TABLE OF CONTENTS - 1130 MAINTENANCE DIAGNOSTICS

VOLUME 1

VOLUME 2

VOLUME 3

* THESE TESTS MUST USE THE BASIC DIAGNOSTIC LOADER: 03A3

** USE RELOCATING LOADER: 03AA OR 03AC

*** TAPE CONTAINS THE P.T. LOADER

EC HISTORY		TABLE OF CONTENTS
3JUN71	571152	MAINTENANCE DIAGNOSTICS
10APR72	571155	MACH 1131-C
		PART NO 5889435
		CLASSIFICATION

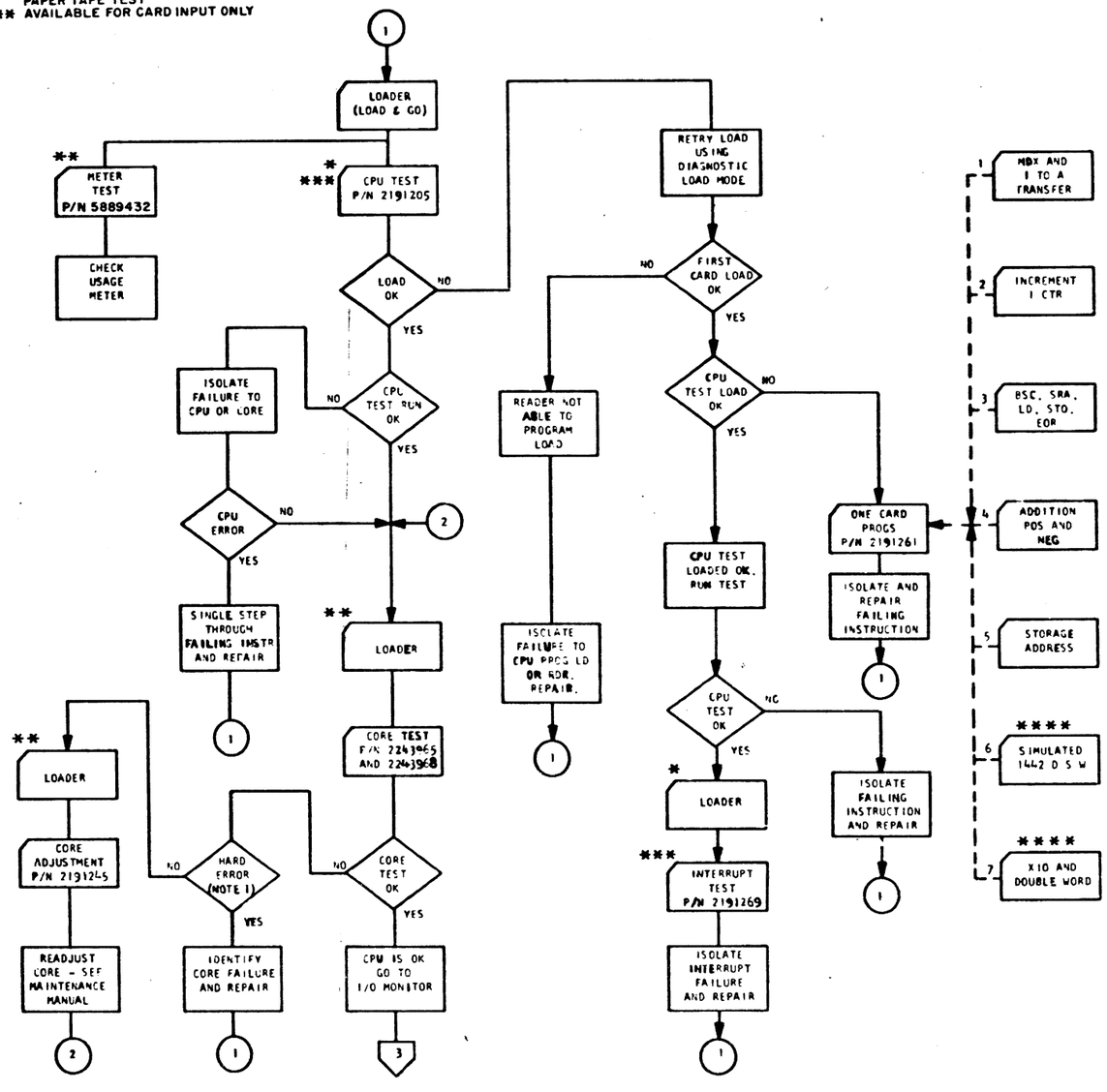
B

IBM CORP

IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1130 SYSTEM

CPU TEST INDEX

* 1442,1134 BASIC LOADER
** 1442,1134 RELOCATING LOADER
*** BASIC LOADER IS INCLUDED WITH PAPER TAPE TEST
**** AVAILABLE FOR CARD INPUT ONLY



DATE 2JUN71 6JUN72
EC NO 571152 571156

PART NO. 5889436

CPU NORMAL OPERATION SUMMARY

BASIC LOADER

1. LOAD AND GO MODE PROVIDES NORMAL LOAD FOR CPU AND INTERRUPT TESTS.
2. DIAGNOSTIC MODE USED ONLY WHEN LOAD AND GO MODE IS INOPERABLE. SEE DESCRIPTION FOR DIAGNOSTIC OPERATING INSTRUCTIONS

CPU TEST

1. SET ALL CONSOLE BIT SWITCHES OFF.
2. LOAD BASIC LOADER FOLLOWED BY CPU TEST DECK AND TWO BLANK CARDS.
3. PROG WILL LOAD AND STOP WITH B REG AT 3000 ADDR 0120.
4. SET ALL BIT SWITCHES TO FFFF AND PRESS PROG START.
5. PROG WILL STOP WITH B REG AT 3001 ADDR. 0284.
6. SET SWITCHES OFF PRESS START.
7. PROG WILL HALT WITH B REG AT 3002 ADDR. 02C5. SEE 3.2 FOR OPTIONS AND PRESS START
8. PROG WILL RUN APPROX 2 MIN. THEN STOP AT END OF TEST WITH B REG AT 3003 ADDR OF62.
9. ERRORS ARE INDICATED BY ERROR WAITS. SEE DESCRIPTION SECT. 3.5.

CORE TEST

1. SET ALL CONSOLE BIT SWITCHES TO ZERO.
2. LOAD RELOCATING LOADER FOLLOWED BY HI CORE TEST DECK, LO CORE TEST DECK AND TWO BLANK CARDS.
3. HI CORE WILL LOAD, AND HALT WITH B REG AT 3001. THE CORE SIZE WILL BE IN THE ACCUMULATOR
4. PRESS START HI CORE WILL RUN 5 MIN. FOR EACH 8K.
5. PRESS START, LO CORE WILL LOAD, HALT TO DISPLAY CORE SIZE, RUN APPROX. 2 MIN., THEN STOP AT END OF TEST WAIT 30FF, AT LOCATION 09CC.
6. ERRORS ARE INDICATED BY ERROR WAITS; SEE DESCRIPTION SECT. 3.5.

CORE ADJUSTMENT

1. USED ONLY WHEN A CORE VOLTAGE ADJUSTMENT IS NECESSARY. SEE DESCRIPTION.

ONE CARD PROGRAMS

1. USED ONLY WHEN PROGRAM LOAD IS FUNCTIONING, BUT THE BASIC DIAGNOSTIC LOADER IS UNABLE TO CORRECTLY LOAD THE CPU OR CORE TESTS. SEE DESCRIPTION FOR OPERATION.

INTERRUPT TEST

1. USED ONLY TO AID IN DIAGNOSING BASIC LOADER FAILURES IN LOAD AND GO MODE. SEE DESCRIPTION FOR OPERATION.

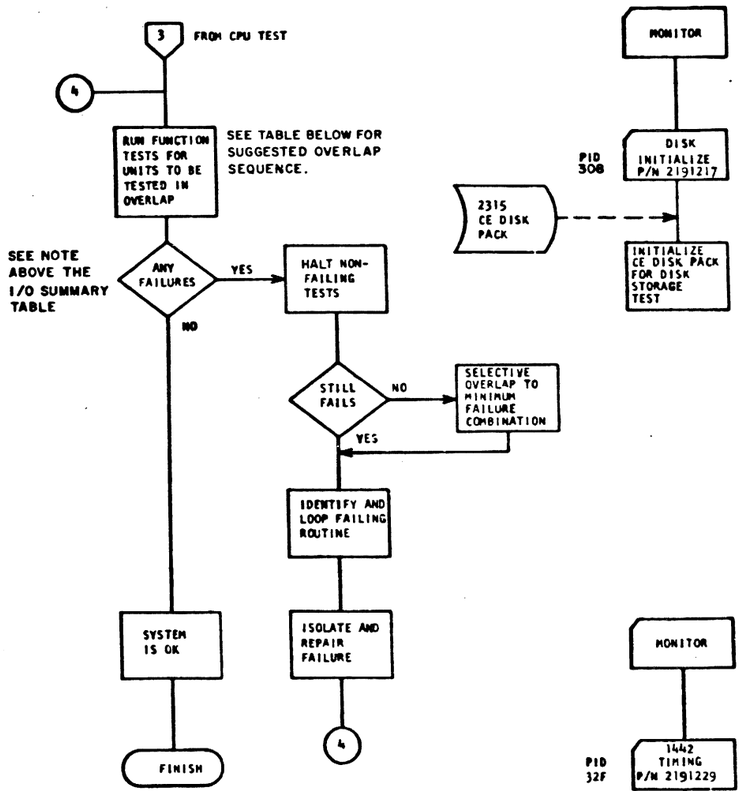
NOTE 1 A HARD ERROR IS A REPEATABLE ERROR WHICH IS CAUSED BY A HARDWARE FAILURE. A SOFT ERROR IS AN INTERMITTENT ERROR WHICH MAY BE CAUSED BY EITHER AN INTERMITTENT HARDWARE FAILURE OR BY MARGINAL CORE VOLTAGE ADJUSTMENT. THE DISTINCTION BETWEEN THE TWO IS DIFFICULT AND MUST BE LEFT TO THE DISCRETION OF THE INDIVIDUAL CE.

2. PART NUMBER IS THE SAME FOR BOTH CARD DECK OR PAPER TAPE PROGRAM. WHEN ORDERING SPECIFY CARD OR TAPE

3. CONTROL OPTION BIT SWITCH SETTINGS ARE FOUND IN THE PROGRAM DESCRIPTION

I/O TEST INDEX

P/N 5889437



PID	NAME	P/N	COMMENTS
300	MONITOR	2191201	
304	KB/PRINTER	2191241	
305	1627 PLOTTER	2191237	
32D	DISK F.T.	5889426	
32C	1132 PRINTER	5889423	
30F	1442-VI, VII	2191225	
308	1134/1055	2191233	

MONITOR CONTROLLED I/O TEST NORMAL OPERATION SUMMARY

1. FOR CARD SYSTEM-PLACE RELOCATING LOADER, FOLLOWED BY MONITOR II AND I/O TESTS IN THE DESIRED RUN SEQUENCE IN THE CARD READER AND MAKE READER READY.
   - A. TO RUN TESTS ON AN INDIVIDUAL TEST BASIS, PLACE A BLANK CARD AFTER EACH I/O TEST DECK.
   - B. TO RUN TESTS IN OVERLAP MODE, PLACE A BLANK CARD AFTER THE LAST I/O TEST DECK.
   - C. TO STOP MONITOR AFTER ALL PROGRAMS ARE LOADED, PLACE BIT SW 15 ON BEFORE LOADING, PRESS STOP, RESET AND PROGRAM LOAD.
2. A STATUS MESSAGE WILL PRINT OUT AFTER EACH I/O TEST IS LOADED. THIS MESSAGE WILL INDICATE LOADING SEQUENCE NUMBER OF THE TEST, THE PROGRAM ID (PID) NUMBER, THE STARTING ADDRESS IN STORAGE AND THE RELOCATION FACTOR.
3. CONTROL OPTIONS MAY BE ENTERED AT ANY TIME. THIS IS FUNCTION 0 AND IS EFFECTIVE WHEN BIT SWITCH 0 AND 1 ARE OFF. IF BIT SWITCHES 4,5,6 AND 7 ARE OFF MONITOR IS ADDRESSED BUT WHEN THESE SWITCHES ARE SET TO A LOADING SEQUENCE NUMBER, THAT I/O TEST IS BEING ADDRESSED. CONTROL OPTIONS AND SWITCH SETTINGS ARE:

   8 - RESTART 10 - LOCK ON FUNCTION 12 - LOOP ON ERROR (ONCE PER ERROR) 14 - HALT ON ERROR
   9 - PRINT RTN ID 11 - LOOP ON PROGRAM 13 - BYPASS ERROR PRINT OUT 15 - HALT
4. TO STOP ALL PROGRAMS, PRESS PROGRAM STOP, MONITOR WILL WAIT (3001) AT ADDRESS 040C.
5. TO RESTART AFTER PROGRAM STOP, PRESS PROGRAM START. MONITOR HAS SAVED THE STATUS OF TESTS.
6. TO STOP ANY ONE PROGRAM (WHILE OVERLAPPING), SET BIT SWS TO ON01 AND PRESS INT. REQ. KEY. N=LOAD SEQUENCE NUMBER
7. TO RESTART ANY ONE PROGRAM, SET BIT SWS TO ON80 AND PRESS INTERRUPT REQUEST KEY. N = LOAD SEQUENCE NUMBER
8. ERROR TYPE OUTS ARE EXPLAINED IN SECTION 4.2 OF EACH I/O DESCRIPTION.
9. AS EACH TEST REACHES ITS NORMAL END A MESSAGE WILL BE TYPED OUT. FOR EXAMPLE XXXX END, WHERE XXXX = PID

NOTE: THERE ARE TIME DEPENDENT DEVICES WHICH MUST BE SERVICED WITHIN A SPECIFIED TIME LIMIT AFTER AN INTERRUPT OCCURS. IF THESE LIMITS ARE NOT COMPLIED WITH, DATA WILL BE LOST BETWEEN THE PROCESSOR AND THE I/O DEVICE. THESE TYPES OF ERRORS OCCUR WHEN ANOTHER DEVICE'S PROGRAM KEEPS CONTROL IN MAINLINE OR INTERRUPTROUTINE FOR EXTENDED PERIODS OF TIME.

PROGRAMS WITH A HIGH RATE OF INTERRUPTS MAY CAUSE OTHER PROGRAMS TO LOSE MAINLINE CONTROL. THIS LOSS OF CONTROL BETWEEN AN XIO READ, WRITE OR CONTROL AND AN XIC SENSE DEVICE MAY CAUSE FALSE DSW ERRORS. THIS TYPE OF ERROR SAYS THE DEVICE SHOULD HAVE BEEN BUSY AND NOT READY. THE PROBLEM IS THE DEVICE HAS COMPLETED IT'S OPERATION, DROPPED BUSY AND BROUGHT UP READY BEFORE CONTROL WAS REGAINED BY THE PROGRAM INDICATING THE ERROR.
IF ANY OF THE TYPES OF ERRORS ABOVE ARE SUSPECTED IN OVERLAP, RUN THE FAILING TEST ALONE TO CHECK FOR TRUE ERRORS.

I/O SUMMARY TABLE

PROGRAM	PROG ID NO	CORE SIZE	OVER-LAP	RUN TIME	SPECIAL INSTRUCTIONS
RELOCATING LOADER - 1442	3AA	340	BASIC	-	CARD LOADER FOR MONITOR II
RELOCATING LOADER-1134	3AC	340	BASIC	-	PAPER TAPE LOADER IN FRONT OF MONITOR II ON PAPER TAPE
MONITOR II	300	1160	BASIC	-	PROVIDES BASIC CONTROL FOR ALL I/O
KEYBOARD PRINTER	304	1200	YES	4 MIN	FOR MANUAL KEYBOARD TESTS SEE SECTION 3.2.3.
1627 PLOTTER (SEE NOTE)	305	950	YES	9 MIN	FOR MANUAL CONTROL SEE SECTION 3.2.3.
DISK INITIALIZATION	308	2300	NO	7 MIN	USE ONCE TO INITIALIZE FE DISK PACK.
DISK FUNCTION TEST	32D	2350	YES	4 MIN	USE ONLY DISKS WHICH HAVE BEEN INITIALIZED.
1132 PRINTER	32C	2200	YES	7 MIN	USE CARRIAGE TAPE WITH 16 OR FEWER PUNCHED HOLES
1442 FUNCTION TEST	30F	1400	YES	NOT FIXED	ROUTINE 1-PUNCH AND FEED WILL PUNCH ONLY INTO BLANK CARDS.
1442 TIMING TEST	32F	1650	NO	NOT FIXED	ENTER 1442 MODEL-8105,8106 OR 8107
1134/1055 FUNCTION TEST	308	750	YES	3 MIN	TAPE MAY BE REPRODUCED BY FUNCTION 1 AND RTN 4

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1. PURPOSE

THE PURPOSE OF THE 1130 CENTRAL PROCESS UNIT FUNCTION TEST IS TO LOCATE FAILING INSTRUCTIONS. EACH SEPARATE CPU INSTRUCTION IS TESTED AND CHECKED FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS. FEATURES THAT ARE NOT UNIQUE TO AN OPERATION CODE (INDEXING, INDIRECT ADDRESSING, ETC.) ARE ALSO TESTED. I/O RELATED FEATURES (INTERRUPT, CYCLE STEAL, ETC.) ARE NOT TESTED.

```
*****************************************************************************
*          PROGRAM RUNNING TIME                                             *
*          2 USEC MACHINE - APPROXIMATELY 1 MINUTE                          *
*          4 USEC MACHINE - APPROXIMATELY 2 MINUTES                         *
*****************************************************************************
```

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE PROGRAM CAN BE OPERATED BY ITSELF BUT MUST BE LOADED BY THE 1130 BASIC DIAGNOSTIC LOADER.

2.2 EQUIPMENT PREREQUISITES

A. 1130 PC HAVING 4096-WORD STORAGE.
B. CARD READER OR PAPER TAPE READER.

3. USE PROCEDURE

3.1 PROGRAM LOADING

THE1130 CPU FUNCTION TEST (03A1) IS LOADED BY THE 1130 BASIC LOADER. SEE THE 1130 BASIC LOADER DOCUMENTATION FOR THE DESCRIPTION OF THE LOADING PROCEDURE.

3.2 PROGRAM OPERATION

AFTER THE PROGRAM IS LOADED THE FOLLOWING NORMAL WAITS OCCUR,

LOCATION B REG	SYMBOLIC	DESCRIPTION AND ACTION
3000	(X000)	START OF PROGRAM. SET ALL BIT SWITCHES ON. PRESS START.
3001	(X001)	TESTING OF BIT SWITCHES ON COMPLETE, TURN OFF, PRESS START.
3002	(X003)	TESTING OF BIT SWITCHES OFF COMPLETE SET IN OPTION, PRESS START.
3003	(X007)	PROGRAM COMPLETED. PUSH START TO RERUN PROGRAM. IF OTHER WAITS OCCUR, REFER TO SECTION 3.5 FOR ERROR ISOLATION.

ANY WAITS OTHER THAN THOSE ABOVE ARE ERROR WAITS.

WHEN AN ERROR WAIT IS OBTAINED,

1. SEE THE PROGRAM LISTING TO DETERMINE THE PROBLEM. ERROR WAITS ARE DOCUMENTED AT THE FRONT OF THE PROGRAM LISTING BY THE CONTENTS OF THE B REGISTER.
2. IF THE ERROR WAIT HAS B REGISTER LESS THAN 3069, THE OPERATOR CANNOT LOOP ON THAT ERROR. INSTEAD, THE OPERATOR SHOULD SINGLE INSTRUCTION STARTING AT THE BEGINNING OF THE FAILING ROUTINE TO DETERMINE THE EXACT FAILURE. (SECTION 3.5)

3. IF THE ERROR WAIT HAS B REGISTER GREATER THAN 3068, THE OPERATOR SHOULD, (SECTION 3.5)

   A. LOOP INSTRUCTION BEING TESTED (BIT SW 8 ON)
      OR IF A LARGER LOOP IS DESIRED
      LOCK ON ERROR (BIT SW 12 ON)
      OR
      LOOP ON ROUTINE (BIT SW 10 ON)
   B. SINGLE STEP TO LOCATE THE EXACT FAILURE.
   C. IF NO ERROR OCCURS, BYPASS THE ERROR WAIT (BIT SW 14 ON) AND USE A SCOPE TO DETERMINE THE FAILURE.

TABLE 1

DATA ENTRY SWITCHES (0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15)	DESCRIPTION
. . . . 1	BYPASS ERROR WAIT (SEE NOTE)
. . . . 1 .	LOCK ON ERROR
. . . . 1 . .	LOOP PROGRAM
. . . . 1 . . .	LOOP ON ROUTINE
. . . . 1	LOOP ON INSTRUCTION BEING TESTED
1	BYPASS MPL/DIV TEST

NOTE- IF ERROR OCCURS, BITS 12 OR 8 MUST BE ON TO MAKE BIT 14 EFFECTIVE.

3.3 TERMINATION

NORMAL TERMINATION OCCURS WITH PROGRAM STOPPING AT WAIT WITH B REG = 3003.

3.4 RESTART PROCEDURE

PRESS STOP, RESET, AND START BUTTONS.

3.5 ERROR WAITS

THERE ARE TWO TYPES OF ERROR CONDITIONS WHICH CAUSE ERROR WAITS.

1. ERRORS WHICH USE THE COMMON ERROR CONTROL ROUTINE (F000).
2. ERRORS WHICH OCCUR BEFORE SUFFICIENT PORTIONS OF THE HARDWARE HAVE BEEN CHECKED OUT TO ALLOW USE OF THE COMMON ERROR CONTROL ROUTINE.

ERRORS WHICH USE THE COMMON ERROR CONTROL ROUTINE HAVE B REG NUMBERS OF /3069 AND UP. WHEN A NUMBERED WAIT OCCURS, BITS 5-15 OF THE STORA (B REG = 3XXX). WHEN A NUMBERED WAIT OCCURS, BITS 5-15 OF THE STORAGE BUFFER REGISTER GIVE THE ERROR IDENTIFICATION NUMBER. TO FIND THE FAILING ROUTINE, LOOK IN THE ERROR IDENTIFICATION TABLE (IN FRONT OF THE LISTING) . THIS WILL GIVE YOU THE SYMBOLIC AND ACTUAL STARTING ADDRESS OF THE ROUTINE THAT FAILED.

ERRORS WHICH DO NOT USE THE COMMON ERROR CONTROL ROUTINE HAVE B REGISTER FROM /3003 THRU /3068. THE INSTRUCTION REG WILL POINT DIRECTLY TO THE FAILING ROUTINE. TO FACILITATE FINDING THE START OF A TEST ROUTINE EACH TEST ROUTINE BEGINS WITH A LABEL HAVING AN A OR B AS ITS FIRST LETTER. IN THE LISTING EACH ROUTINE IS FURTHER BRACKETED BY A SOLID LINE OF ASTRISKS. TO FIND THE FAILING ROUTINE OF ERRORS WHICH DO NOT USE THE COMMON ERROR CONTROL START AT THE LOCATION SPECIFIED BY THE ERROR WAIT AND WORK UP THE LISTING (BACKWARDS) UNTIL THE FIRST SYMBOLIC LOCATION WHICH HAS A LABEL BEGINNING WITH A AND B. THIS IS THE START OF THE FAILING ROUTINE.

TWO WAYS OF LOCATING A FAILURE ARE AS FOLLOWS-

A. DETERMINE WHAT FAILURE CAUSED THE ERROR WAIT. TO LOCATE THE FAILURE, IT IS RECOMMENDED THAT THE PROGRAM BE MANUALLY ENTERED AT THE START OF THE FAILING ROUTINE AND SINGLE INSTRUCTION, FOLLOWING THE LISTING TO DETERMINE THE EXACT FAILURE.

B. USE AN OSCILLOSCOPE TO HELP LOCATE THE FAILURE. IF THE FAILURE IS IN THE COMMON-ERROR ROUTINE, SIMPLY TURN ON CONSOLE ENTRY SWITCH 8 AND DEPRESS START PUSHBUTTON TO LOOP ON THE INSTRUCTION BEING TESTED. IF THE FAILURE IS IN THE FIRST PART OF THE PROGRAM (BEFORE THE COMMON ERROR ROUTINE INSTRUCTIONS HAVE BEEN CHECKED OUT), A BRANCH (MDX) TO THE BEGINNING OF THE ROUTINE MAY BE MANUALLY INSERTED IN PLACE OF THE WAIT INSTRUCTION. THEN, THE ROUTINE MAY BE LOOPED.

4. PRINTOUTS (NONE)

5. COMMENTS

THE 1130 CPU FUNCTION TEST STARTS WITH VERY SIMPLE INSTRUCTIONS AND DETERMINES IF EACH INSTRUCTION PERFORMS TO SPECIFICATIONS. EACH SUCCESSIVE ROUTINE ATTEMPTS TO UTILIZE ONLY AN INSTRUCTION THAT HAS NOT BEEN PREVIOUSLY TESTED. THE PROGRAM OPTIONS PROVIDE A MEANS FOR CONTINOUSLY LOOPING THE ENTIRE PROGRAM AND ALSO ALLOW FAILING ROUTINES TO BE LOOPED.

AN ATTEMPT IS MADE DURING THE EARLY STAGES OF THE PROGRAM TO DEVELOP THOSE INSTRUCTIONS WHICH ALLOW THE USAGE OF THE COMMON CONTROL (F00E AND F005) AND ERROR (F000) ROUTINES. AFTER THESE INSTRUCTIONS HAVE BEEN TESTED THE USER THEN HAS THE ABILITY TO REQUEST VARIOUS CONTROL OPTIONS BY MEANS OF THE DATA ENTRY SWITCHES.

5.1 OPERATING MODES

THE NORMAL MODE OF OPERATION IS WITH THE DATA ENTRY SWITCHES SET TO /0000. THIS CAUSES A SINGLE PASS THROUGH THE PROGRAM WITH AN ERROR WAIT OCCURING IF AN ERROR IS DETECTED.

IF AN ERROR IS DETECTED AND THE COMMON ERROR WAIT OCCURS, THE USER SHOULD TURN ON THE '' LOOP ON ROUTINE '' (DATA ENTRY SWITCHES SET TO /0020) AND SINGLE INSTRUCTION THROUGH THE FAILING ROUTINE TO ISOLATE THE FAILING INSTRUCTION.

IF THE FAILING ROUTINE DOES NOT FAIL WHEN EXECUTED IN SINGLE INSTRUCTION MODE, THE USER CAN TURN ON THE '' BYPASS ERROR WAIT'' SWITCH AND THE ''LOOP ROUTINE'' SWITCH (DATA ENTRY SWITCHES SET TO /0022) AND PROCEED TO USE SCOPING TECHNIQUES TO ISOLATE THE FAILURE.

5.2 PROGRAM LABELS

LABELS OCCURING IN THE PROGRAM LISTING CAN BE QUICKLY IDENTIFIED AS FOLLOWS-

A. LABELS STARTING WITH A OR B INDICATE THE BEGINNING OF A TEST ROUTINE.
B. LABELS STARTING WITH G, H, J, OR K INDICATE COMMUNICATION LABELS WITH A ROUTINE.
C. LABELS STARTING WITH V OR X ARE RESERVED FOR WAITS.
D. LABELS STARTING WITH N, R, OR S INDICATE A CONSTANT OR WORK AREA.
E. LABELS STARTING WITH F, W, Z OR U ARE USED IN COMMON OR SPECIAL ROUTINES THAT ARE NOT A REGULAR TEST ROUTINE.

6. APPENDIX (NONE)

---------- LAST PAGE ----------

```
                         ABS
0000                     ORG     /3000                                  3A100020
                                                                        3A100030
*****************************************************************************3A100040
                *                                                       3A100050
                *                                                       3A100060
                *                                                       3A100070
                *                                                       3A100080
                *                                                       3A100090
                *                                                       3A100100
                *                                                       3A100110
                *                                                       3A100120
                *                                                       3A100130
                *                                                       3A100140
                *                                                       3A100150
                *                                                       3A100160
                *                                                       3A100170
                *                                                       3A100180
                *                                                       3A100190
                *                                                       3A100200
*****************************************************************************3A100210
                *                                                       3A100220
                *       OPERATING INSTRUCTIONS                          3A100230
                *                                                       3A100240
                *         BIT SWITCH SETTINGS                           3A100250
                *                                                       3A100260
                *          BIT 14 ON BYPASS ERROR WAIT                  3A100270
                *                                                       3A100280
                *              BIT 12 OR 8 MUST BE ON TO                3A100290
                *              MAKE BIT 14 EFFECTIVE.                   3A100300
                *                                                       3A100310
                *          BIT 13 NOT USED                              3A100320
                *                                                       3A100330
                *          BIT 12 LOCK ON ERROR                         3A100340
                *                                                       3A100350
                *          BIT 11 ON LOOP PROGRAM                       3A100360
                *                                                       3A100370
                *          BIT 10 ON LOOP ROUTINE                       3A100380
                *                                                       3A100390
                *          BIT  9 NOT USED                              3A100400
                *                                                       3A100410
                *          BIT  8 LOOP ON INSTRUCTION BEING             3A100420
                *                 TESTED                                3A100430
                *          BIT  7 ON BYPASS MPL/DIV TEST                3A100440
                *                                                       3A100450
                *                                                       3A100460
                *                                                       3A100470
                *                                                       3A100480
                *                                                       3A100490
                *                                                       3A100500
                *                                                       3A100510
                *                                                       3A100520
                *                                                       3A100530
*****************************************************************************3A100540
B-REG   I-REG   *            A HALT AT                                  3A100550
*****************************************************************************3A100560
                *                                                       3A100570
3000 0 012E             DC      X0006&1     1130 AND 1800               3A100580
                *                           SET DATA ENTRY SWITCHES     3A100590
                *                           TO /FFFF & PRESS START      3A100600
                *                                                       3A100610
                *                           &1800¤ ALSO SET S/P SWS TO  3A100620
                *                           /FF00 AND PRESS START       3A100630
                *                                                       3A100640
3001 0 02B5             DC      X0016&1     SET SENSE/PROG AND          3A100650
                *                           DATA ENTRY SWITCHES         3A100660
                *                           TO ZEROS AND PRESS          3A100670
                *                           START                       3A100680
                *                                                       3A100690
```



```
3002 0 02C6             DC      X0036&1     SET SWITCHES FOR OPTIONS    3A100700
                *                           AND PRESS START             3A100710
                *                                                       3A100720
3003 0 0F63             DC      X0076&1     PROGRAM COMPLETED           3A100730
                *                                                       3A100740
                *********************************************           3A100750
                *                                                       3A100760
                * ERROR IDENTIFICATION LISTING                          3A100770
                *                                                       3A100780
                *                                                       3A100790
                *                                                       3A100800
                *                                                       3A100810
*****************************************************************************3A100820
        ADDRESS *                                                       3A100830
          OF    *                                                       3A100840
B-REG   ROUTINE * A REG Q REG  XR-1  XR-2  XR-3  STATUS                 3A100850
*****************************************************************************3A100860
3004 0 012E             DC      A080        MDX                         3A100870
                * SHORT FORM MDX FAILED TO MODIFY I CTR &1              3A100880
                *                                                       3A100890
                *                                                       3A100900
3005 0 012E             DC      A080        MDX         MOD&0           3A100910
3006 0 012E             DC      A080                      &1            3A100920
                * SHORT FORM MDX-SHOULD HAVE MODIFIED I CTR             3A100930
                * &2 BUT MODIFIED BY 0 OR &1                            3A100940
                *                                                       3A100950
                *                                                       3A100960
3007 0 012E             DC      A080        MDX         MOD&0           3A100970
3008 0 012E             DC      A080                      &1            3A100980
3009 0 012E             DC      A080                      &2            3A100990
300A 0 012E             DC      A080                      &3            3A101000
                * SHORT FORM MDX SHOULD HAVE MODIFIED I CTR             3A101010
                * &4 BUT MODIFIED BY 0, &1, &2 OR &3                   3A101020
                *                                                       3A101030
                *                                                       3A101040
300B 0 012E             DC      A080        MDX                         3A101050
                * MDX SHORT FORM FAILED TO MODIFY I CTR                 3A101060
                *                                                       3A101070
                *                                                       3A101080
300C 0 012E             DC      A080        MDX         MOD&0           3A101090
300D 0 012E             DC      A080                      &1            3A101100
300E 0 012E             DC      A080                      &2            3A101110
                * MDX SHORT FORM-SHOULD HAVE MODIFIED I CTR             3A101120
                * -2, DID MODIFY BY 0, &1 OR &2                        3A101130
                *                                                       3A101140
                *                                                       3A101150
300F 0 013F             DC      A0C0        BSC,C                       3A101160
                * N/A     N/A     N/A     N/A     N/A     C&0           3A101170
                * BSC SKIPPED-SHOULD NOT HAVE                           3A101180
                *                                                       3A101190
                *                                                       3A101200
3010 0 013F             DC      A0C0        BSC,0                       3A101210
3011 0 013F             DC      A0C0                                    3A101220
                * N/A     N/A     N/A     N/A     N/A     C&0 AFTER LDS 3A101230
                * N/A     N/A     N/A     N/A     N/A     C  AFTER 1ST BSC 3A101240
                * FIRST BSC SKIPPED-SHOULD NOT HAVE                     3A101250
                * SECOND BSC FAILED TO SKIP-INDICATING 1ST BSC          3A101260
                * FAILED TO TURN OFF OVERFLOW                           3A101270
                *                                                       3A101280
                *                                                       3A101290
3012 0 013F             DC      A0C0        BSC,C                       3A101300
                * N/A     N/A     N/A     N/A     N/A     OFF           3A101310
                * BSC DID NOT SKIP WITH OVERFLOW OFF                    3A101320
                *                                                       3A101330
                *                                                       3A101340
3013 0 014C             DC      A100        LD                          3A101350
                * 0000    N/A     N/A     N/A     N/A     N/A           3A101360
                * ACCUM NOT EQUAL TO 0000                               3A101370
```

```
                         *                                                      3A101380
*************************************************************************3A101390
        ADDRESS          *                                                      3A101400
           OF            *                                                      3A101410
B-REG   ROUTINE          * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                3A101420
*************************************************************************3A101430
3014 0 014C                  DC       A100          LD                          3A101440
                         * 0000   N/A    N/A   N/A   N/A   N/A 1ST LD           3A101450
                         * 0000   N/A    N/A   N/A   N/A   N/A 2ND LD           3A101460
                         * A LOAD 0000 FOLLOWED BY LOAD 0000 DID NOT            3A101470
                         * LEAVE ACCUM EQUAL TO 0000                            3A101480
                         *                                                      3A101490
                         *                                                      3A101500
3015 0 014C                  DC       A100          BSC,E                       3A101510
                         * 0000   N/A    N/A   N/A   N/A   N/A                  3A101520
                         * BSC FAILED TO SKIP                                   3A101530
                         *                                                      3A101540
                         *                                                      3A101550
                         *                                                      3A101560
                         *                                                      3A101570
3016 0 0154                  DC       A140          LD                          3A101580
                         * 0000   N/A    N/A   N/A   N/A   N/A 1ST VALVE        3A101590
                         * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD         3A101600
                         * LOAD FFFF ON TOP OF 0000 DID NOT LEAVE ACC           3A101610
                         * NEGATIVE                                             3A101620
                         *                                                      3A101630
                         *                                                      3A101640
3017 0 0154                  DC       A140          BSC,&                       3A101650
                         * FFFF   N/A    N/A   N/A   N/A   N/A                  3A101660
                         *                                                      3A101670
                         *                                                      3A101680
3018 0 0154                  DC       A140          BSC,E                       3A101690
                         * FFFF   N/A    N/A   N/A   N/A   N/A                  3A101700
                         * BSC SKIPPED SHOULD NOT HAVE                          3A101710
                         *                                                      3A101720
                         *                                                      3A101730
3019 0 0154                  DC       A140          ACCUM NOT EQUAL 7FFF        3A101740
301A 0 0154                  DC       A140          ACCUM NOT EQUAL 3FFF        3A101750
301B 0 0154                  DC       A140          ACCUM NOT EQUAL 1FFF        3A101760
301C 0 0154                  DC       A140          ACCUM NOT EQUAL 0FFF        3A101770
301D 0 0154                  DC       A140          ACCUM NOT EQUAL 07FF        3A101780
301E 0 0154                  DC       A140          ACCUM NOT EQUAL 03FF        3A101790
301F 0 0154                  DC       A140          ACCUM NOT EQUAL 01FF        3A101800
3020 0 0154                  DC       A140          ACCUM NOT EQUAL 00FF        3A101810
3021 0 0154                  DC       A140          ACCUM NOT EQUAL 007F        3A101820
3022 0 0154                  DC       A140          ACCUM NOT EQUAL 003F        3A101830
3023 0 0154                  DC       A140          ACCUM NOT EQUAL 001F        3A101840
3024 0 0154                  DC       A140          ACCUM NOT EQUAL 000F        3A101850
3025 0 0154                  DC       A140          ACCUM NOT EQUAL 0007        3A101860
3026 0 0154                  DC       A140          ACCUM NOT EQUAL 0003        3A101870
3027 0 0154                  DC       A140          ACCUM NOT EQUAL 0001        3A101880
3028 0 0154                  DC       A140          ACCUM NOT EQUAL 0000        3A101890
3029 0 0154                  DC       A140          ACCUM NOT EQUAL 0000        3A101900
                         * FFFF   N/A    N/A   N/A   N/A   N/A LOADED           3A101910
                         * 0000   N/A    N/A   N/A   N/A   N/A AFTER SRA8S      3A101920
                         * THE ABOVE WAITS OCCUR AS A RESULT OF A               3A101930
                         * FAILURE ON A ROUTINE THAT LOADS FFFF ON              3A101940
                         * 0000 AND CHECKS USING SRA 1 AND BSC  E.              3A101950
                         *                                                      3A101960
                         *                                                      3A101970
302A 0 01A0                  DC       A180          ACCUM NOT EQUAL FFFF        3A101980
302B 0 01A0                  DC       A180          ACCUM NOT EQUAL FFFF        3A101990
302C 0 01A0                  DC       A180          ACCUM NOT EQUAL 7FFF        3A102000
302D 0 01A0                  DC       A180          ACCUM NOT EQUAL 3FFF        3A102010
302E 0 0154                  DC       A140          ACCUM NOT EQUAL 1FFF        3A102020
302F 0 01A0                  DC       A180          ACCUM NOT EQUAL 0FFF        3A102030
3030 0 01A0                  DC       A180          ACCUM NOT EQUAL 07FF        3A102040
3031 0 01A0                  DC       A180          ACCUM NOT EQUAL 03FF        3A102050
```



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*************************************************************************3A102060
        ADDRESS          *                                                      3A102070
           OF            *                                                      3A102080
B-REG   ROUTINE          * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                3A102090
*************************************************************************3A102100
3032 0 01A0                  DC       A180          ACCUM NOT EQUAL 01FF        3A102110
3033 0 01A0                  DC       A180          ACCUM NOT EQUAL 00FF        3A102120
3034 0 01A0                  DC       A180          ACCUM NOT EQUAL 007F        3A102130
3035 0 01A0                  DC       A180          ACCUM NOT EQUAL 003F        3A102140
3036 0 01A0                  DC       A180          ACCUM NOT EQUAL 001F        3A102150
3037 0 01A0                  DC       A180          ACCUM NOT EQUAL 000F        3A102160
3038 0 01A0                  DC       A180          ACCUM NOT EQUAL 0007        3A102170
3039 0 01A0                  DC       A180          ACCUM NOT EQUAL 0003        3A102180
303A 0 01A0                  DC       A180          ACCUM NOT EQUAL 0001        3A102190
303B 0 01A0                  DC       A180          ACCUM NOT EQUAL 0000        3A102200
303C 0 01A0                  DC       A180          ACCUM NOT EQUAL 0000        3A102210
                         * FFFF   N/A    N/A   N/A   N/A   N/A LOADED           3A102220
                         * 0000   N/A    N/A   N/A   N/A   N/A AFTER SRA8S      3A102230
                         * THE ABOVE WAITS OCCUR AS A RESULT OF A               3A102240
                         * FAILURE ON A ROUTINE THAT LOADS FFFF ON              3A102250
                         * FFFF AND CHECKS USING SRA 1 AND BSC  E.              3A102260
                         *                                                      3A102270
                         *                                                      3A102280
303D 0 01E8                  DC       A1C0          LD 0000 ON 0000             3A102290
                         * 0000   N/A    N/A   N/A   N/A   N/A                  3A102300
                         * ACCUM NOT EQUAL 0000                                 3A102310
                         *                                                      3A102320
                         *                                                      3A102330
303E 0 01E8                  DC       A1C0          LD FFFF ON 0000             3A102340
                         * 0000   N/A    N/A   N/A   N/A   N/A BEFORE LD        3A102350
                         * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD         3A102360
                         * ACCUM NOT EQUAL FFFF                                 3A102370
                         *                                                      3A102380
                         *                                                      3A102390
303F 0 01F5                  DC       A1D0          LD                          3A102400
                         * 0000   N/A    N/A   N/A   N/A   N/A                  3A102410
                         * ACCUM NOT EQUAL 0000                                 3A102420
                         *                                                      3A102430
                         *                                                      3A102440
3040 0 01F5                  DC       A1D0          EOR                         3A102450
                         * 0000   N/A    N/A   N/A   N/A   N/A                  3A102460
                         * 0000   N/A    N/A   N/A   N/A   N/A                  3A102470
                         * WITH ACCUM EQUAL 0000 AN EOR USING 0000 DID          3A102480
                         * NOT RESULT IN ACCUM EQUAL 0000                       3A102490
                         *                                                      3A102500
                         *                                                      3A102510
3041 0 01F5                  DC       A1D0          EOR                         3A102520
                         * FFFF   N/A    N/A   N/A   N/A   N/A LOADED & EOR     3A102530
                         * 0000   N/A    N/A   N/A   N/A   N/A SHOULD BE        3A102540
                         * WITH ACCUM EQUAL FFFF AN EOR USING FFFF DID          3A102550
                         * NOT RESULT IN ACCUM EQUAL 0000                       3A102560
                         *                                                      3A102570
                         *                                                      3A102580
3042 0 01F5                  DC       A1D0          EOR                         3A102590
3043 0 01F5                  DC       A1D0                                      3A102600
                         * 0000   N/A    N/A   N/A   N/A   N/A BEFORE           3A102610
                         * FFFF   N/A    N/A   N/A   N/A   N/A S/B AFTER        3A102620
                         * WITH ACCUM EQUAL 0000 AN EOR USING FFFF DID          3A102630
                         * NOT RESULT IN ACCUM EQUAL FFFF                       3A102640
                         *                                                      3A102650
                         *                                                      3A102660
3044 0 01F5                  DC       A1D0          EOR                         3A102670
                         * FFFF   N/A    N/A   N/A   N/A   N/A BEFORE EOR       3A102680
                         * FFFF   N/A    N/A   N/A   N/A   N/A S/B AFTER        3A102690
                         * WITH ACCUM EQUAL FFFF AN EOR USING 0000 DID          3A102700
                         * NOT RESULT IN ACCUM EQUAL FFFF                       3A102710
                         *                                                      3A102720
                         *                                                      3A102730
```

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                                                                        3A102740
        ADDRESS     *                                                   3A102750
          OF        *                                                   3A102760
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS             3A102770
*****************************************************************     3A102780
3045 0 01F5                DC       A1D0       SRA & EOR               3A102790
                         * 7FFF   N/A    N/A    N/A    N/A  N/A S/B AFTER SRA 3A102800
                         * 0000   N/A    N/A    N/A    N/A  N/A S/B AFTER EOR 3A102810
                         * WITH ACCM EQUAL 7FFF AN EOR USING 7FFF DID NCT   3A102820
                         * BESULT IN ACCUM EQUAL TO 0000                    3A102830
                         * RESULT IN ACCM EQUAL TO 0000                     3A102840
                         *                                                  3A102850
3046 0 0214                     DC       A1E0       LD LONG FGRM           3A102860
                         * 0000   N/A    N/A    N/A    N/A   N/A S/B AFTER LD  3A102870
                         * ACCUM NOT EQUAL 0000-INDICATING WRONG            3A102880
                         * LOCATION WAS LOADED                              3A102890
                         *                                                  3A102900
                         *                                                  3A102910
3047 0 0214                     DC       A1E0       LD LONG FORM           3A102920
                         * C,N1E0. N/A  N/A    N/A    N/A  N/A S/B AFTER LD  3A102930
                         * 0000    N/A  N/A    N/A    N/A  N/A S/B AFTER EOR 3A102940
                         * ACCUM NET EQUAL 0000 INDICATING WRONG LOCATION   3A102950
                         * WAS LOADED                                       3A102960
                         *                                                  3A102970
                         *                                                  3A102980
3048 0 0220                     DC       A1F0       LD IND                 3A102990
3049 0 0220                     DC       A1F0       LD IND                 3A103000
                         * 0000   N/A    N/A    N/A    N/A   N/A S/B FOR BSC   3A103010
                         * ACCUM NOT EQUAL 0000 INDICATING WRONG            3A103020
                         * LOCATION WAS LOADED                              3A103030
                         *                                                  3A103040
                         *                                                  3A103050
304A 0 022D                     DC       A200       BSC LONG FORM          3A103060
                         * UNCONDITIONAL BSC DID NOT BRANCH                 3A103070
                         *                                                  3A103080
                         *                                                  3A103090
304B 0 022D                     DC       A200       BSC LONG FORM          3A103100
                         * UNCONDITIONAL BSC SKIPPED-SHOULD BRANCH          3A103110
                         *                                                  3A103120
                         *                                                  3A103130
304C 0 022D                     DC       A200       BSC,E LONG FORM        3A103140
304D 0 022D                     DC       A200                              3A103150
                         * FFFF   N/A    N/A    N/A    N/A   N/A            3A103160
                         * BSC FELL THRU OR SKIPPED-SHOULD BRANCH           3A103170
                         * DID NOT SKIP OR SKIPPED - SHOULD BR.            3A103180
                         *                                                  3A103190
304E 0 022D                     DC       A200       BSC,& LONG FORM        3A103200
304F 0 022D                     DC       A200                              3A103210
                         * FFFF   N/A    N/A    N/A    N/A   N/A S/B AT TEST   3A103220
                         * DID NOT SKIP OR SKIPPED - SHOULD BR.            3A103230
                         *                                                  3A103240
                         *                                                  3A103250
3050 0 022D                     DC       A200       BSC,Z LONG FORM        3A103260
3051 0 022D                     DC       A200                              3A103270
                         * FFFF   N/A    N/A    N/A    N/A   N/A S/B AT TEST   3A103280
                         * BSC DID NOT SKIP OR SKIPPED - SHOULD BR.        3A103290
                         *                                                  3A103300
                         *                                                  3A103310
3052 0 022D                     DC       A200       BSC,- LONG FORM        3A103320
                         * FFFF   N/A    N/A    N/A    N/A   N/A S/B AT TEST   3A103330
                         * BSC BRANCHED-SHOULD NOT                          3A103340
                         *                                                  3A103350
                         *                                                  3A103360
3053 0 022D                     DC       A200       BSC,C LONG FORM        3A103370
3054 0 022D                     DC       A200                              3A103380
                         * N/A    N/A    N/A    N/A    N/A   C&O S/B AT TEST   3A103390
                         * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH       3A103400
                         *                                                  3A103410
```



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                                                                        3A103420
        ADDRESS     *                                                   3A103430
          OF        *                                                   3A103440
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS             3A103450
*****************************************************************     3A103460
3055 0 022D                DC       A200       BSC,O LONG FORM         3A103470
3056 0 022D                DC       A200                               3A103480
                         * N/A    N/A    N/A    N/A    N/A   C&O S/B AT TEST   3A103490
                         * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH       3A103500
                         *                                                  3A103510
                         *                                                  3A103520
3057 0 022D                DC       A200       BSC,O LONG FORM         3A103530
                         * N/A    N/A    N/A    N/A    N/A   C  S/B AT TEST   3A103540
                         * BSC FAILED TO TURN OFF OVERFLOW                  3A103550
                         *                                                  3A103560
                         *                                                  3A103570
3058 0 022D                DC       A200       BSC,C LONG FORM         3A103580
                         * N/A    N/A    N/A    N/A    N/A   OFF S/B AT TEST   3A103590
                         * BSC BRANCHED-SHOULD  NOT                         3A103600
                         *                                                  3A103610
                         *                                                  3A103620
3059 0 022D                DC       A200       BSC,O LONG FORM         3A103630
                         * N/A    N/A    N/A    N/A    N/A   OFF S/B AT TEST   3A103640
                         * BSC BRANCHED-SHOULD NOT                          3A103650
                         *                                                  3A103660
                         *                                                  3A103670
305A 0 022D                DC       A200       BSC,&- LONG FORM        3A103680
305B 0 022D                DC       A200                               3A103690
                         * 0000   N/A    N/A    N/A    N/A   N/A            3A103700
                         * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH       3A103710
                         *                                                  3A103720
                         *                                                  3A103730
305C 0 022D                DC       A200       BSC,&- LONG FORM        3A103740
                         * FFFF   N/A    N/A    N/A    N/A   N/A S/B AT TEST   3A103750
                         * BSC BRANCHED-SHOULD NOT                          3A103760
                         *                                                  3A103770
                         *                                                  3A103780
305D 0 022D                DC       A200       BSC,&- LONG FORM        3A103790
                         * 0001   N/A    N/A    N/A    N/A   N/A S/B AT TEST   3A103800
                         * BSC BRANCHED SHOULD NOT                          3A103810
                         *                                                  3A103820
                         *                                                  3A103830
305E 0 022D                DC       A200       BSC INDIRECT            3A103840
305F 0 022D                DC       A200                               3A103850
                         * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH       3A103860
                         *                                                  3A103870
                         *                                                  3A103880
3060 0 0270                DC       A240       BSI                     3A103890
                         * UNCONDITIONAL BSI DID NOT BRANCH                 3A103900
                         *                                                  3A103910
                         *                                                  3A103920
3061 0 0270                DC       A240       BSI                     3A103930
                         * UNCONDITIONAL BSI DID NOT STORE I CTR            3A103940
                         * CORRECTLY                                        3A103950
                         *                                                  3A103960
                         *                                                  3A103970
3062 0 0270                DC       A240       BSI,& LONG FORM         3A103980
3063 0 0270                DC       A240                               3A103990
                         * 0000   N/A    N/A    N/A    N/A   N/A S/B AT TEST   3A104000
                         * BSI DID NOT SKIP OR SKIPPED-SHOULD BRANCH       3A104010
                         *                                                  3A104020
                         *                                                  3A104030
3064 0 0270                DC       A240       BSI,& LONG FORM         3A104040
                         * BSI DID NOT STORE THE I CTR CORRECTLY            3A104050
                         *                                                  3A104060
                         *                                                  3A104070
3065 0 0282                DC       A900       STORE                   3A104080
                         * STORE INSTRUCTION FAILED                        3A104090
```

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                                                                                3A104100
        ADDRESS      *                                                          3A104110
          OF         *                                                          3A104120
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                    3A104130
*********************************************************************************3A104140
3066 0 0282                DC       A900        XIO  SENSE/PROG SWS            3A104150
                     * FF00   N/A    N/A    N/A    N/A    N/A  S/B AT TEST     3A104160
                     * ACCUM NOT EQUAL TO FF00-- SENSE/PROG SWS                3A104170
                     * WERE INCORRECTLY SENSED                                 3A104180
                     *                                                         3A104190
3067 0 0282                DC       A900        XIO  DATA ENTRY SWS            3A104200
                     * FF00   N/A    N/A    N/A    N/A    N/A  S/B AT TEST     3A104210
                     * ACCUM NOT EQUAL TO FFFF-- DATA ENTRY SWS                3A104220
                     * WERE INCORRECTLY READ                                   3A104230
                     *                                                         3A104240
                     *                                                         3A104250
3068 0 0282                DC       A900        XIO  SENSE/PROG SWS            3A104260
                     * FF00   N/A    N/A    N/A    N/A    N/A  S/B AT TEST     3A104270
                     * ACCUM NOT EQUAL TO 0000-- SENSE/PROG SWS                3A104280
                     * WERE INCORRECTLY SENSED                                 3A104290
                     *                                                         3A104300
                     *                                                         3A104310
3069 0 0282                DC       A900        XIO                            3A104320
                     * 0000   N/A    N/A      N/A    N/A   NT/B AT TEST        3A104330
                     * ACCUM NOT EQUAL TO 0000--DATA ENTRY SWS                 3A104340
                     * WERE INCORRECTLY READ                                   3A104350
                     *                                                         3A104360
                     *                                                         3A104370
                     *                                                         3A104380
                     *                                                         3A104390
                     ***************************************************     3A104400
                     *                                                       3A104410
                     * THE FOLLOWING ERRORS ARE HANDLED BY THE               3A104420
                     * COMMON ERROR CONTROL ROUTINE.  THE ID NUMBER          3A104430
                     * SHOWN FOR EACH ERROR WILL APPEAR IN BITS              3A104440
                     * 5 THRU 15 OF THE WAIT INSTRUCTION.                    3A104450
                     *                                                       3A104460
                     ***************************************************   3A104470
                     *                                                       3A104480
306A 0 02D8                DC       A280        SRA 16                         3A104490
                     * FFFF   N/A    N/A    N/A    N/A    N/A S/B AFTER LD     3A104500
                     * 0000   N/A    N/A    N/A    N/A    N/A S/B AFTER SRA    3A104510
                     * ACCUM NOT ZERO                                          3A104520
                     *                                                         3A104530
                     *                                                         3A104540
306B 0 02E2                DC       A281        SRA 15                         3A104550
                     * 8000   N/A    N/A    N/A    N/A    N/A S/B AFTER LD     3A104560
                     * 0001   N/A    N/A    N/A    N/A    N/A S/B AFTER SRA    3A104570
                     * ACCUM NOT EQUAL 0001                                    3A104580
                     *                                                         3A104590
                     *                                                         3A104600
306C 0 02ED                DC       A282        SRA 1                          3A104610
                     * AAAA   N/A    N/A    N/A    N/A    N/A S/B AFTER LD     3A104620
                     * 5555   N/A    N/A    N/A    N/A    N/A S/B AFTER SRA    3A104630
                     * ACCUM NOT EQUAL 5555                                    3A104640
                     *                                                         3A104650
                     *                                                         3A104660
306D 0 02F8                DC       A283        SRA 1                          3A104670
                     * 5555   N/A    N/A    N/A    N/A    N/A S/B AFTER LD     3A104680
                     * 2AAA   N/A    N/A    N/A    N/A    N/A S/B AFTER SRA    3A104690
                     * ACCUM NOT EQUAL 2AAA                                    3A104700
                     *                                                         3A104710
                     *                                                         3A104720
306E 0 0303                DC       A284        SERIES OF SRAS-15              3A104730
                     *                           *TOTAL SHIFTS                 3A104740
                     * 8000   N/A    N/A    N/A    N/A    N/A S/B AFTER LD     3A104750
                     * 0001   N/A    N/A    N/A    N/A    N/A S/B AFTER SRA    3A104760
                     * ACCUM NOT EQUAL 0001                                    3A104770
```



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                                                                                3A104780
        ADDRESS      *                                                          3A104790
          OF         *                                                          3A104800
B-REG   ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                    3A104810
*********************************************************************************3A104820
                     *                                                         3A104830
                     *                                                         3A104840
306F 0 0318                DC       A2C0        AND-MEMORY#0000                3A104850
                     * 0000   N/A    N/A    N/A    N/A    N/A S/B AFTER LD     3A104860
                     * 0000   N/A    N/A    N/A    N/A    N/A AFTER AND        3A104870
                     * ACCUM NOT EQUAL 0000                                    3A104880
                     *                                                         3A104890
                     *                                                         3A104900
3070 0 0322                DC       A2C4        AND-MEMORY#FFFF                3A104910
                     * 0000   N/A    N/A    N/A    N/A    N/A                  3A104920
                     * 0000   N/A    N/A    N/A    N/A    N/A                  3A104930
                     * ACCUM NOT EQUAL 0000                                    3A104940
                     *                                                         3A104950
                     *                                                         3A104960
3071 0 032C                DC       A2C8        AND-MEMORY#0000                3A104970
                     * FFFF   N/A    N/A    N/A    N/A    N/A                  3A104980
                     * 0000   N/A    N/A    N/A    N/A    N/A                  3A104990
                     * ACCUM NOT EQUAL 0000                                    3A105000
                     *                                                         3A105010
                     *                                                         3A105020
3072 0 0336                DC       A2CC        AND-MEMORY#FFFF                3A105030
                     * FFFF   N/A    N/A    N/A    N/A    N/A                  3A105040
                     * FFFF   N/A    N/A    N/A    N/A    N/A                  3A105050
                     * ACCUM NOT EQUAL FFFF                                    3A105060
                     *                                                         3A105070
                     *                                                         3A105080
3073 0 0344                DC       A300        OR-MEMORY # 0000               3A105090
                     * 0000   N/A    N/A    N/A    N/A    N/A AFTER LD&OR       3A105100
                     * 0000   N/A    N/A    N/A    N/A    N/A AFTER EOR        3A105110
                     * ACCUM NOT EQUAL 0000                                    3A105120
                     *                                                         3A105130
                     *                                                         3A105140
3074 0 034E                DC       A302        OR-MEMORY#FFFF                 3A105150
                     * 0000   N/A    N/A    N/A    N/A    N/A AFTER LD & OR     3A105160
                     * FFFF   N/A    N/A    N/A    N/A    N/A AFTER EOR        3A105170
                     * ACCUM NOT EQUAL FFFF                                    3A105180
                     *                                                         3A105190
                     *                                                         3A105200
3075 0 0359                DC       A304        OR-MEMORY#FFFF                 3A105210
                     * FFFF   N/A    N/A    N/A    N/A    N/A AFTER LD&OR       3A105220
                     * FFFF   N/A    N/A    N/A    N/A    N/A AFTER EOR        3A105230
                     * ACCUM NOT EQUAL FFFF                                    3A105240
                     *                                                         3A105250
                     *                                                         3A105260
3076 0 0367                DC       A340        RTE 16                         3A105270
                     * FFFF   0000   N/A    N/A    N/A    N/A BEFORE RTE       3A105280
                     * 0000   FFFF   N/A    N/A    N/A    N/A AFTER RTE        3A105290
                     * ACCUM NOT EQUAL 0000                                    3A105300
                     *                                                         3A105310
                     *                                                         3A105320
3077 0 0367                DC       A340        RTE 16                         3A105330
                     * 0000   FFFF   N/A    N/A    N/A    N/A BEFORE RTE       3A105340
                     * FFFF   0000   N/A    N/A    N/A    N/A AFTER RTE        3A105350
                     * ACCUM NOT EQUAL FFFF                                    3A105360
                     *                                                         3A105370
                     *                                                         3A105380
3078 0 0380                DC       A380        SRT 32                         3A105390
                     * 8000   N/A    N/A    N/A    N/A    N/A BEFORE SRT       3A105400
                     * FFFF   FFFF   N/A    N/A    N/A    N/A AFTER SRT        3A105410
                     * ACCUM NOT EQUAL FFFF                                    3A105420
                     *                                                         3A105430
                     *                                                         3A105440
                     *                                                         3A105450
```

