

IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-D1FB-D

PRODUCT NAME: PDP-8E EXTENDED MEMORY ADDRESS
TEST (EA8E)

DATE: JUNE 14, 1971

MAINTAINER: DIAGNOSTIC GROUP

AUTHOR: VERNON FREY



1. ABSTRACT

The PDP-8E Extended Memory Address Test is designed to detect any location that cannot be uniquely addressed. This is performed by a series of four test routines which will test systems equipped with from 8K to 32K words of core memory. Automatic program relocation is provided in order to test all memory fields from each memory field. Teletype print-outs are provided for error identification, and the operator is given a degree of control over the program by various SR settings.

2. REQUIREMENTS

2.1 Equipment

A PDP-8E computer equipped with a minimum of 8K words of core memory.

2.2 Storage

The program occupies core locations 0000 to 3777.

2.3 Preliminary Programs

The Binary Loader must be in memory. Also, all diagnostics for a basic 4K PDP-8E must have been previously run successfully.

3. LOADING PROCEDURE

Load the program with the Binary Loader (BIN). The program may be loaded into any desired core stack by having BIN in that core stack.

4. OPERATING PROCEDURE

4.1 Program and Operator Action

- A. Set the SR to the INSTRUCTION FIELD and DATA FIELD of the stack which contains the program.
- B. Press key EXTD ADDR LOAD.
- C. Set the SR for desired starting address according to the following table.

ADDRESS	TEST EXECUTION
0200	Run all tests
0201	Run only test 1
0202	Run only test 2
0203	Run only test 3
0204	Run only test 4

- D. Press keys ADDR LOAD, CLEAR, and CONT. A setup SR message will be printed.
- E. Set the SR for desired operation according to the following table.

*Set to
0402*

SWITCH	0 (down)	1 (up)
SR00	continue after error typeout errors	halt after error
SR01	normal	inhibit error typeouts
SR02	relocate program	TTY bell on error
SR03	normal	inhibit program relocation
SR04	normal	change stack limits
SR05	normal	halt after current test
SR06-08	starting stack limit (0-7)	
SR09-11	ending stack limit (0-7)	

- F. Press key CONT.

4.2 Detailed SR Explanation

SR00-02 SR02, if set, will ring the TTY bell once for each error.
SR00 and SR01 have no effect with SR02 set.
SR03 SR03 may be set or reset at any time and the program will act accordingly
SR04 SR04 allows the operator to change the stack limits as defined by SR06-11.
SR05 SR05 is normal halt for program
SR06-08 These switches define the starting stack limit (normally 0).
SR09-11 These switches define the ending stack limit (normally 7)

4.3 Example of Selecting Stacks for Test

Example 1: SR = ~~0007~~, 28K system

Stacks selected for testing are 6,5,4,3,2,1,~~0~~

Example 2: SR = ~~0004~~, 28K System

Stacks selected for testing are 4,3,2,1,~~0~~

Example 3: SR = ~~0022~~ 28K System

Stacks selected for testing are 2
(No relocation will occur)

Example 4: SR = ~~0041~~ 28K System

Stacks selected for testing are 6,5,4,1,~~0~~

NOTE 1: Stacks not in the system are automatically de-selected as is Example 1. Stack 7 is not present therefore not selected.

NOTE 2: A single stack can be selected for testing providing the program is not in that stack as in Example 3.

NOTE 3: Any stack or group of stacks can be by-passed as in Example 4. Stacks 2 and 3 are not selected, stack 7 is not present.

5. ERRORS

The contents of a given memory test location should always be equal to its address or the complement of its address. If it is not, a test error will result. A relocation error will occur if the relocation comparison check fails.

5.1

Test Error Typeouts

For the first error encountered a header will be typed out followed by the pertinent data. For all subsequent errors, only the pertinent data will be typed. The format is as follows:

PR LOC ADDR GOOD BAD TEST

PR LOC = the program address where the error JMS occurred.
(Includes Field)

ADDR = the address of the location in error. (Includes Field)

GOOD = what the data should be.

BAD = what the data is.

TEST = the test (1-4) running when the failure occurred.

5.2

Relocation Error Typeouts

All relocation errors are in the following format:

XXXXX RELOCATION ERROR AT LOCATION YYYYY

XXXXX = the program address where the error JMS occurred, (Includes Field)

YYYYY = the address of the location in error (Includes Field)

NOTE: After each error print-out the program continues on with the next sequential memory location.

6.

RESTRICTIONS

6.1

Starting Restrictions

The program may be restarted at any time from location 0200 of the stack the program is presently in.

6.2

Operating Restrictions

None

7.

EXECUTION TIME

The time to run all 4 tests in one core stack is approximately 1/2 second.

During program execution a 5 will be typed on the TTY approximately every 5 minutes of program run time. This allows the operator to determine approximate run time before a failure occurred.

8.

SCOPE LOOPS

Two special scope loops have been provided in this program.

8.1

Scope Loop 1

This scope loop writes the value equal to the address specified by the SR into the address specified by the SR. It then loops doing a write-read.

The address being looped on can be changed simply by changing the switch setting.

- A. Set the SR to the INSTRUCTION FIELD that the program is in and the DATA FIELD wanted to test.
- B. Press key EXTD ADDR LOAD.
- C. Set the SR equal to 3400.
- D. Press key ADDR LOAD.
- E. Set the SR equal to the address to test.
- F. Press keys CLEAR, and CONT.

Scope Loop 2

This scope loop is the same as Scope Loop 1 except that a group of addresses may be specified. The starting address specified must be less than the ending address specified.

- A. Set the SR to the INSTRUCTION FIELD that the program is in and the DATA FIELD wanted to test.
- B. Press key EXTD ADDR LOAD.
- C. Set the SR equal to 3600.
- D. Press key ADDR LOAD.
- E. Set the SR equal to the first address of the group.
- F. Press keys CLEAR and CONT. A halt will occur at address 3602.
- G. Set the SR equal to the last address of the group.
- H. Press key CONT.

NOTE:1: The address(s) specified will be looped until stopped by the operator with key HALT. No error checking is done. To resume normal operation, restart program at address 0200-0204 of the current instruction field.

9. PROGRAM DESCRIPTION

9.1 General

The PDP-8E Extended Memory Address Test is intended for use with a PDP-8E equipped with the extended memory option. A total of four tests are executed by the program. (See 9.2 thru 9.5). Each test writes a unique pattern into core memory and the checks for error. The patterns were chosen to aid the operator in the event of addressing errors.

The program automatically relocates itself to each memory field under test to ensure that all fields may be correctly referenced from any field. Fields not present in the system will automatically be de-selected from testing. (See 9.6)

Control of the program is given to the operator by means of the SR. The operator may halt after error, inhibit error printouts, substitute TTY BELL for error indication, halt after test, change field test limits, select all or any one of four tests, inhibit program relocation, and at any time restart the program at location \$200 thru \$204.

9.2 Test 1

Test 1 writes the value of each location into itself in the forward direction. Then each location is read and checked in the forward direction.

9.3 Test 2

Test 2 writes the complement value of each location into itself in the forward direction. Then each location is read and checked in the forward direction.

9.4 Test 3

Test 3 writes the value of each location into itself in the reverse direction. Then each location is read and checked in the reverse direction.

9.5

Test 4

Test 4 writes the complement value of each location into itself in the reverse direction. Then each location is read and checked in the reverse direction.

9.6

Program Relocation

Program relocation is governed by the status of SR bit 3 or by the fact that only one stack is selected for testing. With SR bit 3 down (0 position) program relocation occurs each time the test pattern and its complement have been completely tested in each selected stack. The program first relocates to the highest order 4K stack under test. The program keeps relocating to the next lower stack under test until it reaches the lowest order stack under test. The testing and relocation cycle is then repeated. The contents of the entire stack are relocated which enables any other information (RIM-BIN) to be carried with the program.

The program provides a degree of protection for itself by remembering all stacks where errors occur. When a faulty stack is next in sequence to contain the program, the program will skip the faulty stack and relocate to the first lower order stack which is error free. If all other selected stacks are faulty, program relocation will not take place.

During relocation a comparison check is made to insure no program loss.

For further understanding of how the tests are performed, refer to the listing.

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)
/COPYRIGHT 1971, DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS. 01754
/PROGRAMMER, VERNON FREY

//
/SW0=1
/SW1=1
/SW2=1
/SW3=1
/SW4=1
/SW5=1
/SW6-SW8
/SW9-SW11

//
//
/ PROGRAM STARTING ADDRESS
/0200 RUN ALL TESTS
/0201 RUN ONLY TEST 1
/0202 RUN ONLY TEST 2
/0203 RUN ONLY TEST 3
/0204 RUN ONLY TEST 4

//
//

//107 COMMANDS FOR THE MC68-E EXTENDED MEMORY & INTERRUPT
/GTF#6004 /GET INTERRUPT FLAGS
/AC0 LINK
/AC1 GREATER THAN FLAG
/AC2 INTERRUPT BUS
/AC3 INTERRUPT INHIBIT FLIP-FLOP
/AC4 INTERRUPT ON
/AC5 USER FLAG
/AC6-8 INSTRUCTION FIELD
/AC9-11 DATA FIELD
/RESTORE INTERRUPT FLAGS
/AC0 LINK
/AC1 GREATER THAN FLAG
/AC2 INTERRUPT INHIBIT FLIP-FLOP
/AC3 INTERRUPT ON
/AC5 USER FLAG
/AC6-8 INSTRUCTION FIELD
/AC9-11 DATA FIELD

//
//

6004

GTF#6004

/GET INTERRUPT FLAGS

//107 COMMANDS FOR THE MC68-E EXTENDED MEMORY & INTERRUPT

6005

RTF#6005

/RESTORE INTERRUPT FLAGS

/AC0 LINK

/AC1 GREATER THAN FLAG

/AC2 INTERRUPT INHIBIT FLIP-FLOP

/AC3 INTERRUPT ON

/AC5 USER FLAG

/AC6-8 INSTRUCTION FIELD

/AC9-11 DATA FIELD

CDF0-E6201
CDF1-E6211
CDF2-E6221
CDF3-E6231
CDF4-E6241
CDF5-E6251
CDF6-E6261

/CHANGE TO DATA FIELD 0
/CHANGE TO DATA FIELD 1
/CHANGE TO DATA FIELD 2
/CHANGE TO DATA FIELD 3
/CHANGE TO DATA FIELD 4
/CHANGE TO DATA FIELD 5
/CHANGE TO DATA FIELD 6

