20371	027352	14113#
E20372	027436	14157#

E20373	027514	14198#
E20374	027604	14243#
E20375	027670	14286#
E20376	027746	14328#
E20377	030032	14371#
E20404	030360	14564#
E20405	030452	14610#
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E20407	030642	14702#
E2041	002200	3991#
E20410	030734	14748#
E20411	031026	14794#
E20412	031122	14840#
E20413	031216	14886#
E20420	031546	15085#
E20421	031626	15130#
E20422	031712	15175#
E20423	031776	15220#
E20424	032056	15266#
E20425	032142	15312#
E20426	032230	15358#
E20427	032316	15404#
E20430	032376	15452#
E20431	032456	15500#
E20432	032542	15548#
E20433	032626	15596#
E20434	032712	15644#
E20435	032776	15691#
E20436	033062	15736#
E20437	033146	15780#
E20440	033230	15824#
E20441	033310	15868#
E20442	033376	15912#
E20443	033470	15958#
E20444	033576	16009#
E20445	033656	16051#
E20446	033740	16094#
E20447	034020	16137#
E20450	034102	16180#
E20453	034316	16305#
E20454	034406	16354#
E20455	034476	16402#
E20456	034566	16451#
E20457	034654	16498#
E2046	002402	4146#
E20460	034756	16553#
E20461	035060	16608#
E20462	035162	16663#
E20463	035266	16718#
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E20465	035476	16829#
E20466	035602	16885#
E20467	035704	16940#
E20470	036006	16995#
E20471	036110	17050#
E20472	036212	17105#

.MAYN. MACY11 27(732) 15-OCT-76 14:58 PAGE 702
 082628.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

E20473	036316	17160#
E20474	036422	17216#
E20475	036526	17271#
E20476	036632	17327#
E20477	036742	17385#
E20500	037036	17435#
E20501	037132	17485#
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E20504	037430	17638#
E20505	037524	17688#
E20506	037620	17738#
E20515	040230	18007#
E20516	040312	18054#
E20521	040502	18170#
E20522	040560	18211#
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E20525	040774	18339#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 703
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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I0016	003544	4593#	
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I002	001012	2996	3002#
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I0023	004072	4783#	
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I0075	007344	6326#	
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MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 707
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

I010	001120	3169#	
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I0101	007674	6504#	
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I0103	010102	6612#	
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 708
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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I0166	014510	8631	8636#
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I0174	014716	8825	8833#
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I0177	015014	8924	8929#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 709
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I0262	020574	11002	11009#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 711
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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I0474	036376	17193	17203#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 712
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

I0475	036502	17248	17258#
I0476	036606	17304	17314#
I0477	036712	17360	17370#
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I0501	037102	17460	17470#
I0502	037176	17510	17520#
I0503	037272	17560	17570#
I0504	037400	17610	17623#
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I0506	037570	17713	17723#
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I0510	037714	17799	17806#
I0511	037760	17836	17843#
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I0514	040134	17950	17957#
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I0516	040270	18032	18041#
I0517	040350	18079	18087#
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I0521	040462	18152	18159#
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I0527	041120	18410	18418#
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I0531	041260	18494	18502#
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I0564	043746	19667	19675#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 713
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

I0565	044030	19711	19719#	
I0566	044112	19755	19763#	
I0567	044174	19799	19807#	
I0570	044256	19844	19852#	
I0571	044244	19889	19897#	
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I0573	044516	19978	19986#	
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I0575	044702	20069	20078#	
I0576	044774	20115	20124#	
I0577	045066	20161	20170#	
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I0617	046366	20812	20817#	
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I0622	046554	20940	20945#	
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I0673	053046	22810	22829#	22838
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I0723	056740	23730	23737#	
I0724	057022	23769	23777#	
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I0762	062416	25079	25084	25088#
I0763	062462	25117	25122	25126#
I0764	062522	25153	25157	25161#
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I0766	062622	25224	25228	25232#
I0767	062666	25260	25265	25269#
I0770	062726	25296	25300	25304#
I0771	062772	25333	25338	25342#
I0772	063032	25370	25374	25378#
I0773	063072	25405	25409	25413#
I0774	063132	25440	25444	25448#
I0775	063176	25477	25482	25486#
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I1003	063502	25692	25696	25699#
I1004	063546	25726	25731	25735#
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I1010	064020	25922#		
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I20236	016674	10082	10088#	
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 718
 DB2EAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

00221	015606	9513	9518#
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00227	016110	9739	9744#
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00231	016306	9850	9855#
00232	016362	9895	9900#
00233	016422	9931	9936#
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00236	016736	10105	10110#
00237	017016	10152	10157#
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00243	017310	10336	10341#
00244	017364	10382	10387#
00245	017444	10428	10433#
00246	017524	10474	10479#
00247	017602	10520	10525#
00250	017662	10566	10571#
00251	017740	10611	10616#
00252	020020	10656	10661#
00253	020076	10701	10706#
00254	020156	10746	10751#
00255	020236	10791	10796#
00256	020320	10836	10842#
00257	020400	10882	10888#
00260	020462	10929	10934#
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00262	020624	11020	11026#
00263	020706	11066	11072#
00264	020774	11114	11120#
00265	021052	11156	11162#
00266	021144	11204	11210#
00267	021224	11246	11252#
00270	021316	11294	11300#
00271	021376	11336	11342#
00272	021464	11383	11389#
00273	021540	11424	11430#
00274	021626	11471	11476#
00275	021704	11515	11520#
00276	021762	11558	11563#
00277	022036	11600	11605#
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00301	022174	11687	11692#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 719
 DB2EAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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00315	023252	12205	12210#
00316	023330	12248	12253#
00317	023410	12290	12295#
00320	023466	12333	12338#
00321	023546	12376	12381#
00322	023626	12419	12424#
00323	023704	12461	12466#
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00325	024044	12552	12558#
00326	024124	12596	12602#
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00364	027010	13908	13914#
00365	027074	13951	13957#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 720
 DBQERB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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00404	030364	14562	14567#
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00411	031032	14792	14797#
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00423	032002	15218	15223#
00424	032062	15263	15269#
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00426	032234	15355	15361#
00427	032322	15401	15407#
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00431	032462	15498	15503#
00432	032546	15546	15551#
00433	032632	15594	15599#
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00437	033152	15777	15783#
00440	033234	15822	15827#
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00442	033402	15910	15915#
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00446	033744	16092	16097#
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.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 721
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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00537	041702	18743	18748#
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00615	046274	20747	20753#		
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00655	051052	22150	22158#		
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00657	051262	22262	22270#		
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00665	052062	22526	22533	22539#	
00666	052200	22547	22572#		
00667	052322	22582	22608#		
00670	052436	22659#			
00671	052552	22710#			
00672	052756	22786#			
00673	053162	22863#			
00674	053304	22874	22899#		
00675	053426	22908	22933#		
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00677	053672	22976	23001#		
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00701	054136	23044	23069#		
00702	054252	23101#			
00703	054366	23133#			
00704	054514	23168#			
00705	054630	23200#			
00706	054754	23208	23234#		
00707	055100	23243	23269#		
00710	055216	23302#			
00711	055334	23335#			
00712	055452	23368#			
00713	055570	23401#			
00714	055736	23416	23452#		
00715	056244	23465	23539#		
00716	056310	23564#			
00717	056436	23621#			
00720	056544	23674#			
00721	056624	23699#			
00722	056704	23724#			
00723	056764	23749#			
00724	057046	23787#			
00725	057162	23825	23830#		
00726	057276	23867	23872#		
00727	057446	23912	23931#		
00730	057620	23983	23992#		
00731	057772	24044	24053#		
00732	060056	24083#			
00733	060156	24116#			
00734	060256	24149#			
00735	060334	24186#			
00736	060412	24224#			
00737	060470	24260#			
00740	060570	24307#			

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PRINT 066050
PSW = 177776

PUF 064746
RCSR = 177560
ROBR = 177562
RESTR 066166
RETURN 066654
RSERR 065050
RSMMSG 067520
RSVFLG 066712
RSVTST 065042
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8018	26794*													
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7455	7459*	7489*	7497	7501*	7508*	7515*	7583*	7591	7595*	7602*	7609*	7639*		
7644	7647*	8030*	8388	8392*	8428	8432*	9465	8469*	8535	8509*	22243*	22252		
22297*	22306	22373	22445	22554*	22590*	22606*	22634*	22640	22656*	22685*	22691	22707*		
22748*	22754*	22781*	22825*	22831*	22858*	22881*	22897*	22915*	22931*	22949*	22965*	22983*		
22999*	23017*	23033*	23051*	23067*	23083*	23099*	23115*	23131*	23150*	23166*	23182*	23198*		
23215*	23232*	23250*	23267*	23283*	23300*	23316*	23333*	23349*	23366*	23382*	23399*	23424*		
23434*	23474*	23495*	23533*	26384*										
26375	26384*													
2945*	7835	7968												
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26760	26844*													
8031*	24868*	26570	26584*	26960*										
7766	26448*													
26454	27056*													
7754*	7760*	26445*	26975*											
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2898*	3112*	3137*	3140	3166*	3169*	3199*	3202*	3203*	3229*	3232*	3234*	3258*		
3259*	3262*	3264*	3265*	3291*	3294*	3319*	3322*	3329	3355*	3358*	3386*	3387*		
3390*	3400*	3401*	3425*	3430*	3437*	3461*	3462*	3466*	3473*	3474*	3529*	3531*		
3534*	3544*	3545*	3570*	3571*	3658*	3661	3687*	3690	3715*	3718	3744*	3749		
3756*	3757*	3783*	3788	3795*	3796*	3820*	3825	3832*	3833*	3857*	3858	3861		
3886*	3890	3915*	3919	3944*	3945*	3949	3974*	3975*	3979	3987*	3988*	4013*		
4017*	4019	4043*	4044*	4045	4048*	4050	4075*	4078*	4080	4103*	4107*	4109		
4119*	4120	4131*	4132*	4133*	4134*	4135*	4136*	4181*	4207*	4235*	4260*	4288*		
4317*	4344*	4378*	4411*	4443*	4480*	4517*	4550*	4586*	4621*	4663*	4664*	4666		
4697*	4698*	4737*	4738*	4776*	4777*	4814*	4815*	4860*	4861*	4895*	4896*	4929*		
4930*	4962*	4963*	4996*	4997*	5031*	5032*	5069*	5070*	5106*	5107*	5144*	5145*		
5182*	5183*	5220*	5221*	5260*	5261*	5302*	5303*	5341*	5342*	5380*	5381*	5413*		
5414*	5448*	5449*	5483*	5484*	5523*	5524*	5556*	5557*	5586*	5587*	5620*	5621*		
5654*	5655*	5696*	5697*	5737*	5738*	5772*	5773*	5812*	5813*	5852*	5853*	5885*		
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7788*	7789*	7826*	7827*	7869*	7870*	7905*	7906*	7938*	7939*	7966*	7967*	8051*		
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9378*	9411*	9443*	9475*	9506*	9539*	9571*	9603*	9648*	9683*	9729*	9767*	9841*		
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11092*	11139*	11181*	11229*	11271*	11319*	11361*	11408*	11449*	11495*	11540*	11583*	11625*		
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13933*	13976*	14013*	14055*	14091*	14135*	14179*	14221*	14266*	14309*	14351*	14394*	14430*		
14467*	14504*	14541*	14587*	14633*	14679*	14725*	14771*	14817*	14863*	14910*	14949*	14988*		
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23658	23679*	23687	23704*	23712	23729*	23768*	23777	23793*	23836*	23880*	23937*	23998*
24007	24017	24027	24037	24059*	24089*	24122*	24168*	24206*	24243*	24280*	24290	24331*
24385*	24438*	24494*	24535*	24580*	24624*	24668*	24711*	24755*	24797*	24841*	24897*	24906
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25304	25332*	25369*	25378	25404*	25439*	25476*	25514*	25551*	25587*	25622*	25657*	25691*
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26845*												