```
*************************************************************************3A105460
        ADDRESS     *                                                    3A105470
          OF        *                                                    3A105480
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS              3A105490
*************************************************************************3A105500
                    *                                                    3A105510
3079 0 0380               DC       A380       SRT 32 & RTE 16          3A105520
                    * 8000   N/A    N/A   N/A   N/A   N/A  BEFORE SRT   3A105530
                    * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER SRT&RTE 3A105540
                    * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED       3A105550
                    *                                                    3A105560
                    *                                                    3A105570
307A 0 0395               DC       A384       SRT 32                   3A105580
                    * 4000   N/A    N/A   N/A   N/A   N/A AFTER LD      3A105590
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER SRT     3A105600
                    * ACCUM NOT EQUAL 0000                               3A105610
                    *                                                    3A105620
                    *                                                    3A105630
307B 0 0395               DC       A384       SRT 32 & RTE 16          3A105640
                    * 4000   N/A    N/A   N/A   N/A   N/A AFTER LD      3A105650
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER SRT     3A105660
                    * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A105670
                    *                                                    3A105680
                    *                                                    3A105690
307C 0 03A8               DC       A388       SRT 15                   3A105700
                    * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD      3A105710
                    * 0000   AAAA   N/A   N/A   N/A   N/A AFTER SRT     3A105720
                    * ACCUM NOT EQUAL 0000                               3A105730
                    *                                                    3A105740
                    *                                                    3A105750
307D 0 03A8               DC       A388       SRT 15 & RTE 16          3A105760
                    * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD      3A105770
                    * 0000   AAAA   N/A   N/A   N/A   N/A AFTER SRT 15  3A105780
                    * AAAA   0000   N/A   N/A   N/A   N/A AFTER RTE 16  3A105790
                    * ACCUM NOT EQUAL AAAA-INDICATING Q REG FAILED       3A105800
                    *                                                    3A105810
                    *                                                    3A105820
307E 0 038C               DC       A38C       SERIES OF SRTS-30        3A105830
                    *                         *TOTAL SHIFTS            3A105840
                    * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD      3A105850
                    * 0000   0001   N/A   N/A   N/A   N/A AFTER SRTaS    3A105860
                    * ACCUM NOT EQUAL 0000                               3A105870
                    *                                                    3A105880
                    *                                                    3A105890
307F 0 038C               DC       A38C       SERIES OF SRTS-30        3A105900
                    *                         *TOTAL SHIFTS &          3A105910
                    *                         *RTE 16                  3A105920
                    * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD      3A105930
                    * 0000   0001   N/A   N/A   N/A   N/A AFTER SRTaS    3A105940
                    * 0001   0000   N/A   N/A   N/A   N/A AFTER RTE 16  3A105950
                    * ACCUM NOT EQUAL 0001-INDICATING Q REG FAILED       3A105960
                    *                                                    3A105970
                    *                                                    3A105980
3080 0 03DC               DC       A3C0       RTE 15                   3A105990
                    * 5555   AAAA   N/A   N/A   N/A   N/A AFTER LDaS    3A106000
                    * 5554   AAAB   N/A   N/A   N/A   N/A AFTER RTE 15  3A106010
                    * ACCUM NOT EQUAL 5554 - RTE 15 Q TO A FAILED        3A106020
                    *                                                    3A106030
                    *                                                    3A106040
3081 0 03DC               DC       A3C0       RTE 15 & RTE 16          3A106050
                    * 5555   AAAA   N/A   N/A   N/A   N/A AFTER LDaS    3A106060
                    * 5554   AAAB   N/A   N/A   N/A   N/A AFTER RTE 15  3A106070
                    * AAAB   5554   N/A   N/A   N/A   N/A AFTER RTE 16  3A106080
                    * ACCUM NOT EQUAL AAAB-INDICATING Q REG FAILED       3A106090
                    *                                                    3A106100
                    *                                                    3A106110
                    *                                                    3A106120
                    *                                                    3A106130
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*************************************************************************3A106140
        ADDRESS     *                                                    3A106150
          OF        *                                                    3A106160
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS              3A106170
*************************************************************************3A106180
3082 0 03F3               DC       A3C4       SERIES OF RTES-31        3A106190
                    *                         *TOTAL SHIFTS            3A106200
                    * 0000   8000   N/A   N/A   N/A   N/A AFTER LD      3A106210
                    * 0001   0000   N/A   N/A   N/A   N/A AFTER RTEaS    3A106220
                    * ACCUM NOT EQUAL 0001                               3A106230
                    *                                                    3A106240
                    *                                                    3A106250
3083 0 03F3               DC       A3C4       SERIES OF RTES-31        3A106260
                    *                         *TOTAL SHIFTS            3A106270
                    *                         *FOLLOWED BY RTE 16      3A106280
                    * 0000   8000   N/A   N/A   N/A   N/A AFTER LD      3A106290
                    * 0001   0000   N/A   N/A   N/A   N/A AFTER RTEaS    3A106300
                    * 0000   0001   N/A   N/A   N/A   N/A AFTER RTE 16  3A106310
                    * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A106320
                    *                                                    3A106330
                    *                                                    3A106340
3084 0 0412               DC       A400       SLA 16                   3A106350
                    * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LD      3A106360
                    * 0000   FFFF   N/A   N/A   N/A   N/A AFTER SLA     3A106370
                    * ACCUM NOT EQUAL 0000                               3A106380
                    *                                                    3A106390
                    *                                                    3A106400
3085 0 0412               DC       A400       SLA 16                   3A106410
                    * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LD      3A106420
                    * 0000   FFFF   N/A   N/A   N/A    C  AFTER SLA     3A106430
                    * CARRY NOT SET                                      3A106440
                    *                                                    3A106450
                    *                                                    3A106460
3086 0 0412               DC       A400       SLA 16 & RTE 16          3A106470
                    * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LD      3A106480
                    * 0000   FFFF   N/A   N/A   N/A   N/A AFTER SLA     3A106490
                    * FFFF   0000   N/A   N/A   N/A   N/A AFTER RTE 16  3A106500
                    * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED       3A106510
                    *                                                    3A106520
                    *                                                    3A106530
3087 0 0433               DC       A408       SLA 16                   3A106540
                    * 0001   0000   N/A   N/A   N/A   N/A AFTER LD      3A106550
                    * 0000   0000   N/A   N/A   N/A   N/A AFTERSLA      3A106560
                    * ACCUM NOT EQUAL 0000                               3A106570
                    *                                                    3A106580
                    *                                                    3A106590
3088 0 0433               DC       A408       SLA 16                   3A106600
                    * 0001   0000   N/A   N/A   N/A    C  AFTER LD      3A106610
                    * 0000   0000   N/A   N/A   N/A    C  AFTER SLA     3A106620
                    * CARRY NOT SET                                      3A106630
                    *                                                    3A106640
                    *                                                    3A106650
3089 0 0433               DC       A408       SLA 16 & RTE 16          3A106660
                    * 0001   0000   N/A   N/A   N/A   N/A AFTER LD      3A106670
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER SLA     3A106680
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16  3A106690
                    * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A106700
                    *                                                    3A106710
                    *                                                    3A106720
308A 0 0453               DC       B400       SLA 1                    3A106730
                    * AAAA   0000   N/A   N/A   N/A   N/A AFTER LD      3A106740
                    * 5554   0000   N/A   N/A   N/A   N/A AFTER SLA     3A106750
                    * ACCUM NOT EQUAL 5554                               3A106760
                    *                                                    3A106770
                    *                                                    3A106780
                    *                                                    3A106790
                    *                                                    3A106800
                    *                                                    3A106810
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*************************************************************************3A106820
        ADDRESS     *                                                     3A106830
          OF        *                                                     3A106840
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS               3A106850
*************************************************************************3A106860
3088 0 0453                DC       B400       SLA 1                     3A106870
                     * AAAA   0000   N/A   N/A   N/A    C                 3A106880
                     * 5554   0000   N/A   N/A   N/A    C                 3A106890
                     * CARRY NOT SET                                      3A106900
                     *                                                    3A106910
                     *                                                    3A106920
308C 0 0453                DC       B400       SLA 1 & RTE 16            3A106930
                     * AAAA   0000   N/A   N/A   N/A   N/A                3A106940
                     * 5554   0000   N/A   N/A   N/A   N/A                3A106950
                     * 0000   5554   N/A   N/A   N/A   N/A AFTER RTE      3A106960
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A106970
                     *                                                    3A106980
                     *                                                    3A106990
308D 0 0471                DC       B406       SLA 1                     3A107000
                     * 5555   0000   N/A   N/A   N/A   N/A AFTER LD       3A107010
                     * AAAA   0000   N/A   N/A   N/A   N/A AFTER SLA      3A107020
                     * ACCUM NOT EQUAL AAAA                               3A107030
                     *                                                    3A107040
                     *                                                    3A107050
308E 0 0471                DC       B406       SLA 1                     3A107060
                     * 5555   0000   N/A   N/A   N/A    C  AFTER LD       3A107070
                     * AAAA   0000   N/A   N/A   N/A   OFF AFTER SLA      3A107080
                     * CARRY SET-SHOULD BE CLEAR                          3A107090
                     *                                                    3A107100
                     *                                                    3A107110
308F 0 0471                DC       B406       SLA 1 & RTE 16            3A107120
                     * 5555   0000   N/A   N/A   N/A   N/A AFTER LD       3A107130
                     * AAAA   0000   N/A   N/A   N/A   N/A AFTER SLA      3A107140
                     * 0000   AAAA   N/A   N/A   N/A   N/A AFTER RTE      3A107150
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A107160
                     *                                                    3A107170
                     *                                                    3A107180
3090 0 0490                DC       B40A       SERIES OF SLAS-16         3A107190
                     *                          *TOTAL SHIFTS             3A107200
                     * 0001   0000   N/A   N/A   N/A   N/A AFTER SLA 0    3A107210
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER SLA@S     3A107220
                     * ACCUM NOT EQUAL 0000                               3A107230
                     *                                                    3A107240
                     *                                                    3A107250
3091 0 0490                DC       B40A       SERIES OF SLAS-16         3A107260
                     *                          *TOTAL SHIFTS             3A107270
                     * 0001   0000   N/A   N/A   N/A    C  AFTER SLA 0    3A107280
                     * 0000   0000   N/A   N/A   N/A    C  AFTER  SLA@S    3A107290
                     * CARRY NOT SET                                      3A107300
                     *                                                    3A107310
                     *                                                    3A107320
3092 0 0490                DC       B40A       SERIES OF SLAS-16         3A107330
                     *                          *TOTAL SHIFTS &           3A107340
                     *                          *RTE 16                   3A107350
                     * 0001   0000   N/A   N/A   N/A   N/A AFTER SLA 0    3A107360
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER SLA@S     3A107370
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16    3A107380
                     * ACC NOT EQUAL 0000-INDICATING Q REG FAILED         3A107390
                     *                                                    3A107400
                     *                                                    3A107410
3093 0 04BD                DC       A440       SLT 32                    3A107420
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LD       3A107430
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER SLT 32    3A107440
                     * ACCUM NOT EQUAL 0000                               3A107450
                     *                                                    3A107460
                     *                                                    3A107470
                     *                                                    3A107480
                     *                                                    3A107490
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*************************************************************************3A107500
        ADDRESS     *                                                     3A107510
          OF        *                                                     3A107520
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS               3A107530
*************************************************************************3A107540
3094 0 04BD                DC       A440       SLT 32                    3A107550
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LD       3A107560
                     * 0000   0000   N/A   N/A   N/A    C  AFTER SLT 32    3A107570
                     * CARRY NOT SET                                      3A107580
                     *                                                    3A107590
                     *                                                    3A107600
3095 0 04BD                DC       A440       SLT 32 & RTE 16           3A107610
                     * 0000   0001                          AFTER LD      3A107620
                     * 0000   0000                          AFTER SLT 32  3A107630
                     * 0000   0000                          AFTER RTE 16  3A107640
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A107650
                     *                                                    3A107660
                     *                                                    3A107670
3096 0 04DA                DC       A444       SLT 16                    3A107680
                     * 0000   FFFF   N/A   N/A   N/A   N/A AFTER LD       3A107690
                     * FFFF   0000   N/A   N/A   N/A   N/A AFTER SLT 16    3A107700
                     * ACCUM NOT EQUAL FFFF                               3A107710
                     *                                                    3A107720
                     *                                                    3A107730
3097 0 04DA                DC       A444       SLT 16                    3A107740
                     * 0000   FFFF   N/A   N/A   N/A   N/A AFTER LD       3A107750
                     * FFFF   0000   N/A   N/A   N/A   OFF AFTER SLT 16    3A107760
                     * CARRY ON SHOULD NOT BE                             3A107770
                     *                                                    3A107780
                     *                                                    3A107790
3098 0 04DA                DC       A444       SLT 16 & RTE 16           3A107800
                     * 0000   FFFF   N/A   N/A   N/A   N/A AFTER LD       3A107810
                     * FFFF   0000   N/A   N/A   N/A   N/A AFTER SLT 16    3A107820
                     * 0000   FFFF   N/A   N/A   N/A   N/A AFTER RTE 16    3A107830
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED       3A107840
                     *                                                    3A107850
                     *                                                    3A107860
3099 0 04F9                DC       A44A       SLT 15                    3A107870
                     * 0000   5555   N/A   N/A   N/A   N/A AFTER LD       3A107880
                     * 2AAA   8000   N/A   N/A   N/A   N/A AFTER SLT 15    3A107890
                     * ACCUM NOT EQUAL 2AAA                               3A107900
                     *                                                    3A107910
                     *                                                    3A107920
309A 0 04F9                DC       A44A       SLT 15                    3A107930
                     * 0000   5555   N/A   N/A   N/A   N/A AFTER LD       3A107940
                     * 2AAA   8000   N/A   N/A   N/A   OFF AFTER SLT 15    3A107950
                     * CARRY SET-SHOULD NOT BE                            3A107960
                     *                                                    3A107970
                     *                                                    3A107980
309B 0 04F9                DC       A44A       SLT 15 & RTE 16           3A107990
                     * 0000   5555   N/A   N/A   N/A   N/A AFTER LD       3A108000
                     * 2AAA   8000   N/A   N/A   N/A   N/A AFTER SLT 15    3A108010
                     * 8000   2AAA   N/A   N/A   N/A   N/A AFTER RTE 16    3A108020
                     * ACCUM NOT EQUAL 8000-INDICATING Q REG FAILED       3A108030
                     *                                                    3A108040
                     *                                                    3A108050
309C 0 0519                DC       B440       SERIES OF SLTS-32         3A108060
                     *                          *TOTAL SHIFTS             3A108070
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LD       3A108080
                     * 0000   0000   N/A   N/A   N/A   N/A AFTER SLT@S     3A108090
                     * ACCUM NOT EQUAL 0000                               3A108100
                     *                                                    3A108110
                     *                                                    3A108120
309D 0 0519                DC       B440       SERIES OF SLTS-32         3A108130
                     *                          *TOTAL SHIFTS             3A108140
                     * 0000   0001   N/A   N/A   N/A   N/A AFTER LD       3A108150
                     * 0000   0000   N/A   N/A   N/A    C  AFTER SLT@S     3A108160
                     * CARRY NOT ON                                       3A106170
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*************************************************************************3A108180
        ADDRESS     *                                                     3A108190
          OF        *                                                     3A108200
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS               3A108210
*************************************************************************3A108220
309E 0 0519               DC       B440        SERIES OF SLTS-32         3A108230
                          *                     *TOTAL SHIFTS &           3A108240
                          *                     *RTE 16                   3A108250
                          * 0000   0001   N/A   N/A   N/A   N/A AFTER LD  3A108260
                          * 0000   0000   N/A   N/A   N/A   N/A AFTER SLTaS 3A108270
                          * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16 3A108280
                          * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED   3A108290
                          *                                               3A108300
                          *                                               3A108310
309F 0 0542               DC       A480        STO                       3A108320
                          * 0000   N/A    N/A   N/A   N/A   N/A           3A108330
                          * STORING 0000 INTO A STORAGE LOCATION           3A108340
                          * CONTAINING FFFF DID NOT RETURN 0000 WHEN       3A108350
                          * RELOADED IN THE ACCUM                         3A108360
                          *                                               3A108370
                          *                                               3A108380
30A0 0 054E               DC       A482        STO                       3A108390
                          * FFFF   N/A    N/A   N/A   N/A   N/A           3A108400
                          * STORING FFFF INTO A STORAGE LOCATION          3A108410
                          * CONTAINING 0000 DID NOT RETURN FFFF WHEN      3A108420
                          * RELOADED IN THE ACCUM                         3A108430
                          *                                               3A108440
                          *                                               3A108450
30A1 0 055F               DC       A4C0        STS                       3A108460
                          * N/A    N/A    N/A   N/A   N/A   ON AFTER LDS 3 3A108470
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER LDS 0 3A108480
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS  3A108490
                          * LDS  0 FAILED TO RESET CARRY AND OVERFLOW OR   3A108500
                          * STS FAILED TO STORE INDICATORS.                3A108510
                          *                                               3A108520
                          *                                               3A108530
30A2 0 056B               DC       A4C2        STS                       3A108540
                          * N/A    N/A    N/A   N/A   N/A   C&O AFTER LDS  3A108550
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS  3A108560
                          * STS DID NOT CLEAR CARRY                       3A108570
                          *                                               3A108580
                          *                                               3A108590
30A3 0 056B               DC       A4C2        STS  CK ACC               3A108600
                          * INITIALLY ACC HAS CORE LOCATION OF             3A108610
                          *   SYMBOLIC LABEL A4C2                         3A108620
                          * ACC DISTROYED AFTER STS                       3A108630
                          *                                               3A108640
                          *                                               3A108650
30A4 0 056B               DC       A4C2        STS                       3A108660
                          * N/A    N/A    N/A   N/A   N/A   C&O AFTER LDS  3A108670
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS  3A108680
                          * STS DID NOT CLEAR OVERFLOW                    3A108690
                          *                                               3A108700
                          *                                               3A108710
30A5 0 056B               DC       A4C2        STS                       3A108720
                          * N/A                                BEFORE LD  3A108730
                          * 0003                               AFTER LD   3A108740
                          * STS OF 0003 INTO A STORAGE LOCATION            3A108750
                          * CONTAINING 0000 DID NOT RETURN 0003 WHEN       3A108760
                          * RELOADED IN THE ACCUM                         3A108770
                          *                                               3A108780
30A6 0 0590               DC       A4C8        STS                       3A108790
                          * N/A    N/A    N/A   N/A   N/A   C&O AFTER LDS  3 3A108800
                          * N/A    N/A    N/A   N/A   N/A   C  AFTER LDS  2 3A108810
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS  3A108820
                          * 0002   N/A    N/A   N/A   N/A   OFF AFTER LD   3A108830
                          * STS FAILED TO STORE OR LDS 2 FAILED TO RESET   3A108840
                          * OVERFLOW.                                     3A108850
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*************************************************************************3A108860
        ADDRESS     *                                                     3A108870
          OF        *                                                     3A108880
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS               3A108890
*************************************************************************3A108900
30A7 0 0590               DC       A4C8        STS                       3A108910
                          * N/A    N/A    N/A   N/A   N/A   C&O AFTER LDS  3 3A108920
                          * N/A    N/A    N/A   N/A   N/A    C  AFTER LDS   3A108930
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS  3A108940
                          * STS DID NOT CLEAR CARRY OR OVERFLOW IF OVERFLOW 3A108950
                          * HAD NOT BEEN RESET BY LDS  2                   3A108960
                          *                                               3A108970
30A8 0 05A7               DC       A4CC        STS                       3A108980
                          * N/A    N/A    N/A   N/A   N/A   C&O AFTER LDS  3 3A108990
                          * N/A    N/A    N/A   N/A   N/A   O AFTER LDS  1  3A109000
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS   3A109010
                          * LDS 1 FAILED, IF ACCUMULATOR IS OTHER THAN /0001 3A109020
                          *                                               3A109030
                          *                                               3A109040
30A9 0 05A7               DC       A4CC        STS                       3A109050
                          * N/A    N/A    N/A   N/A   N/A   C&O AFTER LDS  3 3A109060
                          * N/A    N/A    N/A   N/A   N/A   O AFTER LDS  1  3A109070
                          * N/A    N/A    N/A   N/A   N/A   OFF AFTER STS   3A109080
                          * STS FAILED TO RESET INDICATORS.                3A109090
                          *                                               3A109100
                          *                                               3A109110
                          *                                               3A109120
30AA 0 05C4               DC       A500        BSC,D&EZC                 3A109130
                          * 8001   N/A    N/A   N/A   N/A   C&O           3A109140
                          * BSC SKIPPED-SHOULD NOT HAVE                    3A109150
                          *                                               3A109160
                          *                                               3A109170
30AB 0 05CF               DC       A502        BSC,-DC&                  3A109180
                          * 0000   N/A    N/A   N/A   N/A   C&O           3A109190
                          * BSC SKIPPED-SHOULD NOT HAVE                    3A109200
                          *                                               3A109210
                          *                                               3A109220
30AC 0 05DA               DC       A504        BSC,O-E                   3A109230
                          * 8000   N/A    N/A   N/A   N/A   C&O           3A109240
                          * BSC FAILED TO SKIP                            3A109250
                          *                                               3A109260
                          *                                               3A109270
30AD 0 05DA               DC       A504        BSC,O                     3A109280
                          * 8000   N/A    N/A   N/A   N/A    C            3A109290
                          * BSC FAILED TO CLEAR OVERFLOW                  3A109300
                          *                                               3A109310
30AE 0 05F1               DC       A508        BSC,C&Z                   3A109320
                          * 0001   N/A    N/A   N/A   N/A   OFF           3A109330
                          * BSC FAILED TO SKIP                            3A109340
                          *                                               3A109350
                          *                                               3A109360
30AF 0 05FC               DC       A50A        BSC,&DCE LONG FORM        3A109370
                          * 8001   N/A    N/A   N/A   N/A   C&O           3A109380
                          * BSC DID NOT BRANCH - SHOULD HAVE               3A109390
                          *                                               3A109400
                          *                                               3A109410
30B0 0 05FC               DC       A50A        BSC,&DCE LONG FORM        3A109420
                          * 8001   N/A    N/A   N/A   N/A   C&O           3A109430
                          * BSC SKIPPED-SHOULD BRANCH                      3A109440
                          *                                               3A109450
                          *                                               3A109460
30B1 0 0619               DC       A50C        BSC,-Z LONG FORM          3A109470
                          * 0004   N/A    N/A   N/A   N/A   C&O           3A109480
                          * BSC DID NOT BRANCH - SHOULD HAVE               3A109490
                          *                                               3A109500
                          *                                               3A109510
30B2 0 0619               DC       A50C        BSC,-Z LONG FORM          3A109520
                          * 0004   N/A    N/A   N/A   N/A   C&O           3A109530
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                    * BSC SKIPPED-SHOULD BRANCH                                3A109540
*************************************************************************3A109550
      ADDRESS       *                                                          3A109560
        OF          *                                                          3A109570
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                    3A109580
*************************************************************************3A109590
                    *                                                          3A109600
                    *                                                          3A109610
3083 0 062D              DC       A50E       BSC,&EOCZ LONG                   3A109620
                    *                        *FORM                             3A109630
                    * 8001   N/A    N/A   N/A   N/A   C&O                      3A109640
                    * BSC BRANCHED-SHOULD NOT                                  3A109650
                    *                                                          3A109660
                    *                                                          3A109670
3084 0 062D              DC       A50E       BSC,&EOCZ LONG                   3A109680
                    *                        *FORM                             3A109690
                    * 8001   N/A    N/A   N/A   N/A   C&O                      3A109700
                    * BSC SKIPPED-SHOULD NOT                                   3A109710
                    *                                                          3A109720
                    *                                                          3A109730
3085 0 0641              DC       B500       BSC,&                            3A109740
                    * 0001   N/A    N/A   N/A   N/A   C&O                      3A109750
                    * BSC ON PLUS CLEARED THE OVERFLOW F-F                     3A109760
                    *                                                          3A109770
                    *                                                          3A109780
3086 0 0641              DC       B500       BSC,&                            3A109790
                    * 0001   N/A    N/A   N/A   N/A   N/A                      3A109800
                    * BSC FAILED TO SKIP                                       3A109810
                    *                                                          3A109820
                    *                                                          3A109830
3087 0 0660              DC       A540       BSI,EC0&Z LONG                   3A109840
                    *                        *FORM                             3A109850
                    * 8001   N/A    N/A   N/A   N/A   C&O                      3A109860
                    * BSI DID NOT BRANCH - SHOULD HAVE                         3A109870
                    *                                                          3A109880
                    *                                                          3A109890
3088 0 0660              DC       A540       BSI,EC0&Z LONG                   3A109900
                    *                        *FORM                             3A109910
                    * 8001   N/A    N/A   N/A   N/A   C&O                      3A109920
                    * BSI SKIPPED-SHOULD BRANCH                                3A109930
                    *                                                          3A109940
                    *                                                          3A109950
3089 0 0660              DC       A540       BSI,EC0&Z LONG                   3A109960
                    *                        *FORM                             3A109970
                    * 8001   N/A    N/A   N/A   N/A   C&O AFTER LDS            3A109980
                    * 8001   N/A    N/A   N/A   N/A    C  AFTER BSI            3A109990
                    * BSI DID NOT CLEAR OVERFLOW                               3A110000
                    *                                                          3A110010
                    *                                                          3A110020
30BA 0 0681              DC       A544       BSI,Z- LONG FORM                 3A110030
                    * 0002   N/A    N/A   N/A   N/A   N/A                      3A110040
                    * BSI DID NOT BRANCH - SHOULD HAVE                         3A110050
                    *                                                          3A110060
                    *                                                          3A110070
30BB 0 0681              DC       A544       BSI,Z- LONG FORM                 3A110080
                    * 0002   N/A    N/A   N/A   N/A   N/A                      3A110090
                    * BSI SKIPPED-SHOULD BRANCH                                3A110100
                    *                                                          3A110110
                    *                                                          3A110120
30BC 0 0696              DC       A546       BSI,Z LONG FORM                  3A110130
                    * 0000   N/A    N/A   N/A   N/A   N/A                      3A110140
                    * BSI BRANCHED-SHOULD NOT                                  3A110150
                    *                                                          3A110160
                    *                                                          3A110170
30BD 0 0696              DC       A546       BSI,Z LONG FORM                  3A110180
                    * 0000   N/A    N/A   N/A   N/A   N/A                      3A110190
                    * BSI SKIPPED-SHOULD NOT     U                             3A110200
                    *                                                          3A110210
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                    *                                                          3A110220
*************************************************************************3A110230
      ADDRESS       *                                                          3A110240
        OF          *                                                          3A110250
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                    3A110260
*************************************************************************3A110270
30BE 0 06A9              DC       A548       BSI,- LONG FORM                  3A110280
                    * 8001   N/A    N/A   N/A   N/A   N/A                      3A110290
                    * BSI SKIPPED-SHOULD NOT                                  3A110300
                    *                                                          3A110310
                    *                                                          3A110320
30BF 0 06A9              DC       A548       BSI,- LONG FORM                  3A110330
                    * 8001   N/A    N/A   N/A   N/A   N/A                      3A110340
                    * BSI BRANCHED-SHOULD NOT                                  3A110350
                    *                                                          3A110360
30C0 0 06BB              DC       A54A       BSI,& LONG FORM                  3A110370
                    * 0002   N/A    N/A   N/A   N/A   N/A                      3A110380
                    * BSI SKIPPED-SHOULD NOT                                  3A110390
                    *                                                          3A110400
                    *                                                          3A110410
30C1 0 06BB              DC       A54A       BSI,& LONG FORM                  3A110420
                    * 0002   N/A    N/A   N/A   N/A   N/A                      3A110430
                    * BSI BRANCHED-SHOULD NOT                                  3A110440
                    *                                                          3A110450
                    *                                                          3A110460
30C2 0 06CD              DC       A54C       BSI,E LONG FORM                  3A110470
                    * 0002   N/A    N/A   N/A   N/A   N/A                      3A110480
                    * BSI SKIPPED-SHOULD NOT                                  3A110490
                    *                                                          3A110500
                    *                                                          3A110510
30C3 0 06CD              DC       A54C       BSI,E LONG FORM                  3A110520
                    * 0002   N/A    N/A   N/A   N/A   N/A                      3A110530
                    * BSI BRANCHED-SHOULD NOT                                  3A110540
                    *                                                          3A110550
                    *                                                          3A110560
30C4 0 06DF              DC       A54E       BSI,C LONG FORM                  3A110570
                    * N/A    N/A    N/A   N/A   N/A    C                       3A110580
                    * BSI SKIPPED-SHOULD NOT                                  3A110590
                    *                                                          3A110600
                    *                                                          3A110610
30C5 0 06DF              DC       A54E       BSI,C LONG FORM                  3A110620
                    * N/A    N/A    N/A   N/A   N/A    C                       3A110630
                    * BSI BRANCHED SHOULD NOT                                  3A110640
                    *                                                          3A110650
                    *                                                          3A110660
30C6 0 06F1              DC       A54F       BSI,O LONG FORM                  3A110670
                    * N/A    N/A    N/A   N/A   N/A    O                       3A110680
                    * BSI SKIPPED-SHOULD NOT                                  3A110690
                    *                                                          3A110700
                    *                                                          3A110710
30C7 0 06F1              DC       A54F       BSI,O LONG FORM                  3A110720
                    * N/A    N/A    N/A   N/A   N/A    O                       3A110730
                    * BSI BRANCHED-SHOULD NOT                                  3A110740
                    *                                                          3A110750
                    *                                                          3A110760
30C8 0 0704              DC       A580       LDD                              3A110770
                    * 0000   0000   N/A   N/A   N/A   N/A                      3A110780
                    * ACCUM NOT EQUAL 0000                                     3A110790
                    *                                                          3A110800
                    *                                                          3A110810
30C9 0 0704              DC       A580       LDD & RTE 16                     3A110820
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD            3A110830
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16         3A110840
                    * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED             3A110850
                    *                                                          3A110860
                    *                                                          3A110870
30CA 0 0717              DC       A584       LDD                              3A110880
                    * FFFF   FFFF   N/A   N/A   N/A   N/A                      3A110890
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                    * ACCUM NOT EQUAL FFFF                                  3A110900
*************************************************************************3A110910
        ADDRESS     *                                                       3A110920
          OF        *                                                       3A110930
B-REG    ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                 3A110940
*************************************************************************3A110950
30CB 0 0717             DC      A584        LDD & RTE 16                    3A110960
                    * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LDD         3A110970
                    * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER RTE 16      3A110980
                    * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED          3A110990
                    *                                                       3A111000
                    *                                                       3A111010
30CC 0 072B             DC      A588        LDD ODD ADDRESS                 3A111020
                    * 0000   0000   N/A   N/A   N/A   N/A                   3A111030
                    * ACCUM NOT EQUAL 0000                                  3A111040
                    *                                                       3A111050
                    *                                                       3A111060
30CD 0 072B             DC      A588        LDD-ODD ADDRESS                 3A111070
                    *                       * & RTE 16                      3A111080
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD         3A111090
                    * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16      3A111100
                    * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED          3A111110
                    *                                                       3A111120
                    *                                                       3A111130
30CE 0 073D             DC      A5C0        STD                             3A111140
                    * 0000   0000   N/A   N/A   N/A   N/A                   3A111150
                    * USING STD-ACCUM NOT STORED IN LOCATION EA              3A111160
                    *                                                       3A111170
                    *                                                       3A111180
30CF 0 073D             DC      A5C0        STD                             3A111190
                    * 0000   0000   N/A   N/A   N/A   N/A                   3A111200
                    * USING STD-Q REG NOT STORED IN LOCATION EA&1            3A111210
                    *                                                       3A111220
                    *                                                       3A111230
30D0 0 0751             DC      A5C4        STD                             3A111240
                    * FFFF   FFFF   N/A   N/A   N/A   N/A                   3A111250
                    * USING STD-ACCUM NOT STORED IN LOCATION EA              3A111260
                    *                                                       3A111270
                    *                                                       3A111280
30D1 0 0751             DC      A5C4        STD                             3A111290
                    * FFFF   FFFF   N/A   N/A   N/A   N/A                   3A111300
                    * USING STD-Q REG NOT STORED IN LOCATION EA&1            3A111310
                    *                                                       3A111320
                    *                                                       3A111330
30D2 0 076A             DC      A5C8        STD ODD ADRESS                  3A111340
                    * 0000   0000   N/A   N/A   N/A   N/A                   3A111350
                    * STD USING ODD ADDRESS-ACCUM NOT STORED IN EA           3A111360
                    *                                                       3A111370
                    *                                                       3A111380
30D3 0 076A             DC      A5C8        STD-ODD ADDRESS                 3A111390
                    * 0000   0000   N/A   N/A   N/A   N/A                   3A111400
                    * STD USING ODD ADDRESS-ACCUM NOT STORED                 3A111410
                    * IN EA&1                                               3A111420
                    *                                                       3A111430
                    *                                                       3A111440
30D4 0 078F             DC      A600        LDX 1                           3A111450
                    * N/A    N/A    N/A   N/A   N/A   N/A                   3A111460
                    * TAG REG BIT 7 WILL NOT SET                            3A111470
                    *                                                       3A111480
                    *                                                       3A111490
30D5 0 0798             DC      A602        LDX 2                           3A111500
                    * N/A    N/A    N/A   N/A   N/A   N/A                   3A111510
                    * TAG REG BIT 6 WILL NOT SET                            3A111520
                    *                                                       3A111530
                    *                                                       3A111540
30D6 0 07A1             DC      A604        LDX 1                           3A111550
                    * N/A    N/A    0000  N/A   N/A   N/A                   3A111560
                    * INDEX REG 1 NOT EQUAL 0000                            3A111570
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                    *                                                       3A111580
*************************************************************************3A111590
        ADDRESS     *                                                       3A111600
          OF        *                                                       3A111610
B-REG    ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                 3A111620
*************************************************************************3A111630
30D7 0 07AD             DC      A606        LDX 2                           3A111640
                    * N/A    N/A    N/A   0000  N/A   N/A                   3A111650
                    * INDEX REG 2 NOT EQUAL 0000                           3A111660
                    *                                                       3A111670
                    *                                                       3A111680
30D8 0 07BA             DC      A608        LDX 3                           3A111690
                    * N/A    N/A    N/A   N/A   0000  N/A                   3A111700
                    * INDEX REG 3 NOT EQUAL 0000                            3A111710
                    *                                                       3A111720
                    *                                                       3A111730
30D9 0 07C7             DC      A60A        LDX 1                           3A111740
                    * N/A    N/A    FFFF  N/A   N/A   N/A                   3A111750
                    * INDEX REG 1 NOT EQUAL FFFF                            3A111760
                    *                                                       3A111770
                    *                                                       3A111780
30DA 0 07D4             DC      A60C        LDX 2                           3A111790
                    * N/A    N/A    N/A   FFFF  N/A   N/A                   3A111800
                    * INDEX REG 2 NOT EQUAL FFFF                            3A111810
                    *                                                       3A111820
                    *                                                       3A111830
30DB 0 07E1             DC      A60E        LDX 3                           3A111840
                    * N/A    N/A    N/A   N/A   FFFF  N/A                   3A111850
                    * INDEX REG 3 NOT EQUAL FFFF                            3A111860
                    *                                                       3A111870
                    *                                                       3A111880
30DC 0 07EE             DC      B600        LDX 1 LONG FORM                 3A111890
                    * N/A    N/A    0001  N/A   N/A   N/A                   3A111900
                    * INDEX REG 1 NOT EQUAL 0001                            3A111910
                    *                                                       3A111920
                    *                                                       3A111930
30DD 0 07FC             DC      B602        LDX 3 INDIRECT                  3A111940
                    * N/A    N/A    N/A   N/A   FFFF  N/A                   3A111950
                    * INDEX REG 3 NOT EQUAL FFFF                            3A111960
                    *                                                       3A111970
                    *                                                       3A111980
30DE 0 0810             DC      A640        STX                             3A111990
                    * N/A    N/A    N/A   N/A   N/A   N/A                   3A112000
                    * STX WITH NO TAG DID NOT STORE I-CTR CORRECT           3A112010
                    *                                                       3A112020
                    *                                                       3A112030
30DF 0 0827             DC      A642        STX 1                           3A112040
                    * N/A    N/A    0000  N/A   N/A   N/A                   3A112050
                    * INDEX REG 1 WAS NOT STORED BY STX                     3A112060
                    *                                                       3A112070
                    *                                                       3A112080
30E0 0 0834             DC      A644        STX 2                           3A112090
                    * N/A    N/A    N/A   0000  N/A   N/A                   3A112100
                    * INDEX REG 2 NOT STORED BY STX                         3A112110
                    *                                                       3A112120
                    *                                                       3A112130
30E1 0 0841             DC      A646        STX 3                           3A112140
                    * N/A    N/A    N/A   N/A   0000  N/A                   3A112150
                    * INDEX REG 3 NOT STORED BY STX                         3A112160
                    *                                                       3A112170
                    *                                                       3A112180
30E2 0 084E             DC      A648        STX 1                           3A112190
                    * N/A    N/A    FFFF  N/A   N/A   N/A                   3A112200
                    * INDEX REG 1 NOT STORED BY STX                         3A112210
                    *                                                       3A112220
                    *                                                       3A112230
30E3 0 085C             DC      A64A        STX 2                           3A112240
                    * N/A    N/A    N/A   FFFF  N/A   N/A                   3A112250
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                    * INDEX REG 2 NOT STORED BY STX                          3A112260
*************************************************************************3A112270
        ADDRESS     *                                                    3A112280
          OF        *                                                    3A112290
B-REG    ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS              3A112300
*************************************************************************3A112310
                    *                                                    3A112320
30E4 0 086A               DC       A64C       STX 3                     3A112330
                    * N/A    N/A    N/A   N/A   FFFF  N/A               3A112340
                    * INDEX REG 3 NOT STORED BY STX                      3A112350
                    *                                                    3A112360
                    *                                                    3A112370
30E5 0 08DC               DC       A680       ADD                       3A112380
                    * FFFF   N/A    N/A   N/A   N/A    C  AFTER LD&LDS   3A112390
                    * FFFF   N/A    N/A   N/A   N/A    C  AFTER A        3A112400
                    * ADD FFFF & 0000 TURNED ON OVERFLOW                 3A112410
                    *                                                    3A112420
                    *                                                    3A112430
30E6 0 08DC               DC       A680       ADD                       3A112440
                    * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD       3A112450
                    * FFFF   N/A    N/A   N/A   N/A   N/A AFTER A        3A112460
                    * ADD FFFF & 0000 FAILED TO EQUAL FFFF               3A112470
                    *                                                    3A112480
                    *                                                    3A112490
30E7 0 08F1               DC       A684       ADD                       3A112500
                    * FFFF   N/A    N/A   N/A   N/A   OFF AFTER LD&LDS   3A112510
                    * 0000   N/A    N/A   N/A   N/A    C  AFTER A        3A112520
                    * ADD FFFF & 0001 DID NOT TURN ON CARRY              3A112530
                    *                                                    3A112540
                    *                                                    3A112550
30E8 0 08F1               DC       A684       ADD                       3A112560
                    * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD&LDS   3A112570
                    * 0000   N/A    N/A   N/A   N/A   N/A AFTER A        3A112580
                    * ADD FFFF & 0001 DID NOT EQUAL 0000                 3A112590
                    *                                                    3A112600
                    *                                                    3A112610
30E9 0 0904               DC       A688       ADD                       3A112620
                    * FFFF   N/A    N/A   N/A   N/A   OFF AFTER LD&LDS   3A112630
                    * FFFF   N/A    N/A   N/A   N/A    C  AFTER A        3A112640
                    * ADD FFFF & FFFF DID NOT TURN ON CARRY              3A112650
                    *                                                    3A112660
                    *                                                    3A112670
30EA 0 0904               DC       A688       ADD                       3A112680
                    * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LD&LDS   3A112690
                    * FFFF   N/A    N/A   N/A   N/A   N/A AFTER A        3A112700
                    * ADD FFFF & FFFF DID NOT EQUAL FFFE                 3A112710
                    *                                                    3A112720
                    *                                                    3A112730
30EB 0 0918               DC       A68C       ADD                       3A112740
                    * 4000   N/A    N/A   N/A   N/A   OFF AFTER LD       3A112750
                    * 8000   N/A    N/A                0  AFTER A        3A112760
                    * ADD 4000 & 4000 DID NOT TURN ON OVERFLOW            3A112770
                    *                                                    3A112780
                    *                                                    3A112790
30EC 0 0918               DC       A68C       ADD                       3A112800
                    * 4000   N/A    N/A   N/A   N/A   N/A               3A112810
                    * ADD 4000 & 4000 DID NOT EQUAL 8000                 3A112820
                    *                                                    3A112830
                    *                                                    3A112840
30ED 0 092C               DC       B680       ADD                       3A112850
                    * 8000   N/A    N/A   N/A   N/A   N/A AFTER LD       3A112860
                    * 0000   N/A    N/A   N/A   N/A   N/A AFTER A        3A112870
                    * ADD 8000 & 8000 NOT EQUAL 0000                     3A112880
                    *                                                    3A112890
                    *                                                    3A112900
30EE 0 092C               DC       B680       ADD                       3A112910
                    * 8000   N/A    N/A   N/A   N/A   OFF AFTER LD       3A112920
                    * 0000   N/A                       C&O AFTER A       3A112930
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                    * ADD 8000 & 8000 DID NOT TURN ON OVERFLOW               3A112940
*************************************************************************3A112950
        ADDRESS     *                                                    3A112960
          OF        *                                                    3A112970
B-REG    ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS              3A112980
*************************************************************************3A112990
                    *                                                    3A113000
                    *                                                    3A113010
30EF 0 092C               DC       B680       ADD                       3A113020
                    * 8000   N/A    N/A   N/A   N/A   OFF AFTER LD       3A113030
                    * 0000   N/A    N/A   N/A   N/A   C&O AFTER A        3A113040
                    * ADD 8000 & 8000 DID NOT TURN ON CARRY              3A113050
                    *                                                    3A113060
                    *                                                    3A113070
30F0 0 0954               DC       A6C0       LDX 1                     3A113080
                    * N/A    N/A    FFF4  N/A   N/A   N/A               3A113090
                    * INDEX REG 1 WAS NOT LOADED EQUAL FFF4               3A113100
                    *                                                    3A113110
                    *                                                    3A113120
30F1 0 0954               DC       A6C0       LD 1                      3A113130
                    * N/A    N/A    FFF4  N/A   N/A   N/A               3A113140
                    * A LOAD INSTR INDEXED BY INDEX REG 1                 3A113150
                    * LOADED THE WRONG LOCATION                          3A113160
                    *                                                    3A113170
                    *                                                    3A113180
30F2 0 096C               DC       A6C2       LDX 2                     3A113190
                    * N/A    N/A    N/A   0004  N/A   N/A               3A113200
                    * INDEX REG 2 NOT LOADED EQUAL 0004                   3A113210
                    *                                                    3A113220
                    *                                                    3A113230
30F3 0 096C               DC       A6C2       LD 2                      3A113240
                    * N/A    N/A    N/A   0004  N/A   N/A               3A113250
                    * A LOAD INSTR INDEXED BY INDEX REG 2                 3A113260
                    * LOADED THE WRONG LOCATION                          3A113270
                    *                                                    3A113280
                    *                                                    3A113290
30F4 0 0984               DC       A6C4       LDX 3                     3A113300
                    * N/A    N/A    N/A   N/A   0000  N/A               3A113310
                    * INDEX REG 3 NOT LOADED EQUAL 0000                   3A113320
                    *                                                    3A113330
                    *                                                    3A113340
30F5 0 0984               DC       A6C4       LD 3                      3A113350
                    * N/A    N/A    N/A   N/A   0000  N/A               3A113360
                    * A LOAD INSTR INDEXED BY INDEX REG 3                 3A113370
                    * LOADED THE WRONG LOCATION                          3A113380
                    *                                                    3A113390
                    *                                                    3A113400
30F6 0 099B               DC       A6C6       LDX 3                     3A113410
                    * N/A    N/A    N/A   N/A   0001  N/A               3A113420
                    * INDEX REG 3 NOT EQUAL 0001                         3A113430
                    *                                                    3A113440
                    *                                                    3A113450
30F7 0 099B               DC       A6C6       LD 3 LONG FORM            3A113460
                    * N/A    N/A    N/A   N/A   0001  N/A               3A113470
                    * A LONG FORM LOAD INDEXED BY INDEX REG 3             3A113480
                    * LOADED THE WRONG LOCATION                          3A113490
                    *                                                    3A113500
                    *                                                    3A113510
30F8 0 09B3               DC       A6C8       LDX 3                     3A113520
                    * N/A    N/A    N/A   N/A   FFFF  N/A               3A113530
                    * INDEX REG 3 NOT EQUAL FFFF                         3A113540
                    *                                                    3A113550
                    *                                                    3A113560
30F9 0 09B3               DC       A6C8       LD 3 INDIRECT             3A113570
                    * N/A    N/A    N/A   N/A   FFFF  N/A               3A113580
                    * AN INDIRECT LOAD INDEXED BY INDEX REG 3             3A113590
                    * LOADED THE WRONG LOCATION                          3A113600
                    *                                                    3A113610
```

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                    *                                                         3A113620
***************************************************************************** 3A113630
        ADDRESS     *                                                         3A113640
          OF        *                                                         3A113650
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                   3A113660
***************************************************************************** 3A113670
30FA 0 0A38             DC      A700       SUB                                3A113680
                    * 0000   N/A   N/A   N/A   N/A    N/A AFTER LD            3A113690
                    * FFFF   N/A   N/A   N/A   N/A    N/A AFTER S             3A113700
                    * SUB 0001 FORM 0000 DID NOT EQUAL FFFF                   3A113710
                    *                                                         3A113720
                    *                                                         3A113730
30FB 0 0A38             DC      A700       SUB                                3A113740
                    * 0000   N/A   N/A   N/A   N/A    OFF AFTER LD            3A113750
                    * FFFF   N/A   N/A   N/A   N/A     C  AFTER S             3A113760
                    * SUB 0001 FROM 0000 DID NOT SET CARRY                    3A113770
                    *                                                         3A113780
                    *                                                         3A113790
30FC 0 0A4F             DC      A704       SUB                                3A113800
                    * 0000   N/A   N/A   N/A   N/A    N/A AFTER LD            3A113810
                    * 0001   N/A   N/A   N/A   N/A    N/A AFTER S             3A113820
                    * SUB FFFF FROM 0000 DID NOT EQUAL 0001                   3A113830
                    *                                                         3A113840
                    *                                                         3A113850
30FD 0 0A4F             DC      A704       SUB                                3A113860
                    * 0000   N/A   N/A   N/A   N/A    OFF AFTER LD            3A113870
                    * 0001   N/A   N/A   N/A   N/A     C  AFTER S             3A113880
                    * SUB FFFF FROM 0000 DID NOT SET CARRY                    3A113890
                    *                                                         3A113900
                    *                                                         3A113910
30FE 0 0A66             DC      A708       SUB                                3A113920
                    * 8000   N/A   N/A   N/A   N/A    N/A AFTER LD            3A113930
                    * 7FFF   N/A   N/A   N/A   N/A    N/A AFTER S             3A113940
                    * SUB 0001 FROM 8000 DID NOT EQUAL 7FFF                   3A113950
                    *                                                         3A113960
                    *                                                         3A113970
30FF 0 0A66             DC      A708       SUB                                3A113980
                    * 8000   N/A   N/A   N/A   N/A    OFF AFTER LD            3A113990
                    * 0001   N/A   N/A   N/A   N/A     O  AFTER CARRY         3A114000
                    * AND OVERFLOW CONDITION HAD BEEN LOADED INTO             3A114010
                    * ACCUMULATOR AS A NUMBER                                 3A114020
                    * SUB 0001 FROM 8000 DID NOT TURN ON OVERFLOW             3A114030
                    *                                                         3A114040
                    *                                                         3A114050
3100 0 0A7D             DC      A70C       SUB                                3A114060
                    * 0000   N/A   N/A   N/A   N/A    N/A AFTER LD            3A114070
                    * 8000   N/A   N/A   N/A   N/A    N/A AFTER S             3A114080
                    * SUB 8000 FROM 0000 DID NOT EQUAL 8000                   3A114090
                    *                                                         3A114100
                    *                                                         3A114110
3101 0 0A7D             DC      A70C       SUB                                3A114120
                    * 0000   N/A   N/A   N/A   N/A    OFF AFTER LD            3A114130
                    * 8000   N/A   N/A   N/A   N/A    C&O AFTER S             3A114140
                    * SUB 8000 FROM 0000 DID NOT TURN ON OVERFLOW             3A114150
                    *                                                         3A114160
                    *                                                         3A114170
3102 0 0A7D             DC      A70C       SUB                                3A114180
                    * 0000   N/A   N/A   N/A   N/A    OFF AFTER LD            3A114190
                    * 8000   N/A   N/A   N/A   N/A    C&O AFTER S             3A114200
                    * SUB 8000 FROM 0000 DID NOT TURN ON CARRY                3A114210
                    *                                                         3A114220
                    *                                                         3A114230
3103 0 0AA8             DC      A740       AD-0000 0000                       3A114240
                    * FFFF  FFFF   N/A   N/A   N/A    N/A AFTER LDD           3A114250
                    * FFFF  FFFF   N/A   N/A   N/A    N/A AFTER AD            3A114260
                    * ACCUM NOT EQUAL FFFF                                    3A114270
                    *                                                         3A114280
                    *                                                         3A114290
```



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                    *                                                         3A114300
***************************************************************************** 3A114310
        ADDRESS     *                                                         3A114320
          OF        *                                                         3A114330
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                   3A114340
***************************************************************************** 3A114350
3104 0 0AA8             DC      A740       AD-0000 0000                       3A114360
                    * FFFF  FFFF   N/A   N/A   N/A    N/A AFTER ADD           3A114370
                    * FFFF  FFFF   N/A   N/A   N/A    N/A AFTER RTE           3A114380
                    * Q REG NOT EQUAL FFFF                                    3A114390
                    *                                                         3A114400
                    *                                                         3A114410
3105 0 0AA8             DC      A740       AD-0000 0000                       3A114420
                    * FFFF  FFFF   N/A   N/A   N/A    OFF AFTER LDD           3A114430
                    * FFFF  FFFF   N/A   N/A   N/A    OFF AFTER RTE           3A114440
                    * OVERFLOW SET SHOULD NOT BE                              3A114450
                    *                                                         3A114460
                    *                                                         3A114470
3106 0 0AA8             DC      A740       AD-0000 0000                       3A114480
                    * FFFF  FFFF   N/A   N/A   N/A    OFF AFTER LDD           3A114490
                    * FFFF  FFFF   N/A   N/A   N/A    OFF AFTER RTE           3A114500
                    * CARRY SET-SHOULD NOT BE                                 3A114510
                    *                                                         3A114520
                    *                                                         3A114530
3107 0 0AD7             DC      A746       AD-FFFF FFFF                       3A114540
                    * 0000  0001   N/A   N/A   N/A    N/A AFTER LDD           3A114550
                    * 0000  0000   N/A   N/A   N/A    N/A AFTER AD            3A114560
                    * OVERFLOW SET- SHOULD NOT BE                             3A114570
                    *                                                         3A114580
                    *                                                         3A114590
3108 0 0AD7             DC      A746       AD-FFFF FFFF                       3A114600
                    * 0000  0001   N/A   N/A   N/A    N/A AFTER LDD           3A114610
                    * 0000  0000   N/A   N/A   N/A    N/A AFTER AD            3A114620
                    * Q REG NOT EQUAL 0000                                    3A114630
                    *                                                         3A114640
                    *                                                         3A114650
3109 0 0AD7             DC      A746       AD-FFFF FFFF                       3A114660
                    * 0000  0001   N/A   N/A   N/A    OFF AFTER LDD           3A114670
                    * 0000  0000   N/A   N/A   N/A     C  AFTER AD            3A114680
                    * CARRY NOT SET- SHOULD BE                                3A114690
                    *                                                         3A114700
                    *                                                         3A114710
310A 0 0AD7             DC      A746       AD-FFFF FFFF                       3A114720
                    * 0000  0001   N/A   N/A   N/A    OFF AFTER LDD           3A114730
                    * 0000  0000   N/A   N/A   N/A     C  AFTER AD            3A114740
                    * CARRY NOT SET-SHOULD BE                                 3A114750
                    *                                                         3A114760
                    *                                                         3A114770
310B 0 0B03             DC      A74C       AD-FFFF FFFF                       3A114780
                    * FFFF  FFFF   N/A   N/A   N/A    N/A AFTER LDD           3A114790
                    * FFFF  FFFE   N/A   N/A   N/A    N/A AFTER AD            3A114800
                    * ACCUM NOT EQUAL FFFF                                    3A114810
                    *                                                         3A114820
                    *                                                         3A114830
310C 0 0B03             DC      A74C       AD-FFFF FFFF                       3A114840
                    * FFFF  FFFF   N/A   N/A   N/A    N/A AFTER LDD           3A114850
                    * FFFF  FFFE   N/A   N/A   N/A    N/A AFTER AD            3A114860
                    * Q REG NOT EQUAL FFFE                                    3A114870
                    *                                                         3A114880
                    *                                                         3A114890
310D 0 0B03             DC      A74C       AD-FFFF FFFF                       3A114900
                    * FFFF  FFFF   N/A   N/A   N/A    OFF AFTER LDD           3A114910
                    * FFFF  FFFE   N/A   N/A   N/A     C  AFTER AD            3A114920
                    * OVERFLOW ON-SHOULD NOT BE                               3A114930
                    *                                                         3A114940
                    *                                                         3A114950
                    *                                                         3A114960
                    *                                                         3A114970
```

```
                        *
*****************************************************************************
        ADDRESS         *
          OF            *
B-REG   ROUTINE         * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*****************************************************************************
310E 0 0B03                  DC      A74C        AD-FFFF FFFF
                        * FFFF  FFFF   N/A   N/A   N/A   OFF AFTER LDD
                        * FFFF  FFFE   N/A   N/A   N/A    C  AFTER AD
                        * CARRY NOT ON-SHOULD BE
                        *
                        *
310F 0 0B2D                  DC      B742        AD-FFFF FFFF
                        * FFFF  7FFF   N/A   N/A   N/A   N/A AFTER LDD
                        * FFFF  7FFE   N/A   N/A   N/A   N/A AFTER AD
                        * ACCUM NOT EQUAL FFFF
                        *
                        *
3110 0 0B2D                  DC      B742        AD-FFFF FFFF
                        * FFFF  7FFF   N/A   N/A   N/A   N/A AFTER LDD
                        * FFFF  7FFE   N/A   N/A   N/A   N/A AFTER AD
                        * Q REG NOT EQUAL 7FFE
                        *
                        *
3111 0 0B2D                  DC      B742        AD-FFFF FFFF
                        * FFFF  7FFF   N/A   N/A   N/A   OFF AFTER LDD
                        * FFFF  7FFE   N/A   N/A   N/A    C  AFTER AD
                        * OVERFLOW SET-SHOULD NOT BE
                        *
                        *
3112 0 0B2D                  DC      B742        AD-FFFF FFFF
                        * FFFF  7FFF   N/A   N/A   N/A   OFF AFTER LDD
                        * FFFF  7FFE   N/A   N/A   N/A    C  AFTER AD
                        * CARRY NOT SET-SHOULD BE
                        *
                        *
3113 0 0B57                  DC      B747        AD-0001 ODD LOC
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER LDD
                        * 0001  0002   N/A   N/A   N/A   N/A AFTER AD
                        * ACCUM NOT EQUAL 0001
                        *
                        *
3114 0 0B57                  DC      B747        AD-0001 ODD LOC
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER LDD
                        * 0001  0002   N/A   N/A   N/A   N/A AFTER AD
                        * Q REG NOT EQUAL 0002
                        *
                        *
3115 0 0B79                  DC      A780        SD-0000 0001
                        * 0000  0000   N/A   N/A   N/A   N/A AFTER LDD
                        * FFFF  FFFF   N/A   N/A   N/A   N/A AFTER SD
                        * ACCUM NOT EQUAL FFFF
                        *
                        *
3116 0 0B79                  DC      A780        SD-0000 0001
                        * 0000  0000   N/A   N/A   N/A   N/A AFTER LDD
                        * FFFF  FFFF   N/A   N/A   N/A   N/A AFTER SD
                        * Q REG NOT EQUAL FFFF
                        *
                        *
3117 0 0B79                  DC      A780        SD-0000 0001
                        * 0000  0000   N/A   N/A   N/A   OFF AFTER LDD
                        * FFFF  FFFF   N/A   N/A   N/A    C  AFTER SD
                        * OVERFLOW ON-SHOULD NOT BE
                        *
                        *
                        *
                        *
```



```
                        *
*****************************************************************************
        ADDRESS         *
          OF            *
B-REG   ROUTINE         * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
*****************************************************************************
3118 0 0B79                  DC      A780        SD-0000 0001
                        * 0000  0000   N/A   N/A   N/A   OFF AFTER LDD
                        * FFFF  FFFF   N/A   N/A   N/A    C  AFTER SD
                        * CARRY NOT ON-SHOULD BE
                        *
                        *
3119 0 0BA3                  DC      A786        SD-FFFF FFFF
                        * 0000  0000   N/A   N/A   N/A   N/A AFTER LDD
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER SD
                        * ACCUM NOT EQUAL TO 0000
                        *
                        *
311A 0 0BA3                  DC      A786        SD-FFFF FFFF
                        * 0000  0000   N/A   N/A   N/A   N/A AFTER LDD
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER SD
                        * Q REG NOT EQUAL 0001
                        *
                        *
311B 0 0BB8                  DC      A78A        SD-FFFF FFFF
                        * 0000  C000   N/A   N/A   N/A   N/A AFTER LDD
                        * 0000  C001   N/A   N/A   N/A   N/A AFTER SD
                        * ACCUM NOT EQUAL 0000
                        *
                        *
311C 0 0BB8                  DC      A78A        SD-FFFF FFFF
                        * 0000  C000   N/A   N/A   N/A   N/A AFTER LDD
                        * 0000  C001   N/A   N/A   N/A   N/A AFTER SD
                        * Q REG NOT EQUAL C001
                        *
                        *
311D 0 0BCC                  DC      A78E        SD-FFFF ODD LOC
                        * 0000  0000   N/A   N/A   N/A   N/A AFTER LDD
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER SD
                        * ACCUM NOT EQUAL 0000
                        *
                        *
311E 0 0BCC                  DC      A78E        SD-FFFF ODD LOC
                        * 0000  0000   N/A   N/A   N/A   N/A AFTER LDD
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER SD
                        * Q REG NOT EQUAL 0001
                        *
                        *
311F 0 0BEC                  DC      A7C0        MULT-2AAA
                        * 5555  N/A    N/A   N/A   N/A   N/A AFTER LD
                        * 0E38  9C72   N/A   N/A   N/A   N/A AFTER M
                        * ACCUM NOT EQUAL 0E38
                        *
                        *
3120 0 0BEC                  DC      A7C0        MULT-2AAA
                        * 5555  N/A    N/A   N/A   N/A   N/A AFTER LD
                        * 0E38  9C72   N/A   N/A   N/A   N/A AFTER M
                        * Q REG NOT EQUAL 9C72
                        *
                        *
3121 0 0C01                  DC      A7C4        MULT-FFFF
                        * FFFF  N/A    N/A   N/A   N/A   N/A AFTER LD
                        * 0000  0001   N/A   N/A   N/A   N/A AFTER M
                        * ACCUM NOT EQUAL 0000
                        *
                        *
                        *
                        *
```

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                    *
**********************************************************************
        ADDRESS     *
          OF        *
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
**********************************************************************
3122 0 0C01                 DC       A7C4       MULT-FFFF
                    * FFFF   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0001   N/A   N/A   N/A    N/A AFTER M
                    * Q REG NOT EQUAL 0001
                    *
                    *
3123 0 0C15                 DC       A7C8       MULT-FFFF
                    * 0000   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * ACCUM NOT EQUAL 0000
                    *
                    *
3124 0 0C15                 DC       A7C8       MULT-FFFF
                    * 0000   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * Q REG NOT EQUAL 0000
                    *
                    *
3125 0 0C28                 DC       A7CC       MULT-0000
                    * FFFF   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * ACCUM NOT EQUAL 0000
                    *
                    *
3126 0 0C28                 DC       A7CC       MULT-0000
                    * FFFF   N/A    N/A   N/A   N/A    N/A AFTER LD
                    * 0000   0000   N/A   N/A   N/A    N/A AFTER M
                    * Q REG NOT EQUAL 0000
                    *
                    *
3127 0 0C43                 DC       A800       DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    N/A AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * ACCUM NOT EQUAL 8000
                    *
                    *
3128 0 0C43                 DC       A800       DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    N/A AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * Q REG NOT EQUAL 7FFF
                    *
                    *
3129 0 0C43                 DC       A800       DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    OFF AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * OVERFLOW ON-SHOULD NOT BE
                    *
                    *
312A 0 0C43                 DC       A800       DVD-8000
                    * 4000   7FFF   N/A   N/A   N/A    OFF AFTER LDD
                    * 8000   7FFF   N/A   N/A   N/A    N/A AFTER D
                    * CARRY ON-SHOULD NOT BE
                    *
                    *
312B 0 0C71                 DC       A806       DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    N/A AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * ACCUM NOT EQUAL 5555
                    *
                    *
                    *
                    *
```



```
                    *
**********************************************************************
        ADDRESS     *
          OF        *
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS
**********************************************************************
312C 0 0C71                 DC       A806       DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    N/A AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * Q REG NOT EQUAL 2DAA
                    *
                    *
312D 0 0C71                 DC       A806       DVD-5555
                    * 1C71   B3E3   N/A   N/A   N/A    OFF AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * OVERFLOW ON-SHOULD NOT BE
                    *
                    *
312E 0 0C71                 DC       A806       DVD-5555
                    * 1C71   BBE3   N/A   N/A   N/A    OFF AFTER LDD
                    * 5555   2DAA   N/A   N/A   N/A    N/A AFTER D
                    * CARRY ON-SHOULD NOT BE
                    *
                    *
312F 0 0C9A                 DC       A80C       DVD-0000
                    * 0000   0001   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     0  AFTER D
                    * OVERFLOW NOT ON- SHOULD BE OR Q-REG NOT 1
                    *
                    *
3130 0 0CA9                 DC       A80E       DVD-0001
                    * 4000   0000   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     0  AFTER D
                    * OVERFLOW NOT ON-SHOULD BE
                    *
                    *
3131 0 0CB4                 DC       B800       DVD-4000
                    * A000   0000   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     0  AFTER D
                    * OVERFLOW NOT ON-SHOULD BE
                    *
                    *
3132 0 0CBF                 DC       B802       DVD-8000
                    * C000   0000   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     0  AFTER D
                    * OVERFLOW OFF--SHOULD BE ON
                    *
                    *
3133 0 0CCA                 DC       B804       DVD-0001
                    * 0000   FFFF   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     0  AFTER D
                    * OVERFLOW OFF--SHOULD BE ON
                    *
                    *
3134 0 0CD5                 DC       B806       DVD-0001
                    * FFFF   7FFF   N/A   N/A   N/A    OFF AFTER LDD
                    * N/A    N/A    N/A   N/A   N/A     0  AFTER D
                    * OVERFLOW OFF--SHOULD BE ON
                    *
                    *
3135 0 0D56                 DC       A840       MDX 1
                    * N/A    N/A    0000  N/A   N/A    N/A AFTER LDX
                    * N/A    N/A    FFFF  N/A   N/A    N/A AFTER MDX 1
                    * INDEX REG 1 NOT EQUAL FFFF WHEN MODIFIED
                    * BY MINUS 1
                    *
                    *
3136 0 0D64                 DC       A842       MDX LONG FORM
```

```
                    * ADD &1 TO MEMORY FAILED                                   3A117700
*************************************************************************3A117710
       ADDRESS      *                                                           3A117720
         OF         *                                                           3A117730
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                     3A117740
*************************************************************************3A117750
                    *                                                           3A117760
                    *                                                           3A117770
3137 0 0D79              DC      A844       MDX 2 LONG FORM                     3A117780
                    * N/A    N/A    N/A   FFFE  N/A   N/A AFTER LDX            3A117790
                    * N/A    N/A    N/A   FFFF  N/A   N/A AFTER MDX 2          3A117800
                    * INDEX REG 2 NOT EQUAL TO FFFF AFTER MDX &1               3A117810
                    * TO INDEX REG 2                                           3A117820
                    *                                                           3A117830
                    *                                                           3A117840
3138 0 0D88              DC      A846       MDX 3                               3A117850
                    * N/A    N/A    N/A   N/A   FFFF  N/A AFTER LDX            3A117860
                    * N/A    N/A    N/A   N/A   0000  N/A AFTER MDX 2          3A117870
                    * MDX DID NOT CAUSE A SKIP WHEN INDEX REG 3                3A117880
                    * WENT TO 0000                                             3A117890
                    *                                                           3A117900
                    *                                                           3A117910
3139 0 0D92              DC      A848       MDX 1                               3A117920
                    * N/A    N/A    FFFF  N/A   N/A   N/A AFTER LDX            3A117930
                    * N/A    N/A    0003  N/A   N/A   N/A AFTER MDX 1          3A117940
                    * MDX DID NOT CAUSE A SKIP WHEN THE SIGN                   3A117950
                    * CHANGED ON INDEX REG 1                                   3A117960
                    *                                                           3A117970
                    *                                                           3A117980
313A 0 0D9C              DC      A849       MDX 1 INDIRECT                      3A117990
                    * N/A    N/A    FFFE  N/A   N/A   N/A AFTER LDX            3A118000
                    * N/A    N/A    FFFF  N/A   N/A   N/A AFTER LDX 11         3A118010
                    * INDIRECT MDX OF INDEX REG 1 BY &1 FAILED                 3A118020
                    *                                                           3A118030
                    *                                                           3A118040
313B 0 0DCF              DC      A880       SLCA-XR 1                           3A118050
                    * 0000   N/A    0010  N/A   N/A   N/A AFTER LDX            3A118060
                    * 0000   N/A    0000  N/A   N/A   N/A AFTER SLCA           3A118070
                    * ACCUM NOT EQUAL 0000                                     3A118080
                    *                                                           3A118090
                    *                                                           3A118100
313C 0 0DCF              DC      A880       SLCA-XR 1                           3A118110
                    * 0000   N/A    0010  N/A   N/A   N/A AFTER LDX            3A118120
                    * 0000   N/A    0000  N/A   N/A   N/A AFTER SLAC           3A118130
                    * INDEX REG 1 NOT EQUAL 0000                               3A118140
                    *                                                           3A118150
                    *                                                           3A118160
313D 0 0DF6              DC      A884       SLCA-XR 1                           3A118170
                    * 0001   N/A    FFD0  N/A   N/A   N/A AFTER LDX            3A118180
                    * 8000   N/A    FFC1  N/A   N/A   N/A AFTER ASCL           3A118190
                    * ACCUM NOT EQUAL 8000                                     3A118200
                    *                                                           3A118210
                    *                                                           3A118220
313E 0 0DF6              DC      A884       SLCA-XR 1                           3A118230
                    * 0001   N/A    FFD0  N/A   N/A   N/A AFTER LDX            3A118240
                    * 8000   N/A    FFC1  N/A   N/A   N/A AFTER LDX            3A118250
                    * INDEX REG 1 NOT EQUAL FFC1                               3A118260
                    *                                                           3A118270
                    *                                                           3A118280
313F 0 0E1E              DC      A888       SLCA-XR 1                           3A118290
                    * 8000   N/A    0010  N/A   N/A   N/A AFTER LDX            3A118300
                    * 8000   N/A    0010  N/A   N/A   N/A AFTER SLCA           3A118310
                    * ACCUM NOT EQUAL 8000                                     3A118320
                    *                                                           3A118330
                    *                                                           3A118340
3140 0 0E1E              DC      A888       SLCA-XR 1                           3A118350
                    * 8000   N/A    0010  N/A   N/A   N/A AFTER LDX            3A118360
                    * 8000   N/A    0010  N/A   N/A   N/A AFTER SLCA           3A118370
```



```
                    * INDEX REG 1 NOT EQUAL 0010                                3A118380
*************************************************************************3A118390
       ADDRESS      *                                                           3A118400
         OF         *                                                           3A118410
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                     3A118420
*************************************************************************3A118430
                    *                                                           3A118440
                    *                                                           3A118450
3141 0 0E59              DC      A88C       SLC-XR 1                            3A118460
                    * 0000   0000   0020  N/A   N/A   N/A AFTER LDX            3A118470
                    * 0000   0000   0000  N/A   N/A   N/A AFTER SLC            3A118480
                    * ACCUM NOT EQUAL 0000                                     3A118490
                    *                                                           3A118500
                    *                                                           3A118510
3142 0 0E59              DC      A88C       SLC-XR 1                            3A118520
                    * 0000   0000   0020  N/A   N/A   N/A AFTER LDX            3A118530
                    * 0000   0000   0000  N/A   N/A   N/A AFTER SLC            3A118540
                    * Q REG NOT EQUAL 0000                                     3A118550
                    *                                                           3A118560
                    *                                                           3A118570
3143 0 0E59              DC      A88C       SLC-XR 1                            3A118580
                    * 0000   0000   0020  N/A   N/A   N/A AFTER LDX            3A118590
                    * 0000   0000   0000  N/A   N/A   N/A AFTER SLC            3A118600
                    * INDEX REG 1 NOT EQUAL 0000                               3A118610
                    *                                                           3A118620
                    *                                                           3A118630
3144 0 0E78              DC      8882       SLC-XR 1                            3A118640
                    * 0000   0002   FFDF  N/A   N/A   N/A AFTER LDX            3A118650
                    * 8000   0000   FFC1  N/A   N/A   N/A AFTER SLC            3A118660
                    * ACCUM NOT EQUAL 8000                                     3A118670
                    *                                                           3A118680
                    *                                                           3A118690
3145 0 0E78              DC      8882       SLC-XR 1                            3A118700
                    * 0000   0002   FFDF  N/A   N/A   N/A AFTER LDX            3A118710
                    * 8000   0000   FFC1  N/A   N/A   N/A AFTER SLC            3A118720
                    * Q REG NOT EQUAL 0000                                     3A118730
                    *                                                           3A118740
                    *                                                           3A118750
3146 0 0E78              DC      8882       SLC-XR 1                            3A118760
                    * 0000   0002   FFDF  N/A   N/A   N/A AFTER LDX            3A118770
                    * 8000   0000   FFC1  N/A   N/A   N/A AFTER SLC            3A118780
                    * INDEX REG 1 NOT EQUAL FFC1                               3A118790
                    *                                                           3A118800
                    *                                                           3A118810
3147 0 0E9A              DC      8884       SLC-XR 1                            3A118820
                    * 0000   0002   001F  N/A   N/A   N/A AFTER LDD&LDX         3A118830
                    * 8000   0000   0001  N/A   N/A   C   AFTER SLC            3A118840
                    * A SLC TERMINATED BY A ONE BIT IN ACCUM BIT               3A118850
                    * ZERO DID NOT TURN ON CARRY                               3A118860
                    *                                                           3A118870
                    *                                                           3A118880
3148 0 0E9A              DC      8884       SLC-XR 1                            3A118890
                    * 0000   0002   001F  N/A   N/A   N/A AFTER LDD&LDX         3A118900
                    * 8000   0000   0001  N/A   N/A   C   AFTER SLC            3A118910
                    * ACCUM WAS NOT EQUAL TO 8000                              3A118920
                    *                                                           3A118930
                    *                                                           3A118940
3149 0 0E9A              DC      8884       SLC-XR 1                            3A118950
                    * 0000   0002   001F  N/A   N/A   N/A AFTER LDD&LDX         3A118960
                    * 8000   0002   0001  N/A   N/A   C   AFTER SLC            3A118970
                    * A SLC TERMINATED BY A ONE IN ACCUM BIT                   3A118980
                    * ZERO DID NOT LEAVE XR 1 EQUAL 0001                       3A118990
                    *                                                           3A119000
                    *                                                           3A119010
314A 0 0EBA              DC      8885       SLC-IX 1                            3A119020
                    * 0000   0002   001C  N/A   N/A   N/A AFTER LDD&LDX         3A119030
                    * 2000   0000   0000  N/A   N/A   OFF AFTER SLC            3A119040
                    * A SLC TERMINATED BY XR 1 GOING TO ZERO LEFT               3A119050
```

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                    * THE CARRY FF SET                                      3A119060
*************************************************************************** 3A119070
                                                                            3A119080
        ADDRESS     *                                                       3A119090
          OF        *                                                       3A119100
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                 3A119110
*************************************************************************** 3A119120
                    *                                                       3A119130
                    *                                                       3A119140
3148 0 0ED6                DC      B8A0       CMP   A GREATER M            3A119150
                    * 4000   N/A    N/A    N/A   N/A   N/A                  3A119160
                    * A GREATER THAN M CMP FAILED                           3A119170
                    *                                                       3A119180
                    *                                                       3A119190
314C 0 0ED6                DC      B8A0       CMP   A GREATER M            3A119200
                    * 4000   N/A    N/A    N/A   N/A   N/A AFTER LD          3A119210
                    * 4000   N/A    N/A    N/A   N/A   N/A AFTER CMP         3A119220
                    * ACC DISTROYED AFTER CMP                               3A119230
                    *                                                       3A119240
                    *                                                       3A119250
314D 0 0EF1                DC      B8A1       CMP   A LESS M               3A119260
                    * 0000   N/A    N/A    N/A   N/A   N/A                  3A119270
                    * ACC LESS THAN M FAILS                                 3A119280
                    *                                                       3A119290
                    *                                                       3A119300
314E 0 0EF8                DC      B8A2       CMP   A LESS M               3A119310
                    * 0000   N/A    N/A    N/A   N/A   N/A                  3A119320
                    * ACC LESS THAN M FAILS                                 3A119330
                    *                                                       3A119340
                    *                                                       3A119350
314F 0 0F05                DC      B8A3       CMP A LESS M                 3A119360
                    * 0000   N/A    N/A    N/A   N/A   N/A                  3A119370
                    * ACC LESS THAN M FAILS                                 3A119380
                    *                                                       3A119390
                    *                                                       3A119400
3150 0 0F0F                DC      B8A4       CMP A LESS M                 3A119410
                    * 8000   N/A    N/A    N/A   N/A   N/A                  3A119420
                    * ACC LESS THAN M FAILS                                 3A119430
                    *                                                       3A119440
                    *                                                       3A119450
3151 0 0F19                DC      B8A5       CMP   A EQ M                 3A119460
                    * 1000   N/A    N/A    N/A   N/A   N/A                  3A119470
                    * ACC EQ M FAILED                                       3A119480
                    *                                                       3A119490
                    *                                                       3A119500
3152 0 0F24                DC      B8C0       DCM  AQ GTR M,M&1            3A119510
                    * 8000  0001    N/A    N/A   N/A   N/A                  3A119520
                    * DCM AQ GREATER THAN M, M&1 FAILED                      3A119530
                    *                                                       3A119540
                    *                                                       3A119550
3153 0 0F24                DC      B8C0       DCM AQ GTR M, M&1            3A119560
                    * 8000  0001    N/A    N/A   N/A   N/A                  3A119570
                    * ACC DISTROYED AFTER DCM                               3A119580
                    *                                                       3A119590
                    *                                                       3A119600
3154 0 0F24                DC      B8C0       DCM AQ GTR M,M&1             3A119610
                    * 8000  0001    N/A    N/A   N/A   N/A                  3A119620
                    * Q REG DISTROYED AFTER DCM                              3A119630
                    *                                                       3A119640
                    *                                                       3A119650
3155 0 0F3E                DC      B8C1       DCM AQ LESS M,M&1            3A119660
                    * 0000  8000    N/A    N/A   N/A   N/A                  3A119670
                    * DCM FAILED WHEN A,Q LESS THAN M, M&1                   3A119680
                    *                                                       3A119690
                    *                                                       3A119700
3156 0 0F46                DC      B8C2       DCM AQ EQ M,M&1              3A119710
                    * 0000  8000    N/A    N/A   N/A   N/A                  3A119720
                    * DCM FAILED WHEN A,Q EQ M, M&1                          3A119730
                    *
```



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                    *                                                       3A119740
*************************************************************************** 3A119750
        ADDRESS     *                                                       3A119760
          OF        *                                                       3A119770
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                 3A119780
*************************************************************************** 3A119790
3157 0 087F                DC      A660       LDX 1 -1                     3A119800
                    *  N/A    N/A   0000   0000  0000   N/A AFTER LDX&S      3A119810
                    *  N/A    N/A   FFFF   0000  0000   N/A AFTER LDX  1    3A119820
                    * INDEX 2 CHANGED                                       3A119830
                    *                                                       3A119840
                    *                                                       3A119850
3158 0 087F                DC      A660       LDX 1 -1                     3A119860
                    *  N/A    N/A   0000   0000  0000   N/A AFTER LDX&S      3A119870
                    *  N/A    N/A   FFFF   0000  0000   N/A AFTER LDX 1      3A119880
                    * INDEX 3 CHANGED                                       3A119890
                    *                                                       3A119900
                    *                                                       3A119910
3159 0 0897                DC      A662       LDX 2 -1                     3A119920
                    *  N/A    N/A   0000   0000  0000   N/A AFTER LDX&S      3A119930
                    *  N/A    N/A   0000   FFFF  0000   N/A AFTER LDX 2      3A119940
                    * INDEX 1 CHANGED                                       3A119950
                    *                                                       3A119960
                    *                                                       3A119970
315A 0 0897                DC      A662       LDX 2 -1                     3A119980
                    *  N/A    N/A   0000   0000  0000   N/A AFTER LDX&S      3A119990
                    *  N/A    N/A   0000   FFFF  0000   N/A AFTER LDX 2      3A120000
                    * INDEX 3 CHANGED                                       3A120010
                    *                                                       3A120020
                    *                                                       3A120030
315B 0 08AF                DC      A664       LDX 3 -1                     3A120040
                    *  N/A    N/A   0000   0000  0000   N/A AFTER LDX&S      3A120050
                    *  N/A    N/A   0000   0000  FFFF   N/A AFTER LDX 3      3A120060
                    * INDEX 1 CHANGED                                       3A120070
                    *                                                       3A120080
                    *                                                       3A120090
315C 0 08AF                DC      A664       LDX 3 -1                     3A120100
                    *  N/A    N/A   0000   0000  0000   N/A AFTER LDX&S      3A120110
                    *  N/A    N/A   0000   0000  FFFF   N/A AFTER LDX 3      3A120120
                    * INDEX 2 CHANGED                                       3A120130
                    *                                                       3A120140
                    *                                                       3A120150
315D 0 09DC                DC      A6D0       INDEXED INST F#0             3A120160
                    * INITIALLY XR 1 HAS CORE LOCATION OF                   3A120170
                    *   SYMBOLIC LABEL N6C1                                 3A120180
                    * AFTER THE TEST THE ACC SHOULD HAVE                    3A120190
                    *   CORE LOCATION OF SYMBOLIC LABEL N6C0                3A120200
                    * SHORT FORM INDEXED INST FAILED %X#1¤                  3A120210
                    *                                                       3A120220
                    *                                                       3A120230
315E 0 09E8                DC      A6D2       INDEXED INST F#0             3A120240
                    * INITIALLY XR 2 HAS CORE LOCATION OF                   3A120250
                    *   SYMBOLIC LABEL N6C1                                 3A120260
                    * AFTER THE TEST THE ACC SHOULD HAVE                    3A120270
                    *   CORE LOCATION OF SYMBOLIC LABEL N6C2                3A120280
                    * SHORT FORM INDEXED INST FAILED %X#2¤                  3A120290
                    *                                                       3A120300
                    *                                                       3A120310
315F 0 09F4                DC      A6D3       INDEXED INST F#0             3A120320
                    * INITIALLY XR 3 HAS CORE LOCATION OF                   3A120330
                    *   SYMBOLIC LABEL N6C1                                 3A120340
                    * AFTER THE TEST THE ACC SHOULD HAVE                    3A120350
                    *   CORE LOCATION OF SYMBOLIC LABEL N6C1                3A120360
                    * SHORT FORM INDEXED INST. FAILED %X#3¤                 3A120370
                    *                                                       3A120380
                    *                                                       3A120390
                    *                                                       3A120400
                    *                                                       3A120410
```

```
                        *                                                       3A120420
*************************************************************************3A120430
        ADDRESS         *                                                       3A120440
          OF            *                                                       3A120450
B-REG    ROUTINE        * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                 3A120460
*************************************************************************3A120470
*************************************************************************3A120480
3160 0 0DCF                   DC       A880        SLCA  CK CARRY               3A120490
                        * 0000  FFFF  000A   N/A   N/A   C     AFTER LDD&LDS    3A120500
                        * 0000  FFFF  0000   N/A   N/A   OFF   AFTER STS        3A120510
                        * CARRY ON  SHOULD BE OFF                               3A120520
                        *                                                       3A120530
                        *                                                       3A120540
3161 0 0DF6                   DC       A884        SLCA CK CARRY                3A120550
                        * 0001  0010  FFD0   N/A   N/A   OFF   AFTER LDD&LDX    3A120560
                        * 8000  0010  FF01   N/A   N/A   C     AFTER SLCA       3A120570
                        * CARRY OFF, SHOULD BE ON                               3A120580
                        *                                                       3A120590
                        *                                                       3A120600
3162 0 0E3B                   DC       A889        NON INDEXED SLCA             3A120610
                        * 0001   N/A  0010   0010   0010  N/A AFTER LD           3A120620
                        * 0002   N/A   N/A    N/A    N/A  N/A AFTER SLCA        3A120630
                        * SLCA  T#0  FAILED                                     3A120640
                        *                                                       3A120650
                        *                                                       3A120660
3163 0 0A00                   DC       A6D5        INDEXED SLA                  3A120670
                        * 0001   N/A   0002   N/A   N/A   N/A AFTER LD&LDX      3A120680
                        * 0004   N/A   N/A   N/A  N/A   N/A  AFTER SLA          3A120690
                        * INDEXED SLA  FAILED                                   3A120700
                        *                                                       3A120710
                        *                                                       3A120720
3164 0 0A0C                   DC       A6D6        INDEXED SRA                  3A120730
                        * 0004   N/A    N/A  0002   N/A   N/A AFTER LDX&LD      3A120740
                        * 0001  N/A    N/A   N/A    N/A   N/A AFTEP SRA         3A120750
                        * INDEXED SRA  FAILED                                   3A120760
                        *                                                       3A120770
                        *                                                       3A120780
3165 0 0A18                   DC       A6F0        INDEXED BSC                  3A120790
                        * INITIALLY ACC HAS CORE LOCATION OF                    3A120800
                        *   SYMBOLIC LABEL N6F1                                 3A120810
                        * ACC DISTROYED AFTER INDEXED BSC                       3A120820
                        *                                                       3A120830
                        *                                                       3A120840
3166 0 0A29                   DC       A6F1        INDIR, INDEX BSC             3A120850
                        *  N/A   N/A    0001   N/A   M/A   N/A AFTER LDX       3A120860
                        *  N/A   N/A    N/A   N/A  N/A   N/A  AFTER BSC        3A120870
                        * INDIRECT, INDEXED BSC FAILED                          3A120880
                        *                                                       3A120890
                        *                                                       3A120900
3167 0 0810                   DC       A640        STX  CK ACC                  3A120910
                        * INITIALLY ACC HAS CORE LOCATION OF                    3A120920
                        *   SYMBOLIC LABEL H640                                 3A120930
                        * ACC DISTROYED AFTER  STX                              3A120940
                        *                                                       3A120950
                        *                                                       3A120960
3168 0 0D9C                   DC       A849        MDX  CK ACC                  3A120970
                        * INITIALLY ACC HAS CORE LOCATION OF                    3A120980
                        *   SYMBOLIC LABEL H849                                 3A120990
                        * ACC DISTROYED AFTER MDX                               3A121000
                        *                                                       3A121010
                        *                                                       3A121020
3169 0 08C9                   DC       A670        ACC DECDOE                   3A121030
                        * 0001   N/A   0010   N/A    N/A   N/A                  3A121040
                        * 0000   N/A   0000   N/A    N/A   N/A                  3A121050
                        * FALSE DECODE OF ACC BE ZERO                          3A121060
                        * * EACH BIT POSITION IS TESTED                         3A121070
                        *                                                       3A121080
                        *                                                       3A121090
```