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6271 CDF7=6271 /CHANGE TO DATA FIELD 7
6202 CIF0=6202 /CHANGE TO INSTRUCTION FIELD 0
6212 CIF1=6212 /CHANGE TO INSTRUCTION FIELD 1
6222 CIF2=6222 /CHANGE TO INSTRUCTION FIELD 2
6232 CIF3=6232 /CHANGE TO INSTRUCTION FIELD 3
6242 CIF4=6242 /CHANGE TO INSTRUCTION FIELD 4
6252 CIF5=6252 /CHANGE TO INSTRUCTION FIELD 5
6262 CIF6=6262 /CHANGE TO INSTRUCTION FIELD 6
6272 CIF7=6272 /CHANGE TO INSTRUCTION FIELD 7
6203 CBF0=6203 /CHANGE TO DATA AND INSTRUCTION FIELD 0
6213 CBF1=6213 /CHANGE TO DATA AND INSTRUCTION FIELD 1
6223 CBF2=6223 /CHANGE TO DATA AND INSTRUCTION FIELD 2
6233 CBF3=6233 /CHANGE TO DATA AND INSTRUCTION FIELD 3
6243 CBF4=6243 /CHANGE TO DATA AND INSTRUCTION FIELD 4
6253 CBF5=6253 /CHANGE TO DATA AND INSTRUCTION FIELD 5
6263 CBF6=6263 /CHANGE TO DATA AND INSTRUCTION FIELD 6
6273 CBF7=6273 /CHANGE TO DATA AND INSTRUCTION FIELD 7
6204 CINT=6204 /CLEAR USER INTERRUPT (TIME SHARE)
6214 R0F=6214 /READ DATA FIELD INTO AC BITS 6-8
6224 R1F=6224 /READ INSTRUCTION FIELD INTO AC BITS 6-8
6234 RIB=6234 /READ INTERRUPT BUFFER
AC6-8 INSTRUCTION FIELD IN USE BEFORE LAST
/ PROGRAM INTERRUPT.
/AC9-11 DATA FIELD IN USE BEFORE LAST
/AC9-11 DATA FIELD IN USE BEFORE LAST
/ PROGRAM INTERRUPT.
/ RESTORE MEMORY FIELD
/INSTRUCTION FIELD LOADED FROM SAVE FIELD 0-2
/DATA FIELD LOADED FROM SAVE FIELD 3-5
/SKIP ON USER INTERRUPT (TIME SHARE)
/CLEAR USER FLAG (TIME SHARE)
/SET USER FLAG (TIME SHARE)

6244 RMF=6244
6254 SINT=6254
6264 CUF=6264
6274 SUF=6274

0020 *20
/ CONSTANTS AND POINTERS
/
SW0, 4000 /HALT AFTER ERROR
SW1, 2000 /INHIBIT ERROR TYPEOUT
SW2, 1000 /BELL ON ERROR
SW3, 400 /INHIBIT PROGRAM RELOCATION
SW4, 200 /CHANGE STACK LIMITS
SW5, 100 /HALT AFTER CURRENT TEST
SW68, 70 /STARTING STACK LIMIT (0-7)
SW911, 7 /ENDING STACK LIMIT (0-7)
STACK0, 0 // STACKS CONTAIN 0 IF SELECTED FOR TESTING
STACK1, 0 //
STACK2, 0 //
STACK3, 0 //
STACK4, 0 //
STACK5, 0 //
STACK6, 0 //
STACK7, 0 //
STK0, 0 //

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/EXTENDER ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER. -)

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00041      STK1,          0
00042      STK2,          0
00043      STK3,          0
00044      STK4,          0
00045      STK5,          0
00046      STK6,          0
00047      STK7,          0
00048      NOREL0,        0
00049      KABOVE,        ABOVE
00050      KBELOW,        BELOW
00051      1706
00052      1725
00053      0000
00054      HEAD1,
00055      INSAME,
00056      LEGAL0,
00057      RUNTST,
00058      TESTAD,
00059      KBINT,
00060      SSL,
00061      ESL,
00062      0000
00063      STKPIN,
00064      STKTST,
00065      BDATA,
00066      GDATA,
00067      0000
00068      MOVE,
00069      0000
00070      1736
00071      KDOWN,
00072      DOWN
00073      0000
00074      0000
00075      0000
00076      0000
00077      0000
00078      0000
00079      0000
00080      0000
00081      0000
00082      0000
00083      0000
00084      0000
00085      0000
00086      0000
00087      0000
00088      0000
00089      0000
00090      0000
00091      0000
00092      0000
00093      0000
00094      0000
00095      0000
00096      0000
00097      0000
00098      0000
00099      0000
00100      0000
00101      0000
00102      0000
00103      0000
00104      0000
00105      0000
00106      0000
00107      0000
00108      0000
00109      0000
00110      0000
00111      0000
00112      0000
00113      0000
00114      0000
00115      0000
00116      0000
00117      0000
00118      0000
00119      0000
00120      0000
00121      0000
00122      0000
00123      0000
00124      0000
00125      0000
00126      0000
00127      0000
00048      /0 IF RELOCATE
00049      /PROG RELOCATION CONTROL (0=INH)
00050      /CONTROL UPPER STACKS NOT TESTED
00051      /CONTROL LOWER STACKS NOT TESTED
00052      /ERROR HEADING CONTROL
00053      /PROG IN SEL STACK
00054      /LEGAL STACK SELECTION
00055      /6003=ALL, 0001=1, 0002=2, 2000=3, 4000=4
00056      /TEST ADDRESS COUNTER
00057      /HIGHEST ACTUAL STACK IN SYSTEM
00058      /STARTING STACK LIMIT 00X0
00059      /ENDING STACK LIMIT 00X0
00060      /STACK PROG IS IN 00X0
00061      /STACK SEL FOR TEST 00X0
00062      /BAD DATA
00063      /GOOD DATA
00064      /RELOCATION ADDRESS
00065      /CONTROL LOWER STACKS TESTED
00066      /INDIRECT ADDRESS TEMP STORAGE - CHEXN
00067      /CHECKERBOARD ERROR COUNTER
00068      /CODERR - TEST 3 & 4
00069      /MESSAGE - LEGAL
00070      /MESSAGE - 4 WORDS
00071      /MESSAGE - 4 WORDS
00072      /MESSAGE - 4 WORDS
00073      /MESSAGE - 4 WORDS
00074      /MESSAGE - 4 WORDS
00075      /MESSAGE - 4 WORDS
00076      /MESSAGE - 4 WORDS
00077      /MESSAGE - 4 WORDS
00078      /MESSAGE - 4 WORDS
00079      /MESSAGE - 4 WORDS
00080      /MESSAGE - 4 WORDS
00081      /MESSAGE - 4 WORDS
00082      /MESSAGE - 4 WORDS
00083      /MESSAGE - 4 WORDS
00084      /MESSAGE - 4 WORDS
00085      /MESSAGE - 4 WORDS
00086      /MESSAGE - 4 WORDS
00087      /MESSAGE - 4 WORDS
00088      /MESSAGE - 4 WORDS
00089      /MESSAGE - 4 WORDS
00090      /MESSAGE - 4 WORDS
00091      /MESSAGE - 4 WORDS
00092      /MESSAGE - 4 WORDS
00093      /MESSAGE - 4 WORDS
00094      /MESSAGE - 4 WORDS
00095      /MESSAGE - 4 WORDS
00096      /MESSAGE - 4 WORDS
00097      /MESSAGE - 4 WORDS
00098      /MESSAGE - 4 WORDS
00099      /MESSAGE - 4 WORDS
00100      /MESSAGE - 4 WORDS
00101      /MESSAGE - 4 WORDS
00102      /MESSAGE - 4 WORDS
00103      /MESSAGE - 4 WORDS
00104      /MESSAGE - 4 WORDS
00105      /MESSAGE - 4 WORDS
00106      /MESSAGE - 4 WORDS
00107      /MESSAGE - 4 WORDS
00108      /MESSAGE - 4 WORDS
00109      /MESSAGE - 4 WORDS
00110      /MESSAGE - 4 WORDS
00111      /MESSAGE - 4 WORDS
00112      /MESSAGE - 4 WORDS
00113      /MESSAGE - 4 WORDS
00114      /MESSAGE - 4 WORDS
00115      /MESSAGE - 4 WORDS
00116      /MESSAGE - 4 WORDS
00117      /MESSAGE - 4 WORDS
00118      /MESSAGE - 4 WORDS
00119      /MESSAGE - 4 WORDS
00120      /MESSAGE - 4 WORDS
00121      /MESSAGE - 4 WORDS
00122      /MESSAGE - 4 WORDS
00123      /MESSAGE - 4 WORDS
00124      /MESSAGE - 4 WORDS
00125      /MESSAGE - 4 WORDS
00126      /MESSAGE - 4 WORDS
00127      /MESSAGE - 4 WORDS