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 R0002 003060
 R0003 003076
 R0004 003112
 R0005 003130
 R0006 003152
 R0007 003206
 R0010 003242
 R0011 003300
 R0012 003336
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 R0016 003536
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 R0024 004136
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 R0037 005024
 R0040 005106
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4483#	4491	4497	
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4553#	4563		
4590#	4600		
4625#	4635		
4669#	4678		
4701#	4710	4716	
4741#	4749	4756	
4780#	4788	4794	
4818#	4826	4832	4840
4865#	4875		
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5148#	5156	5162	
5186#	5193	5201	
5225#	5232	5240	
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R0047	005546	5527#	5536			
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R0052	005716	5625#	5634			
R0053	005760	5658#	5669	5675		
R0054	006036	5700#	5711	5717		
R0055	006122	5742#	5752			
R0056	006166	5776#	5787	5793		
R0057	006250	5816#	5826	5832		
R0060	006332	5857#	5866			
R0061	006406	5892#	5901			
R0062	006454	5927#	5938	5944		
R0063	006536	5969#	5978	5985		
R0064	006612	6009#	6018			
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R0067	006760	6108#	6118			
R0070	007026	6142#	6152			
R0071	007076	6176#	6186			
R0072	007140	6211#	6225			
R0073	007222	6251#	6259			
R0074	007262	6284#	6292	6299		
R0075	007336	6323#	6333			
R0076	007404	6358#	6369			
R0077	007472	6399#	6409	6415	6422	
R0100	007560	6446#	6455	6461	6467	6475
R0101	007662	6500#	6509	6515	6521	6529
R0102	007766	6554#	6563	6569	6575	6583
R0103	010072	6608#	6617	6623	6629	6637
R0104	010200	6664#	6675	6681		
R0105	010270	6707#	6718	6724		
R0106	010360	6750#	6761	6767		
R0107	010450	6792#	6803	6809		
R0110	010540	6834#	6845	6851		
R0111	010626	6877#	6888	6894		
R0112	010714	6919#	6930	6936		
R0113	011004	6962#	6973	6979		
R0114	011070	7004#	7014	7020		
R0115	011146	7045#	7055	7061		
R0116	011222	7086#	7099	7106	7112	
R0117	011322	7141#	7154	7161	7167	
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R0122	011554	7262#	7272			
R0123	011626	7297#	7307			
R0124	011666	7330#	7337	7343		
R0125	011730	7366#	7372	7378		
R0126	011772	7401#	7410	7418	7424	
R0127	012066	7447#	7461			
R0130	012146	7485#	7495	7503	7510	7517
R0131	012276	7542#	7554			

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RO133	012502	7636#	7649			
RO134	012576	7679#	7691			
RO135	012650	7715#	7727			
RO136	012742	7753#				
RO137	013036	7794#				
RO140	013126	7834#	7847			
RO141	013214	7873#	7885			
RO142	013264	7909#	7918			
RO143	013324	7942#	7951			
RO145	013654	8053#	8062			
RO146	013706	8088#	8093	8098	8103	8108
RO147	013752	8134#	8140			
RO150	013776	8166#	9169			
RO151	014020	8193#	8199			
RO152	014044	8225#	8230			
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RO154	014112	8290#	8295			
RO155	014134	8321#	8327			
RO156	014160	8353#	8358			
RO157	014202	8384#	8395			
RO160	014242	8421#	8426	8435		
RO161	014306	8461#	8472			
RO162	014344	8498#	8503	8512		
RO163	014406	8538#	8543			
RO164	014430	8569#	8576			
RO165	014456	8600#	8607			
RO166	014504	8633#	8639			
RO167	014530	8665#	8671			
RO170	014554	8697#	8703			
RO171	014600	8729#	8735			
RO172	014624	8761#	8768			
RO173	014652	8794#	8801			
RO174	014712	8830#	8837			
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RO176	014766	8894#	8899			
RO177	015010	8926#	8933			
RO200	015036	8959#	8966			
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RO202	015112	9024#	9030			
RO203	015136	9057#	9063			
RO204	015162	9089#	9095			
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RO206	015232	9154#	9160			
RO207	015256	9186#	9193			
RO210	015304	9219#	9224			
RO211	015326	9250#	9257			
RO212	015354	9283#	9290			
RO213	015402	9315#	9322			
RO214	015430	9348#	9354			
RO215	015454	9381#	9387			
RO216	015500	9414#	9420			
RO217	015524	9446#	9452			
RO220	015550	9478#	9483			
RO221	015572	9509#	9516			
RO222	015620	9542#	9548			

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 729
 DBSERB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

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R0225	015754	9653#	9660	
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R0227	016072	9734#	9742	
R0231	016270	9846#	9853	
R0232	016330	9881#	9892	9898
R0233	016404	9926#	9934	
R0234	016456	9966#	9978	9984
R0235	016536	10013#	10025	10031
R0237	016760	10137#	10149	10155
R0240	017036	10183#	10195	10201
R0241	017114	10229#	10241	10247
R0242	017174	10275#	10287	10293
R0243	017254	10321#	10333	10339
R0244	017330	10367#	10379	10385
R0245	017406	10413#	10425	10431
R0246	017466	10459#	10471	10477
R0247	017546	10505#	10517	10523
R0250	017624	10551#	10563	10569
R0251	017702	10596#	10608	10614
R0252	017762	10641#	10653	10659
R0253	020040	10686#	10698	10704
R0254	020120	10731#	10743	10749
R0255	020200	10776#	10788	10794
R0256	020260	10821#	10833	10840
R0257	020340	10867#	10879	10886
R0260	020422	10913#	10925	10932
R0261	020502	10959#	10971	10978
R0262	020564	11005#	11017	11024
R0263	020646	11051#	11063	11070
R0264	020730	11096#	11105	11111
R0265	021016	11143#	11153	11160
R0266	021100	11186#	11195	11201
R0267	021172	11234#	11243	11250
R0270	021252	11276#	11285	11291
R0271	021344	11324#	11333	11340
R0272	021420	11365#	11374	11380
R0273	021506	11412#	11421	11428
R0274	021572	11456#	11468	11474
R0275	021650	11500#	11512	11518
R0276	021724	11544#	11556	11561
R0277	022002	11587#	11598	11603
R0300	022060	11629#	11641	11646
R0301	022136	11673#	11685	11690
R0302	022214	11716#	11728	11733
R0303	022274	11759#	11771	11776
R0304	022352	11802#	11814	11819
R0305	022432	11845#	11857	11862
R0306	022512	11888#	11899	11904
R0307	022564	11930#	11942	11947
R0310	022644	11973#	11985	11990
R0311	022722	12016#	12028	12033
R0312	023000	12060#	12072	12077
R0313	023060	12104#	12116	12121
R0314	023136	12148#	12160	12165

11118

11208

11298

11387

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 730
 DBQEAR.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

RO315	023214	12191#	12203	12208
RO316	023272	12234#	12246	12251
RO317	023352	12276#	12288	12293
RO320	023430	12319#	12331	12336
RO321	023510	12362#	12374	12379
RO322	023570	12405#	12417	12422
RO323	023650	12447#	12459	12464
RO324	023724	12490#	12502	12509
RO325	024004	12537#	12549	12556
RO326	024064	12582#	12594	12600
RO327	024144	12626#	12637	12642
RO330	024236	12675#	12687	12693
RO331	024316	12720#	12732	12738
RO332	024376	12764#	12776	12782
RO333	024460	12808#	12820	12826
RO334	024552	12855#	12867	12873
RO335	024634	12899#	12911	12917
RO336	024716	12943#	12954	12960
RO337	024772	12986#	12998	13004
RO340	025054	13030#	13042	13048
RO341	025134	13074#	13086	13092
RO342	025214	13118#	13130	13136
RO343	025276	13162#	13174	13180
RO344	025356	13206#	13218	13224
RO345	025436	13250#	13262	13268
RO346	025516	13294#	13306	13312
RO347	025600	13337#	13349	13355
RO350	025660	13381#	13393	13399
RO351	025742	13425#	13437	13443
RO352	026024	13469#	13481	13487
RO353	026106	13512#	13524	13530
RO354	026166	13557#	13569	13575
RO355	026246	13601#	13613	13619
RO356	026326	13646#	13658	13664
RO357	026406	13690#	13702	13708
RO360	026466	13734#	13746	13752
RO361	026552	13779#	13789	13796
RO362	026636	13823#	13834	
RO363	026704	13859#	13869	13876
RO364	026764	13901#	13912	
RO365	027036	13938#	13948	13955
RO366	027122	13981#	13992	
RO367	027170	14017#	14027	14034
RO370	027250	14059#	14070	
RO371	027320	14096#	14108	14114
RO372	027404	14140#	14152	14158
RO373	027464	14183#	14193	14199
RO374	027554	14228#	14238	14244
RO375	027632	14270#	14281	14287
RO376	027716	14313#	14323	14329
RO377	027774	14355#	14366	14372
RO400	030060	14398#	14408	
RO401	030126	14434#	14445	
RO402	030200	14471#	14482	
RO403	030246	14508#	14519	
RO404	030314	14545#	14558	14565

12649

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 731
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

RO405	030406	14591#	14604	14611	
RO406	030500	14637#	14650	14657	
RO407	030574	14683#	14696	14703	
RO410	030670	14729#	14742	14749	
RO411	030762	14775#	14788	14795	
RO412	031054	14821#	14834	14841	
RO413	031150	14867#	14880	14887	
RO414	031244	14914#	14926		
RO415	031320	14953#	14965		
RO416	031374	14992#	15004		
RO417	031446	15031#	15043		
RO420	031516	15068#	15080	15086	
RO421	031576	15113#	15125	15131	
RO422	031660	15158#	15170	15176	
RO423	031744	15203#	15215	1522	
RO424	032024	15248#	15260	15267	
RO425	032106	15294#	15306	15313	
RO426	032174	15340#	15352	15359	
RO427	032262	15386#	15398	15405	
RO430	032342	15434#	15447	15453	
RO431	032422	15482#	15495	15501	
RO432	032504	15530#	15543	15549	
RO433	032570	15578#	15591	15597	
RO434	032654	15626#	15639	15645	
RO435	032744	15673#	15685	15692	
RO436	033026	15718#	15730	15737	
RO437	033114	15763#	15774	15781	
RO440	033200	15807#	15819	15825	
RO441	033260	15851#	15863	15869	
RO442	033342	15895#	15907	15913	
RO443	033430	15939#	15952	15959	
RO444	033534	15989#	16003	16010	
RO445	033624	16035#	16046	16052	
RO446	033704	16078#	16089	16095	
RO447	033766	16121#	16132	16138	
RO450	034046	16164#	16175	16181	
RO451	034130	16208#	16219		
RO452	034202	16246#	16257		
RO453	034260	16285#	16298	16306	
RO454	034350	16334#	16347	16355	
RO455	034436	16381#	16395	16403	
RO456	034526	16430#	16444	16452	
RO457	034620	16480#	16493	16499	16507
RO460	034722	16535#	16548	16554	16562
RO461	035022	16589#	16603	16609	16617
RO462	035124	16644#	16658	16664	16672
RO463	035230	16700#	16713	16719	16727
RO464	035334	16756#	16769	16775	16783
RO465	035436	16810#	16824	16830	16838
RO466	035542	16866#	16880	16886	16894
RO467	035650	16922#	16935	16941	16949
RO470	035752	16977#	16990	16996	17004
RO471	036052	17031#	17045	17051	17059
RO472	036154	17086#	17100	17106	17114
RO473	036260	17142#	17155	17161	17169
RO474	036364	17198#	17211	17217	17225

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 732
 DBQERB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

RO475	036466	17252#	17266	17272	17280
RO476	036572	17308#	17322	17328	17336
RO477	036700	17365#	17378	17386	
RO500	036774	17415#	17428	17436	
RO501	037066	17464#	17478	17486	
RO502	037162	17514#	17528	17536	
RO503	037260	17565#	17578	17586	
RO504	037366	17618#	17631	17639	
RO505	037460	17667#	17681	17689	
RO506	037554	17717#	17731	17739	
RO507	037644	17765#	17776		
RO510	037706	17802#	17813		
RO511	037750	17839#	17850		
RO512	040014	17877#	17888		
RO513	040060	17914#	17925		
RO514	040130	17954#	17964		
RO515	040200	17990#	18002	18008	
RO516	040260	18036#	18049	18055	
RO517	040342	18083#	18093		
RO520	040410	18119#	18128		
RO521	040452	18155#	18165	18171	
RO522	040526	18196#	18206	18212	
RO523	040612	18240#	18250		
RO524	040660	18278#	18289	18295	
RO525	040742	18323#	18333	18340	
RO526	041026	18369#	18379	18386	
RO527	041110	18414#	18424	18431	
RO530	041174	18459#	18470		
RO531	041250	18498#	18509		
RO532	041324	18538#	18549		
RO533	041374	18576#	18587		
RO534	041444	18614#	18625		
RO535	041516	18652#	18663		
RO536	041570	18691#	18702		
RO537	041644	18728#	18740	18746	
RO540	041724	18772#	18784	18790	
RO541	042006	18816#	18828	18834	
RO542	042066	18860#	18872	18876	
RO543	042150	18905#	18917	18924	
RO544	042250	18954#	18966	18972	
RO545	042330	18999#	19011	19017	
RO546	042414	19044#	19056	19062	
RO547	042476	19089#	19100	19106	
RO550	042560	19132#	19144	19151	
RO551	042642	19177#	19189	19196	
RO552	042726	19222#	19234	19241	
RO553	043010	19267#	19279	19286	
RO554	043074	19312#	19324	19331	
RO555	043162	19357#	19369	19376	
RO556	043250	19402#	19414	19421	
RO557	043334	19448#	19460	19467	
RO560	043422	19494#	19505	19512	
RO561	043506	19538#	19550	19556	
RO562	043570	19582#	19594	19600	
RO563	043652	19626#	19639	19645	
RO564	043740	19671#	19683	19689	