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                        *                                                       3A121100
*************************************************************************3A121110
        ADDRESS         *                                                       3A121120
          OF            *                                                       3A121130
B-REG    ROUTINE        * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS                 3A121140
*************************************************************************3A121150
316A 0 0D04                   DC       B807        DVD  OVFLO                   3A121160
                        * 6100   0000   N/A   N/A   N/A   OFF AFTER LDD        3A121170
                        *  N/A    N/A   N/A   N/A    N/A   0  AFTER D          3A121180
                        * OVFLO NOT ON                                          3A121190
                        *                                                       3A121200
                        *                                                       3A121210
316B 0 0D0F                   DC       B808        DVD  OVFLO                   3A121220
                        * 8000   0000   N/A   N/A   N/A   OFF AFTER LDD        3A121230
                        *  N/A    N/A   N/A   N/A    N/A   0  AFTER D          3A121240
                        * OVFLO NOT ON                                          3A121250
                        *                                                       3A121260
                        *                                                       3A121270
316C 0 0D1A                   DC       B809        DVD  NO OVFLO                3A121280
                        * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LDD        3A121290
                        *  N/A    N/A   N/A   N/A   N/A   OFF AFTER D          3A121300
                        * OVFLO ON, SHOULD BE OFF                               3A121310
                        *                                                       3A121320
                        *                                                       3A121330
316D 0 0D26                   DC       B810        MPY-DIV ZERO REM             3A121340
                        * ACC WRONG AFTER MPY-DIV TEST                          3A121350
                        *                                                       3A121360
                        *                                                       3A121370
316E 0 0D26                   DC       B810        MPY-DIV ZERO REM             3A121380
                        * Q REG WRONG AFTER MPY-DIV TEST                        3A121390
                        *                                                       3A121400
                        *                                                       3A121410
316F 0 0D64                   DC       A842        MDX  CK ACC                  3A121420
                        * INITIALLY ACC HAS CORE LOCATION OF                    3A121430
                        *   SYMBOLIC LABEL N844                                 3A121440
                        * ACC DISTROYED AFTER ADD TO MEMORY                     3A121450
                        *                                                       3A121460
                        *                                                       3A121470
3170 0 05FC                   DC       A50A        BSC  CK ACC                  3A121480
                        * 8001   N/A    N/A   N/A   N/A   N/A AFTER LD          3A121490
                        * 8001   N/A    N/A   N/A   N/A   N/A AFTER BSC         3A121500
                        * ACC DISTROYED AFTER BSC CONDITIONS MET                3A121510
                        *                                                       3A121520
                        *                                                       3A121530
3171 0 0DB2                   DC       A84A        MDX MEM  CK SKIP             3A121540
                        * MEMORY LOC HAS ZERO                                   3A121550
                        * MDX FAILED TO SKIP                                    3A121560
                        *                                                       3A121570
                        *                                                       3A121580
3172 0 0DBC                   DC       A85A        MDX MEM CK NO SKP            3A121590
                        * MEMORY LOC IS NON ZERO                                3A121600
                        * MDX SKIPED, SHOULD NOT HAVE                           3A121610
                        *                                                       3A121620
                        *                                                       3A121630
                        *                                                       3A121640
3173 0 0E48                   DC       A88A        SW 15 NO INDEX               3A121650
                        * 0000   FFFF   0010   0010   0010   NAFTER LDX&S       3A121660
                        * 7FFF   N/A    N/A    N/A    N/A    NAFTER SLC         3A121670
                        *ACCUM NOT EQ TO 7FFF                                   3A121680
                        *                                                       3A121690
                        *                                                       3A121700
                        *                                                       3A121710
3174 0 0F69                   DC       F000        IMPROPER CONTROL             3A121720
                        *                          OPERATION SPECIFIED,         3A121730
                        *                          BIT SW 14 ON WITHOUT         3A121740
                        *                          BIT SW 8 OR 12 ON.           3A121750
                        *                          CORRECT SWS AND PUSH         3A121760
                        *                          START TO CONTINUE            3A121770
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                        *                                                   3A121780
                        ********************************************      3A121790
                        ********************************************      3A121800
3175                            ORG     300                             3A121810
012C 0 03A1                     DC      /03A1       PID                 3A121820
                        *                                               3A121830
                        ************************************************3A121840
                        *                                               3A121850
                        *                   TEST MDX OPERATION          3A121860
                        *                                               3A121870
                        ********************************************      3A121880
*************************************************************************3A121890
CORE    DATA OR     *LA- OPER-                                          3A121900
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT3A121910
*************************************************************************3A121920
012D 0 3000         X000  DC      /3000       SET SWITCHES TO RUN       3A121930
012E 0 7001         A080  MDX     G080                                  3A121940
012F 0 3004               DC      /3004       ERR ID & ERR WAIT         3A121950
                        *                     MDX BY 1 FAILED           3A121960
0130 0 7002         G080  MDX     G081                                  3A121970
0131 0 3005               DC      /3005       ERR ID & ERR WAIT         3A121980
                        *                     MDX BY 2 FAILED           3A121990
0132 0 3006               DC      /3006       ERR ID & ERR WAIT         3A122000
                        *                     MDX BY 2 FAILED           3A122010
0133 0 7004         G081  MDX     G082                                  3A122020
0134 0 3007               DC      /3007       ERR ID & ERR WAIT         3A122030
                        *                     MDX BY 4 FAILED           3A122040
0135 0 3008               DC      /3008       ERR ID & ERR WAIT         3A122050
                        *                     MDX BY 4 FAILED           3A122060
0136 0 3009               DC      /3009       ERR ID & ERR WAIT         3A122070
                        *                     MDX BY 4 FAILED           3A122080
0137 0 300A               DC      /300A       ERR ID & ERR WAIT         3A122090
                        *                     MDX BY 4 FAILED           3A122100
0138 0 7002         G082  MDX     G084                                  3A122110
0139 0 300B               DC      /300B       ERR ID & ERR WAIT         3A122120
                        *                     MDX BY 2 FAILED           3A122130
013A 0 7004         G083  MDX     A0C0        EXIT TO NEXT ROUTINE      3A122140
013B 0 70FE         G084  MDX     G083                                  3A122150
013C 0 300C               DC      /300C       ERR ID & ERR WAIT         3A122160
                        *                     MDX BY -2 FAILED          3A122170
013D 0 300D               DC      /300D       ERR ID & ERR WAIT         3A122180
                        *                     MDX BY -2 FAILED          3A122190
013E 0 300E               DC      /300E       ERR ID & ERR WAIT         3A122200
                        *                     MDX BY -2 FAILED          3A122210
                        *                                               3A122220
                        *                TEST OF BSC SKIP WHEN IT       3A122230
                        *                SHOULD NOT                     3A122240
                        *                                               3A122250
                        ********************************************      3A122260
013F 0 2003         A0C0  LDS     3           SET C AND OF ON           3A122270
0140 0 4802               BSC     C           SK IF CARRY IS OFF        3A122280
0141 0 7002               MDX     G0C1                                  3A122290
0142 0 300F               DC      /300F       ERR ID & ERR WAIT         3A122300
                        *                     BSC-CARRY FAILED          3A122310
0143 0 0000         N100  DC      0                                     3A122320
0144 0 4801         G0C1  BSC     0                                     3A122330
0145 0 7001               MDX     G0C2                                  3A122340
0146 0 3010               DC      /3010       ERR ID & ERR WAIT         3A122350
                        *                     BSC-OVERFLOW FAILED       3A122360
0147 0 4801         G0C2  BSC     0           CK IF OF WAS RESET        3A122370
0148 0 3011               DC      /3011       ERR ID & ERR WAIT         3A122380
                        *                     BSC-OVFLW SKPD-SHOULD     3A122390
                        *                     *NOT HAVE                 3A122400
0149 0 2000               LDS     0           RESET CARRY TO OFF        3A122410
014A 0 4802               BSC     C           SK IF CARRY IS OFF        3A122420
014B 0 3012               DC      /3012       ERR ID & ERR WAIT         3A122430
                        *                     BSC-C DID NOT SKIP        3A122440
                        *                                               3A122450
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                        *                   TEST OF ACC ABILITY TO HOLD 3A122460
                        *                   ALL ZEROS                   3A122470
                        *                                               3A122480
                        ********************************************      3A122490
*************************************************************************3A122500
CORE    DATA OR     *LA- OPER-                                          3A122510
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT3A122520
*************************************************************************3A122530
014C 0 C0F6         A100  LD      N100        LD /0000                  3A122540
014D 0 4820               BSC     Z           SK IF ZERO                3A122550
014E 0 3013               DC      /3013       ERR ID & ERR WAIT         3A122560
                        *                     LD ACC TO 0 FAILED        3A122570
014F 0 C0F3               LD      N100        ACC#0,RELOAD TO 0         3A122580
0150 0 4820               BSC     Z           SK IF ZERO                3A122590
0151 0 3014               DC      /3014       ERR ID & ERR WAIT         3A122600
                        *                     LD ACC TO 0 FAILED        3A122610
0152 0 4804               BSC     E           SK IF EVEN                3A122620
0153 0 3015               DC      /3015       ERR ID & ERR WAIT         3A122630
                        *                     BSC ON EVEN FAILED        3A122640
                        *                                               3A122650
                        *                   CONTAIN ALL ONES            3A122660
                        *                                               3A122670
                        ********************************************      3A122680
0154 0 C04A         A140  LD      N140        ACC.#0,RELOAD TO ONES     3A122690
0155 0 4810               BSC     -           SK IF MINUS               3A122700
0156 0 3016               DC      /3016       ERR ID & ERR WAIT         3A122710
                        *                     LOAD ACC. FAILED OR       3A122720
                        *                     *BSC ON NEG. FAILED       3A122730
0157 0 4808               BSC     &                                     3A122740
0158 0 7001               MDX     G140                                  3A122750
0159 0 3017               DC      /3017       ERR ID & ERR WAIT         3A122760
                        *                     BSC ON & SKPD-            3A122770
015A 0 4804         G140  BSC     E           *SHOULD NOT HAVE          3A122780
015B 0 7001               MDX     G141                                  3A122790
015C 0 3018               DC      /3018       ERR ID & ERR WAIT         3A122800
                        *                     BSC ON E SKPD-            3A122810
015D 0 1801         G141  SRA     1           *SHOULD NOT HAVE          3A122820
015E 0 4804               BSC     E                                     3A122830
015F 0 7001               MDX     G142                                  3A122840
0160 0 3019               DC      /3019       ERR ID & ERR WAIT         3A122850
                        *                     ACC NOT # 7FFF            3A122860
0161 0 1801         G142  SRA     1                                     3A122870
0162 0 4804               BSC     E                                     3A122880
0163 0 7001               MDX     G143                                  3A122890
0164 0 301A               DC      /301A       ERR ID & ERR WAIT         3A122900
                        *                     ACC NOT # 3FFF            3A122910
0165 0 1801         G143  SRA     1                                     3A122920
0166 0 4804               BSC     E                                     3A122930
0167 0 7001               MDX     G144                                  3A122940
0168 0 301B               DC      /301B       ERR ID & ERR WAIT         3A122950
                        *                     ACC NOT # 1FFF            3A122960
0169 0 1801         G144  SRA     1                                     3A122970
016A 0 4804               BSC     E                                     3A122980
016B 0 7001               MDX     G145                                  3A122990
016C 0 0000               DC                  ERR ID & ERR WAIT         3A123000
                        *                     /301C       ACC NOT # 0FFF3A123010
016D 0 1801         G145  SRA     1                                     3A123020
016E 0 4804               BSC     E                                     3A123030
016F 0 7001               MDX     G146                                  3A123040
0170 0 301D               DC      /301D       ERR ID & ERR WAIT         3A123050
                        *                     ACC NOT # 07FF            3A123060
0171 0 1801         G146  SRA     1                                     3A123070
0172 0 4804               BSC     E                                     3A123080
0173 0 7001               MDX     G147                                  3A123090
0174 0 301E               DC      /301E       ERR ID & ERR WAIT         3A123100
                        *                     ACC NOT # 03FF            3A123110
0175 0 1801         G147  SRA     1                                     3A123120
0176 0 4804               BSC     E                                     3A123130
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0177 0 7001           MDX   G148
0178 0 301F           DC    /301F     ERR ID & ERR WAIT          3A123140
                      *               ACC NOT # 01FF             3A123150
0179 0 1801     G148  SRA   1                                    3A123160
017A 0 4804           BSC   E                                    3A123170
017B 0 7001           MDX   G149                                 3A123180
017C 0 3020           DC    /3020     ERR ID & ERR WAIT          3A123190
                      *               ACC NOT # 00FF             3A123200
017D 0 1801     G149  SRA   1                                    3A123210
017E 0 4804           BSC   E                                    3A123220
017F 0 7001           MDX   G14A                                 3A123230
0180 0 3021           DC    /3021     ERR ID & ERR WAIT          3A123240
                      *               ACC NOT # 007F             3A123250
0181 0 1801     G14A  SRA   1                                    3A123260
0182 0 4804           BSC   E                                    3A123270
0183 0 7001           MDX   G14B                                 3A123280
0184 0 3022           DC    /3022     ERR ID & ERR WAIT          3A123290
                      *               ACC NOT # 003F             3A123300
0185 0 1801     G14B  SRA   1                                    3A123310
0186 0 4804           BSC   E                                    3A123320
0187 0 7001           MDX   G14C                                 3A123330
0188 0 3023           DC    /3023     ERR ID & ERR WAIT          3A123340
                      *               ACC NOT # 001F             3A123350
0189 0 1801     G14C  SRA   1                                    3A123360
018A 0 4804           BSC   E                                    3A123370
018B 0 7001           MDX   G14D                                 3A123380
018C 0 3024           DC    /3024     ERR ID & ERR WAIT          3A123390
                      *               ACC NOT # 000F             3A123400
018D 0 1801     G14D  SRA   1                                    3A123410
018E 0 4804           BSC   E                                    3A123420
018F 0 7001           MDX   G14E                                 3A123430
0190 0 3025           DC    /3025     ERR ID & ERR WAIT          3A123440
                      *               ACC NOT # 0007             3A123450
0191 0 1801     G14E  SRA   1                                    3A123460
0192 0 4804           BSC   E                                    3A123470
0193 0 7001           MDX   G14F                                 3A123480
0194 0 3026           DC    /3026     ERR ID & ERR WAIT          3A123490
                      *               ACC NOT # 0003             3A123500
0195 0 1801     G14F  SRA   1                                    3A123510
0196 0 4804           BSC   E                                    3A123520
0197 0 7001           MDX   G150                                 3A123530
0198 0 3027           DC    /3027     ERR ID & ERR WAIT          3A123540
                      *               ACC NOT # 0001             3A123550
0199 0 1801     G150  SRA   1                                    3A123560
019A 0 4804           BSC   E                                    3A123570
019B 0 3028           DC    /3028     ERR ID & ERR WAIT          3A123580
                      *               ACC NOT # 0000             3A123590
019C 0 4820           BSC   Z                                    3A123600
019D 0 3029           DC    /3029     ERR ID & ERR WAIT          3A123610
                      *               ACC NOT # 0000             3A123620
019E 0 7001           MDX   A180      EXIT TO NEXT ROUTINE       3A123630
019F 0 FFFF     N140  DC    /FFFF                                3A123640
                      *                                          3A123650
                      *          TEST LDING OF ONES ON ONES      3A123660
                      *                                          3A123670
                      ********************************************3A123680
                      ********************************************3A123690
CORE     DATA OR      *LA- OPER-                                 3A123700
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A123710
                      ********************************************3A123720
                      ********************************************3A123730
01A0 0 C049     A180  LD    N180      LD  /FFFF                  3A123740
01A1 0 482C           BSC   &EZ       SK ON &,EVEN OR ZERO       3A123750
01A2 0 4810           BSC   -         SK IF MINUS                3A123760
01A3 0 302A           DC    /302A     ERR ID & ERR WAIT          3A123770
                      *               ACC NOT # FFFF             3A123780
01A4 0 C045           LD    N180      LD  /FFFF                  3A123790
01A5 0 482C           BSC   &EZ                                  3A123800
01A6 0 4810           BSC   -                                    3A123810
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01A7 0 3028           DC    /3028     ERR ID & ERR WAIT          3A123820
                      *               ACC NOT # FFFF             3A123830
01A8 0 1801           SRA   1         SHIFT RIGHT ONE            3A123840
                      *          TEST ABILITY OF ACC TO SHIFT    3A123850
01A9 0 4804           BSC   E                                    3A123860
01AA 0 7001           MDX   G181                                 3A123870
01AB 0 302C           DC    /302C     ERR ID & ERR WAIT          3A123880
                      *               ACC NOT # 7FFF             3A123890
01AC 0 1801     G181  SRA   1                                    3A123900
01AD 0 4804           BSC   E                                    3A123910
01AE 0 7001           MDX   G182                                 3A123920
01AF 0 302D           DC    /302D     ERR ID & ERR WAIT          3A123930
                      *               ACC NOT # 3FFF             3A123940
0180 0 1801     G182  SRA   1                                    3A123950
01B1 0 4804           BSC   E                                    3A123960
01B2 0 7001           MDX   G183                                 3A123970
01B3 0 302E           DC    /302E     ERR ID & ERR WAIT          3A123980
                      *               ACC NOT # 1FFF             3A123990
01B4 0 1801     G183  SRA   1                                    3A124000
01B5 0 4804           BSC   E                                    3A124010
01B6 0 7001           MDX   G184                                 3A124020
01B7 0 302F           DC    /302F     ERR ID & ERR WAIT          3A124030
                      *               ACC NOT # 0FFF             3A124040
01B8 0 1801     G184  SRA   1                                    3A124050
01B9 0 4804           BSC   E                                    3A124060
01BA 0 7001           MDX   G185                                 3A124070
01BB 0 3030           DC    /3030     ERR ID & ERR WAIT          3A124080
                      *               ACC NOT # 07FF             3A124090
01BC 0 1801     G185  SRA   1                                    3A124100
01BD 0 4804           BSC   E                                    3A124110
01BE 0 7001           MDX   G186                                 3A124120
01BF 0 3031           DC    /3031     ERR ID & ERR WAIT          3A124130
                      *               ACC NOT # 03FF             3A124140
01C0 0 1801     G186  SRA   1                                    3A124150
01C1 0 4804           BSC   E                                    3A124160
01C2 0 7001           MDX   G187                                 3A124170
01C3 0 3032           DC    /3032     ERR ID & ERR WAIT          3A124180
                      *               ACC NOT # 01FF             3A124190
01C4 0 1801     G187  SRA   1                                    3A124200
01C5 0 4804           BSC   E                                    3A124210
01C6 0 7001           MDX   G188                                 3A124220
01C7 0 3033           DC    /3033     ERR ID & ERR WAIT          3A124230
                      *               ACC NOT # 00FF             3A124240
01C8 0 1801     G188  SRA   1                                    3A124250
01C9 0 4804           BSC   E                                    3A124260
01CA 0 7001           MDX   G189                                 3A124270
01CB 0 3034           DC    /3034     ERR ID & ERR WAIT          3A124280
                      *               ACC NOT # 007F             3A124290
01CC 0 1801     G189  SRA   1                                    3A124300
01CD 0 4804           BSC   E                                    3A124310
01CE 0 7001           MDX   G18A                                 3A124320
01CF 0 3035           DC    /3035     ERR ID & ERR WAIT          3A124330
                      *               ACC NOT # 003F             3A124340
01D0 0 1801     G18A  SRA   1                                    3A124350
01D1 0 4804           BSC   E                                    3A124360
01D2 0 7001           MDX   G18B                                 3A124370
01D3 0 3036           DC    /3036     ERR ID & ERR WAIT          3A124380
                      *               ACC NOT # 001F             3A124390
01D4 0 1801     G18B  SRA   1                                    3A124400
01D5 0 4804           BSC   E                                    3A124410
01D6 0 7001           MDX   G18C                                 3A124420
01D7 0 3037           DC    /3037     ERR ID & ERR WAIT          3A124430
                      *               ACC NOT # 000F             3A124440
01D8 0 1801     G18C  SRA   1                                    3A124450
01D9 0 4804           BSC   E                                    3A124460
01DA 0 7001           MDX   G18D                                 3A124470
01DB 0 3038           DC    /3038     ERR ID & ERR WAIT          3A124480
                      *               ACC NOT # 0007             3A124490
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01DC 0 1801          G18D  SRA     1                                    3A124500
01DD 0 4804                BSC     E                                    3A124510
01DE 0 7001                MDX     G18E                                 3A124520
01DF 0 3039                DC      /3039       ERR ID & ERR WAIT        3A124530
                     *                         ACC NOT # 0003           3A124540
01E0 0 1801          G18E  SRA     1                                    3A124550
01E1 0 4804                BSC     E                                    3A124560
01E2 0 7001                MDX     G18F                                 3A124570
01E3 0 303A                DC      /303A       ERR ID & ERR WAIT        3A124580
                     *                         ACC NOT # 0001           3A124590
01E4 0 1801          G18F  SRA     1                                    3A124600
01E5 0 4804                BSC     E                                    3A124610
01E6 0 303B                DC      /303B       ERR ID & ERR WAIT        3A124620
                     *                         ACC NOT # 0000           3A124630
01E7 0 4820                BSC     Z                                    3A124640
01E8 0 303C                DC      /303C       ERR ID & ERR WAIT        3A124650
                     *                         ACC NOT # 0000           3A124660
01E9 0 7001                MDX     A1C0        EXIT TO NEXT ROUTINE     3A124670
01EA 0 FFFF          N180  DC      /FFFF                                3A124680
                     *                                                  3A124690
                     *              TEST ABILITY TO LOAD ZEROS          3A124700
                     *              ON TOP OF ZEROS AND ONES ON         3A124710
                     *              TOP OF ZEROS                        3A124720
                     *                                                  3A124730
                     ************************************************** 3A124740
********************************************************************** 3A124750
CORE    DATA OR      *LA- OPER-                                        3A124760
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A124770
********************************************************************** 3A124780
01EB 0 C007          A1C0  LD      N1C0        LD  /0000                3A124790
01EC 0 4820                BSC     Z           SK ON ZERO               3A124800
01ED 0 303D                DC      /303D       ERR ID & ERR WAIT        3A124810
                     *                         ACC NOT # ZERO           3A124820
01EE 0 C005                LD      N1C1        LD  /FFFF                3A124830
01EF 0 482C                BSC     &EZ                                  3A124840
01F0 0 4810                BSC     -           SK ON MINUS              3A124850
01F1 0 303E                DC      /303E       ERR ID & ERR WAIT        3A124860
                     *                         ACC NOT # FFFF           3A124870
01F2 0 7002                MDX     A1D0        EXIT TO NEXT ROUTINE     3A124880
01F3 0 0000          N1C0  DC      /0000                                3A124890
01F4 0 FFFF          N1C1  DC      /FFFF                                3A124900
                     *                                                  3A124910
                     *                   TEST EOR OPERATION             3A124920
                     *                                                  3A124930
                     ************************************************** 3A124940
01F5 0 C01C          A1D0  LD      N1D1        LD  /0000                3A124950
01F6 0 4820                BSC     Z           SK ON ZERO               3A124960
01F7 0 303F                DC      /303F       ERR ID & ERR WAIT        3A124970
                     *                         ACC NOT # ZERO           3A124980
01F8 0 F019                EOR     N1D1        ZERO WITH /0000          3A124990
01F9 0 4820                BSC     Z           SK ON ZERO               3A125000
01FA 0 3040                DC      /3040       ERR ID & ERR WAIT        3A125010
                     *                         EOR OF 0 AND 0 FAILED    3A125020
01FB 0 C015                LD      N1D0        LD  /FFFF                3A125030
01FC 0 F014                EOR     N1D0        ZERO WITH /FFFF          3A125040
01FD 0 4820                BSC     Z                                    3A125050
01FE 0 3041                DC      /3041       ERR ID & ERR WAIT        3A125060
                     *                         EOR OF 1 AND 1 FAILED    3A125070
01FF 0 F011                EOR     N1D0                                 3A125080
0200 0 482C                BSC     &EZ                                  3A125090
0201 0 4810                BSC     -                                    3A125100
0202 0 3042                DC      /3042       ERR ID & ERR WAIT        3A125110
                     *                         EOR OF 1 AND 0 FAILED    3A125120
0203 0 1801                SRA     1                                    3A125130
0204 0 F00E                EOR     N1D2                                 3A125140
0205 0 4820                BSC     Z                                    3A125150
0206 0 3043                DC      /3043       ERR ID & ERR WAIT        3A125160
                     *                         EOR OF 1 AND 0 FAILED    3A125170
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0207 0 C009                LD      N1D0                                 3A125180
0208 0 F009                EOR     N1D1                                 3A125190
0209 0 482C                BSC     &EZ                                  3A125200
020A 0 4810                BSC     -                                    3A125210
020B 0 3044                DC      /3044       ERR ID & ERR WAIT        3A125220
                     *                         EOR OF 0 AND 1 FAILED    3A125230
020C 0 1801                SRA     1                                    3A125240
020D 0 F005                EOR     N1D2                                 3A125250
020E 0 4820                BSC     Z                                    3A125260
020F 0 3045                DC      /3045       ERR ID & ERR WAIT        3A125270
                     *                         EOR OF 0 AND 1 FAILED    3A125280
0210 0 7003                MDX     A1E0        EXIT TO NEXT ROUTINE     3A125290
0211 0 FFFF          N1D0  DC      /FFFF                                3A125300
0212 0 0000          N1D1  DC      /0000                                3A125310
0213 0 7FFF          N1D2  DC      /7FFF                                3A125320
                     *                                                  3A125330
                     *                   TEST OF ABILITY TO SET         3A125340
                     *                   F BIT TO ONE                   3A125350
                     *                                                  3A125360
                     ************************************************** 3A125370
0214 0 C400 021F     A1E0  LD    L N1E1        LD  /0000                3A125380
0216 0 4820                BSC     Z           SK ON ZERO               3A125390
0217 0 3046                DC      /3046       ERR ID & ERR WAIT        3A125400
                     *                         WRONG LOCATION LOADED    3A125410
0218 0 C400 021E           LD    L N1E0        LD C%N1E0¤               3A125420
021A 0 F003                EOR     N1E0                                 3A125430
021B 0 4820                BSC     Z           SK ON ZERO               3A125440
021C 0 3047                DC      /3047       ERR ID & ERR WAIT        3A125450
                     *                         WRONG LOCATION LOADE     3A125460
021D 0 7002                MDX     A1F0        EXIT TO NEXT ROUTINE     3A125470
021E 0 021E          N1E0  DC      N1E0                                 3A125480
021F 0 0000          N1E1  DC      /0000                                3A125490
                     *                                                  3A125500
                     *                   TEST OF INDIRECT ADDRESSING    3A125510
                     *                                                  3A125520
                     ************************************************** 3A125530
0220 0 C480 022C     A1F0  LD    I N1F2        LD  /0000                3A125540
0222 0 4820                BSC     Z           SK ON ZERO               3A125550
0223 0 3048                DC      /3048       ERR ID & ERR WAIT        3A125560
                     *                         WRONG LOCATION LOADED    3A125570
0224 0 C480 022B           LD    I N1F1        LD C%N1F1¤               3A125580
0226 0 F004                EOR     N1F1        ZERO WITH C%N1F1¤        3A125590
0227 0 4820                BSC     Z                                    3A125600
0228 0 3049                DC      /3049       ERR ID & ERR WAIT        3A125610
                     *                         WRONG LOCATION LOADED    3A125620
0229 0 7003                MDX     A200        EXIT TO NEXT ROUTINE     3A125630
022A 0 0000          N1F0  DC      /0000                                3A125640
022B 0 022B          N1F1  DC      N1F1                                 3A125650
022C 0 022A          N1F2  DC      N1F0                                 3A125660
                     *                                                  3A125670
                     *                   TEST OF BSC LONG FORM AND      3A125680
                     *                   INDIRECT OPERATION             3A125690
                     *                                                  3A125700
                     ************************************************** 3A125710
********************************************************************** 3A125720
CORE    DATA OR      *LA- OPER-                                        3A125730
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A125740
********************************************************************** 3A125750
022D 0 4C00 0231     A200  BSC   L G200                                 3A125760
022F 0 304A                DC      /304A       ERR ID & ERR WAIT        3A125770
                     *                         BSC DID NOT BRANCH       3A125780
0230 0 3048                DC      /3048       ERR ID & ERR WAIT        3A125790
                     *                         BSC SKPD-SHOULD BRNCH    3A125800
0231 0 C03A          G200  LD      N200                                 3A125810
0232 0 4C04 0236           BSC   L G201,E      BR IF NOT EVEN           3A125820
0234 0 304C                DC      /304C       ERR ID & ERR WAIT        3A125830
                     *                         BSC E DID NOT BRANCH     3A125840
0235 0 304D                DC      /304D       ERR ID & ERR WAIT        3A125850
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                        *                                                       BSC SKPD-SHOULD BRNCH      3A125860
0236 0 4C08 023A  G201   BSC  L  G202,&                                         BR IF NOT PLUS             3A125870
0238 0 304E              DC       /304E                                        ERR ID & ERR WAIT          3A125880
                        *                                                       BSC - DID NOT BRANCH       3A125890
0239 0 304F              DC       /304F                                        ERR ID & ERR WAIT          3A125900
                        *                                                       BSC SKPD-SHOULD BRNCH      3A125910
023A 0 4C20 023E  G202   BSC  L  G203,Z                                                                  3A125920
023C 0 3050              DC       /3050                                        ERR ID & ERR WAIT          3A125930
                        *                                                       BSC Z DID NOT SKIP         3A125940
023D 0 3051              DC       /3051                                        ERR ID & ERR WAIT          3A125950
                        *                                                       BSC SKPD-SHOULD BRNCH      3A125960
023E 0 4C10 0241  G203   BSC  L  V154,-                                        BR IF NOT MINUS            3A125970
0240 0 7001              MDX      G204                                                                    3A125980
0241 0 3052       V154   DC       /3052                                        ERR ID & ERR WAIT          3A125990
                        *                                                       BSC SKPD-SHOULD NOT        3A126000
0242 0 2003       G204   LDS      3                                            SET C AND OF ON            3A126010
0243 0 4C02 0247         BSC  L   G205,C                                       BR IF CARRY IS ON          3A126020
0245 0 3053              DC       /3053                                        ERR ID & ERR WAIT          3A126030
                        *                                                       BSC C DID NOT BRANCH       3A126040
0246 0 3054              DC       /3054                                        ERR ID & ERR WAIT          3A126050
                        *                                                       BSC SKPD-SHOULD BRNCH      3A126060
0247 0 4C01 0248  G205   BSC  L   G208,O                                       BR IF OF ON                3A126070
0249 0 3055              DC       /3055                                        ERR ID & ERR WAIT          3A126080
                        *                                                       BSC O DID NOT BRANCH       3A126090
024A 0 3056              DC       /3056                                        ERR ID & ERR WAIT          3A126100
                        *                                                       BSC SKPD-SHOULD BRNCH      3A126110
024B 0 4C01 024E  G208   BSC  L   V168,O                                       BR IF OF ON                3A126120
024D 0 7001              MDX      G206                                                                    3A126130
024E 0 3057       V168   DC       /3057                                        ERR ID & ERR WAIT          3A126140
                        *                                                       BSC BRNCD-SHOULD NOT       3A126150
024F 0 2000       G206   LDS      0                                                                       3A126160
0250 0 4C02 0253         BSC  L   V170,C                                       BR IF CARRY IS OFF         3A126170
0252 0 7001              MDX      G207                                                                    3A126180
0253 0 3058       V170   DC       /3058                                        ERR ID & ERR WAIT          3A126190
                        *                                                       BSC BRNCD-SHOULD NOT       3A126200
0254 0 4C01 0257  G207   BSC  L   V174,O                                       BR IF OF ON                3A126210
0256 0 7001              MDX      G209                                                                    3A126220
0257 0 3059       V174   DC       /3059                                        ERR ID & ERR WAIT          3A126230
                        *                                                       BSC BRNCD-SHOULD NOT       3A126240
0258 0 C014       G209   LD       N201                                                                    3A126250
0259 0 4C18 025D         BSC  L   G20A,&-                                      BR ON ZERO                 3A126260
025B 0 305A              DC       /305A                                        ERR ID & ERR WAIT          3A126270
                        *                                                       BSC &- DID NOT BRANCH      3A126280
025C 0 3058              DC       /3058                                        ERR ID & ERR WAIT          3A126290
                        *                                                       BSC SKPD-SHOULD BRNCH      3A126300
025D 0 C00E       G20A   LD       N200                                                                    3A126310
025E 0 4C18 0261         BSC  L   V180,&-                                                                 3A126320
0260 0 7001              MDX      G20D                                                                    3A126330
0261 0 305C       V180   DC       /305C                                        ERR ID & ERR WAIT          3A126340
                        *                                                       BSC BRNCHED-SHOULDNT       3A126350
0262 0 C00B       G20D   LD       N202                                                                    3A126360
0263 0 4C18 0266         BSC  L   V184,&-                                                                 3A126370
0265 0 7001              MDX      G20B                                                                    3A126380
0266 0 305D       V184   DC       /305D                                        ERR ID & ERR WAIT          3A126390
                        *                                                       BSC BRNCHED-SHOULDNT       3A126400
0267 0 4C80 026F  G20B   BSC  I   N203                                                                    3A126410
0269 0 305E              DC       /305E                                        ERR ID & ERR WAIT          3A126420
                        *                                                       INDIRECT BSC FAILED        3A126430
026A 0 305F              DC       /305F                                        ERR ID & ERR WAIT          3A126440
                        *                                                       INDIRECT BSC FAILED        3A126450
026B 0 7004       G20C   MDX      A240                                         EXIT TO NEXT ROUTINE       3A126460
026C 0 FFFF       N200   DC       /FFFF                                                                   3A126470
026D 0 0000       N201   DC       /0000                                                                   3A126480
026E 0 0001       N202   DC       /0001                                                                   3A126490
026F 0 0268       N203   DC       G20C                                                                    3A126500
                        *                                                                                3A126510
                        *                    TEST SHORT AND LONG FORM                                    3A126520
                        *                    BSI                                                         3A126530
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                        *                                                                                3A126540
                        ************************************************                                 3A126550
*************************************************************************************************** 3A126560
CORE     DATA OR      *LA- OPER-                                                                        3A126570
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT                              3A126580
*************************************************************************************************** 3A126590
0270 0 4002       A240   BSI      N241         STORE ADDRESS OF I REG                                   3A126600
0271 0 0271       N240   DC       N240         STORE ADDRESS OF I REG                                   3A126610
0272 0 3060              DC       /3060        ERR ID & ERR WAIT                                        3A126620
                        *                      BSI SKPD-SHOULD BRNCH                                    3A126630
0273 0 0000       N241   DC       /0000        RETURN ADDR FOR MAIN PROG                                3A126640
0274 0 C0FE              LD       N241         LD RETURN ADDR                                           3A126650
0275 0 F0FB              EOR      N240         ZERO IN RETURN ADDR                                      3A126660
0276 0 4820              BSC      Z                                                                     3A126670
0277 0 3061              DC       /3061        ERR ID & ERR WAIT                                        3A126680
                        *                      BSI NOT STORED I REG                                     3A126690
0278 0 4408 027D         BSI  L   N243,&       STORE ADDR OF I REG                                      3A126700
027A 0 3062       V1AC   DC       /3062        ERR ID & ERR WAIT                                        3A126710
                        *                      BSI & DID NOT BRANCH                                     3A126720
0278 0 3063              DC       /3063        ERR ID & ERR WAIT                                        3A126730
                        *                      BSI SKPD-SHOULD BNCH                                     3A126740
027C 0 027A       N242   DC       V1AC                                                                  3A126750
027D 0 0000       N243   DC       /0000        RETURN ADDR FOR MAIN PROG                                3A126760
027E 0 C0FE              LD       N243                                                                  3A126770
027F 0 F0FC              EOR      N242                                                                  3A126780
0280 0 4820              BSC      Z                                                                     3A126790
0281 0 3064              DC       /3064        ERR ID & ERR WAIT                                        3A126800
                        *                      BSI NOT STORE I REG                                      3A126810
                        *                                                                               3A126820
                        *                TEST OF INSTR REQUIRED FOR                                     3A126830
                        *                ERROR CONTROL                                                  3A126840
                        *                                                                               3A126850
                        ************************************************                                 3A126860
0282 0 C048       A900   LD       F911         LD A NUMBER                                              3A126870
0283 0 D048              STO      F912                                                                  3A126880
0284 0 C048              LD       F913                                                                  3A126890
0285 0 C046              LD       F912                                                                  3A126900
0286 0 F044              EOR      F911                                                                  3A126910
0287 0 4820              BSC      Z                                                                     3A126920
0288 0 3065              DC       /3065        ERR ID & ERR WAIT                                        3A126930
                        *                      STORE FAILED                                             3A126940
0289 0 C047              LD       F918         CK FIRST PASS SW %/0002¤                                 3A126950
028A 0 4820              BSC      Z            IS SW ON                                                 3A126960
028B 0 704C              MDX      A280         YES GO TO NEXT ROUTINE                                   3A126970
028C 0 C042              LD       F916         GET 0002                                                 3A126980
028D 0 D043              STO      F918         STORE  /0002                                             3A126990
028E 0 1810              SRA      16           CLEAR ACC                                                3A127000
028F 0 D400 0001         STO  L   /0001        ZERO WITH /0001                                          3A127010
0291 0 61FF              LDX   1  -1           LD XR 1 WITH -1                                          3A127020
0292 0 C400 0001         LD   L   /0001        ZERO IN 1800  -1 FOR 1130                                3A127030
0294 0 4820              BSC      Z            ZERO FOR 1800                                            3A127040
0295 0 700F              MDX      G901         1130 CPU                                                 3A127050
0296 0 C038              LD       F919         1800 P-C  LD /0240                                       3A127060
0297 0 D031              STO      F903         STO /0240  THIS IS AREA,                                 3A127070
0298 0 D400 0F67         STO  L   N8C2         * FUNCTION AND MODIFIER                                  3A127080
029A 0 D400 0FD3         STO  L   F004         * FOR READING DATA ENTRY                                 3A127090
029C 0 D03A              STO      F007         * SWITCHES IN 1800                                       3A127100
029D 0 0836       G902   XIO      F922         SENSE SENSE/PROG SWS                                     3A127110
029E 0 E037              AND      F923         IGNORE CE SWS. %/FF00¤                                   3A127120
029F 0 F036              EOR      F923         ZERO WITH /FF00                                          3A127130
*************************************************************************************************** 3A127140
CORE     DATA OR      *LA- OPER-                                                                        3A127150
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT                              3A127160
*************************************************************************************************** 3A127170
02A0 0 4C18 02AC         BSC  L   G900,&-      BRANCH ON ZERO                                           3A127180
02A2 0 F033              EOR      F923                                                                  3A127190
02A3 0 3066              DC       /3066        ERROR ID & ERR WAIT                                      3A127200
                        *                      SENSE/PROG SWS NOT                                       3A127210
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                        *                                                       * EQUAL TO /FF00                3A127220
02A4 0 70F8                     MDX     G902            REPEAT TEST             3A127230
02A5 0 C02D             G901    LD      F920            1130 CPU  LD /3A00      3A127240
02A6 0 D022                     STO     F903            STO /3A00  THIS IS      3A127250
02A7 0 D400 0F67                STO  L  N8C2            * AREA- FUNCTION &      3A127260
02A9 0 D400 0FD3                STO  L  F004            * MODIFIER FOR READING  3A127270
02AB 0 D02B                     STO     F007            * DATA ENTRY SWITCHES   3A127280
02AC 0 081B             G900    XIO     F902            TEST DATA ENTRY SWS     3A127290
02AD 0 C022                     LD      F917            * FOR /FFFF             3A127300
02AE 0 F01F                     EOR     F915                                    3A127310
02AF 0 4C18 02B4                BSC  L  X001,&-         BRANCH ON ZERO          3A127320
02B1 0 F01C                     EOR     F915                                    3A127330
02B2 0 3067                     DC      /3067           ERR ID & ERR WAIT       3A127340
                        *                               DATA ENTRY SWS NOT      3A127350
                        *                               EQUAL TO /FFFF          3A127360
02B3 0 70F8                     MDX     G900                                    3A127370
02B4 0 3001             X001    DC      /3001           SET SENSE/PROG AND      3A127380
                        *                               DATA ENTRY SWS TO       3A127390
                        *                               ZEROS AND PUSH START    3A127400
02B5 0 C013                     LD      F903            CK FOR 1130 %3A00-1130¤ 3A127410
02B6 0 F01C                     EOR     F920                                    3A127420
02B7 0 4C18 02BF                BSC  L  G904,&-         XFER IF 1130            3A127430
02B9 0 081A             G903    XIO     F922            TEST SENSE/PROG SWS     3A127440
02BA 0 E01B                     AND     F923            IGNORE CE SWS.  %/FF00¤ 3A127450
02BB 0 4C18 02BF                BSC  L  G904,&-         BRANCH IF OK            3A127460
02BD 0 3068                     DC      /3068           ERR ID & ERR WAIT       3A127470
                        *                               SENSE/PROG SWS NOT      3A127480
                        *                               * EQUAL TO /0000        3A127490
02BE 0 70FA                     MDX     G903            REPEAT TEST             3A127500
02BF 0 0808             G904    XIO     F902            TEST DATA ENTRY SWS     3A127510
02C0 0 C00F                     LD      F917            * FOR /0000             3A127520
02C1 0 4C18 02C5                BSC  L  X003,&-         BRANCH ON ZERO          3A127530
02C3 0 3069                     DC      /3069           ERR ID & ERR WAIT       3A127540
                        *                               DATA ENTRY SWITCHES     3A127550
                        *                               * NOT EQ /0000          3A127560
02C4 0 70FA                     MDX     G904                                    3A127570
02C5 0 3002             X003    DC      /3002           SET BIT SWITCHES AS     3A127580
                        *                               * DESIRED FOR RUN       3A127590
                        *                               * AND PUSH START        3A127600
02C6 0 7011                     MDX     A280            EXIT TO NEXT ROUTINE    3A127610
02C8    0000                    BSS  E                                          3A127620
02C8 0 02D0             F902    DC      F917                                    3A127630
02C9 0 0240             F903    DC      /0240           EQUAL /3A00 IN 1130     3A127640
02CA 0 02CA             F904    DC      F904                                    3A127650
02CB 0 02CC             F911    DC      F912                                    3A127660
02CC 0 0000             F912    DC      /0000                                   3A127670
02CD 0 0000             F913    DC      /0000                                   3A127680
02CE 0 FFFF             F915    DC      /FFFF                                   3A127690
02CF 0 0002             F916    DC      /0002                                   3A127700
02D0 0 0000             F917    DC      /0000                                   3A127710
02D1 0 0000             F918    DC      /0000                                   3A127720
02D2 0 0240             F919    DC      /0240           1800 READ BIT SWS CONSTANT 3A127730
02D3 0 3A00             F920    DC      /3A00           1130 READ BIT SWS CONSTANT 3A127740
02D4 0 0000             F922    DC      0               SENSE SENSE/PROG CON    3A127750
02D5 0 0760                     DC      /0760                                   3A127760
02D6 0 FF00             F923    DC      /FF00                                   3A127770
02D7 0 0240             F007    DC      /0240           EQUAL /3A00 IN 1130     3A127780
                        ********************************************            3A127790
                        *                                                       3A127800
                        *               BEGINING OF SECTION OF                  3A127810
                        *               PROGRAM USING COMMON ERROR              3A127820
                        *               CONTROL ROUTINE                         3A127830
                        *                                                       3A127840
                        ********************************************            3A127850
                        ********************************************            3A127860
                        *                                                       3A127870
                        *               TEST OF SRA OPERATION                   3A127880
                        *                                                       3A127890
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                        ********************************************            3A127900
*************************************************************************       3A127910
CORE    DATA OR         *LA- OPER-                                              3A127920
ADDR    INSTRUCTION     *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT     3A127930
*************************************************************************       3A127940
02D8 0 C039             A280    LD      N280                                    3A127950
02D9 0 1810                     SRA     16                                      3A127960
02DA 0 4C18 02DF                BSC  L  G280,&-         BRANCH ON ZERO          3A127970
02DC 0 4400 0F69                BSI  L  F000            SRA 16 FAILED           3A127980
02DE 0 306A                     DC      /306A           ERR ID                  3A127990
02DF 0 4400 0FC4        G280    BSI  L  F005            CK LOCK ON ERROR        3A128000
02E1 0 70F6                     MDX     A280            LOOP                    3A128010
                        ********************************************            3A128020
02E2 0 C030             A281    LD      N281            LD /8000                3A128030
02E3 0 180F                     SRA     15              NOW A#/0001             3A128040
02E4 0 F02F                     EOR     N282            ZERO WITH /0001         3A128050
02E5 0 4C18 02EA                BSC  L  G281,&-         BRANCH ON ZERO          3A128060
02E7 0 4400 0F69                BSI  L  F000            SRA 15 FAILED           3A128070
02E9 0 306B                     DC      /306B           ERR ID                  3A128080
02EA 0 4400 0FC4        G281    BSI  L  F005            CK LOCK ON ERROR        3A128090
02EC 0 70F5                     MDX     A281            LOOP                    3A128100
                        ********************************************            3A128110
02ED 0 C027             A282    LD      N283            LD /AAAA                3A128120
02EE 0 1801                     SRA     1               NOW A#/5555             3A128130
02EF 0 F026                     EOR     N284            ZERO WITH /5555         3A128140
02F0 0 4C18 02F5                BSC  L  G282,&-         BRANCH ON ZERO          3A128150
02F2 0 4400 0F69                BSI  L  F000            SRA 1 FAILED            3A128160
02F4 0 306C                     DC      /306C           ERR ID                  3A128170
02F5 0 4400 0FC4        G282    BSI  L  F005            CK LOCK ON ERROR        3A128180
02F7 0 70F5                     MDX     A282            LOOP                    3A128190
                        ********************************************            3A128200
02F8 0 C01D             A283    LD      N284            LD /5555                3A128210
02F9 0 1801                     SRA     1               NOW A#/2AAA             3A128220
02FA 0 F01C                     EOR     N285            ZERO WITH /2AAA         3A128230
02FB 0 4C18 0300                BSC  L  G283,&-         BRANCH ON ZERO          3A128240
02FD 0 4400 0F69                BSI  L  F000            SRA 1 FAILED            3A128250
02FF 0 306D                     DC      /306D           ERR ID                  3A128260
0300 0 4400 0FC4        G283    BSI  L  F005            CK LOCK ON ERROR        3A128270
0302 0 70F5                     MDX     A283            LOOP                    3A128280
                        ********************************************            3A128290
0303 0 C00F             A284    LD      N281            LD /8000                3A128300
0304 0 1801                     SRA     1               NOW A# /4000            3A128310
0305 0 1802                     SRA     2               A# /1000                3A128320
0306 0 1804                     SRA     4               A#/0100                 3A128330
0307 0 1808                     SRA     8               A # /0001               3A128340
0308 0 F00B                     EOR     N282            ZERO WITH /0001         3A128350
0309 0 4C18 030E                BSC  L  G284,&-         BRANCH ON ZERO          3A128360
030B 0 4400 0F69                BSI  L  F000            COMB SRA FAILED         3A128370
030D 0 306E                     DC      /306E           ERR ID                  3A128380
030E 0 4400 0FC4        G284    BSI  L  F005            CK LOCK ON ERROR        3A128390
0310 0 70F2                     MDX     A284            LOOP                    3A128400
0311 0 7006                     MDX     A2C0            EXIT TO NEXT ROUTINE    3A128410
0312 0 FFFF             N280    DC      /FFFF                                   3A128420
0313 0 8000             N281    DC      /8000                                   3A128430
0314 0 0001             N282    DC      /0001                                   3A128440
0315 0 AAAA             N283    DC      /AAAA                                   3A128450
0316 0 5555             N284    DC      /5555                                   3A128460
0317 0 2AAA             N285    DC      /2AAA                                   3A128470
                        *                                                       3A128480
                        *               TEST OF AND FUNCTION                    3A128490
                        *                                                       3A128500
                        ********************************************            3A128510
*************************************************************************       3A128520
CORE    DATA OR         *LA- OPER-                                              3A128530
ADDR    INSTRUCTION     *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT     3A128540
*************************************************************************       3A128550
0318 0 C029             A2C0    LD      N2C0            LD /0000                3A128560
0319 0 E028                     AND     N2C0            AND /0000               3A128570
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031A 0 4C18 031F          BSC  L  G2C0,&-   BRANCH ON ZERO                    3A128580
031C 0 4400 0F69          BSI  L  F000      AND OF 0 AND FAILED               3A128590
031E 0 306F               DC      /306F     ERR ID                            3A128600
031F 0 4400 0FC4    G2C0  BSI  L  F005      CK LOCK ON ERROR                  3A128610
0321 0 70F6               MDX     A2C0      LOOP                              3A128620
                          ********************************************        3A128630
0322 0 C01F         A2C4  LD      N2C0      LD /0000                          3A128640
0323 0 E01F               AND     N2C2      LD /FFFF                          3A128650
0324 0 4C18 0329          BSC  L  G2C4,&-   BRANCH ON ZERO                    3A128660
0326 0 4400 0F69          BSI  L  F000      AND OF 0 AND 1 FAILED             3A128670
0328 0 3070               DC      /3070     ERR ID                            3A128680
0329 0 4400 0FC4    G2C4  BSI  L  F005      CK LOCK ON ERROR                  3A128690
032B 0 70F6               MDX     A2C4      LOOP                              3A128700
                          ********************************************        3A128710
032C 0 C016         A2C8  LD      N2C2      LD /FFFF                          3A128720
032D 0 E014               AND     N2C0      AND /0000                         3A128730
032E 0 4C18 0333          BSC  L  G2C8,&-   BRANCH ON ZERO                    3A128740
0330 0 4400 0F69          BSI  L  F000      AND OF 1 AND 0 FAILED             3A128750
0332 0 3071               DC      /3071     ERR ID                            3A128760
0333 0 4400 0FC4    G2C8  BSI  L  F005      CK LOCK ON ERROR                  3A128770
0335 0 70F6               MDX     A2C8      LOOP                              3A128780
                          ********************************************        3A128790
0336 0 C00C         A2CC  LD      N2C2      LD /FFFF                          3A128800
0337 0 E00B               AND     N2C2      AND /FFFF                         3A128810
0338 0 F00A               EOR     N2C2      ZERO WITH /FFFF                   3A128820
0339 0 4C18 033E          BSC  L  G2CC,&-   BRANCH ON ZERO                    3A128830
033B 0 4400 0F69          BSI  L  F000      AND OF 1 AND 1 FAILED             3A128840
033D 0 3072               DC      /3072     ERR ID                            3A128850
033E 0 4400 0FC4    G2CC  BSI  L  F005      CK LOCK ON ERROR                  3A128860
0340 0 70F5               MDX     A2CC      LOOP                              3A128870
0341 0 7002               MDX     A300      EXIT TO NEXT ROUTINE              3A128880
0342 0 0000         N2C0  DC      /0000                                       3A128890
0343 0 FFFF         N2C2  DC      /FFFF                                       3A128900
                          *                                                   3A128910
                          *              TEST OF OR FUNCTION                  3A128920
                          *                                                   3A128930
                          ********************************************        3A128940
************************************************************************    3A128950
CORE    DATA OR     *LA- OPER-                                              3A128960
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT     3A128970
************************************************************************    3A128980
0344 0 C020         A300  LD      N300      LD /0000                          3A128990
0345 0 E81F               OR      N300      OR /0000                          3A129000
0346 0 4C18 034B          BSC  L  G300,&-   BRANCH ON ZERO                    3A129010
0348 0 4400 0F69          BSI  L  F000      OR OF 0 AND 0 FAILED              3A129020
034A 0 3073               DC      /3073     ERR ID                            3A129030
034B 0 4400 0FC4    G300  BSI  L  F005      CK LOCK ON ERROR                  3A129040
034D 0 70F6               MDX     A300      LOOP                              3A129050
                          ***** ******* ***************************           3A129060
034E 0 C016         A302  LD      N300      LD /0000                          3A129070
034F 0 E816               OR      N302      OR /FFFF                          3A129080
0350 0 F015               EOR     N302      ZERO WITH /FFFF                   3A129090
0351 0 4C18 0356          BSC  L  G302,&-   BRANCH ON ZERO                    3A129100
0353 0 4400 0F69          BSI  L  F000      OR OF 0 AND 1 FAILED              3A129110
0355 0 3074               DC      /3074     ERR ID                            3A129120
0356 0 4400 0FC4    G302  BSI  L  F005      CHECK LOOP SWITCH                 3A129130
0358 0 70F5               MDX     A302      LOOP                              3A129140
                          ********************************************        3A129150
0359 0 C00C         A304  LD      N302      LD /FFFF                          3A129160
035A 0 E80B               OR      N302      OR /FFFF                          3A129170
035B 0 F00A               EOR     N302      EOR IN /FFFF                      3A129180
035C 0 4C18 0361          BSC  L  G304,&-   BRANCH ON ZERO                    3A129190
035E 0 4400 0F69          BSI  L  F000      OR OF 1 AND 1 FAILED              3A129200
0360 0 3075               DC      /3075     ERR ID                            3A129210
0361 0 4400 0FC4    G304  BSI  L  F005      CK LOCK ON ERRCR                  3A129220
0363 0 70F5               MDX     A304      LOOP                              3A129230
0364 0 7002               MDX     A340      EXIT TO NEXT ROUTINE              3A129240
0365 0 0000         N300  DC      /0000                                       3A129250
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0366 0 FFFF         N302  DC      /FFFF                                       3A129260
                          *                                                   3A129270
                          *              TEST OF RTE 16 OPERATION             3A129280
                          *                                                   3A129290
                          ********************************************        3A129300
************************************************************************    3A129310
CORE    DATA OR     *LA- OPER-                                              3A129320
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT     3A129330
************************************************************************    3A129340
0367 0 C016         A340  LD      N340      LD /0000                          3A129350
0368 0 18D0               RTE     16        PLACE /0000 IN Q REG              3A129360
0369 0 C015               LD      N341      LD /FFFF                          3A129370
036A 0 18D0               RTE     16        NOW A#/0000  Q#/FFFF              3A129380
036B 0 4C18 0370          BSC  L  G340,&-   BRANCH ON ZERO                    3A129390
036D 0 4400 0F69          BSI  L  F000      ALL 0 THRU Q FAILED               3A129400
036F 0 3076               DC      /3076     ERR ID                            3A129410
0370 0 4400 0F98    G340  BSI  L  F00E      CK LOCK ON ERROR                  3A129420
0372 0 70F4               MDX     A340      LOOP                              3A129430
0373 0 18D0               RTE     16        NOW A#/FFFF  Q#/0000              3A129440
0374 0 F00A               EOR     N341      ZERO WITH /FFFF                   3A129450
0375 0 4C18 037A          BSC  L  G342,&-   BRANCH ON ZERO                    3A129460
0377 0 4400 0F69          BSI  L  F000      ALL 1 THRU Q FAILED               3A129470
0379 0 3077               DC      /3077     ERR ID                            3A129480
037A 0 4400 0FC4    G342  BSI  L  F005      CK LOCK ON ERROR                  3A129490
037C 0 70EA               MDX     A340      LOOP                              3A129500
037D 0 7002               MDX     A380      EXIT TO NEXT ROUTINE              3A129510
037E 0 0000         N340  DC      /0000                                       3A129520
037F 0 FFFF         N341  DC      /FFFF                                       3A129530
                          *                                                   3A129540
                          *              TEST OF SRT OPERATION                3A129550
                          *                                                   3A129560
                          ********************************************        3A129570
0380 0 C055         A380  LD      N380      LD /8000                          3A129580
0381 0 18A0               SRT     32        NOW  A#/FFFF  Q#/FFFF            3A129590
0382 0 F054               EOR     N381      EOR IN /FFFF                      3A129600
0383 0 4C18 0388          BSC  L  G380,&-   BRANCH ON ZERO                    3A129610
0385 0 4400 0F69          BSI  L  F000      SRT 32-A REG FAILED               3A129620
0387 0 3078               DC      /3078     ERR ID                            3A129630
0388 0 4400 0F98    G380  BSI  L  F00E      CK LOCK ON ERROR                  3A129640
038A 0 70F5               MDX     A380      LOOP                              3A129650
038B 0 18D0               RTE     16        NOW A#/FFFF  Q#/0000              3A129660
038C 0 F04A               EOR     N381      EOR IN /FFFF                      3A129670
038D 0 4C18 0392          BSC  L  G382,&-   BRANCH ON ZERO                    3A129680
038F 0 4400 0F69          BSI  L  F000      SRT 32-Q REG FAILED               3A129690
0391 0 3079               DC      /3079     ERR ID                            3A129700
0392 0 4400 0FC4    G382  BSI  L  F005      CK LOCK ON ERROR                  3A129710
0394 0 70EB               MDX     A380      LOOP                              3A129720
                          ********************************************        3A129730
0395 0 C042         A384  LD      N382      LD /4000                          3A129740
0396 0 18A0               SRT     32        NOW A#/0000  Q#/0000              3A129750
0397 0 4C18 039C          BSC  L  G384,&-   BRANCH ON ZERO                    3A129760
0399 0 4400 0F69          BSI  L  F000      SRT 32-A REG FAILED               3A129770
039B 0 307A               DC      /307A     ERR ID                            3A129780
039C 0 4400 0FC4    G384  BSI  L  F005      CK LOCK ON ERROR                  3A129790
039E 0 70F6               MDX     A384      LOOP                              3A129800
039F 0 18D0               RTE     16        NOW  A#/0000  Q#/0000            3A129810
03A0 0 4C18 03A5          BSC  L  G386,&-   BRANCH ON ZERO                    3A129820
03A2 0 4400 0F69          BSI  L  F000      SRT 32-Q REG FAILED               3A129830
03A4 0 3078               DC      /3078     ERR ID                            3A129840
03A5 0 4400 0FC4    G386  BSI  L  F005      CK LOCK ON ERROR                  3A129850
03A7 0 70ED               MDX     A384      LOOP                              3A129860
                          ********************************************        3A129870
03A8 0 C030         A388  LD      N383      LD  /5555                         3A129880
03A9 0 188F               SRT     15        NOW  A#/0000  Q#/0000             3A129890
03AA 0 4C18 03AF          BSC  L  G388,&-   BRANCH ON ZERO                    3A129900
03AC 0 4400 0F69          BSI  L  F000      SRT 15-A REG FAILED               3A129910
03AE 0 307C               DC      /307C     ERR ID                            3A129920
03AF 0 4400 0F98    G388  BSI  L  F00E      CK LOCK ON ERROR                  3A129930
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03B1 0 70F6              MDX     A388        LOOP                          3A129940
03B2 0 18D0              RTE     16          NOW A#/AAAA  Q#/0000           3A129950
03B3 0 F026              EOR     N384        ZERO WITH /AAAA               3A129960
03B4 0 4C18 03B9         BSC  L  G38A,&-     BRANCH ON ZERO                3A129970
03B6 0 4400 0F69         BSI  L  F000        SRT 15-Q REG FAILED           3A129980
03B8 0 307D              DC      /307D       ERR ID                        3A129990
03B9 0 4400 0FC4  G38A   BSI  L  F005        CK LOCK ON ERROR              3A130000
03BB 0 70EC              MDX     A388        LOOP                          3A130010
                         ********************************************      3A130020
*****************************************************************************3A130030
CORE     DATA OR     *LA- OPER-                                            3A130040
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT   3A130050
*****************************************************************************3A130060
03BC 0 C01C              A38C    LD      N383        LD /5555              3A130070
03BD 0 1880              SRT     0           NOW A#/5555  Q#/0000          3A130080
03BE 0 1882              SRT     2           NOW  A#/1555  Q#/4000         3A130090
03BF 0 1884              SRT     4                 /0155    /5400          3A130100
03C0 0 1886              SRT     6                 /0005    /5550          3A130110
03C1 0 1888              SRT     8                 /0000    /0555          3A130120
03C2 0 188A              SRT     10                /0000    /0001          3A130130
03C3 0 4C18 03C8         BSC  L  G38C,&-     BRANCH ON ZERO                3A130140
03C5 0 4400 0F69         BSI  L  F000        SERIES SRT FAILED             3A130150
03C7 0 307E              DC      /307E       ERR ID                        3A130160
03C8 0 4400 0F98  G38C   BSI  L  F00E        CK LOCK ON ERROR              3A130170
03CA 0 70F1              MDX     A38C        LOOP                          3A130180
03CB 0 18D0              RTE     16          NOW  A#/0001  Q#/0000          3A130190
03CC 0 F00E              EOR     N385        ZERO WITH /0001               3A130200
03CD 0 4C18 03D2         BSC  L  G38E,&-     BRANCH ON ZERO                3A130210
03CF 0 4400 0F69         BSI  L  F000        SERIES SRT FAILED             3A130220
03D1 0 307F              DC      /307F       ERR ID                        3A130230
03D2 0 4400 0FC4  G38E   BSI  L  F005        CK LOCK ON ERROR              3A130240
03D4 0 70E7              MDX     A38C        LOOP                          3A130250
03D5 0 7006              MDX     A3C0        EXIT TO NEXT ROUTINE          3A130260
03D6 0 8000       N380   DC      /8000                                     3A130270
03D7 0 FFFF       N381   DC      /FFFF                                     3A130280
03D8 0 4000       N382   DC      /4000                                     3A130290
03D9 0 5555       N383   DC      /5555                                     3A130300
03DA 0 AAAA       N384   DC      /AAAA                                     3A130310
03DB 0 0001       N385   DC      /0001                                     3A130320
                         *                                                 3A130330
                         *           TEST OF RTE OPERATION                 3A130340
                         *                                                 3A130350
                         ********************************************      3A130360
03DC 0 C02F              A3C0    LD      N3C1        LD /AAAA              3A130370
03DD 0 18D0              RTE     16          NOW  A#/0000  Q#/AAAA          3A130380
03DE 0 C02C              LD      N3C0        NOW  A#/5555  Q#/AAAA         3A130390
03DF 0 18CF              RTE     15          NOW  A#/5554  Q#/AAAB         3A130400
03E0 0 F02E              EOR     N3C4        ZERO WITH /5554               3A130410
03E1 0 4C18 03E6         BSC  L  G3C0,&-     BRANCH ON ZERO                3A130420
03E3 0 4400 0F69         BSI  L  F000        RTE 15-Q TO A FAILED          3A130430
03E5 0 3080              DC      /3080       ERR ID                        3A130440
03E6 0 4400 0F98  G3C0   BSI  L  F00E        CK LOCK ON ERROR              3A130450
03E8 0 70F3              MDX     A3C0        LOOP                          3A130460
03E9 0 18D0              RTE     16          NOW  A#/AAAB  Q#/5554         3A130470
03EA 0 F025              EOR     N3C5        ZERO WITH /AAAB               3A130480
03EB 0 4C18 03F0         BSC  L  G3C2,&-     BRANCH ON ZERO                3A130490
03ED 0 4400 0F69         BSI  L  F000        RTE 15-A TO Q FAILED          3A130500
03EF 0 3081              DC      /3081       ERR ID                        3A130510
03F0 0 4400 0FC4  G3C2   BSI  L  F005        CK LOCK ON ERROR              3A130520
03F2 0 70E9              MDX     A3C0        LOOP                          3A130530
                         ********************************************      3A130540
*****************************************************************************3A130550
CORE     DATA OR     *LA- OPER-                                            3A130560
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT   3A130570
*****************************************************************************3A130580
03F3 0 C01A              A3C4    LD      N3C3        LD /8000              3A130590
03F4 0 18D0              RTE     16          NOW  A#/XXXX  Q#/8000         3A130600
03F5 0 C017              LD      N3C2        LD /0000                      3A130610
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03F6 0 18C0              RTE     0           NOW  A#/0000  Q#/8000         3A130620
03F7 0 18DF              RTE     31                                        3A130630
03F8 0 F018              EOR     N3C6        ZERO WITH /0001               3A130640
03F9 0 4C18 03FE         BSC  L  G3C4,&-     BRANCH ON ZERO                3A130650
03FB 0 4400 0F69         BSI  L  FC00        SERIES RTE FAILED             3A130660
03FD 0 3082              DC      /3082       ERR ID                        3A130670
03FE 0 4400 0F98  G3C4   BSI  L  F00E        CK LOCK ON ERROR              3A130680
0400 0 70F2              MDX     A3C4        LOOP                          3A130690
0401 0 18D0              RTE     16          NOW  A-/0000  Q-/0000          3A130700
0402 0 4C18 0407         BSC  L  G3C6,&-     BRANCH ON ZERO                3A130710
0404 0 4400 0F69         BSI  L  F000        SERIES RTE FAILED             3A130720
0406 0 3083              DC      /3083       ERR ID                        3A130730
0407 0 4400 0FC4  G3C6   BSI  L  F005        CK LOCK ON ERROR              3A130740
0409 0 70E9              MDX     A3C4        LOOP                          3A130750
040A 0 7007              MDX     A400        EXIT TO NEXT ROUTINE          3A130760
040B 0 5555       N3C0   DC      /5555                                     3A130770
040C 0 AAAA       N3C1   DC      /AAAA                                     3A130780
040D 0 0000       N3C2   DC      /0000                                     3A130790
040E 0 8000       N3C3   DC      /8000                                     3A130800
040F 0 5554       N3C4   DC      /5554                                     3A130810
0410 0 AAAB       N3C5   DC      /AAAB                                     3A130820
0411 0 0001       N3C6   DC      /0001                                     3A130830
                         *                                                 3A130840
                         *           TEST OF SLA OPERATION                 3A130850
                         *                                                 3A130860
                         ********************************************      3A130870
0412 0 C400 04B6  A400   LD   L  N400        LD /FFFF                      3A130880
0414 0 18D0              RTE     16          NOW  A#/XXXX  Q#/FFFF         3A130890
0415 0 C400 04B6         LD   L  N400        LD /FFFF                      3A130900
0417 0 1010              SLA     16          NOW A#/0000  Q#/FFFF          3A130910
0418 0 4C02 041D         BSC  L  G404,C      BR ON CARRY                   3A130920
041A 0 4400 0F69         BSI  L  F000        SLA 15-CARRY FAILED           3A130930
041C 0 3085              DC      /3085       ERR ID                        3A130940
041D 0 4400 0F98  G404   BSI  L  F00E        CK LOCK ON ERROR              3A130950
041F 0 70F2              MDX     A400        LOOP                          3A130960
0420 0 4C18 0425         BSC  L  G400,&-     BRANCH ON ZERO                3A130970
0422 0 4400 0F69         BSI  L  F000        SLA 16-A REG FAILED           3A130980
0424 0 3084              DC      /3084       ERR ID                        3A130990
0425 0 4400 0F98  G400   BSI  L  F00E        CK LOCK ON ERROR              3A131000
0427 0 70EA              MDX     A400        LOOP                          3A131010
0428 0 18D0              RTE     16          NOW  A#/FFFF  Q#/0000         3A131020
0429 0 F400 04B6         EOR  L  N400        ZERO WITH /FFFF               3A131030
042B 0 4C18 0430         BSC  L  G406,&-     BRANCH ON ZERO                3A131040
042D 0 4400 0F69         BSI  L  F000        SLA 16-AFFECTED Q REG         3A131050
042F 0 3086              DC      /3086       ERR ID                        3A131060
0430 0 4400 0FC4  G406   BSI  L  F005        CK LOCK ON ERROR              3A131070
0432 0 70DF              MDX     A400        LOOP                          3A131080
                         ********************************************      3A131090
*****************************************************************************3A131100
CORE     DATA OR     *LA- OPER-                                            3A131110
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT   3A131120
*****************************************************************************3A131130
0433 0 C400 04BB  A408   LD   L  N405        LD /0000                      3A131140
0435 0 18D0              RTE     16          NOW A#/XXXX  Q#/0000          3A131150
0436 0 C4C0 04BC         LD   L  N406              /FFFE    /0000          3A131160
0438 0 1010              SLA     16                /0000    /0000          3A131170
0439 0 4C02 043C         BSC  L  G407,C      BR ON CARRY                   3A131180
043B 0 7003              MDX     G40C                                      3A131190
043C 0 4400 0F69  G407   BSI  L  F000        SLA 16- CARRY FAILED          3A131200
043E 0 3088              DC      /3088       ERR ID                        3A131210
043F 0 4400 0F98  G40C   BSI  L  F00E        CK LOCK ON ERROR              3A131220
0441 0 70F1              MDX     A408        LOOP                          3A131230
0442 0 4C18 0447         BSC  L  G408,&-     BRANCH ON ZERO                3A131240
0444 0 4400 0F69         BSI  L  F000        SLA 16-A REG FAILED           3A131250
0446 0 3087              DC      /3087       ERR ID                        3A131260
0447 0 4400 0F98  G408   BSI  L  F00E        CK LOCK ON ERROR              3A131270
0449 0 70E9              MDX     A408        LOOP                          3A131280
044A 0 18D0              RTE     16          NOW  A#/0000  Q#/0000         3A131290
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044B 0 4C18 0450          BSC  L  G40E,&-    BRANCH ON ZERO                3A131300
044D 0 4400 0F69          BSI  L  F000       SLA 16-AFFECTED Q REG         3A131310
044F 0 3089               DC      /3089      ERR ID                        3A131320
0450 0 4400 0FC4  G40E    BSI  L  F005       CK LOCK ON ERROR              3A131330
0452 0 70E0               MDX     A408       LOOP                          3A131340
                          ********************************************    3A131350
0453 0 C067       B400    LD      N405       LD  /00U0                     3A131360
0454 0 18D0               RTE     16         NOW  A#/XXXX  Q#/0000         3A131370
0455 0 C063               LD      N403       LD  /AAAA                     3A131380
0456 0 1001               SLA     1          NOW  A#/5554  Q#/0000         3A131390
0457 0 4C02 045C          BSC  L  H402,C     BRANCH ON CARRY               3A131400
0459 0 4400 0F69          BSI  L  F000       SLA 1-CARRY FAILED            3A131410
045B 0 308B               DC      /308B      ERR ID                        3A131420
045C 0 4400 0F98  H402    BSI  L  F00E       CK LOCK ON ERROR              3A131430
045E 0 70F4               MDX     B400       LOOP                          3A131440
045F 0 F05A               EOR     N404       ZERO WITH /5554               3A131450
0460 0 4C18 0465          BSC  L  H400,&-    BRANCH ON ZERO                3A131460
0462 0 4400 0F69          BSI  L  F000       SLA 1-A REG FAILED            3A131470
0464 0 308A               DC      /308A      ERR ID                        3A131480
0465 0 4400 0F98  H400    BSI  L  F00E       CK LOCK ON ERROR              3A131490
0467 0 70EB               MDX     B400       LOOP                          3A131500
0468 0 18D0               RTE     16         NOW  A#/0000  Q#/5554         3A131510
0469 0 4C18 046E          BSC  L  H404,&-    BRANCH ON ZERO                3A131520
046B 0 4400 0F69          BSI  L  F000       SRA 1-AFFECTED Q REG          3A131530
046D 0 308C               DC      /308C      ERR ID                        3A131540
046E 0 4400 0FC4  H404    BSI  L  F005       CK LOCK ON ERROR              3A131550
0470 0 70E2               MDX     B400       LOOP                          3A131560
                          ********************************************    3A131570
0471 0 C049       B406    LD      N405       LD  /0000                     3A131580
0472 0 18D0               RTE     16         NOW  A#/XXXX  Q#/0000         3A131590
0473 0 C044               LD      N402       LD /5555                      3A131600
0474 0 1001               SLA     1          NOW A#/AAAA  Q#/0000          3A131610
0475 0 4C02 0478          BSC  L  H407,C     BR ON CARRY                   3A131620
0477 0 7003               MDX     H405                                     3A131630
0478 0 4400 0F69  H407    BSI  L  F000       SLA 1-CARRY FAILED            3A131640
047A 0 308E               DC      /308E      ERR ID                        3A131650
047B 0 4400 0F98  H405    BSI  L  F00E       CK LOCK ON ERROR              3A131660
047D 0 70F3               MDX     B406       LOOP                          3A131670
047E 0 F03A               EOR     N403       ZERO WITH /AAAA               3A131680
047F 0 4C18 0484          BSC  L  H406,&-    BRANCH ON ZERO                3A131690
0481 0 4400 0F69          BSI  L  F000       SLA 1-A REG FAILED            3A131700
0483 0 308D               DC      /308D      ERR ID                        3A131710
0484 0 4400 0F98  H406    BSI  L  F00E       CK LOCK ON ERROR              3A131720
0486 0 70EA               MDX     B406       LOOP                          3A131730
0487 0 18D0               RTE     16         NOW  A#/0000  Q#/AAAA         3A131740
0488 0 4C18 048D          BSC  L  H408,&-    BRANCH ON ZERO                3A131750
048A 0 4400 0F69          BSI  L  F000       SLA 1-AFFECTED Q REG          3A131760
048C 0 308F               DC      /308F      ERR ID                        3A131770
048D 0 4400 0FC4  H408    BSI  L  F005       CK LOCK ON ERROR              3A131780
048F 0 70E1               MDX     B406       LOOP                          3A131790
                          ********************************************    3A131800
********************************************************************** 3A131810
CORE    DATA OR      *LA- OPER-                                          3A131820
ADDR    INSTRUCTION  *BEL ATION FT OPERANDS & REMARKS   IDESEQ# AT RIGHT 3A131830
********************************************************************** 3A131840
0490 0 C02A       B40A    LD      N405       LD /0000                      3A131850
0491 0 18D0               RTE     16         NOW A#/XXXX  Q#/0000         3A131860
0492 0 C024               LD      N401       LD /0001                      3A131870
0493 0 6101               LDX   1 1                                        3A131880
0494 0 6204               LDX   2 4                                        3A131890
0495 0 6303               LDX   3 3                                        3A131900
0496 0 1000               SLA     0          NOW A#/0001  Q#/0000          3A131910
0497 0 1100               SLA   1 0                /0002    /0000          3A131920
0498 0 1002               SLA     2                /0008    /0000          3A131930
0499 0 1200               SLA   2 0                /0080    /0000          3A131940
049A 0 1006               SLA     6                /2000    /0000          3A131950
049B 0 1300               SLA   3 0                /0000    /0000          3A131960
049C 0 4C02 04A1          BSC  L  H40D,C     BRANCH ON CARRY               3A131970
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049E 0 4400 0F69          BSI  L  F000       COMB SLA-CARRY FAILED         3A131980
04A0 0 3091               DC      /3091      ERR ID                        3A131990
04A1 0 4400 0F98  H40D    BSI  L  F00E       CK LOCK ON ERROR              3A132000
04A3 0 70EC               MDX     B40A       LOOP                          3A132010
04A4 0 4C18 04A9          BSC  L  H40A,&-    BRANCH ON ZERO                3A132020
04A6 0 4400 0F69          BSI  L  F000       COMB SLA-A REG FAILED         3A132030
04A8 0 3090               DC      /3090      ERR ID                        3A132040
04A9 0 4400 0F98  H40A    BSI  L  F00E       CK LOCK ON ERROR              3A132050
04AB 0 70E4               MDX     B40A       LOOP                          3A132060
04AC 0 18D0               RTE     16                                       3A132070
04AD 0 4C18 04B2          BSC  L  H40E,&-    BRANCH ON ZERO                3A132080
04AF 0 4400 0F69          BSI  L  F000       COMB SLA-AFFECTED Q           3A132090
04B1 0 3092               DC      /3092      ERR ID                        3A132100
04B2 0 4400 0FC4  H40E    BSI  L  F005       CK LOCK ON ERROR              3A132110
04B4 0 70DB               MDX     B40A       LOOP                          3A132120
04B5 0 7007               MDX     A440       EXIT TO NEXT ROUTINE          3A132130
04B6 0 FFFF       N400    DC      /FFFF                                    3A132140
04B7 0 0001       N401    DC      /0001                                    3A132150
04B8 0 5555       N402    DC      /5555                                    3A132160
04B9 0 AAAA       N403    DC      /AAAA                                    3A132170
04BA 0 5554       N404    DC      /5554                                    3A132180
04BB 0 0000       N405    DC      /0000                                    3A132190
04BC 0 FFFE       N406    DC      /FFFE                                    3A132200
                  *                                                        3A132210
                  *                TEST OF SLT OPERATION                   3A132220
                  *                                                        3A132230
                  ********************************************           3A132240
04BD 0 C07E       A440    LD      N440       LD /0001                      3A132250
04BE 0 18D0               RTE     16         NOW A#/XXXX  Q#Q#/0001        3A132260
04BF 0 C07D               LD      N441       LD  /0000                     3A132270
04C0 0 10A0               SLT     32                 /0000  Q#/0000       3A132280
04C1 0 4C02 04C6          BSC  L  G442,C     BRANCH ON CARRY               3A132290
04C3 0 4400 0F69          BSI  L  F000       SLT 32-CARRY FAILED           3A132300
04C5 0 3094               DC      /3094      ERR ID                        3A132310
04C6 0 4400 0F98  G442    BSI  L  F00E       CK LOCK ON ERROR              3A132320
04C8 0 70F4               MDX     A440       LOOP                          3A132330
04C9 0 4C18 04CE          BSC  L  G440,&-    BRANCH ON ZERO                3A132340
04CB 0 4400 0F69          BSI  L  F000       SLT 32-A REG FAILED           3A132350
04CD 0 3093               DC      /3093      ERR ID                        3A132360
04CE 0 4400 0F98  G440    BSI  L  F00E       CK LOCK ON ERROR              3A132370
04D0 0 70EC               MDX     A440       LOOP                          3A132380
04D1 0 18D0               RTE     16         NOW  A#/0000  Q#/0000         3A132390
04D2 0 4C18 04D7          BSC  L  G443,&-    BRANCH ON ZERO                3A132400
04D4 0 4400 0F69          BSI  L  F000       SLT 32-Q REG FAILED           3A132410
04D6 0 3095               DC      /3095      ERR ID                        3A132420
04D7 0 4400 0FC4  G443    BSI  L  F005       CK LOCK ON ERROR              3A132430
04D9 0 70E3               MDX     A440       LOOP                          3A132440
                          ********************************************    3A132450
********************************************************************** 3A132460
CORE    DATA OR      *LA- OPER-                                          3A132470
ADDR    INSTRUCTION  *BEL ATION FT OPERANDS & REMARKS   IDESEQ# AT RIGHT 3A132480
********************************************************************** 3A132490
04DA 0 C063       A444    LD      N442       LD  /FFFF                     3A132500
04DB 0 18D0               RTE     16         NOW  A#/XXXX  Q#/FFFF         3A132510
04DC 0 C060               LD      N441       LD  /0000                     3A132520
04DD 0 1090               SLT     16         NOW  A#/FFFF  Q#/0000         3A132530
04DE 0 4C02 04E1          BSC  L  G446,C     BR ON CARRY                   3A132540
04E0 0 7003               MDX     G447                                     3A132550
04E1 0 4400 0F69  G446    BSI  L  F000       SLT 16-CARRY FAILED           3A132560
04E3 0 3097               DC      /3097      ERR ID                        3A132570
04E4 0 4400 0F98  G447    BSI  L  F00E       CK LOCK ON ERROR              3A132580
04E6 0 70F3               MDX     A444       LOOP                          3A132590
04E7 0 F056               EOR     N442       ZERO WITH /FFFF               3A132600
04E8 0 4C18 04ED          BSC  L  G444,&-    BRANCH ON ZERO                3A132610
04EA 0 4400 0F69          BSI  L  F000       SLT 16-A REG FAILED           3A132620
04EC 0 3096               DC      /3096      ERR ID                        3A132630
04ED 0 4400 0F98  G444    BSI  L  F00E       CK LOCK ON ERROR              3A132640
04EF 0 70EA               MDX     A444       LOOP                          3A132650
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04F0 0 18D0              RTE     16          NOW A#/0000  Q#/C000     3A132660
04F1 0 4C18 04F6         BSC  L  G448,&-     BRANCH ON ZERO           3A132670
04F3 0 4400 0F69         BSI  L  F000        SLT 16-Q REG FAILED      3A132680
04F5 0 3098              DC      /3098       ERR ID                   3A132690
04F6 0 4400 0FC4   G448  BSI  L  F005        CK LOCK ON ERROR         3A132700
04F8 0 70E1              MDX     A444        LOOP                     3A132710
                         ****************************************     3A132720
04F9 0 C045        A44A  LD      N443        LD  /5555                3A132730
04FA 0 18D0              RTE     16          NOW  A#/XXXX  Q#/5555    3A132740
04FB 0 C041              LD      N441              /0000    /5555     3A132750
04FC 0 108F              SLT     15                /2AAA    /8000     3A132760
04FD 0 4C02 0500         BSC  L  G44C,C      BR ON CARRY              3A132770
04FF 0 7003              MDX     G44D                                 3A132780
0500 0 4400 0F69   G44C  BSI  L  F000        SLT 15-CARRY FAILED      3A132790
0502 0 309A              DC      /309A       ERR ID                   3A132800
0503 0 4400 0F98   G44D  BSI  L  F00E        CK LOCK ON ERROR         3A132810
0505 0 70F3              MDX     A44A        LOOP                     3A132820
0506 0 F039              EOR     N444        ZERO WITH /2AAA          3A132830
0507 0 4C18 050C         BSC  L  G44A,&-     BRANCH ON ZERO           3A132840
0509 0 4400 0F69         BSI  L  F000        SLT 15-A REG FAILED      3A132850
050B 0 3099              DC      /3099       ERR ID                   3A132860
050C 0 4400 0F98   G44A  BSI  L  F00E        CK LOCK ON ERROR         3A132870
050E 0 70EA              MDX     A44A        LOOP                     3A132880
050F 0 18D0              RTE     16          NOW  A#/8000  Q#/0000     3A132890
0510 0 F030              EOR     N445        ZERO WITH /8000          3A132900
0511 0 4C18 0516         BSC  L  G44E,&-     BRANCH ON ZERO           3A132910
0513 0 4400 0F69         BSI  L  F000        SLT 15-Q REG FAILED      3A132920
0515 0 309B              DC      /309B       ERR ID                   3A132930
0516 0 4400 0FC4   G44E  BSI  L  F005        CK LOCK ON ERROR         3A132940
0518 0 70E0              MDX     A44A        LOOP                     3A132950
                         ****************************************     3A132960
************************************************************************ 3A132970
CORE    DATA OR     *LA- OPER-                                        3A132980
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A132990
************************************************************************ 3A133000
0519 0 C022        B440  LD      N440        LD  /0001                3A133010
051A 0 18D0              RTE     16          NOW  A#/XXXX  Q#/0001    3A133020
051B 0 C021              LD      N441        LD /0000                 3A133030
051C 0 1080              SLT     0           NOW  A#/0000  Q#/0001    3A133040
051D 0 1081              SLT     1                 /0000    /0002     3A133050
051E 0 1085              SLT     5                 /0000    /0040     3A133060
051F 0 1087              SLT     7                 /0000    /2000     3A133070
0520 0 1089              SLT     9                 /0040    /0000     3A133080
0521 0 108A              SLT     10                /0000    /0000     3A133090
0522 0 4C02 0527         BSC  L  H443,C      BR ON CARRY              3A133100
0524 0 4400 0F69         BSI  L  F000        COMB SLT-CARRY FAILED    3A133110
0526 0 309D              DC      /309D       ERR ID                   3A133120
0527 0 4400 0F98   H443  BSI  L  F00E        CK LOCK ON ERROR         3A133130
0529 0 70EF              MDX     B440        LOOP                     3A133140
052A 0 4C18 052F         BSC  L  H440,&-     BRANCH ON ZERO           3A133150
052C 0 4400 0F69         BSI  L  F000        COMB SLT-A REG FAILE     3A133160
052E 0 309C              DC      /309C       ERR ID                   3A133170
052F 0 4400 0F98   H440  BSI  L  F00E        CK LOCK ON ERROR         3A133180
0531 0 70E7              MDX     B440        LOOP                     3A133190
0532 0 18D0              RTE     16          NOW  A#/0000  Q#/0000     3A133200
0533 0 4C18 0538         BSC  L  H444,&-     BRANCH ON ZERO           3A133210
0535 0 4400 0F69         BSI  L  F000        COMB SLT-Q REG FAILE     3A133220
0537 0 309E              DC      /309E       ERR ID                   3A133230
0538 0 4400 0FC4   H444  BSI  L  F005        CK LOCK ON ERROR         3A133240
053A 0 70DE              MDX     B440        LOOP                     3A133250
053B 0 7006              MDX     A480        EXIT TO NEXT ROUTINE     3A133260
053C 0 0001        N440  DC      /0001                                3A133270
053D 0 0000        N441  DC      /0000                                3A133280
053E 0 FFFF        N442  DC      /FFFF                                3A133290
053F 0 5555        N443  DC      /5555                                3A133300
0540 0 2AAA        N444  DC      /2AAA                                3A133310
0541 0 8000        N445  DC      /8000                                3A133320
                         *                                            3A133330
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                         *                TEST OF STO OPERATION       3A133340
                         *                                            3A133350
                         ****************************************     3A133360
0542 0 C019        A480  LD      N480        LD  /0000                3A133370
0543 0 D01A              STO     N482        STO  /0000               3A133380
0544 0 C018              LD      N481        LD  /FFFF                3A133390
0545 0 C018              LD      N482        LD  /0000                3A133400
0546 0 4C18 054B         BSC  L  G480,&-     BRANCH ON ZERO           3A133410
0548 0 4400 0F69         BSI  L  F000        STO ZEROS FAILED         3A133420
054A 0 309F              DC      /309F       ERR ID                   3A133430
054B 0 4400 0FC4   G480  BSI  L  F005        CK LOCK ON ERROR         3A133440
054D 0 70F4              MDX     A480        LOOP                     3A133450
                         ****************************************     3A133460
054E 0 C00E        A482  LD      N481        LD  /FFFF                3A133470
054F 0 D00E              STO     N482                                 3A133480
0550 0 C00B              LD      N480        LD  /0000                3A133490
0551 0 C00C              LD      N482        LD  /FFFF                3A133500
0552 0 F00A              EOR     N481        ZERO WITH /FFFF          3A133510
0553 0 4C18 0558         BSC  L  G482,&-     BRANCH ON ZERO           3A133520
0555 0 4400 0F69         BSI  L  F000        STO ONES FAILED          3A133530
0557 0 30A0              DC      /30A0       ERR ID                   3A133540
0558 0 4400 0FC4   G482  BSI  L  F005        CK LOCK ON ERROR         3A133550
055A 0 70F3              MDX     A482        LOOP                     3A133560
055B 0 7003              MDX     A4C0        EXIT TO NEXT ROUTINE     3A133570
055C 0 0000        N480  DC      /0000                                3A133580
055D 0 FFFF        N481  DC      /FFFF                                3A133590
055E 0 FFFF        N482  DC      /FFFF                                3A133600
                         *                                            3A133610
                         *                TEST OF STS OPERATION       3A133620
                         *                                            3A133630
                         ****************************************     3A133640
************************************************************************ 3A133650
CORE    DATA OR     *LA- OPER-                                        3A133660
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A133670
************************************************************************ 3A133680
055F 0 2003        A4C0  LDS     3                                    3A133690
0560 0 2000              LDS     0           SET C AND OF OFF         3A133700
0561 0 285D              STS     N4C0                                 3A133710
0562 0 C05C              LD      N4C0                                 3A133720
0563 0 4C18 0568         BSC  L  G4C0,&-                              3A133730
0565 0 4400 0F69         BSI  L  F000        STS FAILED TO STORE      3A133740
0567 0 30A1              DC      /30A1       ERR ID                   3A133750
0568 0 4400 0FC4   G4C0  BSI  L  F005        CK LOCK ON ERROR         3A133760
056A 0 70F4              MDX     A4C0        LOOP                     3A133770
                         ****************************************     3A133780
0568 0 C0FF        A4C2  LD      A4C2                                 3A133790
056C 0 2003              LDS     3                                    3A133800
056D 0 2851              STS     N4C0                                 3A133810
056E 0 F0FC              EOR     A4C2                                 3A133820
056F 0 4C18 0574         BSC  L  H4C3,&-     BRANCH ON ZERO           3A133830
0571 0 4400 0F69         BSI  L  F000        ACC GONE AFT LDS-STS     3A133840
0573 0 30A3              DC      /30A3       ERR ID                   3A133850
0574 0 4C02 0577   H4C3  BSC  L  H4C2,C      BR IF CARRY IS NO        3A133860
0576 0 7003              MDX     G4C2                                 3A133870
0577 0 4400 0F69   H4C2  BSI  L  F000        STS NOT CLEAR CARRY      3A133880
0579 0 30A2              DC      /30A2       ERR ID                   3A133890
057A 0 4400 0F98   G4C2  BSI  L  F00E        CK LOCK ON ERROR         3A133900
057C 0 70EE              MDX     A4C2        LOOP                     3A133910
057D 0 4C01 0580         BSC  L  H4C4,O      BR IF CARRY IS ON        3A133920
057F 0 7003              MDX     G4C4                                 3A133930
0580 0 4400 0F69   H4C4  BSI  L  F000        STS NOT CLEAR OVERFLW    3A133940
0582 0 30A4              DC      /30A4       ERR ID                   3A133950
0583 0 4400 0F98   G4C4  BSI  L  F00E        CK LOCK ON ERROR         3A133960
0585 0 70E5              MDX     A4C2        LOOP                     3A133970
0586 0 C038              LD      N4C0                                 3A133980
0587 0 F038              EOR     N4C1                                 3A133990
0588 0 4C18 058D         BSC  L  G4C6,&-     BRANCH ON ZERO           3A134000
058A 0 4400 0F69         BSI  L  F000        STS FAILED TO STORE      3A134010
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058C 0 30A5            DC      /30A5       ERR ID                      3A134020
058D 0 4400 0FC4 G4C6  BSI  L  F005        CK LOCK ON ERROR            3A134030
058F 0 70DB            MDX     A4C2        LOOP                        3A134040
                       ********************************************     3A134050
0590 0 2002      A4C8  LDS     2                                       3A134060
0591 0 2002            LDS     2           SET C ON OF OFF             3A134070
0592 0 282C            STS     N4C0        SET /0002 IN N4C0           3A134080
0593 0 282D            STS     N4C2        SET /0000 IN N4C2           3A134090
0594 0 C02A            LD      N4C0        LD /0002                    3A134100
0595 0 F02C            EOR     N4C3        ZERO WITH /0002             3A134110
0596 0 4C18 059B       BSC  L  G4C8,&-     BRANCH ON ZERO              3A134120
0598 0 4400 0F69       BSI  L  F000        STS FAILED TO STORE         3A134130
059A 0 30A6            DC      /30A6       ERR ID                      3A134140
059B 0 4400 0F98 G4C8  BSI  L  F00E        CK LOCK ON ERROR            3A134150
059D 0 70F2            MDX     A4C8        LOOP                        3A134160
059E 0 C022            LD      N4C2        LD /0002                    3A134170
059F 0 4C18 05A4       BSC  L  G4CA,&-     BRANCH ON ZERO              3A134180
05A1 0 4400 0F69       BSI  L  F000        STS NOT CLEAR CARRY         3A134190
05A3 0 30A7            DC      /30A7       ERR ID                      3A134200
05A4 0 4400 0FC4 G4CA  BSI  L  F005        CK LOCK ON ERROR            3A134210
05A6 0 70E9            MDX     A4C8        LOOP                        3A134220
                       ********************************************     3A134230
05A7 0 2003      A4CC  LDS     3                                       3A134240
05A8 0 2001            LDS     1           SET C-OFF  OF - ON          3A134250
05A9 0 2815            STS     N4C0        SET /0001 IN N4C0           3A134260
05AA 0 2816            STS     N4C2        SET /0000 IN N4C2           3A134270
05AB 0 C013            LD      N4C0        LD /0001                    3A134280
05AC 0 F016            EOR     N4C4        ZERO WITH /0001             3A134290
05AD 0 4C18 05B2       BSC  L  G4CC,&-     BRANCH ON ZERO              3A134300
05AF 0 4400 0F69       BSI  L  F000        STS FAILED TO STORE         3A134310
05B1 0 30A8            DC      /30A8       ERR ID                      3A134320
05B2 0 4400 0F98 G4CC  BSI  L  F00E        CK LOCK ON ERROR            3A134330
05B4 0 70F2            MDX     A4CC        LOOP                        3A134340
05B5 0 C00B            LD      N4C2        LD STATUS STORED            3A134350
05B6 0 4C18 05BB       BSC  L  G4CD,&-     BRANCH ON ZERO              3A134360
05B8 0 4400 0F69       BSI  L  F000        STS NOT CLEAR OVERFL        3A134370
05BA 0 30A9            DC      /30A9       ERR ID                      3A134380
05BB 0 4400 0FC4 G4CD  BSI  L  F005        CK LOCK ON ERROR            3A134390
05BD 0 70E9            MDX     A4CC        LOOP                        3A134400
05BE 0 7005            MDX     A500        EXIT TO NEXT ROUTINE        3A134410
05BF 0 0003      N4C0  DC      /0003                                   3A134420
05C0 0 0003      N4C1  DC      /0003                                   3A134430
05C1 0 0000      N4C2  DC      /0000                                   3A134440
05C2 0 0002      N4C3  DC      /0002                                   3A134450
05C3 0 0001      N4C4  DC      /0001                                   3A134460
                       *                                               3A134470
                       *              TEST OF BSC OPERATION            3A134480
                       *                                               3A134490
                       ********************************************     3A134500
************************************************************************3A134510
CORE     DATA OR      *LA- OPER-                                       3A134520
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A134530
************************************************************************3A134540
05C4 0 2003      A500  LDS     3           SET C AND OF ON             3A134550
05C5 0 C400 0658       LD   L  N500        LD /8001                    3A134560
05C7 0 482F            BSC     O&EZC       SK IF OF OFF, PLUS, EVEN,   3A134570
                       *                   * ZERO OR CARRY OFF.        3A134580
05C8 0 7003            MDX     G500                                    3A134590
05C9 0 4400 0F69       BSI  L  F000        BSC SKPD-SHOULD NOT         3A134600
05CB 0 30AA            DC      /30AA       ERR ID                      3A134610
05CC 0 4400 0FC4 G500  BSI  L  F005        CK LOCK ON ERROR            3A134620
05CE 0 70F5            MDX     A500        LOOP                        3A134630
                       ********************************************     3A134640
05CF 0 2003      A502  LDS     3           SET C & OF ON               3A134650
05D0 0 C400 0659       LD   L  N501        LD /0000                    3A134660
05D2 0 481B            BSC     -OC&        SK IF MINUS, OF OFF, CARRY  3A134670
                       *                   *OFF OR PLUS                3A134680
05D3 0 7003            MDX     G502                                    3A134690
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05D4 0 4400 0F69       BSI  L  F000        BSC SKPD-SHOULD NOT         3A134700
05D6 0 30AB            DC      /30AB       ERR ID                      3A134710
05D7 0 4400 0FC4 G502  BSI  L  F005        CK LOCK ON ERROR            3A134720
05D9 0 70F5            MDX     A502        LOOP                        3A134730
                       ********************************************     3A134740
05DA 0 2003      A504  LDS     3           SET C AND OF ON             3A134750
05DB 0 C07E            LD      N502        LD /8000                    3A134760
05DC 0 2809            STS     N507        SET /0003 IN N507           3A134770
05DD 0 4815            BSC     O-E         SK IF OF OFF,MUNIS OR EVEN  3A134780
05DE 0 7001            MDX     G504                                    3A134790
05DF 0 7003            MDX     G505                                    3A134800
05E0 0 4400 0F69 G504  BSI  L  F000        BSC FAILED TO SKIP          3A134810
05E2 0 30AC            DC      /30AC       ERR ID                      3A134820
05E3 0 4400 0F98 G505  BSI  L  F00E        CK LOCK ON ERROR            3A134830
05E5 0 70F4            MDX     A504        LOOP                        3A134840
05E6 0 2000      N507  LDS     *-*                                     3A134850
05E7 0 4801            BSC     O           SKIP IF OVERFLOW IS OFF     3A134860
05E8 0 4801            BSC     O                                       3A134870
05E9 0 7001            MDX     G506                                    3A134880
05EA 0 7003            MDX     G507                                    3A134890
05EB 0 4400 0F69 G506  BSI  L  F000        BSC NOT CLEAR OVERFLW       3A134900
05ED 0 30AD            DC      /30AD       ERR ID                      3A134910
05EE 0 4400 0FC4 G507  BSI  L  F005        CK LOCK ON ERROR            3A134920
05F0 0 70E9            MDX     A504        LOOP                        3A134930
                       ********************************************     3A134940
05F1 0 2000      A508  LDS     0           SET C AND OF OFF            3A134950
05F2 0 C068            LD      N503        LD /0001                    3A134960
05F3 0 482A            BSC     C&Z         SK IF CARRY OFF, PLUS       3A134970
                       *                   * OR ZERO                   3A134980
05F4 0 7001            MDX     G508                                    3A134990
05F5 0 7003            MDX     H508                                    3A135000
05F6 0 4400 0F69 G508  BSI  L  F000        BSC FAILED TO SKIP          3A135010
05F8 0 30AE            DC      /30AE       ERR ID                      3A135020
05F9 0 4400 0FC4 H508  BSI  L  F005        CK LOCK ON ERROR            3A135030
05FB 0 70F5            MDX     A508        LOOP                        3A135040
                       ********************************************     3A135050
05FC 0 2003      A50A  LDS     3           SET C AND OF ON             3A135060
05FD 0 C05A            LD      N500        LD /8001                    3A135070
05FE 0 4C0F 060F       BSC  L  G50A,&OCE   BR ON NOT PLUS, OF ON,       3A135080
                       *                   * CARRY ON OR NOT EVEN      3A135090
0600 0 7001            MDX     H50A                                    3A135100
0601 0 7007            MDX     J50A                                    3A135110
0602 0 4400 0F69 H50A  BSI  L  F000        BSC FELL THRU               3A135120
0604 0 30AF            DC      /30AF       ERR ID                      3A135130
0605 0 4400 0F98       BSI  L  F00E        CK LOCK ON ERROR            3A135140
0607 0 70F4            MDX     A50A        LOOP                        3A135150
0608 0 7006            MDX     G50A                                    3A135160
0609 0 4400 0F69 J50A  BSI  L  F000        BSC SKPD-SHOULD BRNCH       3A135170
060B 0 30B0            DC      /30B0       ERR ID                      3A135180
060C 0 4400 0F98       BSI  L  F00E        CK LOCK ON ERROR            3A135190
060E 0 70ED            MDX     A50A        LOOP                        3A135200
060F 0 F048      G50A  EOR     N500        ZERO WITH /8001             3A135210
0610 0 4820            BSC     Z           SK ON ZERO                  3A135220
0611 0 7001            MDX     H50B                                    3A135230
0612 0 7003            MDX     K50B                                    3A135240
0613 0 4400 0F69 H50B  BSI  L  F000        ACC DISTROYED AFTER BSC     3A135250
0615 0 3170            DC      /3170       ERR ID                      3A135260
0616 0 4400 0FC4 K50B  BSI  L  F005        CK LOCK ON ERROR            3A135270
0618 0 7000            MDX     A50C        EXIT TO NEXT ROUTINE        3A135280
                       ********************************************     3A135290
************************************************************************3A135300
CORE     DATA OR      *LA- OPER-                                       3A135310
ADDR     INSTRUCTION  *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A135320
************************************************************************3A135330
0619 0 2003      A50C  LDS     3           SET C & OF ON               3A135340
061A 0 C041            LD      N504        LD /0004                    3A135350
061B 0 4C30 061F       BSC  L  G50C,-Z     BR NOT MINUS OR NOT ZERO    3A135360
061D 0 7002            MDX     H50C                                    3A135370
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061E 0 7008            MDX     J50C                                3A135380
061F 0 700A      G50C  MDX     K50C                                3A135390
0620 0 4400 0F69 H50C  BSI  L  F000    BSC FELL THRU               3A135400
0622 0 30B1            DC      /30B1   ERR ID                      3A135410
0623 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A135420
0625 0 70F3            MDX     A50C    LOOP                        3A135430
0626 0 7006            MDX     A50E                                3A135440
0627 0 4400 0F69 J50C  BSI  L  F000    BSC SKPD-SHOULD BRNC        3A135450
0629 0 30B2            DC      /30B2   ERR ID                      3A135460
062A 0 4400 0FC4 K50C  BSI  L  F005    CK LOCK ON ERROR            3A135470
062C 0 70EC            MDX     A50C    LOOP                        3A135480
062D 0 2000      A50E  LDS     0       SET C AND OF OFF            3A135490
                       ********************************************3A135500
062E 0 2003            LDS     3       SET C AND OF ON             3A135510
062F 0 C028            LD      N500    LD /8001                    3A135520
0630 0 4C3F 0634       BSC  L  G50E,&EOCZ- BR ON NOT PLUS, NOT EVEN, 3A135530
                       *                  *OF, CARRY, NOT ZERO OR  3A135540
                       *                  *NOT MINUS               3A135550
0632 0 7008            MDX     H50E                                3A135560
0633 0 7007            MDX     J50E                                3A135570
0634 0 4400 0F69 G50E  BSI  L  F000    BSC BRNCHED-SHOULDNT        3A135580
0636 0 30B3            DC      /30B3   ERR ID                      3A135590
0637 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A135600
0639 0 70F3            MDX     A50E    LOOP                        3A135610
063A 0 7006            MDX     B500                                3A135620
063B 0 4400 0F69 J50E  BSI  L  F000    BSC SKPD-SHOULDNT           3A135630
063D 0 30B4            DC      /30B4   ERR ID                      3A135640
063E 0 4400 0FC4 H50E  BSI  L  F005    CK LOCK ON ERROR            3A135650
0640 0 70EC            MDX     A50E    LOOP                        3A135660
                       ********************************************3A135670
0641 0 2003      B500  LDS     3       SET C AND OF ON             3A135680
0642 0 C018            LD      N503    LD /0001                    3A135690
0643 0 4808            BSC     &       SK ON PLUS                  3A135700
0644 0 700C            MDX     S501                                3A135710
0645 0 2817            STS     N505    SET /0003 IN N505           3A135720
0646 0 C016            LD      N505    LD /0003                    3A135730
0647 0 F016            EOR     N506    ZERO WITH /0003             3A135740
0648 0 4C18 0654       BSC  L  S503,&-  BRANCH ON ZERO             3A135750
064A 0 4400 0F69       BSI  L  F000    BSC & CLEARED OVFLW         3A135760
064C 0 30B5            DC      /30B5   ERR ID                      3A135770
064D 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A135780
064F 0 70F1            MDX     B500    LOOP                        3A135790
0650 0 700F            MDX     A540    EXIT TO NEXT ROUTINE        3A135800
0651 0 4400 0F69 S501  BSI  L  F000    BSC FAILED TO SKP           3A135810
0653 0 30B6            DC      /30B6   ERR ID                      3A135820
0654 0 4400 0FC4 S503  BSI  L  F005    CK LOCK ON ERROR            3A135830
0656 0 70EA            MDX     B500    LOOP                        3A135840
0657 0 7008            MDX     A540    EXIT TO NEXT ROUTINE        3A135850
0658 0 8001      N500  DC      /8001                               3A135860
0659 0 0000      N501  DC      /0000                               3A135870
065A 0 8000      N502  DC      /8000                               3A135880
065B 0 0001      N503  DC      /0001                               3A135890
065C 0 0004      N504  DC      /0004                               3A135900
065D 0 0000      N505  DC      *-*     STORAGE                     3A135910
065E 0 0003      N506  DC      /0003                               3A135920
065F 0 0002      N542  DC      /0002                               3A135930
                       *                                          3A135940
                       *            TEST OF BSI OPERATION         3A135950
                       *                                          3A135960
                       ********************************************3A135970
*************************************************************************3A135980
CORE     DATA OR     *LA- OPER-                                    3A135990
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A136000
*************************************************************************3A136010
0660 0 2003      A540  LDS     3       SET C AND OF ON             3A136020
0661 0 C0F6            LD      N500    LD  /8001                   3A136030
0662 0 442F 0674       BSI  L  G540,ECO&Z BR ON NOT EVEN, CARRY, OF, 3A136040
0664 0 7001            MDX     H540    * NOT PLUS OR NOT ZERO      3A136050
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0665 0 7007            MDX     J540                                3A136060
0666 0 4400 0F69 H540  BSI  L  F000    BSI FELL THRU               3A136070
0668 0 30B7            DC      /30B7   ERR ID                      3A136080
0669 0 4400 0F98       BSI  L  F00E    CK LOCK ON ERROR            3A136090
066B 0 70F4            MDX     A540    LOOP                        3A136100
066C 0 7014            MDX     A544    EXIT TO NEXT ROUTINE        3A136110
066D 0 4400 0F69 J540  BSI  L  F000    BSI SKPD-SHOULD BRNCH       3A136120
066F 0 30B8            DC      /30B8   ERR ID                      3A136130
0670 0 4400 0F98       BSI  L  F00E    CK LOCK ON ERROR            3A136140
0672 0 70ED            MDX     A540    LOOP                        3A136150
0673 0 7001            MDX     G540&1  SK TO WORD AFTER G540       3A136160
0674 0 0000      G540  DC      /0000                               3A136170
0675 0 28E7            STS     N505    STORE /0002 IN N505         3A136180
0676 0 C0E6            LD      N505    LD  /0002                   3A136190
0677 0 F400 065F       EOR  L  N542    ZERO WITH /0002             3A136200
0679 0 4C18 067E       BSC  L  G542,&-  BRANCH ON ZERO             3A136210
067B 0 4400 0F69       BSI  L  F000    BSI NOT CLEAR OVERFLOW      3A136220
067D 0 30B9            DC      /30B9   ERR ID                      3A136230
067E 0 4400 0FC4 G542  BSI  L  F005    CK LOCK ON ERROR            3A136240
0680 0 70DF            MDX     A540    LOOP                        3A136250
                       ********************************************3A136260
0681 0 C400 065F A544  LD   L  N542    LD /0002                    3A136270
0683 0 4430 0695       BSI  L  G544,Z-  SK ON NOT ZERO OR          3A136280
0685 0 7001            MDX     H544    * NOT MINUS                 3A136290
0686 0 7007            MDX     J544                                3A136300
0687 0 4400 0F69 H544  BSI  L  F000    BSI DID NOT BRANCH          3A136310
0689 0 30BA            DC      /30BA   ERR ID                      3A136320
068A 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A136330
068C 0 70F4            MDX     A544    LOOP                        3A136340
068D 0 7008            MDX     A546    EXIT TO NEXT ROUTINE        3A136350
068E 0 4400 0F69 J544  BSI  L  F000    BSI SKPD-SHOULD BRNC        3A136360
0690 0 30BB            DC      /30BB   ERR ID                      3A136370
0691 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A136380
0693 0 70ED            MDX     A544    LOOP                        3A136390
0694 0 7001            MDX     A546    EXIT TO NEXT ROUTINE        3A136400
0695 0 0000      G544  DC      /0000                               3A136410
                       ********************************************3A136420
0696 0 C0C2      A546  LD      N501                                3A136430
0697 0 4420 069B       BSI  L  G546,Z   BR WHEN NOT ZERO           3A136440
0699 0 700C            MDX     J546                                3A136450
069A 0 7008            MDX     H546                                3A136460
069B 0 0000      G546  DC      /0000                               3A136470
069C 0 4400 0F69       BSI  L  F000    BSI BRNCHD-SHOULD NO        3A136480
069E 0 30BC            DC      /30BC   ERR ID                      3A136490
069F 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A136500
06A1 0 70F4            MDX     A546    LOOP                        3A136510
06A2 0 7006            MDX     A548    EXIT TO NEXT ROUTINE        3A136520
06A3 0 4400 0F69 H546  BSI  L  F000    BSI SKPD-SHOULD NOT         3A136530
06A5 0 30BD            DC      /30BD   ERR ID                      3A136540
06A6 0 4400 0FC4 J546  BSI  L  F005    CK LOCK ON ERROR            3A136550
06A8 0 70ED            MDX     A546    LOOP                        3A136560
                       ********************************************3A136570
*************************************************************************3A136580
CORE     DATA OR     *LA- OPER-                                    3A136590
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A136600
*************************************************************************3A136610
06A9 0 C0AE      A548  LD      N500                                3A136620
06AA 0 4410 06B4       BSI  L  G548,-   BR WHEN NOT MINUS          3A136630
06AC 0 700B            MDX     H548                                3A136640
06AD 0 4400 0F69       BSI  L  F000    BSI SKP-ON COND TRUE        3A136650
06AF 0 30BF            DC      /30BF   ERR ID                      3A136660
06B0 0 4400 0FC4       BSI  L  F005    CK LOCK ON ERROR            3A136670
06B2 0 70F6            MDX     A548    LOOP                        3A136680
06B3 0 7007            MDX     A54A    EXIT TO NEXT ROUTINE        3A136690
06B4 0 0000      G548  DC      /0000                               3A136700
06B5 0 4400 0F69       BSI  L  F000    BSI BRNCHD-SHOULD NOT       3A136710
06B7 0 30BF            DC      /30BF   ERR ID                      3A136720
06B8 0 4400 0FC4 H548  BSI  L  F005    CK LOCK ON ERROR            3A136730
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06BA 0 70EE              MDX     A548        LOOP                        3A136740
                         ********************************************** 3A136750
06BB 0 C0A3        A54A  LD      N542                                    3A136760
06BC 0 4408 06C6         BSI  L  G54A,&      BR WHEN NOT PLUS            3A136770
06BE 0 700B              MDX     H54A                                    3A136780
06BF 0 4400 0F69         BSI  L  F000        BSI SKPD ON COND TRUE       3A136790
06C1 0 30C0              DC      /30C0       ERR ID                      3A136800
06C2 0 4400 0FC4         BSI  L  F005        CK LOCK ON ERROR            3A136810
06C4 0 70F6              MDX     A54A        LOOP                        3A136820
06C5 0 7007              MDX     A54C        EXIT TO NEXT ROUTINE        3A136830
06C6 0 0000        G54A  DC      /0000                                   3A136840
06C7 0 4400 0F69         BSI  L  F000        BSI BRNCHD-SHOULD NOT       3A136850
06C9 0 30C1              DC      /30C1       ERR ID                      3A136860
06CA 0 4400 0FC4   H54A  BSI  L  F005        CK LOCK ON ERROR            3A136870
06CC 0 70EE              MDX     A54A        LOOP                        3A136880
                         ********************************************** 3A136890
06CD 0 C091        A54C  LD      N542                                    3A136900
06CE 0 4404 06D8         BSI  L  G54C,E      BR WHEN NOT EVEN            3A136910
06D0 0 700B              MDX     H54C                                    3A136920
06D1 0 4400 0F69         BSI  L  F000        BSI SKPD ON COND TRUE       3A136930
06D3 0 30C2              DC      /30C2       ERR ID                      3A136940
06D4 0 4400 0FC4         BSI  L  F005        CK LOCK ON ERROR            3A136950
06D6 0 70F6              MDX     A54C        LOOP                        3A136960
06D7 0 7007              MDX     A54E        EXIT TO NEXT ROUTINE        3A136970
06D8 0 0000        G54C  DC      /0000                                   3A136980
06D9 0 4400 0F69         BSI  L  F000        BSI BRNCHD-SHOULD NOT       3A136990
06DB 0 30C3              DC      /30C3       ERR ID                      3A137000
06DC 0 4400 0FC4   H54C  BSI  L  F005        CK LOCK ON ERROR            3A137010
06DE 0 70EE              MDX     A54C        LOOP                        3A137020
                         ********************************************** 3A137030
06DF 0 2000        A54E  LDS     0           SET C AND OF OFF            3A137040
06E0 0 4402 06EA         BSI  L  G54E,C      BR IF CARRY IS ON           3A137050
06E2 0 700B              MDX     H54E                                    3A137060
06E3 0 4400 0F69         BSI  L  F000        BSI SKPD ON COND TRUE       3A137070
06E5 0 30C4              DC      /30C4       ERR ID                      3A137080
06E6 0 4400 0FC4         BSI  L  F005        CK LOCK ON ERROR            3A137090
06E8 0 70F6              MDX     A54E        LOOP                        3A137100
06E9 0 7007              MDX     A54F        EXIT TO NEXT ROUTINE        3A137110
06EA 0 0000        G54E  DC      /0000                                   3A137120
06EB 0 4400 0F69         BSI  L  F000        BSI BRNCHD-SHOULD NOT       3A137130
06ED 0 30C5              DC      /30C5       ERR ID                      3A137140
06EE 0 4400 0FC4   H54E  BSI  L  F005        CK LOCK ON ERROR            3A137150
06F0 0 70EE              MDX     A54E        LOOP                        3A137160
                         ********************************************** 3A137170
06F1 0 2000        A54F  LDS     0           SET C AND OF OFF            3A137180
06F2 0 4401 06FD         BSI  L  G54F,O      BR ON OVERFLOW              3A137190
06F4 0 700C              MDX     H54F                                    3A137200
06F5 0 4400 0F69         BSI  L  F000        BSI SKPD ON COND TRUE       3A137210
06F7 0 30C6              DC      /30C6       ERR ID                      3A137220
06F8 0 30C6              DC      /30C6       ERR ID                      3A137230
06F9 0 4400 0FC4         BSI  L  F005        CK LOCK ON ERROR            3A137240
06FB 0 70F5              MDX     A54F        LOOP                        3A137250
06FC 0 7007              MDX     A580        EXIT TO NEXT ROUTINE        3A137260
06FD 0 0000        G54F  DC      /0000                                   3A137270
06FE 0 4400 0F69         BSI  L  F000        BSI BRNCHD-SHOULD NOT       3A137280
0700 0 30C7              DC      /30C7       ERR ID                      3A137290
0701 0 4400 0FC4   H54F  BSI  L  F005        CK LOCK ON ERROR            3A137300
0703 0 70ED              MDX     A54F        LOOP                        3A137310
                         *                                               3A137320
                         *          TEST OF LDD OPERATION                3A137330
                         *                                               3A137340
                         ********************************************** 3A137350
************************************************************************ 3A137360
CORE     DATA OR     *LA- OPER-                                          3A137370
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A137380
************************************************************************ 3A137390
0704 0 CC00 0788   A580  LDD  L  N5C1        LDD  A#/0000  Q#/0000       3A137400
0706 0 4C18 070B         BSC  L  G580,&-     BRANCH ON ZERO              3A137410
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0708 0 4400 0F69         BSI  L  F000        LDD-A REG INCORRECT         3A137420
070A 0 30C8              DC      /30C8       ERR ID                      3A137430
070B 0 4400 0F98   G580  BSI  L  F00E        CK LOCK ON ERROR            3A137440
070D 0 70F6              MDX     A580        LOOP                        3A137450
070E 0 18D0              RTE     16                                      3A137460
070F 0 4C18 0714         BSC  L  G582,&-     BRANCH ON ZERO              3A137470
0711 0 4400 0F69         BSI  L  F000        LDD-Q REG INCORRECT         3A137480
0713 0 30C9              DC      /30C9       ERR ID                      3A137490
0714 0 4400 0FC4   G582  BSI  L  F005        CK LOCK ON ERROR            3A137500
0716 0 70ED              MDX     A580        LOOP                        3A137510
                         ********************************************** 3A137520
0717 0 C872        A584  LDD     N5C3        LD  A#/FFFF  Q#/FFFF       3A137530
0718 0 F072              EOR     N5C4        ZERO WITH  /FFFF            3A137540
0719 0 4C18 071E         BSC  L  G584,&-     BRANCH ON ZERO              3A137550
071B 0 4400 0F69         BSI  L  F000        LDD-A REG INCORRECT         3A137560
071D 0 30CA              DC      /30CA       ERR ID                      3A137570
071E 0 4400 0F98   G584  BSI  L  F00E        CK LOCK ON ERROR            3A137580
0720 0 70F6              MDX     A584        LOOP                        3A137590
0721 0 18D0              RTE     16          NOW  A#/FFFF  Q#/0000       3A137600
0722 0 F068              EOR     N5C4        ZERO WITH  /FFFF            3A137610
0723 0 4C18 0728         BSC  L  G586,&-     BRANCH ON ZERO              3A137620
0725 0 4400 0F69         BSI  L  F000        LDD-Q REG INCORRECT         3A137630
0727 0 30CB              DC      /30CB       ERR ID                      3A137640
0728 0 4400 0FC4   G586  BSI  L  F005        CK LOCK ON ERROR            3A137650
072A 0 70EC              MDX     A584        LOOP                        3A137660
                         ********************************************** 3A137670
072B 0 C85C        A588  LDD     N5C1        LD  A#/0000  Q#/0000        3A137680
072C 0 4C18 0731         BSC  L  G588,&-     BRANCH ON ZERO              3A137690
072E 0 4400 0F69         BSI  L  F000        LDD ODD-A REG FAILED        3A137700
0730 0 30CC              DC      /30CC       ERR ID                      3A137710
0731 0 4400 0F98   G588  BSI  L  F00E        CK LOCK ON ERROR            3A137720
0733 0 70F7              MDX     A588        LOOP                        3A137730
0734 0 18D0              RTE     16          NOW  A#/FFFF  Q#/0000       3A137740
0735 0 4C18 073A         BSC  L  G58A,&-     BRANCH ON ZERO              3A137750
0737 0 4400 0F69         BSI  L  F000        LDD-ODD-Q REG FAILED        3A137760
0739 0 30CD              DC      /30CD       ERR ID                      3A137770
073A 0 4400 0FC4   G58A  BSI  L  F005        CK LOCK ON ERROR            3A137780
073C 0 70EE              MDX     A588        LOOP                        3A137790
                         *                                               3A137800
                         *          TEST OF STD OPERATION                3A137810
                         *                                               3A137820
                         ********************************************** 3A137830
************************************************************************ 3A137840
CORE     DATA OR     *LA- OPER-                                          3A137850
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A137860
************************************************************************ 3A137870
073D 0 C84A        A5C0  LDD     N5C1        LD  A#/0000  Q#/0000        3A137880
073E 0 D84D              STD     N5C5                                    3A137890
073F 0 C04C              LD      N5C5        LD  A#/0000  Q#/0000        3A137900
0740 0 4C18 0745         BSC  L  G5C0,&-     BRANCH ON ZERO              3A137910
0742 0 4400 0F69         BSI  L  F000        STD-EA INCORRECT            3A137920
0744 0 30CF              DC      /30CF       ERR ID                      3A137930
0745 0 4400 0F98   G5C0  BSI  L  F00E        CK LOCK ON ERROR            3A137940
0747 0 70F5              MDX     A5C0        LOOP                        3A137950
0748 0 C044              LD      N5C6        LD  /FFFF                   3A137960
0749 0 4C18 074E         BSC  L  G5C2,&-     BRANCH ON ZERO              3A137970
074B 0 4400 0F69         BSI  L  F000        STD-EA&1 INCORRECT          3A137980
074D 0 30CF              DC      /30CF       ERR ID                      3A137990
074E 0 4400 0FC4   G5C2  BSI  L  F005        CK LOCK ON ERROR            3A138000
0750 0 70EC              MDX     A5C0        LOOP                        3A138010
                         ********************************************** 3A138020
0751 0 C036        A5C4  LD      N5C1        LD  /0000                   3A138030
0752 0 D039              STD     N5C5        STORE  /0000                3A138040
0753 0 D039              STD     N5C6        STORE  /0000                3A138050
0754 0 C835              LDD     N5C3        LD  A#/FFFF  Q#/FFFF        3A138060
0755 0 D836              STD     N5C5        STORE  /FFFF  AND /FFFF     3A138070
0756 0 C035              LD      N5C5        LD  /FFFF                   3A138080
0757 0 F032              EOR     N5C3        ZERO WITH /FFFF             3A138090
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0758 0 4C18 075D          BSC  L  G5C4,&-    BRANCH ON ZERO                3A138100
075A 0 4400 0F69          BSI  L  F000       STD-EA INCORRECT              3A138110
075C 0 30D0               DC        /30D0    ERR ID                        3A138120
075D 0 4400 0F98    G5C4  BSI  L  F00E       CK LOCK ON ERROR              3A138130
075F 0 70F1               MDX       A5C4     LOOP                          3A138140
0760 0 C02C               LD        N5C6     LD  /1111                     3A138150
0761 0 F028               EOR       N5C3                                   3A138160
0762 0 4C18 0767          BSC  L  G5C6,&-    BRANCH ON ZERO                3A138170
0764 0 4400 0F69          BSI  L  F000       STD-EA&1 INCORRECT            3A138180
0766 0 3001               DC        /30D1    ERR ID                        3A138190
0767 0 4400 0FC4    G5C6  BSI  L  F005       CK LOCK ON ERROR              3A138200
0769 0 70E7               MDX       A5C4     LOOP                          3A138210
                          ********************************************     3A138220
076A 0 C01F         A5C8  LD        N5C3     LD  /FFFF                     3A138230
076B 0 D020               STD       N5C5     STORE  /FFFF                  3A138240
076C 0 D020               STD       N5C6                                   3A138250
076D 0 D020               STD       N5C7                                   3A138260
076E 0 C819               LDD       N5C1     LD  A#/0000  Q#/0000          3A138270
076F 0 D81D               STD       N5C6     STORE IN N5C6 & N5C7          3A138280
0770 0 C017               LD        N5C1     LD  /0000                     3A138290
0771 0 CG18               LD        N5C6     LD  /0000                     3A138300
0772 0 4C18 0777          BSC  L  G5C8,&-    BRANCH ON ZERO                3A138310
0774 0 4400 0F69          BSI  L  F000       STD-ODD-EA INCORRECT          3A138320
0776 0 30D2               DC        /30D2    ERR ID                        3A138330
0777 0 4400 0F98    G5C8  BSI  L  F00E       CK LOCK ON ERROR              3A138340
0779 0 70F0               MDX       A5C8     LOOP                          3A138350
077A 0 C013               LD        N5C7     LD  /FFFF                     3A138360
077B 0 F00E               EOR       N5C3     ZERO WITH /FFFF               3A138370
077C 0 4C18 0781          BSC  L  G5CA,&-    BRANCH ON ZERO                3A138380
077E 0 4400 0F69          BSI  L  F000       STD-ODD-EA&1 LOADED           3A138390
0780 0 30D3               DC        /30D3    ERR ID                        3A138400
0781 0 4400 0FC4    G5CA  BSI  L  F005       CK LOCK ON ERROR              3A138410
0783 0 70E6               MDX       A5C8     LOOP                          3A138420
0784 0 C005               LD        N5C3     LD  /FFFF                     3A138430
0785 0 D007               STD       N5C6                                   3A138440
0786 0 D007               STD       N5C7                                   3A138450
0787 0 7007               MDX       A600     EXIT TO NEXT ROUTINE          3A138460
0788   0000               BSS  E                                           3A138470
0788 0 0000         N5C1  DC        /0000                                  3A138480
0789 0 0000               DC        /0000                                  3A138490
078A 0 FFFF         N5C3  DC        /FFFF                                  3A138500
078B 0 FFFF         N5C4  DC        /FFFF                                  3A138510
078C 0 FFFF         N5C5  DC        /FFFF                                  3A138520
078D 0 FFFF         N5C6  DC        /FFFF                                  3A138530
078E 0 FFFF         N5C7  DC        /FFFF                                  3A138540
                          *                                                3A138550
                          *              TEST OF LDX OPERATION             3A138560
                          *                                                3A138570
                          ********************************************     3A138580
*************************************************************************** 3A138590
CORE     DATA OR     *LA- OPER-                                            3A138600
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT 3A138610
*************************************************************************** 3A138620
078F 0 6500 0792    A600  LDX  L1 G600       LD XR 1 WITH ADDR OF G600     3A138630
0791 0 7003               MDX       H600                                   3A138640
0792 0 4400 0F69    G600  BSI  L  F000       TAG REG BIT 7 FAILED          3A138650
0794 0 30D4               DC        /30D4    ERR ID                        3A138660
0795 0 4400 0FC4    H600  BSI  L  F005       CK LOCK ON ERROR              3A138670
0797 0 70F7               MDX       A600     LOOP                          3A138680
                          ********************************************     3A138690
0798 0 6600 079B    A602  LDX  L2 G602       LD XR 2 WITH ADDR OF G602     3A138700
079A 0 7003               MDX       H602                                   3A138710
079B 0 4400 0F69    G602  BSI  L  F000       TAG REG BIT 6 FAILED          3A138720
079D 0 30D5               DC        /30D5    ERR ID                        3A138730
079E 0 4400 0FC4    H602  BSI  L  F005       CK LOCK ON ERROR              3A138740
07A0 0 70F7               MDX       A602     LOOP                          3A138750
                          ********************************************     3A138760
07A1 0 6100         A604  LDX    1 0         LD DISP#0 TO XR 1             3A138770
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07A2 0 C500 080C          LD   L1 N601       LD ADDR OF N601 & XR 1        3A138780
07A4 0 F067               EOR      N601      ZERO WITH ADDR OF N601        3A138790
07A5 0 4C18 07AA          BSC  L   G604,&-   BRANCH ON ZERO                3A138800
07A7 0 4400 0F69          BSI  L   F000       IX 1 NOT LOADED               3A138810
07A9 0 30D6               DC       /30D6     ERR ID                        3A138820
07AA 0 4400 0FC4    G604  BSI  L   F005       CK LOCK ON ERROR              3A138830
07AC 0 70F4               MDX      A604      LOOP                          3A138840
                          ********************************************     3A138850
07AD 0 6200         A606  LDX    2 0         LD DISP#0 TO XR 2             3A138860
07AE 0 C05F               LD       N603      LD  /FFFF                     3A138870
07AF 0 C600 080C          LD   L2 N601       LD ADDR OF N601 & XR 2        3A138880
07B1 0 F05A               EOR      N601      ZERO WITH ADDR OF N601        3A138890
07B2 0 4C18 07B7          BSC  L   G606,&-   BRANCH ON ZERO                3A138900
07B4 0 4400 0F69          BSI  L   F000       XR 2 NOT LOADED               3A138910
07B6 0 30D7               DC       /30D7     ERR ID                        3A138920
07B7 0 4400 0FC4    G606  BSI  L   F005       CK LOCK ON ERROR              3A138930
07B9 0 70F3               MDX      A606      LOOP                          3A138940
                          ********************************************     3A138950
07BA 0 6300         A608  LDX    3 0         LD DISP#0 TO XR 3             3A138960
07BB 0 C052               LD       N603      LD  /FFFF                     3A138970
07BC 0 C700 080C          LD   L3 N601       LD ADDR OF N601 & XR 3        3A138980
07BE 0 F04D               EOR      N601      ZERO WITH ADDR OF N601        3A138990
07BF 0 4C18 07C4          BSC  L   G608,&-   BRANCH ON ZERO                3A139000
07C1 0 4400 0F69          BSI  L   F000       XR 3 NOT LOADED               3A139010
07C3 0 30D8               DC       /30D8     ERR ID                        3A139020
07C4 0 4400 0FC4    G608  BSI  L   F005       CK LOCK ON ERROR              3A139030
07C6 0 70F3               MDX      A608      LOOP                          3A139040
                          ********************************************     3A139050
07C7 0 61FF         A60A  LDX    1 -1        LD XR 1 WITH -1               3A139060
07C8 0 C045               LD       N603      LD  /1111                     3A139070
07C9 0 C500 080C          LD   L1 N601       LD ADDR OF N601 & XR 1        3A139080
07CB 0 F03F               EOR      N600      ZERO WITH ADDR OF N600        3A139090
07CC 0 4C18 07D1          BSC  L   G60A,&-   BRANCH ON ZERO                3A139100
07CE 0 4400 0F69          BSI  L   F000       XR 1 NOT LOADED               3A139110
07D0 0 30D9               DC       /30D9     ERR ID                        3A139120
07D1 0 4400 0FC4    G60A  BSI  L   F005       CK LOCK ON ERROR              3A139130
07D3 0 70F3               MDX      A60A      LOOP                          3A139140
                          ********************************************     3A139150
07D4 0 62FF         A60C  LDX    2 -1        LD XR 2 WITH -1               3A139160
07D5 0 C038               LD       N603      LD  /FFFF                     3A139170
07D6 0 C600 080C          LD   L2 N601       LD ADDR OF N601 & XR 2        3A139180
07D8 0 F032               EOR      N600      ZERO WITH ADDR OF N600        3A139190
07D9 0 4C18 07DE          BSC  L   G60C,&-   BRANCH ON ZERO                3A139200
07DB 0 4400 0F69          BSI  L   F000       XR 2 NOT LOADED               3A139210
07DD 0 30DA               DC       /30DA     ERR ID                        3A139220
07DE 0 4400 0FC4    G60C  BSI  L   F005       CK LOCK ON ERROR              3A139230
07E0 0 70F3               MDX      A60C      LOOP                          3A139240
                          ********************************************     3A139250
07E1 0 63FF         A60E  LDX    3 -1        LD XR 3 WITH -1               3A139260
07E2 0 C028               LD       N603      LD /FFFF                      3A139270
07E3 0 C700 080C          LD   L3 N601       LD ADDR OF N601 & XR 3        3A139280
07E5 0 F025               EOR      N600      ZERO WITH ADDR OF N600        3A139290
07E6 0 4C18 07EB          BSC  L   G60E,&-   BRANCH ON ZERO                3A139300
07E8 0 4400 0F69          BSI  L   F000       XR 3 NOT LOADED               3A139310
07EA 0 30DB               DC       /30DB     ERR ID                        3A139320
07EB 0 4400 0FC4    G60E  BSI  L   F005       CK LOCK ON ERROR              3A139330
07ED 0 70F3               MDX      A60E      LOOP                          3A139340
                          ********************************************     3A139350
07EE 0 6500 0001    B600  LDX  L1 1          LD XR 3 WITH &1               3A139360
07F0 0 C01D               LD       N603      LD  /FFFF                     3A139370
07F1 0 C500 080C          LD   L1 N601       LD ADDR OF N601 & XR 1        3A139380
07F3 0 F019               EOR      N602      ZERO WITH ADDR OF N602        3A139390
07F4 0 4C18 07F9          BSC  L   J600,&-   BRANCH ON ZERO                3A139400
07F6 0 4400 0F69          BSI  L   F000       LONG FORM LDX-FAILED          3A139410
07F8 0 30DC               DC       /30DC     ERR ID                        3A139420
07F9 0 4400 0FC4    J600  BSI  L   F005       CK LOCK ON ERROR              3A139430
07FB 0 70F2               MDX      B600      LOOP                          3A139440
                          ********************************************     3A139450
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07FC 0 6780 080E    B602  LDX  I3 N603      LD XR 3 WITH /FFFF          3A139460
07FE 0 C010               LD     N604      LD  /0001                   3A139470
07FF 0 C700 080C          LD   L3 N601      LD ADDR OF N601 & XR 3       3A139480
0801 0 F009               EOR    N600      ZERO WITH ADDR OF N600      3A139490
0802 0 4C18 0807          BSC  L J602,&-    BRANCH ON ZERO              3A139500
0804 0 4400 0F69          BSI  L F000       INDIRECT LDX FAILED         3A139510
0806 0 30DD               DC     /30DD      ERR ID                      3A139520
0807 0 4400 0FC4    J602  BSI  L F005       CK LOCK ON ERROR            3A139530
0809 0 70F2               MDX    B602       LOOP                        3A139540
080A 0 7005               MDX    A640       EXIT TO NEXT ROUTINE        3A139550
080B 0 080B         N600  DC     N600                                   3A139560
080C 0 080C         N601  DC     N601                                   3A139570
080D 0 080D         N602  DC     N602                                   3A139580
080E 0 FFFF         N603  DC     /FFFF                                  3A139590
080F 0 0001         N604  DC     /0001                                  3A139600
                    *                                                   3A139610
                    *              TEST OF STX OPERATION                3A139620
                    *                                                   3A139630
                    ********************************************      3A139640
********************************************************************* 3A139650
CORE    DATA OR     *LA- OPER-                                          3A139660
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A139670
********************************************************************* 3A139680
0810 0 C06D         A640  LD     N644      LD  /FFFF                   3A139690
0811 0 D069               STO    N640      SAVE                        3A139700
0812 0 C0FF         H640  LD     H640      LD /C0FF                    3A139710
0813 0 6867               STX    N640      STORE INST REG AT N640      3A139720
0814 0 F0FD         K640  EOR    H640      CK THAT ACC WAS NOT         3A139730
                    *                      * RESET BY STX              3A139740
0815 0 4C18 081D          BSC  L G640,&-    BRANCH ON ZERO              3A139750
0817 0 4400 0F69          BSI  L F000       ACC GONE AFTER STX          3A139760
0819 0 3167               DC     /3167      ERR ID                      3A139770
081A 0 4400 0F98          BSI  L F00E       CK LOCK ON ERROR            3A139780
081C 0 70F3               MDX    A640                                   3A139790
081D 0 C05D         G640  LD     N640      CK THAT STX STORED CORECT   3A139800
081E 0 F05D               EOR    N642                                   3A139810
081F 0 4C18 0824          BSC  L G641,&-    BRANCH ON ZERO              3A139820
0821 0 4400 0F69          BSI  L F000       I CTR NOT STORED            3A139830
0823 0 30DE               DC     /30DE      ERR ID                      3A139840
0824 0 4400 0FC4    G641  BSI  L F005       CK LOCK ON ERROR            3A139850
0826 0 70E9               MDX    A640       LOOP                        3A139860
                    ********************************************      3A139870
0827 0 C056         A642  LD     N644      LD /FFFF                    3A139880
0828 0 D052               STO    N640      SAVE                        3A139890
0829 0 6100               LDX  1 0         LD XR 1 WITH /0000          3A139900
082A 0 6950               STX  1 N640      STORE C%XR 1¤ AT N640       3A139910
082B 0 C04F               LD     N640      LD C%N640¤                  3A139920
082C 0 4C18 0831          BSC  L G642,&-    BRANCH ON ZERO              3A139930
082E 0 4400 0F69          BSI  L F000       XR 1 NOT STORED             3A139940
0830 0 30DF               DC     /30DF      ERR ID                      3A139950
0831 0 4400 0FC4    G642  BSI  L F005       CK LOCK ON ERROR            3A139960
0833 0 70F3               MDX    A642       LOOP                        3A139970
                    ********************************************      3A139980
0834 0 C049         A644  LD     N644      LD /FFFF                    3A139990
0835 0 D045               STO    N640      SAVE                        3A140000
0836 0 6200               LDX  2 0         LD XR 2 WITH /0000          3A140010
0837 0 6A43               STX  2 N640      STORE C%XR 2¤ AT N640       3A140020
0838 0 C042               LD     N640      LD C%N640¤                  3A140030
0839 0 4C18 083E          BSC  L G644,&-    BRANCH ON ZERO              3A140040
083B 0 4400 0F69          BSI  L F000       XR 2 NOT STORED             3A140050
083D 0 30E0               DC     /30E0      ERR ID                      3A140060
083E 0 4400 0FC4    G644  BSI  L F005       CK LOCK ON ERROR            3A140070
0840 0 70F3               MDX    A644       LOOP                        3A140080
                    ********************************************      3A140090
0841 0 C03C         A646  LD     N644      LD /FFFF                    3A140100
0842 0 D038               STO    N640      SAVE                        3A140110
0843 0 6300               LDX  3 0         LD XR 3 WITH /0000          3A140120
0844 0 6B36               STX  3 N640      STORE C%XR 3¤ AT N640       3A140130
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0845 0 C035               LD     N640      LD C%N640¤                  3A140140
0846 0 4C18 084B          BSC  L G646,&-    BRANCH ON ZERO              3A140150
0848 0 4400 0F69          BSI  L F000       XR 3 NOT STORED             3A140160
084A 0 30E1               DC     /30E1      ERR ID                      3A140170
084B 0 4400 0FC4    G646  BSI  L F005       CK LOCK ON ERROR            3A140180
084D 0 70F3               MDX    A646       LOOP                        3A140190
                    ********************************************      3A140200
084E 0 C02E         A648  LD     N643      LD /0000                    3A140210
084F 0 D02B               STO    N640      SAVE                        3A140220
0850 0 61FF               LDX  1 -1        LD XR 1 WITH /FFFF          3A140230
0851 0 6929               STX  1 N640      STORE C%XR 1¤ AT N640       3A140240
0852 0 C028               LD     N640      LD C%N640¤                  3A140250
0853 0 F02A               EOR    N644      ZERO WITH /FFFF             3A140260
0854 0 4C18 0859          BSC  L G648,&-    BRANCH ON ZERO              3A140270
0856 0 4400 0F69          BSI  L F000       XR 1 NOT STORED             3A140280
0858 0 30E2               DC     /30E2      ERR ID                      3A140290
0859 0 4400 0FC4    G648  BSI  L F005       CK LOCK ON ERROR            3A140300
085B 0 70F2               MDX    A648       LOOP                        3A140310
                    ********************************************      3A140320
085C 0 C020         A64A  LD     N643      LD /0000                    3A140330
085D 0 D01D               STO    N640      SAVE                        3A140340
085E 0 62FF               LDX  2 -1        LD XR 2 WITH /FFFF          3A140350
085F 0 6A1B               STX  2 N640      STORE C%XR 2¤ AT N640       3A140360
0860 0 C01A               LD     N640      LD C%N640¤                  3A140370
0861 0 F01C               EOR    N644      ZERO WITH /FFFF             3A140380
0862 0 4C18 0867          BSC  L G64A,&-    BRANCH ON ZERO              3A140390
0864 0 4400 0F69          BSI  L F000       XR 2 NOT STORED             3A140400
0866 0 30E3               DC     /30E3      ERR ID                      3A140410
0867 0 4400 0FC4    G64A  BSI  L F005       CK LOCK ON ERROR            3A140420
0869 0 70F2               MDX    A64A       LOOP                        3A140430
                    ********************************************      3A140440
086A 0 C012         A64C  LD     N643      LD /0000                    3A140450
086B 0 D00F               STO    N640      SAVE                        3A140460
086C 0 63FF               LDX  3 -1        LD XR 3 WITH /FFFF          3A140470
086D 0 6B0D               STX  3 N640      STORE C%XR 3¤ AT N640       3A140480
086E 0 C00C               LD     N640      LD C%N640¤                  3A140490
086F 0 F00E               EOR    N644      ZERO WITH /FFFF             3A140500
0870 0 4C18 0875          BSC  L G64C,&-    BRANCH ON ZERO              3A140510
0872 0 4400 0F69          BSI  L F000       XR 3 NOT STORED             3A140520
0874 0 30E4               DC     /30E4      ERR ID                      3A140530
0875 0 4400 0FC4    G64C  BSI  L F005       CK LOCK ON ERROR            3A140540
0877 0 70F2               MDX    A64C       LOOP                        3A140550
0878 0 C004               LD     N643      LD /0000                    3A140560
0879 0 D001               STO    N640      RESTORE N640 TO /0000       3A140570
087A 0 7004               MDX    A660      EXIT TO NEXT ROUTINE        3A140580
087B 0 0000         N640  DC     /0000                                 3A140590
087C 0 0814         N642  DC     K640                                  3A140600
087D 0 0000         N643  DC     /0000                                 3A140610
087E 0 FFFF         N644  DC     /FFFF                                 3A140620
                    ********************************************      3A140630
********************************************************************* 3A140640
CORE    DATA OR     *LA- OPER-                                          3A140650
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A140660
********************************************************************* 3A140670
087F 0 6100         A660  LDX  1 0         LD XR 1 WITH /0000          3A140680
0880 0 6200               LDX  2 0         LD XR 2 WITH /0000          3A140690
0881 0 6300               LDX  3 0         LD XR 3 WITH /0000          3A140700
0882 0 61FF               LDX  1 -1        LD XR 1 WITH /FFFF          3A140710
0883 0 6A44               STX  2 N660      CK FOR DISTRUCTION OF       3A140720
0884 0 C043               LD     N660       OTHER INDEXES              3A140730
0885 0 4C18 088A          BSC  L G660,&-    BRANCH ON ZERO              3A140740
0887 0 4400 0F69          BSI  L F000       XR 2 CHANGED                3A140750
0889 0 3157               DC     /3157      ERR ID                      3A140760
088A 0 4400 0F98    G660  BSI  L F00E       CK LOCK ON ERROR            3A140770
088C 0 70F2               MDX    A660       LOOP                        3A140780
088D 0 6B3A               STX  3 N660      STORE C%XR 3¤ AT N660       3A140790
088E 0 C039               LD     N660      LD C%N660¤                  3A140800
088F 0 4C18 0894          BSC  L G661,&-    BRANCH ON ZERO              3A140810
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0891 0 4400 0F69          BSI  L  F000       XR 3 CHANGED                3A140820
0893 0 3158               DC       /3158     ERR ID                      3A140830
0894 0 4400 0FC4    G661  BSI  L  F005       CK LOCK ON ERROR            3A140840
0896 0 70E8               MDX      A660      LOOP                        3A140850
                          ********************************************** 3A140860
0897 0 6100         A662  LDX      1 0       LD XR 1 WITH /0000          3A140870
0898 0 6200               LDX      2 0       LD XR 2 WITH /0000          3A140880
0899 0 6300               LDX      3 0       LD XR 3 WITH /0000          3A140890
089A 0 62FF               LDX      2 -1      LD XR 2 WITH /FFFF          3A140900
089B 0 692C               STX      1 N660    STORE C%XR 1¤ AT N660       3A140910
089C 0 C02B               LD       N660      LD C%N660¤                  3A140920
089D 0 4C18 08A2          BSC  L   G662,&-   BRANCH ON ZERO               3A140930
089F 0 4400 0F69          BSI  L   F000      XR 1 CHANGED                3A140940
08A1 0 3159               DC       /3159     ERR ID                      3A140950
08A2 0 4400 0F98    G662  BSI  L   F00E      CK LOCK ON ERROR            3A140960
08A4 0 70F2               MDX      A662      LOOP                        3A140970
08A5 0 6B22               STX      3 N660    STORE C%XR 3 AT N660        3A140980
08A6 0 C021               LD       N660      LD C%N660¤                  3A140990
08A7 0 4C18 08AC          BSC  L   G663,&-   BRANCH ON ZERO               3A141000
08A9 0 4400 0F69          BSI  L   F000      CK LOCK ON ERROR            3A141010
08AB 0 315A               DC       /315A     ERR ID                      3A141020
08AC 0 4400 0FC4    G663  BSI  L   F005      CK LOCK ON ERROR            3A141030
08AE 0 70E8               MDX      A662      LOOP                        3A141040
                          ********************************************** 3A141050
08AF 0 6100         A664  LDX      1 0       CK DISTRUCTION OF           3A141060
08B0 0 6200               LDX      2 0        OTHER INDEXES              3A141070
08B1 0 6300               LDX      3 0       XR@S HAVE /0000             3A141080
08B2 0 63FF               LDX      3 -1      LD XR 3 WITH /FFFF          3A141090
08B3 0 6914               STX      1 N660    STORE C%XR 1¤ AT N660       3A141100
08B4 0 C013               LD       N660      LD C%N660¤                  3A141110
08B5 0 4C18 08BA          BSC  L   G664,&-   BRANCH ON ZERO               3A141120
08B7 0 4400 0F69          BSI  L   F000      XR 1 CHANGED                3A141130
08B9 0 315B               DC       /315B     ERR ID                      3A141140
08BA 0 4400 0F98    G664  BSI  L   F00E      CK LOCK ON ERROR            3A141150
08BC 0 70F2               MDX      A664      LOOP                        3A141160
08BD 0 6A0A               STX      2 N660    STORE C%XR 2¤ AT N660       3A141170
08BE 0 C009               LD       N660      LD C%N660¤                  3A141180
08BF 0 4C18 08C4          BSC  L   G665,&-   BRANCH ON ZERO               3A141190
08C1 0 4400 0F69          BSI  L   F000      XR 2 CHANGED                3A141200
08C3 0 315C               DC       /315C     ERR ID                      3A141210
08C4 0 4400 0FC4    G665  BSI  L   F005      CK LOCK ON ERROR            3A141220
08C6 0 70E8               MDX      A664      LOOP                        3A141230
08C7 0 7001               MDX      A670      EXIT TO NEXT ROUTINE        3A141240
08C8 0 0000         N660  DC       0                                     3A141250
                          ********************************************** 3A141260
08C9 0 6110         A670  LDX      1 16      LD XR 1 WITH /0010          3A141270
08CA 0 C010               LD       N670      LOAD ONE                    3A141280
08CB 0 4C18 08D4    G671  BSC  L   G670,&-   NOT BR FOR CORRECT OP        3A141290
08CD 0 1001         G672  SLA      1                                     3A141300
08CE 0 71FF               MDX      1 -1      -1 FROM C%XR 1¤             3A141310
08CF 0 70F8               MDX      G671                                  3A141320
08D0 0 4400 0FC4          BSI  L   F005       CK LOCK ON ERROR            3A141330
08D2 0 70F6               MDX      A670      LOOP                        3A141340
08D3 0 7008               MDX      A680      EXIT TO NEXT ROUTINE        3A141350
08D4 0 4400 0F69    G670  BSI  L   F000      WRONG DECODE OF ZERO ACC    3A141360
08D6 0 3169               DC       /3169     ERR ID                      3A141370
08D7 0 4400 0F98          BSI  L   F00E      CK LOCK ON ERROR            3A141380
08D9 0 70EF               MDX      A670      LOOP                        3A141390
08DA 0 70F2               MDX      G672                                  3A141400
08DB 0 0001         N670  DC       1                                     3A141410
                          *                                              3A141420
                          *              TEST OF ADD OPERATION           3A141430
                          *                                              3A141440
                          ********************************************** 3A141450
********************************************************************************* 3A141460
CORE     DATA OR     *LA- OPER-                                                    3A141470
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT        3A141480
********************************************************************************* 3A141490
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08DC 0 2002         A680  LDS      2         SET CARRY ON                3A141500
08DD 0 C06E               LD       N680      LD /FFFF                    3A141510
08DE 0 806E               A        N681      A  /0000                   3A141520
08DF 0 4C01 08E2          BSC  L   G680,O    CK FOR OVERFLOW ON          3A141530
08E1 0 7003               MDX      H680      OVERFLOW IS OFF             3A141540
08E2 0 4400 0F69    G680  BSI  L   F000      OVERFLOW IS ON              3A141550
08E4 0 30E5               DC       /30E5     ERR ID                      3A141560
08E5 0 4400 0F98    H680  BSI  L   F00E      CK LOCK ON ERROR            3A141570
08E7 0 70F4               MDX      A680      LOOP                        3A141580
08E8 0 F063               EOR      N680      CK IF ADD ZERO              3A141590
08E9 0 4C18 08EE          BSC  L   G682,&-   * CHANGED ACC               3A141600
08EB 0 4400 0F69          BSI  L   F000      ADD 1 AND 0 FAILED          3A141610
08ED 0 30E6               DC       /30E6     ERR ID                      3A141620
08EE 0 4400 0FC4    G682  BSI  L   F005      CK LOCK ON ERROR            3A141630
08F0 0 70EB               MDX      A680      LOOP                        3A141640
                          ********************************************** 3A141650
08F1 0 2000         A684  LDS      0         SET C AND OF OFF            3A141660
08F2 0 C059               LD       N680      LD /FFFF                    3A141670
08F3 0 805A               A        N682      A  /0001                   3A141680
08F4 0 4C02 08F9          BSC  L   G684,C    CK IF CARRY OCCURED         3A141690
08F6 0 4400 0F69          BSI  L   F000      CARRY NOT ON                3A141700
08F8 0 30E7               DC       /30E7     ERR ID                      3A141710
08F9 0 4400 0F98    G684  BSI  L   F00E      CK LOCK ON ERROR            3A141720
08FB 0 70F5               MDX      A684      LOOP                        3A141730
08FC 0 4C18 0901          BSC  L   G686,&-   BRANCH ON ZERO              3A141740
08FE 0 4400 0F69          BSI  L   F000      ADD FFFF&0001 FAILED        3A141750
0900 0 30E8               DC       /30E8     ERR ID                      3A141760
0901 0 4400 0FC4    G686  BSI  L   F005      CK LOCK ON ERROR            3A141770
0903 0 70ED               MDX      A684      LOOP                        3A141780
                          ********************************************** 3A141790
0904 0 2000         A688  LDS      0         SET C AND OF OFF            3A141800
0905 0 C046               LD       N680      LD /FFFF                    3A141810
0906 0 8045               A        N680      A  /FFFF                    3A141820
0907 0 4C02 090C          BSC  L   G688,C    BR ON CARRY                 3A141830
0909 0 4400 0F69          BSI  L   F000      CARRY NOT ON                3A141840
090B 0 30E9               DC       /30E9     ERR ID                      3A141850
090C 0 44C0 0F98    G688  BSI  L   F00E      CK LOCK ON ERROR            3A141860
090E 0 70F5               MDX      A688      LOOP                        3A141870
090F 0 F042               EOR      N687      ZERO WITH /FFFF             3A141880
0910 0 4C18 0915          BSC  L   G68A,&-   BRANCH ON ZERO              3A141890
0912 0 4400 0F69          BSI  L   F000      ADD FFFF&FFFF FAILED        3A141900
0914 0 30FA               DC       /30FA     ERR ID                      3A141910
0915 0 4400 0FC4    G68A  BSI  L   F005      CK LOCK ON ERROR            3A141920
0917 0 70EC               MDX      A688      LOOP                        3A141930
                          ********************************************** 3A141940
0918 0 2000         A68C  LDS      0         SET C AND OF OFF            3A141950
0919 0 C035               LD       N683      LD /4000                    3A141960
091A 0 8034               A        N683      A  /4000                    3A141970
091B 0 4C01 0920          BSC  L   G68C,O    BR IF OF NOT ON             3A141980
091D 0 4400 0F69          BSI  L   F000      OVERFLOW NOT ON             3A141990
091F 0 30EB               DC       /30EB     ERR ID                      3A142000
0920 0 4400 0F98    G68C  BSI  L   F00E      CK LOCK ON ERROR            3A142010
0922 0 70F5               MDX      A68C      LOOP                        3A142020
0923 0 F02C               EOR      N684      ZERO WITH /8000             3A142030
0924 0 4C18 0929          BSC  L   G68E,&-   BRANCH ON ZERO              3A142040
0926 0 4400 0F69          BSI  L   F000      ADD 4000&4000 FAILED        3A142050
0928 0 30EC               DC       /30EC     ERR ID                      3A142060
0929 0 4400 0FC4    G68E  BSI  L   F005      CK LOCK ON ERROR            3A142070
092B 0 70EC               MDX      A68C      LOOP                        3A142080
                          ********************************************** 3A142090
092C 0 2000         B680  LDS      0         SET C AND OF OFF            3A142100
092D 0 C022               LD       N684      LD /8000                    3A142110
092E 0 8021               A        N684      A  /8000                    3A142120
092F 0 2823               STS      N688      STORE C AND OF COND         3A142130
0930 0 4C18 0935          BSC  L   J680,&-   BRANCH ON ZERO              3A142140
0932 0 4400 0F69          BSI  L   F000      ADD 8000&8000 FAILED        3A142150
0934 0 30ED               DC       /30ED     ERR ID                      3A142160
0935 0 4400 0F98    J680  BSI  L   F00E      CK LOCK ON ERROR            3A142170
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0937 0 70F4                MDX     B680      LOOP                              3A142180
0938 0 C01A                LD      N688      LD C AND OF COND                  3A142190
0939 0 F017                EOR     N686      ZERO WITH /0003                   3A142200
093A 0 4C18 0948           BSC  L  J682,&-   BRANCH ON ZERO                    3A142210
093C 0 4C04 0945           BSC  L  K682,E    BR ON NOT EVEN                    3A142220
093E 0 4400 0F69           BSI  L  F000      CARRY NOT ON                      3A142230
0940 0 30EF                DC      /30EF     ERR ID                            3A142240
0941 0 4400 0FC4           BSI  L  F005      CK LOCK ON ERROR                  3A142250
0943 0 70E8                MDX     B680      LOOP                              3A142260
0944 0 700F                MDX     A6C0      EXIT TO NEXT ROUTINE              3A142270
0945 0 4400 0F69     K682  BSI  L  F000      OVERFLOW NOT ON                   3A142280
0947 0 30EE                DC      /30EE     ERR ID                            3A142290
0948 0 4400 0FC4     J682  BSI  L  F005      CK LOCK ON ERROR                  3A142300
094A 0 70E1                MDX     B680      LOOP                              3A142310
094B 0 7008                MDX     A6C0      EXIT TO NEXT ROUTINE              3A142320
094C 0 FFFF          N680  DC      /FFFF                                       3A142330
094D 0 0000          N681  DC      /0000                                       3A142340
094E 0 0001          N682  DC      /0001                                       3A142350
094F 0 4000          N683  DC      /4000                                       3A142360
0950 0 8000          N684  DC      /8000                                       3A142370
0951 0 0003          N686  DC      /0003                                       3A142380
0952 0 FFFE          N687  DC      /FFFE                                       3A142390
0953 0 0000          N688  DC      /0000     STORAGE                           3A142400
                     *                                                         3A142410
                     *                INDEXING TEST                            3A142420
                     *                                                         3A142430
                     ********************************************            3A142440
*************************************************************************    3A142450
CORE     DATA OR     *LA- OPER-                                              3A142460
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT     3A142470
*************************************************************************    3A142480
0954 0 61FC          A6C0  LDX    1 -4         LD XR 1 WITH -4                3A142490
0955 0 C500 09D0           LD   L1 N6C4      LD C%N6C4&XR 1¤                   3A142500
0957 0 F074                EOR     N6C0      ZERO ACC IF CORRECT OP            3A142510
0958 0 4C20 0966           BSC  L  H6C0,Z    BR IF NOT ZERO                    3A142520
095A 0 697A                STX    1 N6C9     STORE C%XR 1¤ AT N6C9             3A142530
095B 0 C079                LD      N6C9      GET XR 1 VALUE                    3A142540
095C 0 F079                EOR     N6CA      ZERO ACC IF CORRECT               3A142550
095D 0 4C18 0969           BSC  L  G6C0,&-   BRANCH ON ZERO                    3A142560
095F 0 4400 0F69           BSI  L  F000      XR 1 LOADED WRONG                 3A142570
0961 0 30F0                DC      /30F0     ERR ID                            3A142580
0962 0 4400 0FC4           BSI  L  F005      CK LOCK ON ERROR                  3A142590
0964 0 70EF                MDX     A6C0      LOOP                              3A142600
0965 0 7006                MDX     A6C2      EXIT TO NEXT ROUTINE              3A142610
0966 0 4400 0F69     H6C0  BSI  L  F000      WRONG LOCATION                    3A142620
0968 0 30F1                DC      /30F1     ERR ID                            3A142630
0969 0 4400 0FC4     G6C0  BSI  L  F005      CK LOCK ON ERROR                  3A142640
096B 0 70E8                MDX     A6C0      LOOP                              3A142650
                     ********************************************            3A142660
096C 0 6204          A6C2  LDX    2 4         LD XR 2 WITH &4                 3A142670
096D 0 C600 09D0           LD   L2 N6C4      LD C%N6C4&XR 2¤                   3A142680
096F 0 F064                EOR     N6C8      ZERO ACC IF CORRECT               3A142690
0970 0 4C20 097E           BSC  L  H6C2,Z    BR IF NOT ZERO                    3A142700
0972 0 6A62                STX    2 N6C9     STORE XR 2 AT N6C9                3A142710
0973 0 C061                LD      N6C9      GET XR 2 VALUE                    3A142720
0974 0 F062                EOR     N6CB      ZERO ACC IF CORRECT               3A142730
0975 0 4C18 0981           BSC  L  G6C2,&-   BRANCH ON ZERO                    3A142740
0977 0 4400 0F69           BSI  L  F000      XR 2 LOADED WRONG                 3A142750
0979 0 30F2                DC      /30F2     ERR ID                            3A142760
097A 0 4400 0FC4           BSI  L  F005      CK LOCK ON ERROR                  3A142770
097C 0 70EF                MDX     A6C2      LOOP                              3A142780
097D 0 7006                MDX     A6C4      EXIT TO NEXT ROUTINE              3A142790
097E 0 4400 0F69     H6C2  BSI  L  F000      WRONG LOCATION                    3A142800
0980 0 30F3                DC      /30F3     ERR ID                            3A142810
0981 0 4400 0FC4     G6C2  BSI  L  F005      CK LOCK ON ERROR                  3A142820
0983 0 70E8                MDX     A6C2      LOOP                              3A142830
                     ********************************************            3A142840
0984 0 6300          A6C4  LDX    3 0         SET XR 3 TO ZERO                3A142850
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0985 0 C700 09D0           LD   L3 N6C4      LD C%N6C4&XR 3¤                   3A142860
0987 0 F048                EOR     N6C4      ZERO ACC IF CORRECT               3A142870
0988 0 4C20 0995           BSC  L  H6C4,Z    BR IF NOT ZERO                    3A142880
098A 0 6B4A                STX    3 N6C9     STORE XR 3 AT N6C9                3A142890
098B 0 C049                LD      N6C9      LD /0000                          3A142900
098C 0 4C18 0998           BSC  L  G6C4,&-   BRANCH ON ZERO                    3A142910
098E 0 4400 0F69           BSI  L  F000      XR 3 LOADED WRONG                 3A142920
0990 0 30F4                DC      /30F4     ERR ID                            3A142930
0991 0 4400 0FC4           BSI  L  F005      CK LOCK ON ERROR                  3A142940
0993 0 70F0                MDX     A6C4      LOOP                              3A142950
0994 0 7006                MDX     A6C6      EXIT TO NEXT ROUTINE              3A142960
0995 0 4400 0F69     H6C4  BSI  L  F000      WRONG LOCATION                    3A142970
0997 0 30F5                DC      /30F5     ERR ID                            3A142980
0998 0 4400 0FC4     G6C4  BSI  L  F005      CK LOCK ON ERROR                  3A142990
099A 0 70E9                MDX     A6C4      LOOP                              3A143000
                     ********************************************            3A143010
099B 0 6301          A6C6  LDX    3 1         SET XR 3 TO &1                  3A143020
099C 0 C700 09D0           LD   L3 N6C4      LD C%N6C4&XR 3¤                   3A143030
099E 0 F032                EOR     N6C5      ZERO FOR CORRECT OP               3A143040
099F 0 4C20 09AD           BSC  L  H6C6,Z    BR IF NOT ZERO                    3A143050
09A1 0 6B33                STX    3 N6C9     STORE XR 3 AT N6C9                3A143060
09A2 0 C032                LD      N6C9      LD C%N6C9¤                        3A143070
09A3 0 F034                EOR     N6CD      ZERO ACC FOR CORRECT OP           3A143080
09A4 0 4C18 09B0           BSC  L  G6C6,&-   BRANCH ON ZERO                    3A143090
09A6 0 4400 0F69           BSI  L  F000      XR 3 LOADED WRONG                 3A143100
09A8 0 30F6                DC      /30F6     ERR ID                            3A143110
09A9 0 4400 0FC4           BSI  L  F005      CK LOCK ON ERROR                  3A143120
09AB 0 70EF                MDX     A6C6      LOOP                              3A143130
09AC 0 7006                MDX     A6C8      EXIT TO NEXT ROUTINE              3A143140
09AD 0 4400 0F69     H6C6  BSI  L  F000      WRONG LOCATION                    3A143150
09AF 0 30F7                DC      /30F7     ERR ID                            3A143160
09B0 0 4400 0FC4     G6C6  BSI  L  F005      CK LOCK ON ERROR                  3A143170
09B2 0 70E8                MDX     A6C6      LOOP                              3A143180
                     ********************************************            3A143190
09B3 0 63FF          A6C8  LDX    3 -1        SET XR 3 TO -1                  3A143200
09B4 0 C780 09DA           LD   I3 N6CF      LD C%N6CF&XR 3¤                   3A143210
09B6 0 F019                EOR     N6C4      ACC NOW ZERO                      3A143220
09B7 0 4C20 09C5           BSC  L  H6C8,Z    BR IF NOT ZERO                    3A143230
09B9 0 6B1B                STX    3 N6C9     STORE XR 3 AT N6C9                3A143240
09BA 0 C01A                LD      N6C9      LD C%N6C9¤                        3A143250
09BB 0 F01E                EOR     N6CF      ZERO WITH /FFFF                   3A143260
09BC 0 4C18 09C8           BSC  L  G6C8,&-   BRANCH ON ZERO                    3A143270
09BE 0 4400 0F69           BSI  L  F000      XR 3-LOADED WRONG                 3A143280
09C0 0 30F8                DC      /30F8     ERR ID                            3A143290
09C1 0 4400 0FC4           BSI  L  F005      CK LOCK ON ERROR                  3A143300
09C3 0 70EF                MDX     A6C8      LOOP                              3A143310
09C4 0 7017                MDX     A6D0      EXIT TO NEXT ROUTINE              3A143320
09C5 0 4400 0F69     H6C8  BSI  L  F000      WRONG LOCATION                    3A143330
09C7 0 30F9                DC      /30F9     ERR ID                            3A143340
09C8 0 4400 0FC4     G6C8  BSI  L  F005      CK LOCK ON ERROR                  3A143350
09CA 0 70E8                MDX     A6C8      LOOP                              3A143360
09CB 0 7010                MDX     A6D0      EXIT TO NEXT ROUTINE              3A143370
09CC 0 09CC          N6C0  DC      N6C0                                        3A143380
09CD 0 09CD          N6C1  DC      N6C1                                        3A143390
09CE 0 09CE          N6C2  DC      N6C2                                        3A143400
09CF 0 09CF          N6C3  DC      N6C3                                        3A143410
09D0 0 09D0          N6C4  DC      N6C4                                        3A143420
09D1 0 09D1          N6C5  DC      N6C5                                        3A143430
09D2 0 09D2          N6C6  DC      N6C6                                        3A143440
09D3 0 09D3          N6C7  DC      N6C7                                        3A143450
09D4 0 09D4          N6C8  DC      N6C8                                        3A143460
09D5 0 0000          N6C9  DC      /0000                                       3A143470
09D6 0 FFFC          N6CA  DC      /FFFC                                       3A143480
09D7 0 0004          N6CB  DC      /0004                                       3A143490
09D8 0 0001          N6CD  DC      /0001                                       3A143500
09D9 0 09D0                DC      N6C4                                        3A143510
09DA 0 FFFF          N6CF  DC      /FFFF                                       3A143520
09DB 0 70D7                MDX     A6C8      LOOP                              3A143530
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                         ********************************************          3A143540
*************************************************************************** 3A143550
CORE     DATA OR      *LA- OPER-                                             3A143560
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT  3A143570
*************************************************************************** 3A143580
09DC 0 6500 09CD     A6D0  LDX  L1 N6C1        LD XR 1 WITH ADDRESS          3A143590
                           *                   * OF N6C1                     3A143600
09DE 0 C1FF                LD     1 -1        SHORT FORM INDEXING           3A143610
09DF 0 F0EC                EOR    N6C0        ZERO IF CORRECT               3A143620
09E0 0 4C18 09E5           BSC  L H6D0,&-     BRANCH ON ZERO                3A143630
09E2 0 4400 0F69           BSI  L F000        INDEXED LD INST. FAILED       3A143640
09E4 0 315D                DC     /315D       ERR ID                        3A143650
09E5 0 4400 0FC4     H6D0  BSI  L F005        CK LOCK ON ERROR              3A143660
09E7 0 70F4                MDX    A6D0        LOOP                          3A143670
                         ********************************************          3A143680
09E8 0 6600 09CD     A6D2  LDX  L2 N6C1        LD XR 2 WITH ADDRESS          3A143690
                           *                   * OF N6C1                     3A143700
09EA 0 C201                LD     2 1         LD C%OF ADDRESS IN XR 1&1¤    3A143710
09EB 0 F0E2                EOR    N6C2        ZERO IF CORRECT               3A143720
09EC 0 4C18 09F1           BSC  L H6D2,&-     BRANCH ON ZERO                3A143730
09EE 0 4400 0F69           BSI  L F000        INDEXED LD INST. FAILED       3A143740
09F0 0 315E                DC     /315E       ERR ID                        3A143750
09F1 0 4400 0FC4     H6D2  BSI  L F005        CK LOCK ON ERROR              3A143760
09F3 0 70F4                MDX    A6D2        LOOP                          3A143770
                         ********************************************          3A143780
09F4 0 6700 09CD     A6D3  LDX  L3 N6C1        LD XR 3 WITH ADD OF N6C1      3A143790
09F6 0 C300                LD     3 0         LD C%OF ADD IN XR 3 & 0¤      3A143800
09F7 0 F0D5                EOR    N6C1        ZERO IF CORRECT               3A143810
09F8 0 4C18 09FD           BSC  L H6D3,&-     BRANCH ON ZERO                3A143820
09FA 0 4400 0F69           BSI  L F000        INDEXED LD INST. FAILED       3A143830
09FC 0 315F                DC     /315F       ERR ID                        3A143840
09FD 0 4400 0FC4     H6D3  BSI  L F005        CK LOCK ON ERROR              3A143850
09FF 0 70F4                MDX    A6D3        LOOP                          3A143860
                         ********************************************          3A143870
                         ********************************************          3A143880
0A00 0 6102          A6D5  LDX    1 2         LD XR 1 WITH &2               3A143890
0A01 0 C0D6                LD       N6CD      LD /0001                      3A143900
0A02 0 1101                SLA    1 1         NOW A#/0004                   3A143910
0A03 0 F0D3                EOR      N6CB      NOW A#/0000                   3A143920
0A04 0 4C18 0A09           BSC  L H6D5,&-     BRANCH ON ZERO                3A143930
0A06 0 4400 0F69           BSI  L F000        INDEXED SLA FAILED            3A143940
0A08 0 3163                DC     /3163       ERR ID                        3A143950
0A09 0 4400 0FC4     H6D5  BSI  L F005        CK LOCK ON ERROR              3A143960
0A0B 0 70F4                MDX    A6D5        LOOP                          3A143970
                         ********************************************          3A143980
0A0C 0 6202          A6D6  LDX    2 2         LD /00004                     3A143990
0A0D 0 C0C9                LD       N6CB      NOW A#/0001                   3A144000
0A0E 0 1A01                SRA    2 1         ZERO ACC                      3A144010
0A0F 0 F0C8                EOR      N6CD      ZERO WITH /0001               3A144020
0A10 0 4C18 0A15           BSC  L H6D6,&-     BRANCH ON ZERO                3A144030
0A12 0 4400 0F69           BSI  L F000        INDEXED SRA FAILED            3A144040
0A14 0 3164                DC     /3164       ERR ID                        3A144050
0A15 0 4400 0FC4     H6D6  BSI  L F005        CK LOCK ON ERROR              3A144060
0A17 0 70F4                MDX    A6D6        LOOP                          3A144070
                         ********************************************          3A144080
                         *                                                    3A144090
                         *                TEST INDEXED BSC                    3A144100
                         *                                                    3A144110
*************************************************************************** 3A144120
CORE     DATA OR      *LA- OPER-                                             3A144130
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT  3A144140
*************************************************************************** 3A144150
0A18 0 6301          A6F0  LDX    3 1         LD XR 3 WITH &1               3A144160
0A19 0 C00E                LD       N6F1      LD C%OF LABEL N6F1¤           3A144170
0A1A 0 4F30 0A1D           BSC  L3 N6F0       BR TO C%N6F0&XR 3¤            3A144180
0A1C 0 3000                WAIT               INDEXED BSC FAILED            3A144190
0A1D 0 3000          N6F0  WAIT               INDEXED BSC FAILED            3A144200
0A1E 0 F009                EOR      N6F1      CK FOR DISTROYED ACC          3A144210
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0A1F 0 4C18 0A24           BSC  L H6F0,&-     BRANCH ON ZERO                3A144220
0A21 0 4400 0F69           BSI  L F000        ACC DISTROYED                 3A144230
0A23 0 3165                DC     /3165       ERR ID                        3A144240
0A24 0 4400 0FC4     H6F0  BSI  L F005        CK LOCK ON ERROR              3A144250
0A26 0 70F1                MDX    A6F0        LOOP                          3A144260
0A27 0 7001                MDX    A6F1        EXIT TO NEXT ROUTINE          3A144270
0A28 0 0A28          N6F1  DC       N6F1                                    3A144280
                         ********************************************          3A144290
0A29 0 6201          A6F1  LDX    2 1         LD XR 2 WITH &1               3A144300
0A2A 0 4E80 0A2D           BSC  I2 N6F2       BR TO N6F2&1 INDIRECT         3A144310
0A2C 0 7005                MDX    H6F1        BSC FAILED                    3A144320
0A2D 0 7004          N6F2  MDX    H6F1        BSC FAILED                    3A144330
0A2E 0 0A31                DC       N6F3                                    3A144340
0A2F 0 7002                MDX    H6F1        BSC FAILED                    3A144350
0A30 0 7001                MDX    H6F1        BSC FAILED                    3A144360
0A31 0 7003          N6F3  MDX    H6F2                                      3A144370
0A32 0 4400 0F69     H6F1  BSI  L F000        BSC DID NOT BRANCH            3A144380
0A34 0 3166                DC     /3166       ERR ID                        3A144390
0A35 0 4400 0FC4     H6F2  BSI  L F005        CK LOCK ON ERROR              3A144400
0A37 0 70F1                MDX    A6F1        LOOP                          3A144410
                         ********************************************          3A144420
                         *                                                    3A144430
                         *                TEST OF SUBTRACT OPERATION          3A144440
                         *                                                    3A144450
                         ********************************************          3A144460
0A38 0 2000          A700  LDS      0         SET C AND OF OFF              3A144470
0A39 0 C066                LD       N700      LD /0000                      3A144480
0A3A 0 9066                S        N701      S /0001 A NOW /FFFF           3A144490
0A3B 0 2866                STS      N702      STORE CARRY IND. TO N702      3A144500
0A3C 0 F066                EOR      N703      ZERO ACC IF CORRECT           3A144510
0A3D 0 4C18 0A42           BSC  L G700,&-     BRANCH ON ZERO                3A144520
0A3F 0 4400 0F69           BSI  L F000        0000 MINUS 0001 FAILED        3A144530
0A41 0 30FA                DC     /30FA       ERR ID                        3A144540
0A42 0 4400 0F98     G700  BSI  L F00E        CK LOCK ON ERROR              3A144550
0A44 0 70F3                MDX    A700        LOOP                          3A144560
0A45 0 C05C                LD       N702      LD CARRY INDICATION           3A144570
0A46 0 F05D                EOR      N704      ZERO IF CORRECT               3A144580
0A47 0 4C18 0A4C           BSC  L G702,&-     BRANCH ON ZERO                3A144590
0A49 0 4400 0F69           BSI  L F000        CARRY NOT ON                  3A144600
0A4B 0 30FB                DC     /30FB       ERR ID                        3A144610
0A4C 0 4400 0FC4     G702  BSI  L F005        CK LOCK ON ERROR              3A144620
0A4E 0 70E9                MDX    A700        LOOP                          3A144630
                         ********************************************          3A144640
0A4F 0 2000          A704  LDS      0         SET C AND OF OFF&             3A144650
0A50 0 C04F                LD       N700      LD /0000                      3A144660
0A51 0 9051                S        N703      S /FFFF                       3A144670
0A52 0 284F                STS      N702      STORE CARRY ON CONDITION      3A144680
0A53 0 F04D                EOR      N701      ZERO WITH /0001               3A144690
0A54 0 4C18 0A59           BSC  L G704,&-     BRANCH ON ZERO                3A144700
0A56 0 440U 0F69           BSI  L F000        0000 MINUS FFFF FAILED        3A144710
0A58 0 30FC                DC     /30FC       ERR ID                        3A144720
0A59 0 4400 0F98     G704  BSI  L F00E        CK LOCK ON ERROR              3A144730
0A5B 0 70F3                MDX    A704        LOOP                          3A144740
0A5C 0 C045                LD       N702      LD CARRY COND FROM N702       3A144750
0A5D 0 F046                EOR      N704      ZERO ACC IF CORRECT           3A144760
0A5E 0 4C18 0A63           BSC  L G706,&-     BRANCH ON ZERO                3A144770
0A60 0 4400 0F69           BSI  L F000        CARRY NOT SET                 3A144780
0A62 0 30FD                DC     /30FD       ERR ID                        3A144790
0A63 0 4400 0FC4     G706  BSI  L F005        CK LOCK ON ERROR              3A144800
0A65 0 70E9                MDX    A704        LOOP                          3A144810
                         ********************************************          3A144820
*************************************************************************** 3A144830
                                                                             3A144840
CORE     DATA OR      *LA- OPER-                                             3A144850
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT  3A144860
*************************************************************************** 3A144870
0A66 0 2000          A708  LDS      0         SET C AND OF OFF              3A144880
0A67 0 C03D                LD       N705      LD /8000                      3A144890
0A68 0 9038                S        N701      S  /0001
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0A69 0 2838          STS     N702      SAVE C & OF CONDITION          3A144900
0A6A 0 F03C          EOR     N707      ZERO ACC IF CORRECT OP         3A144910
0A6B 0 4C18 0A70     BSC  L  G708,&-   BRANCH ON ZERO                  3A144920
0A6D 0 4400 0F69     BSI  L  F000      8000 MINU  0001 FAILED         3A144930
0A6F 0 30FE          DC      /30FE     ERR ID                         3A144940
0A70 0 4400 0F98  G708  BSI  L  F00E    CK LOCK ON ERROR               3A144950
0A72 0 70F3          MDX     A708      LOOP                           3A144960
0A73 0 C02E          LD      N702      LD STORE CARRY CONDITION       3A144970
0A74 0 F02C          EOR     N701      ZERO IF CORRECT                3A144980
0A75 0 4C18 0A7A     BSC  L  G70A,&-   BRANCH ON ZERO                  3A144990
0A77 0 4400 0F69     BSI  L  F000      OVERFLOW NOT SET               3A145000
0A79 0 30FF          DC      /30FF     ERR ID                         3A145010
0A7A 0 4400 0FC4  G70A  BSI  L  F005    CK LOCK ON ERROR               3A145020
0A7C 0 70E9          MDX     A708      LOOP                           3A145030
                     ********************************************     3A145040
0A7D 0 2000          A70C  LDS     0     SET C AND OF OFF               3A145050
0A7E 0 C021          LD      N700      LD /0000                       3A145060
0A7F 0 9025          S       N705      S  /8000                       3A145070
0A80 0 2821          STS     N702      STORE C & OF CONDITION         3A145080
0A81 0 F023          EOR     N705      ZERO ACC IF CORRECT            3A145090
0A82 0 4C18 0A87     BSC  L  G70C,&-   BRANCH ON ZERO                  3A145100
0A84 0 4400 0F69     BSI  L  F000      0000 MINUS 8000 FAILED         3A145110
0A86 0 3100          DC      /3100     ERR ID                         3A145120
0A87 0 4400 0F98  G70C  BSI  L  F00E    CK LOCK ON ERROR               3A145130
0A89 0 70F3          MDX     A70C      LOOP                           3A145140
0A8A 0 C017          LD      N702      LD CON OF C&OF                 3A145150
0A8B 0 F01A          EOR     N706      ZERO ACC IF CORRECT            3A145160
0A8C 0 4C18 0A9C     BSC  L  G70E,&-   BRANCH ON ZERO                  3A145170
0A8E 0 C013          LD      N702      LD CON OF C & OF               3A145180
0A8F 0 E011          AND     N701      AND IN /0001                   3A145190
0A90 0 4C20 0A99     BSC  L  J70E,Z    BR IF NOT ZERO                 3A145200
0A92 0 4400 0F69     BSI  L  F000      OVERFLOW NOT ON                3A145210
0A94 0 3101          DC      /3101     ERR ID                         3A145220
0A95 0 4400 0FC4     BSI  L  F005      CK LOCK ON ERROR               3A145230
0A97 0 70E5          MDX     A70C      LOOP                           3A145240
0A98 0 700F          MDX     A740      EXIT TO NEXT ROUTINE           3A145250
0A99 0 4400 0F69  J70E  BSI  L  F000    CARRY NOT ON                   3A145260
0A9B 0 3102          DC      /3102     ERR ID                         3A145270
0A9C 0 4400 0FC4  G70E  BSI  L  F005    CK LOCK ON ERROR               3A145280
0A9E 0 70DE          MDX     A70C      LOOP                           3A145290
0A9F 0 7008          MDX     A740      EXIT TO NEXT ROUTINE           3A145300
0AA0 0 0000       N700  DC      /0000                                  3A145310
0AA1 0 0001       N701  DC      /0001                                  3A145320
0AA2 0 0000       N702  DC      /0000     STORAGE                      3A145330
0AA3 0 FFFF       N703  DC      /FFFF                                  3A145340
0AA4 0 0002       N704  DC      /0002                                  3A145350
0AA5 0 8000       N705  DC      /8000                                  3A145360
0AA6 0 0003       N706  DC      /0003                                  3A145370
0AA7 0 7FFF       N707  DC      /7FFF                                  3A145380
                     *                                                3A145390
                     *              TEST OF ADD DOUBLE                3A145400
                     *                                                3A145410
                     ********************************************     3A145420
************************************************************************3A145430
CORE     DATA OR     *LA- OPER-                                       3A145440
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A145450
************************************************************************3A145460
0AA8 0 2000          A740  LDS     0     SET C AND OF OFF               3A145470
0AA9 0 CC00 0B6E           LDD  L  N742  LD A#/FFFF  Q#/FFFF            3A145480
0AAB 0 8C00 0B70           AD   L  N744  A    /0000    /0000           3A145490
0AAD 0 2C00 0B6D           STS  L  N740  STORE CON. OF C & OF           3A145500
0AAF 0 F400 0B6E           EOR  L  N742                                 3A145510
0AB1 0 4C18 0AB6           BSC  L  G740,&-  BRANCH ON ZERO              3A145520
0AB3 0 4400 0F69           BSI  L  F000  AD FFFF&0000 A FAILED          3A145530
0AB5 0 3103                DC      /3103 ERR ID                         3A145540
0AB6 0 4400 0F98  G740     BSI  L  F00E  CK LOCK ON ERROR               3A145550
0AB8 0 70EF                MDX     A740  LOOP                           3A145560
0AB9 0 18D0                RTE     16                                   3A145570
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0ABA 0 F400 0B6E           EOR  L  N742                                 3A145580
0ABC 0 4C18 0AC1           BSC  L  G742,&-  BR ON ZERO                  3A145590
0ABE 0 4400 0F69           BSI  L  F000  AD FFFF&0000 Q FAILED          3A145600
0AC0 0 3104                DC      /3104 ERR ID                         3A145610
0AC1 0 4400 0F98  G742     BSI  L  F00E  CK LOCK ON ERROR               3A145620
0AC3 0 70E4                MDX     A740  LOOP                           3A145630
0AC4 0 C400 0B6D           LD   L  N740  CONDITION OF C & OF            3A145640
0AC6 0 4C18 0AD4           BSC  L  G744,&-  BRANCH ON ZERO              3A145650
0AC8 0 4C04 0AD1           BSC  L  H744,E   BR IF NOT EVEN              3A145660
0ACA 0 4400 0F69           BSI  L  F000  CARRY ON                       3A145670
0ACC 0 3105                DC      /3105 ERR ID                         3A145680
0ACD 0 4400 0FC4           BSI  L  F005  CK LOCK ON ERROR               3A145690
0ACF 0 70D8                MDX     A740  LOOP                           3A145700
0AD0 0 7003                MDX     G744                                 3A145710
0AD1 0 4400 0F69  H744     BSI  L  F000  OVFLO ON                       3A145720
0AD3 0 3106                DC      /3106 ERR ID                         3A145730
0AD4 0 4400 0FC4  G744     BSI  L  F005  CK LOCK ON ERROR               3A145740
0AD6 0 70D1                MDX     A740  LOOP                           3A145750
                     ********************************************     3A145760
0AD7 0 2000          A746  LDS     0     SET C AND OF OFF               3A145770
0AD8 0 CC00 0B72           LDD  L  N746  LD  A#/0000  Q#/0001           3A145780
0ADA 0 8C00 0B6E           AD   L  N742  A     /FFFF    /FFFF           3A145790
0ADC 0 2C00 0B6D           STS  L  N740  STORE COND OF C AND OF         3A145800
0ADE 0 4C18 0AE3           BSC  L  G746,&-  BRANCH ON ZERO              3A145810
0AE0 0 4400 0F69           BSI  L  F000  AD 0000&FFFF A FAILED          3A145820
0AE2 0 3107                DC      /3107 ERR ID                         3A145830
0AE3 0 4400 0F98  G746     BSI  L  F00E  CK LOCK ON ERROR               3A145840
0AE5 0 70F1                MDX     A746  LOOP                           3A145850
0AE6 0 18D0                RTE     16    INTERCHANGE A AND Q            3A145860
0AE7 0 4C18 0AEC           BSC  L  G748,&-  BRANCH ON ZERO              3A145870
0AE9 0 4400 0F69           BSI  L  F000  AD 0001&FFFF Q FAILED          3A145880
0AEB 0 3108                DC      /3108 ERR ID                         3A145890
0AEC 0 4400 0F98  G748     BSI  L  F00E  CK LOCK ON ERROR               3A145900
0AEE 0 70E8                MDX     A746  LOOP                           3A145910
0AEF 0 C400 0B6D           LD   L  N740  LD COND OF C AND OF            3A145920
0AF1 0 F0B2                EOR     N704  CHECK FOR CARRY                3A145930
0AF2 0 4C18 0B00           BSC  L  G74A,&-  ZERO# C AND OF OK           3A145940
0AF4 0 4C04 0AFD           BSC  L  H74A,E   CHECK FOR OVERFLOW %B15¤    3A145950
0AF6 0 4400 0F69           BSI  L  F000  CARRY NOT ON                   3A145960
0AF8 0 3109                DC      /3109 ERR ID                         3A145970
0AF9 0 4400 0FC4           BSI  L  F005  CK LOCK ON ERROR               3A145980
0AFB 0 70D8                MDX     A746  LOOP                           3A145990
0AFC 0 7003                MDX     G74A                                 3A146000
0AFD 0 4400 0F69  H74A     BSI  L  F000  OVFLO ON                       3A146010
0AFF 0 310A                DC      /310A ERR ID                         3A146020
0B00 0 4400 0FC4  G74A     BSI  L  F005  CK LOCK ON ERROR               3A146030
0B02 0 70D4                MDX     A746  LOOP                           3A146040
                     ********************************************     3A146050
************************************************************************3A146060
CORE     DATA OR     *LA- OPER-                                       3A146070
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A146080
************************************************************************3A146090
0B03 0 2000          A74C  LDS     0     SET C AND OF OFF               3A146100
0B04 0 C869                LDD     N742  LD A#/FFFF  Q#/FFFF            3A146110
0B05 0 8868                AD      N742  A  /FFFF    /FFFF            3A146120
0B06 0 2866                STS     N740  STORE C AND OF COND            3A146130
0B07 0 F066                EOR     N742  ZERO WITH /FFFF                3A146140
0B08 0 4C18 0B0D           BSC  L  G74C,&-  BRANCH ON ZERO              3A146150
0B0A 0 4400 0F69           BSI  L  F000  AD FFFF&FFFF ACC FAILED        3A146160
0B0C 0 3108                DC      /310B ERR ID                         3A146170
0B0D 0 4400 0F98  G74C     BSI  L  F00E  CK LOCK ON ERROR               3A146180
0B0F 0 70F3                MDX     A74C  LOOP                           3A146190
0B10 0 18D0                RTE     16    INTERCHANGE A AND Q            3A146200
0B11 0 F062                EOR     N74A  ZERO WITH /FFFF                3A146210
0B12 0 4C18 0B17           BSC  L  G74E,&-  BRANCH ON ZERO              3A146220
0B14 0 4400 0F69           BSI  L  F000  AD FFFF&FFFF Q FAILED          3A146230
0B16 0 310C                DC      /310C ERR ID                         3A146240
0B17 0 4400 0F98  G74E     BSI  L  F00E  CK LOCK ON ERROR               3A146250
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0B19 0 70E9              MDX     A74C       LOOP                          3A146260
0B1A 0 C052              LD      N740       CONDITION OF C AND OF         3A146270
0B1B 0 F05C              EOR     N748       CHECK FOR OVERFLOW            3A146280
0B1C 0 4C18 0B2A         BSC  L  J740,&-    BRANCH ON ZERO                3A146290
0B1E 0 4C04 0B27         BSC  L  K740,E     CHECK FOR CARRY               3A146300
0B20 0 4400 0F69         BSI  L  F000       CARRY NOT ON                  3A146310
0B22 0 310E              DC      /310E      ERR ID                        3A146320
0B23 0 4400 0FC4         BSI  L  F005       CK LOCK ON ERROR              3A146330
0B25 0 70DD              MDX     A74C       LOOP                          3A146340
0B26 0 7003              MDX     J740                                     3A146350
0B27 0 4400 0F69   K740   BSI  L  F000       OVFLO ON                      3A146360
0B29 0 310D              DC      /310D      ERR ID                        3A146370
0B2A 0 4400 0FC4   J740   BSI  L  F005       CK LOCK ON ERROR              3A146380
0B2C 0 70D6              MDX     A74C       LOOP                          3A146390
                         ********************************************     3A146400
0B2D 0 2000        B742  LDS     0          SET C AND OF OFF              3A146410
0B2E 0 C847              LDD     N74C       LD  A#/FFFF  Q#/7FFF          3A146420
0B2F 0 883E              AD      N742       A  /FFFF   /FFFF              3A146430
0B30 0 283C              STS     N740       STORE CONDITION OF C & OF     3A146440
0B31 0 F03C              EOR     N742                                     3A146450
0B32 0 4C18 0B37         BSC  L  J742,&-    BRANCH ON ZERO                3A146460
0B34 0 4400 0F69         BSI  L  F000       AD FFFF&FFFF A FAILED         3A146470
0B36 0 310F              DC      /310F      ERR ID                        3A146480
0B37 0 4400 0F98   J742   BSI  L  F00E       CK LOCK ON ERROR              3A146490
0B39 0 70F3              MDX     B742       LOOP                          3A146500
0B3A 0 18D0              RTE     16         INTERCHANGE A AND Q           3A146510
0B3B 0 F039              EOR     N748                                     3A146520
0B3C 0 4C18 0B41         BSC  L  J744,&-    BRANCH ON ZERO                3A146530
0B3E 0 4400 0F69         BSI  L  F000       AD /7FFF&FFFF Q /FAILED       3A146540
0B40 0 3110              DC      /3110      ERR ID                        3A146550
0B41 0 4400 0F98   J744   BSI  L  F00E       CK LOCK ON ERROR              3A146560
0B43 0 70E9              MDX     B742       LOOP                          3A146570
0B44 0 C028              LD      N740       LD C AND OF CONDITION         3A146580
0B45 0 F032              EOR     N748       ZERO IF CARRY WAS ON          3A146590
0B46 0 4C18 0B54         BSC  L  J746,&-    BRANCH ON ZERO                3A146600
0B48 0 4C04 0B51         BSC  L  K746,E     CHECK FOR CARRY               3A146610
0B4A 0 4400 0F69         BSI  L  F000       CARRY NOT ON                  3A146620
0B4C 0 3112              DC      /3112      ERR ID                        3A146630
0B4D 0 4400 0FC4         BSI  L  F005       CK LOCK ON ERROR              3A146640
0B4F 0 70DD              MDX     B742       LOOP                          3A146650
0B50 0 7003              MDX     J746                                     3A146660
0B51 0 4400 0F69   K746   BSI  L  F000       OVFLO ON                      3A146670
0B53 0 3111              DC      /3111      ERR ID                        3A146680
0B54 0 4400 0FC4   J746   BSI  L  F005       CK LOCK ON ERROR              3A146690
0B56 0 70D6              MDX     B742       LOOP                          3A146700
                         ********************************************     3A146710
*************************************************************************3A146720
CORE     DATA OR     *LA- OPER-                                          3A146730
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT 3A146740
*************************************************************************3A146750
0B57 0 C81A        B747  LDD     N746       LD  A#/0000  Q#/0001          3A146760
0B58 0 881A              AD      N747       A   /0001   /0001            3A146770
0B59 0 F019              EOR     N747       ZERO ACC IF CORRECT OP        3A146780
0B5A 0 4C18 0B5F         BSC  L  J748,&-    BRANCH ON ZERO                3A146790
0B5C 0 4400 0F69         BSI  L  F000       AD-ODD A REG FAILED           3A146800
0B5E 0 3113              DC      /3113      ERR ID                        3A146810
0B5F 0 4400 0F98   J748   BSI  L  F00E       CK LOCK ON ERROR              3A146820
0B61 0 70F5              MDX     B747       LOOP                          3A146830
0B62 0 18D0              RTE     16         NOW  A#/0002  Q#/0000         3A146840
0B63 0 F014              EOR     N748       ZERO ACC IF CORRECT OP        3A146850
0B64 0 4C18 0B69         BSC  L  J74A,&-    BRANCH ON ZERO                3A146860
0B66 0 4400 0F69         BSI  L  F000       AD-ODD Q REG FAILED           3A146870
0B68 0 3114              DC      /3114      ERR ID                        3A146880
0B69 0 4400 0FC4   J74A   BSI  L  F005       CK LOCK ON ERROR              3A146890
0B6B 0 70EB              MDX     B747       LOOP                          3A146900
0B6C 0 700C              MDX     A780       EXIT TO NEXT ROUTINE          3A146910
0B6D 0 0000        N740  DC      /0000                                    3A146920
0B6E   0000              BSS  E                                           3A146930
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0B6E 0 FFFF        N742  DC      /FFFF                                    3A146940
0B6F 0 FFFF              DC      /FFFF                                    3A146950
0B70 0 0000        N744  DC      /0000                                    3A146960
0B71 0 0000              DC      /0000                                    3A146970
0B72 0 0000        N746  DC      /0000                                    3A146980
0B73 0 0001        N747  DC      /0001                                    3A146990
0B74 0 FFFE        N74A  DC      /FFFE                                    3A147000
0B75 0 7FFE        N74B  DC      /7FFE                                    3A147010
0B76 0 FFFF        N74C  DC      /FFFF                                    3A147020
0B77 0 7FFF              DC      /7FFF                                    3A147030
0B78 0 0002        N748  DC      /0002                                    3A147040
                         *                                                3A147050
                         *                  TEST SUB DOUBLE               3A147060
                         *                                                3A147070
                         ********************************************     3A147080
0B79 0 2000        A780  LDS     0          SET C AND OF OFF              3A147090
0B7A 0 C867              LDD     N782       LD  A#/0000  Q#/0000          3A147100
0B7B 0 9868              SD      N784       S   /0000   /0001            3A147110
0B7C 0 2864              STS     N780       STORE C AND OF CONDITION      3A147120
0B7D 0 F068              EOR     N786       ZERO WITH /FFFF               3A147130
0B7E 0 4C18 0B83         BSC  L  G780,&-    BRANCH ON ZERO                3A147140
0B80 0 4400 0F69         BSI  L  F000       SD 0000-0000 ACC FAILED       3A147150
0B82 0 3115              DC      /3115      ERR ID                        3A147160
0B83 0 4400 0F98   G780   BSI  L  F00E       CK LOCK ON ERROR              3A147170
0B85 0 70F3              MDX     A780       LOOP                          3A147180
0B86 0 18D0              RTE     16         NOW  A#/FFFF   Q#/0000         3A147190
0B87 0 F05E              EOR     N786       ZERO WITH /FFFF               3A147200
0B88 0 4C18 0B8D         BSC  L  G782,&-    BR ON ZERO                    3A147210
0B8A 0 4400 0F69         BSI  L  F000       SD 0000-0001 Q FAILED         3A147220
0B8C 0 3116              DC      /3116      ERR ID                        3A147230
0B8D 0 4400 0F98   G782   BSI  L  F00E       CK LOCK ON ERROR              3A147240
0B8F 0 70E9              MDX     A780       LOOP                          3A147250
0B90 0 C050              LD      N780       LD C AND OF CONDITION         3A147260
0B91 0 F056              EOR     N788       ZERO IF CARRY WAS ON          3A147270
0B92 0 4C18 0BA0         BSC  L  G784,&-    BRANCH ON ZERO                3A147280
0B94 0 4C04 0B9D         BSC  L  H784,E     CHECK FOR CARRY               3A147290
0B96 0 4400 0F69         BSI  L  F000       CARRY NOT ON                  3A147300
0B98 0 3117              DC      /3117      ERR ID                        3A147310
0B99 0 4400 0FC4         BSI  L  F005       CK LOCK ON ERROR              3A147320
0B9B 0 70DD              MDX     A780       LOOP                          3A147330
0B9C 0 7003              MDX     G784                                     3A147340
0B9D 0 4400 0F69   H784   BSI  L  F000       OVFLO ON                      3A147350
0B9F 0 3118              DC      /3118      ERR ID                        3A147360
0BA0 0 4400 0FC4   G784   BSI  L  F005       CK LOCK ON ERROR              3A147370
0BA2 0 70D6              MDX     A780       LOOP                          3A147380
                         ********************************************     3A147390
*************************************************************************3A147400
CORE     DATA OR     *LA- OPER-                                          3A147410
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT 3A147420
*************************************************************************3A147430
0BA3 0 2000        A786  LDS     0          SET C AND OF OFF              3A147440
0BA4 0 C83D              LDD     N782       LD  A#/0000  Q#/0000          3A147450
0BA5 0 9840              SD      N786         /FFFF   /FFFF               3A147460
0BA6 0 4C18 0BAB         BSC  L  G786,&-    BRANCH ON ZERO                3A147470
0BA8 0 4400 0F69         BSI  L  F000       SD 0000-FFFF A FAILED         3A147480
0BAA 0 3119              DC      /3119      ERR ID                        3A147490
0BAB 0 4400 0F98   G786   BSI  L  F00E       CK LOCK ON ERROR              3A147500
0BAD 0 70F5              MDX     A786       LOOP                          3A147510
0BAE 0 18D0              RTE     16         NOW A#/0001  Q#/0000          3A147520
0BAF 0 F035              EOR     N785       ZERO WITH  /0001              3A147530
0BB0 0 4C18 0BB5         BSC  L  G788,&-    BRANCH ON ZERO                3A147540
0BB2 0 4400 0F69         BSI  L  F000       SD 0000-FFFF Q FAILED         3A147550
0BB4 0 311A              DC      /311A      ERR ID                        3A147560
0BB5 0 4400 0FC4   G788   BSI  L  F005       CK LOCK ON ERROR              3A147570
0BB7 0 70EB              MDX     A786       LOOP                          3A147580
                         ********************************************     3A147590
0BB8 0 C831        A78A  LDD     N78A       LD  A#/0000  Q#/C000         3A147600
0BB9 0 982C              SD      N786       S  /FFFF   /FFFF              3A147610
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0BBA 0 4C18 0BBF         BSC  L  G78A,&-    BRANCH ON ZERO              3A147620
0BBC 0 4400 0F69         BSI  L  F000       SD 0000-FFFF A FAILED       3A147630
0BBE 0 311B              DC      /311B      ERR ID                      3A147640
0BBF 0 4400 0F98   G78A   BSI  L  F00E       CK LOCK ON ERROR            3A147650
0BC1 0 70F6              MDX     A78A       LOOP                        3A147660
0BC2 0 18D0              RTE     16         NOW  A#/C001  Q#/0000        3A147670
0BC3 0 F025              EOR     N78D       ZERO WITH /C001             3A147680
0BC4 0 4C18 0BC9         BSC  L  G78C,&-    BRANCH ON ZERO              3A147690
0BC6 0 4400 0F69         BSI  L  F000       SD C000-FFFF Q FAILED       3A147700
0BC8 0 311C              DC      /311C      ERR ID                      3A147710
0BC9 0 4400 0FC4   G78C   BSI  L  F005       CK LOCK ON ERROR            3A147720
0BCB 0 70EC              MDX     A78A       LOOP                        3A147730
                         ****************************************      3A147740
0BCC 0 C815        A78E  LDD     N782       LD  A#/0000  Q#/0000        3A147750
0BCD 0 9819              SD      N787       S  /FFFF   /FFFF            3A147760
0BCE 0 4C18 0BD3         BSC  L  G78E,&-    BRANCH ON ZERO              3A147770
0BD0 0 4400 0F69         BSI  L  F000       SD-ODD A FAILED             3A147780
0BD2 0 311D              DC      /311D      ERR ID                      3A147790
0BD3 0 4400 0F98   G78E   BSI  L  F00E       CK LOCK ON ERROR            3A147800
0BD5 0 70F6              MDX     A78E       LOOP                        3A147810
0BD6 0 18D0              RTE     16         NOW  A#/0001  Q#/0000        3A147820
0BD7 0 F00D              EOR     N785       ZERO WITH /0001             3A147830
0BD8 0 4C18 0BDD         BSC  L  H780,&-    BRANCH ON ZERO              3A147840
0BDA 0 4400 0F69         BSI  L  F000       SD-ODD Q FAILED             3A147850
0BDC 0 311E              DC      /311E      ERR ID                      3A147860
0BDD 0 4400 0FC4   H780   BSI  L  F005       CK LOCK ON ERROR            3A147870
0BDF 0 70EC              MDX     A78E       LOOP                        3A147880
0BE0 0 7008              MDX     A7C0       EXIT TO NEXT ROUTINE        3A147890
0BE1 0 0000        N780  DC      /0000      STORAGE                     3A147900
0BE2   0000              BSS  E                                         3A147910
0BE2 0 0000        N782  DC      /0000                                  3A147920
0BE3 0 0000              DC      /0000                                  3A147930
0BE4 0 0000        N784  DC      /0000                                  3A147940
0BE5 0 0001        N785  DC      /0001                                  3A147950
0BE6 0 FFFF        N786  DC      /FFFF                                  3A147960
0BE7 0 FFFF        N787  DC      /FFFF                                  3A147970
0BE8 0 0002        N788  DC      /0002                                  3A147980
0BE9 0 C001        N78D  DC      /C001                                  3A147990
0BEA 0 0000        N78A  DC      /0000                                  3A148000
0BEB 0 C000              DC      /C000                                  3A148010
                         *                                              3A148020
                         *          TEST OF MULTIPLY OPERATION          3A148030
                         *                                              3A148040
                         ****************************************      3A148050
********************************************************************** 3A148060
CORE     DATA OR     *LA- OPER-                                        3A148070
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A148080
********************************************************************** 3A148090
0BEC 0 C04F        A7C0  LD      N7C0       LD  /5555                   3A148100
0BED 0 A04F              M       N7C1       M  /2AAA                    3A148110
0BEE 0 F04F              EOR     N7C2       ZERO WITH  /0E38            3A148120
0BEF 0 4C18 0BF4         BSC  L  G7C0,&-    BRANCH ON ZERO              3A148130
0BF1 0 4400 0F69         BSI  L  F000       M  /5555X/2AAA ACC FAILED   3A148140
0BF3 0 311F              DC      /311F      ERR ID                      3A148150
0BF4 0 4400 0F98   G7C0  BSI  L  F00E       CK LOCK ON ERROR            3A148160
0BF6 0 70F5              MDX     A7C0       LOOP                        3A148170
0BF7 0 18D0              RTE     16         NOW  A#/9C72  Q#/0000        3A148180
0BF8 0 F046              EOR     N7C3       ZERO WITH /9C72             3A148190
0BF9 0 4C18 0BFE         BSC  L  G7C2,&-    BRANCH ON ZERO              3A148200
0BFB 0 4400 0F69         BSI  L  F000       MULT 5555X2AAA Q FAILED     3A148210
0BFD 0 3120              DC      /3120      ERR ID                      3A148220
0BFE 0 4400 0FC4   G7C2  BSI  L  F005       CK LOCK ON ERROR            3A148230
0C00 0 70EB              MDX     A7C0       LOOP                        3A148240
                         ****************************************      3A148250
0C01 0 C03E        A7C4  LD      N7C4       LD  /FFFF                   3A148260
0C02 0 A03D              M       N7C4       M  /FFFF                    3A148270
0C03 0 4C18 0C08         BSC  L  G7C4,&-    BRANCH ON ZERO              3A148280
0C05 0 4400 0F69         BSI  L  F000       M /FFFFX/FFFF ACC FAILED    3A148290
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0C07 0 3121              DC      /3121      ERR ID                      3A148300
0C08 0 4400 0F98   G7C4   BSI  L  F00E       CK LOCK ON ERROR            3A148310
0C0A 0 70F6              MDX     A7C4       LOOP                        3A148320
0C0B 0 18D0              RTE     16         NOW  A#/0001  Q#/0000        3A148330
0C0C 0 F034              EOR     N7C5       ZERO WITH /0001             3A148340
0C0D 0 4C18 0C12         BSC  L  G7C6,&-    BRANCH ON ZERO              3A148350
0C0F 0 4400 0F69         BSI  L  F000       M /FFFFX/FFFF Q REG FAILED  3A148360
0C11 0 3122              DC      /3122      ERR ID                      3A148370
0C12 0 4400 0FC4   G7C6  BSI  L  F005       CK LOCK ON ERROR            3A148380
0C14 0 70EC              MDX     A7C4       LOOP                        3A148390
                         ****************************************      3A148400
0C15 0 C02C        A7C8  LD      N7C6       LD  /0000                   3A148410
0C16 0 A029              M       N7C4       M  /FFFF                    3A148420
0C17 0 4C18 0C1C         BSC  L  G7C8,&-    BRANCH ON ZERO              3A148430
0C19 0 4400 0F69         BSI  L  F000       M /FFFFX/0000 ACC FAILED    3A148440
0C1B 0 3123              DC      /3123      ERR ID                      3A148450
0C1C 0 4400 0F98   G7C8  BSI  L  F00E       CK LOCK ON ERROR            3A148460
0C1E 0 70F6              MDX     A7C8       LOOP                        3A148470
0C1F 0 18D0              RTE     16         NOW  A#/0000  Q#/0000        3A148480
0C20 0 4C18 0C25         BSC  L  G7CA,&-    BRANCH ON ZERO              3A148490
0C22 0 4400 0F69         BSI  L  F000       M /FFFFX/0000 Q REG FAILED  3A148500
0C24 0 3124              DC      /3124      ERR ID                      3A148510
0C25 0 4400 0FC4   G7CA  BSI  L  F005       CK LOCK ON ERROR            3A148520
0C27 0 70ED              MDX     A7C8       LOOP                        3A148530
                         ****************************************      3A148540
0C28 0 C017        A7CC  LD      N7C4       LD  /FFFF                   3A148550
0C29 0 A018              M       N7C6       M  /0000                    3A148560
0C2A 0 4C18 0C2F         BSC  L  G7CC,&-    BRANCH ON ZERO              3A148570
0C2C 0 4400 0F69         BSI  L  F000       M /0000X/FFFF ACC FAILED    3A148580
0C2E 0 3125              DC      /3125      ERR ID                      3A148590
0C2F 0 4400 0F98   G7CC  BSI  L  F00E       CK LOCK ON ERROR            3A148600
0C31 0 70F6              MDX     A7CC       LOOP                        3A148610
0C32 0 18D0              RTE     16         NOW  A#/0000  Q#/0000        3A148620
0C33 0 4C18 0C38         BSC  L  G7CE,&-    BRANCH ON ZERO              3A148630
0C35 0 4400 0F69         BSI  L  F000       M /0000X/FFFF Q REG FAILED  3A148640
0C37 0 3126              DC      /3126      ERR ID                      3A148650
0C38 0 4400 0FC4   G7CE  BSI  L  F005       CK LOCK ON ERROR            3A148660
0C3A 0 70ED              MDX     A7CC       LOOP                        3A148670
0C3B 0 7007              MDX     A800       EXIT TO NEXT ROUTINE        3A148680
0C3C 0 5555        N7C0  DC      /5555                                  3A148690
0C3D 0 2AAA        N7C1  DC      /2AAA                                  3A148700
0C3E 0 0E38        N7C2  DC      /0E38                                  3A148710
0C3F 0 9C72        N7C3  DC      /9C72                                  3A148720
0C40 0 FFFF        N7C4  DC      /FFFF                                  3A148730
0C41 0 0001        N7C5  DC      /0001                                  3A148740
0C42 0 0000        N7C6  DC      /0000                                  3A148750
                         *                                              3A148760
                         *          TEST OF DIVIDE OPERATION            3A148770
                         *                                              3A148780
                         ****************************************      3A148790
********************************************************************** 3A148800
CORE     DATA OR     *LA- OPER-                                        3A148810
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A148820
********************************************************************** 3A148830
0C43 0 2000        A800  LDS     0          SET C AND OF OFF            3A148840
0C44 0 CC00 0CE2         LDD  L  N802       LD  A#/4000  Q#/7FFF        3A148850
0C46 0 AC00 0CF2         D    L  N812       D  /8000                    3A148860
0C48 0 2C00 0CE1         STS  L  N800       STORE C AND OF CONDITION    3A148870
0C4A 0 F400 0CF2         EOR  L  N812       ZERO WITH /8000             3A148880
0C4C 0 4C18 0C51         BSC  L  G800,&-    BR ON ZERO                  3A148890
0C4E 0 4400 0F69         BSI  L  F000       DVD-A-REG INCORRECT         3A148900
0C50 0 3127              DC      /3127      ERR ID                      3A148910
0C51 0 4400 0F98   G800  BSI  L  F00E       CK LOCK ON ERROR            3A148920
0C53 0 70EF              MDX     A800       LOOP                        3A148930
0C54 0 18D0              RTE     16         NOW  A#/7FFF  Q#/0000        3A148940
0C55 0 F400 0CF1         EOR  L  N811       ZERO WITH /7FFF             3A148950
0C57 0 4C18 0C5C         BSC  L  G802,&-    BRANCH ON ZERO              3A148960
0C59 0 4400 0F69         BSI  L  F000       DVD-Q REG INCORRECT         3A148970
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0C5B 0 3128                DC    /3128     ERR ID                          3A148980
0C5C 0 4400 0F98  G802     BSI L FOOE      CK LOCK ON ERROR                3A148990
0C5E 0 70E4                MDX   A800      LOOP                            3A149000
0C5F 0 C0E2                LD    N7C6      LD   /0000                      3A149010
0C60 0 4C18 0C6E           BSC L G804,&-   BRANCH ON ZERO                  3A149020
0C62 0 4C04 0C6B           BSC L H804,E    BR ON NOT EVEN                  3A149030
0C64 0 4400 0F69           BSI L F000      CARRY ON                        3A149040
0C66 0 3129                DC    /3129     ERR ID                          3A149050
0C67 0 4400 0FC4           BSI L F005      CK LOCK ON ERROR                3A149060
0C69 0 70D9                MDX   A800      LOOP                            3A149070
0C6A 0 7006                MDX   A806      EXIT TO NEXT ROUTINE            3A149080
0C6B 0 4400 0F69  H804     BSI L F000      OVFLO ON                        3A149090
0C6D 0 312A                DC    /312A     ERR ID                          3A149100
0C6E 0 4400 0FC4  G804     BSI L F005      CK LOCK ON ERROR                3A149110
0C70 0 70D2                MDX   A800      LOOP                            3A149120
                           ********************************************    3A149130
0C71 0 C872       A806     LDD   N804      LD  A#/1C71  Q#/BBE3            3A149140
0C72 0 AC00 0CF3           D   L N813      D  /5555                        3A149150
0C74 0 286C                STS   N800      STORE C AND OF CONDITION        3A149160
0C75 0 F07D                EOR   N813      ZERO WITH /55555                3A149170
0C76 0 4C18 0C7B           BSC L G806,&-   BRANCH ON ZERO                  3A149180
0C78 0 4400 0F69           BSI L F000      DVD-A REG INCORRECT             3A149190
0C7A 0 312B                DC    /3128     ERR ID                          3A149200
0C7B 0 4400 0F98  G806     BSI L FOOE      CK LOCK ON ERROR                3A149210
0C7D 0 70F3                MDX   A806      LOOP                            3A149220
0C7E 0 18D0                RTE   16        NOW  A#/BBE3  Q#/0000           3A149230
0C7F 0 F074                EOR   N816      ZERO WITH /2DAA                 3A149240
0C80 0 4C18 0C85           BSC L G808,&-   BRANCH ON ZERO                  3A149250
0C82 0 4400 0F69           BSI L F000      DVD-Q REG INCORRECT             3A149260
0C84 0 312C                DC    /312C     ERR ID                          3A149270
0C85 0 4400 0F98  G808     BSI L FOOE      CK LOCK ON ERROR                3A149280
0C87 0 70E9                MDX   A806      LOOP                            3A149290
0C88 0 C058                LD    N800      LD C AND OF CONDITION           3A149300
0C89 0 4C18 0C97           BSC L G80A,&-   BRANCH ON ZERO                  3A149310
0C8B 0 4C04 0C94           BSC L H80A,E    BR IF NOT EVEN                  3A149320
0C8D 0 4400 0F69           BSI L F000      CARRY ON                        3A149330
0C8F 0 312D                DC    /312D     ERR ID                          3A149340
0C90 0 4400 0FC4           BSI L F005      CK LOCK ON ERROR                3A149350
0C92 0 70DE                MDX   A806      LOOP                            3A149360
0C93 0 7006                MDX   A80C      EXIT TO NEXT ROUTINE            3A149370
0C94 0 4400 0F69  H80A     BSI L F000      OVFLO ON                        3A149380
0C96 0 312E                DC    /312E     ERR ID                          3A149390
0C97 0 4400 0FC4  G80A     BSI L F005      CK LOCK ON ERROR                3A149400
0C99 0 70D7                MDX   A806      LOOP                            3A149410
                           ********************************************    3A149420
************************************************************************** 3A149430
CORE     DATA OR      *LA- OPER-                                           3A149440
ADDR     INSTRUCTION *BE. ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT   3A149450
************************************************************************** 3A149460
0C9A 0 2000       A80C     LDS   0         SET C AND OF OFF                3A149470
0C9B 0 C84A                LDD   N806      SET  A#/0000  Q#/0001           3A149480
0C9C 0 A851                D     N80E      D  /0000                        3A149490
0C9D 0 4C01 0CA2           BSC L G80C,O    BRANCH ON OVERFLOW              3A149500
0C9F 0 4400 0F69  H80C     BSI L F000      DVD BY 0- OFL OFF               3A149510
0CA1 0 312F                DC    /312F     ERR ID                          3A149520
0CA2 0 4400 0FC4  G80C     BSI L F005      CK LOCK ON ERROR                3A149530
0CA4 0 70F5                MDX   A80C      LOOP                            3A149540
0CA5 0 18D0                RTE   16        SWAP A AND Q                    3A149550
0CA6 0 F040                EOR   N807      ACC S/B /0000                   3A149560
0CA7 0 4C20 0C9F           BSC L H80C,Z    BCH UNLESS ZERO                 3A149570
                           ********************************************    3A149580
0CA9 0 2000       A80E     LDS   0         SET C AND OF OFF                3A149590
0CAA 0 C83D                LDD   N808      LD  A#/4000  Q#/0000            3A149600
0CAB 0 A83B                D     N807      D  /0001                        3A149610
0CAC 0 4C01 0CB1           BSC L G80E,O    BRANCH ON OVERFLOW              3A149620
0CAE 0 4400 0F69           BSI L F000      DVD-BY 1-OVRFLW OFF             3A149630
0CB0 0 3130                DC    /3130     ERR ID                          3A149640
0CB1 0 4400 0FC4  G80E     BSI L F005      CK LOCK ON ERROR                3A149650
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0CB3 0 70F5                MDX   A80E      LOOP                            3A149660
                           ********************************************    3A149670
0CB4 0 2000       B800     LDS   0         SET C AND OF OFF                3A149680
0CB5 0 C834                LDD   N80A      LD  A#/A000  Q#/0000            3A149690
0CB6 0 A831                D     N808      D  /4000                        3A149700
0CB7 0 4C01 0CBC           BSC L J800,O    BRANCH ON OVERFLOW              3A149710
0CB9 0 4400 0F69           BSI L F000      DVD/4000-OVRFLW OFF             3A149720
0CBB 0 3131                DC    /3131     ERR ID                          3A149730
0CBC 0 4400 0FC4  J800     BSI L F005      CK LOCK ON ERROR                3A149740
0CBE 0 70F5                MDX   B800      LOOP                            3A149750
                           ********************************************    3A149760
0CBF 0 2000       B802     LDS   0         SET C AND OF OFF                3A149770
0CC0 0 C82B                LDD   N80C      LD  A#/C000  Q#/0000            3A149780
0CC1 0 A830                D     N812      D  /8000                        3A149790
0CC2 0 4C01 0CC7           BSC L J802,O    BR ON OF                        3A149800
0CC4 0 4400 0F69           BSI L F000      DVD/8000-OVRFLW OFF             3A149810
0CC6 0 3132                DC    /3132     ERR ID                          3A149820
0CC7 0 4400 0FC4  J802     BSI L F005      CHECK LOOP SWITCH               3A149830
0CC9 0 70F5                MDX   B802      LOOP                            3A149840
                           ********************************************    3A149850
0CCA 0 2000       B804     LDS   0         SET C AND OF OFF                3A149860
0CCB 0 C822                LDD   N80E      LD  A#/0000  Q#/FFFF            3A149870
0CCC 0 A81A                D     N807      D  /0001                        3A149880
0CCD 0 4C01 0CD2           BSC L J804,O    BR ON OF                        3A149890
0CCF 0 4400 0F69           BSI L F000      DVD/0001-OVRFLW OFF             3A149900
0CD1 0 3133                DC    /3133     ERR ID                          3A149910
0CD2 0 4400 0FC4  J804     BSI L F005      CK LOCK ON ERROR                3A149920
0CD4 0 70F5                MDX   B804      LOOP                            3A149930
                           ********************************************    3A149940
0CD5 0 2000       B806     LDS   0         SET C AND OF OFF                3A149950
0CD6 0 C819                LDD   N810      LD  A#/FFFF  Q#/7FFF            3A149960
0CD7 0 A80F                D     N807      D  /0001                        3A149970
0CD8 0 4C01 0CDD           BSC L J806,O    BR ON OF                        3A149980
0CDA 0 4400 0F69           BSI L F000      DVD/0001-OVRFLW OFF             3A149990
0CDC 0 3134                DC    /3134     ERR ID                          3A150000
0CDD 0 4400 0FC4  J806     BSI L F005      CK LOCK ON ERROR                3A150010
0CDF 0 70F5                MDX   B806      LOOP                            3A150020
0CE0 0 7023                MDX   B807      EXIT TO NEXT ROUTINE            3A150030
0CE1 0 0000       N800     DC    /0000     STORAGE                         3A150040
0CE2   0000                BSS E                                           3A150050
0CE2 0 4000       N802     DC    /4000                                     3A150060
0CE3 0 7FFF                DC    /7FFF                                     3A150070
0CE4 0 1C71       N804     DC    /1C71                                     3A150080
0CE5 0 BBE3                DC    /BBE3                                     3A150090
0CE6 0 0000       N806     DC    /0000                                     3A150100
0CE7 0 0001       N807     DC    /0001                                     3A150110
0CE8 0 4000       N808     DC    /4000                                     3A150120
0CE9 0 0000                DC    /0000                                     3A150130
0CEA 0 A000       N80A     DC    /A000                                     3A150140
0CEB 0 0000                DC    /0000                                     3A150150
0CEC 0 C000       N80C     DC    /C000                                     3A150160
0CED 0 0000                DC    /0000                                     3A150170
0CEE 0 0000       N80E     DC    /0000                                     3A150180
0CEF 0 FFFF       N80F     DC    /FFFF                                     3A150190
0CF0 0 FFFF       N810     DC    /FFFF                                     3A150200
0CF1 0 7FFF       N311     DC    /7FFF                                     3A150210
0CF2 0 8000       N812     DC    /8000                                     3A150220
0CF3 0 5555       N813     DC    /5555                                     3A150230
0CF4 0 2DAA       N816     DC    /2DAA                                     3A150240
0CF5 0 C000       N817     DC    /C000                                     3A150250
0CF6 0 6100       N818     DC    /6100                                     3A150260
0CF7 0 0000                DC    /0000                                     3A150270
0CF8 0 8000       N819     DC    /8000                                     3A150280
0CF9 0 0000                DC    /0000                                     3A150290
0CFA 0 0002       N820     DC    /0002                                     3A150300
0CFB 0 0000       N821     DC    0                                         3A150310
0CFC 0 2001                DC    /2001                                     3A150320
0CFD 0 4000                CC    /4000                                     3A150330
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0CFE 0 C000              DC      /C000                                  3A150340
0D00   0000              BSS  E  0                                       3A150350
0D00 0 FFFF         N823 DC      /FFFF                                  3A150360
0D01 0 FFFF              DC      /FFFF                                  3A150370
0D02 0 0000         N824 DC      0          STORAGE                     3A150380
0D03 0 0000              DC      0          STORAGE                     3A150390
                         ********************************************** 3A150400
************************************************************************3A150410
CORE    DATA OR     *LA- OPER-                                          3A150420
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A150430
************************************************************************3A150440
0D04 0 2000         B807 LDS     0          SET C AND OF OFF            3A150450
0D05 0 C8F0              LDD     N818       LD  A#/6100  Q#/0000        3A150460
0D06 0 A8EE              D       N817       D  /C000                    3A150470
0D07 0 4C01 0D0C         BSC  L  J808,O     BR ON OF                    3A150480
0D09 0 4400 0F69         BSI  L  F000       OVERFLOW OFF                3A150490
0D0B 0 316A              DC      /316A      ERR ID                      3A150500
0D0C 0 4400 0FC4    J808 BSI  L  F005       CK LOCK ON ERROR            3A150510
0D0E 0 70F5              MDX     B807       LOOP                        3A150520
                         ********************************************** 3A150530
0D0F 0 2000         B808 LDS     0          SET C AND OF OFF            3A150540
0D10 0 C8E7              LDD     N819       LD  A#/8000  Q#/0000        3A150550
0D11 0 A8DD              D       N80F       D  /FFFF                    3A150560
0D12 0 4C01 0D17         BSC  L  J809,O     BR ON OF                    3A150570
0D14 0 4400 0F69         BSI  L  F000       OVERFLOW OFF                3A150580
0D16 0 3168              DC      /316B      ERR ID                      3A150590
0D17 0 4400 0FC4    J809 BSI  L  F005       CK LOCK ON ERROR            3A150600
0D19 0 70F5              MDX     B808       LOOP                        3A150610
                         ********************************************** 3A150620
0D1A 0 2000         B809 LDS     0          SET C AND OF OFF            3A150630
0D1B 0 C8E4              LDD     N823       LD  A#/FFFF  Q#/FFFF        3A150640
0D1C 0 A8DD              D       N820       D  /0002                    3A150650
0D1D 0 4C01 0D20         BSC  L  J815,O     BR ON OF                    3A150660
0D1F 0 7003              MDX     J810       OVERFLOW OFF                3A150670
0D20 0 4400 0F69    J815 BSI  L  F000                                   3A150680
0D22 0 316C              DC      /316C      ERR ID                      3A150690
0D23 0 4400 0FC4    J810 BSI  L  F005       CK LOCK ON ERROR            3A150700
0D25 0 70F4              MDX     B809       LOOP                        3A150710
                         ********************************************** 3A150720
                         ********************************************** 3A150730
                         *                                              3A150740
                         *                                              3A150750
                         *          MULTIPLY-DIV TEST %B810¤            3A150760
                         *                                              3A150770
                         *                                              3A150780
                         *          THIS TEST TAKES 4 NUMBERS           3A150790
                         *          /8000, /C000, /4000 AND             3A150800
                         *          /2001 AND MULTIPLIES AND            3A150810
                         *          DIVIDES THE RESULT OF THE           3A150820
                         *          MULTIPLICATION BY ALL               3A150830
                         *          VALUES OF NEGATIVE AND              3A150840
                         *          POSITIVE NUMBERS.  THIS             3A150850
                         *          PROCEDURE IS REPETED                3A150860
                         *          UNTIL ALL FOUR NUMBERS              3A150870
                         *          HAVE BEEN USED.                     3A150880
                         *                                              3A150890
                         *     STEP1 SET MULTIPLICAND AND               3A150900
                         *           DIVISOR TO LARGEST NEG.            3A150910
                         *           NUMBER.                            3A150920
                         *     STEP2 TAKE ONE OF FOUR NUMBERS           3A150930
                         *           AND USE IT AS THE                  3A150940
                         *           MULTIPLIER                         3A150950
                         *     STEP3 MULTIPLY                           3A150960
                         *     STEP4 STORE RESULTS IN SYMBOLIC          3A150970
                         *           LOCATION N824                      3A150980
                         *     STEP5 DIVIDE                             3A150990
                         *     STEP6 CHECK RESULT                       3A151000
                         *     STEP7 INCREMENT MULTIPLICAND             3A151010
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                         *          AND DIVISOR BY 1.                   3A151020
                         *     STEP8 GO TO STEP 2 IF ALL                3A151030
                         *           VALUES HAVE NOT BEEN               3A151040
                         *           USED AS MULTIPLICANDS AND          3A151050
                         *           DIVISORS.                          3A151060
                         *     STEP9 SET UP FOR NEXT ONE OF 4           3A151070
                         *           MULTIPLIERS.                       3A151080
                         *    STEP10 GO TO STEP 2 IF ALL 4              3A151090
                         *           NUMBERS HAVE NOT BEEN              3A151100
                         *           USED.                              3A151110
                         *                                              3A151120
                         *                                              3A151130
                         *                                              3A151140
                         *  NOTE -- THREE WORD LOCATIONS ARE AVAILABLE FOR 3A151150
                         *          MANUAL INSERTION OF ANY VALUE DESIRED. 3A151160
                         *          THEY ARE AT LABEL ADDRESS N821&1, N821&2,3A151170
                         *          AND N821&3.                         3A151180
                         *                                              3A151190
                         *  CAUTION **  DO NOT CHANGE THE WORD AT LABEL  3A151200
                         *              LOCATION N822 % /8000¤.         3A151210
                         *                                              3A151220
************************************************************************3A151230
CORE    DATA OR     *LA- OPER-                                          3A151240
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A151250
************************************************************************3A151260
0D26 0 6104         B810 LDX     1 4        LD XR 1 WITH /0004          3A151270
0D27 0 0C00 0FD2    J814 XIO  L  F003       CK BYPASS MPY/DIV SW        3A151280
0D29 0 C400 0FD5         LD   L  Z000       LD SWITCH SETTINGS          3A151290
0D2B 0 1808              SRA     8          SHIFT BIT 7 TO BIT POS 15   3A151300
0D2C 0 4804              BSC     E          SK IF BIT 15#0              3A151310
0D2D 0 7028              MDX     A840       SW BIT 6 ON %BYPASS¤        3A151320
0D2E 0 C0C9              LD      N819       CONST  /8000                3A151330
0D2F 0 D0CB              STO     N821       STORE /8000 AT N821         3A151340
0D30 0 C0CA         J811 LD      N821       LD C%N821¤  /8000           3A151350
0D31 0 A500 0CFB         M    L1 N821                                   3A151360
0D33 0 D8CE              STD     N824       STORE A AND Q               3A151370
0D34 0 2000              LDS     0          SET C AND OF OFF            3A151380
0D35 0 A8C5              D       N821       D  /8000                    3A151390
0D36 0 F500 0CFB         EOR  L1 N821       ZERO WITH /8000             3A151400
0D38 0 4C18 0D3D         BSC  L  J812,&-    BRANCH ON ZERO              3A151410
0D3A 0 4400 0F69         BSI  L  F000       ACC NOT ZERO                3A151420
0D3C 0 316D              DC      /316D      ERR ID                      3A151430
0D3D 0 4400 0F98    J812 BSI  L  F00E       CK LOCK ON ERROR            3A151440
0D3F 0 70F0              MDX     J811       LOOP ON MPL/DIV             3A151450
0D40 0 18D0              RTE     16         NOW  A#/0000  Q#/0000        3A151460
0D41 0 4C18 0D46         BSC  L  J813,&-    BRANCH ON ZERO              3A151470
0D43 0 4400 0F69         BSI  L  F000       REMAINDER IN Q REG          3A151480
0D45 0 316E              DC      /316E      ERR ID                      3A151490
0D46 0 4400 0F98    J813 BSI  L  F00E       CK LOCK ON ERROR            3A151500
0D48 0 70E7              MDX     J811       LOOP ON MPL/DIV             3A151510
0D49 0 C0B1         J816 LD      N821       LD /8000                    3A151520
0D4A 0 809C              A       N807       ADD ONE                     3A151530
0D4B 0 D0AF              STO     N821                                   3A151540
0D4C 0 4C18 0D49         BSC  L  J816,&-    BRANCH ON ZERO              3A151550
0D4E 0 F0A9              EOR     N819                                   3A151560
0D4F 0 4C20 0D30         BSC  L  J811,Z     BR IF NOT ZERO              3A151570
0D51 0 71FF              MDX  1  -1                                     3A151580
0D52 0 70D4              MDX     J814       LOOP TO CK SWITCHES         3A151590
0D53 0 4400 0FC4         BSI  L  F005       CK LOCK ON ERROR            3A151600
0D55 0 70D0              MDX     B810       LOOP                        3A151610
                         ********************************************** 3A151620
                         *                                              3A151630
                         *                TEST OF MDX OPERATION         3A151640
                         %                                              3A151650
                         ********************************************** 3A151660
0D56 0 6100         A840 LDX     1 0        LD XR 1 WITH ZERO           3A151670
0D57 0 71FF              MDX     1 -1       SK IF SIGN CHANGES          3A151680
0D58 0 3000              WAIT                MDX FAILED TO SKIP         3A151690
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0D59 0 696D              STX   1 N840      STORE C%XR 1¤ AT N840      3A151700
0D5A 0 C06C              LD     N840       LD VALUE OF XR 1           3A151710
0D5B 0 F06C              EOR    N841       ZERO ACC WITH /FFFF        3A151720
0D5C 0 4C18 0D61         BSC  L G840,&-    BRANCH ON ZERO             3A151730
0D5E 0 4400 0F69         BSI  L F000       MDX XR 1 FAILED            3A151740
0D60 0 3135              DC     /3135      ERR ID                     3A151750
0D61 0 4400 0FC4   G840  BSI  L F005       CK LOCK ON ERROR           3A151760
0D63 0 70F2              MDX    A840       LOOP                       3A151770
                         ******************************************   3A151780
0D64 0 C068        A842  LD     N845       LD WITH ADDR OF            3A151790
                   *                       * LABEL N844               3A151800
0D65 0 7401 0DC9         MDX  L N842,1     BR TO LABEL ADDR N842 &1   3A151810
0D67 0 F065              EOR    N845                                  3A151820
0D68 0 4C18 0D6D         BSC  L H842,&-    BRANCH ON ZERO             3A151830
0D6A 0 4400 0F69         BSI  L F000       ACC DISTROYED AFTER MDX    3A151840
0D6C 0 316F              DC     /316F      ERR ID                     3A151850
0D6D 0 C05B        H842  LD     N842       LD  A#/3000                3A151860
0D6E 0 F05F              EOR    N846       ACC NOW /0001              3A151870
0D6F 0 4C18 0D74         BSC  L G842,&-    BRANCH ON ZERO             3A151880
0D71 0 4400 0F69         BSI  L F000       ADD TO MEM FAILED          3A151890
0D73 0 3136              DC     /3136      ERR ID                     3A151900
0D74 0 C056        G842  LD     N843       LD  /3000                  3A151910
0D75 0 D053              STO    N842                                  3A151920
0D76 0 4400 0FC4         BSI  L F005       CK LOCK ON ERROR           3A151930
0D78 0 70E8              MDX    A842       LOOP                       3A151940
                         ******************************************   3A151950
************************************************************************ 3A151960
CORE     DATA OR     *LA- OPER-                                       3A151970
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A151980
************************************************************************ 3A151990
0D79 0 6600 FFFE   A844  LDX  L2 -2        LD XR 2 WITH -2            3A152000
0D78 0 7600 0001         MDX  L2 1         ADD ONE TO XR 2            3A152010
0D7D 0 6A49              STX    2 N840      STORE XR 2                 3A152020
0D7E 0 C048              LD     N840       LD WITH XR 2 VALUE         3A152030
0D7F 0 F048              EOR    N841       ZERO ACC WITH /FFFF        3A152040
0D80 0 4C18 0D85         BSC  L G844,&-    BRANCH ON ZERO             3A152050
0D82 0 4400 0F69         BSI  L F000       MDX LONG XR 2 FAILED       3A152060
0D84 0 3137              DC     /3137      ERR ID                     3A152070
0D85 0 4400 0FC4   G844  BSI  L F005       CK LOCK ON ERROR           3A152080
0D87 0 70F1              MDX    A844       LOOP                       3A152090
                         ******************************************   3A152100
0D88 0 63FF        A846  LDX    3 -1        LD XR 3 WITH -1            3A152110
0D89 0 7301              MDX    3 1         ADD ONE TO XR 3            3A152120
0D8A 0 7001              MDX    G846        DID NOT SK ON MDX          3A152130
0D8B 0 7003              MDX    H846                                   3A152140
0D8C 0 4400 0F69   G846  BSI  L F000       XR 3 NO SKIP AT 0          3A152150
0D8E 0 3138              DC     /3138      ERR ID                     3A152160
0D8F 0 4400 0FC4   H846  BSI  L F005       CK LOCK ON ERROR           3A152170
0D91 0 70F6              MDX    A846       LOOP                       3A152180
                         ******************************************   3A152190
0D92 0 61FF        A848  LDX    1 -1        LD XR 1 WITH -1            3A152200
0D93 0 7104              MDX    1 4         ADD 4 TO XR 1              3A152210
0D94 0 7001              MDX    G848        DID NOT SK ON MDX          3A152220
0D95 0 7003              MDX    H848                                   3A152230
0D96 0 4400 0F69   G848  BSI  L F000       SIGN CHANGE-NO SKIP        3A152240
0D98 0 3139              DC     /3139      ERR ID                     3A152250
0D99 0 4400 0FC4   H848  BSI  L F005       CK LOCK ON ERROR           3A152260
0D9B 0 70F6              MDX    A848       LOOP                       3A152270
                         ******************************************   3A152280
0D9C 0 6500 FFFE   A849  LDX  L1 -2        LD XR 1 WITH -2            3A152290
0D9E 0 C0FF        H849  LD     H849                                   3A152300
0D9F 0 7580 0DCD         MDX  I1 N845                                 3A152310
0DA1 0 6925              STX    1 N840      STORE C%XR 1¤ AT N840      3A152320
0DA2 0 F0FB              EOR    H849                                   3A152330
0DA3 0 4C18 0DA8         BSC  L K849,&-    BRANCH ON ZERO             3A152340
0DA5 0 4400 0F69         BSI  L F000       ACC GONE AFTER MDX INDEXED 3A152350
0DA7 0 3168              DC     /3168      ERR ID                     3A152360
0DA8 0 C01E        K849  LD     N840       LD VALUE OF XR 1 AFTER     3A152370
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                   *                       * MDX OP                   3A152380
0DA9 0 F01E              EOR    N841        ZERO ACC WITH /FFFF        3A152390
0DAA 0 4C18 0DAF         BSC  L G849,&-    BRANCH ON ZERO             3A152400
0DAC 0 4400 0F69         BSI  L F000       INDIRECT MDX FAILED        3A152410
0DAE 0 313A              DC     /313A      ERR ID                     3A152420
0DAF 0 4400 0FC4   G849  BSI  L F005       CK LOCK ON ERROR           3A152430
0DB1 0 70EA              MDX    A849       LOOP                       3A152440
                         ******************************************   3A152450
0DB2 0 7400 0DC6   A84A  MDX  L N84A,0     TEST SKIP IF ZERO          3A152460
0DB4 0 7001              MDX    G84A        BYPASS IF CORRECT OP       3A152470
0DB5 0 7003              MDX    H84A                                   3A152480
0DB6 0 4400 0F69   G84A  BSI  L F000       MDX L  FAILED TO SKIP      3A152490
0DB8 0 3171              DC     /3171      ERR ID                     3A152500
0DB9 0 4400 0FC4   H84A  BSI  L F005       CK LOCK ON ERROR           3A152510
0DBB 0 70F6              MDX    A84A       LOOP                       3A152520
                         ******************************************   3A152530
0DBC 0 7400 0DCC   A85A  MDX  L N844,0     TEST NON SKIP              3A152540
0DBE 0 7003              MDX    H85A                                   3A152550
0DBF 0 4400 0F69         BSI  L F000       MDX L  SKIPED              3A152560
0DC1 0 3172              DC     /3172      ERR ID                     3A152570
0DC2 0 4400 0FC4   H85A  BSI  L F005       CK LOCK ON ERROR           3A152580
0DC4 0 70F7              MDX    A85A       LOOP                       3A152590
0DC5 0 7009              MDX    A880       EXIT TO NEXT ROUTINE       3A152600
0DC6 0 0000        N84A  DC     0          CONSTANT ZERO              3A152610
                         ******************************************   3A152620
************************************************************************ 3A152630
CORE     DATA OR     *LA- OPER-                                       3A152640
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A152650
************************************************************************ 3A152660
0DC7 0 0000        N840  DC     /0000      STORAGE                    3A152670
0DC8 0 FFFF        N841  DC     /FFFF                                 3A152660
0DC9 0 3000        N842  WAIT               ADD TO MEM FAILED          3A152690
0DCA 0 3000              WAIT               ADD TO MEM FAILED          3A152700
0DCB 0 3000        N843  WAIT               ADD TO MEM FAILED          3A152710
0DCC 0 0001        N844  DC     /0001                                 3A152720
0DCD 0 0DCC        N845  DC     N844                                  3A152730
0DCE 0 3001        N846  DC     /3001                                 3A152740
                   *                                                  3A152750
                   *                TEST OF SLC OPERATION             3A152760
                   *                                                  3A152770
                   ******************************************         3A152780
0DCF 0 610A        A880  LDX    1 10        LD XR 1 WITH &10           3A152790
0DD0 0 CC00 0EC8         LDD  L N882        LD  A#/0000  Q#/FFFF       3A152800
0DD2 0 2002              LDS    2           SET C ON                   3A152810
0DD3 0 1140              SLCA   1 0         NOW  A#/0000  Q#/FFFF      3A152820
0DD4 0 6D00 0EC7         STX  L1 N880       STORE C%XR 1¤              3A152830
0DD6 0 2812              STS    G881        STORE CARRY CONDITION      3A152840
0DD7 0 4C18 0DDC         BSC  L G880,&-     BRANCH ON ZERO             3A152850
0DD9 0 4400 0F69         BSI  L F000        ACC NOT#ZERO               3A152860
0DDB 0 313B              DC     /313B       ERR ID                     3A152870
0DDC 0 4400 0F98   G880  BSI  L F00E        CK LOCK ON ERROR           3A152880
0DDE 0 70F0              MDX    A880        LOOP                       3A152890
0DDF 0 C400 0EC7         LD   L N880        LD PREVIOUS C%XR 1¤        3A152900
0DE1 0 4C18 0DE6         BSC  L G882,&-     BRANCH ON ZERO             3A152910
0DE3 0 4400 0F69         BSI  L F000        XR 1 NOT#ZERO              3A152920
0DE5 0 313C              DC     /313C       ERR ID                     3A152930
0DE6 0 4400 0F98   G882  BSI  L F00E        CK LOCK ON ERROR           3A152940
0DE8 0 70E6              MDX    A880        LOOP                       3A152950
0DE9 0 2000        G881  LDS    0           SAVED BY STS ABOVE         3A152960
0DEA 0 4802              BSC    C           SK IF CARRY OFF            3A152970
0DEB 0 7004              MDX    G883        CARRY ON                   3A152980
0DEC 0 4400 0FC4         BSI  L F005        CK LOCK ON ERROR           3A152990
0DEE 0 70E0              MDX    A880        LOOP                       3A153000
0DEF 0 7006              MDX    A884        EXIT TO NEXT ROUTINE       3A153010
0DF0 0 4400 0F69   G883  BSI  L F000        CARRY ON %SHOULD NOT BE¤   3A153020
0DF2 0 3160              DC     /3160       ERR ID                     3A153030
0DF3 0 4400 0FC4         BSI  L F005        CK LOCK ON ERROR           3A153040
0DF5 0 70D9              MDX    A880        LOOP                       3A153050
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                                ********************************************** 3A153060
ODF6 0 6580 OECD    A884  LDX  I1 N887      LD XR 1 WITH /FFD0               3A153070
ODF8 0 CC00 OECA          LDD  L  N884      LD  A#/0001  Q#/0010             3A153080
ODFA 0 2000               LDS     0         SET C AND OF OFF                 3A153090
ODFB 0 1140               SLCA  1 0         ACC NOW /8000                    3A153100
ODFC 0 2818               STS     G885      STORE C AND OF CONDITION         3A153110
ODFD 0 F400 OECC          EOR  L  N886      ZERO WITH /8000                  3A153120
ODFF 0 4C18 0E04          BSC  L  G884,&-   BRANCH, ON ZERO                  3A153130
0E01 0 4400 0F69          BSI  L  F000      ACC NOT#/8000                    3A153140
0E03 0 313D               DC      /313D     ERR ID                           3A153150
0E04 0 4400 0F98    G884  BSI  L  F00E      CHECK LOOP SWITCH                3A153160
0E06 0 70EF               MDX     A884      LOOP                             3A153170
0E07 0 6D00 0EC7          STX  L1 N880      STORE C%XR 1¤ AT N880            3A153180
0E09 0 C400 0EC7          LD   L  N880      LD C%N880¤                       3A153190
0E0B 0 F400 0ED4          EOR  L  N88E      ZERO WITH /FF01                  3A153200
0E0D 0 4C18 0E12          BSC  L  G886,&-   BRANCH ON ZERO                  3A153210
0E0F 0 4400 0F69          BSI  L  F000      XR-1 NOT FF01                    3A153220
0E11 0 313E               DC      /313E     ERR ID                           3A153230
0E12 0 4400 0F98    G886  BSI  L  F00E      CK LOCK ON ERROR                 3A153240
0E14 0 70E1               MDX     A884      LOOP                             3A153250
0E15 0 2000         G885  LDS     0         SAVED BY STS ABOVE               3A153260
0E16 0 4802               BSC     C         SK IF CARRY OFF                  3A153270
0E17 0 7003               MDX     G887                                       3A153280
0E18 0 4400 0F69          BSI  L  F000      CARRY OFF, SHOULD BE ON          3A153290
0E1A 0 3161               DC      /3161     ERR ID                           3A153300
0E1B 0 4400 0FC4    G887  BSI  L  F005      CK LOCK ON ERROR                 3A153310
0E1D 0 70D8               MDX     A884      LOOP                             3A153320
                                ********************************************** 3A153330
************************************************************************** 3A153340
CORE     DATA OR      *LA- OPER-                                            3A153350
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT 3A153360
************************************************************************** 3A153370
0E1E 0 6580 0ECB    A888  LDX  I1 N885      LD XR 1 WITH /0010               3A153380
0E20 0 CC00 0ECC          LDD  L  N886      LD  A# /8000  Q#/FFD0            3A153390
0E22 0 1140               SLCA  1 0         ACC NOW /8000                    3A153400
0E23 0 F400 0ECC          EOR  L  N886      ZERO WITH /8000                  3A153410
0E25 0 4C18 0E2A          BSC  L  G888,&-   BRANCH ON ZERO                  3A153420
0E27 0 4400 0F69          BSI  L  F000      ACC NOT#8000                     3A153430
0E29 0 313F               DC      /313F     ERR ID                           3A153440
0E2A 0 4400 0F98    G888  BSI  L  F00E      CK LOCK ON ERROR                 3A153450
0E2C 0 70F1               MDX     A888      LOOP                             3A153460
0E2D 0 6D00 0EC7          STX  L1 N880      STORE C%XR 1¤ IN N880            3A153470
0E2F 0 C400 0EC7          LD   L  N880      LD  C%N880¤                      3A153480
0E31 0 F400 0ECB          EOR  L  N885      ZERO WITH /0010                  3A153490
0E33 0 4C18 0E38          BSC  L  G88A,&-   BRANCH ON ZERO                  3A153500
0E35 0 4400 0F69          BSI  L  F000      XR 1 NOT#0010                    3A153510
0E37 0 3140               DC      /3140     ERR ID                           3A153520
0E38 0 4400 0FC4    G88A  BSI  L  F005      CK LOCK ON ERROR                 3A153530
0E3A 0 70E3               MDX     A888      LOOP                             3A153540
                                ********************************************** 3A153550
0E3B 0 6110         A889  LDX   1 16        LD XR 1 WITH /0010               3A153560
0E3C 0 6210               LDX   2 16        LD XR 2 WITH /0010               3A153570
0E3D 0 6310               LDX   3 16        LD XR 3 WITH /0010               3A153580
0E3E 0 C400 0ECA          LD   L  N884      LD  A#/0001                      3A153590
0E40 0 1041               SLCA    1         ACC NOW /0002                    3A153600
0E41 0 F400 0ED1          EOR  L  N88B      ZERO WITH /0002                  3A153610
0E43 0 4C18 0E48          BSC  L  G889,&-   BRANCH ON ZERO                  3A153620
0E45 0 4400 0F69          BSI  L  F000      NON INDEXED SLCA FAILED          3A153630
0E47 0 3162               DC      /3162     ERR ID                           3A153640
0E48 0 4400 0FC4    G889  BSI  L  F005      CK LOCK ON ERROR                 3A153650
0E4A 0 70F0               MDX     A889      LOOP                             3A153660
                                ********************************************** 3A153670
0E4B 0 6110         A88A  LDX   1 16        LD XR 1 WITH /0010               3A153680
0E4C 0 6210               LDX   2 16        LD XR 2 WITH /0010               3A153690
0E4D 0 6310               LDX   3 16        LD XR 3 WITH /0010               3A153700
0E4E 0 CC00 0EC8          LDD  L  N882      LD  A#/0000  Q#/FFFF             3A153710
0E50 0 10CF               SLC     15        NOW  A#/7FFF  Q#/1000           3A153720
0E51 0 F400 0ED5          EOR  L  N88F      ZERO WITH /7FFF                  3A153730
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0E53 0 4C18 0E56          BSC  L  G88B,&-   NON INDEXED SLC FAILED           3A153740
0E55 0 3173               DC      /3173     ERR ID                           3A153750
0E56 0 4400 0FC4    G88B  BSI  L  F005      CK LOCK ON ERROR                 3A153760
0E58 0 70F2               MDX     A88A      LOOP                             3A153770
                                ********************************************** 3A153780
                                ********************************************** 3A153790
0E59 0 6580 0ED2    A88C  LDX   I1 N88C      LD XR 1 WITH /0020               3A153800
0E5B 0 C872               LDD     N888      LD  A#/0000  Q#/0000             3A153810
0E5C 0 11C0               SLC   1 0         ACC NOW A#/0000  Q#/0000         3A153820
0E5D 0 4C18 0E62          BSC  L  G88C,&-   BRANCH ON ZERO                  3A153830
0E5F 0 4400 0F69          BSI  L  F000      ACC NOT#0000                     3A153840
0E61 0 3141               DC      /3141     ERR ID                           3A153850
0E62 0 4400 0F98    G88C  BSI  L  F00E      CK LOCK ON ERROR                 3A153860
0E64 0 70F4               MDX     A88C      LOOP                             3A153870
0E65 0 18D0               RTE     16        ACC NOW  A#/0000  Q#/0000        3A153880
0E66 0 4C18 0E6B          BSC  L  G88E,&-   BRANCH ON ZERO                  3A153890
0E68 0 4400 0F69          BSI  L  F000      Q REG NOT#0000                   3A153900
0E6A 0 3142               DC      /3142     ERR ID                           3A153910
0E6B 0 4400 0F98    G88E  BSI  L  F00E      CK LOCK ON ERROR                 3A153920
0E6D 0 70EB               MDX     A88C      LOOP                             3A153930
0E6E 0 6958               STX   1 N880      STORE C%XR 1¤ IN N880            3A153940
0E6F 0 C057               LD      N880      LD C%N880¤                       3A153950
0E70 0 4C18 0E75          BSC  L  J880,&-   BRANCH ON ZERO                  3A153960
0E72 0 4400 0F69          BSI  L  F000      XR 1 NOT#0000                    3A153970
0E74 0 3143               DC      /3143     ERR ID                           3A153980
0E75 0 4400 0FC4    J880  BSI  L  F005      CK LOCK ON ERROR                 3A153990
0E77 0 70E1               MDX     A88C      LOOP                             3A154000
                                ********************************************** 3A154010
************************************************************************** 3A154020
CORE     DATA OR      *LA- OPER-                                            3A154030
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT 3A154040
************************************************************************** 3A154050
0E78 0 6580 0ED3    B882  LDX   I1 N88D      LD XR 1 WITH /FFDF               3A154060
0E7A 0 C855               LDD     N88A      LD  A#/0000   Q#/0002           3A154070
0E7B 0 11C0               SLC   1 0         NOW A#/8000  Q#/0000             3A154080
0E7C 0 F04F               EOR     N886      ZERO WITH /8000                  3A154090
0E7D 0 4C18 0E82          BSC  L  J882,&-   BRANCH ON ZERO                  3A154100
0E7F 0 4400 0F69          BSI  L  F000      ACC NOT#/8000                    3A154110
0E81 0 3144               DC      /3144     ERR ID                           3A154120
0E82 0 4400 0F98    J882  BSI  L  F00E      CK LOCK ON ERROR                 3A154130
0E84 0 70F3               MDX     B882      LOOP                             3A154140
0E85 0 18D0               RTE     16        NOW  A#/0000  Q#/8000           3A154150
0E86 0 4C18 0E88          BSC  L  J884,&-   BRANCH ON ZERO                  3A154160
0E88 0 4400 0F69          BSI  L  F000      Q REG NOT#0000                   3A154170
0E8A 0 3145               DC      /3145     ERR ID                           3A154180
0E8B 0 4400 0F98    J884  BSI  L  F00E      CK LOCK ON ERROR                 3A154190
0E8D 0 70EA               MDX     B882      LOOP                             3A154200
0E8E 0 6938               STX   1 N880      STORE C%XR 1¤ AT N880            3A154210
0E8F 0 C037               LD      N880      LD C%N880¤                       3A154220
0E90 0 F400 0ED4          EOR  L  N88E      ZERO WITH /FF01                  3A154230
0E92 0 4C18 0E97          BSC  L  J886,&-   BRANCH ON ZERO                  3A154240
0E94 0 4400 0F69          BSI  L  F000      XR-1 NOT FF01                    3A154250
0E96 0 3146               DC      /3146     ERR ID                           3A154260
0E97 0 4400 0FC4    J886  BSI  L  F005      CK LOCK ON ERROR                 3A154270
0E99 0 70DE               MDX     B882      LOOP                             3A154280
                                ********************************************** 3A154290
0E9A 0 C835         B884  LDD     N88A      LD  A#/0000  Q#/0002            3A154300
0E9B 0 611F               LDX   1 31        LD XR 1 WITH /001F               3A154310
0E9C 0 11C0               SLC   1 0         NOW A#/8000  Q#/0000            3A154320
0E9D 0 4802               BSC     C         SK IF CARRY OFF                  3A154330
0E9E 0 7003               MDX     J887      CARRY ON                         3A154340
0E9F 0 4400 0F69          BSI  L  F000      CARRY NOT ON                     3A154350
0EA1 0 3147               DC      /3147     ERR ID                           3A154360
0EA2 0 4400 0F98    J887  BSI  L  F00E      CK LOCK ON ERROR                 3A154370
0EA4 0 70F5               MDX     B884      LOOP                             3A154380
0EA5 0 F026               EOR     N886      ZERO WITH /8000                  3A154390
0EA6 0 4C18 0EAB          BSC  L  J888,&-   BRANCH ON ZERO                  3A154400
0EA8 0 4400 0F69          BSI  L  F000      ACC NOT EQUAL 8000               3A154410
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OEAA 0 3148                DC     /3148      ERR ID                          3A154420
OEAB 0 4400 0F98  J88B     BSI  L F00E       CK LOCK ON ERROR                3A154430
OEAD 0 70EC                MDX    B884       LOOP                            3A154440
OEAE 0 6D00 0EC7           STX  L1 N880       STORE XR 1 WITH C%N880¤         3A154450
OEB0 0 C016                LD     N880       LD C%N880¤                      3A154460
OEB1 0 F018                EOR    N884       ZERO WITH /0001                 3A154470
OEB2 0 4C18 0EB7           BSC  L J889,&-     BRANCH ON ZERO                  3A154480
OEB4 0 4400 0F69           BSI  L F000       XR 1 NOT EQUAL 0001             3A154490
OEB6 0 3149                DC     /3149      ERR ID                          3A154500
OEB7 0 4400 0FC4  J889     BSI  L F005       CK LOCK ON ERROR                3A154510
OEB9 0 70E0                MDX    B884       LOOP                            3A154520
                           ****************************************          3A154530
OEBA 0 611C       B885     LDX    1 28       LD XR 1 WITH /001C              3A154540
OEBB 0 C814                LDD    N88A       LD  A#/0000  Q#/0002            3A154550
OEBC 0 1100                SLA    1 0        NOW A#/2000  Q#/0000            3A154560
OEBD 0 4802                BSC    C          SKIP IF CARRY OFF               3A154570
OEBE 0 7001                MDX    J88A                                       3A154580
OEBF 0 7003                MDX    J88B                                       3A154590
OEC0 0 4400 0F69  J88A     BSI  L F000       CARRY IS ON                     3A154600
OEC2 0 314A                DC     /314A      ERR ID                          3A154610
OEC3 0 4400 0FC4  J88B     BSI  L F005       CK LOCK ON ERROR                3A154620
OEC5 0 70F4                MDX    B885       LOOP                            3A154630
OEC6 0 700F                MDX    B8A0       EXIT TO NEXT ROUTINE            3A154640
OEC7 0 0000       N880     DC     /0000      STORAGE                         3A154650
OEC8   0000                BSS  E                                            3A154660
OEC8 0 0000       N882     DC     /0000                                      3A154670
OEC9 0 FFFF                DC     /FFFF                                      3A154680
OECA 0 0001       N884     DC     /0001                                      3A154690
OECB 0 0010       N885     DC     /0010                                      3A154700
OECC 0 8000       N886     DC     /8000                                      3A154710
OECD 0 FFD0       N887     DC     /FFD0                                      3A154720
OECE 0 0000       N888     DC     /0000                                      3A154730
OECF 0 0000                DC     /0000                                      3A154740
OED0 0 0000       N88A     DC     /0000                                      3A154750
OED1 0 0002       N88B     DC     /0002                                      3A154760
OED2 0 0020       N88C     DC     /0020                                      3A154770
OED3 0 FFDF       N88D     DC     /FFDF                                      3A154780
OED4 0 FF01       N88E     DC     /FF01                                      3A154790
OED5 0 7FFF       N88F     DC     /7FFF                                      3A154800
                           ****************************************          3A154810
                           ****************************************          3A154820
                           *                                                 3A154830
                           *                TEST COMPARE INSTRUCTION         3A154840
                           *                                                 3A154850
                           *       A # ACCUMULATOR                           3A154860
                           *       Q # ACCUMULATOR EXTENTION                 3A154870
                           *       M # WORD BEING COMPARED                   3A154880
                           *       M&1 # 2ND WORD ON DCM                     3A154890
                           *                                                 3A154900
                           *            THE 1800 HAS A COMPARE INSTRUCTION   3A154910
                           *            BUT THE 1130 DOES NOT. THIS ROUTINE  3A154920
                           *            DETERMINES WHICH MACHINE IS BEING    3A154930
                           *            TESTED BEFORE ATTEMPTING A COMPARE   3A154940
                           *            INSTRUCTION.                         3A154950
                           *                                                 3A154960
                           *            INDEX REGISTERS ARE HARDWARE IN 1800 3A154970
                           *            AND CORE STORAGE LOCATIONS IN 1130.  3A154980
                           *                                                 3A154990
                           ********************************************************************** 3A155000
CORE     DATA OR     *LA- OPER-                                               3A155010
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT    3A155020
                           ********************************************************************** 3A155030
OED6 0 1810       B8A0     SRA    16         CK FOR 1130 OR 1800             3A155040
OED7 0 D400 0001           STO  L /0001       STORE /0000 AT ADDR /0001       3A155050
OED9 0 61FF                LDX    1 -1        LD XR 1 WITH /FFFF              3A155060
OEDA 0 C400 0001           LD   L /0001       LD C%/0001¤                     3A155070
OEDC 0 4C20 0F5C           BSC  L W8C0,Z      BRANCH IF 1130                  3A155080
OEDE 0 C072                LD     N8A2        LD C%N8A2¤  /4000               3A155090
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OEDF 0 B075                CMP    N8A0       A GREATER THAN M                3A155100
OEE0 0 7004                MDX    J8A0       A GREATER THAN M                3A155110
OEE1 0 1000                SLA    0          A LESS THAN M                   3A155120
OEE2 0 4400 0F69           BSI  L F000       A GREATER THAN M FAILED         3A155130
OEE4 0 314B                DC     /314B      ERR ID                          3A155140
OEE5 0 4400 0F98  J8A0     BSI  L F00E       CK LOCK ON ERROR                3A155150
OEE7 0 70EE                MDX    B8A0       LOOP                            3A155160
OEE8 0 F068                EOR    N8A2       ZERO WITH /4000                 3A155170
OEE9 0 4C18 0EF1           BSC  L B8A1,&-     BRANCH ON ZERO                  3A155180
OEEB 0 4400 0F69           BSI  L F000       ACC CHANGED ERROR               3A155190
OEED 0 314C                DC     /314C      ERR ID                          3A155200
OEEE 0 4400 0FC4           BSI  L F005       CK LOCK ON ERROR                3A155210
OEF0 0 70E5                MDX    B8A0       LOOP                            3A155220
                           ****************************************          3A155230
OEF1 0 C063       B8A1     LD     N8A0       N8A0 #/0000                     3A155240
OEF2 0 B05D                CMP    N8A1       N8A1 #/1000                     3A155250
OEF3 0 7001                MDX    J8A2       A LESS THAN M FAILED            3A155260
OEF4 0 7003                MDX    J8A1       A LESS THAN M                   3A155270
OEF5 0 4400 0F69  J8A2     BSI  L F000       A LESS THAN M FAILED            3A155280
OEF7 0 314D                DC     /314D      ERR ID                          3A155290
OEF8 0 4400 0FC4  J8A1     BSI  L F005       CK LOCK ON ERROR                3A155300
OEFA 0 70F6                MDX    B8A1       LOOP                            3A155310
                           ****************************************          3A155320
OEFB 0 C059       B8A2     LD     N8A0       N8A0 #/0000                     3A155330
OEFC 0 B055                CMP    N8A3       N8A3 #/2000                     3A155340
OEFD 0 7001                MDX    J8A4       A LESS THAN M FAILED            3A155350
OEFE 0 7003                MDX    J8A3       A LESS THAN M                   3A155360
OEFF 0 4400 0F69  J8A4     BSI  L F000       A LESS THAN M FAILED            3A155370
OF01 0 314E                DC     /314E      ERR ID                          3A155380
OF02 0 4400 0FC4  J8A3     BSI  L F005       CK LOCK ON ERROR                3A155390
OF04 0 70F6                MDX    B8A2       LOOP                            3A155400
                           ****************************************          3A155410
OF05 0 C04F       B8A3     LD     N8A0       N8A0 #/0000                     3A155420
OF06 0 B04A                CMP    N8A2       N8A2 #/4000                     3A155430
OF07 0 7001                MDX    J8A6       A LESS THAN M FAILED            3A155440
OF08 0 7003                MDX    J8A5       A LESS THAN M                   3A155450
OF09 0 4400 0F69  J8A6     BSI  L F000       A LESS THAN M FAILED            3A155460
OF0B 0 314F                DC     /314F      ERR ID                          3A155470
OF0C 0 4400 0FC4  J8A5     BSI  L F005       CK LOCK ON ERROR                3A155480
OF0E 0 70F6                MDX    B8A3       LOOP                            3A155490
                           ****************************************          3A155500
OF0F 0 C044       B8A4     LD     N8C5       LD  /8000                       3A155510
OF10 0 B044                CMP    N8A0       COMPARE C%N8A0¤ /0000           3A155520
OF11 0 7001                MDX    J8A8       A LESS THAN M FAILED            3A155530
OF12 0 7003                MDX    J8A7       A LESS THAN M                   3A155540
OF13 0 4400 0F69  J8A8     BSI  L F000       A LESS THAN M FAILED            3A155550
OF15 0 3150                DC     /3150      ERR ID                          3A155560
OF16 0 4400 0FC4  J8A7     BSI  L F005       CK LOCK ON ERROR                3A155570
OF18 0 70F6                MDX    B8A4       LOOP                            3A155580
                           ****************************************          3A155590
OF19 0 C036       B8A5     LD     N8A1       LD /1000                        3A155600
OF1A 0 B035                CMP    N8A1       CMP /1000                       3A155610
OF1B 0 7002                MDX    J8AA       A EQUAL M FAILED                3A155620
OF1C 0 7001                MDX    J8AA       A EQUAL M FAILED                3A155630
OF1D 0 7003                MDX    J8A9       A#M                             3A155640
OF1E 0 4400 0F69  J8AA     BSI  L F000       A#M FAILED                      3A155650
OF20 0 3151                DC     /3151      ERR ID                          3A155660
OF21 0 4400 0FC4  J8A9     BSI  L F005       CK LOCK ON ERROR                3A155670
OF23 0 70F5                MDX    B8A5       LOOP                            3A155680
                           ****************************************          3A155690
                           *                                                 3A155700
                           *                TEST DOUBLE COMPARE              3A155710
                           *                                                 3A155720
                           ********************************************************************** 3A155730
CORE     DATA OR     *LA- OPER-                                               3A155740
ADDR     INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT    3A155750
                           ********************************************************************** 3A155760
OF24 0 C831       B8C0     LDD    N8C6       LD  A#/8000  Q#/0001            3A155770
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OF25 0 B82E            DCM    N8C5      AQ GREATER THAN M, M&1     3A155780
OF26 0 7003            MDX    J8C0                                 3A155790
OF27 0 1000            SLA    0         NO-OP                      3A155800
OF28 0 4040            BSI    F000      FAILED A,Q NOT GREATER     3A155810
OF29 0 3152            DC     /3152     ERR ID                     3A155820
OF2A 0 4400 OF98 J8C0  BSI  L F00E       CK LOCK ON ERROR           3A155830
OF2C 0 70F7            MDX    B8C0      LOOP                       3A155840
OF2D 0 F028            EOR    N8C6      ZERO WITH /8000            3A155850
OF2E 0 4C18 OF32       BSC  L J8C1,&-   BRANCH ON ZERO             3A155860
OF30 0 4038            BSI    F000      ACC CHANGED                3A155870
OF31 0 3153            DC     /3153     ERR ID                     3A155880
OF32 0 4400 OF98 J8C1  BSI  L F00E       CK LOCK ON ERROR           3A155890
OF34 0 70EF            MDX    B8C0      LOOP                       3A155900
OF35 0 18D0            RTE    16        NOW A#/0001  Q#/0000       3A155910
OF36 0 F020            EOR    N8C6&1    ZERO WITH /0001            3A155920
OF37 0 4C18 OF3B       BSC  L J8C2,&-   BRANCH ON ZERO             3A155930
OF39 0 402F            BSI    F000      Q REG CHANGED              3A155940
OF3A 0 3154            DC     /3154     ERR ID                     3A155950
OF3B 0 4400 OFC4 J8C2  BSI  L F005       CK LOCK ON ERROR           3A155960
OF3D 0 70E6            MDX    B8C0      LOOP                       3A155970
                       ******************************************** 3A155980
OF3E 0 C819 B8C1       LDD    N8C7      LD  A#/0000  Q#/8000       3A155990
OF3F 0 B81A            DCM    N8C8      A,Q LESS THAN M, M&1       3A156000
OF40 0 7001            MDX    J8C3      A,Q GREATER THAN M,M&1     3A156010
OF41 0 7002            MDX    J8C4      A,Q LESS THAN M,M&1        3A156020
OF42 0 4026 J8C3       BSI    F000      FAILED A,Q GREATER         3A156030
OF43 0 3155            DC     /3155     ERR ID                     3A156040
OF44 0 407F J8C4       BSI    F005      CK LOCK ON ERROR           3A156050
OF45 0 70F8            MDX    B8C1      LOOP                       3A156060
                       ******************************************** 3A156070
OF46 0 C811 B8C2       LDD    N8C7      LD  A#/0000  Q#/8000       3A156080
OF47 0 B810            DCM    N8C7      A,Q EQUQL M,M&1            3A156090
OF48 0 7002            MDX    J8C5      A,Q GREATER                3A156100
OF49 0 7001            MDX    J8C5      A,Q LESS                   3A156110
OF4A 0 7002            MDX    J8C6      A,Q # M,M&1                3A156120
OF4B 0 401D J8C5       BSI    F000      A,Q # M,M&1 FAILED         3A156130
OF4C 0 3156            DC     /3156     ERR ID                     3A156140
OF4D 0 4076 J8C6       BSI    F005      CK LOCK ON ERROR           3A156150
OF4E 0 70F7            MDX    B8C2      LOOP                       3A156160
OF4F 0 700C            MDX    W8C0      EXIT TO NEXT ROUTINE       3A156170
OF50 0 1000 N8A1       DC     /1000                                3A156180
OF51 0 4000 N8A2       DC     /4000                                3A156190
OF52 0 2000 N8A3       DC     /2000                                3A156200
OF54   0000            BSS  E 0                                    3A156210
OF54 0 8000 N8C5       DC     /8000                                3A156220
OF55 0 0000 N8A0       DC     /0000                                3A156230
OF56 0 8000 N8C6       DC     /8000                                3A156240
OF57 0 0001            DC     /0001                                3A156250
OF58 0 0000 N8C7       DC     /0000                                3A156260
OF59 0 8000            DC     /8000                                3A156270
OF5A 0 0000 N8C8       DC     /0000                                3A156280
OF5B 0 8001            DC     /8001                                3A156290
                       ******************************************** 3A156300
                       ******************************************** 3A156310
*********************************************************************** 3A156320
CORE    DATA OR     *LA- OPER-                                      3A156330
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A156340
*********************************************************************** 3A156350
OF5C 0 0809 W8C0       XIO    N8C1      READ SWITCHES              3A156360
OF5D 0 C00A            LD     N8C3      LD SW BITS                 3A156370
OF5E 0 1804            SRA    4         PLACE SW 11 AT BIT 15 POS. 3A156380
OF5F 0 4804            BSC    E         IS SWITCH 11 ON            3A156390
OF60 0 7002            MDX    W8C4      SWITCH 11 ON               3A156400
OF61 0 C003            LD     Z020      SWITCH 11 IS OFF-WAIT      3A156410
OF62 0 3003 X007       DC     /3003     PROGRAM FINISHED           3A156420
OF63 0 4C00 0154 W8C4  BSC  L A140                                  3A156430
OF65 0 0003 Z020       DC     /0003                                3A156440
OF66   0000            BSS  E                                      3A156450
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OF66 0 OF68 N8C1  DC     N8C3                                       3A156460
OF67 0 0240 N8C2  DC     /0240     EQUAL /3A00 IN 1130              3A156470
OF68 0 0000 N8C3  DC     /0000                                      3A156480
            *                                                       3A156490
            *                                                       3A156500
            ******************************************************* 3A156510
            *                                                       3A156520
            *              ERROR CONTROL ROUTINE                    3A156530
            *                                                       3A156540
OF69 0 0000 F000  DC     0         REENTER ADDRESS                  3A156550
OF6A 0 2816       STS    F00X      SAVE STATUS                      3A156560
OF6B 0 D063       STO    U000      SAVE A REG                       3A156570
OF6C 0 18D0       RTE    16                                         3A156580
OF6D 0 D062       STO    U001      SAVE Q REG                       3A156590
OF6E 0 0863       XIO    F003      READ SWITCHES                    3A156600
OF6F 0 C065       LD     Z000      LD SW READINGS                   3A156610
OF70 0 1807       SRA    7         PLACE SW 8 AT BIT POS 15         3A156620
OF71 0 4804       BSC    E         CK LOOP ON INSTRUCTION           3A156630
OF72 0 7012       MDX    F00A      * BEING TESTED SW                3A156640
OF73 0 C480 OF69  LD   I F000      GET WAIT ERROR ID                3A156650
OF75 0 D00C       STO    F002      STORE ERROR ID AT F002           3A156660
OF76 0 C0F2       LD     F000      GET RETURN ADDR                  3A156670
OF77 0 D01F       STO    U008      STORE AT U008                    3A156680
OF78 0 805B       A      U006      ADD ONE                          3A156690
OF79 0 D0EF       STO    F000      STORE NEW RETURN ADDRESS         3A156700
OF7A 0 C05A F00L  LD     Z000      CK BYPASS ERROR SW               3A156710
OF7B 0 1801       SRA    1         PLACE SW 14 AT BIT POS 15        3A156720
OF7C 0 4804       BSC    E         SKIP IF SW 14 OFF                3A156730
OF7D 0 700D       MDX    F00F      CK FOR 8 OR 12 ON ALSO           3A156740
OF7E 0 C051       LD     U001      RESTORE REG AND WAIT             3A156750
OF7F 0 18D0       RTE    16        PLACE IN Q REG                   3A156760
OF80 0 C04E       LD     U000      RESTORE A REG                    3A156770
OF81 0 2000 F00X  LDS    0         RESTORE C AND OF IND.            3A156780
OF82 0 3000 F002  WAIT   0         ERROR WAIT  B REG                3A156790
            *                      * SHOWS ERROR ID                 3A156800
OF83 0 4C80 OF69  F00B BSC  I F000 EXIT FROM ROUTINE                3A156810
            *                      * C%F000¤IS NOW ONE              3A156820
            *                      * GREATER THAN AT THE            3A156830
            *                      * BEGINNING OF ROUTINE           3A156840
            *                                                       3A156850
            *                                                       3A156860
            *                                                       3A156870
            *                  LOOP ON INSTRUCTION BEING            3A156880
            *                  * TESTED                             3A156890
            *                                                       3A156900
*********************************************************************** 3A156910
CORE    DATA OR     *LA- OPER-                                      3A156920
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS   ID&SEQ# AT RIGHT 3A156930
*********************************************************************** 3A156940
OF85 0 C0E3       F00A LD     F000      GET RETURN ADDR AT F000      3A156950
OF86 0 D010            STO    U00B      STORE RETURN ADDRESS         3A156960
OF87 0 8000            A      U003      ADD 3                        3A156970
OF88 0 D0E0            STO    F000      UPDATE RETURN ADDRESS        3A156980
OF89 0 4C80 OF69       BSC  I F000      BR TO UPDATAD ADDRESS        3A156990
            *                           CK FOR SW 8 OR 12            3A157000
OF8B 0 1802       F00F SRA    2         PLACE SW 12 AT BIT POS 15    3A157010
OF8C 0 4804            BSC    E         SKIP IF SW 12 OFF            3A157020
OF8D 0 70F5            MDX    F00B      BR TO EXIT IF SW 12 ON       3A157030
OF8E 0 1804            SRA    4         PLACE SW 8 AT BIT POS 15     3A157040
OF8F 0 4804            BSC    E         SKIP IF SW 8 OFF             3A157050
OF90 0 70F2            MDX    F00B      BR TO EXIT IF SW 8 ON        3A157060
OF91 0 C043            LD     Z000      LD SWITCH READINGS           3A157070
OF92 0 0000            DC                IMPROPER BIT SWS, 14 ON      3A157080
OF93 0 083E            XIO    F003      *WITHOUT 8 OR 12 ON          3A157090
OF94 0 70E5            MDX    F00L                                   3A157100
OF95 0 0003       U003 DC     3         CONSTANT 3                   3A157110
OF96 0 FFFD       U00A DC     -3        CONSTANT -3                  3A157120
OF97 0 0000       U00B DC     0         ERROR OCCURED CONTROL        3A157130
```

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                        *                                                       3A157140
                        *****************************************               3A157150
                        *                                       *               3A157160
                        *                LOCK ON ERROR RT       *               3A157170
                        *                                       *               3A157180
*************************************************************************       3A157190
CORE    DATA OR     *LA- OPER-                                                  3A157200
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT        3A157210
*************************************************************************       3A157220
0F98 0 0000         F00E  DC      0           CONTAINS RETURN ADDRESS           3A157230
0F99 0 281A               STS     F00H        SAVE REGS  C AND OF               3A157240
0F9A 0 D038               STO     U00X                   ACCUMULATOR          3A157250
0F9B 0 1800               RTE     16                                           3A157260
0F9C 0 D03A               STO     U00X&1                 ACC EXTENTION         3A157270
                        *                                                       3A157280
                        *****************************************               3A157290
                        *   SET UP FOR RESTART                  *               3A157300
                        *                                       *               3A157310
                        *   TO RESTART -- PRESS STOP, RESET AND START.  *       3A157320
                        *                                       *               3A157330
0F9D 0 C03A               LD      RST1        LD /6004                        3A157340
                        *                                       *               3A157350
0F9E 0 D400 0000          STO  L  /0000       STO IN WORD ZERO                3A157360
                        *                                       *               3A157370
0FA0 0 C038               LD      RST2        LD /4C00                        3A157380
                        *                                       *               3A157390
0FA1 0 D400 0004          STO  L  /0004       STO IN WORD FOUR                3A157400
                        *                                       *               3A157410
0FA3 0 C036               LD      RST2&1      LD /012C                        3A157420
                        *                                       *               3A157430
0FA4 0 D400 0005          STO  L  /0005       STO IN WORD FIVE                3A157440
                        *                                       *               3A157450
                        *****************************************               3A157460
0FA6 0 082B               XIO     F003        READ SWITCHES                   3A157470
0FA7 0 C02D               LD      Z000        CK LOOP ON INST BEING           3A157480
0FA8 0 1807               SRA     7           * TESTED SW                     3A157490
0FA9 0 4804               BSC     E           SKIP IF EVEN                    3A157500
0FAA 0 700A               MDX     F008        EXIT TO LOOP INST               3A157510
0FAB 0 C0EB               LD      U00B        CK IF ERROR HAS                 3A157520
0FAC 0 4820               BSC     Z           * OCCURRED                      3A157530
0FAD 0 7009               MDX     F009                                        3A157540
0FAE 0 C0E9         F00K  LD      F00E        GOT RETURN ADDR                 3A157550
0FAF 0 8024               A       U006        ADD ONE                         3A157560
0FB0 0 D0E7               STO     F00E        STORE RETURN ADDRESS            3A157570
0FB1 0 C025               LD      U00X&1      RESTORE REGS                    3A157580
0FB2 0 1800               RTE     16                                          3A157590
0FB3 0 C022               LD      U00X                                        3A157600
0FB4 0 2000         F00H  LDS     0           SET C AND OF OFF                3A157610
0FB5 0 4C80 0F98    F008  BSC  I  F00E        BR TO RETURN ADDRESS            3A157620
0FB7 0 C01D         F009  LD      Z000        CHECK LOCK ON ERROR SW          3A157630
0FB8 0 1803               SRA     3           SHIFT BIT 12 TO POS 15          3A157640
0FB9 0 4804               BSC     E           SKIP IF OFF                     3A157650
0FBA 0 7003               MDX     F00C        ERROR SW &B 12¤ ON              3A157660
0FBB 0 1810               SRA     16          RESET ERROR OCCURRED            3A157670
0FBC 0 D0DA               STO     U00B        * CONTROL                       3A157680
0FBD 0 70F0               MDX     F00K        BR TO GET RETURN ADDRESS        3A157690
0FBE 0 C0D9         F00C  LD      F00E        GOT ADDR                        3A157700
0FBF 0 80D6               A       U00A        ADD MINUS THREE                 3A157710
0FC0 0 F0D6               EOR     U00B        COMPARE TO ERR CONTR            3A157720
                        *                     * ADDR                          3A157730
0FC1 0 4820               BSC     Z           SKIP ON ZERO                    3A157740
0FC2 0 70EB               MDX     F00K        BR TO GET RETURN ADDRESS        3A157750
0FC3 0 70F1               MDX     F008        EXIT                            3A157760
                        *                                                       3A157770
                        *****************************************               3A157780
                        *                       CK LOOP RT SW RT  *           3A157790
                        *                                         *           3A157800
*************************************************************************       3A157810
```