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0130 0707 K707,    707   /SIXTY
0131 4060 K4060,   4060  /CODERR - ERRC
0132 6000 K6000,   6000  /LINK IS A 0 - PROG FIELD TYPEOUT
0133 6003 K6003,   6003  /ALL TESTS
0134 6060 K6060,   6060  /SIXTY
0135 6100 K6100,   6100  /TEST 1
0136 6200 K6200,   6200  /TEST 2
0137 6300 K6300,   6300  /TEST 3
0140 6400 K6400,   6400  /TEST 4
0141 6201 K6201,   6201  /C0DF 0
0142 6203 K6203,   6203  /CBF 0
0143 2042 XTYPE,   TYPE  /TYPEOUT AC ROUTINE POINTER
0144 2050 XMESAC,  MESSAGE /TTY ROUTINE POINTER
0145 2000 XSIXTY,  SIXTY  /SIXTY ROUTINE POINTER
0146 2201 XCODER,  CODERR  /ERROR ROUTINE POINTER
0147 2200 XRETUR, RETURN  /ERROR RETURN POINTER
0150 2242 XSTOP,   STOP   /STOP ROUTINE POINTER
0151 2241 XADDER, ADDER  /ADDRESS OF ERROR TYPEOUT POINTER
0152 0000 FIVE,    0      /FIVE MINUTE TIMER
0153 0000 MINS,   0      /FIVE MINUTE CONTROL
0154 7100 MIN50,   -700  /ALL TESTS FIVE MIN
0155 3500 MIN51,   -4300  /TEST 1 FIVE MIN
0156 3500 MIN52,   -4300  /TEST 2 FIVE MIN
0157 6000 MIN53,   -2000  /TEST 3 FIVE MIN
0160 6000 MIN54,   -2000  /TEST 4 FIVE MIN
0000 *0
0000 0000 0
0001 5001 JMP
0002 0002 2
0003 0003 3
0200 *2000
/
/*KM8-E EXTENDED MEMORY ADDRESS TEST (EA8E)
/
EXTAD,  JMP   RUN0   /ALL TESTS
5777! 5776!  JMP   RUN1   /TEST 1
0201 5775!  JMP   RUN2   /TEST 2
0202 5774!  JMP   RUN3   /TEST 3
0203 5773!  JMP   RUN4   /TEST 4
0204 3056  EXTAD!, DCA   RUNST  /TEST CONTROL
0206 6002  DCA   IOF
0207 6224  RIF
0210 1141  TAD
0211 3242  DCA   K6201 ,+1  /MAKE DATA FIELD=INST FIELD
0212 6201  CDF 0
0213 4772!  JMS   TITLE
0214 4771!  CHEXA, JMS   SETSW
0215 7240  STA
0216 3050  DCA   NOREL0
0217 3057  DCA   TESTAD
0220 7240  STA
0221 3053  DCA   HEAD1
0222 1153  TAD   MIN5
0223 3152  DCA
/
/RESET ERROR HEADING
/SETUP COUNTER

```

0224	4770!	JMS	DOWN+2	/CLEAR STACK SELECTION CONTROLS
0225	7604	LAS	SW68	/STARTING STACK LIMIT
0226	0026	AND	SSL	
0227	3061	DCA	SW911	
0230	7624	LAS	AND	/ENDING STACK LIMIT
0231	0027	DCA	ESL	/OBTAIN -SSL IN AC BITS 9-11
0232	3062	JMS	MSSL	
0233	4/67,	TAD	ESL	
0234	1062	SZA	CLA	/SKIP IF SSL EQUALS ESL
0235	7640	JMP	CHEXC	/CONTINUE CHECK
0236	5262	RIF		/READ INSTRUCTION FIELD
0237	6224	CIA		
0240	7041	TAD	SSL	
0241	1061	SNA	CLA	/PROGRAM IS IN THE SELECTED FIELD
0242	7650	JMP	PINF	/INHIBIT PROGRAM RELOCATION
0243	5766!	DCA	NORELO	
0244	3050	TAD	(CHEXB	
0245	1365	DCA	ABOVE-1	
0246	3764!	TAD	ESL	
0247	1062	TAD	K ABOVE	
0250	1051	DCA	TEMP	
0251	3071	JMP	I	/INCREMENT UPPER FIELDS NOT TESTED
0252	5471	TAD	TEMP	
0253	1363	CHEXB,	TAD	/STORE RETURN ADDRESS
0254	3762!	DCA	(CHEXE BELOW+1	
0255	1062	TAD	ESL	
0256	7041	CIA	K BELOW	
0257	1052	TAD	TEMP	
0260	3071	DCA	JMP I	/INCREMENT LOWER FIELDS NOT TESTED
0261	5471	JMS	MSSL	/OBTAIN -SSL IN AC BITS 9-11
0262	4767!	TAD	ESL	
0263	1062	SPA	CLA	/STARTING FIELD IS GREATER THAN ENDING FIELD
0264	7710	CHEXD		
0265	5302	JMP	(CHEXC1	
0266	1361	TAD	ABOVE-1	
0267	3764!	DCA	TEMP	
0270	1062	TAD	ESL	
0271	1051	TAD	K ABOVE	
0272	3071	DCA	TEMP	
0273	5471	JMP	I	/INCREMENT UPPER FIELDS NOT TESTED
0274	1363	CHEXC1,	TAD	/STORE RETURN ADDRESS
0275	3/62!	DCA	(CHEXE BELOW+1	
0276	4/67!	JMS	MSSL	
0277	1052	TAD	K BELOW	
0300	3071	DCA	TEMP	
0301	5471	JMP	I	/INCREMENT LOWER FIELDS NOT TESTED
0302	1360	CHEXD,	TAD	/STORE RETURN ADDRESS
0303	3762!	DCA	(CHEXD1	
0304	4/67!	JMS	MSSL	
0305	1052	TAD	K BELOW	
0306	3071	DCA	TEMP	
0307	5471	JMP	I	/INCREMENT ALL LOWER FIELDS
0310	1363	TAD	(CHEXE DOWN+2	
0311	3770!	DCA	ESL	
0312	1062	TAD		

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    0313 7041 CIA
    0314 1070 TAD KDOWN
    0315 3071 DCA TEMP
    0316 5471 JMP I TEMP
    0317 4757' CHEXE, JMS HIGHEST
    0320 1060 TAD KBINT
    0321 1117 TAD K260
    0322 3060 DCA KBINT
    0323 4756' TSTSYS /MAKE HIGHEST STACK #7 FOR TYPEOUT
    0324 1355 TAD /TYPEOUT # OF STACKS IN SYSTEM
    0325 3764' (CHEXE2
    0326 1060 DCA ABOVE-1
    0327 0101 TAD KBINT
    0330 1051 AND K7
    0331 3071 TAD KABOVE
    0332 5471 DCA TEMP
    0355 0400 JMP I TEMP
    0356 3017 /INCREMENT UPPER STACKS NOT IN SYSTEM

    0357 2737
    0360 0310
    0361 0274
    0362 1726
    0363 0317
    0364 1705
    0365 0283
    0366 2712
    0367 1742
    0370 1740
    0371 2621
    0372 2620
    0373 1624
    0374 1617
    0375 1612
    0376 1605
    0377 1600
    0400 4771 PAGE
    0401 4210 CHEXE2, JMS TOSEL
    0402 1050 JMS LEGAL
    0403 7650 TAD NOREL0
    0403 7650 SNA CLA
    0404 5276 JMP CHEXN
    0405 4776' JMS CHKSWS3 /CHECK PROG RELO SW
    0406 5775' JMP CHEXO /RELOCATE PROGRAM
    0407 5327 JMP CHEXN /INHIBIT PROGRAM RELOCATION

    //CHECK FOR LEGAL STACK SELECTION

    0410 0000 LEGAL,
    0411 7300 CLA CLL
    0412 3054 DCA INSAME /CLEAR SAME CONTROL
    0413 1075 TAD M2
    0414 3055 DCA LEGAL0 /SETUP LEGAL CONTROL
    0415 3064 DCA STKTST

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/EXTENDED DRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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0416 1030 STACK0
0417 4263 JMS LEGALA
0420 1102 TAD K10
0421 3064 TAD STKTST
0422 1031 DCA STACK1
0423 4263 JMS LEGALA
0424 1103 TAD K20
0425 3064 TAD STKTST
0426 1032 DCA STACK2
0427 4263 JMS LEGALA
0430 1104 TAD K30
0431 3064 DCA STKTST
0432 1033 TAD STACK3
0433 4263 JMS LEGALA
0434 1105 TAD K40
0435 3064 DCA STKTST
0436 1034 TAD STACK4
0437 4263 JMS LEGALA
0440 1106 TAD K50
0441 3064 DCA STKTST
0442 1035 TAD STACK5
0443 4263 JMS LEGALA
0444 1107 TAD K60
0445 3064 DCA STKTST
0446 1036 TAD STACK6
0447 4263 JMS LEGALA
0450 1110 TAD K70
0451 3064 DCA STKTST
0452 1037 TAD STACK7
0453 4263 JMS LEGALA
0454 2055 ISZ LEGAL0
0455 9774 JMP NOSTK
0456 1054 TAD INSANE
0457 7640 SEA CLA PINF
0460 5773 JMP NOREL0
0461 3050 DCA
0462 5610 JMP I LEGAL

/LEGAL STACK SELECTION SUBROUTINE

0463 0000 LEGALA, 0 SEA CLA /NOT SELECTED
0464 7640 JMP I LEGAL
0465 5663 ISZ LEGAL0
0466 2055 SKP
0467 7410 JMP I LEGAL
0470 5610 RIF
0471 6224 STKPIN
0472 3063 DCA /PROG IN SEL STACK
0473 4772 JMP SAME
0474 2054 ISZ INSAME
0475 5663 JMP I LEGAL

/NO PROGRAM RELOCATION AND TEST ONLY 1 STACK

```

```

0476 6224 CHEXM, RIF          /STACK PROGRAM IS IN
0477 3063 DCA STKPIN
0500 1371 DCA (STACK0-1
0501 3017 DCA 17
0502 3071 DCA TEMP
0503 1417 CHEXM1, TAD I 17
0504 7650 SNA CLA           /FIND STACK SEL FOR TEST
0505 5310 JMP CHEXM2
0506 2071 ISZ TEMP
0507 5303 JMP CHEXM1
0510 1071 CHEXM2, TAD TEMP
0511 7104 CLL RAL
0512 7006 RTL
0513 3064 DCA STKTST
0514 4770! JMS PNOREL
0515 4767! CHEXM3, JMS TEST
0516 7604 LAS
0517 0025 AND SW5           /HALT AFTER TEST
0520 7640 SZA CLA
0521 7402 HLT
0522 7604 LAS
0523 0024 AND SW4           /CHANGE STACK LIMITS?
0524 7640 SZA CLA
0525 5766! JMP CHEXA
0526 5315 JMP CHEXM3

```

/NO PROGRAM RELOCATION BUT TEST ALL SELECTED STACKS

```

0527 4770! CHEXM, JMS           /TYPEOUT NO RELOCATION
0530 4765! CHEXND, JMS         /TEST SEL'D STACKS
0531 7604 LAS
0532 0025 AND SW5           /HALT AFTER TEST
0533 7640 SZA CLA
0534 7402 HLT
0535 7604 LAS
0536 0024 AND SW4           /CHANGE STACK LIMITS?
0537 7640 SZA CLA
0540 5766! JMP CHEXA
0541 4776! JMS CHKS13
0542 5775! JMP CHEXO
0543 5330 JMP CHEXND

```

```

0565 0600
0566 0214
0567 1200
0570 2636
0571 0027
0572 1631
0573 2712
0574 2732
0575 1000
0576 1640
0577 3074