R0565	044022	19715#	19727	19733		
R0566	044104	19759#	19771	19777		
R0567	044166	19803#	19815	19821		
R0570	044250	19848#	19860	19866		
R0571	044232	19893#	19905	19911		
R0572	044420	19937#	19949	19956		
R0573	044506	19982#	19994	20001		
R0574	044574	20027#	20040	20047		
R0575	044666	20073#	20086	20093		
R0576	044760	20119#	20132	20139		
R0577	045052	20165#	20178	20185		
R0600	045144	20212#	20225	20232		
R0601	045234	20259#	20272	20279		
R0602	045326	20306#	20318	20325		
R0603	045412	20354#	20364			
R0604	045470	20395#	20406			
R0605	045536	20433#	20445			
R0606	045606	20472#	20484			
R0607	045660	20511#	20523			
R0610	045732	20550#	20562			
R0611	046004	20589#	20601			
R0612	046060	20628#	20640			
R0613	046134	20666#	20677			
R0614	046204	20704#	20715			
R0615	046252	20740#	20751			
R0616	046316	20778#	20790			
R0617	046360	20814#	20820	20829		
R0620	046424	20855#	20861	20870		
R0621	046470	20895#	20901	20910	20916	
R0622	046546	20942#	20948	20957		
R0623	046612	20983#	20989	20998	21004	21008
R0624	046700	21036#	21042	21051	21056	
R0625	046754	21081#	21087	21092	21101	21107
R0626	047042	21133#	21139	21148		
R0627	047106	21174#	21180	21189	21195	21199
R0630	047174	21225#	21231	21240	21245	
R0631	047250	21271#	21277	21286	21290	
R0632	047324	21317#	21323	21332	21336	
R0633	047400	21363#	21369	21373	21382	21388
R0634	047464	21414#	21420	21424	21433	21439
R0635	047552	21463#	21469	21477		
R0636	047620	21502#	21510	21516	21522	
R0637	047706	21548#	21554	21562		
R0640	047754	21586#	21592	21599		
R0641	050022	21625#	21632	21640		
R0642	050072	21666#	21673	21681	21686	
R0643	050152	21712#	21719	21723	21731	
R0644	050242	21760#	21767	21775	21780	
R0645	050322	21806#	21813	21822		
R0646	050374	21847#	21855	21863	21868	
R0647	050454	21896#	21900			
R0650	050506	21930#	21948	21951		
R0651	050566	21975#	21986			
R0652	050624	22012#	22023			
R0653	050662	22049#	22060			
R0654	050720	22086#	22097			

R0655	050760	22123#	22132	22141	22147	22155	
R0656	051066	22181#	22190	22199	22205	22213	
R0657	051174	22239#	22249	22259	22267		
R0660	051276	22293#	22303	22313	22321		
R0661	051406	22348#	22356	22364	22376	22383	22393
R0662	051544	22420#	22428	22436	22448	22455	22465
R0663	051710	22480#	22490				
R0664	052000	22507#	22515				
R0665	052044	22529#	22537				
R0666	052114	22551#	22564				
R0667	052226	22585#	22600				
R0670	052346	22634#	22646	22654			
R0671	052462	22685#	22697	22705			
R0672	052572	22736#	22757	22765	22774	22778	
R0673	052776	22813#	22834	22842	22851	22855	
R0674	053224	22879#	22891				
R0675	053346	22913#	22925				
R0676	053470	22947#	22959				
R0677	053612	22981#	22993				
R0700	053734	23015#	23027				
R0701	054056	23049#	23061				
R0702	054172	23081#	23093				
R0703	054306	23113#	23125				
R0704	054434	23148#	23160				
R0705	054550	23180#	23192				
R0706	054672	23213#	23226				
R0707	055016	23248#	23261				
R0710	055134	23281#	23294				
R0711	055252	23314#	23327				
R0712	055370	23347#	23360				
R0713	055506	23380#	23393				
R0714	055632	23421#	23441	23446			
R0715	056020	23473#	23504	23511	23518	23524	23530
R0716	056266	23553#	23559				
R0717	056324	23589#	23601	23609	23616		
R0720	056456	23645#	23655	23663	23670		
R0721	056564	23683#	23694				
R0722	056644	23708#	23719				
R0723	056724	23733#	23744				
R0724	057000	23771#	23781				
R0732	060014	24063#	24070	24079			
R0733	060112	24095#	24102	24111			
R0734	060212	24128#	24135	24144			
R0735	060272	24171#	24181				
R0736	060350	24209#	24219				
R0737	060426	24246#	24256				
R0740	060504	24283#	24293	24301			
R0741	060604	24334#	24347	24358			
R0742	060710	24388#	24401	24412			
R0743	061026	24443#	24456	24467			
R0744	061162	24499#	24507	24511			
R0745	061252	24543#	24551	24555			
R0746	061336	24587#	24595	24599			
R0747	061424	24631#	24639	24643			
R0750	061512	24675#	24683	24687			
R0751	061600	24718#	24726	24730			

		24244*	24281*	24332*	24386*	24439*	24498*	24500	24509*	24510	24542*	24544	24553*	24554
		24586*	24588	24597*	24598	24630*	24632	24641*	24642	24674*	24676	24685*	24686	24717*
		24719	24728*	24729	24759*	24761	24770*	24771	24802*	24805	24814*	24815	24845*	24847
		24856*	24857	24898*	24933*	24970*	25006*	25042*	25079*	25117*	25153*	25188*	25224*	25260*
		25296*	25333*	25370*	25405*	25440*	25477*	25515*	25552*	25588*	25623*	25658*	25692*	25726*
		25762*	25802*	25843*	25918*	25922	25987*	25991	26060*	26064	26130*	26134	26187*	26193
		26204*	26239*	26245	26258*	26297*	26298*	26299	26347*	26365	26679	26746*	26753*	26755*
		26830	26846*	26918*	26920									
		25590*	25599											
		25625*	25634											
		25660*	25668											
		25694*	25702											
		25728*	25738											
		25767*	25778											
		25804*	25811											
		25845*	25862											
		25930	25935*											
		25999	26004*											
		26072	26077*											
		26142	26147*											
		26190*	26200	26207										
		26242*	26252	26259										
		9772*	9784	9790										
		10062*	10074	10080										
		23797*	23804											
		23840*	23847											
		23884*	23891											
		23942*	23950											
		24003*	24011											
R1000	063330	2900*	4122*	4123*	4124	4132	4345*	4379*	4384	4388	4412*	4417	4421	4445*
R1001	063370	4482*	4518*	4520*	4523*	4525	4528	4551*	4553*	4556*	4558	4561	4588*	4590*
R1002	063430	4595	4598	4623*	4625*	4630	4633	4640*	4642	4667*	4669*	4699*	4701*	4711
R1003	063466	4714	4739*	4741*	4751	4754	4778*	4780*	4783	4790	4816*	4828	4834	4837
R1004	063524	4839*	4862*	4865*	4870	4873	4897*	4899*	4904	4907	4931*	4965*	4966*	4971
R1005	063602	4974	4998*	5001*	5006	5009	5034*	5072*	5108*	5146*	5184*	5188	5195	5198
R1006	063650	5200*	5222*	5234	5237	5239*	5265*	5276	5279	5281*	5304*	5315	5318	5320*
R1007	063722	5355*	5356*	5382*	5415*	5418*	5423	5426	5450*	5452	5458	5461	5486*	5525*
R1010	064042	5527*	5531	5534	5589*	5590*	5593*	5595	5598	5623*	5656*	5659*	5664	5667
R1011	064120	5671	5699*	5701*	5706	5709	5713	5739*	5742*	5747	5750	5774*	5777*	5782
R1012	064176	5785	5814*	5854*	5889*	5925*	5928*	5933	5936	5967*	5970*	5980	5983	6007*
R1013	064254	6010*	6042*	6043*	6075*	6076*	6106*	6108*	6113	6116	6140*	6142*	6147	6150
R1014	064274	6175*	6218*	6219	6220	6223	6249*	6251*	6282*	6284*	6294	6297	6321*	6323*
R1015	064340	6326*	6328	6331	6357*	6359*	6364	6367	6397*	6398	6407	6417	6420	6445*
R10230	016130	6447	6469	6472	6474*	6499*	6523	6526	6528*	6553*	6577	6580	6582*	6607*
R10236	016616	6609	6631	6634	6636*	6661*	6665*	6670	6673	6704*	6708*	6713	6716	6747*
R10725	057066	6751*	6756	6759	6789*	6793*	6798	6801	6831*	6834	6840	6843	6874*	6877
R10726	057202	6883	6886	6916*	6920*	6925	6928	6959*	6963*	6968	6971	7002*	7043*	7089*
R10727	057316	7101	7104	7108	7144*	7156	7159	7163	7191*	7194*	7199	7202	7225*	7228*
R10730	057470	7233	7236	7259*	7262*	7267	7270	7294*	7297*	7302	7305	7412*	7413	7416
R10731	057642	7455*	7456	7459	7497*	7498	7501	7508	7515	7591*	7592	7595	7602	7609
R2	=%000002	7644*	7647	7835*	7838	7839	7840	7841	7845	7871*	7873*	7877	7883	7907*
		7909*	7912	7916	7940*	7942*	7945	7949	7958*	7969	7970	7974*	7977*	7978
		7986	7990*	8388*	8389	8392	8428*	8429	8432	8465*	8466	8469	8505*	8506
		8509	9606*	9652*	9733*	9770*	9772*	9776*	9786	9792*	9794*	9798*	9814	9845*
		9846*	9849*	9880*	9881*	9884*	9894	9925*	9926*	9930*	9965*	10012*	10061*	10062*
		10066*	10076	10083*	10084*	10088*	10104	10136*	10137*	10141*	10151	10181*	10227*	10273*

K09

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 737
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

10319*	10365*	10367*	10371*	10381	10411*	10413*	10427	10457*	10459*	10463*	10473	10503*
10505*	10509*	10519	10549*	10594*	10639*	10684*	10729*	10774*	10819*	10821*	10825*	10835
10838	10865*	10867*	10871*	10881	10884	10911*	10913*	10917*	10927	10930	10957*	10959*
10963*	10973	10976	11003*	11005*	11009*	11019	11022	11049*	11051*	11055*	11065	11068
11094*	11096	11097*	11113	11116	11141*	11143	11144*	11155	11158	11183*	11186	11231*
11234	11273*	11276	11321*	11324	11363*	11365	11366*	11382	11395	11410*	11412	11413*
11423	11426	11454*	11497*	11542*	11585*	11627*	11671*	11714*	11757*	11800*	11843*	11886*
11928*	11971*	12014*	12058*	12102*	12146*	12189*	12232*	12274*	12317*	12360*	12403*	12445*
12488*	12490*	12494	12504	12507	12534*	12537*	12541	12551	12554	12580*	12582*	12586*
12595	12598	12624*	12626*	12629*	12638	12644	12647	12673*	12675*	12679*	12688	12691
12718*	12720*	12724*	12733	12736	12762*	12764*	12768*	12777	12780	12806*	12808*	12812*
12821	12824	12853*	12855*	12859*	12868	12871	12897*	12899*	12903*	12912	12915	12941*
12943*	12946*	12955	12958	12984*	12986*	12990*	12999	13002	13028*	13030*	13034*	13043
13046	13072*	13074*	13078*	13087	13090	13116*	13118*	13122*	13131	13134	13160*	13162*
13166*	13175	13178	13204*	13206*	13210*	13219	13222	13248*	13250*	13254*	13263	13266
13292*	13294*	13298*	13307	13310	13335*	13337*	13341*	13350	13353	13379*	13381*	13385*
13394	13397	13423*	13425*	13429*	13438	13441	13467*	13469*	13473*	13482	13485	13510*
13512*	13516*	13525	13528	13555*	13599*	13644*	13688*	13732*	13776*	13779	13820*	13823
13857*	13859	13860*	13871	13874	13899*	13901	13902*	13907	13910	13935*	13938	13978*
13981	14015*	14017	14018*	14029	14032	14057*	14059	14060*	14065	14068	14093*	14137*
14181*	14226*	14256*	14311*	14353*	14432*	14469*	14472*	14475*	14477	14480	14506*	14509*
14512*	14514	14517	14543*	14546	14547*	14552	14556	14589*	14592	14593*	14598	14602
14635*	14639*	14644	14648	14681*	14685*	14690	14694	14727*	14731*	14736	14740	14745
14773*	14777*	14782	14786	14791	14819*	14823*	14828	14832	14865*	14869*	14874	14878
14912*	14916*	14921	14924	14951*	14955*	14960	14963	14990*	14994*	14999	15002	15029*
15033*	15038	15041	15067*	15112*	15156*	15201*	15247*	15248*	15252*	15262	15265	15293*
15294*	15298*	15308	15311	15339*	15340*	15344*	15354	15357	15385*	15386*	15390*	15400
15403	15432*	15480*	15528*	15576*	15624*	15670*	15673*	15677*	15687	15690	15715*	15718*
15722*	15732	15735	15760*	15763*	15766*	15776	15779	15804*	15848*	15892*	15936*	15940*
15944*	15954	15957	15986*	15990*	15991	16005	16008	16033*	16035	16036*	16041	16044
16076*	16079*	16084	16087	16119*	16122*	16127	16130	16134	16162*	16165*	16170	16173
16206*	16209*	16214	16217	16244*	16247*	16252	16255	16283*	16285	16286*	16300	16304
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16560	16587*	16589	16590*	16591*	16611	16615	16642*	16644	16645*	16646*	16666	16670
16698*	16701*	16721	16725	16754*	16757*	16777	16781	16808*	16811*	16812*	16832	16836
16864*	16867*	16868*	16888	16892	16920*	16923*	16937	16943	16947	16975*	16978*	16992
16998	17002	17029*	17032*	17033*	17047	17053	17057	17084*	17087*	17088*	17102	17108
17112	17140*	17143*	17163	17167	17196*	17199*	17219	17223	17250*	17253*	17254*	17274
17278	17306*	17309*	17310*	17330	17334	17363*	17366*	17380	17384	17413*	17416*	17430
17434	17462*	17465*	17466*	17480	17484	17512*	17515*	17516*	17530	17534	17563*	17566*
17580	17584	17616*	17619*	17633	17637	17665*	17668*	17669*	17683	17687	17715*	17718*
17719*	17733	17737	17763*	17765	17766*	17771	17774	17800*	17802	17803*	17808	17811
17837*	17840*	17845	17848	17875*	17878*	17883	17886	17912*	17915*	17920	17923	17951*
17954*	17959	17962	17987*	18033*	18080*	18116*	18153*	18194*	18237*	18240*	18243*	18245
18248	18275*	18278*	18279	18284	18287	18320*	18323*	18335	18338	18366*	18369*	18375
18381	18384	18411*	18414*	18426	18429	18456*	18459*	18465	18468	18495*	18498*	18504
18507	18535*	18538	18539*	18544	18547	18573*	18576	18577*	18582	18585	18611*	18615*
18620	18623	18649*	18653*	18658	18661	18688*	18692*	18697	18700	18725*	18769*	18813*
18857*	18902*	18922	18951*	18996*	19041*	19086*	19129*	19132*	19136*	19146	19149	19174*
19177*	19181*	19191	19194	19219*	19222*	19226*	19236	19239	19264*	19267*	19271*	19281
19284	19309*	19312*	19316	19326	19329	19354*	19357*	19361	19371	19374	19399*	19402*
19406	19416	19419	19445*	19448*	19452	19462	19465	19491*	19494*	19497	19507	19510
19535*	19579*	19623*	19668*	19712*	19756*	19800*	19845*	19890*	19934*	19937*	19941*	19951
19954	19979*	19982*	19986*	19996	19999	20024*	20028*	20032*	20042	20045	20070*	20074*
20078*	20088	20091	20116*	20120*	20124	20134	20137	20162*	20166*	20170	20180	20183

