IDENTIFICATION

PRODUCT NAME: PDP-7 EXTENDED MEMORY CONTROL TEST AND PDP-7/9 MEMORY EXTENSION SWITCH TEST.

PRODUCT CODE: MAINDEC-7A-D1CC-D

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MAINDEC
7A-D1CC-D

1. ABSTRACT

THIS PROGRAM CHECKS THE EXTENDED MEMORY CONTROL IOT'S, AND CHECKS FOR CORRECT OPERATION OF VARIOUS INSTRUCTIONS IN EACH AVAILABLE BANK OF EXTENDED MEMORY.

AN OPTIONAL PDP-7/9 MEMORY EXTENSION SWITCH TEST IS ALSO PROVIDED FOR THOSE SYSTEMS HAVING THAT OPTION.

2. REQUIREMENTS

2.1 EQUIPMENT

STANDARD PDP-7 OR PDP-7A WITH AT LEAST 12K OF CORE STORAGE.

2.2 STORAGE

LOCATIONS 00000 THROUGH 05077 ARE USED.

2.3 PRELIMINARY PROGRAMS

ALL PROGRAMS REQUIRED TO INSURE CORRECT OPERATION OF THE BASIC PROCESSOR MUST HAVE BEEN RUN SUCCESSFULLY.

3. LOADING PROCEDURE

THIS PROGRAM'S OBJECT TAPE IS PUNCHED IN HARDWARE READ-IN FORMAT (HRI). THE PROGRAM MUST BE LOADED IN MEMORY BANK 0. TO LOAD THE PROGRAM, PROCEED AS FOLLOWS:

A. MOUNT TAPE IN READER

B. SET ADDRESS SWITCHES TO 00130

C. PRESS READ-IN KEY

D. THE TAPE IS READ; PROCESSOR STOPS.

THE PROGRAM IS NOW LOADED.

4. USE PROCEDURE

THE EXTENDED MEMORY CONTROL TEST MUST BE RUN PRIOR TO RUNNING THE OPTIONAL MEMORY EXTENSION SWITCH TEST.

EACH TEST PROGRAM IS MADE UP OF INDIVIDUAL TEST ROUTINES WHICH ARE RUN THROUGH SEQUENTIALLY. SECTION 9, PROGRAM DESCRIPTION, GIVES THE NUMBERS AND DESCRIPTION OF THE ROUTINES THAT MAKE UP EACH TEST PROGRAM.

THE SUCCESSFUL EXECUTION OF THE SET OF ROUTINES OF A PROGRAM CONSTITUTES A PROGRAM PASS. COMPLETION OF A PROGRAM PASS IS INDICATED BY A SINGLE RING OF THE TELETYPE BELL.

THE PROGRAMS ARE CONTINUOUS RUNNING, THAT IS, AT THE COMPLETION OF A PROGRAM PASS THE PROGRAM REPEATS ITSELF, UNTIL STOPPED BY USER.

DETECTED HARDWARE FAILURES ARE INDICATED BY ERROR HALTS. WHEN A HALT OCCURS, REFER TO SECTION 5,1, NORMAL HALTS AND DESCRIPTION, AND/OR TO SECTION 6,1, ERROR HALTS AND DESCRIPTION, FOR A DESCRIPTION OF THE REASON FOR THE HALT.

THE TEST(S) PERFORMED IN A TEST ROUTINE ARE REPEATED 4096 TIMES BEFORE THE TEST ROUTINE IS COMPLETED. THEREFORE, WHEN A SOLID HARDWARE ERROR IS FOUND, THE CORRESPONDING ERROR HALT OCCURS 4096 TIMES.

FOR TROUBLE-SHOOTING PURPOSES, A SCOPE LOOP MAY BE SET UP BY REPLACING THE ERROR HALT WITH A NOP INSTRUCTION (740000). THE USER MUST INSURE THAT THE ERROR HALT IS RESTORED PRIOR TO RERUNNING THE PROGRAM.

A HALT IN LOC21 OF BANK 0 IS PROVIDED AS A TRAP FOR FAILURES THAT ARE NOT DETECTED BY THE PROGRAM. WHEN THE HALT OCCURS, LOC23 OF BANK 0 WILL CONTAIN THE ADDRESS OF LOCATION FROM WHICH THE CAL INSTRUCTION WAS EXECUTED, TO CAUSE THE HALT AT LOC21. IT IS POSSIBLE FOR HARDWARE FAILURES TO OCCUR WITHOUT DETECTION BY THE PROGRAM AND WITHOUT TRAPPING TO LOC21 OF BANK 0. SUCH FAILURES MAY BE RECOGNIZED BY THE FAILURE OF THE TELETYPE TO RING ITS BELL AT THE SPECIFIED INTERVALS (SEE SECTION 8,1, EXECUTION TIMES). WHEN SUCH A FAILURE OCCURS, THE NUMBER OF THE FAILING ROUTINE CAN BE OBTAINED BY EXAMINING THE CONTENTS OF LOC 00177.

THE USER MAY CONTROL EXECUTION OF THE PROGRAM WITH THE AC SWITCHES AT ANY TIME, AS FOLLOWS:

ACS0 = 1 — ROUTINE-END-HALT. WITH ACS 0 SET, THE PROGRAM HALTS AT LOC 00234 AFTER THE ROUTINE CURRENTLY BEING EXECUTED IS COMPLETED. THE AC DISPLAYS THE NUMBER OF THE COMPLETED ROUTINE. THE PROGRAM WILL NOT HALT IF ACS 1 IS SET. AFTER PRESSING CONTINUE, THE PROGRAM PROCEEDS TO EXECUTE THE FOLLOWING ROUTINE. THE ROUTINE-END-HALT FEATURE IS USEFUL IN FINDING OUT HOW FAR THE PROGRAM HAS PROGRESSED.

OR TO ADVANCE THE PROGRAM ONE ROUTINE AT A TIME PRIOR TO LOOPING ON A ROUTINE.

ACS1 = 1 — LOOP ON ROUTINE. THE CURRENT ROUTINE IS REPEATED CONTINUOUSLY UNTIL ACS 1 IS TURNED OFF. ACS 1 MUST BE OFF BEFORE ROUTINE-END-HALT OPTION (ACS0) IS ACCEPTED BY THE PROGRAM. THE LOOP ROUTINE OPTION CAN BE USEFUL WHEN TROUBLE-SHOOTING HIGHLY INTERMITTENT ERRORS.

IN ORDER TO PROTECT THE TEST PROGRAM AND TO PREVENT THE NECESSITY OF REPEATED RELOADING OF THE PROGRAM, NO MEANS ARE PROVIDED FOR JUMPING OVER, OR BYPASSING A FAILING ROUTINE. FAILURES MUST BE CORRECTED AS THEY OCCUR.

4.1 STARTING PROCEDURE FOR EXTENDED MEMORY CONTROL TEST

A. IF SYSTEM HAS MEMORY SWITCH OPTION, SET SWITCH TO PDP-7 POSITION (SEE NOTE 1).

B. SET ADDRESS SWITCHES TO 00200.

C. SET AC SWITCHES 3 AND 4 ACCORDING TO AMOUNT OF CORE STORAGE AVAILABLE IN THE SYSTEM (SEE NOTE 2).

D. PRESS START

E. PROGRAM RUNS CONTINUOUSLY UNLESS ERRORS OCCUR.

F. AC SWITCH CONTROL OPTIONS MAY BE SET AT ANY TIME.

4.2 STARTING PROCEDURE FOR OPTIONAL MEMORY EXTENSION SWITCH TEST

A. SET MEMORY EXTENSION SWITCH TO PDP-9 POSITION (SEE NOTE 1).

B. SET ADDRESS SWITCHES TO 00201

C. SET AC SWITCHES 3 AND 4 ACCORDING TO AMOUNT OF CORE STORAGE AVAILABLE IN THE SYSTEM (SEE NOTE 2).

D. PRESS START

E. PROGRAM RUNS CONTINUOUSLY UNLESS ERRORS OCCUR.

F. AC SWITCH CONTROL OPTIONS MAY BE SET AT ANY TIME.

NOTE 1

THE MEMORY EXTENSION SWITCH IS LOCATED IN THE S48 MEMORY EXTENSION CONTROL LOGIC PANEL OF THE PDP-9, AND IN THE CPU EXTEND CONTROL LOGIC PANEL OF THE PDP-7/A.

NOTE 2

SET AC SWITCHES 3 AND 4 AS FOLLOWS:

1. SET TO 01 FOR SYSTEMS WITH 12K OR 16K OF STORAGE.
2. SET TO 10 FOR SYSTEM WITH 20K OR 24K OF STORAGE.
3. SET TO 11 FOR SYSTEM WITH 28K OR 32K OF STORAGE.

5. PROGRAM AND/OR OPERATOR ACTION

5.1 NORMAL HALTS AND DESCRIPTION

LOC 00234 — ROUTINE-END-HALT. THIS HALT OCCURS AT COMPLETION OF CURRENT ROUTINE IF ACS0 IS SET. AFTER PRESSING CONTINUE, PROGRAM PROCEEDS TO EXECUTE NEXT ROUTINE.

6. ERRORS

6.1 ERROR HALTS AND DESCRIPTIONS

EACH ERROR HALT LISTED INDICATES THE LOCATION OF THE HALT, THE NUMBER OF ROUTINE WHERE HALT OCCURS (IF IN A ROUTINE), AND THE POSSIBLE REASON(S) FOR THE HALT. SEVERAL HALTS MAY BE POSSIBLE IN A ROUTINE, EXCEPT WHERE INDICATED. NORMAL OPERATOR ACTION IS TO PRESS CONTINUE. THE TEST IS THEN REPEATED UNTIL IT HAS BEEN PERFORMED 4096 TIMES. A SCOPE LOOP MAY BE SET UP BY REPLACING THE HALT WITH A NOP INSTRUCTION, AND SETTING ACS1 TO 1 (LOOP ON ROUTINE). REFER TO SECTION 9, PROGRAM DESCRIPTION FOR DEFINITIONS OF TERMS LOCB0, LOCB1, LOCB2, ETC.

6.1.1 EXTENDED MEMORY CONTROL TEST ERROR HALTS

LOC 00206 — SYSTEM DOES NOT HAVE 12K OR MORE STORAGE, OR ACS3 AND 4 ARE INCORRECTLY SET. SET ACS3 AND 4 CORRECTLY AND PRESS CONTINUE.

LOC 00407 — T0. SEM INSTRUCTION SKIPPED WITH EXTEND MODE OFF, OR EXTEND MODE IS ON (CHECK CONSOLE INDICATOR).

LOC 00416 — T1. EEM INSTRUCTION FAILED TO TURN ON EXTEND MODE (CHECK CONSOLE INDICATOR), OR SEM INSTRUCTION FAILED TO SKIP WITH EXTEND MODE ON.

LOC 00427 — T2. LEM INSTRUCTION FAILED TO TURN OFF EXTEND MODE.

LOC 00446 — T3. CHAIN OF EEM AND LEM INSTRUCITIONS LEFT THE EXTEND MODE ON (CHECK CONSOLE INDICATOR), EXTEND MODE SHOULD HAVE BEEN OFF.

LOC 00462 T4, AN ATTEMPT TO SET LOCB0 TO ALL 1'S WITH DAC* WITH EXT ON, DID NOT SET LOCB0 TO ALL 1'S.

LOC 00475 T5, ATTEMPT TO SET LOCB1 TO ALL 1'S WITH DAC* AND EXT ON, SET LOCB0 TO ALL 1'S.

LOC 00512 T6, ATTEMPT TO SET LOCB2 TO ALL 1'S WITH DAC* AND EXT ON SET LOCB0 TO ALL 1'S.

LOC 00527 T7, ATTEMPT TO SET LOCB3 TO ALL 1'S WITH DAC* AND EXT ON, SET LOCB0 TO ALL 1'S.

LOC 00545 T10, WITH LOCB0 SET TO ALL 1'S, AN ATTEMPT TO GET C(LOCB0) WITH LAC* AND EXT ON DID NOT SET AC TO ALL 1'S, PROBABLY FAILED TO REFERENCE BANK 0.

LOC 00563 T11, WITH LOCB1 PROBABLY SET TO ALL 1'S, AN ATTEMPT TO GET C(LOCB1) WITH LAC* AND EXT ON DID NOT SET AC TO ALL 1'S, IF LOCB1 CONTAINS ALL 1'S, LAC* FAILED TO REFERENCE BANK 1, IF LOCB1 IS NOT ALL 1'S, DAC* TO SET LOCB1 DID NOT REFERENCE BANK 1.

LOC 00603 T12, WITH LOCB1 = 00001, AND LOCB2 PROBABLY SET TO ALL 1'S, AN ATTEMPT TO GET C(LOCB1) WITH LAC* AND EXT ON DID NOT SET AC TO 00001, DAC* TO SET LOCB2 REFERENCED BANK 1, OR LAC* TO GET C(LOCB1) DID NOT REFERENCE BANK 1.

LOC 00623 T13, WITH LOCB2 PROBABLY SET TO ALL 1'S, AN ATTEMPT TO GET C(LOCB2) WITH LAC* AND EXT ON, DID NOT SET AC TO ALL 1'S, IF LOCB2 CONTAINED ALL 1'S, LAC* FAILED TO REFERENCE BANK 2.

LOC 00643 T14, WITH LOCB1 000001, AND LOCB3 PROBABLY SET ALL 1'S, AN ATTEMPT TO GET C(LOCB1) WITH LAC* AND EXT ON DID NOT SET AC TO 000001, DAC* TO SET LOCB3 REFERENCED BANK 1.

LOC 00663 T15, WITH LOCB2=00002, AND LOCB3 PROBABLY SET TO ALL 1'S, AN ATTEMPT TO GET C(LOCB2) WITH LAC* AND EXT ON DID NOT SET AC TO 00002, DAC* TO SET LOCB3 REFERENCED BANK 2,

LOC 00703 T16, WITH LOCB3 PROBABLY SET TO ALL 1'S, AN ATTEMPT TO GET C(LOCB3) WITH LAC* AND EXT ON DID NOT SET AC TO ALL 1'S, IF LOCB3 IS NOT ALL 1'S, DAC* TO SET LOCB3 FAILED, IF LOCB3 IS SET TO ALL 1'S, LAC* FAILED TO GET C(LOCB3),

LOC 00720 T17, WITH LOCB0 SET TO ALL 1'S AND AC SET TO ALL 1'S, AN XOR* WITH C(LOCB0) WITH EXT ON DID NOT RESULT IN AC=000000,

LOC 00735 T20, WITH LOCB1 SET TO ALL 1'S AND AC SET TO ALL 1'S, AN XOR* WITH C(LOCB0) WITH EXT ON DID NOT RESULT IN AC=000000,

LOC 00754 T21, WITH LOCB2 SET TO ALL 1'S AND AC SET TO ALL 1'S, AN XOR* WITH C(LOCB2) WITH EXT ON DID NOT RESULT IN AC=000000,

LOC 00773 T22, WITH LOCB3 SET TO ALL 1'S AND AC SET TO ALL 1'S, AN XOR* WITH C(LOCB3) WITH EXT ON DID NOT RESULT IN AC=000000,

LOC 01011 T23, WITH EXT ON, XCT* OF NOP IN LOCB0 RESULTED IN FAILURE TO EXECUTE INSTRUCTION FOLLOWING XCT*, INSTEAD, INSTRUCTION AT LOCB0+1 WAS EXECUTED,

LOC 01025 T24, WITH EXT ON, XCT* OF SKP IN LOCB0 FAILED TO SKIP INSTRUCTION FOLLOWING THE XCT*,

LOC 01031 T24, WITH EXT ON, XCT* OF SKP IN LOCB0 RESULTED IN FAILURE TO EXECUTE INSTRUCTION AT XCT* +2, INSTEAD, INSTRUCTION AT LOCB0+1, OR +2 WAS EXECUTED, IF EXT MODE IS ON, SKP AT LOCB0 SKIPPED TO LOCB0+2, IF EXT IS OFF, INSTRUCTION AT LOCB0+1 WAS EXECUTED,

LOC 01050 T25, WITH EXT ON, XCT* OF LAC M1 IN LOCB0 FAILED TO SET AC TO ALL 1'S,

LOC 01067 T26, WITH EXT ON, XCT* OF DAC LOCB0+2 WITH AC SET TO ALL 1'S, FAILED TO SET LOCB0+2 TO ALL 1'S,

LOC 01103 T27, WITH EXT ON, XCT* OF JMP T27A AT LOCB0 RESULTED IN FAILURE TO EXECUTE JUMP, INSTEAD, INSTRUCTION FOLLOWING XCT* WAS EXECUTED,

LOC 01107 T27, WITH EXT ON, XCT* OF JMP T27A AT LOCB0 RESULTED IN FAILURE TO RETURN TO RTN 27,

LOC 01124 T30, WITH EXT ON, XCT* OF JMP* LOC+4, JMP* WAS NOT EXECUTED, INSTEAD, INSTRUCTION FOLLOWING XCT* WAS EXECUTED.

LOC 01130 T30, WITH EXT ON, XCT* OF JMP* LOC +4 FAILED TO RETURN TO RTN 30,

LOC 01145 T31, WITH EXT ON, TEST OF JMP T31A IN LOCB0, INSTRUCTION WAS NOT EXECUTED, INSTEAD, INSTRUCTION FOLLOWING JMP T31A WAS EXECUTED,

LOC 01166 T32, WITH EXT ON, TEST OF XCT* OF NOP IN LOCB1 RESULTED IN FAILURE TO EXECUTE INSTRUCTION FOLLOWING XCT*, INSTEAD, INSTRUCTION AT LOCB1+1 WAS EXECUTED,

LOC 01206 T33, WITH EXT ON, TEST OF XCT* OF SKP IN LOCB1 FAILED TO SKIP INSTRUCTION FOLLOWING THE XCT*,

LOC 01231 T34, WITH EXT ON, TEST OF XCT* OF LAC IN LOCB1 FAILED TO SET AC TO C(LOCB1),

LOC 01252 T35, WITH EXT ON, TEST OF XCT* OF LAC* IN LOCB1 FAILED TO SET AC TO C(LOCB0), C(LOCB0) ≠000000,

LOC 01273 T36, WITH EXT ON, XCT* OF DAC IN LOCB1, FAILED TO SET LOCB1 TO ALL 1'S,

LOC 01315 T37, WITH EXT ON, XCT* OF DAC* IN LOCB1 FAILED TO SET LOCB0 TO ALL 1'S,

LOC 01405 T42, WITH EXT ON, XCT* OF NOP IN LOCB2 FAILED TO EXECUTE INSTRUCTION FOLLOWING XCT*, INSTEAD, INSTRUCTION AT LOCB2+1 WAS EXECUTED,

LOC 01427 T43, WITH EXT ON, XCT* OF SKP IN LOCB2 FAILED TO SKIP INSTRUCTION FOLLOWING THE XCT*,

LOC 01454 T44, WITH EXT ON, XCT* OF LAC IN LOCB2 FAILED TO SET AC TO C(LOCB2),

LOC 01477 T45, WITH EXT ON, XCT* OF LAC* IN LOCB2 FAILED TO SET AC TO C(LOCB0), C(LOCB0)≠000000,

LOC 01522 T46, WITH EXT ON, XCT* OF DAC IN LOCB2 FAILED TO SET LOCB2 TO ALL 1'S,

LOC 01546 T47, WITH EXT ON, XCT* OF DAC* IN LOCB2 FAILED TO SET LOCB0 TO ALL 1'S,

LOC 01651 T52, WITH EXT ON, XCT* OF NOP IN LOCB3 FAILED TO EXECUTE INSTRUCTION FOLLOWING XCT*, INSTEAD, INSTRUCTION AT LOCB3+1 WAS EXECUTED,

LOC 01673 T53, WITH EXT ON, XCT* OF SKP IN LOCB3 FAILED TO SKIP INSTRUCTION FOLLOWING THE XCT*,

LOC 01720 T54, WITH EXT ON, XCT* OF LAC IN LOCB3 FAILED TO SET AC TO C(LOCB3),

LOC 01743 T55, WITH EXT ON, XCT* OF LAC* IN LOCB3 FAILED TO SET AC TO C(LOCBØ), C(LOCBØ)=ØØØØØØ,

LOC 01766 T56, WITH EXT ON, XCT* OF DAC IN LOCB3 FAILED TO SET LOCB3 TO ALL 1'S,

LOC 02012 T57, WITH EXT ON, XCT* OF DAC* IN LOCB3 FAILED TO SET LOCBØ TO ALL 1'S,

LOC 02113 T62, WITH EXT OFF, A JMS IN BANK Ø SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN Ø,

LOC 02127 T63, WITH EXT ON, A JMS IN BANK Ø DID NOT SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN A 1,

LOC 02140 T64, WITH EXT ON, THE EXTEND MODE DID NOT REMAIN ON, FOLLOWING A JMS IN BANKØ,

LOC 02153 T65, WITH EXT ON, A JMS IN BANK Ø DID NOT SAVE EPC AS ØØ, ANY BITS SET IN AC INDICATE THE IN CORRECT BITS,

LOC 02170 T66, WITH EXT OFF, A JMS IN BANK 1 SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN A Ø,

LOC 02214 T67, WITH EXT ON, A JMS IN BANK 1 DID NOT SET BIT 1 TO A 1 ON LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN A 1,

LOC 02235 T70, WITH EXT ON, THE EXTEND MODE DID NOT REMAIN ON, FOLLOWING A JMS IN BANK 1,

LOC 02264 T71, WITH EXT ON, A JMS IN BANK 1 DID NOT SAVE EPC AS Ø1, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 02310 T72, WITH EXT OFF, A JMS IN BANK 2 SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN Ø,

LOC 02336 T73, WITH EXT ON, A JMS IN BANK 2 DID NOT SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN 1,

LOC 02361 T74, WITH EXT ON, THE EXTEND MODE DID NOT REMAIN ON, FOLLOWING A JMS IN BANK 2,

LOC 02412 T75, WITH EXT ON, A JMS IN BANK 2 DID NOT SAVE EPC AS 10, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 02436 T76, WITH EXT OFF, A JMS IN BANK 3 SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN 0,

LOC 02464 T77, WITH EXT ON, A JMS IN BANK 3 DID NOT SET BIT 1 TO A 1 IN LOC JMS'ED TO, BIT 1 SHOULD HAVE BEEN 1,

LOC 02507 T100, WITH EXT ON, THE EXTEND MODE DID NOT REMAIN ON, FOLLOWING A JMS IN BANK 3,

LOC 02540 T101, WITH EXT ON, A JMS IN BANK 3 DID NOT SAVE EPC AS 11, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 02562 T102, WITH EXT OFF, A CAL IN BANK 0 SET BIT 1 TO A 1 IN LOC 00020, BIT 1 SHOULD HAVE BEEN 0,

LOC 02602 T103, WITH EXT ON, A CAL IN BANK 0 DID NOT SET BIT 1 TO A 1 IN LOC 00020, BIT 1 SHOULD HAVE BEEN A 1,

LOC 02620 T104, WITH EXT ON, EXTEND MODE DID NOT REMAIN ON FOLLOWING A CAL OP IN BANK 0,

LOC 02640 T105, WITH EXT ON, A CAL IN BANK 0 DID NOT SAVE EPC AS 00, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 02656 T106, WITH EXT ON, EXTEND MODE DID NOT REMAIN ON, FOLLOWING A CAL* OP IN BANK 0,

LOC 02666 T106, WITH EXT ON, A CAL* IN BANK 0 DID NOT SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 00 IN LOC 00021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 02715 T107, WITH EXT OFF, A CAL OP IN BANK 1 REFERENCED LOC 20 IN BANK 0, IT SHOULD HAVE REFERENCED LOC 20 OF BANK 1,

LOC 02747 T110, WITH EXT OFF, A CAL OP IN BANK 1 SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 01 IN LOC 20020, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 03001 T111, WITH EXT OFF, A CAL* OP IN BANK 1 SET BIT 1 TO A 1 AND/OR DID NOT SAVE EPC AS 01 IN LOC 20021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03034 T112, WITH EXT ON, A CAL OP IN BANK 1 DID NOT REFERENCE BANK 0,

LOC 03036 T112, WITH EXT ON, EXTEND MODE DID NOT REMAIN ON, FOLLOWING A CAL OP IN BANK1,

LOC 03071 T113, WITH EXT ON, A CAL OP IN BANK 1 DID NOT SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 01 IN LOC 00020, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 03115 T114, WITH EXT ON, A CAL* OP IN BANK 1 DID NOT SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 01 IN LOC 00021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03147 T115, WITH EXT OFF, A CAL OP IN BANK 2 REFERENCED LOC 20 IN BANK 0, IT SHOULD HAVE REFERENCED LOC 20 IN BANK 2,

LOC 03203 T116, WITH EXT OFF, A CAL OP IN BANK 2 SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 10 IN LOC 40020, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 03237 T117, WITH EXT OFF, A CAL* OP IN BANK 2 SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 10 IN LOC 40021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS,

LOC 03274 T120, WITH EXT ON, A CAL OP IN BANK 2 DID NOT REFERENCE BANK 0,

LOC 03276 T120, WITH EXT ON, EXTEND MODE DID NOT REMAIN ON, FOLLOWING A CAL OP IN BANK 2,

LOC 03332 T121, WITH EXT ON, A CAL OP IN BANK 2 DID NOT SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 10 IN LOC 00020, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03360 T122, WITH EXT ON, A CAL* OP IN BANK 2 DID NOT SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 10 IN LOC 00021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03412 T123, WITH EXT OFF, A CAL OP IN BANK 3 REFERENCED LOC 20 IN BANK 0, IT SHOULD HAVE REFERENCED LOC 20 OF BANK 3.

LOC 03446 T124, WITH EXT OFF, A CAL OP IN BANK 3 SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 11 IN LOC 60020, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03502 T125, WITH EXT OFF, A CAL* IN BANK 3 SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 11 IN LOC 60021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03537 T126, WITH EXT ON, A CAL OP IN BANK 3 FAILED TO REFERENCE BANK 0,

LOC 03541 T126, WITH EXT ON, EXTEND MODE DID NOT REMAIN ON, FOLLOWING A CAL OP IN BANK 3,

LOC 03575 T127, WITH EXT ON, A CAL OP IN BANK 3 DID NOT SET BIT 1 TO A 1, AND/OR DID NOT SAVE EPC AS 11 IN LOC 00021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03623 T130, WITH EXT ON, A CAL* OP IN BANK 3 DID NOT SET BIT 1 TO A 1, AND/OR NOT SAVE EPC AS 11 IN LOC 00021, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 03655 T131, WITH EXT OFF, AUTO-INDEXING FROM BANK 1 REFERENCED BANK 0 INSTEAD OF BANK 1.

LOC 03651 T131, WITH EXT OFF, AUTO-INDEXING FROM BANK 1 RESULTED IN FAILURE TO INCREMENT AUTO-INDEX, (LOC 10 OF BANK 1).

LOC 03657 T131, WITH EXT OFF, AUTO-INDEXING FROM BANK 1 DID NOT REFERENCE BANK 1 AFTER AUTO-INDEX.

LOC 03732 T132, WITH EXT OFF, AUTO-INDEXING FROM BANK 2 REFERENCED BANK 0 INSTEAD OF BANK 2.

LOC 03734 T132, WITH EXT OFF, AUTO-INDEXING FROM BANK 2 RESULTED IN FAILURE TO INCREMENT AUTO-INDEX. (LOC 10 IN BANK 2).

LOC 03736 T132, WITH EXT OFF, AUTO-INDEXING FROM BANK 2 DID NOT REFERENCE BANK 2 AFTER AUTO-INDEX.

LOC 04007 T133, WITH EXT OFF, AUTO-INDEXING FROM BANK 3 REFERENCED BANK 0 INSTEAD OF BANK 3.

LOC 04011 T133, WITH EXT OFF, AUTO-INDEXING FROM BANK 3 RESULTED IN FAILURE TO INCREMENT AUTO-INDEX. (LOC 10 IN BANK 3).

LOC 04013 T133, WITH EXT OFF, AUTO-INDEXING FROM BANK 3 DID NOT REFERENCE BANK 3 AFTER AUTO-INDEX.

LOC 04054 T134, WITH EXT ON, AUTO-INDEXING FROM BANK 1 RESULTED IN REFERENCE TO BANK 1 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 0.

LOC 04103 T135, WITH EXT ON, AUTO-INDEXING FROM BANK 2 RESULTED IN REFERENCE TO BANK 2 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 0.

LOC 04132 T136, WITH EXT ON, AUTO-INDEXING FROM BANK 3 RESULTED IN REFERENCE TO BANK 3 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 0.

LOC 04151 T137, WITH EXT OFF, TELETYPE FAILED TO INTERRUPT. CHECK THAT TTY IS ON-LINE.

LOC 04157 T137, WITH EXT OFF, AN INTERRUPT FROM BANK 0 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY. ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04200 T140, WITH EXT ON, AN INTERRUPT FROM BANK 0 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY. ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04216 T141, WITH EXT ON, EXT MODE REMAINED ON FOLLOWING AND INTERRUPT FROM BANK 0. IT SHOULD HAVE BEEN TURNED OFF.

LOC 04242 T142, WITH EXT OFF, AN INTERRUPT FROM BANK 1 INTERRUPTED TO LOC 0 OF BANK 1, LOC 0 OF BANK 0 SHOULD HAVE BEEN REFERENCED.

LOC 04250 T142, WITH EXT OFF, AN INTERRUPT FROM BANK 1 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04302 T143, WITH EXT ON, AN INTERRUPT FROM BANK 1 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY,

ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04332 T144, WITH EXT OFF, AN INTERRUPT FROM BANK 2 INTERRUPTED TO LOC 0 OF BANK 2, LOC 0 OF BANK 0 SHOULD HAVE BEEN REFERENCED.

LOC 04340 T144, WITH EXT OFF, AN INTERRUPT FROM BANK 2 FAILED TO STORE

LOC 04374 T145, WITH EXT ON, AN INTERRUPT FROM BANK 2 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04424 T146, WITH EXT OFF, AN INTERRUPT FROM BANK 3 INTERRUPTED TO LOC 0 OF BANK 3, LOC 0 OF BANK 0 SHOULD HAVE BEEN REFERENCED.