```

0600

```
/TEST STACKS CONTROL
```

```

0600 0000 CLA /TEST STACKS CONTROL
0601 7200 CLA
0602 6224 RIF
0603 3063 DCA /STACK PROGRAM IS IN
          TAD STACK7
0604 1037 SZA CLA
0605 7640 JMP CHEXN2
          TAD K70
0606 5222 DCA /STACK SEL FOR TEST
          TAD COUNT
0607 1110 DCA
0610 3064 DCA
0611 3072 DCA
0612 4777 JMS SAME
0613 5222 JMS TEST
0614 4776 JMS
0615 1072 TAD COUNT
0616 7640 CLA
0617 2047 ISE CLA STK7
0620 7410 SKP
0621 9217 JMP *2
0622 1036 TAD STACK6
0623 7640 SZA CLA
0624 5240 JMP CHEXN3
          TAD K6B
0625 1107 DCA /STACK SEL FOR TEST
          TAD COUNT
0626 3064 DCA
0627 3072 DCA
0630 4777 JMS SAME
0631 5240 JMS TEST
0632 4776 JMS
0633 1072 TAD COUNT
0634 7640 CLA
0635 2046 ISE CLA STK6
0636 7410 SKP
0637 5235 JMP *2
0640 1035 TAD STACK5
0641 7640 SZA CLA
0642 5256 JMP CHEXN4
          TAD K5B
0643 4106 DCA /STACK SEL FOR TEST
          TAD COUNT
0644 3064 DCA
0645 3072 DCA
0646 4777 JMS SAME
0647 5256 JMS TEST
0650 4776 JMS
0651 1072 TAD COUNT
0652 7640 CLA
0653 2045 ISE CLA STK5
0654 7410 SKP
0655 5253 JMP *2
0656 1034 CHEXN4, TAD STACK4
          SZA CLA
0657 7640 JMP CHEXN5
0660 5274 TAD K4B
0661 1105 DCA /STACK SEL FOR TEST
0662 3064

```

```

0663 3072 COUNT
0664 4777' DCA SAME /PROG IN SEL STACK?
0665 5274 JMS CHEXNS /YES
0666 4776' JMS TEST /NO - TEST THE SEL STACK
0667 1072 TAD COUNT
0670 7640 SZA CLA STK4
0671 2044 IS2
0672 7410 SKP
0673 5271 IS2 COUNT
0674 1033 JMP '-2
0675 7640 SZA CLA STACK3
0676 5312 JMP CHEXN6
0677 1104 TAD K30
0700 3064 DCA STKTST
0701 3072 DCA COUNT
0702 4777' JMS SAME /STACK SEL FOR TEST
0703 5312 JMS CHEXN6
0704 4776' JMS TEST
0705 1072 TAD COUNT
0706 7640 SZA CLA
0707 2043 IS2 STACK3
0710 7410 SKP
0711 5307 JMP '-2
0712 1032 TAD STACK2
0713 7640 SZA CLA
0714 5330 JMP CHEXN7
0715 1103 TAD K20
0716 3064 DCA STKTST
0717 3072 DCA COUNT
0720 4777' JMS SAME /PROG IN SEL STACK?
0721 5330 JMS CHEXN7
0722 4776' JMS TEST /YES
0723 1072 TAD COUNT /NO - TEST THE SEL STACK
0724 7640 SZA CLA
0725 2042 IS2 STACK2
0726 7410 SKP
0727 5325 JMP '-2
0730 1031 TAD STACK1
0731 7640 SZA CLA
0732 5346 JMP CHEXN8
0733 1102 TAD K10
0734 3064 DCA STKTST
0735 3072 DCA COUNT
0736 4777' JMS SAME /PROG IN SEL STACK?
0737 5346 JMS CHEXN8
0740 4776' JMS TEST /YES
0741 1072 TAD COUNT /NO - TEST THE SEL STACK
0742 7640 SZA CLA
0743 2041 IS2 STACK1
0744 7410 SKP
0745 5343 JMP '-2
0746 1030 CHEXNB, TAD STACK0
0747 7640 SZA CLA
0750 5361 JMP CHEXN9
0751 3064 DCA STKTST /STACK SEL FOR TEST

```

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER.)

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0752	3072	DCA	COUNT	/PROG IN SEL STACK?
0753	4777'	JMS	SAME	/YES
0754	5361	JMP	CHEXN9	/NO - TEST THE SEL STACK
0755	4776'	JMS	TEST	
0756	1072	TAD	COUNT	
0757	7640	SZA	CLA	
0760	2040	ISZ	STK0	
0761	5600	CHEXN9,	JMP 1	CHEXN1
0762	5360	JMP	.-2	
0776	1200			
0777	1631			
	1000			PAGE

/CHECK ALL SELECTED STACKS FROM EACH SELECTED STACK

1000	4777'	CHEX0,	JMS	/TYPEOUT RELOCATION
1001	4776'	JMS	PREL	/RESTORE STK(S)
1002	4775'	JMS	RESTRK	/TEST FROM PRESENT STACK
1003	4774'	JMS	CHEXN1	
1004	7410	SKP	CHKSW3	
1005	5773'	JMP	CHEXN	
1006	6224	CHEX0A,	RIF	/STACK PROGRAM IS IN
1007	3063	DCA	STKPN	
1010	1047	TAD	STK7	
1011	7640	SZA	CLA	
1012	5224	JMP	CHEX00	
1013	1110	TAD	K7B	/STACK SEL FOR MOVE TO
1014	3064	DCA	STKTST	
1015	4772'	JMS	SAME	/PROG IN MOVE STACK?
1016	7410	SKP		/YES
1017	4771'	JMS	RELO	/NO - RELOCATE PROGRAM
1020	4775'	JMS	CHEXN1	
1021	4774'	JMS	CHKSW3	
1022	7410	SKP		/TEST ALL SEL STACKS
1023	5773'	JMP	CHEXN	
1024	1046	TAD	STK6	
1025	7640	SZA	CLA	
1026	5240	JNP	CHEX01	
1027	1107	TAD	K6B	/STACK SEL FOR MOVE TO
1030	3064	DCA	STKTST	
1031	4772'	JMS	SAME	/PROG IN MOVE STACK?
1032	7410	SKP		/YES
1033	4771'	JMS	RELO	/NO - RELOCATE PROGRAM
1034	4775'	JMS	CHEXN1	
1035	4774'	JMS	CHKSW3	
1036	7410	SKP		/TEST ALL SEL STACKS
1037	5773'	JMP	CHEXN	
1040	1045	CHEX01,	TAD	STK5
1041	7640	SEA	CLA	
1042	5254	JMP	CHEX02	
1043	1106	TAD	K50	
1044	3064	DCA	STKTST	

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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1045	4772!	JMS	SAME
1046	7410	SKP	
1047	4771!	JMS	RELO
1050	4775!	JMS	CHEXN1
1051	4774!	JMS	CHKSW3
1052	7410	SKP	
1053	5773!	JMP	CHEXN
1054	1044	CHEX02,	TAD
1055	7640	SEA CLA	STK4
1056	5270	JMP	CHEX03
1057	1105	TAD	K40
1060	3064	DCA	STKTST
1061	4772!	JMS	SAME
1062	7410	SKP	
1063	4771!	JMS	RELO
1064	4775!	JMS	CHEXN1
1065	4774!	JMS	CHKSW3
1066	7410	SKP	
1067	5773!	JMP	CHEXN
1070	1043	CHEX03,	TAD
1071	7640	SEA CLA	STK3
1072	5304	JMP	CHEX04
1073	1104	TAD	K30
1074	3064	DCA	STKTST
1075	4772!	JMS	SAME
1076	7410	SKP	
1077	4771!	JMS	RELO
1100	4775!	JMS	CHEXN1
1101	4774!	JMS	CHKSW3
1102	7410	SKP	
1103	5773!	JMP	CHEXN
1104	1042	CHEX04,	TAD
1105	7640	SEA CLA	STK2
1106	5320	JMP	CHEX05
1107	1103	TAD	K20
1110	3064	DCA	STKTST
1111	4772!	JMS	SAME
1112	7410	SKP	
1113	4771!	JMS	RELO
1114	4775!	JMS	CHEXN1
1115	4774!	JMS	CHKSW3
1116	7410	SKP	
1117	5773!	JMP	CHEXN
1120	1041	CHEX05,	TAD
1121	7640	SEA CLA	STK1
1122	5334	JMP	CHEX06
1123	1102	TAD	K10
1124	3064	DCA	STKTST
1125	4772!	JMS	SAME
1126	7410	SKP	
1127	4771!	JMS	RELO
1130	4775!	JMS	CHEXN1
1131	4774!	JMS	CHKSW3
1132	7410	SKP	
1133	5773!	JMP	CHEXN

/EXTENDED JPRESS TEST FOR KMB-E EXTENDED MEMORY (VER A)

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```

1134 1040 CHEX06, TAD STK0
1135 7640 SZA CLA CHEX07
1136 5344 JMP STKTST
1137 3064 DCA SAME
1140 4772! JMS
1141 7410 SKP RELO
1142 4771! JMS CHEXN1
1143 4775! JMS
1144 7604 CHEX07, LAS /HALT AFTER TEST
1145 0025 AND SW5
1146 7640 SZA CLA
1147 7402 HLT
1150 7604 LAS /CHANGE STACK LIMITS?
1151 0024 AND SW4
1152 7640 SZA CLA /YES
1153 9770! JMS /NO
1154 4774! CHKSNS
1155 5206 JMS /RELOCATE THE PROGRAM
1156 5773! JMP /INHIBIT PROGRAM RELOCATION
1170 0214
1171 1646
1172 1631
1173 0527
1174 1640
1175 0600
1176 3051
1177 2672 PAGE

```

/RUN THE SELECTED TEST(S) ON THE SELECTED FIELD (STKTST)

```

1200 0000 TEST, @ CLA CLL STKTST /UPDATE CDF TEST DATA FIELDS
1201 7300 TAD K6201
1202 1064 TAD TDF1
1203 1141 TAD TDF1
1204 3252 DCA TDF2
1205 1252 TAD TDF2
1206 3777! DCA TDF2
1207 1777! TAD TDF2
1210 3776! DCA TDF3
1211 1776! TAD TDF3
1212 3775! DCA TDF4
1213 3072 DCA COUNT /CLEAR ERROR COUNT
1214 1056 TAD RUNST
1215 7010 RAR
1216 7630 SZE CLA TEST1 /EXECUTE TEST 1
1217 4250 JMS TAD RUNST
1220 1056 RTR
1221 7012 SZE CLA TEST2 /EXECUTE TEST 2
1222 7630 JMS TAD RUNST
1223 4774! TAD
1224 1056

```

```

1225 7006 RTL
1226 7630 S2L CLA TEST3
1227 4773' JMS RUNST
1230 1056 TAD
1231 7024 RAL
1232 7630 S2L CLA TEST3
1233 4772' JMS /EXECUTE TEST 3
1234 7624 LAS /EXECUTE TEST 4
1235 0024 AND SW4 /CHANGE STACK LIMITS?
1236 7640 S2A CLA CHEXA
1237 5771' JMP /YES
1240 2152 ISZ /NOT 5 MINUTES YET
1241 5600 JMP 1 TEST
1242 1153 TAD MINS
1243 3152 DCA FIVE
1244 4544 JMP 1 XMESSAG
1245 4543 4543 /RESTORE TIMER
1246 6500 6500
1247 5600 JMP 1 TEST

```

/TEST 1

/WRITE THE VALUE OF EACH LOCATION INTO ITSELF AND CHECK