20209*	20213*	20217	20227	20230	20256*	20260*	20264	20274	20277	20303*	20307*	20310
20320	20323	20352*	20393*	20396*	20399*	20401	20404	20431*	20434*	20435	20440	20443
20470*	20473*	20479	20482	20509*	20513*	20518	20521	20548*	20552*	20557	20560	20587*
20591*	20596	20599	20626*	20630*	20635	20638	20664*	20666	20667*	20672	20675	20701*
20705*	20710	20713	20738*	20740	20741*	20746	20749	20776*	20780*	20785	20788	20814*
20817	20855*	20858	20895*	20898	20912	20942*	20945	20983*	20996	21000	21036*	21039
21081*	21084	21103	21133*	21136	21174*	21177	21191	21225*	21228	21271*	21274	21317*
21320	21363*	21366	21414*	21417	21463*	21466	21502*	21507	21548*	21551	21526*	21589
21626*	21629	21667*	21670	21713*	21716	21761*	21764	21807*	21810	21848*	21851	21896*
21904*	21930*	21938*	21944	21975*	21978*	22012*	22015*	22049*	22052*	22086*	22089*	22373*
22380*	22390*	22445*	22452*	22462*	22479*	22484	22505*	22509	22513	22527*	22531	22535
22549*	22557*	22559	22562	22569*	22584*	22589*	22593*	22598*	22602*	22633*	22635*	22641
22644*	22657*	22684*	22686*	22692	22695*	22708*	22735*	22739*	22742	22750*	22755*	22760*
22782*	22812*	22816*	22819	22827*	22832*	22837*	22859*	22876*	22884*	22889*	22893*	22910*
22918*	22923*	22927*	22944*	22952*	22957*	22961*	22978*	22986*	22991*	22995*	23012*	23020*
23025*	23029*	23046*	23054*	23059*	23063*	23078*	23086*	23091*	23095*	23110*	23118*	23123*
23127*	23145*	23153*	23158*	23162*	23177*	23185*	23190*	23134*	23210*	23218*	23224*	23228*
23245*	23253*	23259*	23263*	23278*	23286*	23292*	23296*	23311*	23319*	23325*	23329*	23344*
23352*	23358*	23362*	23377*	23385*	23391*	23395*	23417*	23425*	23426*	23427	23437*	23444*
23466*	23486*	23487*	23488	23499*	23516*	23521*	23527*	23644*	23658	23774*	23777*	23794*
23797	23815	23837*	23840	23857	23881*	23884	23902	23940*	23943	23953	23963	23973
24001*	24004	24014	24024	24034	24174*	24177	24212*	24215	24248*	24252	24936*	24942*
24973*	24979*	25014*	25050*	25088*	25126*	25161*	25262*	25269*	25554*	25561	25928*	25997*
26070*	26140*	26188*	26190	26206*	26240*	26242	26256*	26275*	26281*	26287*	26302*	26304
26356*	26455*	26456	26527*	26643	26644*	26645	26646	26663*	26668*	26669	26674*	26679*
26684*	26686	26690*	26695*	26699*	26746	26747*	26751*	26829	26847*	26904*	26905*	26919*
26920*												
9787	9792*	9806	9812	9818								
10077	10082*	10096	10102	10108								
23806*	23813											
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23893*	23900											
23952*	23960											
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2901*	4124*	4125*	4126	4133	4349*	4352*	4354	4388*	4421*	4446*	4449	4456
4483*	4486	4493	4528*	4561*	4598*	4633*	4665*	4666*	4714*	4754*	4837*	4873*
4907*	4933*	4936*	4938	4974*	5009*	5035*	5038*	5045	5073*	5076*	5083	5110*
5113*	5120	5148*	5151*	5158	5198*	5224*	5227	5237*	5279*	5318*	5354*	5384*
5387*	5389	5417*	5421*	5426*	5452*	5453*	5456*	5461*	5488*	5491*	5493	5534*
5598*	5625*	5628*	5630	5667*	5709*	5750*	5785*	5817*	5820*	5822	5857*	5860*
5862	5892*	5895*	5897	5936*	5983*	6116*	6150*	6176*	6177*	6180*	6182	6223*
6297*	6331*	6367*	6407*	6420*	6447*	6450	6457	6472*	6501*	6504	6511	6526*
6555*	6558	6565	6580*	6609*	6612	6619	6634*	6662*	6668*	6673*	6705*	6711*
6716*	6748*	6754*	6759*	6790*	6796*	6801*	6834*	6835*	6838*	6843*	6847	6877*
6878*	6881*	6886*	6890	6919*	6923*	6928*	6932	6962*	6966*	6971*	6975	7005*
7008*	7010	7046*	7049*	7051	7087*	7093	7095	7104*	7142*	7148	7150	7159*
7202*	7236*	7270*	7305*	7883*	7916*	7949*	7971*	7986*	7992*	7995	8001*	8003*
9607*	9611*	9621	9653*	9656*	9687*	9688*	9691*	9701	9734*	9738*	9966*	9970*
9980	10013*	10017*	10027	10183*	10187*	10197	10229*	10233*	10243	10275*	10279*	10289
10321*	10325*	10335	10551*	10555*	10565	10596*	10600*	10610	10641*	10645*	10655	10686*
10690*	10700	10731*	10735*	10745	10776*	10780*	10790	10838*	10884*	10930*	10976*	11022*
11068*	11096*	11100*	11107	11116*	11143*	11148*	11158*	11186*	11190*	11197	11206*	11234*
11238*	11248*	11276*	11280*	11287	11296*	11324*	11328*	11338*	11365*	11369*	11376	11385*
11412*	11416*	11426*	11456*	11460	11470	11500*	11504	11514	11544*	11548*	11557	11587*
11590*	11599	11629*	11633*	11642	11673*	11677*	11686	11716*	11720*	11729	11759*	11763*
11772	11802*	11806*	11815	11845*	11849*	11858	11888*	11891*	11900	11930*	11934*	11943

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12152*	12161	12191*	12195*	12204	12234*	12238*	12247	12276*	12280*	12289	12319*	12323*		
12332	12362*	12366*	12375	12405*	12409*	12418	12447*	12451*	12460	12507*	12554*	1259E*		
12647*	12691*	12736*	12780*	12824*	12871*	12915*	12958*	13002*	13046*	13090*	13134*	13178*		
13222*	13266*	13310*	13353*	13397*	13441*	13485*	13528*	13557*	13561*	13571	13601*	13605*		
13615	13646*	13650*	13660	13690*	13694*	13704	13734*	13738*	13748	13779*	13783*	13785		
13794*	13823*	13827*	13832*	13859*	13863*	13865	13874*	13901*	13905*	13910*	13938*	13942*		
13944	13953*	13981*	13985*	13990*	14017*	14021*	14023	14032*	14059*	14063*	14068*	14096*		
14100*	14110	14140*	14144*	14154	14184*	14187*	14189	14229*	14232*	14234	14272*	14275*		
14314*	14317*	14319	14357*	14360*	14396*	14399*	14402*	14404	14436*	14439*	14441	14480*		
14517*	14546*	14550*	14555	14556*	14560*	14561	14592*	14596*	14601	14602*	14606*	14607		
14638*	14642*	14647	14648*	14652*	14653	14684*	14688*	14693	14694*	14698*	14699	14730*		
14734*	14739	14740*	14744*	14745	14776*	14780*	14785	14786*	14790*	14791	14822*	14826*		
14831	14832*	14836*	14837	14868*	14872*	14877	14878*	14882*	14883	14915*	14919*	14924*		
14954*	14958*	14963*	14993*	14997*	15002*	15032*	15036*	15041*	15068*	15072*	15082	15113*		
15117*	15127	15158*	15162*	15172	15203*	15207*	15217	15265*	15311*	15357*	15403*	15434*		
15435	15439*	15449	15482*	15483	15487*	15497	15530*	15535*	15545	15578*	15583*	15593		
15626*	15631*	15641	15690*	15735*	15779*	15807*	15811*	15821	15851*	15855*	15865	15895*		
15899*	15909	15957*	15991*	15995*	16008*	16044*	16087*	16130*	16173*	16217*	16255*	16285*		
16290*	16303*	16304*	16334*	16339*	16352*	16353*	16381*	16387*	16400*	16401*	16430*	16436*		
16449*	16450*	16480*	16485*	16495	16504*	16505*	16535*	16540*	16550	16559*	16560*	16589*		
16595*	16605	16614*	16615*	16644*	16650*	16660	16669*	16670*	16700*	16705*	16715	16724*		
16725*	16756*	16761*	16771	16780*	16781*	16810*	16816*	16826	16835*	16836*	16866*	16872*		
16882	16891*	16892*	16922*	16927*	16937	16946*	16947*	16977*	16982*	16992	17001*	17002*		
17031*	17037*	17047	17056*	17057*	17086*	17092*	17102	17111*	17112*	17142*	17147*	17157		
17166*	17167*	17198*	17203*	17213	17222*	17223*	17252*	17258*	17268	17277*	17278*	17308*		
17314*	17324	17333*	17334*	17365*	17370*	17383*	17384*	17415*	17420*	17433*	17434*	17464*		
17470*	17483*	17484*	17514*	17520*	17533*	17534*	17565*	17570*	17583*	17584*	17618*	17623*		
17636*	17637*	17667*	17673*	17686*	17687*	17717*	17723*	17736*	17737*	17774*	17811*	17848*		
17886*	17923*	17962*	17990*	17994*	18004	18036*	18037*	18041*	18051	18083*	18084*	18087*		
18089	18119*	18122*	18124	18156*	18159*	18161	18197*	18200*	18202	18248*	18279*	18282*		
18287*	18291	18324*	18327*	18329	18338*	18370*	18373*	18375	18384*	18415*	18418*	18420		
18429*	18460*	18463*	18468*	18499*	18502*	18507*	18537*	18542	18547*	18575*	18580	18585*		
18613*	18618	18623*	18651*	18656	18661*	18690*	18695	18700*	18728*	18732*	18742	18772*		
18776*	18786	18816*	18820*	18830	18860*	18864*	18874	18905*	18909	18919	18922*	18954*		
18958	18968	18999*	19003	19013	19044*	19048	19058	19089*	19092	19102	19149*	19194*		
19239*	19284*	19329*	19374*	19419*	19465*	19510*	19538*	19542*	19552	19582*	19586*	19596		
19626*	19631*	19641	19671*	19675*	19685	19715*	19719	19729	19759*	19763	19773	19803*		
19807	19817	19848*	19852	19862	19893*	19897	19907	19954*	19999*	20045*	20091*	20137*		
20183*	20230*	20277*	20323*	20355*	20358*	20360	20404*	20435*	20438*	20443*	20474*	20477*		
20482*	20512*	20516*	20521*	20551*	20555*	20560*	20590*	20594*	20599*	20629*	20633*	20638*		
20666*	20670*	20675*	20704*	20708*	20713*	20740*	20744*	20749*	20779*	20783*	20788*	22125*		
22129*	22143	22153*	22183*	22187*	22201	22211*	22252*	22253	22265*	22306*	22307	22319*		
22347*	22349	22387	22419*	22421	22459	22513*	22535*	22562*	22562*	22703*	22740*	22744*		
22772*	22817*	22821*	22849*	23423*	23436*	23438	23467*	23478*	23479	23498*	23515*	23522*		
23528*	23590*	23618	23923*	24177*	24344*	24355*	24398*	24409*	24453*	24464*	25082*	25088		
25196	25232	25304*	25335*	25342	25378*	25413*	25448*	25479*	25486*	25517*	25524*	25768*		
25775*	25805*	25814*	25919*	25922*	25924	25988*	25991*	25993	26061*	26064*	26066	26131*		
26134*	26136	26190*	26193*	26196	26242*	26245*	26248	26690	26744*	26748*	26752*	26756		
26757*	26828	26848*												
23815#	23822													
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R4	=%000004	2902#	4126*	4127*	4128	4134	4347*	4354	4380*	4384	4413*	4417	4444*	4446