LOC 04432 T146, WITH EXT OFF, AN INTERRUPT FROM BANK 3 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04466 T147, WITH EXT ON, AN INTERRUPT FROM BANK 3 FAILED TO STORE EXT MODE AND/OR EPC BITS CORRECTLY, ANY BITS SET IN AC INDICATE THE INCORRECT BITS.

LOC 04500 T150, EMIR INSTRUCTION FAILED TO IMMEDIATELY TURN ON EXT MODE, TEST DONE IN BANK 0.

LOC 04511 T151, EMIR INSTRUCTION FAILED TO RESTORE TO EXT MODE OFF, TEST DONE IN BANK 0.

LOC 24522 T152, EMIR INSTRUCTION FAILED TO RESTORE TO EXT MODE ON, TEST DONE IN BANK 0,

LOC 25031 T41 IF AC=000041, WITH EXT ON, A JMP* TO LOCB1 RESULTED IN JUMP TO LOCB0, PRESSING CONTINUE PROCEEDS WITH TEST,

T51 IF AC=000051, WITH EXT ON, A JMP* TO LOCB2 RESULTED IN JUMP TO LOCB0, PRESSING CONTINUE PROCEEDS WITH TEST,

T61 IF AC=000061, WITH EXT ON, A JMP* TO LOCB3 RESULTED IN JUMP TO LOCB0, PRESSING CONTINUE PROCEEDS WITH TEST,

LOC 25031 T51 IF AC=000051, WITH EXT ON, A JMP* TO LOCB2 RESULTED IN JUMP TO LOCB1, PRESSING CONTINUE PROCEEDS WITH TEST,

T61 IF AC=000061, WITH EXT ON, A JMP* TO LOCB3 RESULTED IN JUMP TO LOCB1, PRESSING CONTINUE PROCEEDS WITH TEST,

LOC 25032 T40, NO RECOVERY IS POSSIBLE, RESTART IS REQUIRED, WITH EXT ON, XCT* OF JMP* IN LOCB1 FAILED TO JUMP TO BANK 0,

LOC 25033 NO RECOVERY IS POSSIBLE, RESTART IS REQUIRED, T32 IF LOC 000177=000032, XCT* OF NOP IN LOCB1 RESULTED IN FAILURE TO RETURN CONTROL TO TEST ROUTINE IN BANK 0,

T33 IS LOC 000177=000033, XCT* OF SKP OP IN LOCB1 RESULTED IN FAILURE TO RETURN CONTROL TO TEST ROUTINE IN BANK 0,

LOC 45031 T61, WITH EXT ON, A JMP* TO LOCB3 RESULTED IN JUMP TO LOCB2, PRESSING CONTINUE PROCEEDS WITH TEST,

LOC 45032 T50, NO RECOVERY IS POSSIBLE, RESTART IS REQUIRED, WITH EXT ON, XCT* OF JMP* IN LOCB2 FAILED TO JUMP TO BANK 0,

LOC 45033 NO RECOVERY IS POSSIBLE, RESTART IS REQUIRED, T42 IF LOC 000177=000042, WITH EXT ON, XCT* OF NOP IN LOCB2 FAILED TO RETURN TO TEST ROUTINE IN BANK 0,

T43 IF LOC 000177=000043, WITH EXT ON, XCT* OF SKP OP IN LOCB2 FAILED TO RETURN CONTROL TO TEST ROUTINE IN BANK 0,

LOC 65032

T60, THE RECOVERY IS POSSIBLE, RESTART IS REQUIRED, WITH EXT ON, XCT* OF JMP* IN LOCB3 FAILED TO JUMP TO BANK 0,

LOC 65033

NO RECOVERY IS POSSIBLE, RESTART IS REQUIRED,
T52 IF LOC 000177=000052, WITH EXT ON, XCT* OF NOP IN LOCB3 FAILED TO RETURN CONTROL TO TEST ROUTINE IN BANK 0,

T53 IF LOC 000177=000053, WITH EXT ON, XCT* OF SKP OP IN LOCB3 FAILED TO RETURN CONTROL TO TEST ROUTINE IN BANK 0,

6.1.2 OPTIONAL MEMORY EXTENSION SWITCH TEST ERROR HALTS

LOC 04547 — AT0, WITH EXT OFF, AUTO-INDEXING FROM BANK 1 REFERENCED BANK 1 INSTEAD OF BANK 0.

LOC 04551 — AT0, WITH EXT OFF, AUTO-INDEXING FROM BANK 1 RESULTED IN FAILURE TO INCREMENT AUTO-INDEX (LOC 10 OF BANK 0).

LOC 04553 — AT1, WITH EXT ON, AUTO-INDEXING FROM BANK 1 RESULTED IN REFERENCE TO BANK 1 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 0.

LOC 04614 — AT1, WITH EXT ON, AUTO-INDEXING FROM BANK 1 RESULTED IN REFERENCE TO BANK 1 AFTER AUTO-INDEX. IT SHOULD HAVE BEEN REFERENCED BANK 0.

LOC 04647 — AT2, WITH EXT OFF, AUTO-INDEXING FROM BANK 2 REFERENCED BANK 2 INSTEAD OF BANK 0.

LOC 04651 — AT2, WITH EXT OFF, AUTO-INDEXING FROM BANK 2 RESULTED IN FAILURE TO INCREMENT AUTO-INDEX (LOC 10 OF BANK 0).

LOC 04653 — AT2, WITH EXT OFF, AUTO-INDEXING FROM BANK 2 RESULTED IN REFERENCE TO BANK 0 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 2.

LOC 04716 — AT3, WITH EXT ON, AUTO-INDEXING FROM BANK 2 RESULTED IN REFERENCE TO BANK 2 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 0.

LOC 04751 — AT4, WITH EXT OFF, AUTO-INDEXING FROM BANK 3 REFERENCED BANK 3 INSTEAD OF BANK 0.

LOC 04753 — AT4, WITH EXT OFF, AUTO-INDEXING FROM BANK 3 RESULTED IN FAILURE TO INCREMENT AUTO-INDEX (LOC 10 IN BANK 0).

LOC 04755 — AT4, WITH EXT OFF, AUTO-INDEXING FROM BANK 3 RESULTED IN REFERENCE TO BANK 0 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 3.

LOC 05020 — AT5, WITH EXT ON, AUTO-INDEXING FROM BANK 3 RESULTED IN REFERENCE TO BANK 3 AFTER AUTO-INDEX. IT SHOULD HAVE REFERENCED BANK 0.

7. RESTRICTIONS

THE EXTENDED MEMORY CONTROL TEST MUST BE RUN PRIOR TO RUNNING THE OPTIONAL MEMORY EXTENSION SWITCH TEST.

AT LEAST DURING INITIAL TESTING OF THE SYSTEM, AC SWITCHES 3 AND 4 MUST CORRESPOND TO THE ACTUAL MEMORY STORAGE AVAILABLE IN THE SYSTEM. SETTING THE SWITCHES TO INDICATE LESS BANKS AVAILABLE DOES NOT PROVE THE SYSTEM CONCLUSIVELY. SETTING THE SWITCHES TO INDICATE MORE MEMORY BANKS THAN AVAILABLE WILL CAUSE SYSTEM TO HANG UP BY ADDRESSING A NON-EXISTENT MEMORY BANK.

8. MISCELLANEOUS

8.1 EXECUTION TIME

THE EXTENDED MEMORY CONTROL TEST EXECUTION TIMES ARE:
WITH BANKS Ø AND 1, 30 SECS. MAX. PER PASS.
WITH BANKS Ø THROUGH 2, 50 SECS. MAX. PER PASS.
WITH BANKS Ø THROUGH 3, 75 SECS. MAX. PER PASS.

THE OPTIONAL MEMORY EXTENSION SWITCH TEST EXECUTION TIMES ARE:
WITH BANKS Ø AND 1, 1 SECONDS MAXIMUM PER PROGRAM PASS.
WITH BANKS Ø, 1 AND 2, 2 SECONDS MAXIMUM PER PROGRAM PASS.
WITH BANKS Ø THROUGH 3, 3 SECONDS MAXIMUM PER PROGRAM PASS.

9. DESCRIPTION

9.1 DEFINITIONS

BANK Ø LOCATIONS 00000 THROUGH 17777
BANK 1 LOCATIONS 20000 THROUGH 37777
BANK 2 LOCATIONS 40000 THROUGH 57777
BANK 3 LOCATIONS 60000 THROUGH 77777
LOCB0 LOC 05031
LOCB1 LOC 25031
LOCB2 LOC 45011
LOCB3 LOC 65031
B0LOC LOC IN BANK Ø TO INDIRECTLY REFERENCE LOCBØ
B1LOC LOC IN BANK Ø TO INDIRECTLY REFERENCE LOCB1
B2LOC LOC IN BANK Ø TO INDIRECTLY REFERENCE LOCB3

9.2 SUBROUTINE DESCRIPTION

CHAIN THE CHAIN SUBROUTINE CONTROLS THE EXECUTION SEQUENCE OF TEST ROUTINES AND ACTS ON AC SWITCH OPTIONS.

SBKNUM THIS SUBROUTINE SETS LOCB0, LOCB1, LOCB2, AND LOCB3 TO THEIR RESPECTIVE BANK NUMBERS (0, 1, 2, AND 3).

TSTB2 CHECKS AC SWITCHES 3 AND 4 TO SEE IF BANK 2 IS AVAILABLE IN SYSTEM.

MOVVE THIS SUBROUTINE IS USED TO MOVE A VARIABLE NUMBER OF WORDS FROM ONE AREA TO ANOTHER (WITHIN A BANK, OR OUTSIDE OF IT). THE CALL FOR THIS SUBROUTINE IS:

```
MOVE   (JMS MOVVE)
FROM ADDRESS
TO ADDRESS
WORD COUNT IN COMPLEMENT FORM
```

9.3 EXTENDED MEMORY CONTROL TEST DESCRIPTIONS

T0 TESTS THAT SEM OP DOES NOT SKIP WITH EXTEND MODE OFF.

T1 TESTS THAT EEM OP SETS EXT MODE, AND THAT SEM OP SKIPS WITH EXT MODE ON.

T2 TESTS THAT LEM OP CLEARS EXT MODE.

T3 TESTS THAT EEM AND LEM CHAIN ENDS WITH EXT MODE OFF.

T4 TESTS THAT A DAC* B0LOC WITH EXT MODE ON IS ABLE TO MODIFY THE CONTENTS OF LOCB0.

T5 TESTS THAT A DAC* B1LOC WITH EXT MODE ON DOES NOT MODIFY LOCB0.

T6 TESTS THAT A DAC* B2LOC WITH EXT MODE ON DOES NOT MODIFY LOCB0.

T7 TESTS THAT A DAC* B3LOC WITH EXT MODE ON DOES NOT MODIFY LOCB0.

T10 TESTS THAT A LAC* B0LOC WITH EXT MODE ON GETS CONTENTS OF LOCB0.

T11 TESTS THAT A LAC* B1LOC WITH EXT MODE ON GETS CONTENTS OF LOCB1.

T12 TESTS THAT A DAC* B2LOC WITH EXT MODE ON DOES NOT MODIFY CONTENTS OF LOCB1.

T13 TESTS THAT A LAC* B2LOC WITH EXT MODE ON GETS CONTENTS OF LOCB2.

T14 TESTS THAT A DAC* B3LOC WITH EXT MODE ON DOES NOT MODIFY CONTENTS OF LOCB1.

T15 TESTS THAT A DAC* B3LOC WITH EXT MODE ON DOES NOT MODIFY CONTENTS OF LOCB2.

T16 TESTS THAT A LAC* B3LOC WITH EXT MODE ON GETS CONTENTS OF LOCB3.

T17 WITH EXT MODE ON, CHECKS THAT XOR* WITH DATA IN BANK 0 WORKS CORRECTLY.

T20 WITH EXT MODE ON, CHECKS THAT XOR* WITH DATA IN BANK 1 WORKS CORRECTLY.

T21 WITH EXT MODE ON, CHECKS THAT XOR* WITH DATA IN BANK 2 WORKS CORRECTLY.

T22 WITH EXT MODE ON, CHECKS THAT XOR* WITH DATA IN BANK 3 WORKS CORRECTLY.

T23 WITH EXT MODE ON, CHECKS THAT XCT* OF NOP IN BANK 0 WORKS CORRECTLY.

T24 WITH EXT MODE ON, CHECKS THAT XCT* OF SKP IN BANK 0 WORKS CORRECTLY.

T25 WITH EXT MODE ON, CHECKS THAT XCT* OF LAC IN BANK 0 WORKS CORRECTLY.

T26 WITH EXT MODE ON, CHECKS THAT XCT* OF DAC IN BANK 0 WORKS CORRECTLY.

T27 WITH EXT MODE ON, CHECKS THAT XCT* OF JMP IN BANK 0 TO LOC IN BANK 0 WORKS CORRECTLY.

T30 WITH EXT MODE ON, CHECKS THAT XCT* OF JMP* IN BANK 0 TO LOC IN BANK 0 WORKS CORRECTLY.

T31 WITH EXT MODE ON, CHECKS THAT JMP* IN BANK 0 TO LOC IN BANK 0 WORKS CORRECTLY.

T32 WITH EXT MODE ON, CHECKS THAT XCT* OF NOP IN BANK 1 WORKS CORRECTLY.

T33 WITH EXT MODE ON, CHECKS THAT XCT* OF SKP IN BANK 1 WORKS CORRECTLY.

T34 WITH EXT MODE ON, CHECKS THAT XCT* OF LAC IN BANK 1 WORDS CORRECTLY.

T35 WITH EXT MODE ON, CHECKS THAT XCT* OF LAC* IN BANK 1 WORKS CORRECTLY.

T36 CHECKS THAT XCT* OF DAC IN BANK 1 WITH EXT MODE ON WORKS CORRECTLY.

T37 CHECKS THAT XCT* OF DAC* IN BANK 1 WITH EXT MODE ON CAN REFERENCE LOC IN BANK Ø.

T40 CHECKS THAT WITH EXT MODE ON, A XCT* OF A JMP* IN BANK 1 CAN JUMP TO BANK Ø.

T41 CHECKS THAT WITH EXT MODE ON, A JUMP TO BANK 1 AND BACK TO BANK Ø CAN BE COMPLETED.

T42 CHECKS THAT WITH EXT MODE ON, A XCT* OF A NOP IN BANK 2 WORKS CORRECTLY.

T43 CHECKS THAT WITH EXT MODE ON, A XCT* OF A SKP IN BANK 2 WORKS CORRECTLY.

T44 CHECKS THAT WITH EXT MODE ON, A XCT* OF A LAC IN BANK 2 WORKS CORRECTLY.

T45 CHECKS THAT WITH EXT MODE ON, A XCT* OF A LAC* IN BANK 2 CAN REFERENCE BANK Ø.

T46 CHECKS THAT WITH EXT MODE ON, A XCT* OF A DAC IN BANK 2 WORKS CORRECTLY.

T47 CHECKS THAT WITH EXT MODE ON, A XCT* OF A DAC* IN BANK 2 CAN REFERENCE BANK Ø.

T50 CHECKS THAT WITH EXT MODE ON, A XCT* OF A JMP* IN BANK 2 CAN JUMP TO BANK Ø.

T51 CHECKS THAT WITH EXT MODE ON, A JUMP TO BANK 2 AND BACK TO BANK Ø CAN BE COMPLETED.

T52 CHECKS THAT WITH EXT MODE ON, A XCT* OF A NOP IN BANK 3 WORKS CORRECTLY.

T53 CHECKS THAT WITH EXT MODE ON, A XCT* OF A SKP IN BANK 3 WORKS CORRECTLY.

T54 CHECKS THAT WITH EXT MODE ON, XCT* OF A LAC IN BANK 3 WORKS CORRECTLY.

T55 CHECKS THAT WITH EXT MODE ON, XCT* OF A LAC* IN BANK 3 CAN REFERENCE BANK Ø.

T56 CHECKS THAT WITH EXT MODE ON, XCT* OF A DAC IN BANK 3 WORKS CORRECTLY.

T57 CHECKS THAT WITH EXT MODE ON, XCT* OF A DAC* IN BANK 3 CAN REFERENCE BANK 0,

T60 CHECKS THAT WITH EXT MODE ON, XCT* OF A JMP* IN BANK 3 CAN JUMP TO BANK 0,

T61 TESTS THAT WITH EXT MODE ON, A JUMP TO BANK 3 AND BACK TO BANK 0 CAN BE COMPLETED.

T62 TESTS THAT A JMS IN BANK 0 WITH EXT MODE OFF STORES EXT MODE STATUS CORRECTLY,

T63 TESTS THAT A JMS IN BANK 0 WITH EXT MODE ON STORES EXT MODE STATUS CORRECTLY,

T64 TESTS THAT AFTER JMS IN BANK 0 WITH EXT MODE ON, THE EXT MODE REMAINS ON.

T65 TESTS THAT A JMS IN BANK 0 STORES THE EXT PC BITS CORRECTLY.

T66 TESTS THAT A JMS IN BANK 1 WITH EXT MODE ON STORES EXT MODE STATUS CORRECTLY,

T67 TESTS THAT A JMS IN BANK 1 WITH EXT MODE ON STORES EXT MODE STATUS CORRECTLY,

T70 TESTS THAT A JMS IN BANK 1 WITH EXT MODE ON DOES NOT RESET EXT MODE,

T71 TESTS THAT A JMS IN BANK 1 STORES THE EXT PC BITS CORRECTLY.

T72 TESTS THAT A JMS IN BANK 2 WITH EXT MODE OFF STORES EXT MODE STATUS CORRECTLY,

T73 TESTS THAT A JMS IN BANK 2 WITH EXT MODE ON STORES EXT MODE STATUS CORRECTLY,

T74 TESTS THAT A JMS IN BANK 2 WITH EXT MODE ON DOES NOT RESET EXT MODE,

T75 TESTS THAT A JMS IN BANK 2 STORES THE EXT PC BITS CORRECTLY.

T76 TEST THAT A JMS IN BANK 3 WITH EXT MODE OFF STORES EXT MODE STATUS CORRECTLY,

T77 TESTS THAT A JMS IN BANK 3 WITH EXT MODE ON STORES EXT MODE STATUS CORRECTLY.

T100 TESTS THAT A JMS IN BANK 3 WITH EXT MODE ON DOES NOT RESET EXT MODE.

T101 TEST THAT A JMS IN BANK 3 STORES EXT PC BITS CORRECTLY.

T102 TESTS THAT A CAL OP IN BANK 0 WITH EXT MODE OFF STORES EXT MODE STATUS CORRECTLY.

T103 TESTS THAT A CAL OP IN BANK 0 WITH EXT MODE ON STORES EXT MODE STATUS CORRECTLY.

T104 TESTS THAT A CAL OP IN BANK 0 WITH EXT MODE ON DOES NOT RESET EXT MODE.

T105 TESTS THAT A CAL OP IN BANK 0 STORES EXT PC BITS CORRECTLY.

T106 TESTS THAT A CAL* IN BANK 0 WITH EXT MODE ON DOES NOT RESET EXT MODE, AND STORES EXT PC BITS CORRECTLY.

T107 TESTS THAT A CAL OP IN BANK 1 WITH EXT MODE OFF REFERENCES LOC 20 OF BANK 1.

T110 TESTS THAT A CAL OP IN BANK 1 WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T111 TESTS THAT A CAL* IN BANK 1 WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T112 TESTS THAT A CAL* IN BANK 1 WITH EXT MODE ON REFERENCES LOC 20 OF BANK 0, AND DOES NOT RESET EXT MODE.

T113 TESTS THAT A CAL OP IN BANK 1 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T114 TESTS THAT A CAL* IN BANK 1 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T115 TESTS THAT A CAL OP IN BANK 2 WITH EXT MODE OFF REFERENCES LOC 20 OF BANK 2.

T116 TESTS THAT A CAL OP IN BANK 2 WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T117 TESTS THAT A CAL* IN BANK 2 WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T120 TESTS THAT A CAL OP IN BANK 2 WITH EXT MODE ON REFERENCES LOC 20 OF BANK 0, AND DOES NOT RESET EXT MODE.

T121 TESTS THAT A CAL OP IN BANK 2 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T122 TESTS THAT A CAL* IN BANK 2 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T123 TESTS THAT A CAL OP IN BANK 3 WITH EXT MODE OFF REFERENCES LOC 20 OF BANK 3.

T124 TESTS THAT A CAL OP IN BANK 3 WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T125 TESTS THAT A CAL* IN BANK 3 WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T126 TESTS THAT A CAL OP IN BANK 3 WITH EXT MODE ON REFERENCES LOC 20 OF BANK 3.

T127 TESTS THAT A CAL OP IN BANK 3 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T130 TESTS THAT A CAL* IN BANK 3 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T131 TESTS THAT WITH EXT MODE OFF, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 1 REFERENCES BANK 1, AND THAT AFTER AUTO-INDEX BANK 1 IS REFERENCED, BANK 1 IS REFERENCED.

T132 TESTS THAT WITH EXT MODE OFF, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 2 REFERENCES BANK 2 AND THAT AFTER AUTO-INDEX BANK 2 IS REFERENCED.

T133 TESTS THAT WITH EXT MODE OFF, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 3 REFERENCES BANK 3, AND THAT AFTER AUTO-INDEX BANK 3 IS REFERENCED.

T134 TESTS THAT WITH EXT MODE ON, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 1 REFERENCES BANK 1, AND THAT AFTER AUTO-INDEX BANK 0 CAN BE REFERENCED.

T135 TESTS THAT WITH EXT MODE ON, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 2 REFERENCES BANK 2, AND THAT AFTER AUTO-INDEX BANK 0 CAN BE REFERENCED.

T136 TESTS THAT WITH EXT MODE ON, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 3 REFERENCES BANK 3, AND THAT AFTER AUTO-INDEX BANK Ø CAN BE REFERENCED.

T137 TESTS THAT AN INTERRUPT FROM BANK Ø WITH EXT MODE OFF STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T140 TESTS THAT AN INTERRUPT FROM BANK Ø WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T141 TESTS THAT AFTER AN INTERRUPT FROM BANK Ø WITH EXT MODE ON, THE EXT MODE IS RESET.

T142 TESTS THAT AN INTERRUPT FROM BANK 1 WITH EXT MODE OFF REFERENCES BANK Ø, AND THAT EXT MODE STATUS AND EXT PC BITS ARE STORED CORRECTLY.

T143 TESTS THAT AN INTERRUPT FROM BANK 1 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T144 TESTS THAT AN INTERRUPT FROM BANK 2 WITH EXT MODE OFF REFERENCES BANK Ø, AND THAT EXT MODE STATUS AND EXT PC BITS ARE STORED CORRECTLY.

T145 TESTS THAT AN INTERRUPT FROM BANK 2 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T146 TESTS THAT AN INTERRUPT FROM BANK 3 WITH EXT MODE OFF REFERENCES BANK Ø, AND THAT EXT MODE STATUS AND EXT PC BITS ARE STORED CORRECTLY.

T147 TESTS THAT AN INTERRUPT FROM BANK 3 WITH EXT MODE ON STORES EXT MODE STATUS AND EXT PC BITS CORRECTLY.

T150 TESTS THAT EXECUTION OF EMIR OP TURNS ON EXT MODE.

T151 TESTS THAT EMIR CAN RESTORE TO EXT MODE OFF.

T152 TEST THAT EMIR CAN RESTORE TO EXT MODE ON.

9.4 OPTIONAL MEMORY EXTENSION SWITCH TEST DESCRIPTION

AT0 TESTS THAT WITH EXT MODE OFF, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 1 REFERENCES BANK 0, AND THAT AFTER AUTO-INDEX BANK 1 IS REFERENCED,

AT1 TESTS THAT WITH EXT MODE ON, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 1 REFERENCES BANK 0, AND THAT AFTER AUTO-INDEX, BANK 0 CAN BE REFERENCED,

AT2 TESTS THAT WITH EXT MODE OFF, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 2 REFERENCES BANK 0, AND THAT AFTER AUTO-INDEX, BANK 2 IS REFERENCED,

AT3 TESTS THAT WITH EXT MODE ON, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 2 REFERENCES BANK 0, AND THAT AFTER AUTO-INDEX, BANK 0 CAN BE REFERENCED,

AT4 TESTS THAT WITH EXT MODE OFF, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 3 REFERENCES BANK 0, AND THAT AFTER AUTO-INDEX, BANK 3 IS REFERENCED,