```

0000 0057 TEST1, 0 TESTAD /CLEAR TEST ADDRESS COUNTER
1251 3057 DCA TESTAD /CHANGE TO TEST DATA FIELD
1252 6201 CDF0
1253 1057 TEST1A, TAD TESTAD
1254 3457 DCA 1 TESTAD /WRITE MEMORY
1255 8057 ISZ TESTAD
1256 5253 JNP TESTAD /4096 TIMES
1257 1057 TEST1B, TAD TESTAD /READ AND CHECK
1260 7041 CIA
1261 1457 TAD 1 TESTAD
1262 7640 S2A CLA
1263 9273 JMP ADDER1 /ADDRESS ERROR
1264 2057 ISZ TESTAD
1265 5257 JNP TEST1B /CONTINUE READ AND CHECK
1266 1063 TAD STKPIN
1267 1141 TAD K6201
1270 3271 DCA .+1
1271 6201 CDF0
1272 5650 JMP 1 TEST1 /CHANGE TO PROGRAM DATA FIELD
1273 1057 ADDER1, TAD /DONE
1274 3066 DCA
1275 1457 TAD 1
1276 3065 DCA
1277 1063 TAD
1300 1141 TAD
1301 3302 DCA
1302 6201 CDF0
1303 4770' JMS /CHARGE TO PROGRAM DATA FIELD
1304 1064 TAD /ADDRESS ERROR TEST1

```

/EXTENDEL DRESS TEST FOR KM8-E EXTENDED MEMORY (VER 4)

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1305	1141	TAD	K6201
1306	3307	DCA	.+1
1307	6201	CDF0	
1310	5264	JMP	ADDR1

1370 2256

1371 0214

1372 1514

1373 1443

1374 1400

1375 1516

1376 1445

1377 1402

1400 PAGE

/TEST 2

/WRITE THE COMPLEMENT VALUE OF EACH LOCATION INTO ITSELF AND CHECK

0000	TEST2, 0	TAD	TESTAD	/CLEAR TEST ADDRESS COUNTER
1401	3057	DCA	TESTAD	/CHANGE TO TEST DATA FIELD
1402	6201	TDF2,	CDF0	
1403	4057	TEST2A,	TAD	TESTAD
1404	7040	CMA		
1405	3457	DCA I	TESTAD	
1406	2057	ISE	TESTAD	
1407	5203	JMP	TEST2A	/WRITE MEMORY
1410	4057	TAD	TESTAD	/4096 TIMES
1411	7001	IAC		/READ AND CHECK
1412	1457	TAD I	TESTAD	
1413	7640	SEA CLA		
1414	5224	JMP	ADDER2	/ADDRESS ERROR
1415	2057	ISE	TESTAD	
1416	5210	JMP	TEST2B	/CONTINUE READ AND CHECK
1417	1063	TAD	STKPIN	
1420	1141	TAD	K6201	
1421	3222	DCA	.+1	
1422	6201	CDF0		/CHANGE TO PROGRAM DATA FIELD
1423	5600	JMP I	TEST2	/DONE
1424	1057	ADDER2, TAD	TESTAD	
1425	7040	CMA		
1426	3066	DCA	GDATA	/GOOD
1427	1457	TAD I	TESTAD	/BAD
1430	3065	DCA	BDATA	
1431	1063	TAD	STKPIN	
1432	1141	TAD	K6201	
1433	3234	DCA	.+1	
1434	6201	CDF0		/CHANGE TO PROGRAM DATA FIELD
1435	4777,	JMS	ERR2	/ADDRESS ERROR TEST 2
1436	1064	TAD	STKST	
1437	1141	TAD	K6201	
1440	3241	DCA	.+1	
1441	6201	CDF0		/CHANGE TO TEST DATA FIELD

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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1442 5215 JMP ADDRT2

/TEST 3

/WRITE THE VALUE OF EACH LOCATION INTO ITSELF AND CHECK BACKWARDS

```

1443 0000 TEST3, 0          TESTAD      /CLEAR TEST ADDRESS COUNTER
1444 3057 DCA              TESTAD      /CHANGE TO TEST DATA FIELD
1445 6201 TDF3, CDF0       TEST3A, TAD TESTAD
1446 1057 TEST3A, TAD     TESTAD
1447 1074 TAD              M1
1450 3057 DCA              TESTAD
1451 1057 TAD              TESTAD
1452 3457 DCA I            TESTAD
1453 1057 TAD              TESTAD
1454 7640 SZA CLA         TEST3A
1455 5246 TEST3B, TAD     TESTAD
1456 1057 TAD              M1
1457 1074 TAD              TESTAD
1460 3057 DCA              TESTAD
1461 1057 TAD              TESTAD
1462 7041 CIA              /READ AND CHECK
1463 1457 TAD I            TESTAD
1464 7640 SZA CLA         /ADDRESS ERROR
1465 5276 JMP              ADDER3
1466 1057 TAD              TESTAD
1467 7640 SZA CLA         /CONTINUE READ AND CHECK
1470 5256 JMP              TEST3B
1471 1063 TAD              STKPIN
1472 1141 TAD              K6201
1473 3274 DCA .+1
1474 6201 CDF0             /CHANGE TO PROGRAM DATA FIELD
1475 5643 JMP I            TEST3
1476 1057 ADDER3, TAD     TESTAD
1477 3066 DCA              GDATA
1500 1457 TAD I            /GOOD
1501 3065 DCA              /BAD
1502 1063 TAD              STKPIN
1503 1141 TAD              K6201
1504 3305 DCA .+1
1505 6201 CDF0             /CHANGE TO PROGRAM DATA FIELD
1506 4776 JMS              ERRJ
1507 1064 TAD              STKTS T
1510 1141 DCA .+1
1511 3312 CDF0             /CHANGE TO TEST DATA FIELD
1512 6201 JMP              ADDRT3

```

/TEST 4

/WRITE THE COMPLEMENT VALUE OF EACH LOCATION INTO ITSELF
/AND CHECK BACKWARDS

```

1514 0000 TEST4, 0          TESTAD
1515 3057 DCA              /CLEAR TEST ADDRESS COUNTER

```

/EXTENDER JDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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1516 6201 TOF4, CDF0 TESTAD /CHANGE TO TEST DATA FIELD
1517 1057 TESTAA, TAD M1
1520 1074 TAD TESTAD
1521 3057 DCA TESTAD
1522 1057 TAD TESTAD
1523 7040 CMA I TESTAD /WRITE MEMORY
1524 3457 DCA I TESTAD
1525 1057 TAD TESTAD
1526 7640 SZA CLA TESTAA /4096 TIMES
1527 5317 TEST4B, JMP TESTAD
1530 1057 TAD TESTAD
1531 1074 TAD M1
1532 3057 DCA TESTAD
1533 1057 TAD TESTAD /READ AND CHECK
1534 7001 IAC
1535 1457 TAD I TESTAD
1536 7640 SZA CLA ADDER4 /ADDRESS ERROR
1537 5350 JMP TESTAD
1540 1057 ADDR4, TAD TESTAD
1541 7640 SZA CLA TESTAB /CONTINUE READ AND CHECK
1542 5330 JMP TESTAB
1543 1063 TAD STKPIN
1544 1141 TAD K6201
1545 3346 DCA .+1
1546 6201 CDF0 /CHANGE TO PROGRAM DATA FIELD
1547 5714 JMP I TEST4 /DONE
1550 1057 ADDER4, TAD TESTAD
1551 7040 CMA /GOOD
1552 3066 DCA TESTAD
1553 1457 TAD I BDATA /BAD
1554 3065 DCA STKPIN
1555 1063 TAD K6201
1556 1141 TAD .+1
1557 3360 DCA /CHANGE TO PROGRAM DATA FIELD
1560 6201 CDF0 JMS STKTS
1561 4775 TAD K6201 /ADDRESS ERROR TEST 4
1562 1064 DCA .+1
1563 1141 TAD
1564 3365 DCA /CHANGE TO TEST DATA FIELD
1565 6201 CDF0 ADDR4
1566 5340 JMP
1575 2416
1576 2400
1577 2342
1600 7200 RUN0, CLA /SETUP 5 MINUTE TIMER & TEST SELECTED TO RUN
1601 1154 TAD MIN50
1602 3153 DCA MIN50

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```

1603 1133 TAD K6003
1604 5777 JMP EXTAD0
1605 7200 RUN1, CLA /RUN ONLY TEST 1
1606 1155 TAD MIN51
1607 3153 DCA MIN5
1610 7001 IAC EXTAD0
1611 5777 JMP CLL /RUN ONLY TEST 2
1612 7300 RUN2, CLA TAD MIN52
1613 1156 DCA MIN5
1614 3153 IAC RAL /RUN ONLY TEST 3
1615 7005 JMP EXTAD0
1616 5777 CLA TAD MIN53
1617 7200 RUN3, DCA MIN5
1620 1157 STL RTR /RUN ONLY TEST 4
1621 3153 DCA MIN5
1622 7132 STL RTR
1623 5777 JMP EXTAD0
1624 7200 RUN4, CLA TAD MIN54
1625 4160 DCA MIN5
1626 3153 STL RAR /PROG NOT IN SEL STACK
1627 7130 JMP EXTAD0
1630 5777,

```

```

/RETURN IF PROGRAM IS IN SELECTED STACK
/RETURN+1 IF PROGRAM IS NOT IN SELECTED STACK

```

```

1631 0000 SAME, 0 TAD STKPIN
1632 1063 CIA
1633 7041 TAD STKTS1
1634 1064 TAD STKTS1
1635 7640 SEA CLA
1636 2231 ISE SAME
1637 5631 JMP I SAME

```

```

/CHECK PROGRAM RELOCATION SWITCH
/RETURN IF RELOCATE, RETURN+1 IF INHIBIT RELOCATION

```

```

1640 0000 CHKSW3, 0 LAS
1641 7604 AND SW3
1642 0023 SEA CLA
1643 7640 ISE CHKSW3
1644 2240 JMP I CHKSW3
1645 5640

```

```

/RELOCATE THE PROGRAM
1646 0000 RELO, 0 CLA
1647 7200 DCA COUNT
1650 3072 DCA MOVE
1651 3067 TAD K6201
1652 1141 TAD STKPIN
1653 1063 DCA RELO2
1654 3265 TAD K6201
1655 1141