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4456	4481*	4483	4493	4519*	4523	4525	4552*	4558	4587*	4595	4622*	4630
4668*	4669	4700*	4701	4711	4740*	4751	4779*	4817*	4834	4839	4863*	4864*
4870	4898*	4904	4932*	4964*	4971	4999*	5006	5033*	5045	5071*	5083	5109*
5120	5147*	5158	5185*	5195	5200	5223*	5234	5239	5266*	5276	5281	5305*
5315	5320	5344*	5351	5383*	5389	5416*	5423	5451*	5458	5485*	5493	5526*
5531	5588*	5595	5622*	5630	5657*	5662	5664	5698*	5706	5740*	5747	5775*
5782	5815*	5822	5855*	5862	5887*	5888*	5897	5924*	5926	5933	5968*	5969
5970	5980	6008*	6010	6041*	6043	6074*	6107*	6113	6141*	6147	6174*	6182
6209*	6220	6250*	6251	6283*	6294	6322*	6328	6356*	6364	6395*	6400	6417
6444*	6469	6474	6498*	6523	6528	6552*	6577	6582	6606*	6631	6636	6663*
6670	6706*	6713	6749*	6756	6791*	6798	6832*	6840	6875*	6883	6917*	6925
6960*	6968	7003*	7010	7044*	7051	7085*	7101	7140*	7156	7192*	7199	7226*
7233	7260*	7267	7295*	7302	7872*	7877	7908*	7912	7941*	7945	7972*	7977
7993*	7995	8002*	8004*	9605*	9651*	9686*	9732*	9771*	9844*	9879*	9894	9924*
9964*	9980	10011*	10027	10060*	10076	10098	10135*	10151	10182*	10197	10228*	10243
10274*	10289	10320*	10321	10335	10366*	10381	10412*	10427	10458*	10473	10504*	10505
10519	10550*	10565	10595*	10610	10640*	10655	10685*	10700	10730*	10745	10775*	10790
10820*	10835	10865*	10881	10912*	10927	10958*	10973	11004*	11019	11050*	11065	11095*
11113	11142*	11155	11184*	11203	11232*	11245	11274*	11293	11322*	11335	11364*	11382
11411*	11423	11455*	11470	11498*	11499*	11500	11514	11543*	11557	11586*	11599	11628*
11642	11672*	11686	11715*	11729	11758*	11772	11801*	11815	11844*	11858	11887*	11900
11929*	11943	11972*	11986	12015*	12029	12059*	12073	12103*	12117	12147*	12161	12190*
12204	12233*	12247	12275*	12299	12318*	12332	12361*	12375	12404*	12418	12446*	12460
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13043	13073*	13087	13117*	13131	13161*	13175	13205*	13219	13249*	13263	13293*	13307
13336*	13350	13380*	13394	13424*	13438	13468*	13482	13511*	13525	13556*	13571	13600*
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13900*	13907	13936*	13950	13979*	13987	14016*	14029	14058*	14065	14094*	14110	14138*
14154	14182*	14189	14227*	14234	14269*	14271	14277	14312*	14319	14354*	14356	14362
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15172	15200*	15217	15245*	15262	15291*	15308	15337*	15354	15383*	15400	15433*	15449
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15776	15805*	15821	15849*	15865	15893*	15909	15937*	15954	15987*	16005	16034*	16041
16077*	16084	16120*	16127	16163*	16170	16207*	16214	16245*	16252	16281*	16282*	16300
16330*	16331*	16349	16378*	16397	16427*	16446	16475*	16477*	16501	16531*	16532*	16556
16586*	16611	16641*	16666	16696*	16697*	16721	16752*	16753*	16777	16807*	16832	16863*
16888	16918*	16919*	16943	16973*	16974*	16998	17028*	17053	17083*	17108	17138*	17139*
17163	17194*	17195*	17219	17249*	17274	17305*	17330	17361*	17362*	17380	17411*	17412*
17430	17461*	17480	17511*	17530	17561*	17562*	17580	17614*	17615*	17633	17664*	17683
17714*	17733	17764*	17771	17801*	17808	17838*	17845	17876*	17883	17913*	17920	17952*
17959	17988*	18004	18034*	18051	18081*	18089	18117*	18124	18154*	18161	18195*	18202
18238*	18245	18276*	18284	18321*	18335	18367*	18381	18412*	18426	18457*	18465	18496*
18504	18536*	18544	18574*	18582	18612*	18620	18650*	18658	18689*	18697	18726*	18742
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22374	22381	22391	22395	22418*	22426	22424	22446	22453	22463	22467	22506*	22509
22528*	22550*	22559	22586*	22595*	22651*	22702*	22771*	22848*	22880*	22886*	22914*	22920*
22948*	22954*	22982*	22988*	23016*	23022*	23050*	23056*	23082*	23088*	23114*	23120*	23149*
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24171*	24179	24183	24209*	24217	24221	24246*	24254	24257	24334*	24342	24343*	24353
24354*	24388*	24396	24397*	24407	24408*	24443*	24451	24452*	24462	24463*	25196*	25232*
25342*	25844*	25845	25858	25864	25927*	25996*	26066*	26139*	26189*	26196	26241*	26248
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26931*	26941											
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4828	5000*	5004*	5343*	5345	5360	5487*	5491	5499	5558*	5561	5624*	5628
5658*	5662*	5671	5700*	5704*	5713	5741*	5745	5776*	5780	5789	5816*	5820
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6211	6227	6358*	6362*	6396*	6399	6411	6446*	6450	6463	6500*	6504	6517
6554*	6558	6571	6608*	6612	6625	6664*	6668	6677	6707*	6711	6720	6750*
6754	6763	6792*	6796	6805	6833*	6838	6876*	6981	6918*	6923	6961*	6966
7004*	7008	7016	7045*	7049	7057	7094*	7086	7114	7139*	7141	7169	7193*
7197	7227*	7231	7261*	7265	7296*	7300	7329*	7330	7339	7365*	7366	7400*
7401	7420	7446*	7447	7484*	7485	7541*	7542	7556	7578*	7579	7635*	7636
7651	7678*	7679	7714*	7715	7750*	7753	7791*	7794	7833*	7834	7973*	7987*
7991*	7997*	9701*	9702*	11185*	11187*	11203	11206	11233*	11235*	11245	11248	11275*
11277*	11293	11296	11323*	11325*	11335	11338	13778*	13780*	13791	13794	13822*	13824*
13829	13832	13937*	13939*	13950	13953	13980*	13982*	13987	13990	14095*	14100	14139*
14144	14183*	14187	14195	14228*	14232	14240	14270*	14275	14283	14313*	14317	14325
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14872	14914*	14919	14953*	14958	14997*	14993	14997	15031*	15032	15036	15111*	15113
15117	15157*	15162	15202*	15207	15246*	15252	15292*	15298	15338*	15344	15384*	15390
15435*	15439	15483*	15487	15531*	15535	15579*	15583	15627*	15631	15672*	15677	15717*
15722	15762*	15766	15806*	15811	15850*	15851	15855	15894*	15896*	15899	15938*	15939*
15944	15988*	15989*	15995	16035*	16039*	16048	16078*	16082*	16091	16121*	16125*	16134
16164*	16168*	16177	16208*	16212*	16246*	16250*	16284*	16290	16333*	16339	16380*	16387
16429*	16436	16479*	16485	16534*	16540	16588*	16595	16643*	16650	16699*	16705	16755*
16761	16809*	16816	16865*	16872	16921*	16927	16976*	16982	17030*	17037	17085*	17092
17141*	17147	17197*	17203	17251*	17258	17307*	17314	17364*	17370	17414*	17420	17463*
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17802*	17806*	17839*	17843*	17877*	17881*	17914*	17918*	17953*	17957*	17989*	17994	18035*
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18815*	18820	18859*	18864	18904*	18909	18953*	18958	18998*	19003	19043*	19048	19088*
19092	19131*	19136	19176*	19191	19221*	19226	19266*	19271	19311*	19316	19356*	19361
19401*	19406	19447*	19452	19493*	19497	19537*	19542	19581*	19586	19625*	19627*	19631
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19936*	19941	19981*	19986	20026*	20027*	20032	20072*	20073*	20078	20118*	20119*	20124
20164*	20165*	20170	20211*	20212*	20217	20258*	20259*	20264	20305*	20306*	20310	20354*
20358	20395*	20399	20433*	20438	20472*	20477	20511*	20516	20550*	20555	20589*	20594
20628*	20633	20703*	20708	20778*	20783	21462*	21472	21479	21501*	21524	21547*	21564
21585*	21601	21624*	21625	21635	21642	21665*	21666	21676	21688	21711*	21712	21726
21733	21759*	21760	21770	21782	21805*	21806	21816	21823	21846*	21847	21858	21870
21931*	21934*	22122*	22124	22149	22152	22157	22180*	22182	22207	22210	22215	22238*