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CORE    DATA OR     *LA- OPER-                                                  3A157820
ADDR    INSTRUCTION *BEL ATION FT OPERANDS & REMARKS    ID&SEQ# AT RIGHT        3A157830
*************************************************************************       3A157840
0FC4 0 0000         F005  DC      0           WILL CONTAIN RETURN ADDR        3A157850
0FC5 0 080C               XIO     F003        READ SWS - PLACE IN LABEL       3A157860
                        *                     * ADDRESS Z000                  3A157870
0FC6 0 C00E               LD      Z000        CK LOOP ROUTINE SW              3A157880
0FC7 0 1805               SRA     5           CHECK FOR BIT 11                3A157890
0FC8 0 4804               BSC     E           NO SKIP FOR LOOP                3A157900
0FC9 0 7003               MDX     F00G        LOOP ROUTINE SWITCH ON          3A157910
0FCA 0 C0F9               LD      F005        LD RETURN ADDRESS               3A157920
0FCB 0 D0CC               STO     F00E        SAVE FOR LOCK ON ERROR RTN      3A157930
0FCC 0 70CC               MDX     F00E&1      BR TO SAVE REGISTERS            3A157940
0FCD 0 4C80 0FC4    F00G  BSC  I  F005        BR TO MAIN PROGRAM              3A157950
                        *                     * RETURN ADDRESS                3A157960
0FCF 0 0000         U000  DC      /0000       A REG SAVED HERE                3A157970
0FD0 0 0000         U001  DC      /0000       Q REG SAVED HERE                3A157980
0FD2   0000               BSS  E                                              3A157990
0FD2 0 0FD5         F003  DC      Z000                                        3A158000
0FD3 0 0240         F004  DC      /0240       EQUAL /3A00 IN 1130             3A158010
0FD4 0 0001         U006  DC      /0001                                       3A158020
0FD5 0 0000         Z000  DC      /0000       SW READING STORED HERE          3A158030
0FD6   0002         U00X  BSS     2           SAVED FOR A&Q STORAGE           3A158040
0FD8 0 6004         RST1  LDX     /0004                                       3A158050
0FD9 0 4C00 012E    RST2  BSC  L  A080                                        3A158060
0FDC   012D               END     X000                                        3A158070
 NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
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C R O S S R E F E R E N C E