```

```

/CLEAR ERROR COUNTER

```

/EXTENDED ADDRESS TEST FOR KME-E EXTENDED MEMORY (VER)

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```

1656 1064 TAD STKTST
1657 3267 DCA RELO3
1660 1265 TAD RELO2
1661 3272 DCA RELO4
1662 1142 TAD K6203
1663 1064 TAD STKTST
1664 3303 DCA RELO5
1665 6201 RELO2, CDF0 /MOVE FROM DATA FIELD
1666 1467 TAD I MOVE
1667 6201 RELO3, CDF0 /MOVE TO DATA FIELD
1670 3467 DCA I MOVE
1671 1467 TAD I MOVE
1672 6201 CDF0 /MOVE FROM DATA FIELD
1673 7041 CIA
1674 1467 TAD I MOVE
1675 7640 SZA CLA
1676 4776 JMS ERRM /MOVE ERROR
1677 2067 ISE MOVE
1700 5265 JMP RELO2
1701 1072 TAD COUNT
1702 7650 SNA CLA /SKIP IF MOVE ERROR
1703 6203 CBF0 /CHANGE TO NEW PROG FIELD
1704 5646 JMP I RELO

```

/ INCREMENT CONTROL OF UPPER STACKS NOT TESTED AND/OR
 / STACKS NOT IN THE SYSTEM

```

1705 0000
1706 2031 @ ISE, STACK1
1707 2032 ISE STACK2
1710 2033 ISE STACK3
1711 2034 ISE STACK4
1712 2035 ISE STACK5
1713 2036 ISE STACK6
1714 2037 ISE STACK7
1715 5705 JMP I ABOVE-1

```

/ INCREMENT CONTROL OF LOWER STACKS NOT TESTED

```

1716 2036 ISE STACK6
1717 2035 ISE STACK5
1720 2034 ISE STACK4
1721 2033 ISE STACK3
1722 2032 ISE STACK2
1723 2031 ISE STACK1
1724 2030 ISE STACK0
1725 5726 BELOW, JMP I +1
1726 0000 @

```

/ CLEAR ALL STACKS OR STACKS TO BE TESTED

```

1727 3037 DCA STACK7
1730 3036 DCA STACK6
1731 3035 DCA STACK5

```

```

1732 3034 DCA STACK4
1733 3033 DCA STACK3
1734 3032 DCA STACK2
1735 3031 DCA STACK1
1736 3030 DOWN, DCA STACK0
1737 5740 JMP 1 .+1
1740 0000 0 RETURN ADDRESS
1741 5327 JMP .-12 /CLEAR ALL STACK SELECTION CONTROLS

```

```

/ OBTAIN -SSL (MINUS STARTING STACK LIMIT)
/MSSL, 0 TAD SSL
CLL RTR
RAR
CIA
JMP 1 MSSL

```

```

1742 0000
1743 1061
1744 7112
1745 7010
1746 7041
1747 5742
1776 2434
1777 0205
2000 PAGE

```

```
/ CONVERT OCTAL NUMBERS FOR TYPEOUT
```

```

/SIXTY, 0 CLA CLL
TAD I SIXTY0
DCA SIXTY1
ISE SIXTY
TAD I SIXTY
DCA SIXTY1
ISE SIXTY
K77
TAD
CMA AND I SIXTY0
AND I SIXTY0
CLL RTR
RTR
RTR
JMS CNV
ISE SIXTY1
TAD K77
AND I SIXTY0
JMS CNV
JMP I SIXTY
0 SIXTY2
DCA SIXTY2
TAD RTL
CLL RTL
RAL
AND K707
AND SIXTY2
TAD K707
AND K6060
TAD K6060
DCA I SIXTY1
/SAVE DIGITS
/AND LEFT DIGIT
/AND RIGHT DIGIT
/STORE CONVERTED DIGITS

```

2037 0000 SIXTY0, 0 /ADDRESS OF OPERAND
 2040 0000 SIXTY1, 0 /STORAGE ADDRESS
 2041 0000 SIXTY2, 0 /TEMPORARY STORAGE

/TYPEOUT CHARACTER IN AC AND RETURN

```

2042 0000 TYPE, 0
2043 6046 TLS /TRANSMIT CHARACTER
2044 6041 TSF
2045 5244 JMP .+1 /WAIT FOR FLAG
2046 7300 CLA CLL I TYPE
2047 5642 JMP I
  
```

/TELETYPE OUTPUT ROUTINE WITH BELL

```

2050 0000 MESSAGE, 0
2051 7240 STA
2052 1250 TAD MESSAGE /FIRST WORD -1
2053 3010 DCA 10
2054 1410 TAD 1
2055 3266 DCA MSRCHT
2056 1266 TAD MSRCHT
2057 7112 CLL RTR
2060 7012 RTR
2061 7012 RTR
2062 4267 JMS /POSITION FIRST CHARACTER
2063 1266 TAD /TYPEOUT FIRST CHARACTER
2064 4267 JMS
2065 5254 TAD /TYPEOUT SECOND CHARACTER
2066 0000 MSRCHT, 0 /CONTINUE TYPING
2067 0000 TYPECH, 0
2070 0111 AND K77 /IS IT END OF MESSAGE?
2071 7450 SNA /RETURN TO PROGRAM
2072 5410 JMP I 10 /SUBTRACT 34
2073 1100 TAD
2074 7440 SZA
2075 5300 JMP .+3
2076 1112 TAD K207 /CODE IS BELL
2077 5320 JMP MTP
2100 1077 TAD M4 /SUBTRACT 4
2101 7500 SMA /CODE LESS THAN 40?
2102 5305 JMP .+3 /NO
2103 1127 TAD K340 /YES, ADD 300, CODE IS ALPHA
2104 5320 JMP MTP
2105 1076 TAD M3 /SUBTRACT 3
2106 7440 SZA
2107 5312 JMP .+3 /CODE IS LINE FEED
2110 1113 TAD K212
2111 5320 JMP MTP
2112 1075 TAD M2
2113 7440 SZA /SUBTRACT 2
  
```

/EXTENDED ADDRESS TEST FOR KMM8-E EXTENDED MEMORY (VER)

PAL10 V141

2-JUN-71

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PAGE 1-21

2114 5317 JMP *+3
2115 1114 TAD K215 /CODE IS CR
2116 7410 SKP
2117 1116 TAD K245 /ADD 200 TO OTHER CODES >40
2120 4242 MTP, JMS TYPE /TYPEOUT CHARACTER IN AC
2121 5667 JMP 1 TYPECH
2200 PAGE

/ERROR ROUTINE (BELL ON ERROR HAS PRIORITY)

2200 0000 RETURN, 0 /PROGRAM RETURN ADDRESS
2201 6002 CODERR, IOF /CHECK FOR BELL ON ERROR
2202 7604 AND LAS SW2
2203 0022 SNA CLA
2204 7650 JMP .+4
2205 9211
2206 1112 RBELL, TAD K207 /BELL CODE
2207 4543 JMS 1 XTYPE /RING BELL
2210 5600 JMP 1 RETURN
2211 7604 LAS
2212 0021 AND SW1
2213 7640 S2A CLA STOP /INHIBIT TIMEOUT
2214 5242 JMP RIF /READ INST FIELD
2215 6224 RTR
2216 7012 RAR
2217 7010 AND K7
2220 0101 TAD K4060
2221 1131 DCA ERROR0
2222 3233 RETURN
2223 1200 TAD M1
2224 1074 DCA ERRLOC
2225 3073 JMS 1 XSIXTY
2226 4545 ERRLOC
2227 0073 JMESSAG
2230 2234 ERROR1
2231 4544 JMS 1 XMESSAG
2232 4543 4543 /TYPEOUT ERROR LOCATION
2233 0000 ERROR0, /FIELD
2234 0000 ERROR1, 0
2235 0000 0
2236 4040 4040 /PROGRAM LOCATION OF ERROR JMS
2237 0000 0000 /TYPEOUT ERROR
2240 5641 ADDER, 0 /ADDRESS OF ERROR TYPEOUT
2241 0000 STOP, LAS /HALT AFTER ERROR
2242 7604 AND SW0
2243 0020 SNA CLA LIMIT
2244 7650 JMP LIMIT /INHIBIT ERROR HALT
2245 5251 TAD RETURN
2246 1200 M1
2247 1074 TAD
2250 7402 HLT
2251 7604 LIMIT, LAS
2252 0024 AND SW4 /HALT WITH AC=ERROR LOC
/CHANGE STACK LIMITS?

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/EXTENDE DRESS TEST FOR KM8-E EXTENDED MEMORY (VER 1) PAL10 V141 2-JUN-71 21:26 PAGE 1-22

2253	7640	SZA CLA			
2254	5777	JMP	CHEXA	/YES	
2255	5600	JMP	1	RETURN	/NO