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R40731 057722
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22239	22261	22264	22269	22292*	22293	22315	22318	22323	22348*	22387	22390	22420*
22459	22462	22478*	22480	22492	22548*	22553	22570	22583*	22585	22605	22640*	22648
22652	22691*	22699	22703	22734*	22738	22780	22811*	22815	22857	22875*	22879	22896
22909*	22913	22930	22943*	22947	22964	22977*	22981	22998	23011*	23015	23032	23045*
23049	23066	23077*	23081	23098	23109*	23113	23130	23144*	23148	23165	23176*	23180
23197	23209*	23213	23231	23244*	23248	23266	23277*	23281	23299	23310*	23314	23332
23343*	23347	23365	23376*	23380	23398	23418*	23421	23448	23468*	23473	23532	23551*
23553	23561	23538*	23599	23607	23614	23619	23643*	23653	23661	23668	23672	23681*
23692	23697	23706*	23717	23722	23731*	23742	23747	23770*	23773	23784	23797*	23801*
23806*	23810*	23815*	23819*	23840*	23844	23849*	23853	23857*	23861	23884*	23888	23893*
23897	23902*	23906	23939*	23948	23958	23968	23978	23987	24000*	24009	24019	24029
24039	24048	24061*	24068	24074	24077	24092*	24100	24106	24109	24125*	24133	24139
24142	24170*	24173	24184	24208*	24211	24222	24245*	24249	24258	24282*	24283	24305
24333*	24345	24356	24360	24387*	24399	24410	24414	24440*	24454	24465	24469	24495*
24499	24513	24536*	24543	24557	24583*	24587	24601	24627*	24631	24645	24671*	24675
24689	24714*	24718	24732	24756*	24760	24774	24800*	24804	24818	24842*	24846	24860
24899*	24900	24934*	24935	24971*	24972	25007*	25008	25043*	25044	25080*	25081	25118*
25119	25120*	25126	25154*	25155	25189*	25190	25225*	25226	25261*	25263	25297*	25298
25334*	25336	25371*	25372	25406*	25407	25441*	25442	25478*	25480	25516*	25518	25553*
25555	25589*	25590	25624*	25625	25659*	25660	25693*	25694	25727*	25728	25766*	25767
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8872	8901	9356	9389	9422	9454	9485	9518	9550	9582	9627	9662	9708
9292	9324	9855	9900	9936	9986	10033	10110	10157	10203	10249	10295	10341
9744	9820	10479	10525	10571	10616	10661	10706	10751	10796	10842	10888	10934
10387	10433	11072	11120	11162	11210	11252	11300	11342	11389	11430	11476	11520
10980	11026	11648	11692	11735	11778	11821	11864	11906	11949	11992	12035	12079
11563	11605	12210	12253	12295	12338	12381	12424	12466	12511	12558	12602	12651
12123	12167	12784	12828	12875	12919	12962	13006	13050	13094	13138	13182	13226
12695	12740	13314	13357	13401	13445	13489	13532	13577	13621	13666	13710	13754
13270	13314	13914	13957	13994	14036	14072	14116	14160	14201	14246	14289	14331
13836	13878	14447	14484	14521	14567	14613	14659	14705	14751	14797	14843	14889
14374	14410	15006	15045	15088	15133	15178	15223	15269	15315	15361	15407	15455
14928	14967	15599	15647	15694	15739	15783	15827	15871	15915	15961	16012	16054
15503	15551	16221	16253	16308	16357	16405	16454	16509	16564	16619	16674	16729
16097	16140	16896	16951	17006	17061	17116	17171	17227	17282	17338	17388	17438
16729	16785	17538	17588	17641	17691	17741	17778	17815	17852	17890	17927	17966
17438	17488	18130	18173	18214	18252	18297	18343	18388	18433	18472	18511	18551
18010	18057	18665	18704	18748	18792	18836	18880	18926	18974	19019	19064	19108
18551	18589	19243	19288	19333	19377	19423	19469	19514	19558	19602	19647	19691
19108	19153	19823	19868	19913	19958	20003	20049	20095	20141	20187	20234	20281
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23101	23133	23724	23749	23787	23830	23872	23931	23992	24053	24083	24116	24149
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		25704	25740	25780	25819	25866	25938	26007	26080	26150	26209	26261		
SCOPEA	065260	7544	26563*											
SCOPEB	065266	8014	26567*											
SEL TST	066700	26574*	26575*	26576	26970*									
S081	050532	21941*	22089											
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SP	=%000006	2904*	3290*	4143	4154*	4161*	5343	5345*	5346*	5349*	5351	5354	5355	5360*
		6210	6211*	6212*	6213	6216*	6218	6227*	6396	6397	6399*	6400*	6403	6411
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		7148*	7163	7169*	7329	7330*	7331*	7339	7365	7366*	7374	7400	7401*	7402*
		7403*	7420	7446	7447*	7448*	7449*	7484	7485*	7488*	7505	7512	7541	7542*
		7556*	7578	7579*	7582*	7599	7606	7635	7636*	7651*	7678	7679*	7714	7715*
		7750	7753*	7791	7794*	7833	7834*	21462	21471	21472	21475	21479*	21501	21503*
		21512	21524*	21547	21564*	21585	21601*	21624	21625*	21634	21635	21638	21642*	21665
		21666*	21675	21676	21679	21688*	21711	21712*	21725	21726	21729	21733*	21759	21760*
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		21858	21861	21870*	22122	22124*	22126*	22149	22153	22157*	22180	22182*	22184*	22207
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		22315	22319	22323*	22346	22354*	22362*	22374*	22378	22380	22381*	22391*	22395*	22418
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		22570*	22583	22585*	22605*	22734	22738*	22761	22768	22772	22780*	22811	22815*	22838
		22845	22849	22857*	22875	22879*	22896*	22909	22913*	22930*	22943	22947*	22964*	22977
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		23130*	23144	23148*	23165*	23176	23180*	23197*	23209	23213*	23231*	23244	23248*	23266*
		23277	23281*	23299*	23310	23314*	23332*	23343	23347*	23365*	23376	23380*	23398*	23418
		23421*	23448*	23468	23473*	23532*	23551	23553*	23561*	23588	23593*	23596*	23599*	23604
		23607*	23614*	23619*	23643	23647*	23650*	23653*	23661*	23665	23668*	23672*	23681	23684*
		23687	23692*	23697*	23706	23709*	23712	23717*	23722*	23731	23734*	23737	23742*	23747*
		23770	23773*	23784*	23827*	23869*	23918	23920*	23923	23924*	23939	23943*	23946*	23948*
		23953*	23956*	23958*	23963*	23966*	23968*	23973*	23976*	23978*	23985	23987*	23988*	23989*
		24000	24004*	24007*	24009*	24014*	24017*	24019*	24024*	24027*	24029*	24034*	24037*	24039*
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		24109*	24125	24128*	24133*	24139*	24142*	24170	24173*	24184*	24208	24211*	24222*	24245
		24249*	24258*	24282	24283*	24285*	24286*	24297	24305*	24333	24336*	24339*	24344	24345*
		24350	24355	24356*	24360*	24387	24390*	24393*	24398	24399*	24404	24409	24410*	24414*
		24440	24445*	24448*	24453	24454*	24459	24464	24465*	24469*	24495	24499*	24513*	24536
		24543*	24557*	24583	24587*	24601*	24627	24631*	24645*	24671	24675*	24689*	24714	24718*
		24732*	24756	24760*	24774*	24800	24804*	24818*	24842	24846*	24860*	24899	24900*	24901*
		24902*	24934	24935*	24937*	24938*	24971	24972*	24974*	24975*	25007	25008*	25009*	25010*
		25043	25044*	25045*	25046*	25080	25081*	25083*	25084*	25118	25119*	25121*	25122*	25154
		25155*	25156*	25157*	25189	25190*	25191*	25192*	25225	25226*	25227*	25228*	25261	25263*
		25264*	25265*	25297	25298*	25299*	25300*	25334	25336*	25337*	25338*	25371	25372*	25373*
		25374*	25406	25407*	25408*	25409*	25441	25442*	25443*	25444*	25478	25480*	25481*	25482*
		25516	25518*	25519*	25520*	25553	25555*	25556*	25557*	25589	25590*	25591*	25592*	25624
		25625*	25626*	25627*	25659	25660*	25661*	25662*	25693	25694*	25695*	25696*	25727	25728*
		25729*	25730*	25731*	25766	25767*	25769*	25770*	25803	25804*	25806*	25807*	25844	25845*
		25846*	25847*	25858*	25864*	26385*	26402*	26403*	26455	26465*	26527	26536*	26570*	26584
		26643*	26644	26663	26668	26684	26686*	26699	26707*	26708*	26718*	26719*	26794*	26795
		26796*	26798*	26801	26802	26805	26807*	26808*	26817	26826*	26827*	26828*	26829*	26830*
		26831*	26832	26844*	26845	26846	26847	26848	26849	26850	26885*	26898*	26912*	26927*
		26940*												
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T0043	005264	5380#	
T0044	005326	5390	5413#
T0045	005400	5424	5448#
T0046	005446	5459	5483#
T0047	005524	5500	5523#
T0050	005572	5532	5556#
T0051	005624	5566	5586#
T0052	005670	5596	5620#
T0053	005736	5631	5654#
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T0055	006074	5714	5737#
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T0062	006426	5898	5922#
T0063	006514	5941	5965#
T0064	006570	5981	6005#
T0065	006632	6015	6039#
T0066	006674	6048	6072#
T0067	006736	6081	6104#
T0070	007004	6114	6138#
T0071	007054	6148	6172#
T0072	007120	6183	6207#
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T0074	007242	6256	6280#
T0075	007314	6295	6319#
T0076	007362	6329	6354#
T0077	007434	6365	6390#
T0100	007536	6418	6442#
T0101	007640	6470	6496#
T0102	007744	6524	6550#
T0103	010050	6578	6604#
T0104	010152	6632	6659#
T0105	010242	6678	6702#
T0106	010332	6721	6745#
T0107	010422	6764	6787#
T0110	010512	6806	6829#
T0111	010600	6848	6872#
T0112	010666	6891	6914#
T0113	010756	6933	6957#
T0114	011046	6976	7000#
T0115	011124	7017	7041#
T0116	011202	7058	7082#
T0117	011302	7137#	
T0120	011402	7189#	
T0121	011454	7200	7223#
T0122	011526	7234	7257#
T0123	011600	7268	7292#
T0124	011652	7303	7327#
T0125	011714	7340	7363#
T0126	011756	7375	7398#
T0127	012052	7421	7444#
T0130	012132	7457	7482#
T0131	012262	7513	7539#
T0132	012336	7576#	

MAIN. MACY11 27:732) 15-OCT-76 14:58 PAGE 746
 DBQER8.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0133	012466	7607	7633#		
T0134	012550	7673#			
T0135	012634	7688	7712#		
T0136	012706	7724	7747#	7764	
T0137	013002	7788#	7805		
T0140	013064	7802	7826#		
T0141	013132	7869#			
T0142	013242	7879	7905#		
T0143	013302	7914	7938#		
T0144	013344	7947	7966#	7984	8006
T0145	013644	8051#			
T0146	013676	8085#			
T0147	013742	8131#			
T0150	013766	8163#			
T0151	014010	8190#			
T0152	014034	8222#			
T0153	014056	8253#			
T0154	014102	8287#			
T0155	014124	8318#			
T0156	014150	8350#			
T0157	014172	8381#			
T0160	014232	8418#			
T0161	014276	8458#			
T0162	014334	8495#			
T0163	014376	8535#			
T0164	014420	8566#			
T0165	014446	8597#			
T0166	014474	8630#			
T0167	014520	8662#			
T0170	014544	8694#			
T0171	014570	8726#			
T0172	014614	8758#			
T0173	014642	8791#			
T0174	014670	8824#			
T0175	014730	8860#			
T0176	014756	8891#			
T0177	015000	8923#			
T0200	015026	8956#			
T0201	015054	8989#			
T0202	015102	9021#			
T0203	015126	9054#			
T0204	015152	9086#			
T0205	015176	9118#			
T0206	015222	9151#			
T0207	015246	9183#			
T0210	015274	9216#			
T0211	015316	9247#			
T0212	015344	9280#			
T0213	015372	9312#			
T0214	015420	9345#			
T0215	015444	9378#			
T0216	015470	9411#			
T0217	015514	9443#			
T0220	015540	9475#			
T0221	015562	9506#			
T0222	015610	9539#			

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 747
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0223	015634	9571#
T0224	015660	9603#
T0225	015736	9648#
T0226	015774	9683#
T0227	016052	9729#
T0230	016112	9767#
T0231	016252	9841#
T0232	016310	9876#
T0233	016364	9921#
T0234	016424	9958#
T0235	016516	10008#
T0236	016576	10057#
T0237	016740	10132#
T0240	017020	10178#
T0241	017074	10224#
T0242	017154	10270#
T0243	017234	10316#
T0244	017312	10362#
T0245	017366	10408#
T0246	017446	10454#
T0247	017526	10500#
T0250	017604	10547#
T0251	017664	10592#
T0252	017742	10637#
T0253	020022	10682#
T0254	020100	10727#
T0255	020160	10772#
T0256	020240	10817#
T0257	020322	10863#
T0260	020402	10909#
T0261	020464	10955#
T0262	020544	11001#
T0263	020626	11047#
T0264	020710	11092#
T0265	020776	11139#
T0266	021054	11181#
T0267	021146	11229#
T0270	021226	11271#
T0271	021320	11319#
T0272	021400	11361#
T0273	021466	11408#
T0274	021542	11449#
T0275	021630	11495#
T0276	021706	11540#
T0277	021764	11583#
T0300	022040	11625#
T0301	022120	11669#
T0302	022176	11712#
T0303	022254	11755#
T0304	022334	11798#
T0305	022412	11841#
T0306	022472	11884#
T0307	022546	11926#
T0310	022624	11969#
T0311	022704	12012#
T0312	022760	12056#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 748
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0313	023040	12100#
T0314	023120	12144#
T0315	023174	12187#
T0316	023254	12230#
T0317	023332	12272#
T0320	023412	12315#
T0321	023470	12358#
T0322	023550	12401#
T0323	023630	12443#
T0324	023706	12486#
T0325	023764	12532#
T0326	024046	12578#
T0327	024126	12622#
T0330	024216	12671#
T0331	024300	12716#
T0332	024360	12760#
T0333	024440	12804#
T0334	024522	12848#
T0335	024614	12895#
T0336	024676	12939#
T0337	024754	12982#
T0340	025034	13026#
T0341	025116	13070#
T0342	025174	13114#
T0343	025256	13158#
T0344	025340	13202#
T0345	025416	13246#
T0346	025500	13290#
T0347	025560	13333#
T0350	025642	13377#
T0351	025722	13421#
T0352	026004	13465#
T0353	026066	13508#
T0354	026146	13553#
T0355	026226	13597#
T0356	026306	13642#
T0357	026366	13686#
T0360	026446	13730#
T0361	026526	13774#
T0362	026612	13818#
T0363	026664	13855#
T0364	026744	13897#
T0365	027012	13933#
T0366	027076	13976#
T0367	027150	14013#
T0370	027230	14055#
T0371	027276	14091#
T0372	027360	14135#
T0373	027444	14179#
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T0375	027612	14266#
T0376	027676	14309#
T0377	027754	14351#
T0400	030040	14394#
T0401	030106	14430#
T0402	030160	14467#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 749
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0403	030226	14504#
T0404	030274	14541#
T0405	030366	14587#
T0406	030460	14633#
T0407	030554	14679#
T0410	030650	14725#
T0411	030742	14771#
T0412	031034	14817#
T0413	031130	14863#
T0414	031224	14910#
T0415	031300	14949#
T0416	031354	14988#
T0417	031426	15027#
T0420	031500	15064#
T0421	031554	15108#
T0422	031634	15153#
T0423	031720	15198#
T0424	032004	15243#
T0425	032064	15289#
T0426	032150	15335#
T0427	032236	15381#
T0430	032324	15429#
T0431	032404	15477#
T0432	032464	15525#
T0433	032550	15573#
T0434	032634	15621#
T0435	032720	15668#
T0436	033004	15713#
T0437	033070	15758#
T0440	033154	15802#
T0441	033236	15846#
T0442	033316	15890#
T0443	033404	15934#
T0444	033476	15981#
T0445	033604	16031#
T0446	033664	16074#
T0447	033746	16117#
T0450	034026	16160#
T0451	034110	16204#
T0452	034162	16242#
T0453	034234	16279#
T0454	034324	16328#
T0455	034414	16376#
T0456	034504	16425#
T0457	034574	16474#
T0460	034676	16529#
T0461	035000	16584#
T0462	035102	16639#
T0463	035204	16694#
T0464	035310	16750#
T0465	035414	16805#
T0466	035520	16861#
T0467	035624	16916#
T0470	035726	16971#
T0471	036030	17026#
T0472	036132	17081#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 750
DBGEAR.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0473	036234	17136#
T0474	036340	17192#
T0475	036444	17247#
T0476	036550	17303#
T0477	036654	17359#
T0500	036750	17409#
T0501	037044	17459#
T0502	037140	17509#
T0503	037234	17559#
T0504	037330	17609#
T0505	037436	17662#
T0506	037532	17712#
T0507	037626	17761#
T0510	037670	17798#
T0511	037732	17835#
T0512	037776	17873#
T0513	040042	17910#
T0514	040106	17949#
T0515	040154	17985#
T0516	040236	18031#
T0517	040320	18078#
T0520	040364	18114#
T0521	040432	18151#
T0522	040510	18192#
T0523	040566	18235#
T0524	040634	18273#
T0525	040716	18318#
T0526	041002	18364#
T0527	041064	18409#
T0530	041150	18454#
T0531	041224	18493#
T0532	041300	18533#
T0533	041350	18571#
T0534	041420	18609#
T0535	041472	18647#
T0536	041544	18686#
T0537	041620	18723#
T0540	041704	18767#
T0541	041762	18811#
T0542	042046	18855#
T0543	042124	18900#
T0544	042212	18946#
T0545	042306	18994#
T0546	042370	19039#
T0547	042452	19084#
T0550	042534	19127#
T0551	042622	19172#
T0552	042702	19217#
T0553	042770	19262#
T0554	043050	19307#
T0555	043136	19352#
T0556	043224	19397#
T0557	043312	19443#
T0560	043376	19489#
T0561	043462	19533#
T0562	043546	19577#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 751
DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0563	043626	19621#
T0564	043716	19666#
T0565	043776	19710#
T0566	043760	19754#
T0567	044142	19798#
T0570	044224	19843#
T0571	044306	19888#
T0572	044374	19932#
T0573	044462	19977#
T0574	044550	20022#
T0575	044642	20068#
T0576	044734	20114#
T0577	045026	20160#
T0600	045120	20207#
T0601	045210	20254#
T0602	045302	20301#
T0603	045372	20350#
T0604	045436	20388#
T0605	045516	20429#
T0606	045566	20468#
T0607	045640	20507#
T0610	045712	20546#
T0611	045764	20585#
T0612	046040	20624#
T0613	046114	20662#
T0614	046160	20699#
T0615	046232	20736#
T0616	046276	20774#
T0617	046350	20811#
T0620	046414	20852#
T0621	046460	20878#
T0622	046536	20939#
T0623	046602	20980#
T0624	046670	21033#
T0625	046744	21079#
T0626	047032	21130#
T0627	047076	21171#
T0630	047164	21222#
T0631	047240	21268#
T0632	047314	21314#
T0633	047370	21360#
T0634	047454	21411#
T0635	047540	21460#
T0636	047606	21499#
T0637	047674	21531#
T0640	047742	21569#
T0641	050010	21622#
T0642	050060	21663#
T0643	050140	21709#
T0644	050216	21754#
T0645	050310	21803#
T0646	050362	21844#
T0647	050444	21893#
T0650	050476	21927#
T0651	050556	21972#
T0652	050614	22009#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 752
 DBQEAB.CMB CROSS REFERENCE TABLE -- USER SYMBOLS