NAME	VALUE	REFERENCES
A0C0	013F	013A,300F,3010,3011,3012
A080	012E	0FD9,3004,3005,3006,3007,3008,3009,300A,300B,300C,300D,300E
A1C0	01EB	01E9,303D,303E
A1D0	01F5	01F2,303F,3040,3041,3042,3043,3044,3045
A1E0	0214	0210,3046,3047
A1F0	0220	021D,3048,3049
A100	014C	3013,3014,3015
A140	0154	0F63,3016,3017,3018,3019,301A,301B,301C,301D,301E,301F,3020,3021 3022,3023,3024,3025,3026,3027,3028,3029,302E
A180	01A0	019E,302A,302B,302C,302D,302F,3030,3031,3032,3033,3034,3035,3036 3037,3038,3039,303A,303B,303C
A2CC	0336	0340,3072
A2C0	0318	0311,0321,306F
A2C4	0322	032B,3070
A2C8	032C	0335,3071
A200	022D	0229,304A,3048,304C,304D,304E,304F,3050,3051,3052,3053,3054,3055 3056,3057,3058,3059,305A,305B,305C,305D,305E,305F
A240	0270	026B,3060,3061,3062,3063,3064
A280	02D8	028B,02C6,02E1,306A
A281	02E2	02EC,3068
A282	02ED	02F7,306C
A283	02F8	0302,306D
A284	0303	0310,306E
A3C0	03DC	03D5,03E8,03F2,3080,3081
A3C4	03F3	0400,0409,3082,3083
A300	0344	0341,034D,3073
A302	034E	0358,3074
A304	0359	0363,3075
A340	0367	0364,0372,037C,3076,3077
A38C	03BC	03CA,03D4,307E,307F
A380	0380	037D,038A,0394,3078,3079
A384	0395	039E,03A7,307A,307B
A388	03A8	03B1,03BB,307C,307D
A4CC	05A7	05B4,05BD,30A8,30A9
A4C0	055F	055B,056A,30A1
A4C2	056B	056B,056E,057C,0585,058F,30A2,30A3,30A4,30A5
A4C8	0590	059D,05A6,30A6,30A7
A400	0412	040A,041F,0427,0432,3084,3085,3086
A408	0433	0441,0449,0452,3087,3088,3089
A44A	04F9	0505,050E,0518,3099,309A,309B
A440	04BD	04B5,04C8,04D0,04D9,3093,3094,3095
A444	04DA	04E6,04EF,04F8,3096,3097,3098
A480	0542	053B,054D,309F
A482	054E	055A,30A0
A5C0	073D	0747,0750,30CE,30CF
A5C4	0751	075F,0769,30D0,30D1
A5C8	076A	0779,0783,30D2,30D3
A50A	05FC	0607,060E,30AF,30B0,3170
A50C	0619	0618,0625,062C,30B1,30B2
A50E	062D	0626,0639,0640,30B3,30B4
A500	05C4	05BE,05CE,30AA
A502	05CF	05D9,30AB
A504	05DA	05E5,05F0,30AC,30AD
A508	05F1	05FB,30AE
A54A	06BB	0683,06C4,06CC,30C0,30C1
A54C	06CD	06C5,06D6,06DE,30C2,30C3
A54E	06DF	06D7,06E8,06F0,30C4,30C5
A54F	06F1	06E9,06FB,0703,30C6,30C7
A540	0660	0650,0657,066B,0672,0680,30B7,30B8,3089
A544	0681	066C,068C,0693,30BA,30BB
A546	0696	068D,0694,06A1,06A8,30BC,30BD
A548	06A9	06A2,06B2,06BA,30BE,30BF
A580	0704	06FC,070D,0716,30C8,30C9
A584	0717	0720,072A,30CA,30CB
A588	072B	0733,073C,30CC,30CD
A6C0	0954	0944,094B,0964,0968,30F0,30F1