AT5 TESTS THAT WITH EXT MODE ON, INDIRECT REFERENCE OF AUTO-INDEX FROM BANK 3 REFERENCES BANK 0, AND THAT AFTER AUTO-INDEX, BANK 0 CAN BE REFERENCED,

```
                        /PDP-7 EXTENDED MEMORY CONTROL TEST
                        /COPYRIGHT 1968, DIGITAL EQUIPMENT CORP.
                        /MAYNARD, MASS.
                        /
                                .FULL
005031                  LOC=DEND+1
005031                  LOCB0=LOC
025031                  LOCB1=LOC+20000
045031                  LOCB2=LOC+40000
065031                  LOCB3=LOC+60000
000001                  L1=1
020001                  L1B1=20001
040001                  L1B2=40001
060001                  L1B3=60001
000000                  L0=0
000000                  L0B0=0
020000                  L0B1=20000
040000                  L0B2=40000
060000                  L0B3=60000
000010                  L10=10
000010                  L10B0=10
020010                  L10B1=20010
040010                  L10B2=40010
060010                  L10B3=60010
000020                  L20=20
000020                  L20B0=20
020020                  L20B1=20020
040020                  L20B2=40020
060020                  L20B3=60020
707742                  EMIR=707742
                                .EJECT
```

```
00130                                   .LOC 130
00130     005031        R0LOC           LOCB0
00131     025031        R1LOC           LOCB1
00132     045031        R2LOC           LOCB2
00133     065031        R3LOC           LOCB3
00134     020001        R1L1            L1B1
00135     040001        R2L1            L1B2
00136     060001        R3L1            L1B3
00137     000000        R0L0            L0B0
00140     020000        R1L0            L0B1
00141     040000        R2L0            L0B2
00142     060000        R3L0            L0B3
00143     000010        R0L10           L10B0
00144     020010        R1L10           L10B1
00145     040010        R2L10           L10B2
00146     060010        R3L10           L10B3
00147     000020        R0L20           L20B0
00150     020020        R1L20           L20B1
00151     040020        R2L20           L20B2
00152     060020        R3L20           L20B3
00153     000000        KSTART          0
00154     000402        P0STRT          T0
00155     004526        P1STRT          AT0
00156     000000        NXTST           0
00157     000000        CURTST          0
00160     000000        TEMP            0
00161     000000        CTRA            0
00162     000000        CTRB            0
00163     777777        M1              -1
00164     000001        K1              1
00165     000002        K2              2
00166     000003        K3              3
00167     020000        K20K            020000
00170     040000        K40K            040000
00171     060000        K60K            060000
00172     200000        K200K           200000
00173     220000        K220K           220000
00174     240000        K240K           240000
00175     260000        K260K           260000
00176     000207        BELL            207
00177     000000        RTNNO           0
                                        .EJECT
```

```
00200   600375          JMP     STP0
00201   600377          JMP     STP1
00202   750004  START   LAS                     /CHECK THAT CPU HAS MORE
00203   500171          AND     K60K            /THAN 8K MEMORY.
00204   740200          SZA
00205   600210          JMP     .+3
00206   750040          HLT!CLA                 /ERROR,NOT MORE THAN 8K,OR
00207   600202          JMP     START           /INCORRECT SWITCH SETTINGS.
00210   200153  GETRDY  LAC     KSTART          /GET 1ST RTN ADDRESS
00211   040156          DAC     NXTST           /STORE AT NXTST
00212   100247          JMS     FORWD           /GO SET UP FOR NEXT TEST
00213   100274          SETA                    /SET CTRA TO
00214   770000          77:000                  /4096
00215   620157          JMP*    CURTST          /GO TO NEXT TEST.
00216   000000  CHAIN   0
00217   707704          LEM
00220   200234          LAC     CHAINA+4
00221   040021          DAC     21
00222   750004          LAS                     /READ ACS
00223   740010          RAL
00224   741100          SPA                     /LOOP ON ROUTINE?(ACS1)
00225   620216          JMP*    CHAIN           /YES.
00226   440161          ISZ     CTRA            /DONE  TIMES?
00227   620216          JMP*    CHAIN           /NO.REPEAT TEST.
00230   750004  CHAINA  LAS                     /READ ACS
00231   740100          SMA                     /HALT AT END OF TEST?(ACS0)
00232   600235          JMP     .+3             /NO.
00233   200177          LAC     RTNNO           /YES.GET TEST NUMBER.
00234   740040          HLT                     /HALT,TEST NUMBER IN AC.
00235   200156          LAC     NXTST
00236   340164          TAD     K1
00237   750200          SZA!CLA                 /LAST TEST?
00240   600212          JMP     GETRDY+2        /NO.PROCEED TO NEXT TEST.
00241   200176          LAC     BELL            /GET BELL CODE
00242   700406          TLS                     /RING BELL
00243   700401          TSF                     /DONE?
00244   600243          JMP     .-1             /NO. WAIT.
00245   700402          TCF                     /YES, CLEAR TELEPRINTER FLAG.
00246   600210          JMP     GETRDY          /START OVER.
00247   000000  FORWD   0
00250   220156          LAC*    NXTST           /GET NEXT TEST NUMBER.
00251   040177          DAC     RTNNO           /STORE AT RTNNO.
00252   440156          ISZ     NXTST
00253   200156          LAC     NXTST           /GET CURRENT TEST NUMBER
00254   040160          DAC     TEMP            /STORE AT TEMP
00255   440156          ISZ     NXTST
00256   200156          LAC     NXTST           /GET CURRENT TEST ADDRESS.
00257   040157          DAC     CURTST
00260   220160          LAC*    TEMP
00261   040156          DAC     NXTST           /SET NEXT TEST ADDRESS.
00262   620247          JMP*    FORWD           /EXIT.
                        .EJECT
```

```
                        /SUBROUTINE TO SET A LOCATION TO SPECIFIED VALUE.
00263   000000  STCTR   0
00264   220263          LAC*    STCTR           /GET LOC ADDR AND
00265   040161          DAC     TEMP            /SAVE AT TEMP.
00266   440263          ISZ     STCTR
00267   220263          LAC*    STCTR           /GET VALUE AND STORE
00270   060160          DAC*    TEMP            /AT DESIRED LOCATION
00271   440263          ISZ     STCTR
00272   754000          CLA!CLL                 /CLEAR AC,LINK
00273   620263          JMP*    STCTR           /EXIT.
        100263  SETLOC=JMS STCTR
                        /SUROUTINE TO SET CTRA TO SPECIFIED VALUE.
00274   000000  STCTA   0
00275   220274          LAC*    STCTA           /GET DESIRED VALUE.
00276   040302          DAC     .+4
00277   440274          ISZ     STCTA           /SET UP TO EXIT.
00300   100263          SETLOC                  /CALL ON STCTR TO
00301   000161          CTRA                    /SET CTRA TO
00302   000000          0                       /THIS VALUE (VARIABLE).
00303   620274          JMP*    STCTA           /EXIT
        100274  SETA=JMS STCTA
                        /SUBROUTINE TO MOVE VARIABLE LENGTH FIELDS
00304   000000  MOVVE   0
00305   220304          LAC*    MOVVE           /GET AND STORE "FROM"
00306   040326          DAC     FADDR           /ADDRESS
00307   440304          ISZ     MOVVE
00310   220304          LAC*    MOVVE           /GET AND STORE "TO"
00311   040327          DAC     TADDR           /ADDRESS.
00312   440304          ISZ     MOVVE
00313   220304          LAC*    MOVVE           /GET AND STORE "MOVE COUNT"
00314   040330          DAC     MCTR
00315   440304          ISZ     MOVVE
00316   220326  MOVEA   LAC*    FADDR           /GET "FROM" VOID
00317   060327          DAC*    TADDR           /STORE AT "TO" LOCATION
00320   440326          ISZ     FADDR           /UPDATE "TO"AND "FROM"
00321   440327          ISZ     TADDR           /ADDRESSES.
00322   440330          ISZ     MCTR            /DONE MOVING?
00323   600316          JMP     MOVEA           /NO. GO MOVE ANOTHER WORD.
00324   754000          CLA!CLL
00325   620304          JMP*    MOVVE           /YES.DONE.EXIT.
00326   000000  FADDR   0
00327   000000  TADDR   0
00330   000000  MCTR    0
        100304  MOVE=JMS MOVVE
                .EJECT
```

```
00331  000000  SBKNUM  0
00332  727702          FEM                     /ENTER EXTEND MODE.
00333  100350          JMS     TSTB2           /BANK 2 AVAILABLE?
00334  600343          JMP     .+7             /NO.
00335  100356          JMS     TSTB3           /YES.BANK 3 AVAILABLE?
00336  600341          JMP     .+3             /NO.
00337  200166          LAC     K3              /YES. 3 TO AC
00340  060133          DAC*    B3LOC           /3 TO LOCB3
00341  200165          LAC     K2              /2 TO AC
00342  060132          DAC*    B2LOC           /2 TO LOCB2
00343  200164          LAC     K1              /1 TO AC
00344  060131          DAC*    B1LOC           /1 TO LOCB1
00345  727704          LEM                     /LEAVE EXTEND MODE
00346  145031          DZM     LOCB0           /0 TO LOCB0
00347  620331          JMP*    SBKNUM          /EXIT.
                /
00350  000000  TSTB2   0                       /TEST FOR BANK2 AVAILABLE
00351  750004          LAS                     /READ ASC
00352  500170          AND     K40K
00353  740200          SZA                     /BANK 2 AVAILABLE?
00354  440350          ISZ     TSTB2           /YES. SET UP AVAI EXIT
00355  620350          JMP*    TSTB2           /EXIT.
                /
00356  000000  TSTB3   0                       /TEST FOR BANK3 AVAILABLE
00357  750004          LAS                     /READ ACS
00360  500171          AND     K60K
00361  240171          XOR     K60K
00362  741200          SNA                     /BANK3 AVAILABLE?
00363  440356          ISZ     TSTB3           /YES.SET UP AVAI EXIT
00364  620356          JMP*    TSTB3           /EXIT.
                /
00365  000000  STFLG   0                       /SUB TO SET TELEPRINTER FLAG
00366  700401          TSF                     /FLAG SET?
00367  741000          SKP                     /NO.
00370  620365          JMP*    STFLG           /YES. EXIT
00371  700406          TLS                     /START PRINTER
00372  700401          TSF                     /WAIT FOR FLAG.
00373  600372          JMP     .-1
00374  620365          JMP*    STFLG           /EXIT.
                /
00375  200154  STP0    LAC     P0STRT          /GET P0 START ADR
00376  741000          SKP
00377  200155  STP1    LAC     P1STRT          /GET P1 START ADR
00400  040153          DAC     KSTART
00401  600202          JMP     START
                .EJECT
```

```
                        /TEST THAT SEM DOES NOT SKIP WITH EXT MODE OFF.
00402   000000  T0      0
00403   000412          T1
00404   707704          LEM                     /LEAVE EXT MODE IF ON.
00405   707701          SEM                     /SKIP IF EXTEND ON. SHOULD NOT
00406   741000          SKP                     /NO SKIP. OK.
00407   740040          HLT                     /ERROR. EXT MODE ON, OR SEM
                                                /SKIPPED WITH EXT MODE OFF.
00410   100216          JMS     CHAIN           /GO TO CHAIN. SEE IF DONE.
00411   600405          JMP     T0+3            /NOT DONE. REPEAT TEST.
                        /
                        /TEST THAT EEM SETS EXT MODE AND SEM SKIPS WITH EXT MODE ON
00412   000001  T1      1
00413   000421          T2
00414   707702          EEM                     /SET EXTEN MODE.
00415   707701          SEM                     /SKIP IF EXT ON. SHOULD SKIP.
00416   740040          HLT                     /ERROR. EXT MODE NOT ON, OR
                                                /SEM FAILED TO SKIP WITH EXT ON.
00417   100216          JMS     CHAIN           /CHAIN. SEE IF DONE.
00420   600414          JMP     T1+2            /NOT DONE. REPEAT TEST.
                        /
                        /TEST THAT LEM CLEARS EXT MODE
00421   000002  T2      2
00422   000432          T3
00423   707702          EEM                     /ENTER EXT MODE
00424   707704          LEM                     /LEAVE EXT MODE
00425   707701          SEM                     /SKIP IF EXT ON. SHOULD NOT
00426   741000          SKP                     /OK.
00427   740040          HLT                     /ERROR. LEM FAILED TO TURN OFF
                                                /EXT MODE.
00430   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
00431   600423          JMP     T2+2            /NOT DONE. REPEAT TEST
                        /
                        /EEM, LEM TEST CHAIN
00432   000003  T3      3
00433   000451          T4
00434   707702          EEM
00435   707704          LEM
00436   707702          EEM
00437   707704          LEM
00440   707702          EEM
00441   707704          LEM
00442   707702          EEM
00443   707704          LEM
00444   707701          SEM                     /SKIP IF EXT ON. SHOULD NOT
00445   741000          SKP                     /OK
00446   740040          HLT                     /ERROR. FEM,LEM CHAIN LEFT
                                                /EXT MODE ON. SHOULD BE OFF.
00447   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
00450   600434          JMP     T3+2            /NOT DONE. REPEAT TEST
                        .EJECT
```

```
                                /EXT ON, DAC*       B0LOC.(LOCB0 SHOULD BE MODIFIED).
00451   000004      T4          4
00452   000465                  T5
00453   145031                  DZM         LOCB0           /ZERO TO LOC 03000 OF BANK 0.
00454   750001                  CLA!CMA                     /SET AC TO ALL 1'S
00455   707702                  EEM                         /ENTER EXT MODE.
00456   060130                  DAC*        B0LOC           /TRY TO SET LOCB0
00457   707704                  LEM                         /TO ALL 1'S.LEAVE EXT MODE.
00460   545031                  SAD         LOCB0           /SKIP IF  LOCB0 NOT ALL 1'S.
00461   741000                  SKP                         /SAVE. OK.
00462   740040                  HLT                         /ERROR. LOCB0 WAS
                                                            /NOT MODIFIED.CHECK OTHER
                                                            /BANKS.
00463   100216                  JMS         CHAIN           /CHAIN. SEE IF DONE.
00464   600453                  JMP         T4+2            /NOT DONE.REPEAT TEST.
                                /
                                /EXT ON, DAC* B1LOC.(LOCB0 SHOULD NOT BE MODIFIED).
00465   000005      T5          5
00466   000500                  T6
00467   145031                  DZM         LOCB0           /0 TO LOCB0
00470   750001                  CLA!CMA                     /ALL 1'S TO AC
00471   707702                  EEM                         /EXT MODE ON.
00472   060131                  DAC*        B1LOC           /TRY TO SET LOCB1
00473   707704                  LEM                         /TO ALL 1'S.LEAVE EXT MODE.
00474   545031                  SAD         LOCB0           /SKIP IF LOCB0
                                                            /DIFFERENT FROM AC.
00475   740040                  HLT                         /ERROR. LOCB0 SAME
                                                            /AS AC. LOCB000 MODIFIED
                                                            /INSTEAD OF LOCB1
00476   100216                  JMS         CHAIN           /CHAIN.SEE IF DONE.
00477   600467                  JMP         T5+2            /NOT DONE. REPEAT TEST.
                                /
                                /EXT ON, DAC* B2LOC (LOCB0 SHOULD NOT MODIFY).
00500   000006      T6          6
00501   000515                  T7
00502   100350                  JMS         TSTB2           /CHECK FOR BANK2 AVAILABLE.
00503   600230                  JMP         CHAINA          /NOT AVAI. SKIP TEST.
00504   145031                  DZM         LOCB0           /0 TO LOCB0
00505   750001                  CLA!CMA                     /ALL 1'S TO AC.
00506   707702                  EEM                         /ENTER EXTEND MODE.
00507   060132                  DAC*        B2LOC           /ATTEMPT TO SET ALL 1'S IN LOCB2
00510   707704                  LEM                         /LEAVE EXTEND MODE.
00511   545031                  SAD         LOCB0           /SKIP IF LOCB0 DIFFERENT FROM AC.
00512   740040                  HLT                         /ERROR.LOCB0 MODIFIED BY REFERENCE
                                                            /TO BANK2.
00513   100216                  JMS         CHAIN           /CHAIN. SEE IF DONE.
00514   600504                  JMP         T6+4            /NOT DONE. REPEAT TEST.
                                .EJECT
```

```
                        /EXT ON,DAC* B3LOC(LOCB0 SHOULD NOT MODIFY).
00515   000007  T7      7
00516   000532          T10
00517   100356          JMS     TSTB3           /CHECK FOR BANK3 AVAILABLE.
00520   600230          JMP     CHAINA          /NOT AVAI.SKIP TEST
00521   145031          DZM     LOCB0           /0 TO LOC
00522   750001          CLA!CMA                 /ALL 1'S TO AC.
00523   707702          EEM                     /ENTER EXT MODE.
00524   060133          DAC*    B3LOC           /TRY TO SET ALL 1'S IN LOCB3
00525   707704          LEM                     /LEAVE EXT MODE
00526   545031          SAD     LOCB0           /SKIP IF LOCB0 DIFFERENT FROM AC.
00527   740040          HLT                     /ERR. LOCB0 WAS MODIFIED BY REF TO BANK3.
00530   100216          JMS     CHAIN           /CHAIN.SEE IF DONE.
00531   600521          JMP     T7+4            /NOT DONE. REPEAT TEST.
                        /
                        /EEM, TEST OF LAC* B0LOC. SHOULD GET CORRECT DATA, FROM LOCB0
00532   000010  T10     10
00533   000550          T11
00534   100331          JMS     SBKNUM          /SET BANKS TO THEIR NUMBERS.
00535   750001          CLA!CMA                 /ALL 1'S TO AC
00536   045031          DAC     LOCB0           /ALL 1'S TO LOC
00537   750000          CLA                     /CLEAR AC.
00540   707702          EEM                     /ENTER EXT MODE
00541   220130          LAC*    B0LOC           /TRY TO GET C(LOCB0)WITH EXT ON.
00542   707704          LEM                     /LEAVE EXT MODE.
00543   540163          SAD     M1              /SKIP IF AC NOT ALL 1'S.
00544   741000          SKP                     /OK.
00545   740040          HLT                     /ERR. NOT ALL 1'S.LAC* B0LOC
                                                /DID NOT GET C(LOCB0)
00546   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
00547   600534          JMP     T10+2           /NOT DONE. REPEAT TEST.
                        /
                        /EEM, TEST OF LAC*B1LOC. SHOULD GET CORRECT DATA, FROM LOCB1
00550   000011  T11     11
00551   000566          T12
00552   100331          JMS     SBKNUM          /SET BANKS TO THEIR NUMBER.
00553   750001          CLA!CMA                 /ALL 1'S TO AC.
00554   707702          EEM                     /ENTER EXT MODE
00555   060131          DAC*    B1LOC           /ALL 1'S TO LOCB1
00556   750000          CLA
00557   220131          LAC*    B1LOC           /TRY TO GET C(LOCB1) WITH EXT ON.
00560   707704          LEM                     /LEAVE EXT MODE.
00561   540163          SAD     M1              /SKIP IF AC NOT ALL 1'S.
00562   741000          SKP                     /OK.
00563   740040          HLT                     /ERR. NOT ALL 1'S. LAC*B1LOC
                                                /DID NOT GET C(LOCB1).
00564   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
00565   600552          JMP     T11+2           /NOT DONE. REPEAT TEST.
                        .EJECT
```

```
                                /EEM, ALL 1'S TO LOCR2 (DAC* B2LOC). LAC* B1LOC. SHOULD GET
                                /UNMODIFIED CONTENTS OF LOCB1.
00566   000012   T12     12
00567   000606           T13
00570   100350           JMS     TSTB2          /BANK2 AVAILABLE?
00571   600230           JMP     CHAINA         /NO. SKIP TEST.
00572   100331           JMS     SBKNUM         /YES. SET BANK NUMBERS
00573   750001           CLA!CMA                /ALL 1'S TO AC
00574   707702           EEM                    /ENTER EXTEND MODE.
00575   060132           DAC*    B2LOC          /ALL 1'S TO LOCB2.
00576   750000           CLA                    /CLEAR AC.
00577   220131           LAC*    B1LOC          /GET C(LOCB1).
00600   707704           LEM                    /LEAVE EXT MODE
00601   540164           SAD     K1             /SKIP IF AC NOT 1
00602   741000           SKP                    /OK
00603   740040           HLT                    /ERR. DAC* B2LOC REFERENCED
                                                /BANK1, OR LAC* B1LOC
                                                /DID NOT REFERENCE BANK1.
00604   100216           JMS     CHAIN          /CHAIN. SEE IF DONE.
00605   600572           JMP     T12+4          /NOT DONE. REPEAT TEST.
                                /
                                /EEM, TEST OF LAC* B2LOC. SHOULD GET CORRECT DATA,FROM LOCB2.
00606   000013   T13     13
00607   000626           T14
00610   100350           JMS     TSTB2          /BANK2 AVAILABLE?
00611   600230           JMP     CHAINA         /NO. SKIP TEST
00612   100331           JMS     SBKNUM         /YES, SET BANK NUMBERS
00613   750001           CLA!CMA                /ALL 1'S TO AC
00614   707702           EEM                    /ENTER EXT MODE
00615   060132           DAC*    B2LOC          /ALL 1'S TO LOCB2
00616   750000           CLA                    /CLEAR AC.
00617   220132           LAC*    B2LOC          /GET C(LOCB2)
00620   707704           LEM                    /LEAVE EXT MODE.
00621   540163           SAD     M1             /SKIP IF AC NOT ALL 1'S
00622   741000           SKP                    /OK
00623   740040           HLT                    /ERR. NOT ALL 1'S. LAC* B2LOC
                                                /DID NOT GET C(LOCB2)
00624   100216           JMS     CHAIN          /CHAIN. SEE IF DONE
00625   600612           JMP     T13+4          /NOT DONE. REPEAT TEST
                         .EJECT
```

```
                        /EEM, ALL 1'S TO LOCB3 (DAC*B3LOC).LAC*B1LOC. SHOULD
                        /GET UNMODIFIED CONTENTS OF LOCB1.
00626   000014  T14     14
00627   000646          T15
00630   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
00631   600230          JMP     CHAINA          /NO. SKIP TEST
00632   100331          JMS     SBKNUM          /YES. SET BANK NUMBERS
00633   750001          CLA!CMA                 /ALL 1'S TO AC
00634   707702          EEM                     /ENTER EXT MODE.
00635   060133          DAC*    B3LOC           /ALL 1'S TO B3LOC
00636   750000          CLA                     /CLEAR AC
00637   220131          LAC*    B1LOC           /GET C(LOCB1)
00640   707704          LEM                     /LEAVE EXT MODE.
00641   540164          SAD     K1              /SKIP IF AC NOT 1.
00642   741000          SKP                     /OK
00643   740040          HLT                     /ERROR. DAC* B3LOC REFERENCED
                                                /BANK 1.
00644   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
00645   600632          JMP     T14+4           /NOT DONE.  REPEAT TEST
                        /
                        /EEM, ALL 1'S TO LOCB3 (DAC*B3LOC). LAC*B2LOC. SHOULD GET
                        /UNMODIFIED CONTENTS OF LOCB2
00646   000015  T15     15
00647   000666          T16
00650   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
00651   600230          JMP     CHAINA          /NO. SKIP TEST
00652   100331          JMS     SBKNUM          /YES. SET BANK NUMBERS
00653   750001          CLA!CMA                 /ALL 1'S TO AC.
00654   707702          EEM                     /ENTER EXT MODE
00655   060133          DAC*    B3LOC           /ALL 1'S TO LOCB3
00656   750000          CLA                     /CLEAR AC
00657   220132          LAC*    B2LOC           /GET C(LOCB2)
00660   707704          LEM                     /LEAVE EXT MODE
00661   540165          SAD     K2              /SKIP IF AC NOT 2.
00662   741000          SKP                     /OK
00663   740040          HLT                     /ERROR. DAC*B3LOC REFERENCED
                                                /BANK2, OR LAC*B2LOC DID
                                                /NOT REFERENCE BANK2.
00664   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
00665   600652          JMP     T15+4           /NOT DONE. REPEAT TEST
                        .EJECT
```

```
                                /EEM, ALL 1'S TO LOCB3 (DAC*B3LOC). LAC*B3LOC. SHOULD GET CORECT DATA.
00666   000016          T16     16
00667   000717          T17
00670   100356                  JMS     TSTB3           /BANK 3 AVAILABLE?
00671   600237                  JMP     CHAINA          /NO. SKIP TEST
00672   100331                  JMS     SBKNUM          /YES. SET BANK NUMBERS
00673   750001                  CLA!CMA                 /ALL 1'S TO AC
00674   707702                  EEM                     /ENTER EXTEND MODE.
00675   060133                  DAC*    B3LOC           /ALL 1'S TO LOCB3
00676   750000                  CLA                     /CLEAR AC
00677   220133                  LAC*    B3LOC           /GET C(LOCB3)
00700   707704                  LEM                     /LEAVE EXT MODE
00701   540163                  SAO     M1              /SKIP IF AC NOT ALL 1'S
00702   741200                  SKP
00703   740040                  HLT                     /ERROR. NOT ALL 1'S LAC*B3LOC
                                                        /DID NOT GET C(LOCB3)
00704   100216                  JMS     CHAIN           /CHAIN.  SEE IF DONE
00705   600672                  JMP     T16+4           /NOT DONE. REPEAT TEST
                                /
                                /WITH EXT ON, CHECK XOR* WITH DATA IN BANK 0 WORKS CORRECTLY.
00706   000017          T17     17
00707   000723          T20
00710   100331                  JMS     SBKNUM          /SET BANK NUMBERS
00711   750001                  CLA!CMA                 /ALL 1'S TO AC
00712   707702                  EEM                     /ENTER EXT MODE
00713   060130                  DAC*    B0LOC           /ALL 1'S TO LOCB0
00714   260130                  XOR*    R0LOC           /XOR* AC WITH C(LOCB0)
00715   707704                  LEM                     /LEAVE EXT MODE
00716   741200                  SNA                     /SKIP IF AC NOT 0
00717   741000                  SKP                     /OK
00720   740040                  HLT                     /ERROR XOR* OF AC WITH B0LOC
                                                        /DID NOT RESULT IN AC=0.
00721   100216                  JMS     CHAIN           /CHAIN. SEE IF DONE
00722   600710                  JMP     T17+2           /NOT DONE. REPEAT TEST
                                /
                                /WITH EXT ON, CHECK THAT XOR* WITH DATA IN BANK 1 WORKS CORRECTLY.
00723   000020          T20     20
00724   000740                  T21
00725   100331                  JMS     SBKNUM          /SET BANK NUMBERS
00726   750001                  CLA!CMA                 /ALL 1'S TO AC
00727   707702                  EEM                     /ENTER EXT MODE.
00730   060131                  DAC*    B1LOC           /ALL 1'S TO LOCB1
00731   260131                  XOR*    B1LOC           /XOR* AC WITH C(LOCB1)
00732   707704                  LEM                     /LEAVE EXT MODE
00733   741200                  SNA                     /SKIP IF AC NOT 0
00734   741000                  SKP                     /OK
00735   740040                  HLT                     /ERROR XOR* OF AC AND C(LOCB1)
                                                        /DID NOT GIVE AC=0
00736   100216                  JMS     CHAIN           /CHAIN.  SEE IF DONE
00737   600725                  JMP     T20+2           /NOT DONE. REPEAT TEST.
                                .EJECT
```

```
                                /WITH EXT ON, CHECK THAT XOR* WITH DATA IN BANK2 WORKS CORRECTLY.
00740   000021      T21         21
00741   000757                  T22
00742   100350                  JMS         TSTB2           /BANK 2 AVAILABLE?
00743   600230                  JMP         CHAINA          /NOT AVAI. SKIP TEST
00744   100331                  JMS         SBKNUM          /SET BANK NUMBERS
00745   750001                  CLA!CMA                     /ALL 1'S TO AC
00746   707702                  EEM                         /ENTER EXT MODE
00747   060132                  DAC*        B2LOC           /ALL 1'S TO LOCB2
00750   260132                  XOR*        B2LOC           /XOR* AC WITH C(LOCB2)
00751   707704                  LEM                         /LEAVE EXT MODE
00752   741200                  SNA                         /SKIP IF AC NOT 0
00753   741000                  SKP                         /OK
00754   740040                  HLT                         /ERROR XOR* OF AC WITH C(LOCB2)
                                                            /DID NOT RESULT IN AC=0.
00755   100216                  JMS         CHAIN           /CHAIN. SEE IF DONE
00756   600744                  JMP         T21+4           /NOT DONE. REPEAT TEST
                                /
                                /WITH EXT ON, CHECK THAT XOR* WITH DATA IN BANK 3 WORKS CORRECTLY.
00757   000022      T22         22
00760   000776                  T23
00761   100356                  JMS         TSTB3           /BANK 3 AVAILABLE?
00762   600230                  JMP         CHAINA          /NOT AVAI. SKIP TEST.
00763   100331                  JMS         SBKNUM          /SET BANK NUMBERS
00764   750001                  CLA!CMA                     /ALL 1'S TO AC
00765   707702                  EEM                         /ENTER EXT MODE
00766   060133                  DAC*        B3LOC           /ALL 1'S TO LOCB3
00767   260133                  XOR*        B3LOC           /XOR* AC WITH C(LOCB3)
00770   707704                  LEM                         /LEAVE EXT MODE
00771   741200                  SNA                         /SKIP IF AC NOT 0
00772   741000                  SKP                         /OK
00773   740040                  HLT                         /ERROR XOR* OF AC WITH C(LOCB3)
                                                            /DID NOT RESULT IN AC=0
00774   100216                  JMS         CHAIN           /CHAIN. SEE IF DONE
00775   600763                  JMP         T22+4           /NOT DONE. REPEAT TEST
                                .EJECT
```

```
                                /TEST OF XCT* OF NOP INSTRUCTION IN BANK 0 WITH EXT ON.
00776   000023          T23     23
00777   001015                  T24
01000   100304                  MOVE                    /MOVE 2 INSTRUCTIONS TO TEST AREA
01001   001013                  T23W                    /IN BANK 0
01002   005031                  LOCB0
01003   777776                  -2
01004   707702                  EEM                     /ENTER EXT MODE
01005   420130                  XCT*    B0LOC           /XCT* NOP IN LOCB0
01006   707704          T23A    LEM                     /LEAVE EXT MODE
01007   100216                  JMS     CHAIN           /CHAIN.  SEE IF DONE
01010   601004                  JMP     T23+6           /NOT DONE, REPEAT TEST
01011   740040          T23B    HLT                     /ERROR XCT* OF NOP IN LOCB0 DID NOT
                                                        /RESULT IN EXECUTION OF INSTRUCTION AT
                                                        /T23A. INSTEAD, INSTRUSTION AT LOCB0+1
                                                        /WAS EXECUTED. (PC FAILURE)
01012   601006                  JMP     T23A
01013   740000          T23W    NOP                     /THESE 2 WORDS ARE MOVED TO LOCB0
01014   601011                  JMP     T23B            /AND LOCB0+1 PRIOR TO TEST
                                /
                                /TEST OF XCT* OF SKP INSTRUCTION IN BANK 0 WITH EXT ON.
01015   000024          T24     24
01016   001036                  T25
01017   100304                  MOVE                    /MOVE 3 INSTRUCTIONS TO TEST
01020   001033                  T24W                    /AREA IN BANK 0
01021   005031                  LOCB0
01022   777775                  -3
01023   707702                  EEM                     /ENTER EXT MODE
01024   420130                  XCT*    B0LOC           /XCT* SKP OP IN LOCB0
01025   740040                  HLT                     /FAILED TO SKIP. ERROR
01026   707704          T24A    LEM                     /LEAVE EXT MODE
01027   100216                  JMS     CHAIN           /CHAIN.  SEE IF DONE
01030   601023                  JMP     T24+6           /NOT DONE, REPEAT
01031   740040          T24B    HLT                     /ERROR. PC FAILURE IF EXT MODE
                                                        /LIGHT OFF, SKIP FAILED TO OCCUR. IF EXT
                                                        /MODE ON, SKIP OCCURRED, BUT DID
                                                        /NOT RETURN TO XCT*+2
01032   601026                  JMP     T24A
01033   741000          T24W    SKP                     /TEST SKIP
01034   707704                  LEM                     /TURN OFF EXT MODE
01035   601031                  JMP     T24B            /GO TO ERROR HALT
                                .EJECT
```