T0653	050652	22046#
T0654	050710	22083#
T0655	050746	22120#
T0656	051054	22178#
T0657	051162	22236#
T0660	051264	22290#
T0661	051370	22344#
T0662	051526	22416#
T0663	051664	22474#
T0664	051752	22501#
T0665	052016	22523#
T0666	052064	22544#
T0667	052202	22579#
T0670	052324	22630#
T0671	052440	22681#
T0672	052554	22732#
T0673	052760	22809#
T0674	053164	22871#
T0675	053306	22905#
T0676	053430	22939#
T0677	053552	22973#
T0700	053674	23007#
T0701	054016	23041#
T0702	054140	23075#
T0703	054254	23107#
T0704	054370	23139#
T0705	054516	23174#
T0706	054632	23205#
T0707	054756	23240#
T0710	055102	23275#
T0711	055220	23308#
T0712	055336	23341#
T0713	055454	23374#
T0714	055572	23413#
T0715	055740	23462#
T0716	056246	23549#
T0717	056312	23586#
T0720	056440	23641#
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T0722	056626	23704#
T0723	056706	23729#
T0724	056766	23768#
T0725	057050	23793#
T0726	057164	23836#
T0727	057300	23880#
T0730	057450	23937#
T0731	057622	23998#
T0732	057774	24059#
T0733	060060	24089#
T0734	060160	24122#
T0735	060260	24168#
T0736	060336	24206#
T0737	060414	24243#
T0740	060472	24280#
T0741	060572	24331#
T0742	060676	24385#

23927

T0743	061004	24438#												
T0744	061136	24494#												
T0745	061214	24535#												
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T0747	061370	24624#												
T0750	061456	24668#												
T0751	061544	24711#												
T0752	061632	24755#												
T0753	061710	24797#												
T0754	061776	24841#												
T0755	062112	24897#												
T0756	062152	24932#												
T0757	062216	24969#												
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T0761	062322	25041#												
T0762	062362	25078#												
T0763	062426	25116#												
T0764	062472	25152#												
T0765	062532	25187#												
T0766	062572	25223#												
T0767	062632	25259#												
T0770	062676	25295#												
T0771	062736	25332#												
T0772	063002	25369#												
T0773	063042	25404#												
T0774	063102	25439#												
T0775	063142	25476#												
T0776	063206	25514#												
T0777	063252	25551#												
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T1001	063356	25622#												
T1002	063416	25657#												
T1003	063454	25691#												
T1004	063512	25725#												
T1005	063556	25761#												
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T1012	064126	26055#												
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T1014	064262	26186#												
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		23311	23344	23377	23467	26813								
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		2660	2662	2664	2666	2668	2670	2672	2674	2676	2678	2680	2682	2684
		2686	2688	2690	2692	2694	2696	2698	2701	2703	2705	2707	2709	2711
		2713	2715	2717	2719	2721	2723	2725	2727	2729	2731	2733	2735	2737
		2739	2741	2743	2745	2747	2749	2751	2753	2755	2757	2759	2761	2763
		2765	2767	2769	2771	2773	2775	2777	2779	2781	2783	2785	2787	2789
		2791	2793	2795	2797	2799	2801	2803	2805	2807	2809	2811	2813	2815
		2817	2819	2821	2823	2825	2827	2829	2831	2833	2835	2837	2839	2841
		2843	2845	2847	2849	2851	2853	2855	2857	2859	2861	2863	2865	2867
		2869	2871	2873	2875	2877	2879	2881	2883	2885	2887	2889	2949#	4149#

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 756
DBDEAB.CMB CROSS REFERENCE TABLE -- MACPO NAMES

COMMEN	10
ENDCOM	10
ESCAPE	10
GETPRI	10
GETSWR	10
MULT	10
NEWTST	10
POP	10
PUSH	10
REPORT	10
SETPRI	10
SETUP	10
SKIP	10
SLASH	10
STARS	10
SWRSU	10
TYPBIN	10
TYPDEC	10
TYPNAM	10
TYPNUM	10
TYPPCS	10
TYPDCT	10
TYPTXT	10
SSESCA	10
SSNEWT	10
SSSKIP	10
.EQUAT	10
.HEADE	10
.K11	10
.SETUP	10
.SWRHI	10
.SACTI	10
.SAPT8	10
.SAPTH	10
.SAPTY	10
.SASTA	10
.SCATC	10
.SCHTA	10
.SOB20	10
.SOB20	10
.SOIV	10
.SEOP	10
.SERRO	10
.SERRT	10
.SMULT	10
.SPOWE	10
.SRAND	10
.SRODE	10
.SRODC	10
.SREAO	10
.SR2AZ	10
.SSAVE	10
.SSB20	10
.SSB20	10
.SSCOP	10
.SSIZE	10

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 757
DBQERB.CMB CROSS REFERENCE TABLE -- MACRO NAMES

.SSUPR	18
.STRAP	18
.STYPR	18
.STYPO	18
.STYPE	18
.STYPI	18
.S40CA	18
.117C	18

E11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 759
 DBQERB.CMB CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

RDC	3203	3265	3401	3474	3545	3757	3796	3833	3988	12195	12238	12280	13254	13298	13341
RDD	6326	6362	14100	14144	14187	14232	14275	14317	14360	14402	14439	14475	14512	14550	14596
	14642	14688	14734	14780	14826	14872	14919	14958	14997	15036	23827	23869	23920	23924	23986
	24047	25126	25232	25922	26193	26245	26402	26718	26796	26885	26898	26912	26927	26940	
ASH	26920														
ASL	5038	5076	11934	11977	12020	12990	13034	13078	26747	26751					
ASRB	11280	11328	11369	11416											
BCC	3028	3086	5078	5153	8323	8355	8386	9657	9739	9850	9931	9975	10022	10071	10093
	10146	10192	10376	10560	10740	10830	11060	11150	11240	11330	11418	11465	11509	11553	11595
	11768	11854	11896	11982	2025	12113	12157	12200	12285	12328	12371	12414	12499	12546	12591
	12634	12817	12908	12951	13039	13083	13171	13215	13259	13346	13390	13434	13478	13610	13699
	13743	14149	15077	15167	15257	15349	15444	15492	15588	15636	15727	15771	15860	15904	16295
	16344	16490	16545	16710	16766	16932	16987	17152	17208	17375	17425	17575	17628	17999	18781
	18869	18963	19053	19097	19186	19276	19366	19411	19502	19591	19680	19768	19857	19902	19991
	20083	20129	20222	20315	20823	20904	20992	21095	21183	21280	21376	21559	21980	22054	22196
	22371														
BCS	3057	3172	3206	3363	3395	3506	3539	5040	5115	8058	8105	8463	9616	9696	9781
	9803	9889	10238	10284	10330	10422	10468	10514	10605	10650	10695	10785	10876	10922	10968
	11014	11102	11192	11282	11371	11638	11682	11725	11811	11939	12069	12243	12456	12684	12729
	12773	12864	12995	13127	13303	13521	13566	13655	14105	15122	15212	15303	15395	15540	15682
	15816	15949	16000	16392	16441	16600	16655	16821	16877	17042	17097	17263	17319	17475	17525
	17678	17728	18046	18737	18825	18914	19008	19141	19231	19321	19457	19547	19636	19724	19812
	19946	20037	20175	20269	20864	20951	21045	21142	21234	21326	21427	21597	22017	22091	22138
	22443														
BEQ	3026	3084	3114	3142	3235	3266	3331	3402	3438	3468	3475	3546	3576	3605	3633
	3663	3751	3758	3797	3834	3863	3952	3982	3989	4020	4051	4081	4110	4138	4144
	4238	4263	4355	4386	4451	4457	4494	4526	4559	4596	4631	4674	4706	4712	4746
	4752	4785	4791	4829	4835	4871	4905	4939	4972	5007	5046	5084	5121	5159	5196
	5235	5263	5271	5277	5310	5316	5352	5390	5424	5459	5500	5532	5596	5631	5665
	5672	5707	5714	5748	5783	5790	5823	5829	5863	5898	5934	5941	5975	5981	6048
	6114	6148	6183	6221	6289	6295	6329	6365	6393	6405	6412	6418	6452	6458	6464
	6470	6506	6512	6518	6524	6560	6566	6572	6578	6614	6620	6626	6632	6671	6678
	6714	6721	6757	6764	6799	6806	6841	6848	6884	6891	6926	6933	6969	6976	7011
	7017	7052	7058	7096	7102	7109	7151	7157	7164	7200	7234	7268	7303	7340	7375
	7414	7421	7457	7499	7506	7513	7551	7593	7600	7607	7645	7676	7688	7724	7761
	7802	7879	7914	7947	8055	8090	8390	8430	8467	8507	8828	9622	9694	9703	9787
	9809	9815	9887	9895	9962	9981	10020	10028	10077	10099	10105	10144	10152	10198	10236
	10244	10282	10290	10328	10336	10382	10420	10428	10466	10474	10512	10520	10558	10566	10611
	10648	10656	10701	10738	10746	10783	10791	10828	10836	10882	10920	10928	10974	11012	11020
	11058	11066	11108	11114	11156	11198	11204	11246	11288	11294	11336	11377	11383	11424	11452
	11471	11507	11515	11558	11600	11636	11643	11687	11730	11766	11773	11816	11852	11859	11894
	11901	11944	11980	11987	12030	12067	12074	12111	12118	12162	12198	12205	12248	12283	12290
	12333	12369	12376	12412	12419	12454	12461	12505	12544	12552	12596	12639	12645	12682	12689
	12734	12778	12815	12822	12851	12869	12906	12913	12949	12956	13000	13037	13044	13088	13125
	13132	13169	13176	13220	13257	13264	13308	13344	13351	13395	13432	13439	13476	13483	13519
	13526	13564	13572	13616	13653	13661	13705	13749	13786	13792	13830	13866	13872	13908	13945
	13951	13988	14024	14030	14066	14111	14147	14155	14190	14196	14224	14235	14241	14278	14284
	14320	14326	14363	14369	14405	14442	14478	14515	14553	14562	14599	14608	14645	14654	14691
	14700	14737	14746	14783	14792	14829	14838	14875	14884	14922	14961	15000	15039	15083	15128
	15165	15173	15210	15218	15263	15309	15347	15355	15393	15401	15450	15498	15538	15546	15586
	15594	15634	15642	15677	15688	15733	15769	15777	15814	15822	15866	15902	15910	15947	15955
	15984	15998	16006	16042	16049	16085	16092	16128	16135	16171	16178	16215	16253	16293	16301
	16342	16350	16398	16447	16488	16496	16502	16543	16551	16557	16606	16612	16661	16667	16708
	16716	16722	16764	16772	16778	16827	16833	16883	16889	16930	16938	16944	16985	16993	16999
	17048	17054	17103	17109	17150	17158	17164	17206	17214	17220	17269	17275	17325	17331	17373
	17381	17423	17431	17481	17531	17573	17581	17612	17626	17634	17684	17734	17772	17809	17846