A6C2	096C	0965,097C,0983,30F2,30F3
A6C4	0984	097D,0993,099A,30F4,30F5
A6C6	099B	0994,09AB,09B2,30F6,30F7
A6C8	09B3	09AC,09C3,09CA,09DB,30F8,30F9
A6D0	09DC	09C4,09CB,09E7,315D
A6D2	09E8	09F3,315E
A6D3	09F4	09FF,315F
A6D5	0A00	0A08,3163
A6D6	0A0C	0A17,3164
A6F0	0A18	0A26,3165
A6F1	0A29	0A27,0A37,3166
A60A	07C7	07D3,30D9
A60C	07D4	07E0,30DA
A60E	07E1	07ED,30DB
A600	078F	0787,0797,30D4
A602	0798	07A0,30D5
A604	07A1	07AC,30D6
A606	07AD	07B9,30D7
A608	07BA	07C6,30D8
A64A	085C	0869,30E3
A64C	086A	0877,30E4
A640	0810	080A,081C,0826,30DE,3167
A642	0827	0833,30DF
A644	0834	0840,30E0
A646	0841	084D,30E1
A648	084E	085B,30E2
A660	087F	087A,088C,0896,3157,3158
A662	0897	08A4,08AE,3159,315A
A664	08AF	08BC,08C6,315B,315C
A670	08C9	08C7,08D2,08D9,3169
A68C	0918	0922,092B,30EB,30EC
A680	08DC	08D3,08E7,08F0,30E5,30E6
A684	08F1	08FB,0903,30E7,30E8
A688	0904	090E,0917,30E9,30EA
A7CC	0C28	0C31,0C3A,3125,3126
A7C0	0BEC	0BE0,0BF6,0C00,311F,3120
A7C4	0C01	0C0A,0C14,3121,3122
A7C8	0C15	0C1E,0C27,3123,3124
A70C	0A7D	0A89,0A97,0A9E,3100,3101,3102
A700	0A38	0A44,0A4E,30FA,30FB
A704	0A4F	0A5B,0A65,30FC,30FD
A708	0A66	0A72,0A7C,30FE,30FF
A74C	0B03	0B0F,0B19,0B25,0B2C,3108,310C,310D,310E
A740	0AA8	0A98,0A9F,0AB8,0AC3,0ACF,0AD6,3103,3104,3105,3106
A746	0AD7	0AE5,0AEE,0AFB,0B02,3107,3108,3109,310A
A78A	0B88	0BC1,0BCB,3118,311C
A78E	0BCC	0BD5,0BDF,311D,311E
A780	0B79	0B6C,0B85,0B8F,0B9B,0BA2,3115,3116,3117,3118
A786	0BA3	0BAD,0BB7,3119,311A
A80C	0C9A	0C93,0CA4,312F
A80E	0CA9	0CB3,3130
A800	0C43	0C3B,0C53,0C5E,0C69,0C70,3127,3128,3129,312A
A806	0C71	0C6A,0C7D,0C87,0C92,0C99,312B,312C,312D,312E
A84A	0DB2	0DBB,3171
A840	0D56	0D2D,0D63,3135
A842	0D64	0D78,3136,316F
A844	0D79	0D87,3137
A846	0D88	0D91,3138
A848	0D92	0D9B,3139
A849	0D9C	0DB1,313A,3168
A85A	0DBC	0DC4,3172
A88A	0E4B	0E58,3173
A88C	0E59	0E64,0E6D,0E77,3141,3142,3143
A880	0DCF	0DC5,0DDE,0DE8,0DEE,0DF5,313B,313C,3160
A884	0DF6	0DEF,0E06,0E14,0E1D,313D,313E,3161
A888	0E1E	0E2C,0E3A,313F,3140
A889	0E3B	0E4A,3162
A900	0282	3065,3066,3067,3068,3069

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B40A  0490  04A3,04AB,04B4,3090,3091,3092
B400  0453  045E,0467,0470,308A,308B,308C
B406  0471  047D,0486,048F,308D,308E,308F
B440  0519  0529,0531,053A,309C,309D,309E
B500  0641  063A,064F,0656,3085,3086
B600  07EE  07F8,30DC
B602  07FC  0809,30DD
B680  092C  0937,0943,094A,30ED,30EE,30EF
B742  0B2D  0B39,0B43,0B4F,0B56,310F,3110,3111,3112
B747  0B57  0B61,0B6B,3113,3114
B8A0  0ED6  0EC6,0EE7,0EF0,3148,314C
B8A1  0EF1  0EE9,0EFA,314D
B8A2  0EFB  0F04,314E
B8A3  0F05  0F0E,314F
B8A4  0F0F  0F18,3150
B8A5  0F19  0F23,3151
B8C0  0F24  0F2C,0F34,0F3D,3152,3153,3154
B8C1  0F3E  0F45,3155
B8C2  0F46  0F4E,3156
B800  0CB4  0CBE,3131
B802  0CBF  0CC9,3132
B804  0CCA  0CD4,3133
B806  0CD5  0CDF,3134
B807  0D04  0CE0,0D0E,316A
B808  0D0F  0D19,3168
B809  0D1A  0D25,316C
B810  0D26  0D55,316D,316E
B882  0E78  0E84,0E8D,0E99,3144,3145,3146
B884  0E9A  0EA4,0EAD,0EB9,3147,3148,3149
B885  0EBA  0EC5,314A
F00A  0F85  0F72
F00B  0F83  0F8D,0F90
F00C  0FBE  0FBA
F00E  0F98  0370,0388,03AF,03C8,03E6,03FE,041D,0425,043F,0447,045C,0465,047B
            0484,04A1,04A9,04C6,04CE,04E4,04ED,0503,050C,0527,052F,057A,0583
            0598,05B2,05E3,0605,060C,0669,0670,070B,071E,0731,0745,075D,0777
            081A,088A,08A2,08BA,08D7,08E5,08F9,090C,0920,0935,0A42,0A59,0A70
            0A87,0AB6,0AC1,0AE3,0AEC,0B0D,0B17,0B37,0B41,0B5F,0B83,0B8D,0BAB
            0BBF,0BD3,0BF4,0C08,0C1C,0C2F,0C51,0C5C,0C7B,0C85,0D3D,0D46,0DDC
            0DE6,0E04,0E12,0E2A,0E62,0E6B,0E82,0E8B,0EA2,0EAB,0EE5,0F2A,0F32
            0FAE,0FB0,0FB5,0FBE,0FCB,0FCC
F00F  0F88  0F7D
F00G  0FCD  0FC9
F00H  0FB4  0F99
F00K  0FAE  0FBD,0FC2
F00L  0F7A  0F94
F00X  0F81  0F6A
F000  0F69  02DC,02E7,02F2,02FD,030B,031C,0326,0330,033B,0348,0353,035E,036D
            0377,0385,038F,0399,03A2,03AC,03B6,03C5,03CF,03E3,03ED,03FB,0404
            041A,0422,042D,043C,0444,044D,0459,0462,046B,0478,0481,048A,049E
            04A6,04AF,04C3,04CB,04D4,04E1,04EA,04F3,0500,0509,0513,0524,052C
            0535,0548,0555,0565,0571,0577,0580,058A,0598,05A1,05AF,05B8,05C9
            05D4,05E0,05EB,05F6,0602,0609,0613,0620,0627,0634,063B,064A,0651
            0666,066D,067B,0687,068E,069C,06A3,06AD,06B5,06BF,06C7,06D1,06D9
            06E3,06EB,06F5,06FE,0708,0711,071B,0725,072E,0737,0742,074B,075A
            0764,0774,077E,0792,079B,07A7,07B4,07C1,07CE,07DB,07E8,07F6,0804
            0817,0821,082E,083B,0848,0856,0864,0872,0887,0891,089F,08A9,08B7
            08C1,08D4,08E2,08EB,08F6,08FE,0909,0912,091D,0926,0932,093E,0945
            095F,0966,0977,097E,098E,0995,09A6,09AD,09BE,09C5,09E2,09EE,09FA
            0A06,0A12,0A21,0A32,0A3F,0A49,0A56,0A60,0A6D,0A77,0A84,0A92,0A99
            0AB3,0ABE,0ACA,0AD1,0AE0,0AE9,0AF6,0AFD,0B0A,0B14,0B20,0B27,0B34
            0B3E,0B4A,0B51,0B5C,0B66,0B80,0B8A,0B96,0B9D,0BA8,0BB2,0BBC,0BC6
            0BD0,0BDA,0BF1,0BFB,0C05,0C0F,0C19,0C22,0C2C,0C35,0C4E,0C59,0C64
            0C6B,0C78,0C82,0C8D,0C94,0C9F,0CAE,0CB9,0CC4,0CCF,0CDA,0D09,0D14
            0D20,0D3A,0D43,0D5E,0D6A,0D71,0D82,0D8C,0D96,0DA5,0DAC,0DB6,0DBF
            0DD9,0DE3,0DF0,0E01,0E0F,0E18,0E27,0E35,0E45,0E5F,0E68,0E72,0E7F
            0E88,0E94,0E9F,0EA8,0EB4,0EC0,0EE2,0EEB,0EF5,0EFF,0F09,0F13,0F1E
            0F28,0F30,0F39,0F42,0F4B,0F73,0F76,0F79,0F83,0F85,0F88,0F89,3174
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F002  0F82  0F75
F003  0FD2  0D27,0F6E,0F93,0FA6,0FC5
F004  0FD3  029A,02A9
F005  0FC4  02DF,02EA,02F5,0300,030E,031F,0329,0333,033E,034B,0356,0361,037A
            0392,039C,03A5,03B9,03D2,03F0,0407,0430,0450,046E,048D,04B2,04D7
            04F6,0516,0538,054B,0558,0568,058D,05A4,05BB,05CC,05D7,05EE,05F9
            0616,0623,062A,0637,063E,064D,0654,067E,068A,0691,069F,06A6,06B0
            06B8,06C2,06CA,06D4,06DC,06E6,06EE,06F9,0701,0714,0728,073A,074E
            0767,0781,0795,079E,07AA,07B7,07C4,07D1,07DE,07EB,07F9,0807,0824
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J8A4	0EFF	0EFD
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J8C3	0F42	0F40
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J815	0D20	0D1D
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N4C4	05C3	05AC
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N682   094E  08F3
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N818   0CF6  0D05
N819   0CF8  0D10,0D2E,0D4E
N820   0CFA  0D1C
N821   0CFB  0D2F,0D30,0D31,0D35,0D36,0D49,0D48
N823   0D00  0D1B
N824   0D02  0D33
N84A   0DC6  0DB2
N840   0DC7  0D59,0D5A,0D7D,0D7E,0DA1,0DA8
N841   0DC8  0D5B,0D7F,0DA9
N842   0DC9  0D65,0D6D,0D75
N843   0DCB  0D74
N844   0DCC  0D8C,0DCB
N845   0DCD  0D64,0D67,0D9F
N846   0DCE  0D6E
N88A   0ED0  0E7A,0E9A,0E88
N88B   0ED1  0E41
N88C   0ED2  0E59
N88D   0ED3  0E78
N88E   0ED4  0E08,0E90
N88F   0ED5  0E51
N880   0EC7  0DD4,0DDF,0E07,0E09,0E2D,0E2F,0E6E,0E6F,0E8E,0E8F,0EAE,0EB0
N882   0EC8  0DD0,0E4E
N884   0ECA  0DF8,0E3E,0EB1
N885   0ECB  0E1E,0E31
N886   0ECC  0DFD,0E20,0E23,0E7C,0EA5
N887   0ECD  0DF6
N888   0ECE  0E5B
RST1   0FD8  0F9D
RST2   0FD9  0FA0,0FA3
S501   0651  0644
S503   0654  0648
U00A   0F96  0FBF
U008   0F97  0F77,0F86,0FAB,0FBC,0FC0
```

```
U00X   0FD6  0F9A,0F9C,0FB1,0FB3
U000   0FCF  0F6B,0F80
U001   0FD0  0F6D,0F7E
U003   0F95  0F87
U006   0FD4  0F78,0FAF
V1AC   027A  027C
V154   0241  023E
V168   024E  024B
V170   0253  0250
V174   0257  0254
V180   0261  025E
V184   0266  0263
W8C0   0F5C  0EDC,0F4F
W8C4   0F63  0F60
X000   012D  0FDC,3000
X001   02B4  02AF,3001
X003   02C5  02C1,3002
X007   0F62  3003
Z000   0FD5  0D29,0F6F,0F7A,0F91,0FA7,0FB7,0FC6,0FD2
Z020   0F65  0F61

END OF ASSEMBLY
```

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BASIC DIAGNOSTIC LOADER

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BASIC DIAGNOSTIC LOADER

1. PURPOSE

THE 1130 BASIC DIAGNOSTIC LOADER IS A SELF-CHECKING PROGRAM DESIGNED TO LOAD AND VERIFY LOADING OF DIAGNOSTIC-CARD OR PAPER TAPE PROGRAMS PUNCHED IN 8-8 FORMAT.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE BASIC LOADER WILL ONLY LOAD PROGRAM DECKS WHICH ARE PUNCHED IN THE 8-8 FORMAT DESCRIBED IN SECTION 6.1.

2.2 EQUIPMENT PREREQUISITES

A. 1131 CENTRAL PROCESSING UNIT (CPU).
B. 1442 CARD READ/PUNCH, OR PAPER TAPE READER.

3. USE PROCEDURE

3.1 NORMAL LOADING PROCEDURE

A. AT 1442 CARD READ/PUNCH,

1. DEPRESS NPRO PUSHBUTTON TO CLEAR FEED.
2. PLACE BASIC LOADER DECK, FOLLOWED BY MAIN PROGRAM AND TWO BLANK CARDS IN HOPPER.
3. DEPRESS START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.

B. AT PAPER TAPE READER

1. SET TAPE IN READER
2. MAKE READER READY

C. AT 1131 CPU,

1. PUSH RESET.
2. PUSH PROGRAM LOAD. MAIN PROGRAM SHOULD LOAD AND BEGIN EXECUTION.
3. IF PROGRAM FAILS TO LOAD OR HALTS AT A WAIT INSTRUCTION BELOW LOCATION 012C, REFER TO SECTION 3.2

3.2 DIAGNOSTIC LOADING PROCEDURE

1. SET INTERRUPT DELAY SWITCH (ON CE PANEL) TO ON POSITION.
2. RETRY LOADING PROCEDURE.

IF PROGRAM LOADS, RUN CPU AND INTERRUPT TESTS TO DIAGNOSE NORMAL LOADER FAILURE.

IF PROGRAM DOES NOT LOAD, REFER TO SECTION 3.3

3.3 DIAGNOSTIC GUIDE

NOTE

ALL REGISTER-CONTENT INDICATIONS IN FOLLOWING STEPS ARE EXPRESSED IN HEXADECIMAL NOTATION. ALL ADDRSESSES APPLY TO BOTH PAPER TAPE AND CARD VERSIONS OF THE PROGRAM.

FAILURE DESCRIPTION	SUGGESTED ACTION + POSSIBLE CAUSE OF FAILURE
1. NO CARD FEEDS	REFER TO PROGRAM LOAD TESTS. POSSIBLE FAILURE OF EITHER PROGRAM-LOAD MODE OR READER.

2.	FIRST CARD FEEDS BUT IS NOT READ CORRECTLY.	REFER TO PROGRAM LOAD TESTS. POSSIBLE FAILURE OF READER.
3.	FIRST CARD IS READ CORRECTLY BUT NOT ABLE TO LOAD REMAINDER OF LOADER.	REFER TO ONE-CARD PROGRAMS. POSSIBLE FAILURE OF CPU INSTRUCTIONS USED TO BOOTSTRAP LOADER.
4.	MAIN PROGRAM STARTS EXECUTING BEFORE ALL CARDS HAVE BEEN LOADED.	CHECK THAT LAST CARD OF PROGRAM, WHICH IS PUNCHED WITH FF IN COLUMNS 79 AND 80, IS NOT OUT OF SEQUENCE. IF CARD IS IN SEQUENCE, A READING PROBLEM IS INDICATED.
5.	ALL CARDS FEED BUT MAIN PROGRAM DID NOT EXECUTE.	SEE IF LAST CARD WENT PAST THE READ STATION OF THE 1442. IF IT DID, RUN ONE-CARD DIAGNOSTIC PROGRAMS. CHECK THAT MAIN PROGRAM IS FOLLOWED BY TWO BLANK CARDS.

3.4 ERROR WAITS

SBR	LOCATION	MEANING
30F1	001E	PROGRAM STOPPED BECAUSE CHECKSUM FOR FIRST CARD WAS NOT CORRECT (0000). CHECK THAT LOCATIONS 0000 TO 001E WERE READ CORRECTLY BY COMPARING WITH LISTING. IF NOT LOADED CORRECTLY, REFER TO PROGRAM LOAD TESTS. IF LOCATIONS WERE LOADED CORRECTLY, RUN ONE-CARD PROGRAMS TO HELP ISOLATE PROBLEM.
30F2	002F	PROGRAM STOPPED BECAUSE OF DSW ERROR. THE ONLY VALID WORDS ARE 8003, 0003, AND 0800. DETERMINE CAUSE OF DSW ERROR AND CORRECT. RELOAD AFTER REPAIRING.
30F3	004F	PROGRAM STOPPED BECAUSE FIRST WORD OF CARD 2 FAILED TO BE LOADED IN LOCATION 004F AND THEREFORE, DID NOT REPLACE THE WAIT INSTRUCTION AT THAT LOCATION. EXAMINE CARD 2 AND TRY RELOADING. IF NO IMPROVEMENT, RUN ONE-CARD DIAGNOSTIC PROGRAMS.
30F4	0095	PROGRAM STOPPED BECAUSE OF DSW ERROR. THE ONLY VALID WORDS ARE 8003, 0003, AND 0800. DETERMINE CAUSE OF DSW ERROR AND CORRECT. RELOAD AFTER REPAIR.
30F5	00A5	WHILE LOADING THE MAIN PROGRAM, PROGRAM FOUND THAT WORD COUNT IN LOCATION 0034 EQUALED ZERO. PROBLEM MAY BE CAUSED BY A BLANK CARD IN DECK, OR READING FAILURE.
30F6	00B7	CHECKSUM ERROR. EITHER THE SUM OF LOCATIONS 0010 THRU 0036 DOES NOT EQUAL ZERO, OR AN ADD FAILURE HAS OCCURRED. COMPARE DATA IN LOCATIONS 0010 THRU 0036 WITH DATA IN CARD COLUMNS 1 THROUGH 78. IF CORRECT, RUN CARDS 2 THRU 5 OF ONE-CARD DIAGNOSTIC PROGRAMS TO HELP DETERMINE CAUSE OF FAILURE.
30F7	00DE	PROGRAM HAS FOUND THAT A WORD IN THE READ-IN AREA AND THE WORD AT LOCATION WHERE THE WORD READ IN WAS TRANSFERRED DO NOT AGREE. THE ADDRESSES OF THE WORDS FOUND NOT TO AGREE CAN BE FOUND AT LOCATIONS 00DA AND 00DC. THE PROBLEM MAY BE A DATA-TRANSFER ERROR OR AN EOR FAILURE. RUN ONE-CARD DIAGNOSTIC PROGRAMS TO DETERMINE CAUSE OF PROBLEM.

4. PRINTOUTS (NONE)

5. COMMENTS

THE 1130 BASIC DIAGNOSTIC LOADER IS A SELF-CHECKING PROGRAM DESIGNED TO LOAD AND VERIFY LOADING OF CARD PROGRAMS PUNCHED IN 8-8 MODE. THE 8-8 MODE REFERS TO PROGRAM CARDS IN WHICH A CARD COLUMN CONTAINS A HALF WORD WHERE ONE FULL WORD CONSISTS OF SIXTEEN BITS. TWO CARD COLUMNS ARE REQUIRED FOR EACH WORD. THE LOADER DECK CONSISTS OF FIVE CARDS. THE FIRST CARD IS PUNCHED IN IPL-MODE FORMAT. CARDS TWO THROUGH FIVE ARE PUNCHED IN 8-8 MODE.

5.1 BASIC-LOADER FIRST-CARD FUNCTIONS

5.1.1 AFTER BEING LOADED IN IPL MODE, THE FIRST-CARD PROGRAM DEVELOPS A CHECKSUM TO DETERMINE IF IT WAS LOADED CORRECTLY. IF THE CHECKSUM IS NOT 0000, THE PROGRAM STOPS AT A WAIT WITH THE DEVELOPED CHECKSUM DISPLAYED BY THE ACCUMULATOR.

5.1.2 IF THE CHECKSUM IS CORRECT, THE FIRST-CARD PROGRAM PROCEEDS TO LOAD CARDS TWO THROUGH FIVE. TWO CARD COLUMNS WILL FORM ONE STORAGE WORD BECAUSE THESE CARDS ARE PUNCHED IN 8-8 MODE. THE DSW IS CHECKED, AND IF AN ERROR IS DETECTED, THE PROGRAM WILL STOP AT A WAIT WITH THE ERROR DSW DISPLAYED BY THE ACCUMULATOR. THE CONDITION CAUSING THE DSW ERROR MUST BE CORRECTED BEFORE ATTEMPTING TO RELOAD.

5.1.3 AFTER LOADING CARDS TWO THROUGH FIVE, THE PROGRAM BRANCHES TO BEGINNING OF PROGRAM JUST LOADED.

5.2 FUNCTIONS OF BASIC-LOADER CARDS TWO THROUGH FIVE

5.2.1 CARDS TWO THROUGH FIVE LOAD A MAIN-PROGRAM CARD INTO LOCATIONS 0010 TO 0036. THE DSW IS CHECKED AFTER READING A CARD COLUMN, AND IF AN ERROR OCCURRED, THE PROGRAM STOPS AT A WAIT WITH THE DSW ERROR DISPLAYED BY THE ACCUMULATOR.

5.2.2 CARDS TWO THROUGH FIVE ALSO DEVELOP CHECKSUM OF LOCATIONS 0010 THROUGH 0036. IF CHECKSUM IS OTHER THAN 0000, PROGRAM STOPS AT ERROR WAIT WITH CHECKSUM DISPLAYED BY ACCUMULATOR. A CORRECT CHECKSUM MEANS CARD WAS READ CORRECTLY.

5.2.3 THE WORD COUNT, (NUMBER OF WORDS ON THE CARD) IS TAKEN FROM LOCATION 0034. IF IT IS ZERO PROGRAM STOPS AT ERROR-WAIT.

5.2.4 THE NUMBER OF WORDS SPECIFIED IN LOCATION 0034 IS RELOCATED, STARTING AT THE ADDRESS THAT WAS SPECIFIED IN CARD COLUMNS 75 AND 76 AND THAT WAS READ INTO LOCATION 0035.

5.2.5 THE DATA READ AND THE DATA AT THE TRANSFERED LOCATION ARE COMPARED WORD BY WORD TO VERIFY THAT THE RELOCATION HAS BEEN DONE CORRECTLY. AN UNEQUAL COMPARISON RESULTS IN THE PROGRAM STOPPING AT AN ENOV-WAIT INDICATING AN RELOCATION ERROR.

5.2.6 THE PROGRAM REPEATS THE STEPS DISCUSSED IN PARAGRAPHS 5.2.1 THROUGH 5.2.5 FOR EACH CARD OF THE MAIN PROGRAM DECK, EXCEPT FOR THE LAST CARD, WHICH MUST HAVE A LOCATION ADDRESS OF 0000. AFTER READING THE CARD AND DEVELOPING THE CHECKSUM, THE PROGRAM BRANCHES TO LOCATION 0010 AND STARTS EXECUTING THE MAIN LINE PROGRAM.

6. APPENDIX

6.1 PUNCHED CARD 8-8 FORMAT

THE ORGANIZATION OF THE PUNCHED CARD 8-8 FORMAT IS AS FOLLOWS.

A. COLUMNS 1 THROUGH 72 CONTAIN HALF WORDS (8 BITS) PUNCHED INTO ROWS 12 THROUGH 5. WORD-BITS 0 THROUGH 7 ARE PUNCHED INTO EVEN NUMBERED COLUMNS. WORD-BITS 8 THROUGH 15 ARE PUNCHED INTO ODD NUMBERED COLUMNS.

B. COLUMNS 73 AND 74 CONTAIN A WORD-COUNT OF THE TOTAL NUMBER OF DATA WORDS PUNCHED INTO THE CARD.

C. COLUMNS 75 AND 76 CONTAIN THE LOCATION, IN CORE WHERE THE DATA ON THE CARD ARE TO BE LOADED.

D. COLUMNS 77 AND 78 CONTAIN A CHECKSUN (TWO'S COMPLEMENT OF THE SUM OF ALL WORDS IN COLUMNS 1 THROUGH 76).

F. COLUMNS 79 AND 80 CONTAIN THE CARD'S SEQUENCE NUMBER PUNCHED IN HOLLERITH/HEXADECIMAL FORMAT.

BASIC DIAGNOSTIC LOADER
LIST FOR CARD ONE (IPL)

```
02BC                    ABS                                          CLD00000
                        ORG     /0000                                CLD00010
                   *---- 1130 LOADER CARD 1 ---------------------    CLD00020
                   *    LOAD WITH PROGRAM LOAD BUTTON
                   *                                                 CLD00060
0000 0 C02C        START LD      RDIN+1     CORRECT I/O CONT. COMM.   CLD00070
0001 0 1802              SRA     2               BY SHIFTING          CLD00080
0002 0 D02A              STO     RDIN+1                               CLD00090
0003 0 C023              LD      STRD       CORRECT I/O CONT. COMM.   CLD00100
0004 0 1801              SRA     1               BY SHIFTING AND      CLD00110
0005 0 D021              STO     STRD            STORE WORD           CLD00120
0006 0 F038              EOR     STORE      SET UP STORE LONG INST    CLD00130
0007 0 D037              STO     STORE           PUT BACK INTO CORE.  CLD00140
0008 0 C022              LD      SENSE      CORRECT I/O CONT. COMM.   CLD00150
0009 0 1803              SRA     3                                    CLD00160
000A 0 D020              STO     SENSE                                CLD00170
000B 0 F01D              EOR     RESET                                CLD00180
000C 0 D01C              STO     RESET                                CLD00190
000D 0 1805              SRA     5          MAKE STORE LONG INST.     CLD00200
000E 0 F031              EOR     STORE+1                              CLD00210
000F 0 D030              STO     STORE+1                              CLD00220
0010 0 C017              LD      INTAD                                CLD00230
0011 0 D0F6              STO     /0008                                CLD00240
0012 0 D0F9              STO     /000C                                CLD00250
                   *                                                 CLD00260
0013 0 C016        STRT  LD      CHKSM      FORM CHECK SUM ,THIS CARD CLD00270
0014 0 8000              A       *          FROM 0015 THRU 004D       CLD00280
0015 0 D014              STO     CHKSM                                CLD00290
0016 0 C0FD              LD      STRT+1                               CLD00300
0017 0 800E              A       K0001      MODIFY ADD INSTRUCTION    CLD00310
0018 0 D0FB              STO     STRT+1                               CLD00320
0019 0 F008              EOR     CON1       CHECK THAT LAST LOC.CHECKD CLD00330
001A 0 4820              BSC     Z          SKIP WHEN DONE            CLD00340
001B 0 70F7              MDX     STRT       GO GET NEXT WORD          CLD00350
001C 0 C00D              LD      CHKSM    GET SUM OF  0013 THRU 004F  CLD00360
001D 0 4820              BSC     Z      -- SEE ACC IS  0000  IF SO GO CLD00370
001E 0 30F1              WAIT    -15        CHECK SUM ERROR           CLD00380
001F 0 7010        ENDCK MDX     SRTRD      START LOADING             CLD00390
                   *                                                 CLD00400
0020 0 8823        INT   OC      /8823                                CLD00410
0021 0 0806              XIO     RESET-1    SENSE AND RESET DSW       CLD00420
0022 0 48F8              DC      /48F8      BOSC    +-Z               CLD00430
0023 0 0803        K0803 DC      /0803                                CLD00440
0024 0 700E              MDX     PACK                                 CLD00450
                   *                                                 CLD00460
0025 0 8039        CON1  A     X /0039                                CLD00470
0026 0 0001        K0001 DC      /0001      START RD,USED AS CONSTANT CLD00480
0027 0 2808        STRD  DC      /2808     /1404 SET BY PROG.         CLD00490
0028 0 0020        INTAD DC      INT        RESET DSW CONTROL COMMAND CLD00500
0029 0 0003        RESET DC      /0003     /1703 SET BY PROGRAM       CLD00510
002A 0 3829        CHKSM DC      /3829     SENSE DSW CONTROL COMMAND  CLD00520
002B 0 8800        SENSE DC      /8800     /1700 SET BY PROGRAM       CLD00530
002C 0 0000        RDIN  DC      /0000      READ IN LOCATIONS 0+1     CLD00540
002D 0 4800              DC      /4800     /1200 SET BY PROGRAM       CLD00550
                   *                                                 CLD00560
002E 0 F017        ERROR EOR     K0800     RESTORE ACC. TO DSW        CLD00570
002F 0 30F2              WAIT    -14      **ERR. DSW IN ACC.          CLD00580
                   *                                                 CLD00590
0030 0 08F5        SRTRD XIO     STRD-1     START READ                CLD00600
0031 0 08F6              XIO     RESET-1    RESET DSW                 CLD00610
0032 0 08F7              XIO     SENSE-1    SENSE DSW FOR CRP         CLD00620
0033 0 F011        PACK  EOR     K8003      BITS 0 + 14 + 15 ONLY     CLD00630
0034 0 4820              BSC     Z          SKIP IF BITS 0+14+15 ONLY CLD00640
0035 0 7011              MDX     CONT1      CONTINUE DSW ANALYSIS     CLD00650
0036 0 08F5              XIO     RDIN       RD COL. ONE-HALF WORD     CLD00660
0037 0 C0F4              LD      RDIN                                 CLD00670
0038 0 F0ED              EOR     K0001      SWITCH READ IN AREA, EVEN CLD00680
0039 0 D0F2              STO     RDIN           COLS. IN 0 ODD IN 1   CLD00690
```


BASIC DIAGNOSTIC LOADER
LIST FOR CARD ONE (IPL)

```
003A 0 4820              BSC     Z          SKIP BOTH HALVES IN       CLD00700
003B 0 70F5              MDX     SRTRD+1    GET 2ND HALF WORD         CLD00710
003C 0 C0C3              LD      START    GET LAST 8 BITS             CLD00720
003D 0 1808              SRA     8          SHIFT IT                  CLD00730
003E 0 F0C2              EOR     START+1  GET FIRST 8 BITS            CLD00740
003F 0 C004        STORE DC      /C004      FIRST WORD OF STO L       CLD00750
0040 0 00F7              DC      /00F7      2ND WORD OF STORE LONG    CLD00760
                   * STORE + STORE +1 CHANGED BY PROG9 TO STO L /004F CLD00770
0041 0 C0FE              LD      STORE+1                              CLD00780
0042 0 80E3              A       K0001      MODIFY STORE ADDRESS      CLD00790
0043 0 D0FC              STO     STORE+1                              CLD00800
0044 0 70EC              MDX     SRTRD+1                              CLD00810
                   *                                                 CLD00820
0045 0 8003        K8003 DC      /8003                                CLD00830
0046 0 0800        K0800 DC      /0800                                CLD00840
                   *                                                 CLD00850
0047 0 F003        CONT1 EOR     K8000      CHECK FOR BITS 14+15 ONLY CLD00860
0048 0 4820              BSC     Z          SKIP BUSY AND NOT READY   CLD00870
0049 0 7002              MDX     CONT2                                CLD00880
004A 0 70E7              MDX     SRTRD+2                              CLD00890
004B 0 8000        K8000 DC      /8000                                CLD00900
                   *                                                 CLD00910
004C 0 F0D6        CONT2 EOR     K0803      CHECK FOR BIT 4 ONLY      CLD00920
004D 0 4820              BSC     Z          SKIP END OF CARD          CLD00930
004E 0 70DF              MDX     ERROR                                CLD00940
004F 0 30F3              WAIT    -13      **ERR IF PRGM STOPS AT WAIT CLD00950
                   *                                                 CLD00960
                   * CARD 2 IS READ IN AT THIS LOCATION WITH THE     CLD00970
                   * CHECK FOR READ OF 4 CARDS.                      CLD00980
0050       0000          END     START                                CLD00990
```

BASIC DIAGNOSTIC LOADER
LIST FOR CARD ONE (IPL)

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CHKSM	002A	0013,0C15,001C
CONT1	0047	0035
CONT2	004C	0049
CON1	0025	0019
ENDCK	001F	
ERROR	002E	004E
INT	0020	0028
INTAD	0028	0010
K0001	0026	0017,0038,0042
K0800	0046	002E
K0803	0023	004C
K8000	0048	0047
K8003	0045	0033
PACK	0033	0024
RDIN	002C	0000,0002,0036,0037,0039
RESET	0029	0008,000C,0021,0031
SENSE	002B	0008,000A,0032
SRTRD	0030	001F,003B,0044,004A
START	0000	003C,003E,0050
STORE	003F	0006,0007,000E,000F,0041,0043
STRD	0027	0003,0005,0030
STRT	0013	0016,0018,001B

BASIC DIAGNOSTIC LOADER
LIST FOR CARDS TWO THROUGH FIVE

```
                        ABS                                                 CLD01000
                    * CARDS 2,3,4,+5 ------------------------------------- CLD01010
                    * THIS PROGRAM READS ONE CARD OF 8/8 FORMAT             CLD01020
                    * INTO LOCS. 0000 THRU 0027.                            CLD01030
                    * THE CHECK SUM IS CHECKED.  FOR SUM LOCS.              CLD01040
                    * 0000THRU 0026 TO BE ZERO                              CLD01050
                    * THE NUMBER OF WORDS SPECIFIED IN LOC. 0024            CLD01060
                    * ARE MOVED TO THE LOCATIONS BEGINNING AT THE           CLD01070
                    * ADDRESS IN 0025.  THE WORDS MOVED ARE CHECKED         CLD01080
                    * AGAINST THE IMAGE IN 0000 AND FOLLOWING.              CLD01090
                    * IF ALL CHECKS ARE OK THE NEXT CARD IS READ.           CLD01100
                    * CARD 2 BEGINS HERE                                    CLD01110
                    *                                                       CLD01120
02BC                      ORG    /004F                                      CLD01130
004F 0 C020               LD     COUNT     COUNT CARDS READ                 CLD01140
0050 0 8020       RSTRT   A      K0001                                      CLD01150
0051 0 D01E               STO    COUNT                                      CLD01160
0052 0 F01F               EOR    K0004     CHECK FOR 4 CARDS READ           CLD01170
0053 0 4820               BSC    Z         SKIP 4 CARDS READ                CLD01180
0054 0 70DB               MDX    /0030     GO TO START READ                 CLD01190
                    *                                                       CLD01200
0055 0 C071               LD     MDX        SET RESART BRANCH               CLD01210
0056 0 D0F9               STO    RSTRT                                      CLD01220
0057 0 C070               LD     MDX0                                       CLD01222
0058 0 D0A7               STO    /0000                                      CLD01224
                    *                                                       CLD01230
0059 0 C034         LOAD  LD     CON1                                       CLD01240
005A 0 D01D               STO    STORE     RESTORE STORE INST.              CLD01250
005B 0 C022               LD     CON2                                       CLD01260
005C 0 D027               STO    RDIN      RESTORE RDIN LOC.                CLD01270
005D 0 C022               LD     INTAD                                      CLD01280
005E 0 D0A9               STO    /0008                                      CLD01290
005F 0 D0AC               STO    /000C                                      CLD01300
                    *                                                       CLD01310
0060 0 081D         SRTRD XIO    STRD-1    START READ                       CLD01320
0061 0 081E               XIO    RESET-1   RESET DSW                        CLD01330
0062 0 081F               XIO    SENSE-1   SENSE DSW                        CLD01340
                    *                                                       CLD01350
0063 0 F027         PACK  EOR    K8003     CHECK BITS 0, 14+15 ONLY         CLD01360
0064 0 4820               BSC    Z         SKIP IF COL. REQUEST             CLD01370
0065 0 7031               MDX    CONT1                                      CLD01380
0066 0 081D               XIO    RDIN      READ A COLUMN                    CLD01390
0067 0 C01C               LD     RDIN      SET NEXT READ IN LOCATION        CLD01400
0068 0 F008               EOR    K0001                                      CLD01410
0069 0 D01A               STO    RDIN                                       CLD01420
006A 0 F013               EOR    CON2                                       CLD01430
006B 0 4820               BSC    Z         SKIP IF BOTH HALF WORDS IN       CLD01440
006C 0 70F4               MDX    SRTRD+1                                    CLD01450
006D 0 C018               LD     RDEVN     COMBINE HALF WORDS               CLD01460
006E 0 1808               SRA    8                                          CLD01470
006F 0 7007               MDX    /0077                                      CLD01490
0070 0 0000         COUNT DC     /0000                                      CLD01500
0071 0 0001         K0001 DC     /0001                                      CLD01510
0072 0 0004         K0004 DC     /0004                                      CLD01520
                    *                                                       CLD01540
                    *  CARD 3 BEGINS HERE                                   CLD01550
                    *                                                       CLD01560
0073                      ORG    /0077                                      CLD01570
0077 0 F00F               EOR    RDDDD                                      CLD01571
0078 0 D097         STORE STO    /0010     STORE FULL WORD                  CLD01580
0079 0 C0FE               LD     STORE     SET NEXT WORD LOCATION           CLD01590
007A 0 80F6               A      K0001                                      CLD01600
007B 0 D0FC               STO    STORE                                      CLD01610
007C 0 70E4               MDX    SRTRD+1                                    CLD01620
007D 0 7096         HOP   MDX    /0014          START PROGRAM               CLD01630
007E 0 0086         CON2  DC     RDEVN     READ CARD CONTROL COMMAND        CLD01650
007F 0 1404         STRD  DC     /1404                                      CLD01660
0080 0 008F         INTAD DC     INT       RESET DSW CONTROL COMMAND        CLD01670
```

BASIC DIAGNOSTIC LOADER
LIST FOR CARDS TWO THROUGH FIVE

```
0081 0  1703          RESET DC      /1703                                  CLD01680
0082 0  0000          CKSUM DC      /0000      SENSE DSW CONTROL COMMAND   CLD01690
0083 0  1700          SENSE DC      /1700                                  CLD01700
0084 0  0086          RDIN  DC      RDEVN      READ COL. CONTROL COMMAND   CLD01710
0085 0  1200                DC      /1200                                  CLD01720
0086 0  0000          RDEVN DC      /0000                                  CLD01730
0087 0  0000          RDDDD DC      /0000                                  CLD01740
0088 0  0034          K0034 DC      /0034                                  CLD01750
0089 0  0037          K0037 DC      /0037                                  CLD01760
008A 0  0800          K0800 DC      /0800                                  CLD01770
008B 0  8003          K8003 DC      /8003                                  CLD01780
008C 0  0010          K0010 DC      /0010                                  CLD01790
008D 0  8000          K8000 DC      /8000                                  CLD01800
008E 0  D097          CON1  STO  X  /0010-STORE-1                          CLD01805
                      *                                                    CLD01810
008F 0  0000          INT   DC      0                                      CLD01820
0090 0  08EF                XIO     RESET-1    SENSE AND RESET DSW         CLD01830
0091 0  4878                BOSC    +-2        BR OUT OF INTERRUPT         CLD01840
0092 0  0803          K0803 DC      /0803                                  CLD01850
0093 0  70CF                MDX     PACK                                   CLD01860
                      *                                                    CLD01870
0094 0  F0F5          ERROR EOR     K0800      RESTORE ACC TO DSW          CLD01880
0095 0  30F4                WAIT    -12      **ERR. DSW IN ACC.            CLD01890
0096 0  70C2                MDX     LOAD           PRESS START TO RETRY    CLD01900
0097 0  F0F5          CONT1 EOR     K8000      CHECK FOR BITS 14+15 ONLY   CLD01910
0098 0  4820                BSC     Z          SKIP BUSY AND NOT READY     CLD01920
0099 0  7005                MDX     CONT2                                  CLD01930
009A 0  70C7                MDX     SRTRD+2                                CLD01940
                      *                                                    CLD01950
                      * CARD 4 BEGINS HERE                                 CLD01960
                      *                                                    CLD01970
009B                        ORG     /009F                                  CLD01980
009F 0  F0F2          CONT2 EOR     K0803      CHECK FOR BIT 4 ONLY        CLD01990
00A1 0  70F2                MDX     ERROR      SKIP END OF CARD            CLD02000
                      *                                                    CLD02010
                      *---CHECK FOR WORD COUNT OF ZERO----------------     CLD02020
                      *                                                    CLD02030
00A2 0  C091                LD      /0034      GET WORD COUNT              CLD02040
00A3 0  4820                BSC     Z          SKIP IF WORD COUNT ZERO     CLD02050
00A4 0  7002                MDX     SUM1                                   CLD02060
00A5 0  30F5                WAIT    -11      **ERR. WORD COUNT IS ZERO     CLD02070
00A6 0  70B2                MDX     LOAD       START CONTINUES LOADING     CLD02080
                      *                                                    CLD02090
                      *-----FORM CHECK SUM OF CARD IMAGE LOCS.'00-26-----  CLD02100
                      *                                                    CLD02110
00A7 0  C0E4          SUM1  LD      K0010      SET ACC. TO /0010           CLD02120
00A8 0  D0D4                STO     CKLOD+1                                CLD02130
00A9 0  1810                SRA     16                                     CLD02140
00AA 0  D0D7                STO     CKSUM                                  CLD02150
00AB 0  C0D6                LD      CKSUM                                  CLD02160
00AC 00 8400FFFF      CKLOD A    L  /FFFF      FORM SUM OF LOCS.10 THRU 36 CLD02170
00AE 0  D0D3                STO     CKSUM                                  CLD02180
00AF 0  C0FD                LD      CKLOD+1    MODIFY ADDRESS              CLD02190
00B0 0  80C0                A       K0001                                  CLD02200
00B1 0  D0FB                STO     CKLOD+1                                CLD02210
00B2 0  F0D6                EOR     K0037      CHECK THAT ALL WORDS DONE   CLD02220
00B3 0  4820                BSC     Z          SKIP ALL LOCS. ADDED        CLD02230
00B4 0  70F6                MDX     CKLOD-1                                CLD02240
00B5 0  C0CC                LD      CKSUM      LOAD SUM 10 THRU 36         CLD02250
00B6 0  4820                BSC     Z          SKIP SUM IS CORRECT         CLD02260
00B7 0  30F6                WAIT    -10      **ERR. IN CHECK SUM           CLD02270
                      *                                                    CLD02280
                      * MOVE CARD IMAGE TO THE LOCS. BEGINING AT           CLD02290
                      * THE ADDRESS GIVEN IN LOC. /0025.----------------   CLD02300
                      *                                                    CLD02310
00B8 00 C4000035      MOVE  LD   L  /0035      GET ADDRESS FOR FIRST WORD  CLD02320
00BA 0  4820                BSC     Z           SKIP ADDRESS IS 0000       CLD02330
                                                                           CLD02340
```


BASIC DIAGNOSTIC LOADER
LIST FOR CARDS TWO THROUGH FIVE

```
00BB 0  7001                MDX     STRE                                   CLD02350
00BC 0  70C0                MDX     HOP        START PROGRAM VIA HOP       CLD02360
00BD 0  D00C          STRE  STO     PUT+1      SET FIRST WORD ADDRESS      CLD02370
00BE 0  C0CD                LD      K0010      SET ACC. EQU. 0010          CLD02380
00BF 0  D001                STO     GET+1      SET TO GET FIRST WORD AT 0  CLD02390
00C0 00 C400FFFF      GET   LD   L  /FFFF      GET PROG. WORD              CLD02400
00C2 0  7006                MDX     PUT                                    CLD02410
                      *                                                    CLD02420
                      * CARD 5 BEGINS HERE                                 CLD02430
                      *                                                    CLD02440
00C3                        ORG     /00C7                                  CLD02450
00C7 0  7008          MDX   MDX  X  LOAD-RSTRT-1                           CLD02456
00C8 0  7013          MDX0  MDX  X  /0013                                  CLD02457
00C9 00 D400FFFF      PUT   STO  L  /FFFF      PUT PROG. WORD              CLD02460
00CB 0  C0FE                LD      PUT+1      MODIFY PUT                  CLD02470
00CC 0  80A4                A       K0001                                  CLD02480
00CD 0  D0FC                STO     PUT+1                                  CLD02490
00CE 0  C0F2                LD      GET+1      MODIFY GET                  CLD02500
00CF 0  80A1                A       K0001                                  CLD02510
00D0 0  D0F0                STO     GET+1                                  CLD02520
00D1 0  F0B6                EOR     K0034      CHECK FOR ALL WORDS MOVED   CLD02530
00D2 0  4820                BSC     Z          SKIP ALL WORDS MOVED        CLD02540
00D3 0  70EC                MDX     GET                                    CLD02550
00D4 00 C4000035      SUM2  LD   L  /0035      GET ADDRESS OF FIRST WORD   CLD02560
00D6 0  D003                STO     CKMOV+1        PUT IT INTO ROUTINE     CLD02570
00D7 0  C0B4                LD      K0010      SET TO GET FIRST WORD OF    CLD02580
00D8 0  D003                STO     COMP+1         IMAGE                   CLD02590
00D9 00 C400FFFF      CKMOV LD   L  /FFFF      GET WORD MOVED              CLD02600
00DB 00 F400FFFF      COMP  EOR  L  /FFFF      COMPARE WITH CARD IMAGE     CLD02610
00DD 0  4820                BSC     Z          SKIP WORD STORED OK         CLD02620
00DE 0  30F7                WAIT    -9       **ERR. WORD NOT STORED OK.    CLD02630
00DF 0  C0FA                LD      CKMOV+1    MODIFY FOR NEXT WORD        CLD02640
00E0 0  8090                A       K0001                                  CLD02650
00E1 0  D0F8                STO     CKMOV+1                                CLD02660
00E2 0  C0F9                LD      COMP+1     MODIFY FOR NEXT COMPARE     CLD02670
00E3 0  80BD                A       K0001                                  CLD02680
00E4 0  D0F7                STO     COMP+1                                 CLD02690
00E5 0  F0A2                EOR     K0034      CHECK IF ALL DONE           CLD02700
00E6 0  4820                BSC     Z          SKIP ALL WORDS CHECKED      CLD02710
00E7 0  70F1                MDX     CKMOV                                  CLD02720
00E8 0  70BD                MDX     SUM1-1     GO GET NEXT CARD            CLD02730
00EA    0059                END     LOAD                                   CLD02740
```

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CKLOD	00AC	00A8,00AF,00B1,00B4
CKMOV	00D9	00D6,00DF,00E1,00E7
CKSUM	0082	00AA,00AB,00AE,00B5
COMP	00DB	00D8,00E2,00E4
CONT1	0097	0065
CONT2	009F	0099
CON1	008E	0059
CON2	007E	005B,006A
COUNT	0070	004F,0051
ERROR	0094	00A1
GET	00C0	00BF,00CE,00D0,00D3
HOP	007D	00BC
INT	008F	0080
INTAD	0080	005D
K0001	0071	0050,0068,007A,00B0,00CC,00CF,00EC,00E3
K0004	0072	0052
K0010	008C	00A7,00BE,00D7
K0034	00B8	00D1,00E5
K0037	0089	00B2
K0800	008A	0094
K0803	0092	009F
K8000	008D	0097
K8003	0088	0063
LOAD	0059	0096,00A6,00C7,00E9
MDX	00C7	0055
MDX0	00C8	0057
MOVE	0088	
PACK	0063	0093
PUT	00C9	00BD,00C2,00CB,00CD
RDEVN	0086	006D,007E,0084
RDIN	0084	005C,0066,0067,0069
RDDDD	0087	0077
RESET	0081	0061,0090
RSTRT	0050	0056,00C7
SENSE	0083	0062
SRTRD	0060	006C,007C,009A
STORE	0078	005A,0079,0078,008E
STRD	007F	0060
STRE	00BD	00B8
SUM1	00A7	00A4,00E8
SUM2	00D4	


```
                        ABS
02BC                    ORG     /0000                                   TDL00000
                *   LOAD WITH PROGRAM LOAD BUTTON                       TDL00010
0000 0  7011            MDX     STRT                                    TDL00020
0001 0  0000            DC                                              TDL00030
0002 0  0000            DC                                              TDL00040
0003 0  0000            DC                                              TDL00050
0004 0  0000            DC                                              TDL00060
0005 0  0000            DC                                              TDL00070
0006 0  0000            DC                                              TDL00080
0007 0  0000            DC                                              TDL00090
0008 0  0000            DC                                              TDL00100
0009 0  0000            DC                                              TDL00110
000A 0  0000            DC                                              TDL00120
000B 0  0000            DC                                              TDL00130
000C 0  003A            DC      INT                                     TDL00140
000D 0  0000            DC                                              TDL00150
000E 0  0000            DC                                              TDL00160
000F 0  0000            DC                                              TDL00170
0010 0  0000            DC                                              TDL00180
0011 0  0000            DC                                              TDL00190
                *                                                       TDL00200
0012 0  C00D    STRT    LD      CHKSM   FORM CHECK SUM                  TDL00210
0013 00 84000000        A   L   /00000                                  TDL00220
0015 0  D00A            STO     CHKSM                                   TDL00230
0016 0  C0FD            LD      STRT+2                                  TDL00240
0017 0  8064            A       K0001   MODIFY ADD INSTRUCTION          TDL00250
0018 0  D0FB            STO     STRT+2                                  TDL00260
0019 0  F007            EOR     LAST    CHECK THAT LAST LOC.CHECKD      TDL00270
001A 0  4820            BSC     Z       SKIP WHEN DONE                  TDL00280
001B 0  70F6            MDX     STRT    GO GET NEXT WORD                TDL00290
001C 0  C003            LD      CHKSM   GET SUM OF  0000 THRU 00E8      TDL00300
001D 0  4820            BSC     Z       SKIP IF CKSUM ZERO              TDL00310
001E 0  30F1            WAIT    -15     CKSUM ERROR                     TDL00320
001F 0  7030            MDX     LOAD    START LOADING                   TDL00330
0020 0  2D6E    CHKSM   DC      /2D6E                                   TDL00340
0021 0  00E9    LAST    DC      END                                     TDL00350
                *                                                       TDL00360
0022 0  FFFF            DC      /FFFF                                   TDL00380
0023 0  0000            DC                                              TDL00400
0024 0  0000            DC                                              TDL00401
0025 0  0000            DC                                              TDL00402
0026 0  0000            DC                                              TDL00410
0027 0  0000            DC                                              TDL00420
0028 0  0000            DC                                              TDL00430
0029 0  0000            DC                                              TDL00440
002A 0  0000            DC                                              TDL00450
002B 0  0000            DC                                              TDL00460
002C 0  0000            DC                                              TDL00470
002D 0  0000            DC                                              TDL00480
002E 0  0000            DC                                              TDL00490
002F 0  0000            DC                                              TDL00500
0030 0  0000            DC                                              TDL00510
0031 0  0000            DC                                              TDL00520
0032 0  0000            DC                                              TDL00530
0033 0  0000            DC                                              TDL00540
0034 0  0000            DC                                              TDL00550
0035 0  0000            DC                                              TDL00560
0036 0  0000            DC                                              TDL00570
0037 0  0000            DC                                              TDL00580
0038 0  0000            DC                                              TDL00590
0039 0  0000            DC                                              TDL00600
003A 0  0000    INT     DC      0                                       TDL00610
003B 0  0842            XIO     RESET   SENSE AND RESET DSW             TDL00620
003C 0  4878            BOSC    +-Z     BR OUT OF INTERRUPT             TDL00630
003D 0  0000            DC      0                                       TDL00640
003E 0  701F            MDX     PACK                                    TDL00650
003F 0  0000            DC                                              TDL00660
                                                                        TDL00670
```

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```
0040 0 0000          DC                                          TDL00680
0041 0 0000          DC                                          TDL00690
0042 0 0000          DC                                          TDL00700
0043 0 D09F    CON1  STO  X  /0010-STORE-1                       TDL00710
0044 0 004E    CON2  DC     RDEVN                                 TDL00720
0045 0 0028    CON3  DC     40                                    TDL00730
0046 0 7F00    DELET DC     /7F00                                 TDL00740
0047 0 7006    FIX   MDX  X Y-X-1                                 TDL00750
0048 0 C0ED    REFIX LD   X RDEVN-X-1                            TDL00760
0049 0 0000    WCNT  DC     0                                     TDL00770
004A 0 4C00    K4C00 DC     /4C00                                 TDL00780
004B 0 ECF0    KECF0 DC     /ECF0      PUNCH BIT MASK             TDL00790
004C 0 0C00    K0C00 DC     /0C00                                 TDL00800
004D 0 4000    K4000 DC     /4000                                 TDL00810
004E 0 0000    RDEVN DC     /0000                                 TDL00820
004F 0 0000    RDODD DC     /0000                                 TDL00830
               *                                                  TDL00840
0050 0 C0F2    LOAD  LD     CON1                                  TDL00850
0051 0 D01E          STO    STORE     RESTORE STORE INST.         TDL00860
0052 0 C0F1          LD     CON2                                  TDL00870
0053 0 D02E          STO    RDIN      RESTORE RDIN LOC.           TDL00880
0054 0 C0F0          LD     CON3                                  TDL00890
0055 0 D0F3          STO    WCNT                                  TDL00900
0056 0 C0F1          LD     REFIX                                 TDL00910
0057 0 D008          STO    X                                     TDL00920
               *                                                  TDL00930
0058 0 0823    SRTRD XIO    K0001     START READ                  TDL00940
0059 0 0826          XIO    SENSE     SENSE DSW                   TDL00950
005A 0 E0F0          AND    KECF0      MASK OUT PUNCH BITS        TDL00960
005B 0 F0F1          EOR    K4000                                 TDL00970
005C 0 4820          BSC    Z         SKIP IF COL. REQUEST        TDL00980
005D 0 7039          MDX    CONT1                                 TDL00990
               *                                                  TDL01000
005E 0 081F    PACK  XIO    RESET     RESET DSW                   TDL01010
005F 0 0822          XIO    RDIN      READ A COLUMN               TDL01020
0060 0 C0ED    X     LD     RDEVN                                 TDL01030
0061 0 90E4          S      DELET                                 TDL01040
0062 0 4820          BSC    Z                                     TDL01050
0063 0 7001          MDX    *+1                                   TDL01060
0064 0 70F3          MDX    SRTRD                                 TDL01070
0065 0 C0E1          LD     FIX                                   TDL01080
0066 0 D0F9          STO    X                                     TDL01090
0067 0 C01A    Y     LD     RDIN      SET NEXT READ IN LOCATION   TDL01100
0068 0 F013          EOR    K0001                                 TDL01110
0069 0 D018          STO    RDIN                                  TDL01120
006A 0 F0D9          EOR    CON2                                  TDL01130
006B 0 4820          BSC    Z         SKIP IF BOTH HALF WORDS IN  TDL01140
006C 0 70EB          MDX    SRTRD                                 TDL01150
006D 0 C0E0          LD     RDEVN     COMBINE HALF WORDS          TDL01160
006E 0 1808          SRA    8                                     TDL01170
006F 0 F0DF          EOR    RDODD                                 TDL01180
               *                                                  TDL01190
0070 0 D09F    STORE STO    /0010     STORE FULL WORD             TDL01200
0071 0 C0FE          LD     STORE     SET NEXT WORD LOCATION      TDL01210
0072 0 8009          A      K0001                                 TDL01220
0073 0 D0FC          STO    STORE                                 TDL01230
0074 0 C0D4          LD     WCNT                                  TDL01240
0075 0 9006          S      K0001                                 TDL01250
0076 0 D0D2          STO    WCNT                                  TDL01260
0077 0 4820          BSC    Z                                     TDL01270
0078 0 70DF          MDX    SRTRD                                 TDL01280
0079 0 7028          MDX    DATA                                  TDL01290
007A 0 7099    HOP   MDX    /0014          START PROGRAM          TDL01300
               *                                                  TDL01310
007B 0 0000    CKSUM DC     /0000                                 TDL01320
007C 0 0001    K0001 DC     /0001     READ CARD CONTROL COMMAND   TDL01330
007D 0 1C10          DC     /1C10                                 TDL01340
007E 0 0000    RESET DC     /0000     RESET DSW CONTROL COMMAND   TDL01350
```


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```
007F 0 1F01          DC     /1F01                                 TDL01360
0080 0 0004    SENSE DC     /0004     SENSE DSW CONTROL COMMAND   TDL01370
0081 0 1F00          DC     /1F00                                 TDL01380
0082 0 004E    RDIN  DC     RDEVN     READ COL. CONTROL COMMAND   TDL01390
0083 0 1A00          DC     /1A00                                 TDL01400
0084 0 0037    K0037 DC     /0037                                 TDL01410
0085 0 0034    K0034 DC     /0034                                 TDL01420
0086 0 0010    K0010 DC     /0010                                 TDL01430
0087 0 0000          DC                                          TDL01440
0088 0 0000          DC                                          TDL01450
0089 0 0000          DC                                          TDL01460
008A 0 0000          DC                                          TDL01470
008B 0 0000          DC                                          TDL01480
008C 0 0000          DC                                          TDL01490
008D 0 0000          DC                                          TDL01500
008E 0 0000          DC                                          TDL01510
008F 0 0000          DC                                          TDL01520
0090 0 0000          DC                                          TDL01530
0091 0 0000          DC                                          TDL01540
0092 0 0000          DC                                          TDL01550
0093 0 0000          DC                                          TDL01555
               *                                                 TDL01560
0094 0 F0B7    ERROR EOR    K0C00     RESTORE ACC TO DSW          TDL01570
0095 0 30F4          WAIT   -12       **ERR. DSW IN ACC.          TDL01580
0096 0 70C2          MDX    SRTRD+1        PRESS START TO RETRY   TDL01590
               *                                                 TDL01600
0097 0 F0B2    CONT1 EOR    K4C00      CHK BITS 4 AND 5 ONLY      TDL01610
0098 0 4820          BSC    Z          SKIP BUSY AND NOT READY    TDL01620
0099 0 70FA          MDX    ERROR                                 TDL01630
009A 0 70BE          MDX    SRTRD+1                               TDL01640
009B 0 0000          DC                                          TDL01660
009C 0 0000          DC                                          TDL01670
009D 0 0000          DC                                          TDL01680
009E 0 0000          DC                                          TDL01690
009F 0 0000          DC                                          TDL01700
00A0 0 0000          DC                                          TDL01710
00A1 0 0000          DC                                          TDL01720
               *                                                 TDL01730
               *---CHECK FOR WORD COUNT OF ZERO----------------- TDL01740
               *                                                 TDL01750
00A2 0 C091    DATA  LD     /0034      GET WORD COUNT             TDL01760
00A3 0 4820          BSC    Z          SKIP IF WORD COUNT ZERO    TDL01770
00A4 0 7002          MDX    SUM1                                  TDL01780
00A5 0 30F5          WAIT   -11       **ERR. WORD COUNT IS ZERO   TDL01790
00A6 0 70A9          MDX    LOAD      START CONTINUES LOADING     TDL01800
               *                                                 TDL01810
               *----FORM CHECK SUM OF CARD IMAGE LOCS.'10-36----- TDL01820
               *                                                 TDL01830
00A7 0 C0DE    SUM1  LD     K0010      SET ACC. TO /0010          TDL01840
00A8 0 D004          STO    CKLOD+1                               TDL01850
00A9 0 1810          SRA    16                                    TDL01860
00AA 0 D0D0          STO    CKSUM                                 TDL01870
00AB 0 C0CF          LD     CKSUM                                 TDL01880
00AC 00 8400FFFF CKLOD A  L  /FFFF      FORM SUM OF LOCS.10 THRU 36 TDL01890
00AE 0 D0CC          STO    CKSUM                                 TDL01900
00AF 0 C0FD          LD     CKLOD+1    MODIFY ADDRESS             TDL01910
00B0 0 80CB          A      K0001                                 TDL01920
00B1 0 D0FB          STO    CKLOD+1                               TDL01930
00B2 0 F0D1          EOR    K0037      CHECK THAT ALL WORDS DONE  TDL01940
00B3 0 4820          BSC    Z          SKIP ALL LOCS. ADDED       TDL01950
00B4 0 70F6          MDX    CKLOD-1                               TDL01960
00B5 0 C0C5          LD     CKSUM      LOAD SUM 10 THRU 36        TDL01970
00B6 0 4820          BSC    Z          SKIP SUM IS CORRECT        TDL01980
00B7 0 30F6          WAIT   -10       **ERR. IN CHECK SUM         TDL01990
               *                                                 TDL02000
               * MOVE CARD IMAGE TO THE LOCS. BEGINING AT        TDL02010
               * THE ADDRESS GIVEN IN LOC. /0025.---------------- TDL02020
               *                                                 TDL02030
```

BASIC DIAGNOSTIC LOADER
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```
00B8 00 C4000035    MOVE  LD   L  /0035     GET ADDRESS FOR FIRST WORD   TDL02040
00BA 0  4820              BSC      Z        SKIP ADDRESS IS 0000         TDL02050
00BB 0  7001              MDX      STRE                                  TDL02060
00BC 0  70BD              MDX      HOP      START PROGRAM VIA HOP        TDL02070
00BD 0  D00C        STRE  STO      PUT+1    SET FIRST WORD ADDRESS       TDL02080
00BE 0  C0C7              LD       K0010    SET ACC. EQU. 0010           TDL02090
00BF 0  D001              STO      GET+1    SET TO GET FIRST WORD AT 0   TDL02100
00C0 00 C400FFFF    GET   LD   L  /FFFF     GET PROG. WORD               TDL02110
00C2 0  7006              MDX      PUT                                   TDL02120
                    *                                                    TDL02130
00C3 0  0010              DC       /0010                                 TDL02140
00C4 0  0000              DC                                             TDL02150
00C5 0  0000              DC                                             TDL02160
00C6 0  0000              DC                                             TDL02170
00C7 0  0000              DC                                             TDL02171
00C8 0  0000              DC                                             TDL02172
                    *                                                    TDL02180
00C9 00 D400FFFF    PUT   STO  L  /FFFF     PUT PROG. WORD               TDL02190
00CB 0  C0FE              LD       PUT+1    MODIFY PUT                   TDL02200
00CC 0  80AF              A        K0001                                 TDL02210
00CD 0  D0FC              STO      PUT+1                                 TDL02220
00CE 0  C0F2              LD       GET+1    MODIFY GET                   TDL02230
00CF 0  80AC              A        K0001                                 TDL02240
00D0 0  D0F0              STO      GET+1                                 TDL02250
00D1 0  F0B3              EOR      K0034    CHECK FOR ALL WORDS MOVED    TDL02260
00D2 0  4820              BSC      Z        SKIP ALL WORDS MOVED         TDL02270
00D3 0  70EC              MDX      GET                                   TDL02280
00D4 00 C4000035    SUM2  LD   L  /0035     GET ADDRESS OF FIRST WORD    TDL02290
00D6 0  D003              STO      CKMOV+1       PUT IT INTO ROUTINE     TDL02300
00D7 0  C0AE              LD       K0010    SET TO GET FIRST WORD OF     TDL02310
00D8 0  D003              STO      COMP+1         IMAGE                   TDL02320
00D9 00 C400FFFF    CKMOV LD   L  /FFFF     GET WORD MOVED               TDL02330
00DB 00 F400FFFF    COMP  EOR  L  /FFFF     COMPARE WITH CARD IMAGE      TDL02340
00DD 0  4820              BSC      Z        SKIP WORD STORED OK          TDL02350
00DE 0  30F7              WAIT     -9       **ERR. WORD NOT STORED OK.   TDL02360
00DF 0  C0FA              LD       CKMOV+1  MODIFY FOR NEXT WORD         TDL02370
00E0 0  8098              A        K0001                                 TDL02380
00E1 0  D0F8              STO      CKMOV+1                               TDL02390
00E2 0  C0F9              LD       COMP+1   MODIFY FOR NEXT COMPARE      TDL02400
00E3 0  8098              A        K0001                                 TDL02410
00E4 0  D0F7              STO      COMP+1                                TDL02420
00E5 0  F09F              EOR      K0034    CHECK IF ALL DONE            TDL02430
00E6 0  4820              BSC      Z        SKIP ALL WORDS CHECKED       TDL02440
00E7 0  70F1              MDX      CKMOV                                 TDL02450
00E8 0  708D              MDX      SUM1-1   GO GET NEXT CARD             TDL02460
00E9    0000        END   BSS      0                                     TDL02470
00EA    0050              END      LOAD                                  TDL02480
```


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CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CHKSM	0020	0012,0015,001C
CKLOD	00AC	00A8,00AF,00B1,00B4
CKMOV	00D9	00D6,00DF,00E1,00E7
CKSUM	0078	00AA,00AB,00AE,00B5
COMP	00DB	00D8,00E2,00E4
CONT1	0097	005D
CON1	0043	0050
CON2	0044	0052,006A
CON3	0045	0054
DATA	00A2	0079
DELET	0046	0061
END	00E9	0021
ERROR	0094	0099
FIX	0047	0065
GET	00C0	00BF,00CE,00DC,00D3
HOP	007A	00BC
INT	003A	000C
KECF0	004B	005A
KOC00	004C	0094
K0001	007C	0017,0058,0068,0072,0075,00B0,00CC,00CF,00E0,00E3
K0010	0086	00A7,00BE,00D7
K0034	0085	00D1,00E5
K0037	0084	00B2
K4C00	004A	0097
K4000	004D	005B
LAST	0021	0019
LOAD	0050	001F,00A6,00E9
MOVE	0088	
PACK	005E	003E
PUT	00C9	00BD,00C2,00CB,00CD
RDEVN	004E	0044,0048,0060,006D,0082
RDIN	0082	0053,005F,0067,0069
RDODD	004F	006F
REFIX	0048	0056
RESET	007E	003B,005E
SENSE	0080	0059
SRTRD	0058	0064,006C,0078,0096,009A
STORE	0070	0043,0051,0071,0073
STRE	00BD	00BB
STRT	0012	0000,0016,0018,001B
SUM1	00A7	00A4,00E8
SUM2	00D4	
WCNT	0049	0055,0074,0076
X	0060	0047,0048,0057,0066
Y	0067	0047

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1. PURPOSE

THE ONE-CARD PROGRAMS ARE SHORT TESTS USED TO HELP ISOLATE FAILING FUNCTIONS THAT KEEP THE BASIC DIAGNOSTIC LOADER FROM OPERATING CORRECTLY. THERE ARE SEVEN ONE-CARD PROGRAMS, SEQUENCE NUMBERED 01 THROUGH 07 IN HOLLERITH - HEXADECIMAL CODE IN COLUMNS 79 AND 80. EACH PROGRAM IS RUN INDIVIDUALLY AND IS LOADED INTO CORE STORAGE USING THE PROGRAM LOAD MODE. REFER TO PARAGRAPH 5., COMMENTS, FOR PURPOSE AND DESCRIPTION OF EACH ONE-CARD PROGRAM.

INCLUDED IN THE APPENDIX, PARAGRAPHS 6.1 AND 6.2, ARE MANUAL ENTRY TEST PROGRAMS WHICH ARE LOADED BY MEANS OF THE CONSOLE ENTRY SWITCHES,. ONE PROGRAM IS A DATA PATH TEST, AND THE OTHER IS AN ADD TEST. THESE PROGRAMS PROVIDE ADDITIONAL AID IN ISOLATING MALFUNCTIONS.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

NO ADDITIONAL PROGRAMS ARE REQUIRED.

2.2 EQUIPMENT PREREQUISITES

A. 1131 CENTRAL PROCESSING UNIT (CPU).
B. 1442 CARD READ/PUNCH OR PAPER TAPE.
C. 2501 CARD READER (USE ONLY CARDS 1-6) 7=ERROR.

3. USE PROCEDURE

3.1 GENERAL INFORMATION

THE FASTEST WAY TO ISOLATE A FAILURE WITH THE ONE-CARD PROGRAMS IS TO STEP THROUGH EACH ONE-CARD PROGRAM LOOKING FOR ONE OF THE ERROR CONDITIONS POSSIBLE.

THE POSSIBLE ERROR CONDITIONS ARE,

A. STOP AT ERROR WAIT.
B. INCORRECT REGISTER READINGS AT A NORMAL WAIT.
C. FAILURE TO STOP AT A NORMAL WAIT.

IF THE ABOVE ERROR CONDITIONS DO NOT OCCUR, IT WILL BE NECESSARY TO RELY ON WHATEVER ERROR CONDITIONS APPEAR.

NORMAL WAITS-300X. NORMAL WAITS HAVE AS THEIR LAST DIGIT THE NUMBER OF THE ONE-CARD PROGRAM WHERE THEY OCCUR. FOR EXAMPLE WAIT 3003 IDENTIFIES A NORMAL WAIT IN ONE-CARD PROGRAM 03. WHEN A PROGRAM HAS MORE THAN ONE NORMAL WAIT, REFERENCE TO THE INSTRUCTION ADDRESS REGISTER READING IS NECESSARY, TO CORRECTLY IDENTIFY THE WAIT.

ERROR WAITS - 30EX. THE LAST DIGIT OF AN ERROR WAIT IDENTIFIES THE ONE-CARD PROGRAM WHERE WAIT OCCURS. THE NEXT TO LAST DIGIT, E, IDENTIFIES THE WAIT AS BEING AN ERROR WAIT. WHEN MORE THAN ONE ERROR WAIT OCCURS IN A ONE-CARD PROGRAM, REFERENCE TO THE INSTUCTION ADDRESS REGISTER IS NECESSARY TO CORRECTLY IDENTIFY THE ERROR WAIT.

WHEN AN ERROR INDICATION OCCURS, THE LISTING OF THE PROGRAM BEING EXECUTED MUST BE REFERENCED TO DETERMINE THE CAUSE OF THE ERROR. CORRECT LOADING SHOULD BE VERIFIED BY DISPLAYING CONTENTS OF LOCATIONS WHERE THE PROGRAM IS STORED. THE PROGRAM SHOULD THEN BE RUN IN SI MODE TO LOCATE POINT OF FAILURE.

3.2 OPERATING PROCEDURE

A. PLACE ALL SEVEN ONE-CARD PROGRAMS, FOLLOWED BY DECK OF BLANK CARDS IN 1442 HOPPER AND PRESS START BUTTON.

B. CLEAR CORE STORAGE TO 33FF AS FOLLOWS,

1. SET MODE SWITCH TO RUN.
2. SET CONSOLE ENTRY SWITCHES TO 33FF.
3. TURN ON STORAGE LOAD SWITCH (ON CE PANEL).
4. PRESS START.
5. PRESS IMM STOP.
6. TURN OFF STORAGE LOAD SWITCH (ON CE PANEL).

C. PRESS IMM STOP KEY.

D. PRESS RESET KEY.

E. PRESS PROGRAM LOAD.

ONE-CARD 01 SHOULD LOAD AND PROGRAM SHOULD STOP AT NORMAL WAIT 3001 (IAR = 0002). FROM THIS POINT ON, PROCEED ACCORDING TO INSTRUCTIONS GIVEN FOR THE WAIT THE PROGRAM HAS STOPPED AT. SEE TABLE 1 FOR NORMAL WAITS, AND TABLE 2 FOR ERROR WAITS.

TABLE 1. NORMAL WAITS

NOTE. IN THIS TABLE SBR=STORAGE BUFFER REG, IAR=INSTRUCTION ADDRESS REG, AND ACC=ACCUMULATOR.

WAITS		INDICATES / ACTION
SBR	IAR	
3001	0002	ACCUMULATOR SHOULD READ FOFO. IF OK PRESS START. IF NOT FOFO ERROR IS INDICATED. REPAIR IF CAUSE IS CLEAR. IF NOT, CONTINUING TEST MAY HELP
3001	0004	ACCUMULATOR SHOULD READ 080F. IF OK PRESS START. IF NOT 080F ERROR IS INDICATED. REPAIR IF CAUSE IS CLEAR. IF NOT, CONTINUING TEST MAY HELP.
3001	004E	DEPRESS IMM STOP, RESET, AND PROGRAM LOAD BUTTONS TO LOAD CARD 02. FAILURE OF PROGRAM TO STOP AT THIS WAIT INDICATES FAILURE OF AN MDX OPERATION. STEPPING THROUGH PROGRAM IN SI MODE MAY HELP LOCATE FAILURE. IF CAUSE OF FAILURE IS CLEAR, REPAIR. IF THE FAILURE IS NOT CLEAR CONTINUING MAY HELP TO IDENTIFY THE FAILURE.
3002	003F	ACCUMULATOR SHOULD READ 003E. IF OK LOAD CARD 03 BY PRESSING IMM STOP, RESET, AND PROGRAM LOAD BUTTONS. IF ADD. IS NOT 003E, AN ERROR HAS OCCURRED. STEP THROUGH PROGRAM IN SING INST MODE, CHECKING THAT IAR AND ACC DISPLAY THE SAME INFORMATION AND ARE INCREMENTED BY ONE AT EACH STEP.
3003	0021	ACC SHOULD READ 0001. IF OK PRESS START. IF ACC IS NOT 0001, AN ERROR HAS OCCURED. STEP THROUGH PROGRAM IN SI MODE, CHECKING THAT (1) ACC CONTAINS A ONE IN BIT 0, (2) EACH SRA 1 INSTRUCTION IS EXECUTED PROPERLY, AND (3) NO BSC Z CAUSES A SKIP UNLESS ACCUMULATOR EQUALS ZERO.

TABLE 1. NORMAL WAITS (CONTINUED)

WAITS		INDICATES / ACTION
SBR	IAR	
3003	0025	ACC SHOULD READ 0000. IF OK PRESS START. IF ACC IS NOT 0000, ERROR HAS OCCURRED. SI THROUGH PROGRAM FROM LOCATION 0021. COMPARE RESULTS OF TEST WITH LISTING.
3003	0030	ACC SHOULD READ 0F0F. IF OK PRESS START. IF ACC IS NOT 0F0F, ERROR HAS OCCURRED. SI THROUGH PROGRAM FROM LOCATION 0025. COMPARE RESULTS OF TEST WITH LISTING. CHECK FOR SINGLE-BIT OMISSION. TRY SWAPPING APPROPRIATE SLT CARDS. (SEE LISTING).
3003	0033	ACC SHOULD READ FFFF. IF OK PRESS START. IF ACC IS NOT FFFF, ERROR HAS OCCURRED. SI THROUGH PROGRAM FROM LOCATION 002E. COMPARE RESULTS OF TEST WITH LISTING.
3003	003C	ACC SHOULD READ FFFF. IF OK LOAD CARD 04 BY PRESSING IMM STOP. RESET, AND PROGRAM LOAD BUTTONS IF ACC IS NOT FFFF, ERROR HAS OCCURRED. SI THROUGH PROGRAM FROM LOCATION 002E. CCM RE RESULTS OF TEST WITH LISTING.
3004	001E	ACC SHOULD READ FFFF. IF OK PRESS START. IF ACC IS NOT FFFF, ERROR HAS OCCURRED. SI THROUGH PROGRAM. COMPARE RESULTS OF TEST WITH LISTING.
3004	0023	ACC SHOULD READ 0000. IF OK PRESS START. *** NOTE *** IF NO ERRORS OCCUR, THIS PROGRAM SHOULD RUN CONTINUOUSLY UNTIL STOPPED. IF NO ERRORS OCCUR, LOAD CARD 05 BY PRESSING IMM STOP, RESET, AND PROGRAM LOAD BUTTONS. IF ACC IS NOT 0000, ERROR HAS OCCURRED. SI THROUGH PROGRAM FROM LOCATION 001E. REFER TO LISTING.
3005	1000	PRESS RESET THEN START TO CONTINUE. MOST LIKELY ERROR WILL BE FAILURE OF PROGRAM TO STOP AT THIS WAIT. REFER TO LISTING. REFER TO PARAGRAPH 5.2.5 OF THIS DOCUMENT FOR DESCRIPTION OF CARD 05 PROGRAM.
3005	004C	ACC SHOULD READ 0FAF. IF OK LOAD CARD 06 BY PRESSING IMM STOP, RESET, AND PROGRAM LOAD BUTTONS. IF ACC IS NOT 0FAF, IT INDICATES THAT THE NUMBER OF LOCATIONS TESTED IS INCORRECT, ERROR MAY BE CAUSED BY ADD FAILURE, WHICH SHOULD BE DETECTABLE BY CARD 04 PROGRAM. PRESS START TO RESTART PROGRAM.

TABLE 1. NORMAL WAITS (CONTINUED)

WAITS SBR	WAITS IAR	INDICATES / ACTION
3006	002E	A. SET CONSOLE ENTRY SWITCHES TO 0003 (BUSY,NOT READY SIMULATED DSW). PRESS START. PROGRAM SHOULD RETURN TO THIS WAIT. IF OK PRESS START TO REPEAT TEST OR GO TO STEP B. IF PROGRAM STOPS AT WAIT B=30F6, REFER TO TABLE 2 - ERROR WAITS, FOR APPROPRIATE ACTION. B. SET CONSOLE ENTRY SWITCHES TO 0800 (END OF CARD SIMULATED DSW). PRESS START. PROGRAM SHOULD RETURN TO THIS WIAT. IF OK PRESS START TO REPEAT TEST, OR GO TO STEP C. IF PROGRAM STOPS AT WAIT B=30F6, REFER TO TABLE 2 - ERROR WAITS, FOR APPROPRIATE ACTION. C. SET CONSOLE ENTRY SWITCHES TO 8003 (COL. REQUEST, BUSY, NOT READY SIMULATED DSW). PRESS START. PROGRAM SHOULD RETURN TO THIS WAIT. IF OK PRESS START TO REPEAT TEST, OR GO TO STEP D. IF PROGRAM STOPS AT WAIT B=30F6, REFER TO TABLE 2 - ERROR WAITS, FOR APPROPRIATE ACTION. D. SET CONSOLE ENTRY SWITCHES TO AN INVALID DSW SETTING (OTHER THAN 0003, 0800, OR 8003). PRESS START. PROGRAM SHOULD STOP AT ERROR WAIT B=30F6, INDICATING THAT THE PROGRAM CORRECTLY SENSES AN ERROR DSW. PRESS START TO RETURN TO WAIT B=3006 (THIS WAIT) TO REPEAT TEST WITH SAME, OR DIFFERENT INVALID DSW. E. AFTER DETERMINING THAT CARD 06 PROGRAM REACTS CORRECTLY TO THE SIMULATED DSW'S, LOAD CARD 07 BY PRESSING IMM STOP, RESET, AND PROGRAM LOAD BUTTONS.
3007	0007	A. ACC AND ACC EXTENSION SHOULD READ FFFF. IF OK GO TO STEP B. IF NOT FFFF, LOAD DOUBLE OR ADD DOUBLE ERROR HAS OCCURRED. SI THROUGH PROGRAM. REFER TO LISTING. B. TURN ON INTERRUPT DELAY SWITCH (ON CE PANEL). C. PRESS START. BLANK CARDS SHOULD FEED CONTINUOUSLY THROUGH THE READ STATION OF THE 1442. *** NOTE *** THERE ARE NO OTHER WAITS IN CARD 07 PROGRAM IN ORDER TO PERMIT SCOPING OF X10 FUNCTIONS. CHANGE NO OP INSTRUCTION IN LOCATION 002C TO AN ERROR WAIT (30F7) TO CAUSE PROGRAM TO STOP ON ERROR DSW. D. PRESS STOP TO TERMINATE PROGRAM E. TURN OFF INTERRUPT DELAY SWITCH (ON CE PANEL).

TABLE 2. ERROR WAITS

NOTE. IN THIS TABLE SBR=STORAGE BUFFER REG, IAR=INSTRUCTION ADDRESS REG, AND ACC=ACCUMULATOR.

WAITS SBR	WAITS IAR	INDICATES / ACTION
30F1	0006 TO 004D	STOPPING AT ANY ONE OF THIS WAITS INDICATES FAILURE OF MDX OPERATION. SI THROUGH PROGRAM. IF FAILURE APPEARS AND ITS CAUSE IS CLEAR, REPAIR. IF CAUSE OF FAILURE IS NOT CLEAR, RUNNING ADDITIONAL ONE-CARD PROGRAMS MAY HELP IDENTIFY THE FAILURE.
30F3	0024	ACC NOT 0000 WHEN TESTED. SI THROUGH PROGRAM CHECKING THAT (1) ACC CONTAINS A ONE IN BIT 0, (2) EACH SRA 1 INSTRUCTION IS EXECUTED CORRECTLY, AND (3) A SKIP OCCURS WHEN ACC EQUALS 0000.
30F3	0036	ACC NOT 0000 WHEN TESTED. SI THROUGH PROGRAM FROM LOCATION 002E. COMPARE RESULTS OF TEST WITH LISTING.
30F4	0014	LDX LONG FAILURE. SI THROUGH PROGRAM. COMPARE RESULTS WITH LISTING.
30F4	002C	SUM OF SUMPL AND SUMMI IS NOT EQUAL TO 0000. IF THEIR SUM SHOULD EQUAL 0000, DIAGNOSE AND CORRECT TROUBLE. IF THEIR SUM SHOULD NOT BE 0000, RUU MANUAL-ENTRY ADD TEST (PARAGRAPH 6.2).
30F5	001E	SUM OF LOCATIONS 0014 THROUGH 004E IS NOT 0000. ACC CONTAINS OBTAINED SU. (1) RELOAD CARD 05, (2) RUN IN SI MODE THROUGH LOCATION 0010, (3) DISPLAY REMAINDER OF PROGRAM, AND (4) COMPAPE RESULTS WITH LISTING. IF NO ERROR IS EVIDENT, SI THROUGH CHECKSUM LOOP (LOCATIONS 0012 THROUGH 001A). IF NO ERROR IS EVIDENT, (1) RELOAD CARD 05, (2) SI THROUGH LOCATION 0008, (3) INSERT WAIT OP IN LOCATION 0011, (4) SET 70F6 IN LOCATION 001A, AND (5) RUN CHECKSUM LOOP USING SI MODE FOR LOCATIONS 0011 AND 0013. VERIFY CHECKSUM ADDITION. REPAIR ANY FAILURES DISCOVERED.
30F5	003B	A LOCATION DOES NOT CONTAIN ITS OWN ADDRESS PLUS ONE. PERFORM FOLLOWING INSTRUCTION IN SI MODE. ADDRESS OF LOCATION IN ERROR WILL BE IN ACC. DISPLAY ERROR LOCATION. IT SHOULD CONTAIN ITS OWN ADDRESS PLUS ONE, AS A RESULT OF EXECUTING A BSI-1 AT THAT LOCATION. DIAGNOSE AND CORRECT.
30F6	002D	A. IF PROGRAM STOPS AT THIS WAIT FOLLOWING SETTING OF A VALID SIMULATED DSW IN CONSOLE ENTRY SWITCHES (0003, 0800, 8003). AN ERROR IN INTERPRETING THE DSW HAS OCCURRED. SI THROUGH PROGRAM AND REFER TO LISTING, TO LOCATE CAUSE OF ERROR. B. IF PROGRAM STOPS AT THIS WAIT AFTER SETTING AN INVALID IN THE CONSOLE ENTRY SWITCHES, THE PROGRAM OPERATED CORRECTLY. PRESS START TO RETURN TO NORMAL WAIT B=3006.