```

    // ADDRESS ERROR TEST 1
    //ERR1,   0   COUNT   /ADDRESS ERROR OCCURRED
    2256   0000   ISE2
    2257   2072   SKP   /ADDRESS ERROR OCCURRED
    2260   7410   JMP   .-2
    2261   5257   CLA
    2262   7200   TAD   ERR1
    2263   1256   DCA   1   XRETUR
    2264   3547   TAD   .+3
    2265   1270   DCA   1   XADDER
    2266   3551   SKP
    2267   7410   PERR1
    2270   2307   TAD   K6100
    2271   1135   DCA   #24   /TEST 1
    2272   3340   LAS   /BELL ON ERROR?
    2273   7604   ERR1A,
    2274   0022   AND   SW2
    2275   7640   SZA CLA
    2276   5206   JMP   RBELL
    2277   7604   LAS
    2300   0021   AND   SW1   /INHIBIT ERROR TIMEOUT?
    2301   7640   SZA CLA
    2302   5550   JMP   1   XSTOP
    2303   2053   ISE2   HEAD1
    2304   7410   SKP
    2305   4776   JMS   HEAD12
    2306   5546   JMP   1   XCODER
    2307   1064   PERR1,   STK1ST
    2310   7112   TAD   CLL RTR
    2311   7010   RAR
    2312   1131   TAD   K4060
    2313   3326   DCA   320
    2314   4545   JMS   1   XSIXTY
    2315   0057   TESTAD
    2316   2327   221
    2317   4545   JMS   1   XSIXTY
    2318   7112   GDATA
    2319   7010   #22
    2320   0066   JMS   1   XSIXTY
    2321   2332   BDATA
    2322   4545   223
    2323   0065   JMS   1   XMESSAG
    2324   2335   0
    2325   4544   #20,   /BAD
    2326   0000   0
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    2948   0000   0
    2949   0000   0
    2950   0000   0
    2951   0000   0
    2952   0000   0
    2953   0000   0
    2954   0000   0
    2955   0000   0
    2956   0000   0
    2957   0000   0
    2958   0000   0
    2959   0000   0
    2960   0000   0
    2961   0000   0
    2962   0000   0
    2963   0000   0
    2964   0000   0
    2965   0000   0
    2966   0000   0
    2967   0000   0
    2968   0000   0
    2969   0000   0
    2970   0000   0
    2971   0000   0
    2972   000
```

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER ..)

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2334	4040	4040
2335	0000	223,
2336	0000	0
2337	4040	4040
2340	0000	224,
2341	5550	JMP I XSTOP

/TEST

/ADDRESS ERROR TEST 2

/EXTENDER ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER A)

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```

2342 0000 0    ERR2, 0 ISZ COUNT /ADDRESS ERROR OCCURRED
2343 2072 SKP
2344 7410 JMP .-2
2345 5343 CLA
2346 7200 TAD ERR2 /STORE RETURN ADDRESS
2347 1342 DCA 1 XRETUR
2350 3547 TAD 1 *+3
2351 1354 DCA 1 XADDER
2352 3551 SKP /STORE ERROR TYPEOUT ADDRESS
2353 7410 PERR1
2354 2307 TAD K620@ /TEST 2
2355 1136 DCA 224
2356 3340 JMP ERR1A
2357 5273 PAGE

/ADDRESS ERROR TEST 3

2400 0000 0    ERR3, 0 ISZ COUNT /ADDRESS ERROR OCCURRED
2401 2072 SKP
2402 7410 JMP .-2
2403 5201 CLA
2404 7200 TAD ERR3 /STORE RETURN ADDRESS
2405 1200 DCA 1 XRETUR
2406 3547 TAD 1 *+3
2407 1212 DCA 1 XADDER
2410 3551 SKP /STORE ERROR TYPEOUT ADDRESS
2411 7410 PERR1
2412 2307 TAD K630@ /TEST 3
2413 1137 DCA 224
2414 3777' JMP ERR1A
2415 5776' PAGE

```

```

/ADDRESS ERROR TEST 4

2416 0000 0    ERR4, 0 ISZ COUNT /ADDRESS ERROR OCCURRED
2417 2072 SKP
2420 7410 JMP .-2
2421 5217 CLA
2422 7200 TAD ERR4 /STORE RETURN ADDRESS
2423 1216 DCA 1 XRETUR
2424 3547 TAD 1 *+3
2425 1230 DCA 1 XADDER
2426 3551 SKP /STORE ERROR TYPEOUT ADDRESS
2427 7410 PERR1
2430 2307 TAD K640@ /TEST 4
2431 1140 DCA 224
2432 3777' JMP ERR1A
2433 5776' PAGE

```

/RELOCATION MOVE ERROR OCCURRED

```

2434 0000
2435 2072      ERRM, 0      ISZ      COUNT      /RELO ERROR OCCURRED
2436 7410      SKP
2437 5235      JMP .~2
2440 7200      CLA
2441 1234      TAD      ERRM
2442 3547      DCA 1    XRETURN
2443 1246      TAD .+3
2444 3551      DCA 1    XADDER
2445 5246      JMP 1    XCODER
2446 2447      PERRM

2447 1064      PERRM, TAD      STKTST
2450 7112      CLL RTR
2451 7010      RAR
2452 1131      TAD      K4060
2453 3270      DCA 210
2454 4545      JMS 1    XSIXTY
2455 0067      MOVE
2456 2471      Z14
2457 4544      JMS 1    XMESSAG
2460 2205      TEXT      "RELO ERR AT "
2461 1417
2462 4025
2463 2222
2464 4001
2465 2440
2466 0000
2467 4544      JMS 1    XMESSAG
2470 0000      Z10,
2471 0000      Z11,
2472 0000      0
2473 0000      0
2474 7240      STA
2475 3053      DCA  HEAD1
2476 5550      JMP 1    XSTOP

```

/TYPEOUT TEST 1 OR 2 ERROR HEADING

```

HEAD12, 0      JMS 1    XMESSAG
                TEXT      "%#PR LOC   ADDR   GOOD   BAD   TEST"
2477 0000
2500 4544      JMS 1    XMESSAG
2501 4543      TEXT      "%#PR LOC   ADDR   GOOD   BAD   TEST"
2502 2022
2503 4014
2504 1703
2505 4040
2506 4001
2507 0404
2510 2240
2511 4040

```

/EXTENDEL JRESS TEST FOR KMB-E EXTENDED MEMORY (VER)

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2512 0717
2513 1704
2514 4040
2515 0201
2516 0440
2517 4024
2520 0523
2521 2400
2522 5677 JMP I HEAD12
2576 2273
2577 2340 PAGE
2600 2600

/TYPEOUT PROGRAM TITLE
/TITLE, 0 JMS I XMESSAG TEXT "X#HEA8-E EXT MEM ADDR TEST#"
2600 0000
2601 4544
2602 4543
2603 4305
2604 0170
2605 5505
2606 4005
2607 3024
2610 4015
2611 0515
2612 4001
2613 0404
2614 2240
2615 2405
2616 2324
2617 4300
2620 5600 JMP I TITLE

/TYPEOUT TO SET SWITCHES
/SETSW, 0 JMS I XMESSAG TEXT "X#SETUP SR & CONT"
2621 0000
2622 4544
2623 4543
2624 2305
2625 2425
2626 2040
2627 2322
2630 4046
2631 4003
2632 1716
2633 2400
2634 7402
2635 5621 HLT JMP I SETSW /WAIT FOR SWITCH SETTING
/TYPEOUT 'NO PROGRAM RELOCATION WILL OCCUR'
/PNOREL, 0
2636 0000

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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```
2637 4244 JMS I XMESSAG "%%NO RELOCATION, PROG IN STACK"
2640 4543 TEXT
2641 1617
2642 4022
2643 0514
2644 1703
2645 0124
2646 1117
2647 1654
2650 4020
2651 2217
2652 0740
2653 1116
2654 4023
2655 2401
2656 0313
2657 4000
2660 6224
2661 7106
2662 7004
2663 1132
2664 3266
2665 4544
2666 0000
2667 7240
2670 3053
2671 5636
          RIF
          CLL RTL
          RAL
          TAD
          DCA
          Z8
          JMS I
          XMESSAG
          @
          STA
          DCA
          HEAD1
          JMP I
          PNOREL
          /RESET ERROR HEADING

          /PROGRAM RELOCATION WILL OCCUR
PREL, @ JMS I XMESSAG "%%PROG WILL RELOCATE"
          0000
          4544
          4543
          2022
          2675
          2022
          2676
          1707
          2677
          4027
          2678
          4027
          2700
          1114
          2701
          1440
          2702
          2205
          2703
          1417
          2704
          0301
          2705
          2405
          2706
          0000
          2707
          7240
          2710
          3053
          2711
          5672
          STA
          DCA
          HEAD1
          JMP I
          PREL
          /RESET ERROR HEADING

          /TYPEOUT !PROGRAM IS IN SELECTED FIELD!
PINF, JMS I XMESSAG "%%PROGRAM IN SELECTED FIELD"
          2712
          4244
          2713
          4543
          2714
          2022
          2715
          1707
          2716
          2201
          2717
          1240
```

/EXTENDEI

DRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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2720 1116

2721 4023

2722 0514

2723 0503

2724 2405

2725 0440

2726 0611

2727 0514

2730 0400

2731 5777, JMP CHEXA /SETUP SWITCHES AGAIN

/TYPEOUT 'NONE' FOR NO LEGAL STACK SELECTION

2732 4544 NOSTK, JMS I XMESSAG

2733 1617 TEXT "NONE"

2734 1605

2735 0000

2736 5777, JMP CHEXA

/FIND HIGHEST STACK NUMBER IN THIS SYSTEM

/HIGHST, 0 CLA CLL KBINT /CLEAR HIGH STACK COUNTER
2737 0000 DCA CDF1 CSS /CHECK FOR FIELD 1
2740 7300 DCA CLL KBINT /CLEAR HIGH STACK COUNTER
2741 3060 DCA CDF1 CSS /CHECK FOR FIELD 2
2742 6211 DCA CDF1 CSS /CHECK FOR FIELD 3
2743 4776! JMS CDF2 CSS /CHECK FOR FIELD 4
2744 6221 DCA CDF3 CSS /CHECK FOR FIELD 5
2745 4776! JMS CDF4 CSS /CHECK FOR FIELD 6
2746 6231 DCA CDF5 CSS /CHECK FOR FIELD 7
2747 4776! JMS CDF6 CSS /CHECK FOR FIELD 8
2750 6241 DCA CDF7 CSS /CHECK FOR FIELD 9
2751 4776! JMS CDF8 CSS /CHECK FOR FIELD 10
2752 6251 DCA CDF9 CSS /CHECK FOR FIELD 11
2753 4776! JMS CDF10 CSS /CHECK FOR FIELD 12
2754 6261 DCA CDF11 CSS /CHECK FOR FIELD 13
2755 4776! JMS CDF12 CSS /CHECK FOR FIELD 14
2756 6271 DCA CDF13 CSS /CHECK FOR FIELD 15
2757 4776! JMS CDF14 CSS /CHECK FOR FIELD 16
2760 5737 KHIGH, JMP I HIGHST PAGE
2776 3000
2777 0214
2778 3000

/CHECK IF SELECTED STACK IS IN SYSTEM

CSS, 0 CLA CLL RIF K6201
3000 0000
3001 7300
3002 6224
3003 1141 TAD CSSB
3004 3210 DCA M1
3005 1074 TAD
3006 3615 DCA 1 CHECK

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```

3007 1615 TAD I CHECK
3010 6201 CSSB, CDF 00 /PROGRAM DATA FIELD
3011 7650 SNA CLA 00 /SKIP IF STACK IS IN SYSTEM
3012 5777 JMP KHIGH
3013 2060 ISZ KBINT
3014 5600 JMP I CSS /INCREMENT STACK COUNTER
3015 3016 CHECK, CHECK0
3016 0000 CHECK0, 0