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                                /7EXCM-TAPE 2
                                /TEST OF XCT* OF LAC IN BANK0 (DATA IN BANK0). EXT MODE ON.
01036   000025      T25         25
01037   001054                  T25W
01040   201053                  LAC     T25W            /MOVE LAC M1 TO LOCB0
01041   045031                  DAC     LOCB0
01042   707702                  EEM                     /ENTER EXT MODE
01043   750000                  CLA                     /CLEAR AC
01044   420130                  XCT*    B0LOC           /XCT* LAC M1 AT LOCB0
01045   707704                  LEM                     /LEAVE EXT MODE
01046   540163                  SAD     M1              /SKIP IF AC NOT ALL 1'S
01047   741000                  SKP                     /OK
01050   740040                  HLT                     /ERROR. XCT* OF LAC M1 DID
                                                        /NOT FETCH RIGHT DATA.
01051   100216                  JMS     CHAIN           /CHAIN & SEE IF DONE
01052   601040                  JMP     T25+2           /NOT DONE. REPEAT TEST
01053   200163      T25W        LAC     M1
                                /TEST XCT* OF DAC IN BANK0 (REFERENCED LOC IN BANK0). EXT MODE ON
01054   000026      T26         26
01055   001073                  T27
01056   201072                  LAC     T26W            /MOVE DAC LOCB0+2 TO LOCB0
01057   045031                  DAC     LOCB0
01060   145033                  DZM     LOCB0+2         /0 TO LOCB0+2
01061   750001                  CLA!CMA                 /ALL 1'S TO AC
01062   707702                  EEM                     /ENTER EXT MODE
01063   420130                  XCT*    B0LOC           /XCT* OF DAC LOCB0+2
01064   707704                  LEM                     /LEAVE EXT MODE
01065   545033                  SAD     LOCB0+2         /SKIP IF AC AND LOC+2 DIFFER
01066   741000                  SKP                     /OK
01067   740040                  HLT                     /ERROR. XCT* OF DAC AT LOCB0+2 OF ALL 1'S
                                                        /DID NOT SET LOCB0+2 TO ALL 1'S
01070   100216                  JMS     CHAIN           /CHAIN. SEE IF DONE
01071   601056                  JMP     T26+2           /NOT DONE. REPEAT TEST.
01072   045033      T26W        DAC     LOCB0+2
                                /TEST XCT* OF JMP FROM LOC IN BANK0 TO LOC IN BANK0 . EXT MODE ON
01073   000027      T27         27
01074   001114                  T3W
01075   100304                  MOVE                    /MOVE WORDS TO TEST AREA
01076   001111                  T27W
01077   005031                  LOCB0
01100   777775                  -3
01101   707702                  EEM                     /ENTER EXT MODE
01102   420130                  XCT*    B0LOC           /XCT* OF JMP T27A AT LOCB0
01103   740040                  HLT                     /ERROR. JMP T27A DID NOT OCCUR
01104   707704      T27A        LEM                     /LEAVE EXT MODE.
01105   100216                  JMS     CHAIN           /CHAIN. SEE IF DONE
01106   601075                  JMP     T27+2
01107   740040      T27B        HLT                     /ERROR. PC WAS SET TO ADDR
                                                        /REFERENCED BY XCT* B0LOC
                                                        /(PC FAILURE).
01110   601104                  JMP     T27A
01111   601104      T27W        JMP     T27A            /TEST WORDS
01112   707704                  LEM
01113   601107                  JMP     T27B
                                .EJECT
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                                /TEST XCT* OF JMP* IN BANK0 TO LOC IN BANK0.  EXT ON.
01114   000030          T30     30
01115   001137                  T31
01116   100304                  MOVE                    /MOVE TEST WORDS TO TEST AREA
01117   001132                  T30W
01120   005031                  LOCB0
01121   777773                  -5
01122   707702                  EEM                     /ENTER EXT MODE
01123   420130                  XCT*    B0LOC           /XCT* OF JMP* AT LOCB0. EXT ON
01124   740040                  HLT                     /ERR. XCT* OF JMP* NOT DONE
01125   707704          T30A    LEM                     /OK.  LEAVE EXT. MODE
01126   100216                  JMS     CHAIN           /CHAIN.  SEE IF DONE
01127   601116                  JMP     T30+2           /NOT DONE.  REPEAT TEST
01130   740040          T30B    HLT
                                /
01131   601125                  JMP     T30A
01132   625035          T30W    JMP*    LOC+4           /TEST WORDS
01133   707704                  LEM
01134   601130                  JMP     T30B
01135   601125                  JMP     T30A
01136   005034                  LOC+3
                                /
                                /TEST OF JMP* TO LOC IN BANK0 FROM LOC IN BANK0.  EXT MODE ON
01137   000031          T31     31
01140   001152                  T32
01141   201151                  LAC     T31W            /MOVE JMP T31A TO LOC B0
01142   045031                  DAC     LOCB0
01143   707702                  EEM                     /ENTER EXT MODE
01144   620130                  JMP*    B0LOC           /JMP* B0LOC WITH EXT ON.
01145   740040                  HLT                     /ERROR.  JMP* NOT EXECUTED
01146   707704          T31A    LEM                     /OK.  LEAVE EXT MODE
01147   100216                  JMS     CHAIN           /CHAIN.  SEE IF DONE
01150   601141                  JMP     T31+2           /NOT DONE.  REPEAT TEST
01151   601146          T31W    JMP     T31A
                                .EJECT
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                                /TEST XCT* OF NOP AT LOCB1.  EXT MODE ON
01152   000032          T32     32
01153   001175                  T33
01154   102331                  JMS         SBKNUM          /SET BANK NUMBERS
01155   707702                  EEM                         /ENTER EXT MODE
01156   103304                  MOVE                        /MOVE 5 TEST WORDS TO
01157   001170                  T32W                        /TEST AREA IN BANK 1.
01160   025031                  LOCB1
01161   777773                  -5
01162   420131                  XCT*        B1LOC           /XCT* OF NOP IN LOCB 1
01163   707704          T32A    LEM                         /OK.  LEAVE EXT. MODE
01164   102216                  JMS         CHAIN           /CHAIN.  SFE IF DONE
01165   601154                  JMP         T32+2           /NOT DONE.  REPEAT TEST
01166   740040          T32B    HLT                         /ERROR.  PROGRAM CONTROL DID
                                                            /NOT RETURN TO T32A.  INSTEAD,
                                                            /INSTRUCTION AT LOCB1+1 WAS
01167   621163                  JMP         T32A            /EXECUTED.
01170   740002          T32W    NOP                         /TEST WORDS.
01171   625035                  JMP*        LOC+4
01172   740040                  HLT
01173   605033                  JMP         LOC+2
01174   001166                  T32B
                                /
                                /TEST XCT* OF SKP INSTRUCTION AT LOCB1.  EXT MODE ON
01175   000033          T33     33
01176   001216                  T34
01177   100331                  JMS         SBKNUM          /SET BANK NUMBERS
01200   707702                  EEM                         /ENTER EXT MODE
01201   100304                  MOVE                        /MOVE TEST INSTRUCTIONS
01202   001212                  T33W                        /TO TEST AREA IN BANK 1
01203   025031                  LOCB1
01204   777774                  -4
01205   420131                  XCT*        B1LOC           /XCT* OF SKP AT LOCB1
01206   740040                  HLT                         /THIS LAC WAS NOT SKIPPED BY
                                                            /XCT* OF SKP AT LOCB1
01207   707704                  LEM                         /LEAVE EXT MODE
01210   102216                  JMS         CHAIN           /CHAIN.  SFE IF DONE
01211   601177                  JMP         T33+2           /NOT DONE.  REPEAT TEST
01212   741000          T33W    SKP                         /TEST WORDS.
01213   707704                  LEM
01214   740040                  HLT
01215   605033                  JMP         LOC+2
                                .EJECT
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                                /TEST XCT* OF LAC OP IN LOCB1 (DATA FETCHED IN BANK 1 ALSO).
01216   000034   T34     34
01217   001235           T35
01220   100331           JMS     SBKNUM          /SET BANK NUMBERS
01221   707702           EEM                     /ENTER EXT MODE.
01222   201234           LAC     T34W            /SET TEST WORD
01223   060131           DAC*    B1LOC           /STORE AT LOCB1
01224   750000           CLA                     /CLEAR AC
01225   420131           XCT*    B1LOC           /XCT* OF LAC AT LOCB1
01226   707704           LEM                     /LEAVE EXT MODE
01227   541234           SAD     T34W            /SKIP IF AC DIFFEREFT FROM T34W
01230   741000           SKP                     /OK
01231   740040           HLT                     /ERROR.  XCT* OF LAC AT LOCB1
                                                 /FEYCHED INCORRECT DATA
01232   100216           JMS     CHAIN           /CHAIN.  SEE IF DONE
01233   601220           JMP     T34+2           /NOT DONE.  REPEAT TEST
01234   205031   T34W    LAC     LOC             /TEST WORD.
                         /
                         /TEST OF XCT* OF LAC* IN LOCB1 (DATA FETCHED IN BANK 0)
01235   000035   T35     35
01236   001257           T36
01237   100331           JMS     SBKNUM          /SET BANK NUMBERS
01240   707702           EEM                     /ENTER EXT MODE
01241   100304           MOVE                    /MOVE 2 TEST WORDS TO
01242   001255           T35W                    /BANK 1
01243   025031           LOCB1
01244   777776           -2
01245   750001           CLA!CMA                 /ALL 1'S TO AC
01246   420131           XCT*    B1LOC           /XCT* OF LAC* AT LOCB1
01247   707704           LEM                     /LEAVE EXT MODE
01250   741200           SNA                     /SKIP IF AC NOT 0
01251   741000           SKP                     /OK
01252   740040           HLT                     /ERROR. XCT* OF LAC* AT LOCB1
                                                 /DID NOT FETCH RIGHT DATA
01253   100216           JMS     CHAIN           /CHAIN.  SFE IF DONE
01254   601237           JMP     T35+2           /NOT DONE.  REPEAT TEST
01255   225032   T35W    LAC*    LOC+1           /TEST WORDS
01256   005031           LOCB0
                         .EJECT
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                                /TEST OF XCT* OF DAC INSTRUCTION AT LOCB1 (LOCATION ACCESSED IN BANK 1)
01257   000036          T36     36
01260   001277                  T37
01261   100331                  JMS         SBKNUM              /SET BANK NUMBERS
01262   707702                  EEM                             /ENTER EXT MODE
01263   201276                  LAC         T36W                /MOVE DAC LOCB1 TO LOCR1
01264   060131                  DAC*        R1LOC
01265   750001                  CLA!CMA                         /ALL 1'S TO AC
01266   420131                  XCT*        R1LOC               /XCT* OF DAC AT LOCB1
01267   220131                  LAC*        R1LOC               /GET C(LOCR1)
01270   707704                  LEM                             /LEAVE EXT MODE.
01271   540163                  SAM         M1                  /SKIP IF AC NOT ALL 1'S
01272   741000                  SKP                             /OK
01273   740040                  HLT                             /ERROR.  DAC LOCB1 AT LOCB1
                                                                /DID NOT SET LOCB1 TO ALL 1'S
01274   100216                  JMS         CHAIN               /CHAIN.  SEE IF DONE
01275   601261                  JMP         T36+2               /NOT DONE.  REPEAT TEST
01276   045031          T36W    DAC         LOC
                                /
                                /TEST OF XCT* OF DAC* AT LOCR1 (LOCATION ACCESSED IN BANK 0)
01277   000037          T37     37
01300   001322                  T40
01301   100331                  JMS         SBKNUM              /SET BANK NUMBERS
01302   707702                  EEM                             /ENTER EXT MODE
01303   100304                  MOVE                            /MOVE 2 TEST WORDS TO
01304   001320                  T37W                            /BANK1
01305   025031                  LOCB1
01306   777776                  -2
01307   750001                  CLA!CMA                         /ALL 1'S TO AC
01310   420131                  XCT*        B1LOC               /XCT* OF DAC* AT LOCB1
01311   707704                  LEM                             /LEAVE EXT MODE
01312   205031                  LAC         LOCB0               /GET C (LOCB0)
01313   540163                  SAM         M1                  /SKIP IF AC NOT ALL 1'S
01314   741000                  SKP                             /OK
01315   740040                  HLT                             /ERROR.  XCT* OF DAC* AT
                                                                /LOCR1 DID NOT SET LOCR0 TO 1'S
01316   100216                  JMS         CHAIN               /CHAIN.  SEE IF DONE
01317   601301                  JMP         T37+2               /NOT DONE.  REPEAT TEST
01320   065032          T37W    DAC*        LOC+1               /TEST WORDS.
01321   005031                  LOCB0
                                .EJECT
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                                    /TEST OF XCT* OF JMP* AT LOCB1 (JUMPS BACK TO BANK0)
01322   000040   T40      40
01323   001342            T41
01324   100331            JMS       SBKNUM          /SET BANK NUMBERS
01325   707702            EEM                       /ENTER EXTEND MODE
01326   100304            MOVE                      /MOVE 4 TEST WORDS TO BANK 1
01327   001336            T40W
01330   025031            LOCB1
01331   777774            -4
01332   420131            XCT*      B1LOC           /XCT* OF JMP* AT LOCB1
01333   707704   T40A     LEM                       /OK.  LEAVE EXT MODE
01334   100216            JMS       CHAIN           /CHAIN.  SEE IF DONE
01335   601324            JMP       T40+2           /NOT DONE.  REPEAT TEST
01336   625034   T40W     JMP*      LOC+3           /TEST WORDS ARE MOVED TO
01337   740040            HLT                       /BANK 1
01340   605032            JMP       LOC+1
01341   001333            T40A
                          /
                          /TEST OF JMP* TO LOCB1 AND FROM LOCB1 BACK TO BANK 0.
01342   000041   T41      41
01343   001367            T42
01344   100331            JMS       SBKNUM          /SET BANK NUMBERS
01345   707702            EEM                       /ENTER EXT MODE
01346   100304            MOVE                      /MOVE 2 TEST WORDS TO BANK 1
01347   001363            T41W
01350   025031            LOCB1
01351   777776            -2
01352   100304            MOVE                      /MOVE 2 TEST WORDS TO BANK0
01353   001365            T41WA
01354   005031            LOCB0
01355   777776            -2
01356   200177            LAC       RTNNO           /SET ROUTINE NUMBER
01357   620131            JMP*      B1LOC           /JUMP TO BANK 1
01360   707704   T41A     LEM                       /LEAVE EXTEND MODE
01361   100216            JMS       CHAIN           /CHAIN.  SEE IF DONE
01362   601344            JMP       T41+2           /NOT DONE.  REPEAT TEST
01363   625032   T41W     JMP*      LOC+1           /2 TEST WORDS ARE MOVED TO
01364   001360            T41A                      /BANK 1
01365   740040   T41WA    HLT                       /2 TEST WORDS ARE MOVED TO
01366   601360            JMP       T41A            /BANK0.
                          .EJECT
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                        /TEST XCT* OF NOP AT LOCB2.  EXT MODE ON
01367   000042  T42     42
01370   001414          T43
01371   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
01372   600230          JMP     CHAINA          /NO. SKIP TEST
01373   100331          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01374   707702          EEM                     /ENTER EXT MODE
01375   100304          MOVE                    /MOVE 5 TEST WORDS TO TEST
01376   001407          T42W                    /AREA IN BANK 2
01377   045031          LOCB2
01400   777773          -5
01401   420132          XCT*    B2LOC           /XCT* OF NOP IN LOCB2
01402   707704  T42A    LEM                     /LEAVE EXT MODE
01403   100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
01404   601373          JMP     T42+4           /NOT DONE.  REPEAT TEST
01405   740040  T42B    HLT                     /ERROR.  PROGRAM CONTROL DID
                                                /NOT RETURN TO T42A.  INSTEAD,
                                                /INSTRUCTION AT LOCB2+1 WAS
01406   601402          JMP     T42A            /EXECUTED.
01407   740000  T42W    NOP                     /TEST WORDS.
01410   625035          JMP*    LOC+4
01411   740040          HLT
01412   605033          JMP     LOC+2
01413   001405          T42B
                        /TEST XCT* OF SKP INSTRUCTION AT LOCB2.  EXT MODE ON
01414   000043  T43     43
01415   001437          T44
01416   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
01417   600230          JMP     CHAINA          /NO.  SKIP TEST
01420   100331          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01421   707702          EEM                     /ENTER EXT MODE
01422   100304          MOVE                    /MOVE TEST WORDS TO TEST
01423   001433          T43W                    /AREA IN BANK 2
01424   045031          LOCB2
01425   777774          -4
01426   420132          XCT*    B2LOC           /XCT* OF SKP AT LOCB2
01427   740040          HLT                     /ERROR.  THIS LOC WAS NOT SKIPPED
                                                /BY XCT* OF SKP AT LOCB2
01430   707704          LEM                     /LEAVE EXT MODE
01431   100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
01432   601420          JMP     T43+4           /NOT DONE.  REPEAT TEST
01433   741000  T43W    SKP                     /TEST WORDS
01434   707704          LEM
01435   740040          HLT
01436   605033          JMP     LOC+2
                        .EJECT
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                                /TEST OF XCT* OF LAC OP IN LOCB2 (DATA FETCHED IN BANK 2 ALSO).
01437   000044   T44     44
01440   001460           T45
01441   100350           JMS     TSTB2      /BANK 2 AVAILABLE?
01442   600230           JMP     CHAINA     /NO.  SKIP TEST
01443   100331           JMS     SBKNUM     /YES.  SET BANK NUMBERS
01444   707702           EEM                /ENTER EXT MODE
01445   201457           LAC     T44W       /GET TEST WORD
01446   060132           DAC*    B2LOC      /STORE AT LOCB2
01447   750000           CLA                /CLEAR AC
01450   420132           XCT*    B2LOC      /XCT* OF LAC AT LOCB2
01451   707704           LEM                /LEAVE EXT MODE
01452   541457           SAD     T44W       /SKIP IF AC DIFFERENT FROM T44W
01453   741000           SKP                /OK
01454   740040           HLT                /ERROR.  XCT* OF LAC AT LOCB2
                                            /FETCHED INCORRECT DATA.
01455   100216           JMS     CHAIN      /CHAIN.  SEE IF DONE
01456   601443           JMP     T44+4      /NOT DONE.  REPEAT TEST
01457   205031   T44W    LAC     LOC        /TEST WORD
                         /
                                /TEST OF XCT* OF LAC* IN LOCB2 (DATA FETCHED IN BANK 0).
01460   000045   T45     45
01461   001504           T46
01462   100350           JMS     TSTB2      /BANK 2 AVAILABLE?
01463   600230           JMP     CHAINA     /NO.  SKIP TEST
01464   100331           JMS     SBKNUM     /YES.  SET BANK NUMBERS
01465   707702           EEM                /ENTER EXT MODE
01466   100304           MOVE               /MOVE TEST WORDS TO BANK 2
01467   001502           T45W
01470   045031           LOCB2
01471   777776           -2
01472   750001           CLA!CMA            /ALL 1'S TO AC
01473   420132           XCT*    B2LOC      /XCT* OF LAC* AT LOCB2
01474   707704           LEM                /LEAVE EXT MODE
01475   741200           SNA                /SKIP IF AC NOT 0
01476   741000           SKP                /OK
01477   740040           HLT                /ERROR.  XCT* OF LAC* AT LOCB2
                                            /DID NOT FETCH RIGHT DATA
01500   100216           JMS     CHAIN      /CHAIN.  SEE IF DONE
01501   601464           JMP     T45+4      /NOT DONE.  REPEAT TEST
01502   225032   T45W    LAC*    LOC+1      /TEST WORDS.
01503   005031           LOCB0
                         .EJECT
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01524   000046          /TEST OF XCT* OF DAC INSTRUCTION AT LOCB2 (LOC ACCESSED IN BANK 2)
01525   001526  T46     46
01526   100350          T47
01527   600230          JMS     TSTB2           /BANK 2 AVAILABLE?
01530   100331          JMP     CHAINA          /NO.  SKIP TEST
01531   707702          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01532   201525          EEM                     /ENTER EXT MODE.
01533   060132          LAC     T46W            /MOVE DAC LOCB2 TO LOCB2
01534   750001          DAC*    B2LOC
01535   420132          CLA!CMA                 /ALL 1'S TO AC
01536   220132          XCT*    B2LOC           /XCT* OF DAC AT LOCB2
01537   707704          LAC*    B2LOC           /GET C(LOCB2)
01540   540163          LEM                     /LEAVE EXT MODE
01541   741000          SAD     M1              /SKIP IF AC NOT ALL 1'S
01542   740040          SKP                     /OK
                        HLT                     /ERROR.  XCT* OF DAC AT LOCB2
01543   100216                                  /DID NOT SET LOCB2 TO ALL 1'S
01544   601532          JMP     CHAIN           /CHAIN.  SEE IF DONE
01545   065032          JMP     T46+4           /NOT DONE.  REPEAT TEST
01546   005031  T46W    DAC     LOC             /TEST WORD
                        /
                        /TEST OF XCT* OF DAC* AT LOCB2 (LOC ACCESSED IN BANK0)
01547   000047  T47     47
01550   001553          T50
01551   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
01552   600230          JMP     CHAINA          /NO.  SKIP TEST
01553   100331          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01554   707702          EEM                     /ENTER EXT MODE
01555   100304          MOVE                    /MOVE TEST WORDS TO BANK 2
01556   001551          T47W
01557   045031          LOCB2
01560   777776          -2
01561   750001          CLA!CMA                 /ALL 1'S TO AC
01562   420132          XCT*    B2LOC           /XCT* OF DAC* AT LOCB2
01563   707704          LEM                     /LEAVE EXT MODE
01564   205031          LAC     LOCB0           /GET C (LOCB0)
01565   540163          SAD     M1              /SKIP IF AC NOT ALL 1'S
01566   741000          SKP                     /OK
01567   740040          HLT                     /ERROR.  XCT* OF DAC* AT
                                                /LOCB2 DID NOT SET LOCB0 TO 1'S
01570   100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
01571   601532          JMP     T47+4           /NOT DONE.  REPEAT TEST
01572   065032  T47W    DAC*    LOC+1           /TEST WORDS
01573   005031          LOCB0
                        .EJECT
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                                /TEST OF XCT* OF JMP* AT LOCB2 (JUMPS BACK TO BANK 0)
01553   000050          T50     50
01554   001575                  T51
01555   100353                  JMS         TSTB2               /BANK 2 AVAILABLE?
01556   600232                  JMP         CHAINA              /NO.  SKIP TEST
01557   100331                  JMS         SBKNUM              /YES.  SET BANK NUMBERS
01560   707702                  EEM                             /ENTER EXT MODE
01561   100304                  MOVE                            /MOVE TEST WORDS TO BANK 2
01562   001571                  T50W
01563   045031                  LOCB2
01564   777774                  -4
01565   420132                  XCT*        B2LOC               /XCT* OF JMP* AT LOCB2
01566   707704          T50A    LEM                             /LEAVE EXT MODE
01567   100216                  JMS         CHAIN               /CHAIN.  SEE IF DONE
01570   601557                  JMP         T50+4               /NOT DONE.  REPEAT TEST
01571   625034          T50W    JMP*        LOC+3               /TEST WORDS
01572   740040                  HLT
01573   605032                  JMP         LOC+1
01574   001566                  T50A
                                /
                                /TEST OF JMP* TO LOCB2 AND FROM LOCB2 BACK TO BANK 0.
01575   000051          T51     51
01576   001633                  T52
01577   100350                  JMS         TSTB2               /BANK 2 AVAILABLE?
01600   600230                  JMP         CHAINA              /NO.  SKIP TEST
01601   100331                  JMS         SBKNUM              /YES.  SET BANK NUMBERS
01602   707702                  EEM                             /ENTER EXT MODE
01603   100304                  MOVE                            /MOVE 2 TEST WORDS TO BANK 2
01604   001624                  T51W
01605   045031                  LOCB2
01606   777776                  -2
01607   100304                  MOVE                            /MOVE 2 TEST WORDS TO BANK 0
01610   001626                  T51WA
01611   005031                  LOCB0
01612   777776                  -2
01613   100304                  MOVE                            /MOVE 3 TEST WORDS TO BANK 1
01614   001630                  T51WB
01615   025031                  LOCB1
01616   777775                  -3
01617   200177                  LAC         RTNNO               /SET ROUTINE NUMBERS.
01620   620132                  JMP*        B2LOC               /JUMP TO BANK 2(LOCB2)
01621   707704          T51A    LEM                             /LEAVE EXT MODE
01622   100216                  JMS         CHAIN               /CHAIN.  SEE IF DONE
01623   601601                  JMP         T51+4               /NOT DONE.  REPEAT TEST
01624   625032          T51W    JMP*        LOC+1               /2 TEST WORDS ARE MOVED
01625   001621                  T51A                            /TO BANK 2.
01626   740040          T51WA   HLT                             /2 TEST WORDS ARE MOVED
01627   601621                  JMP         T51A                /TO BANK 0
01630   740040          T51WB   HLT                             /3 TEST WORDS ARE MOVED
01631   625033                  JMP*        LOC+2               /TO BANK 1.
01632   001621                  T51A
                                .EJECT
```

```
                                /TEST XCT* OF NOP AT LOCB3.  EXT MODE ON.
01633   000052  T52     52
01634   001662          T53
01635   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
01636   600230          JMP     CHAINA          /NO. SKIP TEST
01637   100331          JMS     SBKNUM          /YES. SET BANK NUMBERS
01640   707702          EEM                     /ENTER EXT MODE
01641   100304          MOVE                    /MOVE TEST WORDS TO TEST
01642   001653          T52W                    /AREA IN BANK 3.
01643   065031          LOCB3
01644   777773          -5
01645   420133          XCT*    B3LOC           /XCT* OF NOP IN LOCB3
01646   707704  T52A    LEM                     /LEAVE EXT MODE
01647   100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
01650   601637          JMP     T52+4           /NOT DONE.  REPEAT TEST
01651   740040  T52B    HLT                     /ERROR.  PROGRAM CONTROL DID NOT
                                                /RETURN TO T42A.  INSTEAD, INSTRUCTION
                                                /AT LOCB3+1 WAS EXECUTED
01652   601646          JMP     T52A
01653   740000  T52W    NOP                     /TEST WORDS
01654   625035          JMP*    LOC+4
01655   740040          HLT
01656   605033          JMP     LOC+2
01657   001651          T52B
                        /
                        /TEST XCT* OF SKP INSTRUCTION AT LOCB3.  EXT MODE ON.
01660   000053  T53     53
01661   001703          T54
01662   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
01663   600230          JMP     CHAINA          /NO.  SKIP TEST
01664   100331          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01665   707702          EEM                     /ENTER EXT MODE
01666   100304          MOVE                    /MOVE TEST WORDS TO TEST
01667   001677          T53W                    /AREA IN BANK 3.
01670   065031          LOCB3
01671   777774          -4
01672   420133          XCT*    B3LOC           /XCT* OF SKP AT LOCB3
01673   740040          HLT                     /ERROR.  THIS LOC WAS NOT
                                                /SKIPPED BY XCT* OF SKP AT LOCB3
01674   707704          LEM                     /LEAVE EXT MODE.
01675   100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
01676   601664          JMP     T53+4           /NOT DONE. REPEAT TEST
01677   741000  T53W    SKP
01700   707704          LEM
01701   740040          HLT
01702   605033          JMP     LOC+2
                        .EJECT
```

```
                                /TEST OF XCT* OF LAC OP IN LOCB3 (DATA FETCHED IN BANK 3 ALSO)
01703   000054   T54     54
01704   001724           T55
01705   100356           JMS     TSTB3          /BANK 3 AVAILABLE?
01706   600230           JMP     CHAINA         /NO.  SKIP TEST
01707   100331           JMS     SBKNUM         /YES.  SET BANK NUMBERS
01710   707702           EEM                    /ENTER EXT MODE
01711   201723           LAC     T54W           /GET TEST WORD
01712   060133           DAC*    R3LOC          /STORE AT LOCB3
01713   750000           CLA                    /CLEAR AC
01714   420133           XCT*    R3LOC          /XCT* OF LAC AT LOCB3
01715   707704           LEM                    /LEAVE EXT MODE
01716   541723           SAD     T54W           /SKIP IF AC DIFFERENT FROM T54W
01717   741000           SKP                    /OK
01720   740040           HLT                    /ERROR.  XCT* OF LAC AT LOCB3
                                                /FETCHED INCORRECT DATA
01721   100216           JMS     CHAIN          /CHAIN.  SEE IF DONE
01722   601707           JMP     T54+4          /NOT DONE.  REPEAT TEST
01723   205031   T54W    LAC     LOC
                        /
                        /TEST OF XCT* OF LAC* IN LOCB3 (DATA FETCHED IN BANK0)
01724   000055   T55     55
01725   001750           T56
01726   100356           JMS     TSTB3          /BANK 3 AVAILABLE?
01727   600230           JMP     CHAINA         /NO.  SKIP TEST
01730   100331           JMS     SBKNUM         /YES.  SET BANK NUMBERS
01731   707702           EEM                    /ENTER EXT MODE
01732   100304           MOVE                   /MOVE TEST WORDS TO BANK 3.
01733   001746           T55W
01734   065031           LOCB3
01735   777776           -2
01736   750001           CLA!CMA                /ALL 1'S TO AC
01737   420133           XCT*    R3LOC          /XCT* OF LAC* AT LOCB3
01740   707704           LEM                    /LEAVE EXT MODE
01741   741200           SNA                    /SKIP IF AC NOT 0
01742   741000           SKP                    /OK
01743   740040           HLT                    /ERROR.  XCT* OF LAC* AT LOCB3
                                                /DID NOT FETCH CORRECT DATA
01744   100216           JMS     CHAIN          /CHAIN.  SEE IF DONE.
01745   601730           JMP     T55+4          /NOT DONE. REPETA TEST
01746   225032   T55W    LAC*    LOC+1          /TEST WORDS
01747   005031           LOCB0
                         .EJECT
```

```
01750  000056          /TEST XCT* OF DAC INSTRUCTION AT LOCB3 (LOC ACCESSED IN BANK 3)
01751  001772  T56     56
01752  100356          T57
01753  600230          JMS     TSTB3           /BANK 3 AVAILABLE?
01754  100331          JMP     CHAINA          /NO.  SKIP TEST
01755  707702          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01756  201771          FEM                     /ENTER EXT MODE
01757  060133          LAC     T56W            /MOVE TEST WORD TO BANK 3
01760  750001          DAC*    B3LOC
01761  420133          CLA!CMA                 /ALL 1'S TO AC
01762  220133          XCT*    B3LOC           /XCT* OF DAC AT LOCB3
01763  707704          LAC*    B3LOC           /GET C (LOCB3)
01764  540163          LEM                     /LEAVE EXT MODE
01765  741000          SAD     M1              /SKIP IF AC NOT ALL 1'S
01766  740040          SKP                     /OK
                        HLT                     /ERROR.  XCT* OF DAC AT LOCB3
                                                /DID NOT SET LOCB3 TO ALL 1'S
01767  100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
01770  601754          JMP     T56+4           /NOT DONE.  REPEAT TEST
01771  045031  T56W    DAC     LOC             /TEST WORD.
                       /
                       /TEST OF XCT* OF DAC* AT LOCB3 (LOC ACCESSED IN BANK 0)
01772  000057  T57     57
01773  002017          T60
01774  100356          JMS     TSTB3           /BANK 3 AVAILABLE?
01775  600230          JMP     CHAINA          /NO.  SKIP TEST
01776  100331          JMS     SBKNUM          /YES.  SET BANK NUMBERS
01777  707702          FEM                     /ENTER EXT MODE
02000  100304          MOVE                    /MOVE TEST WORDS TO BANK 3
02001  002015          T57W
02002  065031          LOCB3
02003  777776          -2
02004  750001          CLA!CMA                 /ALL 1'S TO AC
02005  420133          XCT*    B3LOC           /XCT* OF DAC* AT LOCB3
02006  707704          LEM                     /LEAVE EXT MODE
02007  205031          LAC     LOCB0           /GET C(LOCB0)
02010  540163          SAD     M1              /SKIP IF AC NOT ALL 1'S
02011  741000          SKP                     /OK
02012  740040          HLT                     /ERROR.  XCT* OF DAC* AT
                                               /LOCB3 DID NOT SET LOCB0 TO 1'S
02013  100216          JMS     CHAIN           /CHAIN.  SEE IF DONE
02014  601776          JMP     T57+4           /NOT DONE.  REPEAT TEST
02015  065032  T57W    DAC*    LOC+1           /TEST WORDS
02016  005031          LOCB0
                       .EJECT
```