F11

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 760
 DBQER8.CMB CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

	17884	17921	17960	17997	18005	18052	18090	18125	18162	18168	18203	18209	18246	18285	18292
	18330	18336	18376	18382	18421	18427	18466	18505	18545	18583	18621	18659	18698	18735	18743
	18787	18823	18831	18875	18912	18920	18949	18969	19006	19014	19059	19095	19103	19139	19147
	19192	19229	19237	19282	19319	19327	19372	19417	19455	19463	19500	19508	19545	19553	19597
	19634	19642	19686	19722	19730	19774	19810	19818	19863	19900	19908	19944	19952	19997	20035
	20043	20089	20135	20173	20181	20228	20267	20275	20313	20321	20361	20391	20402	20441	20480
	20519	20558	20597	20636	20673	20711	20747	20786	20866	20913	20953	21001	21047	21104	21144
	21192	21236	21328	21429	21473	21513	21519	21557	21636	21677	21727	21757	21771	21817	21859
	21935	21945	22019	22093	22144	22150	22194	22202	22208	22254	22262	22308	22316	22369	22379
	22388	22451	22460	22533	22560	22642	22649	22693	22700	22762	22769	22839	22846	23142	23439
	23501	23508	23605	23612	23659	24351	24405	24442	24460	24538	25764	25917	25925	25986	25994
	26059	26067	26129	26137	26197	26249	26286	26303	26350	26363	26366	26379	26463	26534	26569
	26573	26577	26641	26661	26666	26672	26677	26682	26688	26693	26703				
BCE	8540	8572	8603	8636											
BCT	8797	8833	8866	8896	8929	8962	8995	9027							
BHI	9221	9253	9286	9318											
BHIS	9480	9512													
BIC	6145	6180	6214	8003	8004	18820	18864	19226	19271	19631	19675	20032	20078	22567	22569
	22598	22602	22644	22657	22695	22708	22760	22837	22889	22893	22923	22927	22957	22961	22991
	22995	23025	23029	23059	23063	23091	23095	23123	23127	23158	23162	23190	23194	23224	23228
	23259	23263	23292	23296	23325	23329	23358	23362	23391	23395	23426	23487	26064	26403	26575
	26647	26708	26719												
BIS	6111	16304	16353	16401	16450	16505	16560	16615	16670	16725	16781	16836	16892	16947	17002
	17057	17112	17167	17223	17278	17334	17384	17434	17484	17534	17584	17637	17687	17737	18732
	18776	19136	19181	19542	19586	19941	19985	22557	22593	22635	22686	22884	22918	22952	22986
	23020	23054	23086	23118	23153	23185	23216	23253	23286	23319	23352	23385	23425	23478	23486
	26134	26879	26892	26906	26921	26934									
BISB	20358	20399	20438	20477	20516	20555	20594	20633	20670	20708	20744	20783	22750	22827	24942
BIT	5262	6254	6287	6392	7675	8022	8927	9961	11451	12850	14223	15983	17611	18909	18948
	18958	19316	19361	19719	19763	20124	20170	20390	21756	22509	22531	22641	22692	23141	23712
	23918	24297	24441	24537	24625	24669	24712	4793	25763	26271	26342	26344	26391	26451	26523
	26568	26572	26579	26648	26700	26702	26861	26880	26893	26907	26922	26935			
BLE	9059	9092	9124	9157	9189										
BLO	9544	9577													
BLOS	9350	9384	9417	9449											
BLT	8667	8700	8732	8764	26809										
BHI	3025	3083	3432	4707	5190	5229	7979	8056	8095	9613	9778	9800	9972	10068	10090
	10189	10281	10373	10465	10557	10602	10692	10782	10827	10873	10965	11011	11462	11550	11592
	11679	11722	11808	11851	11936	12022	12066	12154	12240	12325	12368	12411	12496	12588	12631
	12726	12770	12861	12905	12992	13080	13124	13212	13300	13387	13431	13475	13607	13696	13740
	14102	15074	15119	15254	15300	15441	15489	15537	15633	15724	15768	15857	15901	16389	16438
	16597	16652	16818	16874	17039	17094	17260	17316	17472	17522	17675	17725	18043	18778	18866
	18960	19050	19094	19183	19273	19363	19408	19499	19588	19677	19765	19854	19899	19988	20080
	20126	20219	20312	20826	20907	20995	21098	21186	21283	21379	21556	21983	22057	22'93	22368
	22743	22820	23428	23480	23489	24582	26205	26257							
BNE	3055	3205	3296	3324	3361	3393	3504	3537	3692	3720	3790	3827	3892	3921	4160
	4184	4210	4419	4488	4643	6015	6081	6256	7830	7881	7981	7988	7996	7998	8023
	8025	8136	8167	9614	9779	9801	9973	10069	10091	10190	10374	10603	10693	10874	10966
	11463	11551	11593	11680	11723	11809	11937	12023	12155	12241	12326	12497	12589	12632	12727
	12771	12862	12993	13081	13213	13301	13388	13608	13697	13741	14103	15075	15120	15255	15301
	15442	15490	15725	15858	16390	16439	16598	16653	16819	16875	17040	17095	17261	17317	17473
	17523	17676	17726	18044	18779	18867	18961	19051	19184	19274	19364	19409	19589	19678	19766
	19855	19989	20081	20127	20220	20825	20906	20994	21097	21185	21282	21378	21595	21982	22056
	22136	22441	22511	22596	22745	22822	22887	22921	22955	22989	23023	23057	23089	23121	23156
	23188	23221	23256	23289	23322	23355	23388	23430	23482	23491	23666	23919	24298	24511	24555
	24599	24626	24643	24670	24687	24713	24730	24772	24799	24816	24858	26272	26300	26343	26345

G11

MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 761
 DBQEAB.CMB CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

	26352	26388	26392	26449	26452	26521	26524	26580	26582	26649	26651	26701	26754	26759	26800
BPL	26806	26859	26862	26871	26881	26894	26908	26923	26936						
	3054	3171	3360	3392	3503	3536	4292	4321	4675	4823	8195	8227	9693	9886	10019
	10143	10235	10327	10419	10511	10647	10737	10919	11057	11506	11635	11765	11893	11979	12110
	12197	12282	12453	12543	12681	12814	12948	13036	13168	13256	13343	13518	13563	13652	14146
	15164	15209	15346	15392	15585	15679	15813	15946	15997	16292	16341	16497	16542	16707	16763
	16929	16984	17149	17205	17372	17422	17572	17625	17996	18734	18822	18911	19005	19138	19228
	19318	19454	19544	19633	19721	19809	19943	20034	20172	20266	20867	20954	21048	21145	21237
	21329	21430	21594	22020	22094	22135	22440	22477	22504	22526	22547	22582	22874	22908	22942
	22976	23010	23044	23208	23243	23416	23465	26712	26814						
BPT	23556	24098	24131												
BR	2974	2996	2998	3002	3032	3061	3090	3117	3146	3175	3209	3238	3269	3299	3327
	3334	3366	3398	3405	3435	3441	3471	3478	3509	3542	3549	3579	3606	3609	3634
	3637	3666	3695	3723	3754	3761	3793	3800	3830	3837	3866	3895	3924	3955	3985
	3992	4023	4054	4084	4113	4141	4147	4187	4212	4215	4241	4265	4268	4294	4297
	4324	4358	4390	4423	4454	4460	4491	4497	4530	4563	4600	4635	4678	4710	4716
	4749	4756	4788	4794	4826	4832	4840	4875	4909	4942	4976	5011	5043	5049	5081
	5087	5118	5124	5156	5162	5193	5201	5232	5240	5274	5282	5313	5321	5358	5393
	5428	5463	5494	5497	5503	5536	5564	5600	5634	5669	5675	5711	5717	5752	5787
	5793	5826	5832	5866	5901	5938	5944	5978	5985	6018	6051	6084	6118	6152	6186
	6225	6259	6292	6299	6333	6369	6409	6415	6422	6455	6461	6467	6475	6509	6515
	6521	6529	6563	6569	6575	6583	6617	6623	6629	6637	6675	6681	6718	6724	6761
	6767	6803	6809	6845	6851	6888	6894	6930	6936	6973	6979	7014	7020	7055	7061
	7099	7106	7112	7154	7161	7167	7204	7238	7272	7307	7337	7343	7372	7378	7410
	7418	7424	7461	7495	7503	7510	7517	7554	7589	7597	7604	7611	7649	7691	7727
	7764	7805	7843	7847	7885	7918	7951	7984	7999	8006	8059	8137	8196	8259	8324
	8423	8500	8573	8604	8668	8765	8798	8834	8867	8930	8963	8996	9060	9190	9254
	9287	9319	9351	9513	9545	20821	20862	20902	20949	20990	21005	21043	21052	21088	21090
	21093	21140	21181	21196	21232	21241	21278	21287	21324	21333	21370	21374	21383	21421	21425
	21434	21682	21721	21776	21864	21897	21901	21932	21939	21941	21949	22133	22191	22250	22304
	22358	22366	22385	22430	22438	22457	22486	22746	22758	22766	22775	22823	22835	22843	22852
	23222	23257	23290	23323	23356	23389	23431	23442	23483	23492	23505	23512	23519	23525	23689
	23714	23739	23825	23867	23912	23983	24044	24072	24075	24104	24107	24137	24140	24295	24348
	24402	24457	25631	25773	25812	25856	25859	25860	25933	25936	26002	26005	26075	26078	26145
	26148	26202	26207	26254	26259	26368	26382	26469	26541	26578	26750	26811	26884	26897	26911
	26926	26939													
BVC	3056	3362	3394	3505	3538	8258	8292	10329	10513	10604	10694	10739	10784	10875	10967
	11013	11059	11767	11853	11938	11981	12068	12112	12199	12370	12816	12907	12994	13038	13126
	17170	13258	13433	13654	14148	15635	15770	15903	19096	19501	19901	20314	20824	20905	20993
BVS	21096	21184	21281	21377	21596	21981	22055	22137	22442						
	3027	3085	8057	8100	9615	9695	9780	9802	9888	9974	10021	10070	10092	10145	10191
	10237	10283	10375	10421	10467	10559	10649	10829	10921	11464	11508	11552	11594	11637	11681
	11724	11810	11895	12024	12156	12242	12284	12327	12413	12455	12498	12545	12590	12633	12683
	12728	12772	12863	12950	13082	13214	13302	13345	13389	13477	13520	13565	13609	13698	13742
	14104	15076	15121	15166	15211	15256	15302	15348	15394	15443	15491	15539	15587	15681	15726
	15815	15859	15948	15999	16294	16343	16391	16440	16489	16544	16599	16654	16709	16765	16820
	16876	16731	16986	17041	17096	17151	17207	17262	17318	17374	17424	17474	17524	17574	17627
	17677	17727	17998	18045	18736	18780	18824	18868	18913	18962	19007	19052	19140	19185	19230
	19275	19320	19365	19410	19456	19546	19590	19635	19679	19723	19767	19811	19856	19945	19990
	20036	20082	20128	20174	20221	20268	20865	20952	21046	21143	21235	21327	21428	21558	22018
	22092	22195	22370	25596											
CCC	3081	3110	3138	3167	3200	3230	3260	3356	3388	3428	3464	3499	3532	3601	3659
	3747	3859	4015	4046	4076	4105	4182	4261	4319	4382	4447	4521	4554	4591	4626
	4670	4702	4742	4781	4866	4900	4934	4967	5002	5036	5111	5186	5225	5267	5306
	5347	5385	5419	5454	5489	5528	5559	5591	5626	5660	5702	5743	5778	5818	5858
	5893	5929	5971	6044	6109	6143	6178	6214	6285	6324	6360	6401	6448	6502	6556

H11

.MAIN. MACY11 27(732) 15-OCT-76 14:58 PAGE 762
DBQEAB.CMB CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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CLN
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DBQEAB.CMB CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

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