```

```

/TYPEOUT NUMBER OF STACKS IN SYSTEM
/TSTSYS, 0

```

```

3017 0000 JMS I XMESAG
3020 4544 4543 4543 /TYPEOUT NUMBER
3021 4543 0000 0000
3022 0000 TAD KBINT
3023 1060 1060 1060 /TYPEOUT NUMBER
3024 7001 7001 7001
3025 4543 4543 4543 /TYPEOUT NUMBER
3026 6544 6544 6544
3027 4023 4023 4023 /TYPEOUT NUMBER
3030 2401 2401 2401 " STACKS IN THIS SYSTEM"
3031 0345 0345 0345
3032 2340 2340 2340
3033 1116 1116 1116
3034 4024 4024 4024 /TYPEOUT CHAR IN AC
3035 1011 1011 1011 /TYPE A SPACE
3036 2340 2340 2340
3037 2331 2331 2331
3040 2324 2324 2324
3041 0515 0515 0515 /TYPEOUT CHAR IN AC
3042 0000 0000 0000 /TYPE A SPACE
3043 5617 5617 5617 /RESTORE STACKS FOR RELOCATION

```

```

/TYPEOUT CHARACTER IN THE AC AND A SPACE
/TYPESP, 0

```

```

3044 0000 JMS I XTYPE
3045 4543 4543 TAD K240 /TYPEOUT CHAR IN AC
3046 1115 1115 1115 /TYPE A SPACE
3047 4543 4543 4543
3050 5644 5644 5644 /TYPESP

```

```

/RESTK, 0

```

```

3051 0000 CLA
3052 7200 TAD STACK0
3053 1030 DCA STACK0
3054 3040 TAD STACK1
3055 1031 DCA STACK1
3056 3041 TAD STACK2
3057 1032 DCA STACK2

```

```

3060 3042 DCA STK2
3061 1033 TAD STACK3
3062 3043 DCA STACK3
3063 1034 TAD STACK4
3064 3044 DCA STACK4
3065 1035 TAD STACK5
3066 3045 DCA STACK5
3067 1036 TAD STACK6
3070 3046 DCA STACK6
3071 1037 TAD STACK7
3072 3047 DCA STACK7
3073 5651 JMP 1 RESTK

```

/TYPEOUT STACKS SELECTED FOR TESTING

```

/TOSEL, 0 JMS I XMESSAG "##STACKS SEL'D ARE "
TEXT

```

```

3074 0000 TAD STACK7
3075 4544 SZA CLA
3076 4543 JMP *+3
3077 2324 TAD K267
3100 0103 JMS TYPESP
3101 1323 TAD STACK6
3102 4023 SZA CLA
3103 0514 JMP *+3
3104 4704 TAD K266
3105 4001 JMS TYPESP
3106 2205 TAD STACK5
3107 4000 SZA CLA
3110 1037 TAD K265
3111 7640 JMS TYPESP
3112 5315 TAD STACK4
3113 1126 JMP *+3
3114 6244 TAD K264
3115 1036 JMS TYPESP
3116 7640 TAD STACK3
3117 5322 SZA CLA
3120 1125 JMP *+3
3121 4244 TAD K263
3122 1035 JMS TYPESP
3123 7640 TAD STACK2
3124 5327 SZA CLA
3125 1124 JMP *+3
3126 4244 TAD K262
3127 1034 JMS TYPESP
3130 7640 TAD STACK1
3131 5334 SZA CLA
3132 1123 JMP *+3
3133 4244 TAD K261
3134 1033 JMS TYPESP
3135 7640 TAD STACK0
3136 5341 SZA CLA
3137 1122 JMP *+3
3140 4244 TAD K260
3141 1032 JMS TYPESP
TAD STACK2

```

/STACK 7 IS SELECTED

/STACK 6 IS SELECTED

/STACK 5 IS SELECTED

/STACK 4 IS SELECTED

/STACK 3 IS SELECTED

```

3142 7640 SZA CLA
3143 5346 JMP +3
3144 1121 TAD K262
3145 4244 JMS TYPESP
3146 1031 TAD STACK1
3147 7640 SZA CLA
3150 5353 JMP +3
3151 1120 TAD K261
3152 4244 JMS TYPESP
3153 1030 TAD STACK0
3154 7640 SZA CLA
3155 5360 JMP +3
3156 1117 TAD K260
3157 4244 JMS TYPESP
3160 5674 JMP 1 TOSEL

```

/ TWO SPECIAL SCOPE LOOPS

```

3177 2760 *3400
3400 7604 LOOP1, LAS /SWITCH ADDRESS
3401 3206 DCA SWAD
3402 1206 TAD SWAD
3403 3606 DCA I SWAD
3404 1606 TAD I SWAD
3405 5200 JMP 1 LOOP1
3406 0000 SWAD, 0 /READ LOWER LIMIT
3600 3600 *3600
3601 7604 LOOP2, LAS FIRST
3602 3224 DCA HLT /READ UPPER LIMIT
3603 7402 LAS LAST
3604 3225 DCA FIRST
3605 1224 LOOP2A, TAD SWAD
3606 3226 DCA SWAD
3607 1226 LOOP2B, TAD I SWAD
3610 3626 DCA I SWAD
3611 1626 TAD I SWAD
3612 7200 CLA SWAD
3613 1226 TAD SWAD
3614 7041 CIA
3615 1225 TAD LAST
3616 7650 SNA CLA
3617 5205 JMP LOOP2A
3620 2226 ISE SWAD
3621 5207 JMP LOOP2B
3622 7402 HLT
3623 5200 JMP LOOP2
3624 0000 FIRST, 0 /HALT RESULTED IN ILLEGAL LIMITS

```

/EXTEND₀ ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER 1)

3625	0000	LAST,	0
3626	0000	SWAD0,	0

5

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/EXTENDED ADDRESS TEST FOR KMB-E EXTENDED MEMORY (VER)

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4000	4100	4200	4300	4400	4500	4600	4700	5000	5100	5200	5300	5400	5500	5600	5700	6000	6100	6200	6300	6400	6500	6600	6700	7000	7100	7200	7300	7400	7500	7600	7700
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

ABOVE	1706	CHEXN9	0761	MINS1	0155
ADDER1	2241	CHEX00	1000	MINS2	0156
ADDER1	1273	CHEX00	1024	K240	0115
ADDER2	1424	CHEX01	1040	K245	0116
ADDER3	1476	CHEX02	1054	K260	0117
ADDER4	1550	CHEX03	1070	K261	0120
ADDRT1	1264	CHEX04	1104	K262	0121
ADDRT2	1415	CHEX05	1120	K263	0122
ADDRT3	1466	CHEX06	1134	K264	0123
ADDRT4	1240	CHEX07	1144	K265	0124
BDATA	0065	CHEX0A	1006	K266	0125
B BELOW	1725	CHKSW3	1640	K267	0126
CBF0	6203	CIF0	6202	K30	0104
CBF1	6213	CIF1	6212	K40	0127
CBF2	6223	CIF2	6222	K4060	0105
CBF3	6233	CIF3	6232	K50	0106
CBF4	6243	CIF4	6242	K60	0107
CBF5	6253	CIF5	6252	K6000	0132
CBF6	6263	CIF6	6262	K6003	0133
CBF7	6273	CIF7	6272	K6060	0134
CDF0	6201	CINT	6204	K6100	0135
CDF1	6211	CNV	2024	K6200	0136
CDF2	6221	CODERR	2201	K6201	0141
CDF3	6231	COUNT	0072	K6203	0142
CDF4	6241	CSS	3000	K6300	0137
CDF5	6251	CSSB	3010	K6400	0140
CDF6	6261	CUF	6264	K7	0101
CDF7	6271	DOWN	1736	K70	0110
CHECK	3015	ERR1	2256	K707	0130
CHECK0	3016	ERR1A	2273	K77	0111
CHEXA	0214	ERR2	2342	KABOVE	0051
CHEXB	0253	ERR3	2400	KBELOW	0052
CHEXC	0262	ERR4	2416	KBINT	0060
CHEXC1	0274	ERRLOC	0073	KDOWN	0070
CHEX0	0302	ERRM	2434	KHIGH	2760
CHEXD1	0310	ERROR0	2253	LAST	3625
CHEXE	0317	ERROR1	2234	LEGAL	0410
CHEXE2	0400	ESL	0062	LEGAL0	0055
CHEXM	0476	EXTAD	0209	LEGALA	0463
CHEXM1	0503	EXTAD0	0205	LIMIT	2251
CHEXM2	0510	FIRST	3624	LOOP1	3400
CHEXN1	0600	ERROR1	0053	LOOP2	3600
CHEXN2	0622	HEAD1	0053	LOOP2A	3605
CHEXN3	0640	HEAD12	2477	LOOP2B	3607
CHEXN	0527	FIVE	0152	M1	0074
CHEXN0	0530	GDATA	0066	M2	0075
CHEXN1	0600	GTFS	6004	M3	0076
CHEXN2	0622	HEAD12	2477	M34	0100
CHEXN3	0640	HIGHEST	2737	M4	0077
CHEXN4	0656	INSAME	0054	MESSAGE	2050
CHEXN5	0674	K10	0102	MINS	0153
CHEXN6	0712	K20	0103	MINS	0154
CHEXN7	0730	K207	0112	MINS0	0150
CHEXN8	0746	K212	0113		

/EXTENDED JRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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STK2	0042	210	2470
STK3	0043	211	2471
STK4	0044	220	2326
STK5	0045	221	2327
STK6	0046	222	2332
STK7	0047	223	2335
STKPIN	0063	224	2340
STKTST	0064	28	2666
STOP	2242		
SUF	6274		
SW0	0020		
SW1	0021		
SW2	0022		
SW3	0023		
SW4	0024		
SW5	0025		
SW68	0026		
SW911	0027		
SWAD	3406		
SWAD@	3626		
TDF1	12B2		
TDF2	1402		
TDF3	1445		
TDF4	1516		
TEMP	0071		
TEST	1200		
TEST1	1250		
TEST1A	1253		
TEST1B	1257		
TEST2	1400		
TEST2A	1403		
TEST2B	1410		
TEST3	1443		
TEST3A	1446		
TEST3B	1456		
TEST4	1514		
TEST4A	1517		
TEST4B	1530		
TESTAD	0057		
TITLE	2600		
TOSEL	3074		
TSTSYS	3017		
TYPE	2042		
TYPECH	2067		
TYPESP	3044		
XADDER	0151		
XCODER	0146		
XMESSAG	0144		
XRETUR	0147		
XSIXTY	0145		
XSTOP	0150		
XTYPE	0143		

/EXTENDED ADDRESS TEST FOR KM8-E EXTENDED MEMORY (VER)

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ERRORS DETECTED! 0

LINKS GENERATED! 133

RUN-TIME: 13 SECONDS

3K CORE USED

1000
900
800
700
600
500
400
300
200
100
0