```
                                /TEST XCT* OF JMP* AT LOCB3 (JUMPS BACK TO BANK 0).
02017   000060          T60     60
02020   002041                  T61
02021   100356                  JMS         TSTB3               /BANK 3 AVAILABLE?
02022   600230                  JMP         CHAINA              /NO.  SKIP TEST
02023   100331                  JMS         SBKNUM              /YES.  SET BANK NUMBERS
02024   707702                  EEM                             /ENTER EXT MODE
02025   100304                  MOVE                            /MOVE TEST WORDS TO BANK 3
02026   002035                  T60W
02027   065031                  LOCB3
02030   777774                  -4
02031   420133                  XCT*        B3LOC               /XCT* OF JMP* AT LOCB3
02032   707704          T60A    LEM                             /LEAVE EXT MODE
02033   100216                  JMS         CHAIN               /CHAIN.  SEE IF DONE
02034   602023                  JMP         T60+4               /NOT DONE.  REPEAT TEST
02035   625034          T60W    JMP*        LOC+3               /TEST WORDS
02036   740040                  HLT
02037   605032                  JMP         LOC+1
02040   002032                  T60A
                                /TEST OF JMP* TO LOCB3 AND FROM LOCB3 BACK TO BANK 0
02041   000061          T61     61
02042   002103                  T62
02043   100356                  JMS         TSTB3               /BANK 3 AVAILABLE?
02044   600230                  JMP         CHAINA              /NO.  SKIP TEST
02045   100331                  JMS         SBKNUM              /YES.  SET BANK NUMBERS
02046   707702                  EEM                             /ENTER EXT MODE
02047   100304                  MOVE                            /MOVE 2 TEST WORDS TO BANK 3
02050   002074                  T61W
02051   065031                  LOCB3
02052   777776                  -2
02053   100304                  MOVE                            /MOVE 2 TEST WORDS TO BANK 0
02054   002076                  T61WA
02055   005031                  LOCB0
02056   777776                  -2
02057   100304                  MOVE                            /MOVE 3 TEST WORDS TO BANK 1
02060   002100                  T61WB
02061   025031                  LOCB1
02062   777775                  -3
02063   100304                  MOVE                            /MOVE 3 TEST WORDS TO BANK 2
02064   002100                  T61WB
02065   045031                  LOCB2
02066   777775                  -3
02067   200177                  LAC         RTNNO               /GET ROUTINE NUMBER
02070   620133                  JMP*        B3LOC               /JMP* TO BANK 3 (LOCB3)
02071   707704          T61A    LEM                             /LEAVE EXT MODE
02072   100216                  JMS         CHAIN               /CHAIN.  SEE IF DONE
02073   602045                  JMP         T61+4               /NOT DONE.  REPEAT TEST
02074   625032          T61W    JMP*        LOC+1               /2 TEST WORDS ARE MOVED TO BANK 3
02075   002071                  T61A
02076   740040          T61WA   HLT                             /2 TEST WORDS ARE MOVED TO BANK 2
02077   601621                  JMP         T51A
02100   740040          T61WB   HLT                             /3 TEST WORDS ARE MOVED TO
02101   625033                  JMP*        LOC+2               /BANK 1 AND 2
02102   002071                  T61A
                                .EJECT
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                        /TEST THAT JMS INSTRUCTION WITH EXT OFF DOES NOT SET BIT 1
                        /AT LOCATION JMS'ED TO.       TEST DONE IN BANK 0.
02103   000062  T62     62
02104   002116          T63
02105   754000          CLL!CLA                         /CLEAR LINK AND AC
02106   102107          JMS     .+1                     /DO JMS IN BANK 0 WITH EXT OFF
02107   000000          0                               /LINK, EXT, EPC AND PC STORED HERE.
02110   202107          LAC     .-1                     /GET STORED INFORMATION
02111   500172          AND     K200K                   /LOCATE BIT 1
02112   740200          SZA                             /BIT 1=1?
02113   740040          HLT                             /YES.ERROR. BIT 1 INCORRECTLY SET
                                                        /SHOULD BE 0 WITH EXT OFF.
02114   100216          JMS     CHAIN                   /CHAIN.   SEE IF DONE
02115   602105          JMP     T62+2                   /NOT DONE.          REPEAT TEST
                        /
                        /TEST THAT JMS INSTRUCTION IN BANK0 WITH EXT ON SETS BIT 1 OF
                        /LOCATION JMS'ED TO.
02116   000063  T63     63
02117   002132          T64
02120   754000          CLL!CLA                         /CLEAR LINK AND AC.
02121   707702          EEM                             /ENTER EXT MODE
02122   102123          JMS     .+1                     /DO JMS IN BANK0 WITH EXT ON
02123   000000          0                               /LINK,EXT,EPC AND PC STORED HERE
02124   202123          LAC     .-1                     /GET STORED INFORMATION
02125   500172          AND     K200K                   /ISOLATE BIT 1
02126   741200          SNA                             /BIT 1=1?
02127   740040          HLT                             /NO. ERROR, EXT MODE ON WAS NOT
                                                        /STORED.
02130   100216          JMS     CHAIN                   /CHAIN.   SEE IF DONE
02131   602120          JMP     T63+2                   /NOT DONE.          REPEAT TEST
                        /
                        /TEST THAT FOLLOWING A JMS WITH EXT MODE ON, EXT MODE REMAINS ON. (BANK0)
02132   000064  T64     64
02133   002143          T65
02134   707702          EEM                             /ENTER EXT MODE
02135   102136          JMS     .+1                     /JMS OP IN BANK0
02136   000000          0
02137   707701          SEM                             /SKIP IF EXT MODE ON.
02140   740040          HLT                             /EXT MODE WAS RESET FOLLOWING
                                                        /JMS INSTRUCTION
02141   100216          JMS     CHAIN                   /CHAIN.   SEE IF DONE
02142   602134          JMP     T64+2                   /NOT DONE.          REPEAT TEST
                        .EJECT
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                                /TEST THAT JMS INSTRUCTION IN BANK0 STORES EPC BITS CORRECTLY
02143   000065      T65         65
02144   002156                  T66
02145   707702                  FEM                     /ENTER EXT MODE.
02146   102147                  JMS         .+1         /DO JMS IN BANK0 WITH EXT ON.
02147   000000                  0                       /LINK,EXT,EPC AND PC STORED HERE.
02150   202147                  LAC         .-1         /GET STORED INFORMATION
02151   500171                  AND         K60K        /ISOLATE BITS 3AND4.
02152   740200                  SZA                     /BITS 3AND4 EQUAL 0?
02153   740040                  HLT                     /NO. ERROR. EPC BITS NOT STORED
                                                        /CORRECTLY
02154   100216                  JMS         CHAIN       /CHAIN.   SEE IF DONE
02155   602145                  JMP         T65+2       /NOT DONE.          REPEAT TEST
                                /
                                /TEST THAT JMS IN BANK1 WITH EXT OFF DOES NOT SET BIT1 AT
                                /LOCATION JMS'ED TO
02156   000066      T66         66
02157   002202                  T67
02160   707702                  FEM                     /ENTER EXT MODE
02161   100304                  MOVE                    /MOVE TEST WORDS TO BANK1
02162   002173                  T66W
02163   025031                  LOCB1
02164   777771                  -7
02165   620131                  JMP*        B1LOC       /JUMP TO BANK1 AND DO TEST
02166   500172      T66A        AND         K200K       /RETURN HERE.       ISOLATE BIT 1
02167   740200                  SZA                     /BIT 1=1?
02170   740040                  HLT                     /YES. ERROR. BIT 1 INCORRECTLY SET
                                                        /SHOULD BE 0.
02171   100216                  JMS         CHAIN       /CHAIN.   SEE IF DONE
02172   602160                  JMP         T66+2       /NOT DONE. REPEAT TEST
02173   707704      T66W        LEM                     /THESE INSTRUCTIONS ARE MOVED TO
02174   105033                  JMS         LOC+2       /AND EXECUTED IN BANK1.
02175   000000                  0
02176   205033                  LAC         LOC+2
02177   707702                  FEM
02200   625037                  JMP*        LOC+6
02201   002166                  T66A
                                .EJECT
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                        /TEST THAT JMS IN BANK1 WITH EXT ON, SETS BIT 1 AT
                        /LOCATION JMS'ED TO.
02202   000067  T67     67
02203   002225          T7Ø
02204   707702          EEM                     /ENTER EXT MODE
02205   100304          MOVE                    /MOVE TEST WORDS TO BANK1
02206   002217          T67W
02207   025031          LOCB1
02210   777772          -6
02211   620131          JMP*    B1LOC           /JMP TO BANK1 AND DO TEST
02212   500172  T67A    AND     K200K           /ISOLATE BIT 1
02213   741200          SNA                     /BIT 1=1?
02214   740040          HLT                     /NO. ERROR. JMS IN BANK 1 DID
                                                /NOT STORE EXT ON STATUS
02215   100216          JMS     CHAIN           /CHAIN.   SEE IF DONE
02216   602204          JMP     T67+2           /NOT DONE. REPEAT TEST
02217   105032  T67W    JMS     LOC+1           /TEST WORDS.        DO JMS
02220   000000          Ø                       /JMS INFO STORED HERE
02221   205032          LAC     LOC+1           /GET JMS INFO
02222   707702          EEM                     /ENTER EXT MODE
02223   625036          JMP*    LOC+5           /RETURN TO BANKØ TO CONTINUE TEST
02224   002212          T67A
                        /
                        /TEST THAT JMS IN BANK1 DOES NOT RESET EXT MODE.
02225   000070  T7Ø     7Ø
02226   002251          T71
02227   707702          EEM                     /ENTER EXT MODE
02230   100304          MOVE                    /MOVE TEST WORDS TO BANK1
02231   002240          T7ØW
02232   025031          LOCB1
02233   777767          -11
02234   620131          JMP*    B1LOC           /JMP TO BANK 1 AND DO TEST
02235   740040  T7ØA    HLT                     /ERROR. EXTEND MODE NOT ON
                                                /FOLLOWING JMS IN BANK1
02236   100216  T7ØB    JMS     CHAIN           /CHAIN.   SEE IF DONE
02237   602227          JMP     T7Ø+2           /NOT DONE.          REPEAT TEST
02240   105032  T7Øw    JMS     LOC+1           /TEST WORDS.        DO JMS
02241   000000          Ø                       /JMS INFO STORED HERE
02242   707701          SEM                     /SKIP IF EXT MODE ON
02243   741000          SKP                     /ERROR. SHOULD HAVE BEEN ON
02244   625041          JMP*    LOC+1Ø          /OK.      EXT MODE ON. OK RETURN
02245   707702          EEM                     /ENTER EXT MODE.
02246   625040          JMP*    LOC+7           /ERROR RETURN TO BANKØ
02247   002235          T7ØA                    /ERROR RETURN ADDRESS
02250   002236          T7ØB                    /NORMAL RETURN ADDRESS
                        .EJECT
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                        /TEST THAT JMS IN BANK1 STORES EPC BITS CORRECTLY
02251   000071  T71     71
02252   002274          T72
02253   707702          EEM                     /ENTER EXT MODE
02254   100304          MOVE                    /MOVE TEST WORDS TO BANK1
02255   002267          T71W
02256   025031          LOCB1
02257   777773          -5
02260   620131          JMP*    B1LOC           /JMP TO BANK1 AND DO TEST
02261   500171  T71A    AND     K60K            /ISOLATE BITS 3 AND 4
02262   240167          XOR     K20K
02263   740200          SZA                     /BITS 3 AND 4 =01?
02264   740040          HLT                     /NO. ERROR. JMS IN BANK 1 DID
                                                /NOT SET BITS 3 AND 4 TO 01
02265   100216          JMS     CHAIN           /CHAIN.   SEE IF DONE.
02266   602253          JMP     T71+2           /NOT DONE.          REPEAT TEST
02267   105032  T71W    JMS     LOC+1           /TEST WORDS.        DO JMS
02270   000000          0                       /JMS INFO STORED HERE
02271   205032          LAC     LOC+1           /GET JMS INFO
02272   625035          JMP*    LOC+4           /GO BACK TO BANK0
02273   002261          T71A
                        /
                        /TEST THAT JMS IN BANK2 WITH EXT OFF, DOES NOT SET BIT 1
                        /AT LOCATION JMS'ED TO
02274   000072  T72     72
02275   002322          T73
02276   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
02277   600230          JMP     CHAINA          /NO.      SKIP TEST
02300   707702          EEM                     /YES.     ENTER EXT MODE
02301   100304          MOVE                    /MOVE TEST WORDS TO BANK2.
02302   002313          T72W
02303   045031          LOCB2
02304   777771          -7
02305   620132          JMP*    B2LOC           /JUMP TO BANK2 AND DO TEST
02306   500172  T72A    AND     K200K           /RETURN HERE.       ISOLATE BIT 1
02307   740200          SZA                     /BIT 1=1?
02310   740040          HLT                     /YES.     ERROR.    BIT 1 INCORRECTLY SET.
                                                /SHOULD BE 0
02311   100216          JMS     CHAIN           /CHAIN.   SEE IF DONE
02312   602300          JMP     T72+4           /NOT DONE.          REPEAT TEST
02313   707704  T72W    LEM                     /TEST WORDS.        LEAVE EXT MODE
02314   105033          JMS     LOC+2           /DO JMS
02315   000000          0                       /JMS INFO STORED HERE
02316   205033          LAC     LOC+2           /GET JMS INFO
02317   707702          EEM                     /ENTER EXT MODE
02320   625037          JMP*    LOC+6           /RETURN TO BANK0 TO CONTINUE TEST
02321   002306          T72A
                        .EJECT
```

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                                /TEST THAT JMS IN BANK2 WITH EXT ON, SETS BIT 1
                                /AT LOCATION JMS'ED TO.
02322   000073      T73         73
02323   002347                  T74
02324   100350                  JMS         TSTB2           /BANK 2 AVAILABLE?
02325   600230                  JMP         CHAINA          /NO.        SKIP TEST
02326   707702                  EEM                         /YES. ENTER EXT MODE
02327   100304                  MOVE                        /MOVE TEST WORDS TO BANK2
02330   002341                  T73W
02331   045031                  LOCB2
02332   777772                  -6
02333   620132                  JMP*        B2LOC           /JMP TO BANK 2 AND DO TEST
02334   500172      T73A        AND         K200K           /RETURN HERE.       ISOLATE BIT 1.
02335   741200                  SNA                         /BIT 1=1?
02336   740040                  HLT                         /NO.        ERROR.    JMS IN BANK2 DID
                                                            /NOT STORE EXT ON STATUS
02337   100216                  JMS         CHAIN           /CHAIN.   SEE IF DONE
02340   602326                  JMP         T73+4           /NOT DONE.          REPEAT TEST
02341   105032      T73W        JMS         LOC+1           /TEST WORDS.        DO JMS.
02342   000000                  0                           /JMS INFO STORED HERE.
02343   205032                  LAC         LOC+1           /GET JMS INFO
02344   707702                  EEM                         /ENTER EXT MODE
02345   625036                  JMP*        LOC+5           /RETURN TO BANK0 TO CONTINUE TEST.
02346   002334                  T73A
                                /
                                /TEST THAT JMS IN BANK2 DOES NOT RESET EXT MODE
02347   000074      T74         74
02350   002375                  T75
02351   100350                  JMS         TSTB2           /BANK 2 AVAILABLE?
02352   600230                  JMP         CHAINA          /NO.        SKIP TEST
02353   707702                  EEM                         /YES.       ENTER EXT MODE
02354   100304                  MOVE                        /MOVE TEST WORDS TO BANK2
02355   002364                  T74W
02356   045031                  LOCB2
02357   777767                  -11
02360   620132                  JMP*        B2LOC           /JMP TO BANK2 AND DO TEST
02361   740040      T74A        HLT                         /ERROR.   EXT MODE NOT ON
                                                            /AFTER JMS IN BANK2.
02362   100216      T74B        JMS         CHAIN           /CHAIN.   SEE IF DONE
02363   602353                  JMP         T74+4           /NOT DONE.          REPEAT TEST
02364   105032      T74W        JMS         LOC+1           /TEST WORDS.        DO JMS
02365   000000                  0                           /JMS INFO STORED HERE
02366   707701                  SEM                         /SKIP IF EXT MODE ON.
02367   741000                  SKP                         /NOT ON
02370   625041                  JMP*        LOC+10          /EXT MODE ON EXIT
02371   707702                  EEM                         /ENTER EXT MODE
02372   625040                  JMP*        LOC+7           /EXT MODE OFF EXIT
02373   002361                  T74A                        /ERROR RETURN ADDRESS
02374   002362                  T74B                        /NORMAL RETURN ADDRESS.
                                .EJECT
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                                /TEST THAT JMS IN BANK2 STORES EPC BITS CORRECTLY
02375   000075   T75     75
02376   002422           T76
02377   100350           JMS     TSTB2          /BANK2 AVAILABLE?
02400   600230           JMP     CHAINA         /NO.      SKIP TEST
02401   707702           EEM                    /YES.     ENTER EXT MODE.
02402   100304           MOVE                   /MOVE TEST WORDS TO BANK2
02403   002415           T75W
02404   045031           LOCB2
02405   777773           -5
02406   620132           JMP*    B2LOC          /JMP TO BANK2 AND DO TEST
02407   500171   T75A    AND     K60K           /ISOLATE BITS 3 AND 4
02410   240170           XOR     K40K
02411   740200           SZA                    /BITS 3 AND 4 =10?
02412   740040           HLT                    /NO. ERROR. JMS IN BANK2 DID
                                                /NOT SET BITS 3 AND 4 TO 10.
02413   100216           JMS     CHAIN          /CHAIN.   SEE IF DONE
02414   602401           JMP     T75+4          /NOT DONE.          REPEAT TEST
02415   105032   T75W    JMS     LOC+1          /TEST WORDS.        DO JMS.
02416   000000           0                      /JMS INFO STORED HERE
02417   205032           LAC     LOC+1          /GET JMS INFO
02420   625035           JMP*    LOC+4          /RETURN TO BANK0 TO
02421   002407           T75A                   /CONTINUE TEST
                        /
                        /TEST THAT JMS IN BANK3 WITH EXT OFF DOES NOT SET BIT 1
                        /AT LOCATION JMS'ED TO.
02422   000076   T76     76
02423   002450           T77
02424   100356           JMS     TSTB3          /BANK 3 AVAILABLE?
02425   600230           JMP     CHAINA         /NO.      SKIP TEST
02426   707702           EEM                    /YES.     ENTER EXT MODE
02427   100304           MOVE                   /MOVE TEST WORDS TO BANK3.
02430   002441           T76W
02431   065031           LOCB3
02432   777771           -7
02433   620133           JMP*    B3LOC          /JMP TO BANK3 AND DO TEST
02434   500172   T76A    AND     K200K          /RETURN HERE.       ISOLATE BIT 1.
02435   740200           SZA                    /BIT 1=1?
02436   740040           HLT                    /YES.     ERROR.    BIT 1 INCORRECTLY SET
                                                /SHOULD BE 0.
02437   100216           JMS     CHAIN          /CHAIN.   SEE IF DONE
02440   602426           JMP     T76+4          /NOT DONE. REPEAT EST.
02441   707704   T76W    LEM                    /TEST WORDS.        LEAVE EXT MODE.
02442   105033           JMS     LOC+2          /DO JMS.
02443   000000           0                      /JMS INFO STORED HERE
02444   205033           LAC     LOC+2          /GET JMS INFO
02445   707702           EEM                    /ENTER EXT MODE
02446   625037           JMP*    LOC+6          /RETURN TO BANK0
02447   002434           T76A                   /TO CONTINUE TEST
                         .EJECT
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                        /TEST THAT JMS IN BANK3 WITH EXT ON, SETS BIT 1
                        /AT LOCATION JMS'ED TO.
02450   000077  T77     77
02451   002475          T100
02452   100356          JMS       TSTB3           /BANK 3 AVAILABLE?
02453   600230          JMP       CHAINA          /NO.      SKIP TEST
02454   707702          EEM                       /YES.     ENTER EXT MODE
02455   100304          MOVE                      /MOVE TEST WORDS TO BANK3
02456   002467          T77W
02457   065031          LOCB3
02460   777772          -6
02461   620133          JMP*      B3LOC           /JMP TO BANK 3 AND DO TEST
02462   500172  T77A    AND       K200K           /RETURN HERE.       ISOLATE BIT 1
02463   741200          SNA                       /BIT 1=1?
02464   740040          HLT                       /NO. ERROR. JMS IN BANK3 DID
                                                  /NOT STORE EXT ON STATUS
02465   100216          JMS       CHAIN           /CHAIN.   SEE IF DONE
02466   602454          JMP       T77+4           /NOT DONE.          REPEAT TEST.
02467   105032  T77W    JMS       LOC+1           /TEST WORDS.        DO JMS
02470   000000          0                         /JMS INFO STORED HERE.
02471   205032          LAC       LOC+1           /GET JMS INFO
02472   707702          EEM                       /ENTER EXT MODE
02473   625036          JMP*      LOC+5           /RETURN TO BANK 0 TO
02474   002462          T77A                      /CONTINUE TEST
                        /
                        /TEST THAT JMS IN BANK3 DOES NOT RESET EXT MODE.
02475   000100  T100    100
02476   002523          T101
02477   100356          JMS       TSTB3           /BANK 3 AVAILABLE?
02500   600230          JMP       CHAINA          /NO.      SKIP TEST
02501   707702          EEM                       /YES.     ENTER EXT MODE
02502   100304          MOVE                      /MOVE TEST WORDS TO BANK3
02503   002512          T100W
02504   065031          LOCB3
02505   777767          -11
02506   620133          JMP*      B3LOC           /JMP TO BANK3 AND DO TEST
02507   740040  T100A   HLT                       /ERROR.   EXT MODE NOT ON
                                                  /AFTER JMS IN BANK3.
02510   100216  T100B   JMS       CHAIN           /CHAIN.   SEE IF DONE
02511   602501          JMP       T100+4          /NOT DONE.          REPEAT TEST
02512   105032  T100W   JMS       LOC+1           /TEST WORDS.        DO JMS
02513   000000          0                         /JMS INFO STORED HERE.
02514   707701          SEM                       /SKIP IF EXT MODE ON
02515   741000          SKP                       /NOT ON
02516   625041          JMP*      LOC+10          /EXT MODE ON EXIT
02517   707702          EEM                       /ENTER EXT MODE
02520   625040          JMP*      LOC+7           /EXT MODE OFF EXIT
02521   002507          T100A                     /ERROR RETURN ADDRESS.
02522   002510          T100B                     /NORMAL RETURN ADDRESS
                        .EJECT
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                                /TEST THAT JMS IN BANK3 STORES EPC BITS CORRECTLY
02523   000101      T101        101
02524   002550                  T102
02525   100356                  JMS         TSTB3           /BANK 3 AVAILABLE?
02526   600230                  JMP         CHAINA          /NO.      SKIP TEST
02527   707702                  FEM                         /YES.     ENTER EXT MODE
02530   100304                  MOVE                        /MOVE TEST WORDS TO BANK3
02531   002543                  T101W
02532   065031                  LOCB3
02533   777773                  -5
02534   620133                  JMP*        R3LOC           /JMP TO BANK3 AND DO TEST
02535   500171      T101A       AND         K60K            /ISOLATE BITS 3 AND 4
02536   240171                  XOR         K60K
02537   740200                  SZA                         /BITS 3 AND 4=11?
02540   740040                  HLT                         /NO.      ERROR. JMS IN BANK3 DID
                                                            /NOT SET BITS 3 AND 4 TO 11.
02541   100216                  JMS         CHAIN           /CHAIN.   SEE IF DONE
02542   602527                  JMP         T101+4          /NOT DONE.          REPEAT TEST
02543   105032      T101W       JMS         LOC+1           /TEST WORDS. DO JMS
02544   000000                  0                           /JMS INFO STORED HERE
02545   205032                  LAC         LOC+1           /GET JMS INFO
02546   625035                  JMP*        LOC+4           /RETURN TO BANK0 TO
02547   002535                  T101A                       /CONTINUE TEST.
                                /TEST THAT CAL IN BANK 0 WITH EXT MODE OFF DOES NOT
                                /SET BIT 1 OF LOC 20 OF BANK0.
02550   000102      T102        102
02551   002567                  T103
02552   100304                  MOVE                        /MOVE TEST WORDS TO LOC 20
02553   002565                  T102W                       /AND 21 OF BANK 0.
02554   000020                  L20B0
02555   777776                  -2
02556   000000                  CAL                         /DO CAL WITH EXT OFF.
02557   200020      T102A       LAC         L20B0           /GET C (L20B0)
02560   500172                  AND         K200K           /ISOLATE BIT 1.
02561   740200                  SZA                         /BIT 1=1?
02562   740040                  HLT                         /YES. ERROR. COL IN BANK 0 WITH
                                                            /EXT OFF SET BIT1=1. S/B=0.
02563   100216                  JMS         CHAIN           /CHAIN. SEE IF DONE
02564   602552                  JMP         T102+2          /NOT DONE. REPEAT TEST.
02565   000000      T102W       0                           /TEST WORDS. CAL INFO STORED HERE
02566   602557                  JMP         T102A           /RETURN TO TEST.
                                .EJECT
```

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                        /TEST THAT CAL IN BANK 0 WITH EXT MODE ON, SETS
                        /BIT 1 OF LOC 20 OF BANK 0
02567   000103  T103    104
02570   002607          T104
02571   100304          MOVE                            /MOVE TEST WORDS TO LOC 20
02572   002605          T103W                           /AND 21 OF BANK 0
02573   000020          L20B0
02574   777776          -2
02575   707702          EEM                             /ENTER EXT MODE
02576   000000          CAL                             /DO CAL WITH EXT ON.
02577   200020  T103A   LAC     L20B0                   /GET C (L20B0)
02600   500172          AND     K200K                   /ISOLATE BIT 1
02601   741200          SNA                             /BIT 1=1?
02602   740040          HLT                             /NO. ERROR.
02603   100216          JMS     CHAIN                   /CHAIN. SEE IF DONE.
02604   602571          JMP     T103+2                  /NOT DONE. REPEAT TEST.
02605   000000  T103W   0                               /TEST WORDS. CAL INFO STORE AND.
02606   602577          JMP     T103A                   /RETURN TO TEST.
                        /TEST THAT CAL IN BANK0 WITH EXT MODE ON, DOES
                        /NOT RESET EXT MODE.
02607   000104  T104    104
02610   002625          T105
02611   100304          MOVE                            /MOVE TEST WORDS TO LOC 20
02612   002623          T104W                           /AND 21 OF BANK0.
02613   000020          L20B0
02614   777776          -2
02615   707702          EEM                             /ENTER EXT MODE
02616   000000          CAL                             /DO CAL WITH EXT ON.
02617   707701  T104A   SEM                             /EXT MODE ON?
02620   740040          HLT                             /NO. ERROR. CAL WITH EXT ON.
                                                        /RESET EXT MODE.
02621   100216          JMS     CHAIN                   /CHAIN. SEE IF DONE
02622   602611          JMP     T104+2                  /NOT DONE. REPEAT TEST.
02623   000000  T104W   0                               /TEST WORDS. CAL INFO STORE WORD
02624   602617          JMP     T104A                   /RETURN TO TEST.
                        .EJECT
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                                /TEST THAT CAL IN BANK0 WITH EXT ON, STORES EPC AS 00.
02625   000105          T105    105
02626   002645                  T106
02627   100304                  MOVE                    /MOVE TEST WORDS TO LOC 20 AND 21
02630   002643                  T105W                   /OF BANK 0.
02631   000020                  L20B0
02632   777776                  -2
02633   707702                  EEM                     /ENTER EXT MODE.
02634   000000                  CAL                     /DO CAL WITH EXT ON.
02635   200020          T105A   LAC     L20B0           /GET C (L20B0)
02636   500171                  AND     K60K            /ISOLATE BITS 3 AND 4
02637   740200                  SZA                     /BITS 3 AND 4=00?
02640   740040                  HLT                     /NO. ERROR. EPC BITS INCORRECTLY
                                                        /STORED BY CAL INSTRUCTION IN BANK 0.
02641   100216                  JMS     CHAIN           /CHAIN. SEE IF DONE.
02642   602627                  JMP     T105+2          /NOT DONE. REPEAT TEST.
02643   000000          T105W   0                       /TEST WORDS. CAL INFO STORE WORD
02644   602635                  JMP     T105A           /RETURN TO TEST
                                /
                                /TEST THAT CAL* IN BANK 0 WITH EXT MODE ON LEAVES
                                /EXT MODE ON, AND STORES EXT MODE STATUS AND EPC BITS CORRECTLY.
02645   000106          T106    106
02646   002674                  T107
02647   100304                  MOVE                    /MOVE 3 TEST WORDS TO LOC 20-22
02650   002671                  T106W                   /OF BANK 0
02651   000020                  L20B0
02652   777775                  -3
02653   707702                  EEM                     /ENTER EXT MODE.
02654   020000                  CAL*                    /DO CAL* WITH EXT ON.
02655   707701          T106A   SEM                     /SKIP IF EXT ON.
02656   740040                  HLT                     /ERROR. EXTMODE RESET AFTER CAL*
02657   200021                  LAC     L20B0+1         /GET CAL* STORED INFO.
02660   500175                  AND     K260K           /ISOLATE BITS 1,3, AND 4.
02661   240172                  XOR     K200K
02662   741200                  SNA                     /BIT1=1 AND BITS 3,4=00?
02663   602667                  JMP     .+4             /YES. OK.
02664   200021                  LAC     L20B0+1         /NO. GET CAL* STORED INFO.
02665   500175                  AND     K260K           /ISOLATE BITS 1,3,4.
02666   740040                  HLT                     /ERR. HALT. CAL* DID NOT STORE
                                                        /EXT MODE ON, OR EPC BITS INCORRECT.
02667   100216                  JMS     CHAIN           /CHAIN. SEE IF DONE
02670   602647                  JMP     T106+2          /NOT DONE. REPEAT TEST.
02671   000021          T106W   L20B0+1                 /TEST ANDS. INDIRECT REF. WORD.
02672   000000                  0                       /CAL* INFO STORE WORD.
02673   602655                  JMP     T106A           /RETURN TO TEST.
                                .EJECT
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                                /TEST THAT CAL IN BANK 1 WITH EXT OFF, REFERENCES
                                /LOC 20 OF BANK 1.
02674   000107      T107        107
02675   002730                  T110
02676   707702                  FEM                     /ENTER EXT MODE
02677   100304                  MOVE                    /MOVE TEST WORDS TO BANK 1
02700   002720                  T107W
02701   025031                  LOCB1
02702   777776                  -2
02703   100304                  MOVE                    /MOVE CAL SUB TO LOC 20-23
02704   002722                  T107WA                  /OF BANK 1.
02705   020020                  L20B1
02706   777774                  -4
02707   100304                  MOVE                    /MOVE TRAP TO LOC 20-21 OF
02710   002726                  T107WB                  /BANK 0.
02711   000020                  L20B0
02712   777776                  -2
02713   707702      T107A       FEM                     /ENTER EXT MODE.
02714   620131                  JMP*        R1LOC       /JMP TO BANK 1 AND DO TEST.
02715   740040      T107B       HLT                     /ERROR. CAL IN BANK 1 WITH EXT
                                                        /OFF REFERENCED LOC 20 OF BANK 0.
02716   100216      T107C       JMS         CHAIN       /CHAIN. SEE IF DONE
02717   602676                  JMP         T107+2      /NOT DONE. REPEAT TEST.
02720   707704      T107W       LEM                     /TEST WORDS. LEAVE EXT MODE
02721   000000                  CAL                     /DO CAL (IN BANK 1)
02722   000000      T107WA      0                       /TEST WORDS. (STORED IN 20-23 OF BANK 1)
02723   707702                  FEM                     /ENTER EXT MODE
02724   620023                  JMP*        L20+3       /RETURN TO TEST IN BANK 0.
02725   002716                  T107C
02726   000000      T107WB      0                       /ERROR TRAP (IN BANK 0).
02727   602715                  JMP         T107B
                                .EJECT
```

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                        /TEST THAT CAL IN RANK 1 WITH EXT OFF, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
02730   00011'  T110    11'
02731   002762           T111
02732   707702           FEM                        /ENTER EXT MODE
02733   100304           MOVE                       /MOVE TEST WORDS TO RANK 1
02734   002752           T110W
02735   025031           LOCB1
02736   777772           -6
02737   100304           MOVE                       /MOVE 2 TEST WORDS TO LOC 20-21
02740   002762           T110WA                     /OF RANK 1.
02741   020022           L20B1
02742   777776           -2
02743   620131           JMP*       R1LOC           /JMP TO BANK1 AND DO TEST.
02744   500175  T110A    AND        K260K           /ISOLATE BITS 1,3, AND 4.
02745   240167           XOR        K20K
02746   740200           SZA                        /BIT1=0 AND BIT3,4=01?
02747   740040           HLT                        /NO. ERROR. EXT STATUS AND/OR EPC
                                                    /STATUS INCORRECTLY STORED BY CAL.
02750   100216           JMS        CHAIN           /CHAIN. SEE IF DONE.
02751   602732           JMP        T110+2          /NOT DONE. REPEAT TEST.
02752   707704  T110W    LEM                  /TEST WORDS. LEAVE EXT MODE
02753   000000           CAL                        /DO CAL.
02754   707702           EEM                        /RETURN HERE AFTER CAL. ENTER EXT MODE
02755   200020           LAC        L20             /SET C (L20B1)
02756   625036           JMP*       LOC+5           /RETURN TO TEST.
02757   002744           T110A
02760   000000  T110WA   0                          /2 TEST WORDS STORED AT LOC 20 AND
02761   605033           JMP        LOC+2           /21 OF BANK 1.
                         .EJECT
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                        /TEST THAT CAL* IN BANK 1 WITH EXT OFF STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
02762   000111  T111    111
02763   003015          T112
02764   707702          EEM                     /ENTER EXT MODE
02765   100304          MOVE                            /MOVE TEST WORDS TO BANK 1
02766   003004            T111W
02767   025031            LOCB1
02770   777772            -6
02771   100304          MOVE                            /MOVE 3 TEST WORDS TO LOC 20-22 OF
02772   003012            T111WA                        /BANK 1.
02773   020020            L20B1
02774   777775            -3
02775   620131          JMP*      B1LOC                 /JMP TO BANK 1 AND DO TEST
02776   500175  T111A    AND       K260K                 /RETURN HERE. ISOLATE BITS 1,3,4.
02777   240167          XOR       K20K
03000   740200          SZA                             /BIT1=0 AND 3,4=01?
03001   740040          HLT                             /NO. ERROR. EXT STATUS AND/OR EPC
                                                        /BITS STATUS INCORRECTLY STORED BY CAL*
03002   100216          JMS       CHAIN                 /CHAIN. SEE IF DONE
03003   602764          JMP       T111+2                /NOT DONE. REPEAT TEST.
03004   707704  T111W   LEM                             /TEST WORDS. LEAVE EXT MODE
03005   020000          CAL*                            /DO CAL*
03006   707702          EEM                             /RETURN HERE AFTER CAL*. ENTER EXT MODE
03007   200021          LAC       L20+1                 /GET C(L20B1)
03010   625036          JMP*      LOC+5                 /RETURN TO TEST IN BANK 0.
03011   002776            T111A
03012   000021  T111WA   L20+1                           /3 TEST WORDS STORED AT LOC 20-22
03013   000000          0                               /OF BANK 1.
03014   605033          JMP       LOC+2
                        .EJECT
```