4. PRINTOUTS (NOT APPLICABLE)

5. COMMENTS

THE ONE-CARD DIAGNOSTIC PROGRAMS ARE DESIGNED TO HELP DIAGNOSE MALFUNCTIONS THAT OCCUR WHILE ATTEMPTING TO LOAD A PROGRAM WITH THE 1130 BASIC DIAGNOSTIC L OADER. THERE ARE SEVEN ONE-CARD PROGRAMS. EACH ONE-CARD PROGRAM TESTS A SPECIFIC FUNCTION OR GROUP OF FUNCTIONS. THE CARDS ARE NUMBERED FROM 01 THROUGH 07 IN HOLLERITH-HEXADECIMAL CODE IN COLUMNS 79 AND 80.

FUNCTIONS OF ONE-CARD DIAGNOSTIC PROGRAMS
THE SEVEN ONE-CARD PROGRAMS PERFORM THEFFOLLOWING FUNCTIONS.

A. CARD 01. TESTS MDX INSTRUCTION AND DATA TRANSFER FROM INSTRUCTION ADDRESS REGISTER TO ACCUMULATOR.

B. CARD 02. EXECUTES A SIMPLE-ADDITION TEST AND TESTS INCREMENTING OF INSTRUCTION ADDRESS REGISTER.

C. CARD 03. TESTS BSC Z, SRA 1, LD, STO, AND EOR INSTRUCTIONS AND DATA TRANSFER BETWEEN REGISTERS.

D. CARD 04. TESTS LONG FORMAT OF LD, A, STO, LDX, EOR. TEST ADDITION OF POSITIVE AND NEGATIVE NUMBERS.

E. CARD 05. TESTS ADDRESSING OF LOCATIONS 0050 THROUGH OFFE.

F. CARD 06. DETERMINES WHETHER 1131 CPU CORRECTLY INTERPRETS SIMULATED DSW'S.

G. CARD 07. TESTS LOAD DOUBLE AND ADD DOUBLE INSTRUCTIONS, AND SETS UP LOOPS TO ALLOW X10 FUNCTIONS TO BE CHECKED WITH AN OSCILLOSCOPE. X10 ROUTINES ARE DIAGNOSTIC LOADER BUT DO NOT STOP ON DSW ERROR.

5.2 DESCRIPTION OF ONE-CARD DIAGNOSTIC PROGRAMS

5.2.1. CARD-031 PROGRAM

THE CARD-01 PROGRAM LOADS ACCUMULATOR WITH FOFO FROM LOCATION 0030 AND STOPS AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0002 , STORAGE BUFFER INDICATING 3001, AND ACCUMULATOR INDICATING FOFO. FAILURE OF INDICATOR TO APPEAR AS DESCRIBED INDICATES A POSSIBLE READ-IN FAILURE DURING PROGRAM LOAD OR FAILURE OF THE LOAD-ACCUMULATOR INSTRUCTION. FOLLOWING DEPRESSION OF START PUSHBUTTON BY OPERATOR, PROGRAM LOADS ACCUMULATOR WITH 080F FROM LOCATION 0031 AND STOPS AT WAIT WITH INSTRUCTION ADDRESS INDICATING 0004, STORAGE BUFFER INDICATING 3001, AND ACCUMULATOR INDICATING 080F. AGAIN, FAILURE IF INDICATORS TO APPEAR AS DESCRIBED INDICATES POSSIBLE READ-IN FAILURE OR LOAD-ACCUMULATOR FAILURE.
NEXT DEPRESSION OF START PUSHBUTTON, THE PROGRAM PERFORMS A SERIES OF MDX INSTRUCTIONS AND STOPS AT A WAIT WITH INSTRUCTION ADDRESS INDICATING 004E AND STORAGE BUFFER INDICATING 3001. IF PROGRAM STOPS AT ANY OTHER WAIT INSTRUCTION, AN MDX FAILURE IS INDICATED.

5.2.2 CARD-02 PROGRAM

THE CARD-02 PROGRAM TESTS ADD FUNCTION AND INCREMENTING OF STORAGE ADDRESS REGISTER. THE PROGRAM LOADS A CONSTANT OF 0001 IN ACCUMULATOR FROM LOCATION 003F AND CONTINUOUSLY ADDS THAT SAME CONSTANT UNTIL STOPPED BY WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 003E. THE ACCUMULATED TOTAL IS DISPLAYED BY ACCUMULATOR INDICATOR AND SHOULD BE 003E. ANY OTHER TOTAL INDICATES AN ADD-FUNCTION FAILURE OR INSTRUCTION ADDRESS REGISTER INCREMENT FAILURE

5.2.3 CARD-03 PROGRAM

A. PART ONE TESTS THE SKIP-ON-ZERO OPERATION AND SHIFT-RIGHT-ONE OPERATION.

B. PART TWO TESTS DATA TRANSFER BETWEEN REGISTERS AS FOLLOWS.

1. DATA TRANSFER FROM STORAGE BUFFER REGISTER TO ARITHMETIC FACTOR REGISTER TO ACCUMULATOR REGISTER.

2. DATA TRANSFER FROM ACCUMULATOR REGISTER TO ACCUMULATOR EXTENSION REGISTER AND BACK TO ACCUMULATOR REGISTER.

3. DATA TRANSFER FROM ACCUMULATOR REGISTER TO STORAGE BUFFER REGISTER.

C. PART THREE TESTS OPERATION FOR FUNCTION.

PART ONE

PROGRAM SETS A 1 IN ACCUMULATOR-BIT 0 AND THEN TRIES TO SKIP-ON-ZERO. AS THE ACCUMULATOR IS NOT ZERO, PROGRAM FALLS THROUGH AND SHIFTS RIGHT ONE POSITION. TESTING FOR ZERO AND SHIFTING RIGHT ONE IS CONTINUED UNTIL PROGRAM IS STOPPED BY WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0021. THE ACCUMULATOR SHOULD INDICATE 0001. ANY OTHER ACCUMULATOR INDICATION INDICATES FAILURE OF SRA 1 OR BSC Z.

AFTER DEPRESSION OF START PUSHBUTTON, PROGRAM PERFORMS A SHIFT-RIGHT-ONE OPERATION, AND SKIPS-ON-ZERO TO A WAIT 0025, STORAGE BUFFER INDICATING 3003. ACCUMULATOR SHOULD INDICATE 0000.

PART TWO

UPON DEPRESSING START PUSHBUTTON, PROGRAM PERFORMS A SERIES OF ALTERNATE LD AND STO INSTRUCTIONS AND STOPS ON A WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0030 AND STORAGE BUFFER INDICATING 3003. ACCUMULATOR INDICATION SHOULD BE 0F0F, OR DATA-TRANSFER FAILURE IS INDICATED. FAILURE MAY BE OCCURRING DURING A LD OR STO INSTRUCTION.

PART THREE

PROGRAM TAKES ACCUMULATOR CONTENTS OF 0F0F LEFT AT END OF PART TWO AND PERFORMS EOR OPERATION WITH CONSTANT F0F0. THE FFFF RESULT IS STORED AT SYMBOLIC LOCATION KFFFF, AND PROGRAM STOPS ON WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0033. ACCUMULATOR INDICATOR SHOULD INDICATE FFFF, OR EOR FAILURE IS INDICATED.

AFTER DEPRESSING START PUSHBUTTON, PROGRAM PERFORMS EOR OF FFFF IN ACCUMULATOR WITH FFFF CONTAINED AT SYMBOLIC LOCATION KFFFF TO SET ACCUMULATOR TO 0000. A SKIP-ON-ZERO OPERATION IS THEN ATTEMPTED. IF EOR INSTRUCTION FAILS TO ZERO ACCUMULATOR, PROGRAM FALLS THROUGH TO AN ERROR WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0036, STORAGE BUFFER INDICATING 30F3. IF THE SKIP-ON-ZERO IS SUCCESSFULLY COMPLETED, THE PROGRAM PERFORMS EOR OF 0000 IN ACCUMULATOR AND 0000 AT SYMBOLIC LOCATION K0000. THE RESULTS OF EOR SHOULD BE 0000. PROGRAM TESTS THAT ACCUMULATOR IS 0000 BY ATTEMPTING SKIP-ON-ZERO. FAILURE TO SKIP STOPS PROGRAM AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0039, AND STORAGE BUFFER INDICATING 30F3, ACCUMULATOR INDICATOR SHOULD DISPLAY RESULT OF FAULTY EOR.

IF PROGRAM SKIPS, PROGRAM PERFORMS EOR OF 0000 IN ACC WITH CONSTANT F0F0 IN SYMBOLIC LOCATION KF0F0. ACC CONTENTS BECOME F0F0. ANOTHER EOR IS PERFORMED WITH CONSTANT 0F0F STORED IN HIGHEST STORAGE LOCATION. PROGRAM STOPS AT WAIT WITH IAR REG EQUAL 003C AND SBR REG EQUAL 3003. ACC SHOULD READ FFFF. ANY OTHER READING INDICATES EOR FAILURE.

5.2.4 CARD-04 PROGRAM

THE CARD-04 PROGRAM LONG FORMAT OF LD, A, STO, LDX, EOR. THEN THE CARD-04 PROGRAM LONG FORMAT OF LD, A, STO, LDX, EOR. THEN PART OF THE PROGRAM MAKES UP LONG FORM INSTRUCTIONS THEN PERFORMS AN LDX LONG OVER AN ERROR WAIT. THE ERROR WAIT WITH INSTRUCTION ADDRESS INDICATING 0014 AND THE STORAGE BUFFER INDICATING 30F4 SHOWS A FAILURE OF THE LDX LONG FORMAT.

LONG FORMAT FOR THE REMAINING TESTS ARE DONE WHEN THE PROGRAM MAKES UP CONSTANTS FFFF AND 0000. THESE CONSTANTS ARE DISPLAYED AT NORMAL WAITS. AT EACH OF THESE WAITS THE REGISTERS REFERENCED SHOULD BE CHECKED. IF THE REGISTERS ARE OK, START SHOULD BE PRESSED.

AFTER THE START IS PUSHED FOLLOWING THE SECOND NORMAL WAIT, THE ADD TEST IS STARTED. THE ADD TEST MUST BE STOPPED BY THE OPERATOR.

THE ADD LOOP PROGRAM ADDS A MINUS ONE (FFFF) TO SUMMI (SUM MINUS), ADDS A PLUS ONE (0001) TO SUMPL (SUM PLUS), AND ADDS SUMMI AND SUMPL. THE RESULTANT SUM, WHICH SHOULD BE 0000, IS USED TO CHECK FOR ERROR. IF THE SUM IS 0000, THE LOOP IS REPEATED, IF SUM IS NOT 0000, PROGRAM STOPS AT ERROR WAIT WITH IAR REG EQUAL 002C AND SBR REG EQUAL 30F4. ACC DISPLAYS ERROR SUM.

5.2.5 CARD-05 PROGRAM

TESTS ADDRESSING OF LOCATIONS 0050 THROUGH 0FFE. AFTER INITIAL SETUP, PROGRAM LOADS A WAIT INSTRUCTION AT LOCATION 0FFE AND LOADS A BRANCH TO SYMBOLIC LOCATION (CHECK) IN LOCATION 0000. THE PROGRAM FORMS A CHECKSUM OF LOCATIONS 0014 THROUGH 004F. IF CHECKSUM IS IN ERROR, PROGRAM STOPS AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 001F AND STORAGE BUFFER INDICATING 30F5. ACCUMULATOR INDICATOR DISPLAYS ERROR CHECKSUM.

IF CHECKSUM IS CORRECT PROGRAM LOADS A SERIES OF BSI -1 INSTRUCTIONS IN LOCATIONS 005C THROUGH 0FFE AND BRANCHES TO LOCATION 0550 TO EXECUTE THE BSI -1 CHAIN, WHICH CAUSES EACH LOCATION FROM 0050 THROUGH 0FFE TO CONTAIN ITS OWN ADDRESS PLUS ONE. THE PROGRAM THEN STOPS AT A WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 1000 AND STORAGE BUFFER INDICATING 3005. UPON DEPRESSION OF RESET AND START PUSHBUTTONS PROGRAM BRANCHES TO SYMBOLIC LOCATION (CHECK).

THE (CHECK) ROUTINE DETERMINES IF EACH LOCATION FROM 0050 THROUGH 0FFE CONTAINS ITS OWN ADDRESS PLUS ONE, KEEPS COUNT OF LOCATIONS TESTED, AND STOPS AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 004C AND STORAGE BUFFER INDICATING 3005. ACCUMULATOR SHOULD INDICATE 0FAF. IF THE CONTENTS OF A LOCATION ARE IN ERROR PROGRAM STOPS AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0038 AND STORAGE BUFFER INDICATING 30F5.

5.2.6 CARD-06 PROGRAM

THE CARD 06 PROGRAM CHECKS THE 1131 CPU FOR CORRECT RESPONSE TO A SIMULATED DSW. THE SIMULATED DSW IS SET IN THE CONSOLE ENTRY SWITCHES AND CAN BE A VALID OR INVALID DSW. PORTIONS OF THE CARD 06 PROGRAM DUPLICATE SECTIONS OF CARD 1 OF THE 1130 BASIC DIAGNOSTIC LOADER. THERE ARE THREE VALID DSW'S.

A. 8003 BITS 0,14 AND 15 ON. COLUMN REQUESTS, BUSY, AND NOT READY.

B. 0003 BITS 14 AND 15 ON. BUSY AND NOT READY.

C. 0800 BIT 4 ON. END OF CARD (CP COMPLETE).

AFTER INITIAL SET UP, PROGRAM STOPS AT WAIT WITH IAR REG READING 002E AND SBR REG READING OF 3006, TO PERMIT OPERATOR TO ENTER A SIMULATED DSW IN THE CONSOLE ENTRY SWITCHES.

AFTER DEPRESSION OF START BUTTON, PROGRAM READS SETTING OF CONSOLE ENTRY SWITCHES INTO CORE AND THEN LOADS READING INTO ACC. IF THE READING IS 8003, THE PROGRAM REREADS THE SWITCHES AND STORES THE READING. PROGRAM BRANCHES BACK TO NORMAL WAIT 3006 TO PERMIT ENTRY OF DIFFERENT DSW IF DESIRED.

IF THE READING IS NOT 8003, PROGRAM CHECKS FOR READING OF 0003. IF TRUE, PROGRAM BRANCHES BACK TO NORMAL WAIT 3006 TO PERMIT ENTRY OF DIFFERENT DSW. IF 8003 READING IS NOT TRUE, PROGRAM READS CONSOLE SWITCHES AND CHECKS FOR ENTRY 0800. IF TRUE, PROGRAM ADDS 1 TO SUM WORD (WHICH CONTAINS NUMBER OF)800 CONDITIONS ENCOUNTERED 0. PROGRAM THEN BRANCHES TO NORMAL WAIT 3006 TO PERMIT ENTRY OF NEW DSW. IF 0800 CONDITION IS NOT TRUE, PROGRAM STOPS AT ERROR WAIT WITH IAR REG READING OF 002D. ACC DISPLAYS ERROR DSW. PRESSING START BRANCHES PROGRAM TO NORMAL WAIT 3006 TO PERMIT ENTRY OF NEW DSW. IF IT IS DESIRED TO LOOP PROGRAM ON A SINGLE DSW, THE NORMAL WAIT THAT PERMITS ENTRY OF DSW'S, MAY BE CHANGED TO A NO OP (7000).

5.2.7 CARD-07 PROGRAM

PART ONE OF CARD 07 PROGRAM TESTS LOAD DOUBLE AND ADD DOUBLE INSTRUCTIONS. AT THE END OF THE TEST, PROGRAM STOPS AT NORMAL WAIT 3007, WITH IAR READING OF 0006. THE ACCUMULATOR AND ACCUMULATOR EXTENSION SHOULD READ FFFF, OR AN ERROR IS INDICATED. PRIOR TO DEPRESSING THE START KEY TO CONTINUE TO PART TWO, OPERATOR MUST TURN ON THE INTERRUPT DELAY SWITCH ON THE CE PANEL.

PART TWO OF CARD 07 PROGRAM IS DESIGNED TO PERMIT SCOPING OF THE X10 FUNCTIONS, WHILE CONTINUOUSLY READING CARDS WITH THE 1442. THE READ-CARD ROUTINE IS A DUPLICATE OF READ-CARD ROUTING IN CARD 1 OF THE 1130 BASIC DIAGNOSTIC LOADER.

AFTER INITIAL SET UP, PROGRAM CAUSES CARD TO FEED, RESET DSW, AND SENSE DSW. IT THEN CHECKS DSW FOR A 8003 INDICATION. IF TRUE, PROGRAM READS CARD COLUMN INTO LOCATION 0000 OR 0001. ODD NUMBERED COLUMNS ARE READ INTO LOCATION 0001. EVEN NUMBERED CARD COLUMNS ARE READ INTO LOCATION 0000. PROGRAM THEN LOADS ACC FROM LOCATION JUST LOADED, AND BRANCHES BACK TO RESET AND SENSE DSW, AND CHECK FOR 8003 DSW AGAIN.

IF DSW IS NOT 8003, THE PROGRAM CHECKS FOR A 0003 DSW. IF TRUE, PROGRAM BRANCHES BACK TO SENSE DSW AND CHECK FOR 8003 DSW. PROGRAM WILL REMAIN IN THIS CLOSED LOOP UNTIL THE 8003 CONDITION IS TRUE OR THE 0003 CONDITION IS NOT TRUE. WHEN THE PROGRAM FINDS THE 0003 CONDITION NOT TRUE, IT SENSES AND RESETS THE DSW AND CHECKS FOR 0800 CONDITION. IF TRUE, PROGRAM BRANCHES TO START ANOTHER CARD FEEDING AND REPEATS THE ENTIRE PROCESS. IF 0003 IS NOT TRUE, PROGRAM WILL AGAIN BRANCH TO START ANOTHER CARD FEEDING. THE OPERATOR HAS AN OPTION TO STOP THE PROGRAM AT LOCATION 002C BY INSERTING A WAIT.

6. APPENDIX

6.1 DATA PATH TEST PROGRAM

THIS PROGRAM IS LOADED USING THE CONSOLE ENTRY SWITCHES AND TESTS THE ABILITY OF THE 1131 CPU TO TRANSFER ONES AND ZEROES BETWEEN THE FOLLOWING REGISTERS.

A. FROM STORAGE BUFFER REGISTER TO ARITHMETIC FACTOR REGISTER TO ACCUMULATOR REGISTER TO STORAGE ADDRESS REGISTER TO INSTRUCTION ADDRESS REGISTER.

B. FROM ACCUMULATOR REGISTER TO ACCUMULATOR EXTENSION REGISTER TO ACCUMULATOR REGISTER.

C. FROM ACCUMULATOR REGISTER TO STORAGE BUFFER REGISTER.

D. FROM INSTRUCTION ADDRESS REGISTER TO STORAGE BUFFER REGISTER.

E. FROM INSTRUCTION ADDRESS REGISTER TO ACCUMULATOR REGISTER.

6.1.1 TEST PROCEDURE

A. CLEAR STORAGE TO WAIT INSTRUCTION 33FF. SEE PARAGRAPH 3.3.6.

B. ENTER THE FOLLOWING PROGRAM USING CONSOLE ENTRY SWITCHES.

NOTE

ALL NUMBERS SHOWN BELOW ARE IN HEXADECIMAL NOTATION.

LOCATION	CONTENT	MNEMONIC	COMMENTS
FFFA	0006	LD	LOAD ACCUMULATOR WITH CONTENTS OF LOCATION 0001.
FFFB	4480	BSI I	STORE CONTENTS OF I COUNTER (FFFD) AT ADDRESS STORED IN LOCATION FFFD. SET I COUNTE TO THAT ADDRESS AND ADD ONE TO I COUNTER.
FFFC	FFFD		ADDRESS POSITION OF BSI I INSTRUCTION.
FFFD	FFFD		THIS IS THE ACTUAL BRANCH ADDRESS FOR THE THE BSI I INSTRUCTION AND IS REPLACED BY THE BSI I.
FFFE	D002	STO	STORE CONTENTS OF ACCUMULATOR AT LOCATION 0001 (SHOULD NOT CHANGE).
FFFF	C0FC	LD	LOAD ACCUMULATOR WITH CONTENTS OF LOCATION FFFC.
0000	4480	BSI I	STORE CONTENTS OF I COUNTER (0002) AT ADDRESS STORED IN LOCATION 0002. SET I COUNTER TO THAT ADDRESS AND ADD ONE TO I COUNTER.
0001	0002		THIS IS ADDRESS POSITION OF BSI I INSTRUCTION.
0002	0002		THIS IS THE ACTUAL BRANCH ADDRESS FOR THE BSI I INSTRUCTION AND IS REPLACED BY THE BSI I INSTRUCTION.
0003	D0F8	STO	STORE CONTENTS OF ACCUMULATOR AT LOCATION FFFC (SHOULD NOT CHANGE).
0004	70F5	MDX	BRANCH TO LOCATION FFFA.

C. LOAD INSTRUCTION ADDRESS REGISTER WITH FFFA.

D. STEP THROUGH PROGRAM IN SI MODE, CHECKING THAT PROGRAM LOOPS PROPERLY. ANY DATA-PATH ERROR SHOULD RESULT IN THE IMPROPER BRANCHING OF A BSI I INSTRUCTION AND STOPPING AT A WAIT. THE LOCATION BEFORE THE WAIT SHOULD CONTAIN THE CONTENTS OF INSTRUCTION ADDRESS REGISTER WHEN THE BRANCH OCCURRED. LOGICAL RECONSTRUCTION OF THE ERROR SHOULD ISOLATE A DATA-TRANSFER ERROR AND SUGGEST THE CIRCUIT CARD CAUSING THE ERROR.

NOTE

A BRANCH OUTSIDE OF THE PROGRAM INTO A CORE LOCATION LOADED WITH 33FF INDICATES AN ERROR HAS OCCURRED. SUBTRACT TWO FROM INSTRUCTION ADDRESS INDICATOR READING AND DISPLAY LOCATION. THE CONTENT OF LOCATION DISPLAYED IS THE INSTRUCTION ADDRESS REGISTER SETTING WHEN THE ERRONEOUS BRANCH OCCURRED. IF THE BRANCH WAS CAUSED BY A BSI I INSTRUCTION FAILURE, THE LOCATION JUST CHECKED WILL HAVE A VALUE HIGHER BY ONE THAN THE ADDRESS OF THE SECOND WORD OF THE BSI I INSTRUCTION. IF THIS IS THE CASE, DISPLAY LOCATIONS WHERE PROGRAM IS STORED TO DETERMINE IF THE LOCATIONS HAVE CHANGED. THE ADDRESSES OF BSI I INSTRUCTIONS ARE STORED BY THE STO INSTRUCTIONS, AND THE LOCATIONS FEED AND 0002 ARE STORED BY THE BSI I INSTRUCTIONS. STATIC OR INTERMITTENT DATA TRANSFER ERRORS SHOULD BE READILY DETECTED BY THIS MEANS AND BE EASY TO ISOLATE BECAUSE OF THE UNIQUE FAILURE INDICATIONS.

ERRORS IN THE DATA PATH PROGRAM SHOULD BE CAUSED BY SINGLE BIT FAILURES, OR BY HALF-WORD FAILURES. THUS, DROPPED OR ADDED BITS CAN BE REFERENCED DIRECTLY TO A CIRCUIT CARD. SWAP INDICATED CIRCUIT CARD TO SEE IF FAILURE CHANGES.

THE Q, U, A, AND E REGISTERS' CIRCUIT CARDS ARE LOCATED IN ROW 4 OF THE CARD GATE, AND ARE INTERCHANGEABLE.

THE I, B, AND M REGISTERS' CIRCUIT CARDS ARE LOCATED IN ROW 6 OR THE CARD GATE, AND ARE INTERCHANGEABLE.

FAILING BIT- 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

COLUMN------ B C D F H J K L

THE FOLLOWING CARDS CONTROL HALF-WORD TRANSFERS AND ARE INTERCHANGEABLE.

M4,M5, M7, L5, AND L6.

6.1.2 PROGRAM DESCRIPTION

THE LD INSTRUCTION AT LOCATION FFFA PERFORMS THE FUNCTION OF SETTING THE ACCUMULATOR TO 0002 SO THAT WHEN THE FOLLOWING BSI I INSTRUCTION IS PERFORMED, A COMPLEMENT BIT PATTERN (FFFD) WILL BE SENT THROUGH THE ACCUMULATOR, THUS TESTING THAT THE ACCUMULATOR IS RETURNED TO 0002 AT THE END OF THE BSI I INSTRUCTION. THIS TEST IS ACCOMPLISHED BY STORING THE CONTENTS OF THE ACCUMULATOR BACK INTO LOCATION 0001 AFTER THE BSI I INSTRUCTION. THE SAME PHILOSOPHY IS USED DURING THE BSI I INSTRUCTION AT LOCATION 00000 BY SETTING THE ACCUMULATOR TO FFFD WHILE 0002 IS SENT THROUGH IT DURING THE BSI I INSTRUCTION. A FAILURE OF EITHER BSI I INSTRUCTION THAT AFFECTS THE ACCUMULATOR WILL CAUSE THE FOLLOWING BSI I INSTRUCTION TO TAKE ITS ADDRESS FROM THE WRONG LOCATION. THIS LOCATION WILL PROBABLY BE ONE OF THE CORE LOCATIONS LOADED WITH 33FF, THUS CAUSING THE PROGRAM TO STOP.

6.2 ADD TEST PROGRAM

THIS PROGRAM HELPS LOCATE AN ADD FAILURE THAT CANNOT BE LOCATED WHEN RUNNING CARD 04 OF ONE-CARD PROGRAMS IN SI MODE, BECAUSE OF THE DYNAMIC NATURE OF THE PROBLEM. IF THE CONTENTS OF SUMPL AND SUMMI DO NOT ADD TO 0000, THERE HAS BEEN A FAILURE IN ADDING 0001 TO SUMPL, OR A FAILURE IN ADDING FFFF TO SUMMI. TO DETERMINE WHICH OF THE TWO SUMS IS IN ERROR, IT MUST BE ASSUMED THAT ONE OF THEM IS CORRECT IN ORDER TO ARRIVE AT THE VALUE OF THE OTHER PRIOR TO THE FAILURE, IN OTHER WORDS, TO DETERMINE VALUE OF SUMPL PRIOR TO FAILURE. IT MUST BE ASSUMED THAT PRESENT VALUE OF SUMMI IS CORRECT AND VICEVERSA. EXECUTE ADD TEST PROGRAM AS FOLLOWS,

A. OBTAIN VALUE OF SUMPL PRIOR TO FAILURE BY DETERMINING TWO'S COMPLEMENT OF (SUMMI - FFFF).

B. OBTAIN VALUE OF SUMMI PRIOR TO FAILURE BY DETERMINING TWO'S COMPLEMENT OF (SUMPL - 0001).

C. LOAD FOLLOWING PROGRAM BY MEANS OF CONSOLE ENTRY SWITCHES.

NOTE

ALL NUMBERS SHOWN BELOW ARE IN HEXADECIMAL NOTATION.

LOCATION	CONTENTS	MNEMONIC	COMMENTS
0000	VALUE OF SUMP PRIOR TO ERROR		WILL BE IN ACCUMULATOR WHEN ADD OCCURS.
0001	0001		WILL BE ADDED TO ACCUMULATOR DURING ADD.
0002	CORRECT SUM OF ADDITION		USED TO CHECK ADD OPERATION.
0003	00FC	LD	LOAD ACCUMULATION FROM LOCATION 0000.
0004	80FC	A	ADD CONTENTS OF LOCATION 0001 TO ACCUMULATOR.
0005	E0FC	EOR	EOR ACCUMULATOR WITH CORRECT ANSWER.
0006	4820	BSC Z	SKIP ON ZERO TO LOCATION 0008.
0007	3000	WAIT	WAIT ON ERROR HAS OCCURRED.
0008	6003	LDX	BRANCH TO LOCATION 0003.

D. LOAD INSTRUCTION ADDRESS REGISTER WITH 0003.

E. RUN PROGRAM IN RUN MODE. ANY ADD FAILURE WILL CAUSE PROGRAM TO STOP AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0008.

F. IF PROGRAM RUNS CONTINUOUSLY WITHOUT ERRORS.

1. PRESS STOP PUSHBUTTON.
2. LOAD LOCATION 0000 WITH VALUE OF SUMMI PRIOR TO ERROR.
3. LOAD LOCATION 0001 WITH FFFF.
4. LOAD LOCATION 0002 WITH CORRECT SUM OF SUMMI PLUS FFFF.
5. RUN AGAIN IN RUN MODE.

---------- LAST PAGE ----------

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 01

```
                        ABS                                                 000020
028C                    ORG     0                                           000030
                    * TEST MDX AND I TO A TRANSFER                          000040
                    *       TEST READ IN ON PROG. LOAD.                     000050
0000 0 C02F         LD      /0030                                           000060
0001 0 3001         WAIT    /0001   --SEE ACC IS FOF0                       000070
0002 0 C02E         LD      /0031                                           000080
0003 0 3001         WAIT    /0001   --SEE ACC IS 080F                       000090
0004 0 703F         MDX     /0044                                           000100
0005 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000110
0006 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000120
0007 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000130
0008 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000140
0009 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000150
000A 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000160
000B 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000170
000C 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000180
000D 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000190
000E 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000200
000F 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000210
0010 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000220
0011 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000230
0012 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000240
0013 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000250
0014 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000260
0015 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000270
0016 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000280
0017 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000290
0018 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000300
0019 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000310
001A 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000320
001B 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000330
001C 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000340
001D 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000350
001E 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000360
001F 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000370
0020 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000380
0021 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000390
0022 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000400
0023 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000410
0024 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000420
0025 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000430
0026 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000440
0027 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000450
0028 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000460
0029 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000470
002A 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000480
002B 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000490
002C 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000500
002D 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000510
002E 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000520
002F 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000530
0030 0 F0F0         DC      /F0F0                                           000540
0031 0 080F         DC      /080F                                           000550
0032 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000560
0033 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000570
0034 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000580
0035 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000590
0036 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000600
0037 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000610
0038 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000620
0039 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000630
003A 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000640
003B 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000650
003C 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000660
003D 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000670
003E 0 7000         MDX     *                                               000680
003F 0 700D         MDX     /004D                                           000690
```


ONE-CARD DIAGNOSTIC PROGRAMS
CARD 01

```
0040 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000700
0041 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000710
0042 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000720
0043 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000730
0044 0 70F9         MDX     /003E                                           000740
0045 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000750
0046 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000760
0047 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000770
0048 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000780
0049 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000790
004A 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000800
004B 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000810
004C 0 30F1         WAIT    -15     **ERR., RESET THEN SI                   000820
004D 0 3001         WAIT    /0001   --STOP HERE INDICATES OK                000830
004E 0 2000         DC      /2000     HEXIDECIMAL NUMBER 0                  000840
004F 0 1000         DC      /1000     HEXIDECIMAL NUMBER 1                  000850
0050   0000         END     0                                               000860
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 01

CROSS REFERENCE LISTING

SYMBOL VALUE REFERENCES

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 02

```
                        ABS                                                 000890
028C                    ORG     /0000                                       000900
                  * TEST ADD BY ONE AND INCREMENT I COUNTER                  000910
0000 0  C03E            LD      /003F       ADD /0001 TO ACC. AT EACH       000920
0001 0  803D            A       /003F         INST. FROM LOC. /0000         000930
0002 0  803C            A       /003F         TO LOC. /003E. TOTAL          000940
0003 0  803B            A       /003F         AT WAIT AT /003F SHOULD       000950
0004 0  803A            A       /003F         BE /003E.                     000960
0005 0  8039            A       /003F       IF ANSWER WRONG                 000970
0006 0  8038            A       /003F         1. DISPLAY LOCS. /003F        000980
0007 0  8037            A       /003F                          /0040        000990
0008 0  8036            A       /003F                          /0041        001000
0009 0  8035            A       /003F                          /0000.       001010
000A 0  8034            A       /003F                                       001020
000B 0  8033            A       /003F         2. LOAD OK. CHECK THE         001030
000C 0  8032            A       /003F              FOLLOWING CARDS          001040
000D 0  8031            A       /003F              BY SWAP + RE-RUN         001050
000E 0  8030            A       /003F              QUAD + IBM.              001060
000F 0  802F            A       /003F            OR SINGLE INSTRUCTION      001070
0010 0  802E            A       /003F              FROM 70000 + SEE         001080
0011 0  802D            A       /003F              WHEN ACC. NOT EQU.       001090
0012 0  802C            A       /003F              I COUNTER.               001100
0013 0  802B            A       /003F                                       001110
0014 0  802A            A       /003F                                       001120
0015 0  8029            A       /003F                                       001130
0016 0  8028            A       /003F                                       001140
0017 0  8027            A       /003F                                       001150
0018 0  8026            A       /003F                                       001160
0019 0  8025            A       /003F                                       001170
001A 0  8024            A       /003F                                       001180
001B 0  8023            A       /003F                                       001190
001C 0  8022            A       /003F                                       001200
001D 0  8021            A       /003F                                       001210
001E 0  8020            A       /003F                                       001220
001F 0  801F            A       /003F                                       001230
0020 0  801E            A       /003F                                       001240
0021 0  801D            A       /003F                                       001250
0022 0  801C            A       /003F                                       001260
0023 0  801B            A       /003F                                       001270
0024 0  801A            A       /003F                                       001280
0025 0  8019            A       /003F                                       001290
0026 0  8018            A       /003F                                       001300
0027 0  8017            A       /003F                                       001310
0028 0  8016            A       /003F                                       001320
0029 0  8015            A       /003F                                       001330
002A 0  8014            A       /003F                                       001340
002B 0  8013            A       /003F                                       001350
002C 0  8012            A       /003F                                       001360
002D 0  8011            A       /003F                                       001370
002E 0  8010            A       /003F                                       001380
002F 0  800F            A       /003F                                       001390
0030 0  800E            A       /003F                                       001400
0031 0  800D            A       /003F                                       001410
0032 0  800C            A       /003F                                       001420
0033 0  8008            A       /003F                                       001430
0034 0  800A            A       /003F                                       001440
0035 0  8009            A       /003F                                       001450
0036 0  8008            A       /003F                                       001460
0037 0  8007            A       /003F                                       001470
0038 0  8006            A       /003F                                       001480
0039 0  8005            A       /003F                                       001490
003A 0  8004            A       /003F                                       001500
003B 0  8003            A       /003F                                       001510
003C 0  8002            A       /003F                                       001520
003D 0  8001            A       /003F                                       001530
003F 0  3002            WAIT    /0002   --SEE ACC. IS 003E                  001540
003F 0  0001            DC      /0001     CONSTANT ADDED AT 0-3D            001550
0040 0  F8FF            DC      /F8FF     CONSTANT TO CHECK CRD READ        001560
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 02

```
0041   000D            BSS    /D
004E 0 2000            DC     /2000     HEXIDECIMAL NUMBER 0
004F 0 0800            DC     /0800     HEXIDECIMAL NUMBER 2
0050   0000            END    0
```

```
001570
001580
001590
001600
```


ONE-CARD DIAGNOSTIC PROGRAMS
CARD 02

CROSS REFERENCE LISTING

SYMBOL VALUE REFERENCES

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 03

```
                        ABS                                                 001630
02BC                    ORG     /0000                                       001640
                    * CHECK BSC Z, SRA 1 , AND EOR.                         001650
                    * LOAD CARD AND RUN PROGRAM. PROGRAM SHOULD STOP        001660
                    * AT WAITS FOLLOWED BY -- FOR SEEING THAT THE REGS.     001670
                    * SHOWN ARE CORRECT, DIFFERENCES INDICATE ERRORS.       001680
                    * WAITS FOLLOWED BY ** OCCUR ONLY ON ERRORS.            001690
                    *  THE FIRST TEST IS OF SRA 1 AND BSC Z.               001700
                    *  A ONE IS PLACED INTO THE BIT ZERO POSITION AND      001710
                    * TESTED AT EACH TIME BY A BSC Z WHICH SHOULD NOT       001720
                    *  SKIP   THE ACC. IS SHOWN AFTER EACH SRA 1.          001730
0000 0  C03C            LD      K8000       8000                            001740
0001 0  4820            BSC     Z           SHOULD NOT SKIP                 001750
0002 0  1801            SRA     1           4000                            001760
0003 0  4820            BSC     Z           SHOULD NOT SKIP                 001770
0004 0  1801            SRA     1           2000                            001780
0005 0  4820            BSC     Z           SHOULD NOT SKIP                 001790
0006 0  1801            SRA     1           1000                            001800
0007 0  4820            BSC     Z           SHOULD NOT SKIP                 001810
0008 0  1801            SRA     1           0800                            001820
0009 0  4820            BSC     Z           SHOULD NOT SKIP                 001830
000A 0  1801            SRA     1           0400                            001840
000B 0  4820            BSC     Z           SHOULD NOT SKIP                 001850
000C 0  1801            SRA     1           0200                            001860
000D 0  4820            BSC     Z           SHOULD NOT SKIP                 001870
000F 0  1801            SRA     1           0100                            001880
000F 0  4820            BSC     Z           SHOULD NOT SKIP                 001890
0010 0  1801            SRA     1           0080                            001900
0011 0  4820            BSC     Z           SHOULD NOT SKIP                 001910
0012 0  1801            SRA     1           0040                            001920
0013 0  4820            BSC     Z           SHOULD NOT SKIP                 001930
0014 0  1801            SRA     1           0020                            001940
0015 0  4820            BSC     Z           SHOULD NOT SKIP                 001950
0016 0  1801            SRA     1           0010                            001960
0017 0  4820            BSC     Z           SHOULD NOT SKIP                 001970
0018 0  1801            SRA     1           0008                            001980
0019 0  4820            BSC     Z           SHOULD NOT SKIP                 001990
001A 0  1801            SRA     1           0004                            002000
0018 0  4820            BSC     Z           SHOULD NOT SKIP                 002010
001C 0  1801            SRA     1           0002                            002020
001D 0  4820            BSC     Z           SHOULD NOT SKIP                 002030
001E 0  1801            SRA     1           0001                            002040
001F 0  4820            BSC     Z           SHOULD NOT SKIP                 002050
0020 0  3003            WAIT    /0003       -- I EQU. 0021  A EQU. 0001     002060
                    *           ERROR, RESET THEN SI, SEE EACH INST.        002070
                    *           OK      PRESS START                         002080
0021 0  1801            SRA     1           0000                            002090
0022 0  4820            BSC     Z           SHOULD SKIP                     002100
0023 0  30F3            WAIT    -13         **ERR. A SHOULD BE ZERO         002110
0024 0  3003            WAIT    /0003       --I EQU. 0025 A EQU. 0000       002120
                    *           ERROR, RESET THEN SI, SEE EACH INST.        002130
                    *           OK      PRESS START                         002140
                    *OK. SHOWS I CNTR. OK FROM 0000 TO /0025                002150
                    *         BSC Z SKIPS ONLY WHEN ACC = 0000              002160
                    *         SRA 1 OK FOR ONE BIT IN ANY POSITION          002170
                    *BEGIN TEST OF TRANSFERS OF B-D-A-M----------------      002180
                    * AND A-U-A AND A-B                                      002190
                    * THE CONTENTS OF ACC. IS SHOWN AFTER EACH CHANGE        002200
0025 0  C018            LD      KF0F0       F0F0                            002210
0026 0  D008            STO     /FFFF                                       002220
0027 0  C007            LD      /FFFF                                       002230
0028 0  D007            STO     /0000                                       002240
0029 0  C006            LD      /0000                                       002250
002A 0  1804            SRA     4           0F0F                            002260
002B 0  D003            STO     /FFFF                                       002270
002C 0  C002            LD      /FFFF                                       002280
002D 0  D002            STO     /0000                                       002290
002E 0  C001            LD      /0000                                       002300
```


ONE-CARD DIAGNOSTIC PROGRAMS
CARD 03

```
002F 0  3003            WAIT    /0003       --I EQU. 0030 A EQU. 0F0F       002310
                    *           IF ERROR, LOAD I CTR. /0025, THEN SI AND    002320
                    *SEE THAT REGS. AS SHOWN FOR EACH INSTRUCTION.          002330
                    *                   QUAD CARDS GATE A2 ROWS 4,5         002340
                    *                   IBM  CARDS GATE A2 ROWS 6,7         002350
                    * BIT POS. -- 0-1 2-3 4-5 6-7 8-9 10-11 12-13 14-15     002360
                    * CARD COL.--  C   D   E   F   G   H    J    K          002370
                    *           IF OK   , PRESS START------------------     002380
                    * TEST FOR                                              002390
0030 0  F00D            EOR     KF0F0       SET ACC TO  FFFF                002400
0031 0  D00D            STO     KFFFF       STORE IT                        002410
0032 0  3003            WAIT    /0003       --I EQU. 0033 A EQU. FFFF       002420
0033 0  F00B            EOR     KFFFF       CLEAR ACC TO 0000               002430
0034 0  4820            BSC     Z           SHOULD SKIP                     002440
0035 0  30F3            WAIT    -13         **ERR. ACC SHOULD BE 0000       002450
0036 0  F009            EOR     K0000       ACC SHOULD STAY 0000            002460
0037 0  4820            BSC     Z           SHOULD SKIP                     002470
0038 0  30F3            WAIT    -13         **ERR. ACC SHOULD BE 0000       002480
0039 0  F004            EOR     KF0F0       ACC SHOULD GO TO F0F0           002490
003A 0  F0C4            EOR     /FFFF       ACC  SHOULD BE FFFF             002500
                    *                   LOC. /FFFF SHOULD BE 0F0F           002510
003B 0  3003            WAIT    /0003       --I EQU. 003C A EQU. FFFF       002520
                    *           IF ERROR PUT IN SI MODE AND START           002530
003C 0  70F1            MDX     /002E                                       002540
                    *           OK    ,TEST ON THIS CARD COMPLETE.          002550
                    * NO ERRORS ON THIS TEST SHOW ALL BITS TRANSFER          002560
                    * CORRECTLY FROM CORE-B-D-A-M AND A-U-A-D-B-CORE.        002570
                    * THAT EOR WORKS RIGHT. THAT BSC Z WORKS RIGHT.         002580
                    * THAT ACC. WILL SHIFT A ONE BIT RIGHT FROM ANY         002590
                    * POSITION. THAT LD, STO, EOR, BSC Z, SRA 1, WAIT       002600
                    * INSTRUCTIONS OK. I CNTR. STEPS FROM /0000 TO/003C     002610
003D 0  8000        K8000 DC        /8000                                   002620
003E 0  F0F0        KF0F0 DC        /F0F0                                   002630
003F 0  FFFF        KFFFF DC        /FFFF                                   002640
0040 0  0000        K0000 DC        /0000                                   002650
0041    0000                BSS     /D                                      002660
004F 0  2000                DC      /2000   HEXIDECIMAL NUMBER 0           002670
004F 0  0040                DC      /0040   HEXIDECIMAL NUMBER 3           002680
0050    0000                END     0                                       002690
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 03

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
KFFFF	003F	0031,0033
KF0F0	003E	0025,0030,0039
K0000	0040	0036
K8000	003D	0000

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 04

```
                        ABS
                    * TEST  LONG FORMAT OF LD A STO LDX EOR.                    002720
                    * THEN-                                                     002728
                    * TEST ADD OF POSITIVE AND NEGATIVE ONES.                   002729
                    * A COMPREHENSIVE TEST  OF ADD IS PERFORMED ON              002730
                    * EACH PASS.  A PASS TAKES ABOUT 4 SECONDS.                 002740
                    * VERIFY CORRECT LOOPING BY SINGLE INSTRUCTION.             002750
                    * PROGRAM FORMS CONTINUOUS LOOP.                            002760
                    * TO EXIT- PRESS RESET + PROGRAM LOAD.                      002770
028C                        ORG     /0000                                       002780
0000 0  C013                LD      K4000       MAKE LONG FORM INSTRUCTIONS     002790
0001 0  1804                SRA     4                                           002791
0002 0  D012                STO     K0400                                       002792
0003 0  F012                EOR     LD                                          002793
0004 0  D011                STO     LD                                          002794
0005 0  C00F                LD      K0400                                       002795
0006 0  F012                EOR     EOR                                         002796
0007 0  D011                STO     EOR                                         002797
0008 0  C00C                LD      K0400                                       002798
0009 0  F011                EOR     STO                                         002799
000A 0  D010                STO     STO                                         002800
000B 0  C009                LD      K0400                                       002801
000C 0  F011                EOR     A                                           002802
000D 0  D010                STO     A                                           002803
000E 0  C006                LD      K0400                                       002804
000F 0  F001                EOR     LDX                                         002805
0010 0  D000                STO     LDX                                         002806
0011 00 64000016    LDX     LDX  L  LD          BRANCH TO TEST LONG FORM.       002807
0013 0  30F4                WAIT    -12         **ERR. LDX FAILED               002808
0014 0  4000        K4000   DC      /4000                                       002809
0015 0  0400        K0400   DC      /0400                                       002810
0016 00 C4000031    LD      LD   L  KF0F0       BEGIN LONG FORM TEST            002812
0018 0  1804                SRA     4                                           002813
0019 00 F4000031    EOR     EOR  L  KF0F0                                       002814
001B 00 D400002F    STO     STO  L  KFFFF                                       002815
001D 0  3004                WAIT    /0004   -- SEE ACC. EQU. FFFF               002816
001F 00 84000030    A       A    L  K0001                                       002840
0020 0  0000                STO     SUMPL       CLEAR SUM PLUS LOCATION         002841
0021 0  0008                STO     SUMMI       CLEAR SUM MINUS LOCATION        002860
0022 0  3004                WAIT    /0004   --SEE ACC. EQU. 0000               002870
0023 0  C009        BEGIN   LD      SUMMI       LOAD SUM OF MINUS ONES          002880
0024 0  800A                A       KFFFF       ADD MINUS ONE TO IT             002890
0025 0  D007                STO     SUMMI       STORE SUM OF MINUS ONES         002900
0026 0  C007                LD      SUMPL       LOAD SUM OF PLUS ONES           002910
0027 0  8008                A       K0001       ADD PLUS ONE TO IT              002920
0028 0  D005                STO     SUMPL       STORE SUM OF PLUS ONES          002930
0029 0  8003                A       SUMMI       ADD SUMMI TO SUMPL              002940
002A 0  4820                BSC     Z           SHOULD ALWAYS SKIP              002950
002B 0  30F4                WAIT    -12         **ERR. ACC NOT ZERO             002960
002C 0  70F6                MDX     BEGIN                                       002970
002D 0  0000        SUMMI   DC      /0000                                       002980
002E 0  0000        SUMPL   DC      /0000                                       002990
002F 0  0000        KFFFF   DC      /0000                                       003000
0030 0  0001        K0001   DC      /0001                                       003010
0031 0  F0F0        KF0F0   DC      /F0F0                                       003020
0032    001C                BSS     /1C                                         003030
004E 0  2000                DC      /2000       HEXIDECIMAL NUMBER 0            003040
004F 0  0020                DC      /0020       HEXIDECIMAL NUMBER 4            003050
0050    0000                END     0                                           003060
                                                                                003070
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 04

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	001F	000C,000D
BEGIN	0023	002C
EOR	0019	0006,0007
KFFFF	002F	001B,0024
KF0F0	0031	0016,0019
K0001	0030	001E,0027
K0400	0015	0002,0005,0008,0008,000E
K4000	0014	0000
LD	0016	0003,0004,0011
LDX	0011	000F,0010
STO	0018	0009,000A
SUMMI	002D	0021,0023,0025,0029
SUMPL	002E	0020,0026,0028

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 05

```
                        ABS                                                 003100
                        ORG     0                                           003110
028C                  * TEST THAT LOCS. 0050 THRU FFF CAN BE ADDRESSED      003120
                      * PROGRAM SHOULD STOP  AT LOC. OFFF WITH B  300A      003130
                      * PRESS RESET AND START.  PROGRAM THEN SHOULD STOP    003140
                      * AT LOC. 004A WITH B 300A  AND ACC. OFAF WHICH       003150
                      * IS THE NUMBER OF LOCATIONS TESTED.  PROGRAM         003160
                      * CAN BE RE-RUN BY PRESSING START.                    003170
0000 0  C022          MOD1  LD      K1000     PROGRAM REPLACES THIS         003180
0001 0  1802                SRA     2                                       003190
0002 0  F02F                EOR     STLN                                    003200
0003 0  D00C                STO     STWT      MAKE UP LONG INSTRUCTIONS     003210
0004 0  D02C                STO     STLN                                    003220
0005 0  C01D                LD      K1000                                   003230
0006 0  1802                SRA     2                                       003240
0007 0  F035                EOR     CHCK                                    003250
0008 0  D034                STO     CHCK                                    003260
0009 0  C01A                LD      KF000                                   003270
000A 0  1804                SRA     4                                       003280
000B 0  F005                EOR     STWT+1                                  003290
000C 0  D004                STO     STWT+1                                  003300
000D 0  C018                LD      CON1                                    003310
000E 0  D0F1                STO     MOD1      MODIFY LOCATION 0000          003320
000F 0  C038                LD      KWAIT                                   003330
0010 00 D40000FF      STWT  STO  L  /00FF      PUT WAIT INTO /0FFF           003340
0012 0  C015                LD      SUMC                                    003350
0013 0  8000          MOD3  A       MOD3+1    FORM CHECK SUM                003360
0014 0  D013                STO     SUMC                                    003370
0015 0  C0FD                LD      MOD3                                    003380
0016 0  800A                A       K0001                                   003390
0017 0  D0F8                STO     MOD3                                    003400
0018 0  F09F                EOR     CON3                                    003410
0019 0  4820                BSC     Z                                       003420
001A 0  70F7                MDX     MOD3-1                                  003430
001B 0  C00C                LD      SUMC                                    003440
001C 0  4820                BSC     Z         SHOULD SKIP                   003450
001D 0  30F5                WAIT    -11       **ERR. SUM SHOULD BE 0000     003460
001E 0  700B                MDX     RSTR                                    003470
001F 0  00DC                DC      /00DC     USED TO MAKE CHECK SUM        003480
0020 0  00DC                DC      /00DC     USED TO MAKE CHECK SUM        003481
0021 0  0001          K0001 DC      /0001                                   003490
0022 0  5000          KBGIN DC      /5000                                   003500
0023 0  1000          K1000 DC      /1000                                   003510
0024 0  F000          KF000 DC      /F000                                   003520
0025 0  40FF          KBSI  BSI  X  -1                                      003530
0026 0  703A          CON1  MDX  X  CHECK-MOD1-1                            003540
0027 0  803C          CON3  A    X  BGIN-MOD3                               003550
0028 0  00FC          SUMC  DC      /00FC                                   003560
0029 0  2030          SUML  DC      /2030                                   003570
002A 0  C0F7          RSTR  LD      KBGIN     LOAD ACC. TO 5000             003580
002B 0  1808                SRA     8         SHIFT TO /0050                003590
002C 0  D005                STO     STLN+1    RESTORE                       003600
002D 0  D010                STO     CHCK+1    RESTORE                       003610
002E 0  1810                SRA     16        ACC = /0000                   003620
002F 0  D0F9                STO     SUMI      RESTORE                       003630
0030 0  C0F4                LD      KBSI      PUT BSI-1 INTO CORE           003640
0031 00 D4000050      STLN  STO  L  /0050                                   003650
0033 0  C0FE                LD      STLN+1                                  003660
0034 0  80EC                A       K0001     MODIFY STORE ADDRESS          003670
0035 0  D0FC                STO     STLN+1                                  003680
0036 0  F0DA                EOR     STWT+1                                  003690
0037 0  4820                BSC     Z         SKIP WHEN LOC. OFFE STORED    003700
0038 0  70F7                MDX     STLN-1                                  003710
0039 0  7016                MDX     /0050     RUN SERIES OF BSI-1 STORED    003720
003A 0  30F5                WAIT    -11       **ERR.  ADDRESS PLUS ONE      003730
                      * DOES NOT EQUAL ADRESS OF LOCATION TESTED.           003740
0038 0  C002          CHECK LD      CHCK+1    LOAD THE ADDRESS BEING        003750
003C 0  80E4                A       K0001       TESTED AND ADD ONE.         003760
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 05

```
003D 00 F4000050   CHCK  FOR  L  /0050     COMPARE WITH CONTENTS.          003770
003F 0  4820             BSC     Z         SHOULD BE ZERO AND SKIP         003780
0040 0  70F9             MDX     CHECK-1   ERROR, STOP + SING. INST.       003790
0041 0  C0E7             LD      SUML                                      003800
0042 0  80DE             A       K0001      FORM SUM OF = LOCS. TESTED     003810
0043 0  D0E5             STO     SUML                                      003820
0044 0  C0E9             LD      CHCK+1     MODIFY TO TEST NEXT LOC.       003830
0045 0  80DB             A       K0001                                     003840
0046 0  D0E7             STO     CHCK+1                                    003850
0047 0  F0C9             FOR     STWT+1    CHECK IF ALL TESTED             003860
0048 0  4820             BSC     Z         SKIP, ALL LOCS. TESTED          003870
0049 0  70F1             MDX     CHCK-2    GO CHECK NEXT LOCATION          003880
004A 0  C0DE             LD      SUML      LOAD SUM OF NUMBER TESTED.      003890
004B 0  3005       KWAIT WAIT    /0005   --ACC. EQU. 0FAF IS NUMBER        003900
004C 0  70DD             MDX     RSTR          TESTED.                     003910
004D 0  D8FF             DC      /D8FF     USED TO MAKE CHECK SUM          003920
004E 0  2000             DC      /2000      HEXIDECIMAL NUMBER 0           003940
004F 0  0010       BGIN  DC      /0010      HEXIDECIMAL NUMBER 5           003950
0050    0000             END     0                                         003960
```


ONE-CARD DIAGNOSTIC PROGRAMS
CARD 05

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
BGIN	004F	0027
CHCK	003D	0007,0008,002D,0038,0044,0046,0049
CHECK	003B	0026,0040
CON1	0026	000D
CON3	0027	0018
KBGIN	0022	002A
KBSI	0025	0030
KF000	0024	0009
KWAIT	004B	000F
K0001	0021	0016,0034,003C,0042,0045
K1000	0023	0000,0005
MOD1	0000	000E,0026
MOD3	0013	0013,0015,0017,001A,0027
RSTR	002A	001E,004C
STLN	0031	0002,0004,002C,0033,0035,0038
STWT	0010	0003,0008,000C,0036,0047
SUMC	0028	0012,0014,001B
SUML	0029	002F,0041,0043,004A

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 06

```
                        ABS                                                 003990
028C                    ORG     0                                           004000
                    * TEST OF LOADER CARD 1 FUNCTIONS                       004010
                    * USING BIT SWITCHES FOR DSW + FOR COLUMN DATA          004020
                    * THIS PROG. IS IDENTICAL TO CARD 1 FROM  1D TO 4C      004030
                    * EXCEPT FOR XIO COMMANDS.                              004040
0000 0 C024         START LD      RDIN+1    SET UP I/O CONT. COMMANDS       004050
0001 0 1804             SRA     4                                           004060
0002 0 F024             EOR     RDSW+1                                      004070
0003 0 D021             STO     RDIN+1                                      004080
0004 0 D022             STO     RDSW+1                                      004090
0005 0 C023             LD      SENSE+1   MAKE UP STORE LONG                004100
0006 0 1801             SRA     1                                           004110
0007 0 F034             EOR     STORE                                       004120
0008 0 D033             STO     STORE                                       004130
0009 0 C014             LD      CHKSM     MAKE UP ADDR. FOR STO LONG        004140
000A 0 1808             SRA     8                                           004150
000B 0 F031             EOR     STORE+1                                     004160
000C 0 D030             STO     STORE+1                                     004170
000D 0 701F             MDX     SRTRD                                       004180
000E 0 0000             DC      0                                           004190
000F 0 0000             DC      0                                           004200
0010 0 0000             DC      0                                           004210
0011 0 0000             DC      0                                           004220
0012 0 0000             DC      0                                           004230
0013 0 0000             DC      0                                           004240
0014 0 0000             DC      0                                           004250
0015 0 0000             DC      0                                           004260
0016 0 0000             DC      0                                           004270
0017 0 0000             DC                                                  004280
0018 0 0000             DC                                                  004290
0019 0 0000             DC                                                  004300
001A 0 0000             DC                                                  004310
001B 0 0000             DC                                                  004320
001C 0 7000             DC      0                                           004330
001D 0 700F         ENDCK MDX   SRTRD                                       004340
001E 0 B800         CHKSM DC    /B800                                       004350
001F 0 0800         K0800 DC    /0800                                       004360
0020 0 8003         K8003 DC    /8003                                       004370
0021 0 8000         K8000 DC    /8000                                       004380
0022 0 0001         K0001 DC    /0001                                       004390
0023 0 0000               DC    /0000                                       004400
0024 0 0000         RDIN  DC    /0000     RD SWS. INTO LOCS. 0 OR 1         004410
0025 0 A000               DC    /A000     /3A00 SET BY PROGRAM              004420
0026 0 0028         RDSW  DC    SENSE     RD SWS. INTO LOC. SENSE           004430
0027 0 3000               DC    /3000     /3A00 SET BY PROGRAM              004440
0028 0 0004         SENSE DC    /0004     SENSE DSW CONTROL COMMAND         004450
0029 0 2808               DC    /2808                                       004460
002A 0 0000         COUNT DC    /0000                                       004470
002B 0 F0F3         ERROR EOR   K0800     RESTORE ACC. TO DSW               004480
002C 0 30F6               WAIT  -10     **ERR. STOP DSW NOT RIGHT           004490
002D 0 3006         SRTRD WAIT  /6        TO LOOP, REPLACE WAIT             004500
002E 0 03F7               XIO   RDSW      READ SWITCHES INTO SENSE          004510
002F 0 C0F8               LD    SENSE     LOAD BIT SWS. INTO ACC.           004520
0030 0 F0FF               EOR   K8003     CHECK BITS 0,14+15 ONLY           004530
0031 0 4820               BSC   Z         SKIP IF BITS 0,14+15 ONLY         004540
0032 0 700F               MDX   CONT1     CONTINUE DSW ANALYSIS             004550
0033 0 03F0               XIO   RDIN      READ BIT SWITCHES INTO 0,1        004560
0034 0 C0EF               LD    RDIN                                        004570
0035 0 F0EC               EOR   K0001     SWITCH READ IN AREA, EVEN         004580
0036 0 D0ED               STO   RDIN          TIMES IN 0 ODD IN 1           004590
0037 0 4820               BSC   Z          SKIP 2 WORDS READ                004600
0038 0 70F4               MDX   SRTRD                                       004610
0039 0 C0C6               LD    START      GET FIRST WORD                   004620
003A 0 1808               SRA   8          SHIFT IT                         004630
003B 0 F0C5               EOR   START+1    EOR WITH SECOND WORD             004640
003C 0 C004         STORE DC    /C004     STORE LONG AT 4D                  004650
003D 0 00F5               DC    /00F5        SET UP BY PROG.                004660
```


ONE-CARD DIAGNOSTIC PROGRAMS
CARD 06

```
003E 0 C0FF               LD    STORE+1                                     004670
003F 0 B0F3               A     K0001+1   DUMMY MODIFY OF STO L             004680
0040 0 D0FC               STO   STORE+1                                     004690
0041 0 70EB               MDX   SRTRD                                       004700
0042 0 F0DF         CONT1 EOR   K8000     CHECK FOR BITS 14+15 ONLY         004710
0043 0 4820               BSC   Z         SKIP BUSY AND NOT READY           004720
0044 0 7001               MDX   CONT2                                       004730
0045 0 70E7               MDX   SRTRD                                       004740
0046 0 C0F1         CONT2 LD    SENSE     BIT SWS. LOADED TO ACC.           004750
0047 0 F0D7               EOR   K0800     CHECK FOR BIT 4 ONLY              004760
0048 0 4820               BSC   Z         SKIP END OF CARD                  004770
0049 0 70E1               MDX   ERROR                                       004780
004A 0 C0DF               LD    COUNT     COUNT PASSES                      004790
0048 0 B0D6               A     K0001                                       004800
004C 0 70E0               MDX   SRTRD                                       004810
004D 0 9000               DC    0                                           004820
004E 0 2000               DC    /2000     HEXIDECIMAL NUMBER 0              004830
004F 0 0008               DC    /0008     HEXIDECIMAL NUMBER 6              004840
0050   0000               END   0                                           004850
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 06

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CHKSM	001E	0009
CONT1	0042	0032
CONT2	0046	0044
COUNT	002A	004A
ENDCK	001D	
ERROR	0028	0049
K0001	0022	0035,003F,004B
K0800	001F	0028,0047
K8000	0021	0042
K8003	0020	0030
RDIN	0024	0000,0003,0033,0034,0036
RDSW	0026	0002,0004,002E
SENSE	0028	0005,0026,002F,0046
SRTRD	002D	0000,001D,0038,0041,0045,004C
START	0000	0039,003B
STORE	003C	0007,0008,000B,000C,003E,0040

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 07

```
                        ABS                                                 004880
028C                    ORG     0                                           004890
                * TEST DOUBLE PRECISION LOAD AND ADD AND                    004891
                * PROGRAM FOR SCOPE LOOPS ON READ CARD                      004900
                * XIO FUNCTIONS ARE IDENTICAL TO CARD1 BUT NO STOP          004910
                * ON ERROR.                                                 004920
0000 0 C017             LD      KFOFO     SET UP CONSTANT /OFOF             004921
0001 0 1804             SRA     4                                           004922
0002 0 D016             STO     KFOFO+1                                     004923
0003 0 D016             STO     KFOFO+2                                     004924
0004 0 C813             LDD     KFOFO     TEST LOAD DOUBLE                  004925
0005 0 8814             AD      KFOFO+2   TEST ADD DOUBLE                   004926
0006 0 3007             WAIT    /0007   --SEE ACC. FFFF Q FFFF IF OK        004927
                *                         CONT. IF NOT RESET AND SI.        004928
0007 0 C01D     START LD        RDIN+1    CORRECT I/O CONT. COMM.           004930
0008 0 1802             SRA     2            SHIFT IT                       004940
0009 0 D01B             STO     RDIN+1       STORE IT                       004950
000A 0 C018             LD      K0001+1   CORRECT I/O CONT. COMM.           004960
000B 0 1801             SRA     1            SHIFT IT                       004970
000C 0 D016             STO     K0001+1      STORE IT                       004980
000D 0 C018             LD      SENSE+1   CORRECT I/O CONT. COMM.           004990
000E 0 1803             SRA     3            SHIFT IT                       005000
000F 0 D019             STO     SENSE+1      STORE IT                       005010
0010 0 F016             EOR     RESET+1                                     005020
0011 0 D015             STO     RESET+1                                     005030
0012 0 700A             MDX     ENDCK                                       005040
0013 0 0000             DC      0                                           005060
0014 0 0000             DC      0                                           005070
0015 0 0000             DC      0                                           005080
0016 0 0000             DC      0                                           005090
0017 0 0000             DC      0                                           005100
0018 0 F0F0     KFOFO DC        /F0F0                                       005110
0019 0 0F0F             DC      /0F0F                                       005120
001A 0 0F0F             DC      /0F0F     PUT IN BY PROGRAM                 005200
0018 0 F0F0             DC      /F0F0                                       005210
001C 0 0000             DC      0                                           005215
001D 0 700F     ENDCK MDX       SRTRD                                       005220
001F 0 0800     K0800 DC        /0800                                       005230
001F 0 8003     K8003 DC        /8003                                       005240
0020 0 8000     K8000 DC        /8000                                       005250
0021 0 0000             DC      0                                           005260
0022 0 0001     K0001 DC        /0001     START RD, USED AS CONSTANT        005270
0023 0 2808             DC      /2808     /1404 SET BY PROG.                005280
0024 0 0000     RDIN  DC        /0000     READ IN LOCATIONS 0 AND 1         005290
0025 0 4800             DC      /4800     /1200 SET BY PROG.                005300
0026 0 0000     RESET DC        0         RESET DSW CONTROL COMMAND         005310
0027 0 0003             DC      /0003     /1703 SET BY PROG.                005320
0028 0 0004     SENSE DC        /0004     SENSE DSW CONTROL COMMAND         005330
0029 0 8800             DC      /8800     /1700 SET BY PROG.                005340
002A 0 0000             DC      0                                           005350
0028 0 F0F2     ERROR EOR       K0800     RESTORE ACC. TO DSW               005360
002C 0 7000             MDX     *         PUT WAIT HERE FOR ERR. STOP       005370
002D 0 08F4     SRTRD XIO       K0001     START READ                        005380
002F 0 08F7             XIO     RESET     RESET DSW                         005390
002F 0 08F8             XIO     SENSE     SENSE DSW FOR CRP                 005400
0030 0 F0EE             EOR     K8003     CHECK BITS 0,14+15 ONLY           005410
0031 0 4820             BSC     Z         SKIP IF BITS 0,14+15 ONLY         005420
0032 0 700F             MDX     CONT1     RD COL.                           005430
0033 0 09F0             XIO     RDIN                                        005440
0034 0 C0EF             LD      RDIN                                        005450
0035 0 F0EC             EOR     K0001                                       005460
0036 0 D0ED             STO     RDIN                                        005470
0037 0 4820             BSC     Z         SKIP, ODD COL. JUST READ          005480
0038 0 7002             MDX     HOP                                         005490
0039 0 C0C7             LD      /0001     LOAD ODD COL. JUST READ           005500
003A 0 7006             MDX     JUMP                                        005510
0038 0 C0C4     HOP   LD        /0000     LOAD EVEN COL. JUST READ          005520
003C 0 7004             MDX     JUMP                                        005530
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 07

```
003D 0 0000          DC    0                                        005540
003E 0 0000          DC    0                                        005550
003F 0 0000          DC    0                                        005560
0040 0 0000          DC    0                                        005570
0041 0 70EC    JUMP  MDX   SRTRD+1                                  005580
0042 0 F0DD    CONT1 EOR   K8000    CHECK FOR BITS 14+15 ONLY       005590
0043 0 4820          BSC   Z        SKIP BUSY AND NOT READY         005600
0044 0 7001          MDX   CONT2                                    005610
0045 0 70E9          MDX   SRTRD+2                                  005620
0046 0 08DF    CONT2 XIO   RESET    SENSE AND RESET DSW             005630
0047 0 F006          EOR   K0800    CHECK FOR BIT 4 ONLY            005640
0048 0 4820          BSC   Z        SKIP END OF CARD                005650
0049 0 70E1          MDX   ERROR                                    005660
004A 0 7002          MDX   /004D                                   005670
004B 0 0000          DC    0                                        005680
004C 0 0000          DC    0                                        005690
004D 0 70DF          MDX   SRTRD                                    005700
004E 0 2000          DC    /2000    HEXIDECIMAL NUMBER 0            005710
004F 0 0004          DC    /0004    HEXIDECIMAL NUMBER 7            005720
0050   0000          END   0                                        005730
```


ONE-CARD DIAGNOSTIC PROGRAMS
CARD 07

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CONT1	0042	0032
CONT2	0046	0044
ENDCK	001D	0012
ERROR	002B	0049
HOP	003B	003B
JUMP	0041	003A,003C
K0F0	0018	0000,0002,0003,0004,0005
K0001	0022	000A,000C,002D,0035
K0800	001E	0028,0047
K8000	0020	0042
K8003	001F	0030
RDIN	0024	0007,0009,0033,0034,0036
RESET	0026	0010,0011,002E,0046
SENSE	0028	000D,000F,002F
SRTRD	002D	001D,0041,0045,004D
START	0007	

TITLE OF CONTENTS

1. PURPOSE

THE CORE FUNCTION TESTS TEST THE CORES, CORE READ/WRITE CIRCUITRY, AND THE CORE ADDRESSING CIRCUITRY IN THE 1131 CENTRAL PROCESSING UNIT. THE CORE FUNCTION TESTS CONSIST OF TWO PROGRAMS WHICH ARE NORMALLY LOADED AND EXECUTED IN THE FOLLOWING SEQUENCE.

A. HIGH CORE FUNCTION TEST (PID 03B0) TESTS ALL CORE LOCATIONS ABOVE ADDRESS /0800, AND CORE LOCATIONS /0000 THRU /0009.
B. LOW CORE FUNCTION TEST (PID 03B1) TESTS CORE LOCATIONS /0000 THRU /0900 AND THE TEN HIGHEST LOCATIONS IN CORE.

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES

THE CORE FUNCTION TESTS ARE LOADED BY THE 1130 RELOCATING LOADER.

2.2 EQUIPMENT PREREQUISITES

A. 1131 CPU
B. CARD OR PAPER TAPE INPUT TO THE 1131

3. USE PROCEDURE

3.1 PROGRAM LOADING

TO LOAD FROM CARDS

A. PLACE THE RELOCATING LOADER, THE HIGH CORE TEST, AND THE LOW CORE TEST IN THE READER IN THAT ORDER. (SEE NOTE)
B. MAKE READER READY.
C. PRESS THE 1131 RESET KEY.
D. PRESS THE 1131 PROGRAM LOAD KEY.
E. IF THE PROGRAM FAILS TO LOAD OR STOPS AT A WAIT BELOW ADDRESS /0160 REFER TO THE RELOCATING LOADER DOCUMENTATION.

TO LOAD FROM PAPER TAPE

A. PLACE THE RELOCATING LOADER IN THE READER.
B. MAKE THE READER READY.
C. PRESS THE 1131 RESET KEY.
D. PRESS THE 1131 PROGRAM LOAD KEY.
E. LOADER WILL LOAD AND HALT AT WAIT 30F6 (B REG).
F. PLACE THE HIGH CORE TEST IN THE READER. (SEE NOTE)
G. MAKE THE READER READY.
H. MANUALLY SET IAR TO /0078.
I. SET MODE SWITCH TO RUN AND PRESS PROGRAM START.
J. IF PROGRAM FAILS TO LOAD OR STOPS AT A WAIT BELOW ADDRESS /0160 REFER TO RELOCATING LOADER DOCUMENTATION.
K. AFTER HIGH CORE TEST IS LOADED, PLACE THE LOW CORE TEST TAPE IN THE READER AND MAKE READER READY.

NOTE...IF DESIRED EITHER OF THE TWO PROGRAMS MAY BE LOADED AND EXECUTED INDEPENDENTLY. IF THE PROGRAMS ARE TO BE RUN IN SEQUENCE THE HIGH CORE TEST MUST BE EXECUTED FIRST. EXECUTION OF THE LOW CORE TEST DESTROYS THE LOADER.

3.2. OPERATING PROCEDURE

A. THE HIGH CORE TEST WILL LOAD AND STOP AT WAIT 3001 (B REG). THE CORE SIZE WILL BE DISPLAYED IN THE ACCUMULATOR.
B. SET SWITCH OPTIONS IF DESIRED. (NORMAL--ALL SWS OFF)
C. PRESS PROGRAM START.
D. THE HIGH CORE TEST WILL RUN ABOUT 1 TO 5 MINUTES DEPENDING ON CORE SIZE AND, IF NO ERRORS OCCUR, STOP AT THE END OF PROGRAM WAIT 3002. SET SWITCH OPTIONS ID DESIRED AND PRESS PROGRAM START. IF SW 15 IS ON THE HIGH CORE TEST WILL BE RERUN.
E. IF SWT 15 IS OFF THE LOW CORE TEST WILL LOAD AND STOP AT WAIT 3001. THE CORE SIZE QILL BE DISPLAYED IN THE ACCUMULATOR.
F. SET OPTIONS IF DESIRED. (NORMAL--ALL SWS OFF)
G. PRESS PROGRAM START.
H. THE LOW CORE TEST WILL RUN ABOUT 1 MINUTE AND, IF NO ERRORS OCCUR, STOP AT THE END OF PROGRAM WAIT 3002. PRESS START TO RERUN THE LOW CORE TEST.
I. ERRORS WILL BE INDICATED BY ERROR WAITS AND PRINTOUTS.
J. PROGRAM OPTIONS MAY BE SELECTED OR CHANGED AT ANY TIME.
K. SEE SECTION 3.6 FOR RESTART PROCEDURE.

3.3 PROGRAN OPERATING OPTIONS

ALL OPTIONS EXCEPT SWT 15 APPLY TO BOTH THE HIGH AND LOW CORE TESTS.

NORMAL SWITCH SETTINGS---ALL OFF

SWT	FUNCTION
15	ON..RERUN HIGH CORE TEST WHEN START IS PRESS AT THE END OF PROGRAM WAIT (3002). OFF.LOAD LOW CORE TEST WHEN PROGRAM START IS PRESSED AT END OF PROGRAM WAIT (3002). NOTE..SWT 15 SETTING HAS NO EFFECT ON LOW CORE TEST.
14	ON..BYPASS DATA ERROR WAITS (3004 AND 3005).
13	ON..BYPASS ALL PRINTOUTS.
12	ON..LOCK ON ERROR FUNCTION. IF AN ERROR OCCURS WHILE SWITCH 12 IS ON THE FAILING FUNCTION WILL BE LOOPED CONTINUOUSLY UNTIL SWT 12 IS TURNED OFF. SWITCH MAY BE TURNED ON WHILE AT AN ERROR WAIT TO LOCK ON THE ERROR.
11	ON..LOOP ENTIRE PROGRAM. THE START AND END WAITS (3001 AND 3002) WILL BE BYPASSED.
10	ON..LOOP ROUTINE. IF A VALID ROUTINE NUMBER (1 THRU 6) IS ENTERED IN SWS 0-7 THAT ROUTINE WILL BE LOOPED CONTINOUSLY. IF NO VALID ROUTINE NUMBER IS ENTERED IN SWS 0-7 THE TEST ROUTINE WHICH IS CURRENTLY BEING EXECUTED WILL BE LOOPED. THE ROUTINE WILL BE LOOPED UNTIL SWS 0-7 ARE CHANGED OR SWITCH 10 IS TURNED OFF.
9	ON..PRINT ROUTINE START MESSSAGE. IF SWT 9 IS ON A START MESSAGE WILL BE PRINTED AT THE START OF EACH ROUTINE.
8	ON..LOCK ON ERROR ADDRESS. IF AN ERROR OCCURS WHILE SWT 8 IS ON THE PROGRAM WILL ALTERNATELY STORE THE LAST GOOD DATA AND THE LAST DATA WORD THAT FILED AT THE ADDRESS THAT FAILED. SWT 8 MAY BE TURNED ON WHILE AT AN ERROR WAIT TO LOCK ON THE ERROR.
0-7	ROUTINE NUMBER...USED WITH SWT 10 OPTION. SEE SWT 10.

3.4 PROGRAM WAITS

ALL WAITS APPLY TO BOTH THE HIGH AND LOW CORE TESTS.

3.4.1 NORMAL WAITS

WAIT NO. (B REG).	DESCRIPTION	RESTART ACTION
30F6	END OF PAPER TAPE LOADER. THIS IS AN ERROR CONDITION EXCEPT AT THE END OF PAPER TAPE LOADER. REFER TO RELOCATING LOADER DOCUMENTATION.	A. PLACE PROGRAM TAPE IN READER AND MAKE READY. B. MANUALLY SET IAR TO 0078. C. SET MODE SWT TO RUN AND PRESS PROGRAM START.
3001	START OF PROGRAM. ACCUMULATOR CONTAINS CORE SIZE.	A. SELECT OPTIONS IF DESIRED. B. PRESS PROGRAM START.
3002	END OF TEST PROGRAM.	A. SELECT OPTIONS IF DESIRED. B. PRESS PROGRAM START.

3.4.2 ERROR WAITS

WAIT NO. (B REG).	DESCRIPTION	RESTART ACTION
3003	PROGRAM COULD NOT DETERMINE CORE SIZE. WRAP-AROUND FAILURE.	PRESS PROGRAM START TO RETRY.
3004	DATA ERROR. FIRST WAIT. A REG CONTAINS INCORRECT DATA. Q REG CONTAINS CORRECT DATA.	PRESS PROGRAM START TO ADVANCE TO WAIT 3005.
3005	DATA ERROR SECOND WAIT. A REG CONTAINS ADDRESS THAT FAILED. Q REG BITS 0-7 CONTAINS RTN NO. Q REG BITS 8-15 CONTAINS FUNC. NO.	SELECT OPTIONS IF DESIRED. PRESS PROGRAM START.
3006	CONSOLE PRINTER FAILURE. SELECT BYPASS PRINT OPTION IF FAILURE PERSISTS.	PRESS PROGRAM START.
3007	ILLEGAL SWITCH COMBINATION. SWS 8, 10, AND 12 ARE OFF AND SWS 13 AND 14 ARE ON. THIS COMBINATION OF SWS WOULD PREVENT ERROR DETECTION.	CHANGE SWITCH SETTINGS. PRESS PROGRAM START.

3.5 PROGRAM TERMINATION

BOTH THE LOW AND HIGH CORE TESTS WILL TERMINATE IN A WAIT INSTRUCTION WITH 3002 INT EH B REG.

3.6 RESTART PROCEDURE

RESTART FROM ANY WAIT BY PRESSING START.

NO RESTART LINKAGE IS AVAILABLE FROM A SYSTEM RESET CONDITION. TO RESTART PROGRAM MANUALLY SET THE INSTRUCTION ADDRESS REGISTER AS SHOWN BELOW, GO TO RUN MODE, AND PRESS PROGRAM START.

HIGH CORE TEST...SET IAR TO /0161 TO RESTART.
LOW CORE TEST....SET IAR TO /0961 TO RESTART.

4. PRINTOUTS

4.1 NORMAL PRINTOUTS

START HIGH CORE TEST	THIS MESSAGE IS PRINTED AT THE START OF THE HIGH CORE TEST PROGRAM.
END HIGH CORE TEST	THIS MESSAGE IS PRINTED AT THE END OF THE HIGH CORE TEST PROGRAM.
START LOW CORE TEST	THIS MESSAGE IS PRINTED AT THE START OF THE LOW CORE TEST PROGRAM.
END LOW CORE TEST	THIS MESSAGE IS PRINTED AT THE END OF THE LOW CORE TEST PROGRAM.
START RTN XX	THIS MESSAGE IS PRINTED AT THE START OF EACH TEST ROUTINE IF SWT 9 IS TURNED ON. XX IS THE ROUTINE NUMBER.

4.2 ERROR PRINTOUTS

ERR CORE SIZE	THIS MESSAGE IS PRINTED IF THE PROGRAM IS UNABLE TO DETERMINE THE CORE SIZE. CORE WRAP-AROUND FEATURE FAILED.
ERR RTN XX FUNC YY	A DATA ERROR WAS DETECTED. XX IS THE ROUTINE NUMBER AND YY IS THE FUNCTION NUMBER. REGISTER DISPLAYS WILL PROVIDE FURTHER INFORMATION AT ERROR WAITS. SEE ERROR WAITS SECTION 3,4,2 AND ROUTINES DESCRIPTION SECTION 5.2.

5. COMMENTS

5.1 PROGRAM DESCRIPTION

THE CORE FUNCTION TEST CONSISTS OF TWO NEARLY IDENTICAL PROGRAMS. THE ONLY DIFFERENCES BETWEEN THE TWO PROGRAMS ARE THE CORE LOCATIONS INTO WHICH THEY ARE LOADED AND THE CORE LOCATIONS WHICH THEY TEST.

THE HIGH CORE TEST LOADS STARTING AT ADDRESS /0161 AND TESTS CORE FROM ADDRESS /0800 UP TO AN ADDRESS 10 LOCATIONS HIGHER THAN THE HIGHEST ADDRESS IN CORE. THIS PROCEDURE TESTS THE WRAP-AROUND FEATURE OF CORE.

THE LOW CORE TEST LOADS STARTING AT ADDRESS /0961 AND TESTS CORE STARTING AT AN ADDRESS 10 POSITIONS LOWER THAN ADDRESS /0000 UP TO ADDRESS /0900. THIS ALSO TESTS THE WRAP-AROUND FEATURE AND OVERLAPS THE AREA TESTED BY THE HIGH CORE TEST.

5.2 TEST ROUTINES DESCRIPTION

BOTH THE HIGH AND LOW CORE TESTS USE IDENTICAL TEST ROUTINES. THERE ARE SIX TEST ROUTINES AND EACH ROUTINE IS DIVIDED INTO TWO TEST FUNCTIONS. EACH TEST FUNCTION IS EXECUTED TWICE BEFORE GOTING TO THE NEXT ROUTINE OR FUNCTION.

RTN 1...ONES AND ZEROS PATTERN

RTN 1 IS INITIALIZED BY FILLING CORE WITH ONES.

FUNC. 1 CHECKS THEN COMPLEMENTS EACH CORE LOCATION STARTING AT THE LOWEST ADDRESS AND PROGRESSING TOWARD THE HIGHEST.
FUNC. 2 CHECKS THEN COMPLEMENTS EACH CORE LOCATION STARTING AT THE HIGHEST ADDRESS AND PROGRESSING TOWARD THE LOWEST.

RTN 2...ADDRESSING PATTERN

RTN 2 IS INITIALIZED BY FILLING EACH CORE LOCATION WITH ITS OWN ADDRESS.

FUNC. 1 SAME AS RTN 1 FUNC 1.
FUNC. 2 SAME AS RTN 1 FUNC 2.

RTN 3...CHECKERBOARD PATTERN

RTN 3 IS INITIALIZED BY FILLING CORE WITH ALTERNATE 5555 AND AAAA CHARACTERS.

FUNC. 1 SAME AS RTN 1 FUNC 1.
FUNC. 2 SAME AS RTN 1 FUNC 2.

RTN 4...BIT ISOLATION PATTERN

RTN 4 HAS NO INITIALIZATION STEP.

FUNC. 1 FLOATING ONE PATTERN. BIT 0 IS SET ON AND ALL OTHER BITS OFF IN THE CORE LOCATION BEING TESTED. THE BIT IS THEN CHECKED AND SHIFTED RIGHT ONE POSITION SO THAT THE CORE LOCATION ALWAYS CONTAINS 15 BITS OFF AND ONE ON. ALL 16 POSITIONS OF EACH CORE LOCATION ARE CHECKED BEFORE ADVANCING TO THE NEXT CORE LOCATION.
FUNC. 2 FLOATING ZERO PATTERN. THIS TEST IS PERFORMED THE SAME AS RTN 4 FUNCTION 1 EXCEPT THAT A ZERO IS SHIFTED RIGJT KEEPING 15 BITS ON AND ONE OFF.

RTN 5...WORST CASE (MAXIMUM NOISE) PATTERN

RTN 5 IS INITIALIZED BY FILLING CORE WITH THE WORST CASE PATTERN. THIS PATTERN CONSISTS OF BLOCKS OF ONES AND ZEROS.

FUNC 1 RAPIDLY SCANS CORE CHECKING EACH CORE LOCATION.
FUNC 2 CHECKS AND COMPLEMENTS EACH CORE LOCATION FOUR TIMES BEFORE PROCEEDING TO THE NEXT ADDRESS.

RTN 6...COMPLEMENT WORST CASE PATTERN

RTN 6 IS INITIALIZED BY FILLING CORE WITH THE COMPLEMENT WORST CASE PATTERN.

FUNC. 1 SAME AS RTN 5 FUNCTION 1.
FUNC. 2 SAME AS RTN 5 FUNCTION 2.

5.3 DESCRIPTION OF OTHER ROUTINES

PROGRAM INITIALIZATION ROUTINE--DETERMINES CORE SIZE AND WAITS AT THE START OF PROGRAM WAIT.

ROUTINE SEQUENCE CONTROL ROUTINE--CHECKS SWITCH OPTIONS AND CONTROLS THE SEQUENCE IN WHICH TEST ROUTINES ARE EXECUTED.

PROGRAM END ROUTINE--CHECKS SWITCH OPTIONS AND WAITS AT THE END OF PROGRAM WAIT.

PRINT ROUTINE--PRINTS ALL MESSAGES USED BY THE PROGRAM.

---------- LAST PAGE ----------

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```
                        ABS
0000                    ORG     /0160
0160 0 03B0             DC      /03B0       PID
                    *
                    ***********************************************
                    *
                    *           PROGRAM INITIALIZATION
                    *
                    ***********************************************
                    *
                    *           FIND CORE SIZE
                    *
0161 0 C075         CRSIZ LD    H1000
0162 0 D073               STO   SIZE        SET 8K CORE SIZE
0163 0 1010               SLA   16
0164 0 D400 0000          STO L 0           CLEAR ADDRS 0000
0166 0 CC00 03F4          LDD L LINK
0168 0 DC80 01D6          STD I SIZE        STO RESTART LINKAGE
016A 0 C400 0000          LD  L 0           DID WRAP-AROUND OCCUR
016C 0 4C20 0185          BSC L FNDSZ,Z     *YES, BRANCH
                    *
016E 0 C067               LD    SIZE
016F 0 1001               SLA   1           INCRE SIZE BY 4K
0170 0 D065               STO   SIZE        IS SIZE OVER 32K
0171 0 4C10 0163          BSC L CRSIZ+2,-   *NO, BRANCH
                    *
0173 0 CC00 03F4          LDD L LINK
0175 0 DC80 01D6          STD I SIZE        STO RESTART LINKAGE
0177 0 C400 0000          LD  L 0           DID WRAP-AROUND OCCUR
0179 0 4C20 0185          BSC L FNDSZ,Z     *YES, BRANCH
                    *
017B 0 CC00 03F4          LDD L LINK
017D 0 DC00 0000          STD L 0
017F 0 4400 043B          BSI L PRINT       PRINT ERROR MSG
0181 0 8492               DC    MSG05+/8000
0182 0 048C               DC    MSG04
                    *
0183 0 3003               WAIT  3           ERR, CANNOT FIND CORE SIZE
0184 0 70DC               MDX   CRSIZ       RETRY
                    *
0185 0 C050         FNDSZ LD    SIZE
0186 0 9400 02E8          S   L H0001       CORRECT CORE SIZE
0188 0 D04D               STO   SIZE
0189 0 804E               A     H000A       ADD TEN
018A 0 D400 02F0          STO L UPRLM       SET UPPER TEST LIMIT
018C 0 C049               LD    SIZE
018D 0 3001               WAIT  1           WAIT FOR SWS, SIZE IN ACC
                    *
018E 0 4400 043B    START BSI L PRINT       PRINT START MSG
0190 0 847D               DC    MSG01+/8000
0191 0 0484               DC    MSG03
                    *
0192 0 1010               SLA   16
0193 0 D045               STO   RID
0194 0 D400 040D          STO L ERRSW
                    *
                    ***********************************************
                    *
                    *           ROUTINE SEQUENCE CONTROL
                    *
                    ***********************************************
                    *
0196 0 1010         CNTRL SLA   16
0197 0 D400 0280          STO L ALTNT
0199 0 D400 0284          STO L PASS
019B 0 D400 0282          STO L COMPL
019D 0 D400 040E          STO L FUNNO
019F 0 0C00 03F6          XIO L RDSWS       READ SWS
```



```
01A1 0 C400 040F          LD  L SWS
01A3 0 1805               SRA   5
01A4 0 4C04 01C4          BSC L SLRTN,E     BR IF LOOP RTN SELECTED
                    *
01A6 0 7401 01D9    ADVNC MDX L RID,1       ADVANCE TO NEXT RTN
01A8 0 C030               LD    RID
01A9 0 9032               S     LRTN
01AA 0 4C30 0418          BSC L END,-Z      BR IF END OF PROGRAM
                    *
01AC 0 C02C         LPRTN LD    RID
01AD 0 4C08 01A6          BSC L ADVNC,+     BR IF RID IS ZERO
01AF 0 801F               A     RTTBL
01B0 0 D012               STO   STRTN+1     SET RTN START ADDRS
01B1 0 C027               LD    RID
01B2 0 8400 0410          A   L NOTBL
01B4 0 D001               STO   *+1         ENTER RTN NUMBER IN MSG
01B5 0 C400 0000          LD  L *-*
01B7 0 D400 0498          STO L MSG06+2
                    *
01B9 0 C400 040F          LD  L SWS
01BB 0 1009               SLA   9           RTN START MSG SELECTED
01BC 0 4C10 01C2          BSC L STRTN,-     *NO,BRANCH
                    *
01BE 0 4400 043B          BSI L PRINT       PRINT RTN START MSG
01C0 0 847D               DC    MSG01+/8000
01C1 0 0496               DC    MSG06
                    *
01C2 0 4C80 0000    STRTN BSC I *-*         START TEST ROUTINE
                    *
01C4 0 1803         SLRTN SRA   3
01C5 0 4C18 01AC          BSC L LPRTN,+-    BR IF NO RTN SELECTED
                    *
01C7 0 9014               S     LRTN
01C8 0 4C30 01AC          BSC L LPRTN,Z-    BR IF INVALID RTN NO.
                    *
01CA 0 C400 040F          LD  L SWS
01CC 0 1808               SRA   8
01CD 0 D00B               STO   RID         SELECT ROUTINE
01CE 0 70DD               MDX   LPRTN
                    *
                    *           ROUTINE ADDRESS TABLE
                    *
01CF 0 01CF         RTTBL DC    RTTBL
01D0 0 01DD               DC    RTN1
01D1 0 01F1               DC    RTN2
01D2 0 0211               DC    RTN3
01D3 0 024D               DC    RTN4
01D4 0 0265               DC    RTN5
01D5 0 027B               DC    RTN6
                    *
                    *           PROGRAM CONSTANTS
                    *
01D6 0 0000         SIZE  DC    *-*         CORE SIZE
01D7 0 1000         H1000 DC    /1000
01D8 0 000A         H000A DC    /000A
01D9 0 0000         RID   DC    *-*         ROUTINE NUMBER
01DA 0 FFFF         FFFF  DC    /FFFF
01DB 0 5555         H5555 DC    /5555
01DC 0 0006         LRTN  DC    6
                    *
                    ***********************************************
                    *
                    *           TEST ROUTINE ONE
                    *
                    ***********************************************
                    *
01DD 0 C0FC         RTN1  LD    FFFF
01DE 0 4400 0285          BSI L FILL        FILL CORE WITH FFFF
```

```
                        *
01E0 0 4400 02DE    FUN11 BSI  L  UP          INCRE LOW TO HIGH CORE
01E2 0 4400 0293          BSI  L  FLIP        CK AND STORE 0000
                        *
01E4 0 4400 0378          BSI  L  LOKFN       CK FOR LOCK ON ERR FUNC
01E6 0 70F9               MDX     FUN11
                        *
01E7 0 7401 040E          MDX  L  FUNNO,1
01E9 0 4400 02F1    FUN12 BSI  L  DOWN        DECRE HIGH TO LOW CORE
01EB 0 4400 0293          BSI  L  FLIP        CK CORE AND STORE 0000
                        *
01ED 0 4400 0378          BSI  L  LOKFN       CK FOR LOCK ON ERR FUNC
01EF 0 70F9               MDX     FUN12
                        *
01F0 0 70A5               MDX     CNTRL       GO TO CONTROL
                        *
                        ***************************************************
                        *
                        *            TEST ROUTINE TWO
                        *
                        ***************************************************
                        *
01F1 0 C400 02EF    RTN2  LD   L  LWRLM       FILL EACH CORE
01F3 0 D400 02E7          STO  L  ADDRS         LOCATION WITH
01F5 0 D480 02E7          STO  I  ADDRS           ADDRESS
01F7 0 F400 02F0          EOR  L  UPRLM
01F9 0 4C18 0200          BSC  L  *+5,+-      BR LAST ADDRESS
                        *
01FB 0 C400 02E7          LD   L  ADDRS
01FD 0 8400 02E8          A    L  H0001       INCRE ADDRESS BY ONE
01FF 0 70F3               MDX     RTN2+2
                        *
0200 0 4400 02DE    FUN21 BSI  L  UP          INCRE LOW TO HIGH CORE
0202 0 4400 02AB          BSI  L  ADRCK       CK AND COMPLEMENT
                        *
0204 0 4400 0378          BSI  L  LOKFN       CK FOR LOCK ON ERR
0206 0 70F9               MDX     FUN21
                        *
0207 0 7401 040E          MDX  L  FUNNO,1
0209 0 4400 02F1    FUN22 BSI  L  DOWN        DECRE HIGH TO LOW CORE
0208 0 4400 02AB          BSI  L  ADRCK       CK AND COMPLEMENT
                        *
020D 0 4400 0378          BSI  L  LOKFN       LOCK ON FUNCTION
020F 0 70F9               MDX     FUN22
                        *
0210 0 7085               MDX     CNTRL
                        *
                        ***************************************************
                        *
                        *            TEST ROUTINE THREE
                        *
                        ***************************************************
                        *
0211 0 C0C9         RTN3  LD      H5555
0212 0 D400 0282          STO  L  COMPL
0214 0 4400 02DE          BSI  L  UP          INCRE LOW TO HIGH CORE
                        *
0216 0 D400 02E7          STO  L  ADDRS
0218 0 C400 0282          LD   L  COMPL
021A 0 D480 02E7          STO  I  ADDRS       STORE 5555 AAAA PATTERN
021C 0 F08D               EOR     FFFF        COMPLEMENT
021D 0 D400 0282          STO  L  COMPL       SET UP NEXT WORD
021F 0 C400 02E7          LD   L  ADDRS
0221 0 F400 02F0          EOR  L  UPRLM
0223 0 4C18 022A          BSC  L  *+5,+-      BR IF LAST ADDRS
                        *
0225 0 C400 02E7          LD   L  ADDRS
0227 0 8400 02E8          A    L  H0001       INCRE ADDRESS BY ONE
```



```
0229 0 70EC               MDX     RTN3+5
                        *
022A 0 C080               LD      H5555
022B 0 D400 0282          STO  L  COMPL
                        *
022D 0 C400 0282    FUN31 LD   L  COMPL
022F 0 D400 02E6          STO  L  SLDBE
0231 0 4400 02DE          BSI  L  UP          INCRE LOW TO HIGH CORE
0233 0 4400 02C5          BSI  L  CHEX        CK AND COMPLEMENT
                        *
0235 0 4400 0378          BSI  L  LOKFN       CK LOCK ON ERR
0237 0 70F5               MDX     FUN31
                        *
0238 0 7401 040E          MDX  L  FUNNO,1
023A 0 C400 02E6          LD   L  SLDBE
023C 0 D400 0282          STO  L  COMPL
                        *
023E 0 C400 0282    FUN32 LD   L  COMPL
0240 0 D400 0282          STO  L  COMPL
0242 0 D400 02E6          STO  L  SLDBE
0244 0 4400 02F1          BSI  L  DOWN        DECRE HIGH TO LOW CORE
0246 0 4400 02C5          BSI  L  CHEX        CK AND COMPLEMENT
                        *
0248 0 4400 0378          BSI  L  LOKFN       CK LOCK ON ERROR
024A 0 70F3               MDX     FUN32
                        *
024B 0 4C00 0196          BSC  L  CNTRL
                        *
                        ***************************************************
                        *
                        *            TEST ROUTINE FOUR
                        *
                        ***************************************************
                        *
024D 0 C400 02E8    RTN4  LD   L  H0001
024F 0 D030               STO     ALTNT
0250 0 1010               SLA     16          CK EACH CORE LOCATION
0251 0 4400 02F9          BSI  L  FLOAT         BIT BY BIT, ONE BIT ON
                        *
0253 0 4400 0378          BSI  L  LOKFN       CK FOR LOCK ON ERR
0255 0 70F7               MDX     RTN4
                        *
0256 0 7401 040E          MDX  L  FUNNO,1
                        *
0258 0 C028         FUN42 LD      H0002
0259 0 D026               STO     ALTNT
025A 0 C400 01DA          LD   L  FFFF
025C 0 D400 0282          STO  L  COMPL       CK EACH CORE LOCATION
025E 0 4400 02F9          BSI  L  FLOAT         BIT BY BIT, ONE BIT OFF.
                        *
0260 0 4400 0378          BSI  L  LOKFN       CK FOR LOCK ON ERR
0262 0 70F5               MDX     FUN42
                        *
0263 0 4C00 0196          BSC  L  CNTRL
                        *
                        ***************************************************
                        *
                        *            TEST ROUTINE FIVE
                        *
                        ***************************************************
                        *
0265 0 1010         RTN5  SLA     16
0266 0 D400 027F          STO  L  COUNT
0268 0 4400 0315          BSI  L  WORST       STORE WORST CASE PATTERN
                        *
026A 0 4400 0323    FUN61 BSI  L  CHECK       CK EACH CORE LOCATION
                        *
026C 0 4400 0378          BSI  L  LOKFN       CK LOCK ON ERROR
```