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                        /TEST THAT CAL IN BANK 1 WITH EXT ON, REFERENCES
                        /LOC 20 OF BANK 0, AND THAT EXT MODE REMAINS ON.
03015   000112  T112    112
03016   003052          T113
03017   707702          EEM             /ENTER EXT MODE
03020   203041          LAC     T112W   /MOVE TEST WORD TO LOCB1
03021   060131          DAC*    B1LOC
03022   100304          MOVE            /MOVE TRAP WORDS TO LOC 20-23
03023   003042          T112WA          /OF BANK 1
03024   020020          L20B1
03025   777774          -4
03026   100304          MOVE            /MOVE TEST WORDS TO LOC 20-23 OF
03027   003046          T112WB          /BANK 0
03030   000020          L20B0
03031   777774          -4
03032   707702  T112A   EEM             /ENTER EXT MODE
03033   620131          JMP*    B1LOC   /GO TO BANK 1 AND DO TEST.
03034   740040  T112B   HLT             /ERROR. CAL'ED TO BANK 1.
03035   603037          JMP     T112D
03036   740040  T112C   HLT             /ERROR. EXT MODE NOT ON AFTER
                                        /CAL IN BANK 1.
03037   100216  T112D   JMS     CHAIN   /CHAIN. SEF IF DONE.
03040   603017          JMP     T112+2  /NOT DONE. REPEAT TEST.
03041   000000  T112W   CAL             /LOCB1 TEST WORD. DO CAL.
03042   000000  T112WA  0               /THESE WORDS MOVED TO LOC 20-23 OF
03043   707702          EEM             /BANK 1. PROVIDE ERROR RETURN
03044   620023          JMP*    L20+3   /IF CAL FAILS TO REFERENCE BANK 0.
03045   003034          T112B
03046   000000  T112WB  0               /BANK 0 CAL BUNDLER STORED
03047   707701          SEM             /IN LOC 20-23 OF BANK 0.
03050   603036          JMP T112C
03051   603037          JMP     T112D
                        .EJECT
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                        /TEST THAT CAL IN BANK 1 WITH EXT ON, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03052   000113  T113    113
03053   003077          T114
03054   707702          FEM                             /ENTER EXT MODE.
03055   203074          LAC     T113W                   /MOVE TEST WORD TO LOCB1.
03056   060131          DAC*    B1LOC
03057   100304          MOVE                            /MOVE CAL HANDLER TO
03060   003075          T113WA                          /LOC 20-21 OF BANK 0.
03061   000020          L20B0
03062   777776          -2
03063   620131          JMP*    B1LOC                   /GO TO BANK 1 AND DO TEST.
03064   200020  T113A   LAC     L20                     /GET CAL INFO WORD CONTENTS
03065   500175          AND     K260K                   /ISOLATE BITS 1,3,AND 4
03066   500175          AND     K260K                   /ISOLATE BITS 1,3,AND 4
03067   240173          XOR     K220K
03070   740200          SZA                             /BIT 1=1 AND 3 AND 4=01?
03071   740040          HLT                             /NO. ERROR EXT STATUS AND/OR
                                                        /EPC BITS STORED INCORRECTLY.
03072   100216          JMS     CHAIN                   /CHAIN. SEE IF DONE.
03073   603054          JMP     T113+2                  /NOT DONE. REPEAT TEST.
03074   000000  T113W   CAL                             /LOCB1 TEST WORD.
03075   000000  T113WA  0                               /CAL HANDLER. (LOC 20-21 OF BANK 0).
03076   603064          JMP     T113A
                        /TEST THAT CAL* IN BANK 1 WITH EXT ON, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03077   000114  T114    114
03100   003124          T115
03101   707702          FEM                             /ENTER EXT MODE.
03102   203120          LAC     T114W                   /MOVE TEST WORD TO LOCB1
03103   060131          DAC*    B1LOC
03104   100304          MOVE                            /MOVE CAL* HANDLER TO
03105   003121          T114WA                          /LOC 20-22 OF BANK 0.
03106   000020          L20B0
03107   777775          -3
03110   620131          JMP*    B1LOC                   /GO TO BANK 1 AND DO TEST 1
03111   200021  T114A   LAC     L20+1                   /GET CAL* INFO WORD CONTENTS
03112   500175          AND     K260K                   /ISOLATE BITS 1,3,AND 4.
03113   240173          XOR     K220K
03114   740200          SZA                             /BIT 1=1 AND 3,4=01
03115   740040          HLT                             /NO. ERROR. EXT STATUS AND/OR EPC
                                                        /BITS INCORRECTLY STORED.
03116   100216          JMS     CHAIN                   /CHAIN. SEE IF DONE.
03117   603101          JMP     T114+2                  /NOT DONE. REPEAT TEST.
03120   020000  T114W   CAL*                            /LOCB1 TEST WORD.
03121   000021  T114WA  L20+1                           /CAL* HANDLER
03122   000000          0                               /(LOC 20-22 OF BANK 0).
03123   603111          JMP     T114A
                        .EJECT
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                        /TEST THAT CAL IN BANK 2 WITH EXT OFF, REFERENCES
                        /LOC 20 OF BANK 2.
03124   000115  T115    115
03125   003162          T116
03126   100357          JMS       TSTB2           /BANK 2 AVAILABLE?
03127   600230          JMP       CHAINA          /NO. SKIP TEST
03130   707702          EEM                       /YES. ENTER EXT MODE
03131   100304          MOVE                      /MOVE TEST WORDS TO BANK 2
03132   003152          T115W
03133   045031          LOCB2
03134   777776          -2
03135   100304          MOVE                      /MOVE CAL SUB TO BE 20-23
03136   003154          T115WA                    /OF BANK 2
03137   040020          L20B2
03140   777774          -4
03141   100304          MOVE                      /MOVE TRAP TO LOC 20-21 OF
03142   003160          T115WB                    /BANK 0
03143   000020          L20B0
03144   777776          -2
03145   707702  T115A   EEM                       /ENTER EXT MODE.
03146   620132          JMP*      B2LOC           /GO TO BANK 2 TO DO TEST.
03147   740040  T115B   HLT                       /ERROR. CAL IN BANK 2 WITH EXT
                                                  /OFF, REFERENCED LOC 20 OF BANK 0.
03150   100216  T115C   JMS       CHAIN           /CHAIN. SEE IF DONE
03151   603126          JMP       T115+2          /NOT DONE. REPEAT TEST.
03152   707704  T115W   LEM                       /TEST WORDS. LEAVE EXT MODE
03153   000000          CAL                       /DO CAL (IN BANK 2)
03154   000000  T115WA  0                         /TEST WORDS (20-23 OF BANK 2)
03155   707702          EEM                       /ENTER EXT MODE.
03156   620023          JMP*      L20+3           /RETURN TO TEST IN BANK 0.
03157   003150          T115C
03160   000000  T115WB  0                         /ERROR TRAP (IN BANK 0).
03161   603147          JMP       T115B
                        .EJECT
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                        /TEST THAT CAL IN BANK 2 WITH EXT OFF, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03162   000116  T116    116
03163   003216          T117
03164   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
03165   600230          JMP     CHAINA          /NO. SKIP TEST.
03166   707702          EEM                     /YES. ENTER EXT MODE.
03167   100304          MOVE                    /MOVE TEST WORDS TO BANK 2
03170   003206          T116W
03171   045031          LOCB2
03172   777772          -6
03173   100304          MOVE                    /MOVE 2 TEST WORDS TO LOC 20-21
03174   003214          T116WA                  /OF BANK 2.
03175   040020          L20B2
03176   777776          -2
03177   620132          JMP*    B2LOC           /GO TO BANK 2 AND TO DO TEST.
03200   500175  T116A   AND     K260K           /ISOLATE BITS 1,3,AND 4.
03201   240170          XOR     K40K
03202   740200          SZA                     /BIT1=0 AND3,4=10?
03203   740040          HLT                     /NO. ERROR EXT STATUS AND/OR EPC
                                                /STATUS INCORRECTLY STORED BY CAL.
03204   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
03205   603166          JMP     T116+4          /NOT DONE. REPEAT TEST.
03206   707704  T116W   LEM                     /TEST WORDS. LEAVE EXT MODE
03207   000000          CAL                     /DO CAL.
03210   707702          EEM                     /RETURN HERE. ENTER EXT MODE
03211   200020          LAC     L20             /GET C (L20B2)
03212   625036          JMP*    LOC+5           /RETURN TO TEST
03213   003200          T116A
03214   000000  T116WA  0                       /2 TEST WORDS STORED AT LOC 20-21
03215   605033          JMP     LOC+2           /OF BANK 2.
                        .EJECT
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```
                                /TEST THAT CAL* IN BANK 2 WITH EXT OFF STORES EXT STATUS
                                /AND EPC BITS CORRECTLY.
03216   000117   T117    117
03217   003253           T120
03220   100350           JMS     TSTB2          /BANK 2 AVAILABLE?
03221   600230           JMP     CHAINA         /NO, SKIP TEST
03222   707702           EEM                    /YES, ENTER EXT MODE.
03223   100304           MOVE                           /MOVE TEST WORDS TO BANK 2
03224   003242           T117W
03225   045031           LOCB2
03226   777772           -6
03227   100304           MOVE                   /MOVE 3 TEST WORDS TO BE 20-22
03230   003250           T117WA                 /OF BANK 2.
03231   040020           L20B2
03232   777775           -3
03233   620132           JMP*    R2LOC          /GO TO BANK 2 TO DO TEST.
03234   500175   T117A   AND     K260K          /RETURN HERE, ISOLATE BITS 1,3,4.
03235   240170           XOR     K40K
03236   740200           SZA                    /BIT 1=0 AND 3,4=10?
03237   740040           HLT                    /NO, ERROR EXT STATUS AND/OR
                                                /EPC STATUS INCORRECTLY STORED BY CAL*
03240   100216           JMS     CHAIN          /CHAIN, SEE IF DONE
03241   603222           JMP     T117+4         /NOT DONE, REPEAT TEST.
03242   707704   T117W   LEM                    /TEST WORDS, LEAVE EXT MODE.
03243   020000           CAL*                   /DO CAL*
03244   707702           EEM                    /RETURN HERE, ENTER EXT MODE.
03245   200021           LAC     L20+1          /GET C(L20B2)
03246   625036           JMP*    LOC+5          /RETURN TO TEST IN BANK 0
03247   003200           T116A
03250   000021   T117WA  L20+1                  /3 TEST WORDS STORED AT LOC 20-22
03251   000000           0                      /OF BANK 2.
03252   605033           JMP     LOC+2
                         .EJECT
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                        /TEST THAT CAL IN BANK 2 WITH EXT ON, REFERENCES
                        /LOC 20 OF BANK 0, AND THAT EXT MODE REMAINS ON.
03253   000120  T120    120
03254   003312          T121
03255   100354          JMS       TSTB2       /BANK 2 AVAILABLE?
03256   620230          JMP       CHAINA      /NO. SKIP TEST
03257   707702          EEM                   /YES. ENTER EXT MODE.
03260   203301          LAC       T120W       /MOVE TEST WORDS TO LOCB2
03261   060132          DAC*      R2LOC
03262   100304          MOVE                  /MOVE TRAP WORDS TO LOC 20-23
03263   003302          T120WA                /OF BANK 2
03264   040027          L2VB2
03265   777774          -4
03266   100304          MOVE                  /MOVE TEST WORDS TO LOC 20-23
03267   003306          T120WB                /OF BANK 0.
03270   000020          L2VB0
03271   777774          -4
03272   707702  T120A   EEM                   /ENTER EXT MODE
03273   620132          JMP*      R2LOC       /GO TO BANK 2 TO DO TEST
03274   740040  T120B   HLT                   /ERROR.CAL'ED TO BANK 2
03275   603277          JMP       T120D
03276   740040  T120C   HLT                   /ERROR. EXT MODE NOT ON AFTER
                                              /CAL FROM BANK 2.
03277   100216  T120D   JMS       CHAIN       /CHAIN. SEE IF DONE.
03300   603257          JMP       T120+4      /NOT DONE. REPEAT TEST.
03301   000000  T120W   CAL                   /LOCB2 TEST WORD. DO CAL
03302   000000  T120WA  0                     /THESE 4 WORDS ARE MOVED TO
03303   707702          EEM                   /LOC 20-23 OF BANK 2, TO PROVIDE
03304   620023          JMP*      L20+3       /ERROR RETURN IF CAL FAILS
03305   003274          T120B                 /TO REFERNECE BANK 0.
03306   000000  T120WB  0                     /BANK 0 CAL HANDLER.
03307   707701          SEM                   /(LOC 20-23 OF BANK 0.)
03310   603276          JMP       T120C
03311   603277          JMP       T120D
                        .EJECT
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                        /TEST THAT CAL IN BANK 2 WITH EXT ON, SPORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03312   000121  T121    121
03313   003342          T122
03314   100352          JMS     TSTB2           /BANK 2 AVAILABLE?
03315   600230          JMP     CHAINA          /NO. SKIP TEST.
03316   707702          FEM                     /YES. ENTER EXT MODE.
03317   223335          LAC     T121W           /MOVE TEST WORD TO LOCB2.
03320   060132          DAC*    B2LOC
03321   100334          MOVE                    /MOVE CAL HANDLER
03322   003336          T121WA                  /TO LOC 20-21 OF BANK 0.
03323   000020          L20B0
03324   777776          -2
03325   620132          JMP*    B2LOC           /GO TO BANK 2 TO DO TEST.
03326   200020  T121A   LAC     L20             /GET C(CAL INFO WORD).
03327   500175          AND     K260K           /ISOLATE BITS 1,3 AND 4.
03330   240174          XOR     K240K
03331   740200          SZA                     /BIT1=1 AND 3,4=10?
03332   740040          HLT                     /NO. ERROR. EXT STATUS AND /OR
                                                /EPC BITS STORED INCORRECTLY.
03333   100216          JMS     CHAIN           /CHAIN. SEE IF DONE.
03334   603316          JMP     T121+4          /NOT DONE. REPEAT TEST.
03335   000000  T121W   CAL                     /LOCB2 TEST WORD.
03336   000020  T121WA  0                       /CAL HANDLER (LOC 20-21 OF
03337   603326          JMP     T121A           /BANK 0).
                        /TEST THAT CAL* IN BANK 2 WITH EXT ON, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03340   000122  T122    122
03341   003367          T123
03342   100352          JMS     TSTB2           /BANK 2 AVAILABLE?
03343   600230          JMP     CHAINA          /NO. SKIP TEST.
03344   707702          EEM                     /YES. ENTER EXT MODE.
03345   223363          LAC     T122W           /TEST WORD TO LOCB2
03346   060132          DAC*    B2LOC
03347   100304          MOVE                    /CAL* HANDLER TO
03350   003364          T122WA                  /LOC 20-22 OF BANK 0.
03351   000020          L20B0
03352   777775          -3
03353   620132          JMP*    B2LOC           /TO BANK 2 TO DO TEST
03354   200021  T122A   LAC     L20+1           /GET C (CAL* INFO WORD)
03355   500175          AND     K260K           /ISOLATE BITS1,3, AND 4.
03356   240174          XOR     K240K
03357   740200          SZA                     /BIT1=1 AND 3,4=10?
03360   740040          HLT                     /NO. ERROR. EXT STATUS AND/OR
                                                /EPC BITS INCORRECTLY STORED.
03361   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
03362   603344          JMP     T122+4          /NOT DONE. REPEAT TEST.
03363   020000  T122W   CAL*                    /LOCB2 TEST WORD.
03364   000021  T122WA  L20+1                   /CAL* HANDLER
03365   000000          0                       /(LOC 20-22 OF BANK 0).
03366   603354          JMP     T122A
                        .EJECT
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                        /TEST THAT CAL IN BANK 3 WITH EXT OFF, REFERENCES
                        /LOC 20 OF BANK 3.
03367   000123  T123    123
03370   003425          T124
03371   100356          JMS       TSTB3           /BANK 3 AVAILABLE?
03372   600230          JMP       CHAINA          /NO. SKIP TEST.
03373   707702          EEM                       /YES. ENTER EXT MODE
03374   100304          MOVE                      /MOVE TEST WORDS TO BANK 3.
03375   003415          T123W
03376   065031          LOCB3
03377   777776          -2
03400   100304          MOVE                      /CAL SUB TO LOC 20-23
03401   003417          T123WA                    /OF BANK 3.
03402   060020          L20B3
03403   777774          -4
03404   100304          MOVE                      /TRAP TO LOC 20-21 OF
03405   003423          T123WB                    /BANK 0.
03406   000020          L20B0
03407   777776          -2
03410   707702  T123A   EEM                       /ENTER EXT MODE.
03411   620133          JMP*      B3LOC           /GO TO BANK 3 TO DO TEST.
03412   740040  T123B   HLT                       /ERROR. CAL IN BANK 3 WITH EXT
                                                  /OFF, REFERENCED LOC 20 OF BANK 3.
03413   100216  T123C   JMS       CHAIN           /CHAIN. SEE IF DONE.
03414   603373          JMP       T123+4          /NOT DONE. REPEAT TEST.
03415   707704  T123W   LEM                       /TEST WORDS. LEAVE EXT MODE.
03416   000000          CAL                       /DO CAL (IN BANK 3)
03417   000000  T123WA  0                         /CAL HANDLER
03420   707702          EEM                       /LOC 20-23 OF BANK 3.
03421   620023          JMP*      L20+3
03422   003413          T123C
03423   000000  T123WB  0                         /ERROR TRAP. (IN BANK 0).
03424   603412          JMP       T123B
                        .EJECT
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                        /TEST THAT CAL IN BANK 3 WITH EXT OFF, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03425   000124  T124    124
03426   003461          T125
03427   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
03430   600230          JMP     CHAINA          /NO. SKIP TEST.
03431   707702          FEM                     /YES. ENTER EXT MODE.
03432   100304          MOVE                    /TEST WORDS TO BANK 3.
03433   003451          T124W
03434   065031          LOCB3
03435   777772          -6
03436   100304          MOVE                    /2 TEST WORDS TO LOC 20-21
03437   003457          T124WA                  /OF BANK 3.
03440   060020          L20B3
03441   777776          -2
03442   620133          JMP*    B3LOC           /GO TO BANK 3 TO DO TEST.
03443   500175  T124A   AND     K260K           /ISOLATE BITS1,3,AND 4.
03444   240171          XOR     K60K
03445   740200          SZA                     /BIT1=0 AND 3,4=11?
03446   740040          HLT                     /NO. ERROR. EXT STATUS AND/OR
                                                /EPC INCORRECTLY STORED.
03447   100216          JMS     CHAIN           /CHAIN. SEE IF DONE.
03450   603431          JMP     T124+4          /NOT DONE. REPEAT TEST.
03451   707704  T124W   LEM                     /TEST WORDS. LEAVE EXT MODE
03452   000000          CAL                     /DO CAL.
03453   707702          FEM                     /RETURN HERE. ENTER EXT MODE
03454   200020          LAC     L20             /GET C(L20B3).
03455   625036          JMP*    LOC+5           /RETURN TO TEST.
03456   003443          T124A
03457   000000  T124WA  0
03460   605033          JMP     LOC+2           /2 TEST WORDS STORED AT
                                                /LOC 20-21 OF BANK 3.
                        .EJECT
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                                /TEST THAT CAL* IN BANK 3 WITH EXT OFF STORES EXT STATUS
                                /AND EPC BITS CORRECTLY.
03461   000125      T125        125
03462   003516                  T126
03463   100354                  JMS         TSTB3           /BANK 3 AVAILABLE?
03464   600230                  JMP         CHAINA          /NO. SKIP TEST
03465   707702                  EEM                         /YES. ENTER EXT MODE.
03466   100304                  MOVE                        /MOVE TEST WORDS TO BANK 3.
03467   003505                  T125W
03470   065031                  LOCB3
03471   777772                  -6
03472   100304                  MOVE                        /MOVE 3 TEST WORDS TO
03473   003513                  T125WA                      /LOC 20-22 OF BANK 3.
03474   060020                  L20B3
03475   777775                  -3
03476   620133                  JMP*        B3LOC           /GO TO BANK 3 TO DO TEST.
03477   500175      T125A       AND         K260K           /RETURN HERE. ISOLATE BITS1,3,4.
03500   240171                  XOR         K60K
03501   740200                  SZA                         /BIT1=0 AND 3,4=11?
03502   740040                  HLT                         /NO. ERROR. EXT STATUS AND/OR
                                                            /EPC BITS INCORRECTLY STORED.
03503   100216                  JMS         CHAIN           /CHAIN. SEE IF DONE.
03504   603465                  JMP         T125+4          /NOT DONE. REPEAT TEST.
03505   707704      T125W       LEM                         /TEST WORDS. LEAVE EXT MODE.
03506   020000                  CAL*                        /DO CAL*
03507   707702                  EEM                         /RETURN HERE. ENTER EXT MODE.
03510   200021                  LAC         L20+1           /GET C(L20B3)
03511   625436                  JMP*        LOC+5           /RETURN TO TEST IN BANK 0.
03512   003477                  T125A
03513   000021      T125WA      L20+1                       /TEST WORDS STORED AT LOC 20-22
03514   000000                  0                           /OF BANK 3.
03515   605033                  JMP         LOC+2
                                .EJECT
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                                /TEST THAT CAL IN BANK 3 WITH EXT ON, REFERNECES
                                /LOC 20 OF BANK 3, AND THAT EXT MODE REMAINS ON.
03516   000126   T126    126
03517   003555           T127
03520   100356           JMS       TSTB3          /BANK 3 AVAILABLE?
03521   600230           JMP       CHAINA         /NO. SKIP TEST
03522   707702           EEM                      /YES. ENTER EXT MODE.
03523   203544           LAC       T126W          /MOVE TEST WORD TO LOCB3
03524   060133           DAC*      B3LOC
03525   100304           MOVE                     /TRAP WORDS TO LOC 20-23
03526   003545           T126WA                   /OF BANK 3.
03527   060020           L20B3
03530   777774           -4
03531   100304           MOVE                     /TEST WORDS TO LOC 20-23
03532   003551           T126WB                   /OF BANK 0
03533   000020           L20B0
03534   777774           -4
03535   707702   T126A   EEM                      /ENTER EXT MODE.
03536   620133           JMP*      B3LOC          /GO TO BANK 3 TO DO TEST.
03537   740040   T126B   HLT                      /ERROR. CAL'ED TO BANK 3.
03540   603542           JMP       T126D
03541   740040   T126C   HLT                      /ERROR. EXT MODE NOT ON
                                                  /AFTER CAL FROM BANK 3.
03542   100216   T126D   JMS       CHAIN          /CHAIN, SEE IF DONE
03543   603522           JMP       T126+4         /NOT DONE. REPEAT TEST.
03544   000000   T126W   CAL                      /LOCB3 TEST WORD. DO CAL
03545   000000   T126WA  0                        /THESE 4 WORDS ARE MOVED TO
03546   707702           EEM                      /LOC 20-23 OF BANK 3, TO      PROVIDE
03547   620023           JMP*      L20+3          /ERROR RETURN IF CAL FAILS TO  .
03550   003537           T126B                    /REFERENCE BANK 0.
03551   000000   T126WB  0                        /BANK 0 CAL HANDLER.
03552   707701           SEM                      /(LOC 20-23 OF BANK 0).
03553   603541           JMP       T126C
03554   603542           JMP       T126D
                         .EJECT
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                        /TEST THAT CAL IN BANK 3 WITH EXT ON, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03555   000127  T127    127
03556   003603          T130
03557   100356          JMS     TSTB3           /BANK3 AVAILABLE?
03560   600230          JMP     CHAINA          /NO. SKIP TEST.
03561   707702          EEM                     /YES. ENTER EXT MODE
03562   203600          LAC     T127W           /MOVE TEST WORD TO LOCB3.
03563   060133          DAC*    B3LOC
03564   100304          MOVE                    /CAL HANDLER TO LOC 20-21
03565   003601          T127WA                  /OF BANK 0.
03566   000020          L20B0
03567   777776          -2
03570   620133          JMP*    B3LOC           /GO TO BANK 3 TO DO TEST.
03571   200020  T127A   LAC     L20             /GET C (CAL INFO WORD).
03572   500175          AND     K260K           /ISOLATE BITS 1,3, AND 4.
03573   240175          XOR     K260K
03574   740200          SZA                     /BIT1=1 AND 3,4=11?
03575   740040          HLT                     /NO. ERROR. EXT STATUS AND/OR
                                                /EPC BITS STORED INCORRECTLY.
03576   100216          JMS     CHAIN           /CHAIN. SEE IF DONE.
03577   603561          JMP     T127+4          /NOT DONE. REPEAT TEST.
03600   000000  T127W   CAL                     /LOCB3 TEST WORD.
03601   000000  T127WA  0                       /CAL HANDLER. (LOC20-21OF
03602   603571          JMP     T127A           /BANK 0).
                        /TEST THAT CAL* IN BANK 3 WITH EXT ON, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
03603   000130  T130    130
03604   003632          T131
03605   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
03606   600230          JMP     CHAINA          /NO. SKIP TEST.
03607   707702          EEM                     /YES. ENTER EXT MODE.
03610   203626          LAC     T130W           /YES. SKIP TEST.
03611   060133          DAC*    B3LOC
03612   100304          MOVE                    /CAL* HANDLER TO LOC 20-22
03613   003627          T130WA                  /OF BANK 0.
03614   000020          L20B0
03615   777775          -3
03616   620133          JMP*    B3LOC           /GO TO BANK 3 AND DO TEST.
03617   200021  T130A   LAC     L20+1           /GET C (CAL* INFO WORD).
03620   500175          AND     K260K           /ISOLATE BITS 1,3, AND 4.
03621   240175          XOR     K260K
03622   740200          SZA                     /BIT1=1 AND 3,4=11?
03623   740040          HLT                     /NO. ERROR. EXT STATUS AND/OR
                                                /EPC BITS STORED INCORRECTLY.
03624   100216          JMS     CHAIN           /CHAIN. SEE IF DONE
03625   603607          JMP     T130+4          /NOT DONE. REPEAT TEST
03626   020000  T130W   CAL*                    /LOCB3 TEST WORD.
03627   000021  T130WA  L20+1                   /CAL* HANDLER
03630   000000          0                       /(LOC 20-22 OF BANK 0).
03631   603617          JMP     T130A
                        .EJECT
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                        /TEST AUTO-INDEX IN BANK 1 WITH EXT OFF. SHOULD REFERENCE
                        /BANK 1. LOC 10 AUTO INDEX REG IS USED.
03632   000131  T131    131
03633   003705          T132
03634   707702          EEM             /ENTER EXT MODE
03635   100304          MOVE            /MOVE TEST WORDS TO BANK 1.
03636   003664          T131W
03637   025031          LOCB1
03640   777763          -15
03641   203701          LAC     T131WA  /SET UP TRAP IN CASE AUTO-INDEX
03642   045040          DAC     LOCB0+7 /REFERENCES BANK 0 INSTEAD OF BANK 1
03643   045041          DAC     LOCB0+10
03644   203704          LAC     T131WD  /SET UP TRAP IN CASE AUTO-INDEX
03645   045033          DAC     LOCB0+2 /RETURN POINTS TO BANK 0 INSTEAD OF BANK 1.
03646   045034          DAC     LOCB0+3
03647   707702  T131A   EEM             /ENTER EXT MODE
03650   203702          LAC     T131WB  /LOAD AUTO-INDEX 10 IN BANK 1
03651   060144          DAC*    R1L10
03652   203703          LAC     T131WC  /LOAD AUTO-INDEX 10 IN BANK 0
03653   040010          DAC     L10B0
03654   620131          JMP*    R1LOC   /GO TO BANK 1 TO DO TEST.
03655   740040  T131B   HLT             /ERROR. AUTO-INDEXING REFERENCED
03656   603662          JMP     T131E   /BANK 0 INSTEAD OF BANK 1.
03657   740040  T131C   HLT             /ERROR. FAILED TO INCREMENT AUTO-INDEX
03660   603662          JMP     T131E
03661   740040  T131D   HLT             /ERROR. AUTO-INDEX RETURN POINTED TO
                                        /BANK 0 INSTEAD OF BANK 1.
03662   100216  T131E   JMS     CHAIN   /CHAIN. SEE IT DONE.
03663   603647          JMP     T131A   /NOT DONE. REPEAT TEST.
03664   707704  T131W   LEM             /TEST WORDS. LEAVE EXT MODE.
03665   620010          JMP*    L10     /JMP* BY AUTO INDEX 10.
03666   605036          JMP     LOC+5   /ERROR. FAILED TO INCR AUTO-INDEX.
03667   707702          EEM             /OK.
03670   625045          JMP*    LOC+14  /OK RETURN.
03671   707702          EEM             /FAILURE TO INCR AUTO-INDEX
03672   625043          JMP*    LOC+12  /RETURN TO BANK 0
03673   707702          EEM             /FAILED
03674   707702          EEM             /TO REFERENCE BANK 1
03675   625044          JMP*    LOC+13  /RETURN TO BANK 0
03676   003657          T131C           /FAILURE TO INCR AUTO-INDEX RETURN ADDR.
03677   003655          T131B           /FAILURE TO REF BANK 1 RETURN ADDR.
03700   003662          T131E           /OK RETURN ADDR.
03701   603655  T131WA  JMP     T131B   /TRAP FOR FAILURE TO REF BANK 1.
03702   005033  T131WB  LOC+2           /L10B1 LOAD WORD
03703   005040  T131WC  LOC+7           /L1010 LOAD WORD
03704   603661  T131WD  JMP     T131D   /TRAP FOR AUTO-INDEX RETURN TO BANK 0
                        .EJECT
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                        /TEST AUTO-INDEX IN BANK 2 WITH EXT OFF. SHOULD REFERENCE
                        /BANK 2. LOC10 AUTO-INDEX IS USED.
03705   000132  T132    132
03706   003762          T133
03707   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
03710   600230          JMP     CHAINA          /NO. SKIP TEST.
03711   707702          EEM                     /ENTER EXT MODE.
03712   100304          MOVE                    /MOVE TEST WORDS TO BANK 2.
03713   003741          T132W
03714   045031          LOCB2
03715   777763          -15
03716   203756          LAC     T132WA          /SET UP TRAP IN CASE AUTO-INDEX
03717   045040          DAC     LOCB0+7         /REFERENCES BANK 0 INSTEAD OF BANK 2
03720   045041          DAC     LOCB0+10
03721   203761          LAC     T132WD          /SET UP TRAP IN CASE AUTO-INDEX
03722   045033          DAC     LOCB0+2         /RETURN POINTS TO BANK 0 INSTEAD OF BANK 2.
03723   045034          DAC     LOCB0+3
03724   707702  T132A   EEM                     /ENTER EXT MODE
03725   203757          LAC     T132WB          /LOAD AUTO-INDEX 10 IN BANK 2.
03726   060145          DAC*    B2L10
03727   203760          LAC     T132WC          /LOAD AUTO-INDEX 10 IN BANK 0.
03730   040010          DAC     L10B0
03731   620132          JMP*    B2LOC           /GO TO BANK 2 TO DO TEST.
03732   740040  T132B   HLT                     /ERROR. AUTO-INDEXING REFERENCED
03733   603737          JMP     T132E           /BANK 0 INSTEAD OF BANK 2.
03734   740040  T132C   HLT                     /ERROR. FAILED TO INCREMENT AUTO-INDEX
03735   603737          JMP     T132E
03736   740040  T132D   HLT                     /ERROR. AUTO-INDEX RETURN POINTED TO
                                                /BANK 0 INSTEAD OF BANK 2.
03737   100216  T132E   JMS     CHAIN           /CHAIN. SEE IF DONE.
03740   603724          JMP     T132A           /NOT DONE. REPEAT TEST.
03741   707704  T132W   LEM                     /TEST WORDS. LEAVE EXT MODE.
03742   620010          JMP*    L10             /JMP* BY AUTO-INDEX 10.
03743   605036          JMP     LOC+5           /ERROR. FAILED TO INCR AUTO-INDEX.
03744   707702          EEM                     /OK.
03745   625045          JMP*    LOC+14          /OK RETURN.
03746   707702          EEM                     /FAILURE TO INCR AUTO INDEX
03747   625043          JMP*    LOC+12          /RETURN TO BANK 0.
03750   707702          EEM                     /FAILED
03751   707702          EEM                     /TO REFERENCE BANK 2
03752   625044          JMP*    LOC+13          /RETURN TO BANK 0.
03753   003734          T132C                   /FAILURE TO INCR AUTO-INDEX RETURN ADDR.
03754   003732          T132B                   /FAILURE TO REF BANK 2 RETURN ADDR.
03755   003737          T132E                   /OK RETURN ADDR.
03756   603732  T132WA  JMP     T132B           /TRAP FOR FAILURE TO REF BANK 2.
03757   005033  T132WB  LOC+2                   /L10B2 LOAD WORD.
03760   005040  T132WC  LOC+7                   /L10B0 LOAD WORD.
03761   603736  T132WD  JMP     T132D           /TRAP FOR AUTO-INDEX RETURN TO BANK 0.
                        .EJECT
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                        /TEST AUTO-INDEX IN BANK 3 WITH EXT OFF. SHOULD REFERENCE
                        /BANK 3. LOC10 AUTO-INDEX IS USED.
03762   000133  T133    133
03763   004037          T134
03764   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
03765   600230          JMP     CHAINA          /NO. SKIP TEST.
03766   707702          EEM                     /ENTER EXT MODE.
03767   100304          MOVE                    /MOVE TEST WORDS TO BANK 3.
03770   004016          T133W
03771   065031          LOCB3
03772   777763          -15
03773   204033          LAC     T133WA          /SET UP TRAP IN CASE AUTO-INDEX
03774   045040          DAC     LOCB0+7         /REFERENCES BANK 0 INSTEAD OF BANK 3.
03775   045041          DAC     LOCB0+10
03776   204036          LAC     T133WD          /SET UP TRAP IN CASE AUTO-INDEX
03777   045033          DAC     LOCB0+2         /RETURN POINTS TO BANK 0 INSTEAD OF BANK 3.
04000   045034          DAC     LOCB0+3
04001   707702  T133A   EEM                     /ENTER EXT MODE.
04002   204034          LAC     T133WB          /LOAD AUTO-INDEX 10 IN BANK 3.
04003   060146          DAC*    B3L10
04004   204035          LAC     T133WC          /LOAD AUTO-INDEX 10 IN BANK 0.
04005   040010          DAC     L10B0
04006   620133          JMP*    B3LOC           /GO TO BANK 3 TO DO TEST.
04007   740040  T133B   HLT                     /ERROR. AUTO-INDEXING REFERENCED
04010   604014          JMP     T133E           /BANK 0 INSTEAD OF BANK 3.
04011   740040  T133C   HLT                     /ERROR. FAILED TO INCREMENT AUTO-INDEX
04012   604014          JMP     T133E
04013   740040  T133D   HLT                     /ERROR, AUTO-INDEX RETURN POINTED TO
                                                /BANK 0 INSTEAD OF BANK 3.
04014   100216  T133E   JMS     CHAIN           /CHAIN. SEE IF DONE.
04015   604001          JMP     T133A           /NOT DONE. REPEAT TEST.
04016   707704  T133W   LEM                     /TEST WORDS. LEAVE EXT MODE.
04017   620010          JMP*    L10             /JMP* BY AUTO-INDEX 10.
04020   605036          JMP     LOC+5           /ERROR. FAILED TO AUTO-INDEX.
04021   707702          EEM                     /OK.
04022   625045          JMP*    LOC+14          /OK RETURN.
04023   707702          EEM                     /FAILURE TO INER AUTO-INDEX
04024   625043          JMP*    LOC+12          /RETURN TO BANK 0.
04025   707702          EEM                     /FAILED
04026   707702          EEM                     /TO REFERENCE BANK 3
04027   625044          JMP*    LOC+13          /RETURN TO BANK 0
04030   004011          T133C                   /FAILURE TO INER AUTO-INDEX RETURN ADDR.
04031   004007          T133B                   /FAILURE TO REF BANK 3 RETURN ADDR.
04032   004014          T133E                   /OK RETURN ADDR.
04033   604007  T133WA  JMP     T133B           /TRAP FOR FAILURE TO REF BANK 3.
04034   005033  T133WB  LOC+2                   /L10B3 LOAD WORD.
04035   005040  T133WC  LOC+7                   /L10B0 LOAD WORD.
04036   604013  T133WD  JMP     T133D           /TRAP FOR AUTO-INDEX RETURN TO BANK 0.
                        .EJECT
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                                /TEST AUTO-INDEX IN BANK 1 WITH EXT ON. SHOULD REFERENCE
                                /BANK 1 AUTO-INDEX 10, AND REFERENCE BANK 0 AFTER AUTO-INDEXING.
04037   000134   T134    134
04040   004064           T135
04041   707702           EEM                          /ENTER EXT MODE.
04042   100304           MOVE                         /MOVE TEST WORDS TO BANK 1
04043   004057           T134W
04044   025031           LOCB1
04045   777775           -3
04046   204063           LAC       T134WB             /OK RETURN TO LOCB0+1.
04047   045032           DAC       LOCB0+1
04050   707702   T134A   EEM                          /ENTER EXT MODE.
04051   204062           LAC       T134WA             /LOAD AUTO-INDEX 10 IN BANK 1
04052   060144           DAC*      B1L10
04053   620131           JMP*      B1LOC              /GO TO BANK 1 AND DO TEST
04054   740040   T134B   HLT                          /ERROR. AUTO-INDEX RETURN POINTED
                                                      /TO BANK 1 INSTEAD OF BANK 0.
04055   100216   T134C   JMS       CHAIN              /CHAIN. SEE IF DONE.
04056   604050           JMP       T134A              /NOT DONE. REPEAT TEST.
04057   620010   T134W   JMP*      L10                /TEST WORDS. JMP* BY AUTO-INDEX 10
04060   625033           JMP*      LOC+2              /ERROR RETURN. SHOULD HAVE SOME
04061   004054           T134B                        /TO BANK 0
04062   005031   T134WA  LOCB0                        /L10B1 LOAD WORD.
04063   604055   T134WB  JMP       T134C              /BANK 0 OK RETURN.
                                /
                                /TEST AUTO-INDEX IN BANK 2 WITH EXT ON. SHOULD REFERENCE
                                /BANK 2 AUTO-INDEX 10, AND REFERENCE BANK 0 AFTER AUTO-INDEXING.
04064   004064   T135    T135
04065   004113           T136
04066   100350           JMS       TSTB2              /BANK 2 AVAILABLE?
04067   600230           JMP       CHAINA             /NO. SKIP TEST.
04070   707702           EEM                          /ENTER EXT MODE.
04071   100304           MOVE                         /MOVE TEST WORDS TO BANK 2
04072   004106           T135W
04073   045031           LOCB2
04074   777775           -3
04075   204112           LAC       T135WB             /OK RETURN TO LOCB0+1
04076   045032           DAC       LOCB0+1
04077   707702   T135A   EEM                          /ENTER EXT MODE.
04100   204111           LAC       T135WA             /LOAD AUTO-INDEX 10 IN BANK 2
04101   060145           DAC*      B2L10
04102   620132           JMP*      B2LOC              /GO TO BANK 2 AND DO TEST.
04103   740040   T135B   HLT                          /ERROR. AUTO-INDEX RETURN POINTED
                                                      /TO BANK 2 INSTEAD OF BANK 0
04104   100216   T135C   JMS       CHAIN              /CHAIN. SEE IF DONE
04105   604077           JMP       T135A              /REPEAT TEST. NOT DONE.
04106   620010   T135W   JMP*      L10                /TEST WORDS. JMP* BY AUTO-INDEX 10
04107   625033           JMP*      LOC+2              /ERROR RETURN. SHOULD HAVE GONE
04110   004103           T135B                        /TO BANK 0
04111   005031   T135WA  LOCB0                        /L10B2 LOAD WORD
04112   604104   T135WB  JMP       T135C              /BANK 0 OK RETURN
                         .EJECT
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                        /TEST AUTO-INDEX IN BANK 3 WITH EXT ON, SHOULD REFERENCE
                        /BANK 3 AUTO-INDEX 10, AND REFERENCE BANK 0 AFTER AUTO-INDEXING.
04113   000136  T136    136
04114   004142          T137
04115   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
04116   600230          JMP     CHAINA          /NO, SKIP TEST.
04117   707702          EEM                     /ENTER EXT MODE.
04120   100304          MOVE                    /MOVE TEST WORDS TO BANK 3
04121   004135          T136W
04122   065031          LOCB3
04123   777775          -3
04124   204141          LAC     T136WB          /OK RETURN TO LOCB0+1.
04125   045032          DAC     LOCB0+1
04126   707702  T136A   EEM                     /ENTER EXT MODE.
04127   204140          LAC     T136WA          /LOAD AUTO-INDEX 10 IN BANK 3.
04130   060146          DAC*    R3L10
04131   620133          JMP*    R3LOC           /GO TO BANK 3 AND DO TEST.
04132   740040  T136B   HLT                     /ERROR, AUTO-INDEX RETURN POINTED
                                                /TO BANK 3 INSTEAD OF BANK 0
04133   100216  T136C   JMS     CHAIN           /CHAIN, SEE IF DONE
04134   604126          JMP     T136A           /NOT DONE, REPEAT TEST.
04135   620010  T136W   JMP*    L10             /TEST WORDS, JMP* BY AUTO-INDEX 10.
04136   625033          JMP*    LOC+2           /ERROR RETURN, SHOULD HAVE GONE
04137   004132          T136B                   /TO BANK 0
04140   005031  T136WA  LOCB0                   /L10R3 LOAD WORD.
04141   604133  T136WB  JMP     T136C           /BANK 0 OK RETURN.
                        /
                        /TEST THAT AN INTERRUPT FROM BANK 0 WITH EXT OFF, STORES
                        /EXT STATUS AND EPC BITS CORRECTLY.
04142   000137  T137    137
04143   004163          T140
04144   204162          LAC     T137W   /SET UP INTERRUPT RETURN.
04145   040001          DAC     1
04146   100365  T137A   JMS     STFLG   /SET TTY PRINTER FLAG.
04147   700042          ION             /ENABLE INTERRUPT
04150   740000          NOP
04151   740040          HLT             /ERROR, FAILED TO INTERRUPT
04152   604146          JMP     T137A   /TRY TO SET UP INTERRUPT AGAIN.
04153   700002  T137B   IOF
04154   200000          LAC     0               /GET C (LOC 0)
04155   500175          AND     K260K   /ISOLATE BITS 1,3, AND 4.
04156   740200          SZA             /BIT 1=0 AND 3,4=00?
04157   740040          HLT             /NO, ERROR, EXT STATUS AND FOR
                                        /EPC BITS INCORRECTLY STORED.
04160   100216          JMS     CHAIN   /CHAIN, SEE IF DONE.
04161   604146          JMP     T137A   /NOT DONE. REPEAT TEST.
04162   604153  T137W   JMP     T137B   /INTERRUPT RETURN WORD.
                        .EJECT
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                        /TEST THAT AN INTERRUPT FROM BANK 0 WITH EXT ON, STORES EXT STATUS
                        /AND EPC BITS CORRECTLY.
04163   000140  T140    140
04164   004204          T141
04165   204203          LAC     T140W   /SET UP INTERRUPT RETURN
04166   040001          DAC     1
04167   707702  T140A   EEM             /ENTER EXT MODE
04170   100365          JMS     STFLG   /SET TTY PRINTER FLAG.
04171   700042          ION             /ENABLE INTERRUPT.
04172   604172          JMP     .
04173   700002  T140B    IOF
04174   200000          LAC     0               /GET C (LOC 0)
04175   500175          AND     K260K   /ISOLATE BITS 1,3, AND 4.
04176   240172          XOR     K200K
04177   740200          SZA             /BIT 1=1, AND 3,4=00?
042200  740040          HLT             /NO. ERROR. EXT STATUS AND/OR
                                        /EPC BITS INCORRECTLY TORED.
04201   100216          JMS     CHAIN   /CHAIN. SEE IF DONE.
04202   604167          JMP     T140A   /NOT DONE. REPEAT TEST.
04203   604173  T140W   JMP     T140B   /INTERRUPT RETURN WORD.
                        /TEST THAT AFTER AN INTERRUPT FROM BANK 0 WITH EXT ON, THE
                        /EXT MODE IS RESET.
04204   000141  T141    141
04205   004222          T142
04206   204221          LAC     T141W   /SET UP INTERRUPT RETURN
04207   040001          DAC 1
04210   707702  T141A   EEM             /ENTER EXT MODE.
04211   100365          JMS     STFLG   /SET TTY PRINTER FLAG.
04212   700042          ION             /ENABLE INTERRUPT.
04213   604213          JMP     .
04214   707701  T141B    SEM             /SKIP IF EXT ON
04215   741000          SKP             /NOT ON OK
04216   740040          HLT             /ERROR. EXT MODE REMAINED
                                        /ON AFTER INTERRUPT.
04217   100216          JMS     CHAIN   /CHAIN. SEE IF DONE.
04220   604210          JMP     T141A   /NOT DONE. REPEAT TEST.
04221   604214  T141W   JMP     T141B   /INTERRUPT RETURN WORD.
                        .EJECT
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                                /TEST THAT AN INTERRUPT FROM BANK 1 WITH EXT OFF, INTERRUPTS
                                /TO BANK 0, AND THAT EXT STATUS AND EPC BITS ARE STORED CORRECTLY.
04222   000142          T142    142
04223   004262                  T143
04224   707702                  EEM                     /ENTER EXT MODE
04225   100304                  MOVE                    /MOVE TEST WORDS TO BANK 1
04226   004253                  T142W
04227   025031                  LOCB1
04230   777775                  -3
04231   100304                  MOVE                    /MOVE BANK 1 INTERRUPT TRAP
04232   004256                  T142WA
04233   020001                  L1B1
04234   777775                  -3
04235   204261                  LAC     T142WB          /SET UP INTERRUPT RETURN
04236   040001                  DAC     1
04237   707702          T142A   EEM                     /ENTER EXTEND MODE
04240   100365                  JMS     STFLG           /SET TTY PRINTER FLAG.
04241   620131                  JMP*    B1LOC           /GO TO BANK 1 AND START TEST.
04242   740040          T142B   HLT                     /ERROR. INTERRUPTED TO LOC 0
04243   604251                  JMP     T142D           /OF BANK 1.
04244   200000          T142C   LAC     0               /GET C(LOC0)
04245   500175                  AND     K260K           /ISOLATE BITS 1,3, AND 4.
04246   240167                  XOR     K20K
04247   740200                  SZA                     /BIT1=0 AND 3,4=01?
04250   740040                  HLT                     /NO. ERROR. EXT MODE AND/OR
                                                        /EPC BITS INCORRECTLY STORED.
04251   100216          T142D   JMS     CHAIN           /CHAIN. SEE IF DONE
04252   604237                  JMP     T142A           /NOT DONE. REPEAT TEST
04253   707704          T142W   LEM                     /BANK 1 TEST WORDS. LEAVE EXT MODE.
04254   700042                  ION                     /ENABLE INTERRUPT
04255   605033                  JMP     LOC+2           /WAIT FOR INTERRUPT.
04256   707702          T142WA  EEM                     /BANK 1 INTERRUPT TRAP.
04257   620003                  JMP*    L1+2
04260   004242                  T142B
04261   604244          T142WB  JMP     T142C           /INTERRUPT RETURN WORD.
                                .EJECT
```

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                        /TEST THAT AN INTERRUPT FROM BANK 1 WITH EXT ON, STORES
                        /EXT STATUS AND EPC BITS CORRECTLY.
04262   000143  T143    143
04263   004317          T144
04264   707702          FEM                     /ENTER EXT MODE
04265   100304          MOVE                    /MOVE TEST WORDS TO BANK 1.
04266   004305          T143W
04267   025031          LOCB1
04270   777776          -2
04271   204307          LAC     T143WA          /SET UP INTERRUPT RETURN
04272   040001          DAC     1
04273   707702  T143A   FEM                     /ENTER EXT MODE.
04274   100365          JMS     STFLG           /SET TTY PRINTER FLAG.
04275   620131          JMP*    B1LOC           /GO TO BANK 1 AND START TEST.
04276   200000  T143B   LAC     0               /GET C(LOC0)
04277   500175          AND     K260K           /ISOLATE BITS 1,3, AND 4.
04300   240173          XOR     K220K
04301   740200          SZA                     /BIT1=1 AND 3,4=01?
04302   740040          HLT                     /NO. ERROR. EXT MODE AND/OR
                                                /EPC BITS INCORRECTLY STORED.
04303   100216          JMS     CHAIN           /CHAIN. SEE IF DONE.
04304   604273          JMP     T143A           /NOT DONE. REPEAT TEST.
04305   700042  T143W   ION                     /BANK 1 TEST WORDS. INT. ON
04306   605032          JMP     LOC+1           /WAIT FOR INTERRUPT.
04307   604276  T143WA  JMP     T143B           /INTERRUPT RETURN WORD.
                        .EJECT
```

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                        /TEST THAT AN INTERRRUPT FROM BANK 2 WITH EXT OFF, INTERRUPTS
                        /TO BANK 0, AND THAT EXT STATUS AND EPC BITS ARE STORED CORRECTLY.
04310   000144  T144    144
04311   004352          T145
04312   100350          JMS     TSTB2   /BANK 2 AVAILABLE?
04313   600230          JMP     CHAINA  /NO. SKIP TEST.
04314   707702          EEM             /ENTER EXT MODE
04315   100304          MOVE            /MOVE TEST WORDS TO BANK 2
04316   004343          T144W
04317   045031          LOCB2
04320   777775          -3
04321   100304          MOVE            /MOVE BANK 2 INTERRUPT TRAP
04322   004346          T144WA
04323   040001          L1B2
04324   777775          -3
04325   204351          LAC     T144WB  /SET UP INTERRUPT RETURN
04326   040001          DAC     1
04327   707702  T144A    EEM             /ENTER EXT MODE.
04330   100365          JMS     STFLG   /SET TTY POINTER FLAG.
04331   620132          JMP*    B2LOC   /GO TO BANK2 AND START TEST.
04332   740040  T144B    HLT             /ERROR. INTERRUPTED TO LOC 0
04333   604341          JMP     T144D   /OF BAK 2.
04334   200000  T144C    LAC     0       /GET C (LOC0)
04335   500175          AND     K260K   /ISOLATE BITS 1,3 AND 4.
04336   240170          XOR     K40K
04337   740200          SZA             /BIT1=0 AND 3,4=10?
04340   740040          HLT             /NO. ERROR. EXT MODE AND/OR
                                        /EPC BITS INCORRECTLY STORED.
04341   100216  T144D    JMS     CHAIN   /CHAIN. SEE IF DONE.
04342   604327          JMP     T144A   /NOT DONE. REPEAT TEST.
04343   707704  T144W    LEM             /BANK 2 TEST WORDS. LEAVE EXT MODE
04344   700042          ION             /ENABLE INTERRUPT.
04345   605033          JMP     LOC+2   /WAIT FOR INTERRUPT.
04346   707702  T144WA   EEM             /BANK 2 INTERRRUPT TRAP.
04347   620003          JMP*    L1+2
04350   004332          T144B
04351   604334  T144WB   JMP     T144C   /INTERRUPT RETURN WORD.
                        .EJECT
```

```
                        /TEST THAT AN INTERRUPT FROM BANK 2 WITH EXT ON, STORES
                        /EXT STATUS AND EPC BITS CORRECTLY.
04352   000145  T145    145
04353   004402          T146
04354   100350          JMS     TSTB2   /BANK 2 AVAILABLE?
04355   600230          JMP     CHAINA  /NO. SKIP TEST.
04356   707702          EEM             /ENTER EXT MODE
04357   100304          MOVE            /MOVE TEST WORDS TO BANK 2.
04360   004377          T145W
04361   045031          LOCB2
04362   777776          -2
04363   204401          LAC     T145WA  /SET UP INTERRUPT RETURN.
04364   040001          DAC 1
04365   707702  T145A    FEM             /ENTER EXT MODE.
04366   100365          JMS     STFLG   /SET TTY PRINTER FLAG.
04367   620132          JMP*    B2LOC   /GO TO BANK 2 AND START TEST.
04370   200000  T145B    LAC     0       /GET C (LOC 0)
04371   500175          AND     K260K   /ISOLATE BITS 1,3 AND 4.
04372   240174          XOR     K240K
04373   740200          SZA             /BIT1=1 ANS 3,4=10?
04374   740040          HLT             /NO. ERROR. EXT MODE AND/OR
                                        /EPC BITS INCORRECTLY STORED.
04375   100216          JMS     CHAIN   /CHAIN. SEE IF DONE.
04376   604365          JMP     T145A   /NOT DONE. REPEAT TEST.
04377   700042  T145W    ION             /BANK 2 TEST WORDS. INT ON
04400   605032          JMP     LOC+1   /WAIT FOR INTERRUPT.
04401   604370  T145WA   JMP     T145B   /INTERRUPT RETURN WORD.
                        .EJECT
```

```
                        /TEST THAT AN INTERRUPT FROM BANK 3 WITH EXT OFF, INTERRUPTS TO
                        /BANK 0, AND THAT EXT STATUS AND EPC BITS ARE STORED CORRECTLY.
04402   000146         T146    146
04403   004444                 T147
04404   100356                 JMS       TSTB3       /BANK 3 AVAILABLE?
04405   600230                 JMP       CHAINA      /NO. SKIP TEST.
04406   707702                 EEM                   /ENTER EXT MODE.
04407   100304                 MOVE                  /MOVE TEST WORDS TO BANK 3
04410   004435                 T146W
04411   065031                 LOCB3
04412   777775                 -3
04413   100304                 MOVE                  /MOVE BANK 3 INTERRUPT TRAP.
04414   004440                 T146WA
04415   060001                 L1B3
04416   777775                 -3
04417   204443                 LAC       T146WB      /SET UP INTERRUPT RETURN.
04420   040001                 DAC       1
04421   707702         T146A   EEM                   /ENTER EXT MODE.
04422   100365                 JMS       STFLG       /SET TTY PRINTER FLAG
04423   620133                 JMP*      B3LOC       /GO TO BANK 3 AND START TEST.
04424   740040         T146B   HLT                   /ERROR. INTERRUPTED TO LOC 0
04425   604433                 JMP       T146D       /OF BANK 3.
04426   200000         T146C   LAC       0           /GET C(LOC0)
04427   500175                 AND       K260K       /ISOLATE BITS 1,3 AND 4.
04430   240171                 XOR       K60K
04431   740200                 SZA                   /BIT1=0 AND 3,4=11?
04432   740040                 HLT                   /NO. ERROR. EXT MODE AND/OR
                                                     /EPC BITS INCORRECTLY STORED.
04433   100216         T146D   JMS       CHAIN       /CHAIN. SEE IF DONE
04434   604421                 JMP       T146A       /NOT DONE. REPEAT TEST
04435   707704         T146W   LEM                   /BANK 3 TEST WORDS. LEAVE EXT MODE.
04436   700042                 ION                   /ENABLE INTERRUPT
04437   605033                 JMP       LOC+2       /WAIT FOR INTERRUPT
04440   707702         T146WA  EEM                   /BANK 3 INTERRUPT TRAP.
04441   620003                 JMP*      L1+2
04442   004424                 T146B
04443   604426         T146WB  JMP       T146C       /INTERRUPT RETURN WORD.
                               .EJECT
```

```
                        /TEST THAT AN INTERRUPT FROM BANK 3 WITH EXT ON, STORES
                        /EXT STATUS AND EPC BITS CORRECTLY.
04444   000147  T147    147
04445   004474          T150
04446   100356          JMS     TSTB3           /BANK 3 AVAILABLE?
04447   600230          JMP     CHAINA          /NO. SKIP TEST.
04450   707702          EEM                     /ENTER EXT MODE.
04451   100304          MOVE                    /MOVE TEST WORDS TO BANK 3.
04452   004471          T147W
04453   065031          LOCB3
04454   777776          -2
04455   204473          LAC     T147WA          /SET UP INTERRUPT RETURN
04456   040001          DAC     1
04457   707702  T147A   EEM                     /ENTER EXT MODE.
04460   100365          JMS     STFLG           /SET TTY PRINTER FLAG.
04461   620133          JMP*    B3LOC           /60 TO BANK 3 AND START TEST.
04462   200000  T147B   LAC     0               /GET C(LOC0)
04463   500175          AND     K260K           /ISOLATE BITS 1,3,AND 4.
04464   240175          XOR     K260K
04465   740200          SZA                     /BIT 1=1 AND 3,4=11?
04466   740040          HLT                     /NO. ERROR. EXT MODE AND/OR
                                                /EPC BITS INCORRECTLY STORED.
04467   100216          JMS     CHAIN           /CHAIN. SEE IF DONE.
04470   604457          JMP     T147A           /NOT DONE. REPEAT TEST.
04471   700042  T147W   ION                     /BANK 3 TEST WORDS. INTERRUPT ON
04472   605032          JMP     LOC+1           /WAIT FOR INTERRUPT
04473   604462  T147WA  JMP     T147B           /INTERRUPT RETURN WORD.
                        .EJECT
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                                /TEST THAT EMIR SETS EXT MODE ON
     04474     000150          T150      150
     04475     004503                    T151
     04476     707742                    EMIR                             /EMIR
     04477     707701                    SEM                              /EXT MODE ON?
     04500     740040                    HLT                              /NO. ERROR. EMIR FAILED TO SET IT.
     04501     100216                    JMS       CHAIN                  /CHAIN. SEE IF DONE.
     04502     604476                    JMP       T150+2                 /NOT DONE. REPEAT TEST
                                /
                                /TEST THAT EMIR RESTORES TO EXT MODE OFF
     04503     000151          T151      151
     04504     004515                    T152
     04505     707742                    EMIR
     04506     624514                    JMP*      T151W
     04507     707701          T151A     SEM
     04510     741000                    SKP
     04511     740040                    HLT
     04512     100216                    JMS       CHAIN
     04513     604517                    JMP       T152+2
     04514     004507          T151W     T151A
                                /
                                /TEST THAT EMIR RESTORES TO EXT MODE ON
     04515     000152          T152      152
     04516     777777                    -1
     04517     707742                    EMIR
     04520     624525                    JMP*      T152W
     04521     707701          T152A     SEM
     04522     740040                    HLT
     04523     100216                    JMS       CHAIN
     04524     604517                    JMP       T152+2
     04525     204521          T152W     T152A+200000
                                         .EJECT
```

```
                        /OPTIONAL TEST. TESTS THAT AUTO INDEXING WORKS AS IN
                        /THE PDP-9, WITH SWITCH IN PDP-9 POSITION.
                        /TEST AUTO-INDEX FROM BANK1 WITH EXT OFF .LOC10 AUTO INDEX IS USED.
04526   000000  AT0     0
04527   004577          AT.
04530   707702          EEM
04531   100304          MOVE                    /ENTER EXT MODE
04532   004556          AT0W                    /MOVE TEST WORDS TO BANK 1
04533   025031          LOCB1
04534   777763          -15
04535   100304          MOVE
04536   004573          AT0WA                   /SET UP TRAP FOR INCORRECT AUTO
04537   005033          LOCB0+2                 /INDEX RETURN TO BANK 0 INSTEAD OF BANK 1.
04540   777776          -2
04541   707702  AT0A    EEM
04542   204575          LAC-5033        AT0WB   /ENTER EXT MODE.
04543   040010          DAC             L10B0   /LOAD AUTO-INDEX REG 10 IN
04544   204576          LAC 5040        AT0WC   /BANK 0.
04545   060144          DAC*            B1L10   /LOAD LOC 10 IN BANK 1
04546   620131          JMP*            B1LOC
04547   740040  AT0B    HLT                     /GO TO BANK 1 AND START TEST
04550   604554          JMP             AT0E    /ERROR. AUTO INDEXING REFERENCED
04551   740040  AT0C    HLT                     /BANK 1 INSTEAD OF BANK 0.
04552   604554          JMP             AT0E    /ERROR, FAILED TO INCREMENT
04553   740040  AT0D    HLT                     /AUTO-INDEXING REGISTER.
                                                /ERROR. AFTER AUTO-INDEXING
04554   100216  AT0E    JMS             CHAIN   /FAILED TO REF. BANK 1.
04555   604541          JMP             AT0A    /CHAIN. SEE IF DONE.
04556   707704  AT0W    LEM                     /NOT DONE. REPEAT TEST.
04557   620010          JMP*            L10     /TESTS WORDS. LEAVE EXT MODE
04560   605036          JMP             LOC+5   /JMP* BY LOC10 OF BANK 0.
04561   707702          EEM                     /FAILED TO INCR. AUTO-INDEX REG.
04562   625045          JMP*            LOC+14  /OK.
04563   707702          EEM                     /OK RETURN.
04564   625043          JMP*            LOC+12  /FAILED TO AUTO-INDEX
04565   707702          EEM                     /RETURN TO BANK 0.
04566   707702          EEM                     /FAILED
04567   625044          JMP*            LOC+13  /TO REFERENCE
04570   004551          AT0C                    /BANK 0. RETURN TO BANK 0
04571   004547          AT0B                    /FAILURE TO AUTO-INDEX RETURN ADDRESS.
04572   004554          AT0E                    /FAILURE TO REF BANK 0 RETURN ADDRESS.
04573   604553  AT0WA   JMP             AT0D    /OK RETURN ADDRESS.
04574   604553          JMP             AT0D    /ERROR TRAP IN CASE AUTO-INDEX RETURN
04575   005033  AT0WB   LOC+2                   /POINTS TO BANK 0 INSTEAD OF BANK 1.
04576   005040  AT0WC   LOC+7                   /L10B0 LOAD WORD
                        .EJECT                  /L10B1 LOAD WORD.
```

IN4=020010
131=025031

```
                        /TEST AUTO-INDEX FROM BANK1 WITH EXT ON.
                        /LOC10 AUTO-INDEX REG IS USED.
04577   000001  AT1     1
04600   004624          AT2
04601   737702          FEM                     /ENTER EXT MODE.
04602   100304          MOVE                    /MOVE TEST WORDS TO BANK 1
04603   004617          AT1W
04604   025031          LOCB1
04605   777775          -3
04606   204622          LAC     AT1WA           /TEST WORD TO LOCB0+1
04607   045032          DAC     LOCB0+1
04610   737702  AT1A    FEM                     /ENTER EXT MODE
04611   204623          LAC     AT1WB           /LOAD LOC 10 OF BANK 0
04612   040010          DAC     L10B0
04613   620131          JMP*    B1LOC           /GO TO BANK 1 AND START TEST.
04614   740040  AT1B    HLT                     /ERROR, AUTO-INDEX RETURN POINTED
                                                /TO BANK 1 INSTEAD OF BANK0.
04615   100216  AT1C    JMS     CHAIN           /CHAIN, SEE IF DONE.
04616   604610          JMP     AT1A            /NOT DONE, REPEAT TEST
04617   620010  AT1W    JMP*    L10             /TEST WORDS, JMP* BY AUTO REG 10
04620   625033          JMP*    LOC+2           /ERROR RETURN, SHOULD HAVE GONE
04621   004614          AT1B                    /TO BANK 0.
04622   604615  AT1WA   JMP     AT1C            /BANK 0 OK RETURN
04623   005031  AT1WB   LOCB0                   /L10B0 LOAD WORD.
                        .EJECT
```

```
                        /TEST AUTO-INDEX FROM BANK 2 WITH EXT OFF. LOC10 AUTO-INDEX IS USED.
04624   000002  AT2     2
04625   004677          AT4
04626   100350          JMS     TSTB2           /BANK 2 AVAILABLE?
04627   600230          JMP     CHAINA          /NO. SKIP TEST
04630   707702          EEM                     /ENTER EXT MODE.
04631   100304          MOVE                    /MOVE TEST WORDS TO BANK 2.
04632   004656          AT2W
04633   045031          LOCB2
04634   777763          -15
04635   100304          MOVE
04636   004673          AT2WA                   /SET UP TRAP FOR INCORRECT AUTO-INDEX
04637   005033          LOCB0+2                 /RETURN TO BANK 0 INSTEAD OF BANK 2.
04640   777776          -2
04641   707702  AT2A    EEM                     /ENTER EXT MODE.
04642   204675          LAC     AT2WB           /LOAD AUTO-INDEX REG 10.
04643   040010          DAC     L10B0
04644   204676          LAC     AT2WC           /LOAD LOC 10 IN BANK 2.
04645   060145          DAC*    B2L10
04646   620132          JMP*    B2LOC           /GO TO BANK 2 AND START TEST.
04647   740040  AT2B    HLT                     /ERROR. AUTO-INDEX REFERENCED
04650   604654          JMP     AT2E            /BANK 2 INSTEAD OF BANK 0.
04651   740040  AT2C    HLT                     /ERROR. FAILED TO INCREMENT
04652   604654          JMP     AT2E            /AUTO-INDEX REGISTER.
04653   740040  AT2D    HLT                     /ERROR. FAILED TO REFERENCE BANK 2
                                                /AFTER AUTO-INDEX.
04654   100216  AT2E    JMS     CHAIN           /CHAIN. SEE IF DONE.
04655   604641          JMP     AT2A            /NOT DONE. REPEAT TEST.
04656   707704  AT2W    LEM                     /TEST WORDS. LEAVE EXT MODE.
04657   620010          JMP*    L10             /JMP* BY LOC 10
04660   605036          JMP     LOC+5           /FAILED TO INCR AUTO-INDEX REG.
04661   707702          EEM                     /OK.
04662   625045          JMP*    LOC+14          /OK RETURN
04663   707702          EEM                     /FAILED TO AUTO INDEX
04664   625043          JMP*    LOC+12          /RETURN TO BANK 0
04665   707702          EEM                     /FAILED
04666   707702          EEM                     /TO REFERENCE
04667   625044          JMP*    LOC+13          /BANK 0. RETURN TO BANK 0
04670   004651          AT2C                    /FAILURE TO AUTO-INDEX RETURN ADDR.
04671   004647          AT2B                    /FAILURE TO REF BANK 0 RETURN ADDR.
04672   004654          AT2E                    /OK RETURN ADDR.
04673   604653  AT2WA   JMP     AT2D            /ERROR TRAP IN CASE AUTO-INDEX RETURN
04674   604653          JMP     AT2D            /POINTS TO BANK 0 INSTEAD OF BANK 2.
04675   005033  AT2WB   LOC+2                   /L10B0 LOAD WORD.
04676   005040  AT2WC   LOC+7                   /L10B2 LOAD WORD.
                        .EJECT
```

```
                        /TEST AUTO-INDEX FROM BANK 2 WITH EXT ON.
                        /LOC 10 AUTO-INDEX REG IS USED.
04677   000003  AT3     3
04700   004726          AT4
04701   100350          JMS       TSTB2         /BANK 2 AVAILABLE?
04702   600230          JMP       CHAINA        /NO. SKIP TEST
04703   707702          EEM                     /ENTER EXT MODE.
04704   100304          MOVE                    /MOVE TEST WORDS TO BANK 2.
04705   004721          AT3W
04706   045031          LOCB2
04707   777775          -3
04710   204724          LAC       AT3WA         /TEST WORD TO LOCB0+1
04711   045032          DAC       LOCB0+1
04712   707702  AT3A    EEM                     /ENTER EXT MODE.
04713   204725          LAC       AT3WR         /LOAD LOC 10 OF BANK 0
04714   040010          DAC       L10B0
04715   620132          JMP*      B2LOC         /GO TO BANK 2 AND START TEST.
04716   740040  AT3B    HLT                     /ERROR. AUTO-INDEX RETURN POINTED
                                                /TO BANK 2 INSTEAD OF BANK 0.
04717   100216  AT3C    JMS       CHAIN         /CHAIN. SEE IF DONE.
04720   604712          JMP       AT3A          /NOT DONE. REPEAT TEST.
04721   620010  AT3W    JMP*      L10           /TEST WORDS. JMP* BY AUTO SEQ 10
04722   625033          JMP*      LOC+2         /ERROR RETURN. SHOULD HAVE
04723   004716          AT3B                    /GONE TO BANK 0.
04724   604717  AT3WA   JMP       AT3C          /BANK 0 OK RETURN.
04725   005031  AT3WR   LOCB0                   /L10B0 LOAD WORD.
                        .EJECT
```

```
                        /TEST AUTO-INDEX FROM BANK 3 WITH EXT OFF.
                        /LOC 10 AUTO-INDEX REG IS USED
04726   000004 AT4     4
04727   005001         AT5
04730   100356         JMS       TSTB3       /RANK 3 AVAILABLE?
04731   600230         JMP       CHAINA      /NO. SKIP TEST.
04732   707702         EEM                   /ENTER EXT MODE.
04733   100304         MOVE                  /MOVE TEST WORDS TO BANK 3.
04734   004760         AT4W
04735   065031         LOCB3
04736   777763         -15
04737   100304         MOVE
04740   004775         AT4WA                 /SET UP TRAP FOR INCORRECT AUTO-INDEX
04741   005033         LOCB0+2               /RETURN TO BANK 0 INSTEAD OF BANK 3.
04742   777776         -2
04743   707702 AT4A    EEM                   /ENTER EXT MODE.
04744   204777         LAC       AT4WB       /LOAD AUTO-INDEX REG 10
04745   040010         DAC       L10B0
04746   205000         LAC       AT4WC       /LOAD LOC 10 IN BANK 3.
04747   060146         DAC*      B3L10
04750   620133         JMP*      B3LOC       /GO TO BANK 3 AND START TEST.
04751   740040 AT4B    HLT                   /ERROR. AUTO-INDEX REFERENCED BANK 3
04752   604756         JMP       AT4E        /INSTEAD OF BANK 0.
04753   740040 AT4C    HLT                   /ERROR. FAILED TO INCREMENT
04754   604756         JMP       AT4E        /AUTO-INDEX REG.
04755   740040 AT4D    HLT                   /ERROR. FAILED TO REFERENCE BANK 3
                                             /AFTER AUTO-INDEX.
04756   100216 AT4E    JMS       CHAIN       /CHAIN. SEE IF DONE
04757   604743         JMP       AT4A        /NOT DONE. REPEAT TEST.
04760   707704 AT4W    LEM                   /TEST WORDS. LEAVE EXT MODE.
04761   620010         JMP*      L10         /JMP* BY LOC 10
04762   605036         JMP       LOC+5       /FAILED TO INCR AUTO-INDEX REG.
04763   707702         EEM                   /OK.
04764   625045         JMP*      LOC+14      /OK RETURN.
04765   707702         EEM                   /FAILURE TO AUTO-INDEX RETURN TO
04766   625043         JMP*      LOC+12      /BANK 0.
04767   707702         EEM                   /FAILURE TO REFERENCE BANK 0.
04770   707702         EEM                   /RETURN TO BANK 0.
04771   625044         JMP*      LOC+13
04772   004753         AT4C                  /FAILURE TO AUTO INDEX RETURN ADDR.
04773   004751         AT4B                  /FAILURE TO REF BANK 0 RETURN ADDR.
04774   004756         AT4E                  /OK RETURN ADDR.
04775   604755 AT4WA   JMP       AT4D        /ERROR TRAP IN CASE AUTO-INDEX RETURN
04776   604755         JMP       AT4D        /POINTS TO BANK 0 INSTEAD OF BANK 3.
04777   005033 AT4WB   LOC+2                 /LOC10B0 LOAD WORD
05000   005040 AT4WC   LOC+7                 /L10B3 LOAD WORD.
                       .EJECT
```

```
                        /TEST AUTO-INDEX FROM BANK 3 WITH EXT ON
                        /LOC 10 AUTO-INDEX REG IS USED.
05021   000005  AT5     5
05022   777777          -1
05023   100356          JMS     TSTB3           /BANK 3 AVAILABLE
05024   600230          JMP     CHAINA          /NO. SKIP TEST.
05025   707702          EEM                     /ENTER EXT MODE
05026   100304          MOVE                    /MOVE TEST WORDS TO BANK 3
05027   005023          AT5W
05030   065031          LOCB3
05031   777775          -3
05032   205026          LAC     AT5WA           /TEST WORD TO LOCB0+1
05033   045032          DAC     LOCB0+1
05034   707702  AT5A    EEM                     /ENTER EXT MODE.
05035   205027          LAC     AT5WB           /LOAD LOC 10 OF BANK 0
05036   040010          DAC     L10B0
05037   620133          JMP*    R3LOC           /GO TO BANK 3 AND START TEST.
05040   740040  AT5B    HLT                     /ERROR. AUTO INDEXING RETURN
                                                /POINTED TO BANK 3 INSTEAD OF BANK 0.
05041   100216  AT5C    JMS     CHAIN           /CHAIN, SEE IF DONE
05042   605014          JMP     AT5A            /NOT DONE, REPEAT TEST.
05043   620010  AT5W    JMP*    L10             /TEST WORDS. JMP* BY AUTO REG 10
05044   625033          JMP*    LOC+2           /ERROR RETURN, SHOULD HAVE GONE
05045   005020          AT5B                    /TO BANK 0
05046   605021  AT5WA   JMP     AT5C            /BANK 0 OK RETURN
05047   005031  AT5WB   LOCB0                   /L10B0 LOAD WORD.
                        /
05050   000000  DEND    0
        000000          .END
                        NO ERROR LINES
```

```
AT0          04526
AT0A         04541
AT0B         04547
AT0C         04551
AT0D         04553
AT0E         04554
AT0W         04556
AT0WA        04573
AT0WB        04575
AT0WC        04576
AT1          04577
AT1A         04610
AT1B         04614
AT1C         04615
AT1W         04617
AT1WA        04622
AT1WB        04623
AT2          04624
AT2A         04641
AT2B         04647
AT2C         04651
AT2D         04653
AT2E         04654
AT2W         04656
AT2WA        04673
AT2WB        04675
AT2WC        04676
AT3          04677
AT3A         04712
AT3B         04716
AT3C         04717
AT3W         04721
AT3WA        04724
AT3WB        04725
AT4          04726
AT4A         04743
AT4B         04751
AT4C         04753
AT4D         04755
AT4E         04756
AT4W         04760
AT4WA        04775
AT4WB        04777
AT4WC        05000
AT5          05001
AT5A         05014
AT5B         05020
AT5C         05021
AT5W         05023
AT5WA        05026
AT5WB        05027
BELL         00176
B0LOC        00130
B0L0         00137
B0L10        00143
```

```
B0L20       00147
B1LOC       00131
B1L0        00140
B1L1        00134
B1L10       00144
B1L20       00150
B2LOC       00132
B2L0        00141
B2L1        00135
B2L10       00145
B2L20       00151
B3LOC       00133
B3L0        00142
B3L1        00136
B3L10       00146
B3L20       00152
CHAIN       00216
CHAINA      00230
CLOF       700004
CLON       700044
CLSF       700001
CTRA        00161
CTRB        00162
CURTST      00157
DEND        05030
EMIR       707742
FADDR       00326
FORWD       00247
GETRDY      00210
KRB        700312
KSF        700301
KSTART      00153
K1          00164
K2          00165
K20K        00167
K200K       00172
K220K       00173
K240K       00174
K260K       00175
K3          00166
K40K        00170
K60K        00171
LOC        005031
LOCB0      005031
LOCB1      025031
LOCB2      045031
LOCB3      065031
L0         000000
L0B0       000000
L0B1       020000
L0B2       040000
L0B3       060000
L1         000001
L1B1       020001
L1B2       040001
```

L1B3	060021
L10	000010
L10BV	000010
L10B1	020010
L10B2	040010
L10B3	060010
L20	000020
L20B0	000020
L20B1	020020
L20B2	040020
L20B3	060020
MCTR	00330
MOVE	100304
MOVEA	00316
MOVVE	00304
M1	00163
NXTST	00156
PCF	700202
PSA	700204
PSB	700244
PSF	700201
P0STRT	00154
P1STRT	00155
RCF	700102
RRB	700112
RSA	700104
RSB	700144
RSF	700101
RTNNO	00177
SBKNUM	00331
SETA	100274
SETLOC	100263
START	00202
STCTA	00274
STCTR	00263
STFLG	00365
STP0	00375
STP1	00377
TADDR	00327
TCF	700402
TEMP	00160
TLS	700406
TSF	700401
TSTB2	00350
TSTB3	00356
T0	00402
T1	00412
T10	00532
T100	02475
T100A	02507
T100B	02513
T100W	02512
T101	02523
T101A	02535
T101W	02543

T102 02550
T102A 02557
T102W 02565
T103 02567
T103A 02577
T103W 02605
T104 02607
T104A 02617
T104W 02623
T105 02625
T105A 02635
T105W 02643
T106 02645
T106A 02655
T106W 02671
T107 02674
T107A 02713
T107B 02715
T107C 02716
T107W 02720
T107WA 02722
T107WB 02726
T11 00550
T110 02730
T110A 02744
T110W 02752
T110WA 02760
T111 02762
T111A 02776
T111W 03004
T111WA 03012
T112 03015
T112A 03032
T112B 03034
T112C 03036
T112D 03037
T112W 03041
T112WA 03042
T112WB 03046
T113 03052
T113A 03064
T113W 03074
T113WA 03075
T114 03077
T114A 03111
T114W 03120
T114WA 03121
T115 03124
T115A 03145
T115B 03147
T115C 03150
T115W 03152
T115WA 03154
T115WB 03160
T116 03162

T130WA	03627
T131	03632
T131A	03647
T131B	03655
T131C	03657
T131D	03661
T131E	03662
T131W	03664
T131WA	03701
T131WB	03702
T131WC	03703
T131WD	03704
T132	03705
T132A	03724
T132B	03732
T132C	03734
T132D	03736
T132E	03737
T132W	03741
T132WA	03756
T132WB	03757
T132WC	03760
T132WD	03761
T133	03762
T133A	04001
T133B	04007
T133C	04011
T133D	04013
T133E	04014
T133W	04016
T133WA	04033
T133WB	04034
T133WC	04035
T133WD	04036
T134	04037
T134A	04050
T134B	04054
T134C	04055
T134W	04057
T134WA	04062
T134WB	04063
T135	04064
T135A	04077
T135B	04103
T135C	04104
T135W	04106
T135WA	04111
T135WB	04112
T136	04113
T136A	04126
T136B	04132
T136C	04133
T136W	04135
T136WA	04140
T136WB	04141

T137	04142
T137A	04146
T137B	04153
T137W	04162
T14	00626
T140	04163
T140A	04167
T140B	04173
T140W	04203
T141	04204
T141A	04210
T141B	04214
T141W	04221
T142	04222
T142A	04237
T142B	04242
T142C	04244
T142D	04251
T142W	04253
T142WA	04256
T142WB	04261
T143	04262
T143A	04273
T143B	04276
T143W	04305
T143WA	04307
T144	04310
T144A	04327
T144B	04332
T144C	04334
T144D	04341
T144W	04343
T144WA	04346
T144WB	04351
T145	04352
T145A	04365
T145B	04370
T145W	04377
T145WA	04401
T146	04402
T146A	04421
T146B	04424
T146C	04426
T146D	04433
T146W	04435
T146WA	04440
T146WB	04443
T147	04444
T147A	04457
T147B	04462
T147W	04471
T147WA	04473
T15	00646
T150	04474
T151	04503

```
T151A       04507
T151W       04514
T152        04515
T152A       04521
T152W       04525
T16         00666
T17         00706
T2          00421
T20         00723
T21         00740
T22         00757
T23         00776
T23A        01006
T23B        01011
T23W        01013
T24         01015
T24A        01026
T24B        01031
T24W        01033
T25         01036
T25W        01053
T26         01054
T26W        01072
T27         01073
T27A        01104
T27B        01107
T27W        01111
T3          00432
T30         01114
T30A        01125
T30B        01130
T30W        01132
T31         01137
T31A        01146
T31W        01151
T32         01152
T32A        01163
T32B        01166
T32W        01170
T33         01175
T33W        01212
T34         01216
T34W        01234
T35         01235
T35W        01255
T36         01257
T36W        01276
T37         01277
T37W        01320
T4          00451
T40         01322
T40A        01333
T40W        01336
T41         01342
T41A        01360
```

```
T41W        01363
T41WA       01365
T42         01367
T42A        01402
T42B        01405
T42W        01407
T43         01414
T43W        01433
T44         01437
T44W        01457
T45         01460
T45W        01502
T46         01504
T46W        01525
T47         01526
T47W        01551
T5          00465
T50         01553
T50A        01566
T50W        01571
T51         01575
T51A        01621
T51W        01624
T51WA       01626
T51WB       01630
T52         01633
T52A        01646
T52B        01651
T52W        01653
T53         01660
T53W        01677
T54         01703
T54W        01723
T55         01724
T55W        01746
T56         01750
T56W        01771
T57         01772
T57W        02015
T6          00500
T60         02017
T60A        02032
T60W        02035
T61         02041
T61A        02071
T61W        02074
T61WA       02076
T61WB       02100
T62         02103
T63         02116
T64         02132
T65         02143
T66         02156
T66A        02166
    W       02173
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T67W	02217
T7	00515
T70	02225
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T70W	02240
T71	02251
T71A	02261
T71W	02267
T72	02274
T72A	02306
T72W	02313
T73	02322
T73A	02334
T73W	02341
T74	02347
T74A	02361
T74B	02362
T74W	02364
T75	02375
T75A	02407
T75W	02415
T76	02422
T76A	02434
T76W	02441
T77	02450
T77A	02462
T77W	02467

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L1          000001
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L1?B0       000010
L20         000020
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B2LOC        00132
B3LOC        00133
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B2L1         00135
B3L1         00136
B0L0         00137
B1L0         00140
B2L0         00141
B3L0         00142
B0L10        00143
B1L10        00144
B2L10        00145
B3L10        00146
B0L20        00147
B1L20        00150
B2L20        00151
B3L20        00152
KSTART       00153
P0STRT       00154
P1STRT       00155
NXTST        00156
CURTST       00157
TEMP         00160
CTRA         00161
CTRB         00162
M1           00163
K1           00164
K2           00165
K3           00166
K20K         00167
K40K         00170
K60K         00171
K200K        00172
K220K        00173
K240K        00174
K260K        00175
BELL         00176
RTNNO        00177
START        00202
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CHAIN        00216
CHAINA       00230
FORWD        00247
STCTR        00263
STCTA        00274
MOVE         00304
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T36W        01276
T37         01277
T37W        01320
T40         01322
T40A        01333
T40W        01336
T41         01342
T41A        01360
T41W        01363
T41WA       01365
T42         01367
T42A        01402
T42B        01405
T42W        01407
T43         01414
T43W        01433
T44         01437
T44W        01457
T45         01460
T45W        01502
T46         01504
T46W        01525
T47         01526
T47W        01551
T50         01553
T50A        01566
T50W        01571
T51         01575
T51A        01621
T51W        01624
T51WA       01626
T51WB       01630
T52         01633
T52A        01646
T52B        01651
T52W        01653
T53         01660
T53W        01677
T54         01703
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T57         01772
T57W        02015
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T63         02116
T64         02132
T65         02143
T66         02156
T66A        02166
T66W        02173
T67         02202
T67A        02212
T67W        02217
T70         02225
T70A        02235
T70B        02236
T70W        02240
T71         02251
T71A        02261
T71W        02267
T72         02274
T72A        02306
T72W        02313
T73         02322
T73A        02334
T73W        02341
T74         02347
T74A        02361
T74B        02362
T74W        02364
T75         02375
T75A        02407
T75W        02415
T76         02422
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T76W        02441
T77         02450
T77A        02462
T77W        02467
T100        02475
T100A       02507
T100B       02510
T100W       02512
T101        02523
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T101W       02543
T102        02550
T102A       02557
T102W       02565
T103        02567
T103A       02577
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T131WC	03703
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T132D	03736
T132E	03737
T132W	03741
T132WA	03756
T132WB	03757
T132WC	03760
T132WD	03761
T133	03762
T133A	04001
T133B	04007
T133C	04011
T133D	04013
T133E	04014
T133W	04016
T133WA	04033
T133WB	04034
T133WC	04035
T133WD	04036
T134	04037
T134A	04050
T134B	04054
T134C	04055
T134W	04057
T134WA	04062
T134WB	04063
T135	04064
T135A	04077
T135B	04103
T135C	04104
T135W	04106
T135WA	04111
T135WB	04112
T136	04113
T136A	04126
T136B	04132
T136C	04133
T136W	04135
T136WA	04140
T136WB	04141
T137	04142
T137A	04146
T137B	04153
T137W	04162
T140	04163
T140A	04167
T140B	04173
ØW	04203

T141	04204
T141A	04210
T141B	04214
T141W	04221
T142	04222
T142A	04237
T142B	04242
T142C	04244
T142D	04251
T142W	04253
T142WA	04256
T142WB	04261
T143	04262
T143A	04273
T143B	04276
T143W	04305
T143WA	04307
T144	04310
T144A	04327
T144B	04332
T144C	04334
T144D	04341
T144W	04343
T144WA	04346
T144WB	04351
T145	04352
T145A	04365
T145B	04370
T145W	04377
T145WA	04401
T146	04402
T146A	04421
T146B	04424
T146C	04426
T146D	04433
T146W	04435
T146WA	04440
T146WB	04443
T147	04444
T147A	04457
T147B	04462
T147W	04471
T147WA	04473
T150	04474
T151	04503
T151A	04507
T151W	04514
T152	04515
T152A	04521
T152W	04525
AT0	04526
AT0A	04541
AT0B	04547
AT0C	04551
AT0D	04553

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AT?W        04556
AT?WA       04573
AT?WB       04575
AT2WC       04576
AT1         04577
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AT1B        04614
AT1C        04615
AT1W        04617
AT1WA       04622
AT1WB       04623
AT2         04624
AT2A        04641
AT2B        04647
AT2C        04651
AT2D        04653
AT2E        04654
AT2W        04656
AT2WA       04673
AT2WB       04675
AT2WC       04676
AT3         04677
AT3A        04712
AT3B        04716
AT3C        04717
AT3W        04721
AT3WA       04724
AT3WB       04725
AT4         04726
AT4A        04743
AT4B        04751
AT4C        04753
AT4D        04755
AT4E        04756
AT4W        04760
AT4WA       04775
AT4WB       04777
AT4WC       05000
AT5         05001
AT5A        05014
AT5B        05020
AT5C        05021
AT5W        05023
AT5WA       05026
AT5WB       05027
DEND        05030
LOC        005031
LOCB?      005031
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L1?1       020001
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L20B1      020020
L?CB1      025031
  2        040000
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L20B2	040020
LOCB2	045031
L0B3	060000
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L10B3	060010
L20B3	060020
LOCB3	065031
SETLOC	100263
SETA	100274
MOVE	100304
CLSF	700001
CLOF	700004
CLON	700044
RSF	700101
RCF	700102
RSA	700104
RRB	700112
RSB	700144
PSF	700201
PCF	700202
PSA	700204
PSB	700244
KSF	700301
KRB	700312
TSF	700401
TCF	700402
TLS	700406
EMIR	707742