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026E 0 70FB              MDX     FUN61                                  3B002740
                *                                                       3B002750
026F 0 7401 040E         MDX  L  FUNNO,1                                3B002760
0271 0 C011       FUN62  LD      H0004                                  3B002770
0272 0 D400 027F         STO  L  COUNT                                  3B002780
0274 0 4400 0335         BSI  L  SHAKE      CK AND COMPL 4 TIMES        3B002790
                *                                                       3B002800
0276 0 4400 0378         BSI  L  LOKFN      CK LOCK ON ERROR            3B002810
0278 0 70F8              MDX     FUN62                                  3B002820
                *                                                       3B002830
0279 0 4C00 0196         BSC  L  CNTRL                                  3B002840
                *                                                       3B002850
                ********************************************************3B002860
                *                                                       3B002870
                *            TEST ROUTINE SIX                           3B002880
                *                                                       3B002890
                ********************************************************3B002900
                *                                                       3B002910
027B 0 C400 02E9  RTN6  LD   L  HFFFF      SET UP COMPLEMENT           3B002920
027D 0 D004             STO     COMPL        WORST CASE PATTERN        3B002930
027E 0 70E6             MDX     RTN5                                   3B002940
                *                                                       3B002950
                ********************************************************3B002960
                *                                                       3B002970
                *            SUBROUTINES FOR RTNS 1-6                   3B002980
                *                                                       3B002990
                ********************************************************3B003000
                *                                                       3B003010
                *            PROGRAM CONSTANTS                          3B003020
                *                                                       3B003030
027F 0 0000       COUNT DC      *-*                                    3B003040
0280 0 0000       ALTNT DC      *-*                                    3B003050
0281 0 0002       H0002 DC      /0002                                  3B003060
0282 0 0000       COMPL DC      *-*                                    3B003070
0283 0 0004       H0004 DC      /0004                                  3B003080
0284 0 0000       PASS  DC      *-*                                    3B003090
                *                                                       3B003100
                *            FILL CORE WITH ONES                        3B003110
                *                                                       3B003120
0285 0 0000       FILL  DC      *-*                                    3B003130
0286 0 D05F             STO     SLDBE                                  3B003140
0287 0 C067             LD      LWRLM      GET STARTING ADDRESS        3B003150
0288 0 D05E             STO     ADDRS                                  3B003160
0289 0 C05C             LD      SLDBE      GET DATA WORD               3B003170
028A 0 D480 02E7        STO  I  ADDRS      STO DATA WORD               3B003180
028C 0 C05A             LD      ADDRS                                  3B003190
028D 0 F062             EOR     UPRLM                                  3B003200
028E 0 4C98 0285        BSC  I  FILL,+-    BR IF LAST ADDRESS          3B003210
                *                                                       3B003220
0290 0 C056             LD      ADDRS                                  3B003230
0291 0 8056             A       H0001      INCRE ADDRESS BY ONE        3B003240
0292 0 70F5             MDX     FILL+3                                 3B003250
                *                                                       3B003260
                *            CK AND COMPLEMENT 0000/FFFF PATTERN        3B003270
                *                                                       3B003280
0293 0 0000       FLIP  DC      *-*                                    3B003290
0294 0 D052             STO     ADDRS      SAVE STARTING ADDRESS       3B003300
0295 0 C480 02E7        LD   I  ADDRS                                  3B003310
0297 0 D052             STO     WAS                                    3B003320
0298 0 F04D             EOR     SLDBE      DATA WORD CORRECT           3B003330
0299 0 4420 0392        BSI  L  ERROR,Z    *NO, BRANCH TO ERROR RTN    3B003340
                *                                                       3B003350
029B 0 C0E6             LD      COMPL                                  3B003360
029C 0 D480 02E7        STO  I  ADDRS      STORE NEW WORD              3B003370
029E 0 C048             LD      ADDRS                                  3B003380
029F 0 F04B             EOR     ENDPT                                  3B003390
02A0 0 4C18 02A5        BSC  L  *+3,+-     BR IF LAST ADDRESS          3B003400
                *                                                       3B003410
```



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02A2 0 C044              LD      ADDRS                                  3B003420
02A3 0 8048              A       INCRE      INCRE ADDRESS               3B003430
02A4 0 70EF              MDX     FLIP+1                                 3B003440
                *                                                       3B003450
02A5 0 C040              LD      SLDBE                                  3B003460
02A6 0 D0DB              STO     COMPL                                  3B003470
02A7 0 F041              EOR     HFFFF                                  3B003480
02A8 0 D03D              STO     SLDBE                                  3B003490
02A9 0 4C80 0293         BSC  I  FLIP                                   3B003500
                *                                                       3B003510
                *            CK AND COMPLEMENT ADDRESS PATTERN          3B003520
                *                                                       3B003530
02AB 0 0000       ADRCK DC      *-*                                    3B003540
02AC 0 D03A             STO     ADDRS                                  3B003550
02AD 0 F0D4             EOR     COMPL                                  3B003560
02AE 0 D037             STO     SLDBE                                  3B003570
02AF 0 C480 02E7        LD   I  ADDRS                                  3B003580
02B1 0 D038             STO     WAS                                    3B003590
02B2 0 F033             EOR     SLDBE      DATA WORD CORRECT           3B003600
02B3 0 4420 0392        BSI  L  ERROR,Z    *NO, BRANCH                 3B003610
                *                                                       3B003620
02B5 0 C030             LD      SLDBE                                  3B003630
02B6 0 F032             EOR     HFFFF                                  3B003640
02B7 0 D480 02E7        STO  I  ADDRS      STORE COMPLEMENT            3B003650
02B9 0 C02D             LD      ADDRS                                  3B003660
02BA 0 F030             EOR     ENDPT                                  3B003670
02BB 0 4C18 02C0        BSC  L  *+3,+-     BR IF LAST ADDRESS          3B003680
                *                                                       3B003690
02BD 0 C029             LD      ADDRS                                  3B003700
02BE 0 802D             A       INCRE      INCRE ADDRESS               3B003710
02BF 0 70EC             MDX     ADRCK+1                                3B003720
                *                                                       3B003730
02C0 0 C0C1             LD      COMPL                                  3B003740
02C1 0 F027             EOR     HFFFF                                  3B003750
02C2 0 D0BF             STO     COMPL                                  3B003760
02C3 0 4C80 02AB        BSC  I  ADRCK                                  3B003770
                *                                                       3B003780
                *            CK AND COMPLEMENT 5555/AAAA PATTERN        3B003790
                *                                                       3B003800
02C5 0 0000       CHEX  DC      *-*                                    3B003810
02C6 0 D020             STO     ADDRS                                  3B003820
02C7 0 C480 02E7        LD   I  ADDRS                                  3B003830
02C9 0 D020             STO     WAS                                    3B003840
02CA 0 F01B             EOR     SLDBE      DATA WORD CORRECT           3B003850
02CB 0 4420 0392        BSI  L  ERROR,Z    *NO, BRANCH                 3B003860
                *                                                       3B003870
02CD 0 C018             LD      SLDBE                                  3B003880
02CE 0 F01A             EOR     HFFFF                                  3B003890
02CF 0 D480 02E7        STO  I  ADDRS      STORE COMPLEMENT            3B003900
02D1 0 D014             STO     SLDBE                                  3B003910
02D2 0 C014             LD      ADDRS                                  3B003920
02D3 0 F017             EOR     ENDPT                                  3B003930
02D4 0 4C18 02D9        BSC  L  *+3,+-     BR IF LAST ADDRESS          3B003940
                *                                                       3B003950
02D6 0 C010             LD      ADDRS                                  3B003960
02D7 0 8014             A       INCRE      INCRE ADDRESS               3B003970
02D8 0 70ED             MDX     CHEX+1                                 3B003980
                *                                                       3B003990
02D9 0 C0A8             LD      COMPL                                  3B004000
02DA 0 F00E             EOR     HFFFF                                  3B004010
02DB 0 D0A6             STO     COMPL                                  3B004020
02DC 0 4C80 02C5        BSC  I  CHEX                                   3B004030
                *                                                       3B004040
                *            INCREMENT FROM LOWER TO UPPER CORE         3B004050
                *                                                       3B004060
02DE 0 0000       UP    DC      *-*                                    3B004070
02DF 0 C008             LD      H0001                                  3B004080
02E0 0 D008             STO     INCRE      SET UP ADDRS INCREMENT      3B004090
```

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02E1 0 C00E            LD     UPRLM                                    3B004100
02E2 0 D008            STO    ENDPT       SET LAST ADDRESS             3B004110
02E3 0 C00B            LD     LWRLM       SET FIRST ADDRESS            3B004120
02E4 0 4C80 02DE       BSC  I UP                                       3B004130
                       *                                               3B004140
                       *           PROGRAM CONSTANTS                   3B004150
                       *                                               3B004160
02E6 0 0000      SLDBE DC     *-*                                      3B004170
02E7 0 0000      ADDRS DC     *-*                                      3B004180
02E8 0 0001      H0001 DC     /0001                                    3B004190
02E9 0 FFFF      HFFFF DC     /FFFF                                    3B004200
02EA 0 0000      WAS   DC     *-*                                      3B004210
02EB 0 0000      ENDPT DC     *-*                                      3B004220
02EC 0 0000      INCRE DC     *-*                                      3B004230
02ED 0 0000      TEMP  DC     *-*                                      3B004240
02EE 0 8000      H8000 DC     /8000                                    3B004250
02EF 0 0800      LWRLM DC     /0800                                    3B004260
02F0 0 0000      UPRLM DC     *-*                                      3B004270
                       *                                               3B004280
                       *           DECREMENT FROM UPPER TO LOWER CORE  3B004290
                       *                                               3B004300
02F1 0 0000      DOWN  DC     *-*                                      3B004310
02F2 0 C0F6            LD     HFFFF       SET UP ADDRESS INCRE         3B004320
02F3 0 D0F8            STO    INCRE                                    3B004330
02F4 0 C0FA            LD     LWRLM                                    3B004340
02F5 0 D0F5            STO    ENDPT       SET UP LAST ADDRESS          3B004350
02F6 0 C0F9            LD     UPRLM       SET UP FIRST ADDRESS         3B004360
02F7 0 4C80 02F1       BSC  I DOWN                                     3B004370
                       *                                               3B004380
                       *           CHECK BIT BY BIT PATTERN            3B004390
                       *                                               3B004400
02F9 0 0000      FLOAT DC     *-*                                      3B004410
02FA 0 C0F4            LD     LWRLM                                    3B004420
02FB 0 D0EB            STO    ADDRS       SAVE ADDRESS                 3B004430
02FC 0 C0F1            LD     H8000                                    3B004440
02FD 0 F084            EOR    COMPL                                    3B004450
02FE 0 D0E7            STO    SLDBE                                    3B004460
02FF 0 D480 02E7       STO  I ADDRS       STORE DATA WORD              3B004470
0301 0 C480 02E7       LD   I ADDRS                                    3B004480
0303 0 D0E6            STO    WAS                                      3B004490
0304 0 F0E1            EOR    SLDBE       DATA CORRECT                 3B004500
0305 0 4420 0392       BSI  L ERROR,Z     *NO, BRANCH                  3B004510
                       *                                               3B004520
0307 0 C0DE            LD     SLDBE                                    3B004530
0308 0 F400 0282       EOR  L COMPL       LAST SHIFT                   3B004540
030A 0 4C04 030E       BSC  L *+2,E       *NO, BRANCH                  3B004550
                       *                                               3B004560
030C 0 1801            SRA    1           SHIFT DATA                   3B004570
030D 0 70EF            MDX    FLOAT+4                                  3B004580
                       *                                               3B004590
030E 0 C0D8            LD     ADDRS                                    3B004600
030F 0 F0E0            EOR    UPRLM                                    3B004610
0310 0 4C98 02F9       BSC  I FLOAT,+-    BR IF LAST ADDRESS           3B004620
                       *                                               3B004630
0312 0 C0D4            LD     ADDRS                                    3B004640
0313 0 80D4            A      H0001       INCRE ADDRESS                3B004650
0314 0 70E6            MDX    FLOAT+2                                  3B004660
                       *                                               3B004670
                       *           STORE WORST CASE PATTERN            3B004680
                       *                                               3B004690
0315 0 0000      WORST DC     *-*                                      3B004700
0316 0 C0D8            LD     LWRLM                                    3B004710
0317 0 D0CF            STO    ADDRS       SAVE ADDRESS                 3B004720
0318 0 4400 0352       BSI  L FIND        FIND IF 0000 OR FFFF         3B004730
031A 0 D480 02E7       STO  I ADDRS       STORE DATA                   3B004740
031C 0 C0CA            LD     ADDRS                                    3B004750
031D 0 F0D2            EOR    UPRLM                                    3B004760
031E 0 4C98 0315       BSC  I WORST,+-    BR IF LAST ADDRESS           3B004770
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                       *                                               3B004780
0320 0 C0C6            LD     ADDRS                                    3B004790
0321 0 80C6            A      H0001       INCRE ADDRESS                3B004800
0322 0 70F4            MDX    WORST+2                                  3B004810
                       *                                               3B004820
                       *           CHECK WORST CASE PATTERN             3B004830
                       *                                               3B004840
0323 0 0000      CHECK DC     *-*                                      3B004850
0324 0 C0CA            LD     LWRLM                                    3B004860
0325 0 D0C1            STO    ADDRS       SAVE ADDRESS                 3B004870
0326 0 C480 02E7       LD   I ADDRS                                    3B004880
0328 0 D0C1            STO    WAS                                      3B004890
0329 0 4C18 032E       BSC  L *+3,+-      BR IF DATA ZERO              3B004900
                       *                                               3B004910
032B 0 F0BD            EOR    HFFFF       COMPLEMENT DATA              3B004920
032C 0 4420 036D       BSI  L ERR,Z       BR TO ERROR RTN IF NOT 0     3B004930
                       *                                               3B004940
032E 0 C0B8            LD     ADDRS                                    3B004950
032F 0 F0C0            EOR    UPRLM                                    3B004960
0330 0 4C98 0323       BSC  I CHECK,+-    BR IF LAST ADDRESS           3B004970
                       *                                               3B004980
0332 0 C0B4            LD     ADDRS                                    3B004990
0333 0 80B4            A      H0001       INCRE ADDRESS                3B005000
0334 0 70F0            MDX    CHECK+2                                  3B005010
                       *                                               3B005020
                       *           CK AND COMPLEMENT 4 TIMES           3B005030
                       *                                               3B005040
0335 0 0000      SHAKE DC     *-*                                      3B005050
0336 0 C0B8            LD     LWRLM                                    3B005060
0337 0 D0AF            STO    ADDRS       SAVE ADDRESS                 3B005070
0338 0 C480 02E7       LD   I ADDRS                                    3B005080
033A 0 D0AF            STO    WAS                                      3B005090
033B 0 4C18 0350       BSC  L INVRT,+-    BR DATA WORD ZERO            3B005100
                       *                                               3B005110
033D 0 F0AB            EOR    HFFFF       COMPL DATA                   3B005120
033E 0 4420 036D       BSI  L ERR,Z       BR IF NOT ZERO               3B005130
                       *                                               3B005140
0340 0 D480 02E7 STORE STO  I ADDRS       STORE NEW DATA               3B005150
0342 0 74FF 027F       MDX  L COUNT,-1                                 3B005160
0344 0 70F3            MDX    SHAKE+3                                  3B005170
                       *                                               3B005180
0345 0 C0A1            LD     ADDRS                                    3B005190
0346 0 F0A9            EOR    UPRLM                                    3B005200
0347 0 4C98 0335       BSC  I SHAKE,+-    BR IF LAST ADDRESS           3B005210
                       *                                               3B005220
0349 0 C400 0283       LD   L H0004                                    3B005230
034B 0 D400 027F       STO  L COUNT                                    3B005240
034D 0 C099            LD     ADDRS                                    3B005250
034E 0 8099            A      H0001       INCRE ADDRESS                3B005260
034F 0 70E7            MDX    SHAKE+2                                  3B005270
                       *                                               3B005280
0350 0 F098      INVRT EOR    HFFFF       COMPLEMENT DATA              3B005290
0351 0 70EE            MDX    STORE                                    3B005300
                       *                                               3B005310
                       *           DETERMINE IF DATA S/B 0000 OR FFFF  3B005320
                       *                                               3B005330
0352 0 0000      FIND  DC     *-*                                      3B005340
0353 0 C093            LD     ADDRS                                    3B005350
0354 0 1806            SRA    6                                        3B005360
0355 0 D097            STO    TEMP                                     3B005370
0356 0 1802            SRA    2           ADDRS BITS 7 AND 9           3B005380
0357 0 F095            EOR    TEMP          BOTH 0 OR BOTH 1           3B005390
0358 0 4C04 035C       BSC  L *+2,E       *NO, BRANCH                  3B005400
                       *                                               3B005410
035A 0 1010            SLA    16                                       3B005420
035B 0 7001            MDX    *+1                                      3B005430
                       *                                               3B005440
035C 0 C08C            LD     HFFFF       COMPLEMENT DATA FOR          3B005450
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035D 0 F400 0282          EOR  L  COMPL       COMPLEMENT WORST CASE      3B005460
035F 0 D086               STO      SLDBE                                 3B005470
0360 0 C400 027F          LD   L  COUNT       DATA COMPL ODD NO. TIMES   3B005480
0362 0 4C04 0367          BSC  L  *+3,E       *YES, BRANCH               3B005490
                     *                                                  3B005500
0364 0 C081               LD       SLDBE                                 3B005510
0365 0 4C80 0352          BSC  I   FIND                                  3B005520
                     *                                                  3B005530
0367 0 C400 02E6          LD   L   SLDBE                                 3B005540
0369 0 F400 02E9          EOR  L   HFFFF       COMPLEMENT DATA           3B005550
036B 0 4C80 0352          BSC  I   FIND                                  3B005560
                     *                                                  3B005570
                     *            ERROR IN WORST CASE PATTERN           3B005580
                     *                                                  3B005590
036D 0 0000          ERR  DC      *-*                                   3B005600
036E 0 4400 0352          BSI  L   FIND        FIND GOOD DATA            3B005610
0370 0 D400 02E6          STO  L   SLDBE                                 3B005620
0372 0 4400 0392          BSI  L   ERROR       GO TO ERROR RTN           3B005630
0374 0 F400 02E9          EOR  L   HFFFF                                 3B005640
0376 0 4C80 036D          BSC  I   ERR                                   3B005650
                     *                                                  3B005660
                     *            CK PASS COUNT AND LOCK ON ERR         3B005670
                     *                                                  3B005680
0378 0 0000          LOKFN DC     *-*                                   3B005690
0379 0 7401 0284          MDX  L   PASS,1                                3B005700
037B 0 C400 0284          LD   L   PASS                                  3B005710
037D 0 4C84 0378          BSC  I   LOKFN,E     BR IF COUNT ODD           3B005720
037F 0 1010               SLA      16                                    3B005730
0380 0 D400 0284          STO  L   PASS                                  3B005740
0382 0 7400 040D          MDX  L   ERRSW       ERROR SW ON               3B005750
0384 0 7004               MDX      *+4         *YES BRANCH               3B005760
                     *                                                  3B005770
0385 0 7401 0378          MDX  L   LOKFN,1     ADD ONE TO RETURN         3B005780
0387 0 4C80 0378          BSC  I   LOKFN                                 3B005790
                     *                                                  3B005800
0389 0 086C               XIO      RDSWS       READ SWITCHES             3B005810
038A 0 C400 040F          LD   L   SWS                                   3B005820
038C 0 100C               SLA      12          LOCK ON ERR FUNC SELECTED 3B005830
038D 0 4CA8 0378          BSC  I   LOKFN,Z+    *YES, BRANCH              3B005840
                     *                                                  3B005850
038F 0 1010               SLA      16                                    3B005860
0390 0 D07C               STO      ERRSW       CLEAR ERROR SW            3B005870
0391 0 70F3               MDX      LOKFN+13                              3B005880
                     *                                                  3B005890
                     ************************************************** 3B005900
                     *                                                  3B005910
                     *            ERROR ROUTINE                         3B005920
                     *                                                  3B005930
                     ************************************************** 3B005940
                     *                                                  3B005950
0392 0 0000          ERROR DC     *-*                                   3B005960
0393 0 CC00 0000          LDD  L   0                                     3B005970
0395 0 DC00 0404          STD  L   SAVE1                                 3B005980
0397 0 C85C               LDD      LINK                                  3B005990
0398 0 DC00 0000          STD  L   0           SET UP RESTART            3B006000
039A 0 085B               XIO      RDSWS       READ SWS                  3B006010
039B 0 C073               LD       SWS                                   3B006020
039C 0 E06E               AND      H00AE                                 3B006030
039D 0 F06E               EOR      H0006       ILLEGAL SWITCH COMBINATION 3B006040
039E 0 4C20 03A2          BSC  L   *+2,Z       *NO, BRANCH               3B006050
                     *                                                  3B006060
03A0 0 3007               WAIT     7           ERR-ILLEGAL SWS           3B006070
03A1 0 70F5               MDX      ERROR+5                               3B006080
                     *                                                  3B006090
03A2 0 C400 040E          LD   L   FUNNO                                 3B006100
03A4 0 8400 02E8          A    L   H0001                                 3B006110
03A6 0 8069               A        NOTBL                                 3B006120
03A7 0 D001               STO      *+1                                   3B006130
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03A8 0 C400 0000          LD   L   *-*                                   3B006140
03AA 0 D400 049E          STO  L   MSG07+3     PUT FUNC. NO. IN MSG      3B006150
03AC 0 4400 043B          BSI  L   PRINT       PRINT ERROR MSG           3B006160
03AE 0 8492               DC       MSG05+/8000                           3B006170
03AF 0 8496               DC       MSG06+/8000                           3B006180
03B0 0 049B               DC       MSG07                                 3B006190
                     *                                                  3B006200
03B1 0 C05D               LD       SWS                                   3B006210
03B2 0 100E               SLA      14                                    3B006220
03B3 0 4C28 03C6          BSC  L   NWAIT,Z+    BY IF BYPASS WAIT         3B006230
                     *                                                  3B006240
03B5 0 C400 02E6          LD   L   SLDBE       GET GOOD DATA             3B006250
03B7 0 1890               SRT      16          PUT IN Q                  3B006260
03B8 0 C400 02EA          LD   L   WAS         BAD DATA IN A             3B006270
03BA 0 3004               WAIT     4           ERROR WAIT                3B006280
                     *                                                  3B006290
03BB 0 C400 040E          LD   L   FUNNO                                 3B006300
03BD 0 8400 02E8          A    L   H0001                                 3B006310
03BF 0 1888               SRT      8           PUT FUNCTION NO.          3B006320
03C0 0 C400 01D9          LD   L   RID          AND RTN NO.               3B006330
03C2 0 1888               SRT      8             IN Q REG                3B006340
03C3 0 C400 02E7          LD   L   ADDRS       ADDRS IN ACC              3B006350
03C5 0 3005               WAIT     5           ERROR WAIT                3B006360
                     *                                                  3B006370
03C6 0 082F          NWAIT XIO     RDSWS       READ SWS                  3B006380
03C7 0 C047               LD       SWS                                   3B006390
03C8 0 D044               STO      ERRSW       SET ERROR SWITCH          3B006400
03C9 0 1008               SLA      8                                     3B006410
03CA 0 4C28 03D6          BSC  L   LOOPA,Z+    BR TO LOOP ADDRESS        3B006420
                     *                                                  3B006430
03CC 0 CC00 0404          LDD  L   SAVE1                                 3B006440
03CE 0 DC00 0000          STD  L   0                                     3B006450
03D0 0 C400 02E6          LD   L   SLDBE                                 3B006460
03D2 0 D480 02E7          STO  I   ADDRS                                 3B006470
03D4 0 4C80 0392          BSC  I   ERROR                                 3B006480
03D6 0 C400 0280     LOOPA LD   L   ALTNT                                3B006490
                     *                                                  3B006500
03D8 0 8031               A        H7000       FIND LAST GOOD DATA       3B006510
03D9 0 D001               STO      *+1          WORD STORED              3B006520
03DA 0 C400 02E6          LD   L   SLDBE                                 3B006530
03DC 0 7000               MDX      *                                     3B006540
                     *                                                  3B006550
03DD 0 7011               MDX      ALT00                                 3B006560
03DE 0 7013               MDX      ALT01                                 3B006570
                     *                                                  3B006580
03DF 0 1001          ALT02 SLA     1                                     3B006590
03E0 0 8400 02E8          A    L   H0001                                 3B006600
03E2 0 D480 02E7          STO  I   ADDRS       STO LAST GOOD DATA        3B006610
03E4 0 C400 02E6          LD   L   SLDBE                                 3B006620
03E6 0 D480 02E7          STO  I   ADDRS       STO LAST BAD DATA         3B006630
03E8 0 C480 02E7          LD   I   ADDRS                                 3B006640
03EA 0 F400 02E6          EOR  L   SLDBE       DATA GOOD NOW             3B006650
03EC 0 4C20 0393          BSC  L   ERROR+1,Z   *NO,BRANCH                3B006660
                     *                                                  3B006670
03EE 0 70D7               MDX      NWAIT                                 3B006680
                     *                                                  3B006690
03EF 0 F400 02E9     ALT00 EOR  L   HFFFF                                3B006700
03F1 0 70F0               MDX      ALT02+3                               3B006710
                     *                                                  3B006720
03F2 0 1001          ALT01 SLA     1                                     3B006730
03F3 0 70EE               MDX      ALT02+3                               3B006740
                     *                                                  3B006750
                     *            CONSTANTS   IOCC TABLE                3B006760
                     *                                                  3B006770
03F4   0000               BSS  E                                         3B006780
03F4 0 4C00 0161     LINK BSC  L   CRSIZ                                 3B006790
03F6 0 040F          RDSWS DC      SWS                                   3B006800
03F7 0 3A00               DC       /3A00                                 3B006810
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03F8 0 0475          VECTR DC    INT                                3B006820
03F9 0 0479                DC    STOP                               3B006830
03FA 0 0000          SENSE DC    0                                  3B006840
03FB 0 0F01                DC    /0F01                              3B006850
03FC 0 0408          RETRN DC    CR                                 3B006860
03FD 0 0900                DC    /0900                              3B006870
03FE 0 0402          PRNT1 DC    CHAR1                              3B006880
03FF 0 0900                DC    /0900                              3B006890
0400 0 0403          PRNT2 DC    CHAR2                              3B006900
0401 0 0900                DC    /0900                              3B006910
0402 0 0000          CHAR1 DC    *-*                                3B006920
0403 0 0000          CHAR2 DC    *-*                                3B006930
0404 0 0000          SAVE1 DC    *-*                                3B006940
0405 0 0000                DC    *-*                                3B006950
0406 0 0000          SAVE2 DC    *-*                                3B006960
0407 0 0000                DC    0                                  3B006970
0408 0 8500          CR    DC    /8500                              3B006980
0409 0 0000          MSGAD DC    *-*                                3B006990
040A 0 7000          H7000 DC    /7000                              3B007000
040B 0 00AE          H00AE DC    /00AE                              3B007010
040C 0 0006          H0006 DC    /0006                              3B007020
040D 0 0000          ERRSW DC    0                                  3B007030
040E 0 0000          FUNNO DC    *-*                                3B007040
040F 0 0000          SWS   DC    *-*                                3B007050
0410 0 0410          NOTBL DC    NOTBL                              3B007060
0411 0 C4FC                DC    /C4FC     01                       3B007070
0412 0 C4D8                DC    /C4D8     02                       3B007080
0413 0 C4DC                DC    /C4DC     03                       3B007090
0414 0 C4F0                DC    /C4F0     04                       3B007100
0415 0 C4F4                DC    /C4F4     05                       3B007110
0416 0 C4D0                DC    /C4D0     06                       3B007120
0417 0 C4D4                DC    /C4D4     07                       3B007130
                     *                                              3B007140
                     ************************************************3B007150
                     *                                              3B007160
                     *          PROGRAM END ROUTINE                 3B007170
                     *                                              3B007180
                     ************************************************3B007190
                     *                                              3B007200
0418 0 4400 043B     END   BSI  L  PRINT     PRINT END MSG          3B007210
041A 0 8481                DC    MSG02+/8000                        3B007220
0418 0 0484                DC    MSG03                              3B007230
041C 0 C8D7                LDD   LINK                               3B007240
041D 0 DC00 0000           STD   L 0                                3B007250
041F 0 08D6                XIO   RDSWS     READ SWS                 3B007260
0420 0 C0EE                LD    SWS                                3B007270
0421 0 100B                SLA   11        LOOP PROGRAM             3B007280
0422 0 4C28 018E           BSC   L START,Z+  *YES, BRANCH           3B007290
                     *                                              3B007300
0424 0 3002                WAIT  2         END PROGRAM              3B007310
                     *                                              3B007320
0425 0 08D0                XIO   RDSWS     READ SWS                 3B007330
0426 0 C0E8                LD    SWS                                3B007340
0427 0 4C04 0161           BSC   L CRSIZ,E   BR IF SW 15 ON         3B007350
                     *                                              3B007360
                     *          LOADER LINKAGE                      3B007370
                     *                                              3B007380
0429 0 C00F                LD    SVINT                              3B007390
042A 0 D400 0008           STO   L /8                               3B007400
042C 0 C00D                LD    SVINT+1                            3B007410
042D 0 D400 000C           STO   L /C                               3B007420
042F 0 6300                LDX   3 0                                3B007430
                     *                                              3B007440
0430 0 6078                LDX   /0078     LOAD NEXT PROG.          3B007450
                     *                                              3B007460
0431 0 C400 0008     LDLNK LD   L /8                                3B007470
0433 0 D005                STO   SVINT                              3B007480
0434 0 C400 000C           LD    L /C                               3B007490
```



```
0436 0 D003                STO   SVINT+1                            3B007500
0437 0 4C00 0161           BSC   L CRSIZ                            3B007510
                     *                                              3B007520
0439 0 0000          SVINT DC    *-*                                3B007530
043A 0 0000                DC    *-*                                3B007540
                     *                                              3B007550
                     ************************************************3B007560
                     *                                              3B007570
                     *          PRINT ROUTINE                       3B007580
                     *                                              3B007590
                     ************************************************3B007600
                     *                                              3B007610
043B 0 0000          PRINT DC    *-*                                3B007620
043C 0 08B9                XIO   RDSWS     READ SWS                 3B007630
043D 0 C0D1                LD    SWS                                3B007640
043E 0 100D                SLA   13        BYPASS PRINT ON          3B007650
043F 0 4C10 0448           BSC   L PRNIT,-   *NO, BRANCH            3B007660
                     *                                              3B007670
0441 0 7401 043B     GTOUT MDX  L PRINT,1                           3B007680
0443 0 C480 043B           LD    I PRINT                            3B007690
0445 0 4C10 046D           BSC   L OUT,-                            3B007700
                     *                                              3B007710
0447 0 70F9                MDX   GTOUT                              3B007720
                     *                                              3B007730
0448 0 CC00 000C     PRNIT LDD  L 12                                3B007740
044A 0 DC00 0406           STD   L SAVE2                            3B007750
044C 0 C8AB                LDD   VECTR                              3B007760
044D 0 DC00 000C           STD   L 12        SET INT VECTOR         3B007770
044F 0 08AC                XIO   RETRN     CARRIER RETURN           3B007780
0450 0 3006                WAIT  6                                  3B007790
                     *                                              3B007800
0451 0 C480 043B     GTADR LD   I PRINT      GET MSG ADDRS          3B007810
0453 0 D085                STO   MSGAD                              3B007820
0454 0 C480 0409           LD    I MSGAD     GET CHAR TO PRINT      3B007830
0456 0 F400 02E9           EOR   L HFFFF                            3B007840
0458 0 4C18 0466           BSC   L MSGEN,+-  BR IF TERMINATOR       3B007850
                     *                                              3B007860
045A 0 F400 02E9           EOR   L HFFFF                            3B007870
045C 0 D0A5                STO   CHAR1     STO FIRST CHAR           3B007880
045D 0 1008                SLA   8                                  3B007890
045E 0 D0A4                STO   CHAR2     STO SECOND CHAR          3B007900
045F 0 089E                XIO   PRNT1     PRINT FIRST CHAR         3B007910
0460 0 3006                WAIT  6                                  3B007920
                     *                                              3B007930
0461 0 089E                XIO   PRNT2     PRINT SECOND CHAR        3B007940
0462 0 3006                WAIT  6                                  3B007950
                     *                                              3B007960
0463 0 7401 0409           MDX   L MSGAD,1   INCRE MSG TABLE ADDRS   3B007970
0465 0 70EE                MDX   GTADR+3                            3B007980
                     *                                              3B007990
0466 0 C480 043B     MSGEN LD   I PRINT                             3B008000
0468 0 4C10 046D           BSC   L OUT,-     BR IF LAST MSG SECTION 3B008010
                     *                                              3B008020
046A 0 7401 043B           MDX   L PRINT,1                          3B008030
046C 0 70E4                MDX   GTADR                              3B008040
                     *                                              3B008050
046D 0 7401 043B     OUT   MDX  L PRINT,1                           3B008060
046F 0 CC00 0406           LDD   L SAVE2                            3B008070
0471 0 DC00 000C           STD   L 12                               3B008080
0473 0 4C80 043B           BSC   I PRINT                            3B008090
0475 0 0000          INT   DC    *-*                                3B008100
0476 0 0883                XIO   SENSE     SENSE DSW AND RESET      3B008110
0477 0 4CC0 0475           BOSC  I INT                              3B008120
                     *                                              3B008130
0479 0 0000          STOP  DC    *-*                                3B008140
047A 0 3008                WAIT  8         PROG STOP WAIT           3B008150
047B 0 4CC0 0479           BOSC  I STOP                             3B008160
                     *                                              3B008170
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047D 0 9A9E          MSG01 DC     /9A9E     ST
047E 0 3E62                DC     /3E62     AR
047F 0 9E21                DC     /9E21     T
0480 0 FFFF                DC     /FFFF
                     *
0481 0 3676          MSG02 DC     /3676     EN
0482 0 3221                DC     /3221     D
0483 0 FFFF                DC     /FFFF
                     *
0484 0 2622          MSG03 DC     /2622     HI
0485 0 1626                DC     /1626     GH
0486 0 211E                DC     /211E      C
0487 0 5262                DC     /5262     OR
0488 0 3621                DC     /3621     E
0489 0 9E36                DC     /9E36     TE
048A 0 9A9E                DC     /9A9E     ST
048B 0 FFFF                DC     /FFFF
                     *
048C 0 1E52          MSG04 DC     /1E52     CO
048D 0 6236                DC     /6236     RE
048E 0 219A                DC     /219A      S
048F 0 22A2                DC     /22A2     IZ
0490 0 3621                DC     /3621     E
0491 0 FFFF                DC     /FFFF
                     *
0492 0 0936          MSG05 DC     /0936     SR E
0493 0 6262                DC     /6262     RR
0494 0 2121                DC     /2121
0495 0 FFFF                DC     /FFFF
                     *
0496 0 629E          MSG06 DC     /629E     RT
0497 0 7621                DC     /7621     N
0498 0 0000                DC     *-*       XX
0499 0 2121                DC     /2121
049A 0 FFFF                DC     /FFFF
                     *
049B 0 2112          MSG07 DC     /2112      F
049C 0 B276                DC     /B276     UN
049D 0 1E21                DC     /1E21     C
049E 0 0000                DC     *-*       YY
049F 0 FFFF                DC     /FFFF
04A0   0431                END    LDLNK
 NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

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3B008180
3B008190
3B008200
3B008210
3B008220
3B008230
3B008240
3B008250
3B008260
3B008270
3B008280
3B008290
3B008300
3B008310
3B008320
3B008330
3B008340
3B008350
3B008360
3B008370
3B008380
3B008390
3B008400
3B008410
3B008420
3B008430
3B008440
3B008450
3B008460
3B008470
3B008480
3B008490
3B008500
3B008510
3B008520
3B008530
3B008540
3B008550
3B008560
3B008570
3B008580
3B008590
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C R O S S R E F E R E N C E

NAME	VALUE	REFERENCES
ADDRS	02E7	01F3,01F5,01FB,0216,021A,021F,0225,0288,028A,028C,0290,0294,0295 029C,029E,02A2,02AC,02AF,02B7,02B9,02BD,02C6,02C7,02CF,02D2,02D6 02FB,02FF,0301,030E,0312,0317,031A,031C,0320,0325,0326,032E,0332 0337,0338,0340,0345,034D,0353,03C3,03D2,03E2,03E6,03E8
ADRCK	02AB	0202,020B,02BF,02C3
ADVNC	01A6	01AD
ALTNT	0280	0197,024F,0259,03D6
ALTOO	03EF	03DD
ALTO1	03F2	03DE
ALTO2	03DF	03F1,03F3
CHAR1	0402	03FE,045C
CHAR2	0403	0400,045E
CHECK	0323	026A,0330,0334
CHEX	02C5	0233,0246,02D8,02DC
CNTRL	0196	01F0,0210,024B,0263,0279
COMPL	0282	0198,0212,0218,021D,022B,022D,023C,023E,0240,025C,027D,0298,02A6 02AD,02C0,02C2,02D9,02DB,02FD,0308,035D
COUNT	027F	0266,0272,0342,034B,0360
CR	0408	03FC
CRSIZ	0161	0171,0184,03F4,0427,0437
DOWN	02F1	01E9,0209,0244,02F7
END	0418	01AA
ENDPT	02EB	029F,02BA,02D3,02E2,02F5
ERR	036D	032C,033E,0376
ERROR	0392	0299,02B3,02CB,0305,0372,03A1,03D4,03EC
ERRSW	040D	0194,0382,0390,03C8
FFFF	01DA	01DD,021C,025A
FILL	0285	01DE,028E,0292
FIND	0352	0318,0365,036B,036E
FLIP	0293	01E2,01EB,02A4,02A9
FLOAT	02F9	0251,025E,030D,0310,0314
FNDSZ	0185	016C,0179
FUNNO	040E	019D,01E7,0207,0238,0256,026F,03A2,03BB
FUN11	01E0	01E6
FUN12	01E9	01EF
FUN21	0200	0206
FUN22	0209	020F
FUN31	022D	0237
FUN32	023E	024A
FUN42	0258	0262
FUN61	026A	026E
FUN62	0271	0278
GTADR	0451	0465,046C
GTOUT	0441	0447
HFFFF	02E9	027B,02A7,02B6,02C1,02CE,02DA,02F2,032B,033D,0350,035C,0369,0374 03EF,0456,045A
H00AE	040B	039C
H000A	01D8	0189
H0001	02E8	0186,01FD,0227,024D,0291,02DF,0313,0321,0333,034E,03A4,03BD,03E0
H0002	0281	0258
H0004	0283	0271,0349
H0006	040C	039D
H1000	01D7	0161
H5555	01DB	0211,022A
H7000	040A	03D8
H8000	02EE	02FC
INCRE	02EC	02A3,02BE,02D7,02E0,02F3
INT	0475	03F8,0477
INVRT	0350	033B
LDLNK	0431	04A0
LINK	03F4	0166,0173,017B,0397,041C
LOKFN	0378	01E4,01ED,0204,020D,0235,0248,0253,0260,026C,0276,037D,0385,0387 038D,0391
LOOPA	03D6	03CA
LPRTN	01AC	01C5,01C8,01CE
LRTN	01DC	01A9,01C7

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LWRLM   02EF   01F1,0287,02E3,02F4,02FA,0316,0324,0336
MSGAD   0409   0453,0454,0463
MSGEN   0466   0458
MSG01   047D   0190,01C0
MSG02   0481   041A
MSG03   0484   0191,041B
MSG04   048C   0182
MSG05   0492   0181,03AE
MSG06   0496   01B7,01C1,03AF
MSG07   049B   03AA,03B0
NOTBL   0410   01B2,03A6,0410
NWAIT   03C6   03B3,03EE
OUT     046D   0445,0468
PASS    0284   0199,0379,037B,0380
PRINT   043B   017F,018E,01BE,03AC,0418,0441,0443,0451,0466,046A,046D,0473
PRNIT   0448   043F
PRNT1   03FE   045F
PRNT2   0400   0461
RDSWS   03F6   019F,0389,039A,03C6,041F,0425,043C
RETRN   03FC   044F
RID     01D9   0193,01A6,01A8,01AC,01B1,01CD,03C0
RTN1    01DD   01D0
RTN2    01F1   01D1,01FF
RTN3    0211   01D2,0229
RTN4    024D   01D3,0255
RTN5    0265   01D4,027E
RTN6    027B   01D5
RTTBL   01CF   01AF,01CF
SAVE1   0404   0395,03CC
SAVE2   0406   044A,046F
SENSE   03FA   0476
SHAKE   0335   0274,0344,0347,034F
SIZE    01D6   0162,0168,016E,0170,0175,0185,0188,018C
SLDBE   02E6   022F,023A,0242,0286,0289,0298,02A5,02A8,02AE,0282,02B5,02CA,02CD
               02D1,02FE,0304,0307,035F,0364,0367,0370,03B5,03D0,03DA,03E4,03EA
SLRTN   01C4   01A4
START   018E   0422
STOP    0479   03F9,047B
STORE   0340   0351
STRTN   01C2   0180,018C
SVINT   0439   0429,042C,0433,0436
SWS     040F   01A1,01B9,01CA,038A,0398,03B1,03C7,03F6,0420,0426,043D
TEMP    02ED   0355,0357
UP      02DE   01E0,0200,0214,0231,02E4
UPRLM   02F0   018A,01F7,0221,028D,02E1,02F6,030F,031D,032F,0346
VECTR   03F8   044C
WAS     02EA   0297,02B1,02C9,0303,0328,033A,0388
WORST   0315   0268,031E,0322

END OF ASSEMBLY
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---------- LAST PAGE ----------

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                         ABS                                              3B100020
0000                     ORG     /0960                                    3B100030
0960 0 03B1              DC      /03B1       PID                          3B100040
                    *                                                     3B100050
                    ***************************************************** 3B100060
                    *                                                     3B100070
                    *           PROGRAM INITIALIZATION                    3B100080
                    *                                                     3B100090
                    ***************************************************** 3B100100
                    *                                                     3B100110
                    *           FIND CORE SIZE                            3B100120
                    *                                                     3B100130
0961 0 C071         CRSIZ LD    H1000                                     3B100140
0962 0 D06F               STO   SIZE        SET 8K CORE SIZE              3B100150
0963 0 1010               SLA   16                                        3B100160
0964 0 D400 0000          STO L 0           CLEAR ADDRS 0000              3B100170
0966 0 CC00 0BF0          LDD L LINK                                      3B100180
0968 0 DC80 09D2          STD I SIZE        STO RESTART LINKAGE           3B100190
096A 0 C400 0000          LD  L 0           DID WRAP-ARCUND OCCUR         3B100200
096C 0 4C20 0985          BSC L FNDSZ,Z     *YES, BRANCH                  3B100210
                    *                                                     3B100220
096E 0 C063               LD    SIZE                                      3B100230
096F 0 1001               SLA   1           INCRE SIZE BY 4K              3B100240
0970 0 D061               STO   SIZE        IS SIZE OVER 32K              3B100250
0971 0 4C10 0963          BSC L CRSIZ+2,-   *NO, BRANCH                  3B100260
                    *                                                     3B100270
0973 0 CC00 03F0          LDD L LINK                                      3B100280
0975 0 DC80 09D2          STD I SIZE        STO RESTART LINKAGE           3B100290
0977 0 C400 0000          LD  L 0           DID WRAP-AROUND OCCUR         3B100300
0979 0 4C20 0985          BSC L FNDSZ,Z     *YES, BRANCH                  3B100310
                    *                                                     3B100320
097B 0 CC00 0BF0          LDD L LINK                                      3B100330
097D 0 DC00 0000          STD L 0                                         3B100340
097F 0 4400 0C23          BSI L PRINT       PRINT ERROR MSG               3B100350
0981 0 8C7A               DC    MSG05+/8000                               3B100360
0982 0 0C74               DC    MSG04                                     3B100370
                    *                                                     3B100380
0983 0 3003               WAIT  3           ERR, CANNOT FIND CORE SIZE    3B100390
0984 0 70DC               MDX   CRSIZ       RETRY                         3B100400
                    *                                                     3B100410
0985 0 C04C         FNDSZ LD    SIZE                                      3B100420
0986 0 9400 0AE4          S   L H0001      CORRECT CORE SIZE             3B100430
0988 0 D049               STO   SIZE                                      3B100440
0989 0 3001               WAIT  1           WAIT FOR SWS, SIZE IN ACC     3B100450
                    *                                                     3B100460
098A 0 4400 0C23    START BSI L PRINT       PRINT START MSG               3B100470
098C 0 8C65               DC    MSG01+/8000                               3B100480
098D 0 0C6C               DC    MSG03                                     3B100490
                    *                                                     3B100500
098E 0 1010               SLA   16                                        3B100510
098F 0 D045               STO   RID                                       3B100520
0990 0 D400 0C09          STO L ERRSW                                     3B100530
                    *                                                     3B100540
                    ***************************************************** 3B100550
                    *                                                     3B100560
                    *           ROUTINE SEQUENCE CONTROL                  3B100570
                    *                                                     3B100580
                    ***************************************************** 3B100590
                    *                                                     3B100600
0992 0 1010         CNTRL SLA   16                                        3B100610
0993 0 D400 0A7C          STO L ALTNT                                     3B100620
0995 0 D400 0A80          STO L PASS                                      3B100630
0997 0 D400 0A7E          STO L COMPL                                     3B100640
0999 0 D400 0C0A          STO L FUNNO                                     3B100650
099B 0 DC00 0BF2          XIO L XDSWS       READ SWS                      3B100660
099D 0 C400 0C08          LD  L SWS                                       3B100670
099F 0 1805               SRA   5                                         3B100680
09A0 0 4CD4 09C0          BSC L SLRTN,E     BR IF LOOP RTN SELECTED       3B100690
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                    *                                                     3B100700
09A2 0 7401 09D5    ADVNC MDX   L RID,1       ADVANCE TO NEXT RTN       3B100710
09A4 0 C030               LD    RID                                       3B100720
09A5 0 9032               S     LRTN                                      3B100730
09A6 0 4C30 0C14          BSC L END,-Z        BR IF END OF PROGRAM        3B100740
                    *                                                     3B100750
09A8 0 C02C         LPRTN LD    RID                                       3B100760
09A9 0 4C08 09A2          BSC L ADVNC,+       BR IF RID IS ZERO           3B100770
09AB 0 801F               A     RTTBL                                     3B100780
09AC 0 D012               STO   STRTN+1       SET RTN START ADDRS         3B100790
09AD 0 C027               LD    RID                                       3B100800
09AE 0 8400 0C0C          A   L NOTBL                                     3B100810
09B0 0 D001               STO   *+1           ENTER RTN NUMBER IN MSG     3B100820
09B1 0 C400 0000          LD  L *-*                                       3B100830
09B3 0 D400 0C80          STO L MSG06+2                                   3B100840
                    *                                                     3B100850
09B5 0 C400 0C08          LD  L SWS                                       3B100860
09B7 0 1009               SLA   9             RTN START MSG SELECTED      3B100870
09B8 0 4C10 09BE          BSC L STRTN,-       *NO,BRANCH                  3B100880
                    *                                                     3B100890
09BA 0 4400 0C23          BSI L PRINT         PRINT RTN START MSG         3B100900
09BC 0 8C65               DC    MSG01+/8000                               3B100910
09BD 0 0C7E               DC    MSG06                                     3B100920
                    *                                                     3B100930
09BE 0 4C80 0000    STRTN BSC I *-*           START TEST ROUTINE          3B100940
                    *                                                     3B100950
09C0 0 1803         SLRTN SRA   3                                         3B100960
09C1 0 4C18 09A8          BSC L LPRTN,+-      BR IF NO RTN SELECTED       3B100970
                    *                                                     3B100980
09C3 0 9014               S     LRTN                                      3B100990
09C4 0 4C30 09A8          BSC L LPRTN,Z-      BR IF INVALID RTN NO.       3B101000
                    *                                                     3B101010
09C6 0 C400 0C08          LD  L SWS                                       3B101020
09C8 0 1808               SRA   8                                         3B101030
09C9 0 D008               STO   RID           SELECT ROUTINE              3B101040
09CA 0 70DD               MDX   LPRTN                                     3B101050
                    *                                                     3B101060
                    *           ROUTINE ADDRESS TABLE                     3B101070
                    *                                                     3B101080
09CB 0 09CB         RTTBL DC    RTTBL                                     3B101090
09CC 0 09D9               DC    RTN1                                      3B101100
09CD 0 09ED               DC    RTN2                                      3B101110
09CE 0 0A0D               DC    RTN3                                      3B101120
09CF 0 0A49               DC    RTN4                                      3B101130
09D0 0 0A61               DC    RTN5                                      3B101140
09D1 0 0A77               DC    RTN6                                      3B101150
                    *                                                     3B101160
                    *           PROGRAM CONSTANTS                         3B101170
                    *                                                     3B101180
09D2 0 0000         SIZE  DC    *-*           CORE SIZE                   3B101190
09D3 0 1000         H1000 DC    /1000                                     3B101200
09D4 0 000A         H000A DC    /000A                                     3B101210
09D5 0 0000         RID   DC    *-*           ROUTINE NUMBER              3B101220
09D6 0 FFFF         FFFF  DC    /FFFF                                     3B101230
09D7 0 5555         H5555 DC    /5555                                     3B101240
09D8 0 0006         LRTN  DC    6                                         3B101250
                    *                                                     3B101260
                    ***************************************************** 3B101270
                    *                                                     3B101280
                    *           TEST ROUTINE ONE                          3B101290
                    *                                                     3B101300
                    ***************************************************** 3B101310
                    *                                                     3B101320
09D9 0 C0FC         RTN1  LD    FFFF                                      3B101330
09DA 0 4400 0A81          BSI L FILL          FILL CORE WITH FFFF         3B101340
                    *                                                     3B101350
09DC 0 4400 0ADA    FUN11 BSI L UP            INCRE LOW TO HIGH CORE      3B101360
09DE 0 4400 0A8F          BSI L FLIP          CK AND STORE COMPL          3B101370
```

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                                *                                                    3B101380
09E0 0 4400 0B74                      BSI  L  LOKFN      CK FOR LOCK ON ERR FUNC     3B101390
09E2 0 70F9                           MDX     FUN11                                  3B101400
                                *                                                    3B101410
09E3 0 7401 0C0A                      MDX  L  FUNNO,1                              3B101420
09E5 0 4400 0AED  FUN12 BSI  L  DOWN       DECRE HIGH TO LOW CORE                  3B101430
09E7 0 4400 0A8F                      BSI  L  FLIP       CK CORE AND STORE 0000      3B101440
                                *                                                    3B101450
09E9 0 4400 0B74                      BSI  L  LOKFN      CK FOR LOCK ON ERR FUNC     3B101460
09EB 0 70F9                           MDX     FUN12                                  3B101470
                                *                                                    3B101480
09EC 0 70A5                           MDX     CNTRL      GO TO CONTROL               3B101490
                                *                                                    3B101500
                                ************************************************ 3B101510
                                *                                                    3B101520
                                *            TEST ROUTINE TWO                        3B101530
                                *                                                    3B101540
                                ************************************************ 3B101550
                                *                                                    3B101560
09ED 0 C400 0AEB  RTN2  LD   L  LWRLM      FILL EACH CORE                          3B101570
09EF 0 D400 0AE3                STO  L  ADDRS        LOCATION WITH                 3B101580
09F1 0 D480 0AE3                STO  I  ADDRS           ADDRESS                    3B101590
09F3 0 F400 0AEC                EOR  L  UPRLM                                      3B101600
09F5 0 4C18 09FC                BSC  L  *+5,+-     BR LAST ADDRESS                 3B101610
                                *                                                    3B101620
09F7 0 C400 0AE3                LD   L  ADDRS                                      3B101630
09F9 0 8400 0AE4                A    L  H0001      INCRE ADDRESS BY ONE            3B101640
09FB 0 70F3                     MDX     RTN2+2                                     3B101650
                                *                                                    3B101660
09FC 0 4400 0ADA  FUN21 BSI  L  UP         INCRE LOW TO HIGH CORE                  3B101670
09FE 0 4400 0AA7                BSI  L  ADRCK      CK AND COMPLEMENT               3B101680
                                *                                                    3B101690
0A00 0 4400 0B74                BSI  L  LOKFN      CK FOR LOCK ON ERR              3B101700
0A02 0 70F9                     MDX     FUN21                                      3B101710
                                *                                                    3B101720
0A03 0 7401 0C0A                MDX  L  FUNNO,1                                    3B101730
0A05 0 4400 0AED  FUN22 BSI  L  DOWN       DECRE HIGH TO LOW CORE                  3B101740
0A07 0 4400 0AA7                BSI  L  ADRCK      CK AND COMPLEMENT               3B101750
                                *                                                    3B101760
0A09 0 4400 0B74                BSI  L  LOKFN      LOCK ON FUNCTION                3B101770
0A08 0 70F9                     MDX     FUN22                                      3B101780
                                *                                                    3B101790
0A0C 0 7085                     MDX     CNTRL                                      3B101800
                                *                                                    3B101810
                                ************************************************ 3B101820
                                *                                                    3B101830
                                *            TEST ROUTINE THREE                      3B101840
                                *                                                    3B101850
                                ************************************************ 3B101860
                                *                                                    3B101870
0A0D 0 C0C9       RTN3  LD      H5555                                              3B101880
0A0E 0 D400 0A7E                STO  L  COMPL                                      3B101890
0A10 0 4400 0ADA                BSI  L  UP         INCRE LOW TO HIGH CORE          3B101900
                                *                                                    3B101910
0A12 0 D400 0AE3                STO  L  ADDRS                                      3B101920
0A14 0 C400 0A7E                LD   L  COMPL                                      3B101930
0A16 0 D480 0AE3                STO  I  ADDRS      STORE 5555 AAAA PATTERN         3B101940
0A18 0 F0BD                     EOR     FFFF       COMPLEMENT                      3B101950
0A19 0 D400 0A7E                STO  L  COMPL      SET UP NEXT WORD                3B101960
0A1B 0 C400 0AE3                LD   L  ADDRS                                      3B101970
0A1D 0 F400 0AEC                EOR  L  UPRLM                                      3B101980
0A1F 0 4C18 0A26                BSC  L  *+5,+-     BR IF LAST ADDRS                3B101990
                                *                                                    3B102000
0A21 0 C400 0AE3                LD   L  ADDRS                                      3B102010
0A23 0 8400 0AE4                A    L  H0001      INCRE ADDRESS BY ONE            3B102020
0A25 0 70EC                     MDX     RTN3+5                                     3B102030
                                *                                                    3B102040
0A26 0 C0B0                     LD      H5555                                      3B102050
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0A27 0 D400 0A7E                STO  L  COMPL                                      3B102060
                                *                                                    3B102070
0A29 0 C400 0A7E  FUN31 LD   L  COMPL                                              3B102080
0A2B 0 D400 0AE2                STO  L  SLDBE                                      3B102090
0A2D 0 4400 0ADA                BSI  L  UP         INCRE LOW TO HIGH CORE          3B102100
0A2F 0 4400 0AC1                BSI  L  CHEX       CK AND COMPLEMENT               3B102110
                                *                                                    3B102120
0A31 0 4400 0B74                BSI  L  LOKFN      CK LOCK ON ERR                  3B102130
0A33 0 70F5                     MDX     FUN31                                      3B102140
                                *                                                    3B102150
0A34 0 7401 0C0A                MDX  L  FUNNO,1                                    3B102160
0A36 0 C400 0AE2                LD   L  SLDBE                                      3B102170
0A38 0 D400 0A7E                STO  L  COMPL                                      3B102180
                                *                                                    3B102190
0A3A 0 C400 0A7E  FUN32 LD   L  COMPL                                              3B102200
0A3C 0 D400 0A7E                STO  L  COMPL                                      3B102210
0A3E 0 D400 0AE2                STO  L  SLDBE                                      3B102220
0A40 0 4400 0AED                BSI  L  DOWN       DECRE HIGH TO LOW CORE          3B102230
0A42 0 4400 0AC1                BSI  L  CHEX       CK AND COMPLEMENT               3B102240
                                *                                                    3B102250
0A44 0 4400 0B74                BSI  L  LOKFN      CK LOCK ON ERROR                3B102260
0A46 0 70F3                     MDX     FUN32                                      3B102270
                                *                                                    3B102280
0A47 0 4C00 0992                BSC  L  CNTRL                                      3B102290
                                *                                                    3B102300
                                ************************************************ 3B102310
                                *                                                    3B102320
                                *            TEST ROUTINE FOUR                       3B102330
                                *                                                    3B102340
                                ************************************************ 3B102350
                                *                                                    3B102360
0A49 0 C400 0AE4  RTN4  LD   L  H0001                                              3B102370
0A4B 0 D030                     STO     ALTNT                                      3B102380
0A4C 0 1010                     SLA     16         CK EACH CORE LOCATION           3B102390
0A4D 0 4400 0AF5                BSI  L  FLOAT        BIT BY BIT, ONE BIT ON        3B102400
                                *                                                    3B102410
0A4F 0 4400 0B74                BSI  L  LOKFN      CK FOR LOCK ON ERR              3B102420
0A51 0 70F7                     MDX     RTN4                                       3B102430
                                *                                                    3B102440
0A52 0 7401 0C0A                MDX  L  FUNNO,1                                    3B102450
                                *                                                    3B102460
0A54 0 C028       FUN42 LD      H0002                                              3B102470
0A55 0 D026                     STO     ALTNT                                      3B102480
0A56 0 C400 09D6                LD   L  FFFF                                       3B102490
0A58 0 D400 0A7E                STO  L  COMPL      CK EACH CORE LOCATION           3B102500
0A5A 0 4400 0AF5                BSI  L  FLOAT        BIT BY BIT, ONE BIT OFF.      3B102510
                                *                                                    3B102520
0A5C 0 4400 0B74                BSI  L  LOKFN      CK FOR LOCK ON ERR              3B102530
0A5E 0 70F5                     MDX     FUN42                                      3B102540
                                *                                                    3B102550
0A5F 0 4C00 0992                BSC  L  CNTRL                                      3B102560
                                *                                                    3B102570
                                ************************************************ 3B102580
                                *                                                    3B102590
                                *            TEST ROUTINE FIVE                       3B102600
                                *                                                    3B102610
                                ************************************************ 3B102620
                                *                                                    3B102630
0A61 0 1010       RTN5  SLA     16                                                 3B102640
0A62 0 D400 0A7B                STO  L  COUNT                                      3B102650
0A64 0 4400 0B11                BSI  L  WORST      STORE WORST CASE PATTERN        3B102660
                                *                                                    3B102670
0A66 0 4400 0B1F  FUN61 BSI  L  CHECK      CK EACH CORE LOCATION                   3B102680
                                *                                                    3B102690
0A68 0 4400 0B74                BSI  L  LOKFN      CK LOCK ON ERROR                3B102700
0A6A 0 70FB                     MDX     FUN61                                      3B102710
                                *                                                    3B102720
0A6B 0 7401 0C0A                MDX  L  FUNNO,1                                    3B102730
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0A6D 0 C011        FUN62 LD      H0004                              3B102740
0A6E 0 D400 0A7B         STO  L  COUNT                              3B102750
0A70 0 4400 0B31         BSI  L  SHAKE      CK AND COMPL 4 TIMES    3B102760
                         *                                          3B102770
0A72 0 4400 0B74         BSI  L  LOKFN      CK LOCK ON ERROR        3B102780
0A74 0 70F8              MDX     FUN62                              3B102790
                         *                                          3B102800
0A75 0 4C00 0992         BSC  L  CNTRL                              3B102810
                         *                                          3B102820
                         ********************************************3B102830
                         *                                          3B102840
                         *            TEST ROUTINE SIX              3B102850
                         *                                          3B102860
                         ********************************************3B102870
                         *                                          3B102880
0A77 0 C400 0AE5   RTN6  LD   L  HFFFF      SET UP COMPLEMENT       3B102890
0A79 0 D004              STO     COMPL        WORST CASE PATTERN     3B102900
0A7A 0 70E8              MDX     RTN5                               3B102910
                         *                                          3B102920
                         ********************************************3B102930
                         *                                          3B102940
                         *            SUBROUTINES FOR RTNS 1-6      3B102950
                         *                                          3B102960
                         ********************************************3B102970
                         *                                          3B102980
                         *            PROGRAM CONSTANTS             3B102990
                         *                                          3B103000
0A7B 0 0000        COUNT DC      *-*                                3B103010
0A7C 0 0000        ALTNT DC      *-*                                3B103020
0A7D 0 0002        H0002 DC      /0002                              3B103030
0A7E 0 0000        COMPL DC      *-*                                3B103040
0A7F 0 0004        H0004 DC      /0004                              3B103050
0A80 0 0000        PASS  DC      *-*                                3B103060
                         *                                          3B103070
                         *            FILL CORE WITH ONES           3B103080
                         *                                          3B103090
0A81 0 0000        FILL  DC      *-*                                3B103100
0A82 0 D05F              STO     SLDBE                              3B103110
0A83 0 C067              LD      LWRLM      GET STARTING ADDRESS    3B103120
0A84 0 D05E              STO     ADDRS                              3B103130
0A85 0 C05C              LD      SLDBE      GET DATA WORD           3B103140
0A86 0 D480 0AE3         STO  I  ADDRS      STO DATA WORD           3B103150
0A88 0 C05A              LD      ADDRS                              3B103160
0A89 0 F052              EOR     UPRLM                              3B103170
0A8A 0 4C08 0A81         BSC  I  FILL,+-    BR IF LAST ADDRESS      3B103180
                         *                                          3B103190
0A8C 0 C056              LD      ADDRS                              3B103200
0A8D 0 8056              A       H0001      INCRE ADDRESS BY ONE    3B103210
0A8E 0 70F5              MDX     FILL+3                             3B103220
                         *                                          3B103230
                         *            CK AND COMPLEMENT 0000/FFFF PATTERN 3B103240
                         *                                          3B103250
0A8F 0 0000        FLIP  DC      *-*                                3B103260
0A90 0 D052              STO     ADDRS      SAVE STARTING ADDRESS   3B103270
0A91 0 C480 0AE3         LD   I  ADDRS                              3B103280
0A93 0 D052              STO     WAS                                3B103290
0A94 0 F04D              EOR     SLDBE      DATA WORD CORRECT       3B103300
0A95 0 4420 0B8E         BSI  L  ERROR,Z    *NO, BRANCH TO ERROR RTN 3B103310
                         *                                          3B103320
0A97 0 C0E6              LD      COMPL                              3B103330
0A98 0 D480 0AE3         STO  I  ADDRS      STORE NEW WORD          3B103340
0A9A 0 C048              LD      ADDRS                              3B103350
0A9B 0 F04B              EOR     ENDPT                              3B103360
0A9C 0 4C18 0AA1         BSC  L  *+3,+-     BR IF LAST ADDRESS      3B103370
                         *                                          3B103380
0A9E 0 C044              LD      ADDRS                              3B103390
0A9F 0 8048              A       INCRE      INCRE ADDRESS           3B103400
0AA0 0 70EF              MDX     FLIP+1                             3B103410
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                         *                                          3B103420
0AA1 0 C040              LD      SLDBE                              3B103430
0AA2 0 D0DB              STO     COMPL                              3B103440
0AA3 0 F041              EOR     HFFFF                              3B103450
0AA4 0 D03D              STO     SLDBE                              3B103460
0AA5 0 4C80 0A8F         BSC  I  FLIP                               3B103470
                         *                                          3B103480
                         *            CK AND COMPLEMENT ADDRESS PATTERN 3B103490
                         *                                          3B103500
0AA7 0 0000        ADRCK DC      *-*                                3B103510
0AA8 0 D03A              STO     ADDRS                              3B103520
0AA9 0 F0D4              EOR     COMPL                              3B103530
0AAA 0 D037              STO     SLDBE                              3B103540
0AAB 0 C480 0AE3         LD   I  ADDRS                              3B103550
0AAD 0 D038              STO     WAS                                3B103560
0AAE 0 F033              EOR     SLDBE      DATA WORD CORRECT       3B103570
0AAF 0 4420 0B8E         BSI  L  ERROR,Z    *NO, BRANCH             3B103580
                         *                                          3B103590
0AB1 0 C030              LD      SLDBE                              3B103600
0AB2 0 F032              EOR     HFFFF                              3B103610
0AB3 0 D480 0AE3         STO  I  ADDRS      STORE COMPLEMENT        3B103620
0AB5 0 C02D              LD      ADDRS                              3B103630
0AB6 0 F030              EOR     ENDPT                              3B103640
0AB7 0 4C18 0ABC         BSC  L  *+3,+-     BR IF LAST ADDRESS      3B103650
                         *                                          3B103660
0AB9 0 C029              LD      ADDRS                              3B103670
0ABA 0 802D              A       INCRE      INCRE ADDRESS           3B103680
0ABB 0 70EC              MDX     ADRCK+1                            3B103690
                         *                                          3B103700
0ABC 0 C0C1              LD      COMPL                              3B103710
0ABD 0 F027              EOR     HFFFF                              3B103720
0ABE 0 D0BF              STO     COMPL                              3B103730
0ABF 0 4C80 0AA7         BSC  I  ADRCK                              3B103740
                         *                                          3B103750
                         *            CK AND COMPLEMENT 5555/AAAA PATTERN 3B103760
                         *                                          3B103770
0AC1 0 0000        CHEX  DC      *-*                                3B103780
0AC2 0 D020              STO     ADDRS                              3B103790
0AC3 0 C480 0AE3         LD   I  ADDRS                              3B103800
0AC5 0 D020              STO     WAS                                3B103810
0AC6 0 F018              EOR     SLDBE      DATA WORD CORRECT       3B103820
0AC7 0 4420 0B8E         BSI  L  ERROR,Z    *NO, BRANCH             3B103830
                         *                                          3B103840
0AC9 0 C018              LD      SLDBE                              3B103850
0ACA 0 F01A              EOR     HFFFF                              3B103860
0ACB 0 D480 0AE3         STO  I  ADDRS      STORE COMPLEMENT        3B103870
0ACD 0 D014              STO     SLDBE                              3B103880
0ACE 0 C014              LD      ADDRS                              3B103890
0ACF 0 F017              EOR     ENDPT                              3B103900
0AD0 0 4C18 0AD5         BSC  L  **3,+-     BR IF LAST ADDRESS      3B103910
                         *                                          3B103920
0AD2 0 C010              LD      ADDRS                              3B103930
0AD3 0 8014              A       INCRE      INCRE ADDRESS           3B103940
0AD4 0 70ED              MDX     CHEX+1                             3B103950
                         *                                          3B103960
0AD5 0 C0A8              LD      COMPL                              3B103970
0AD6 0 F00E              EOR     HFFFF                              3B103980
0AD7 0 D0A6              STO     COMPL                              3B103990
0AD8 0 4C80 0AC1         BSC  I  CHEX                               3B104000
                         *                                          3B104010
                         *            INCREMENT FROM LOWER TO UPPER CORE 3B104020
                         *                                          3B104030
0ADA 0 0000        UP    DC      *-*                                3B104040
0ADB 0 C008              LD      H0001                              3B104050
0ADC 0 D00B              STO     INCRE      SET UP ADDRS INCREMENT  3B104060
0ADD 0 C00E              LD      UPRLM                              3B104070
0ADE 0 D008              STO     ENDPT      SET LAST ADDRESS        3B104080
0ADF 0 C00B              LD      LWRLM      SET FIRST ADDRESS       3B104090
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0AE0 0 4C80 0ADA          BSC  I  UP                                  3B104100
                       *                                             3B104110
                       *          PROGRAM CONSTANTS                  3B104120
                       *                                             3B104130
0AE2 0 0000            SLDBE DC   *-*                                3B104140
0AE3 0 0000            ADDRS DC   *-*                                3B104150
0AE4 0 0001            H0001 DC   /0001                              3B104160
0AE5 0 FFFF            HFFFF DC   /FFFF                              3B104170
0AE6 0 0000            WAS   DC   *-*                                3B104180
0AE7 0 0000            ENDPT DC   *-*                                3B104190
0AE8 0 0000            INCRE DC   *-*                                3B104200
0AE9 0 0000            TEMP  DC   *-*                                3B104210
0AEA 0 8000            H8000 DC   /8000                              3B104220
0AEB 0 FFF6            LWRLM DC   /FFF6                              3B104230
0AEC 0 0900            UPRLM DC   /0900                              3B104240
                       *                                             3B104250
                       *          DECREMENT FROM UPPER TO LOWER CORE 3B104260
                       *                                             3B104270
0AED 0 0000            DOWN  DC   *-*                                3B104280
0AEE 0 C0F6                  LD   HFFFF     SET UP ADDRESS INCRE     3B104290
0AEF 0 D0F8                  STO  INCRE                              3B104300
0AF0 0 C0FA                  LD   LWRLM                              3B104310
0AF1 0 D0F5                  STO  ENDPT     SET UP LAST ADDRESS      3B104320
0AF2 0 C0F9                  LD   UPRLM     SET UP FIRST ADDRESS     3B104330
0AF3 0 4C80 0AED             BSC  I DOWN                             3B104340
                       *                                             3B104350
                       *          CHECK BIT BY BIT PATTERN           3B104360
                       *                                             3B104370
0AF5 0 0000            FLOAT DC   *-*                                3B104380
0AF6 0 C0F4                  LD   LWRLM                              3B104390
0AF7 0 D0EB                  STO  ADDRS     SAVE ADDRESS             3B104400
0AF8 0 C0F1                  LD   H8000                              3B104410
0AF9 0 F084                  EOR  COMPL                              3B104420
0AFA 0 D0E7                  STO  SLDBE                              3B104430
0AFB 0 D480 0AE3             STO  I ADDRS   STORE DATA WORD          3B104440
0AFD 0 C480 0AE3             LD   I ADDRS                            3B104450
0AFF 0 D0E6                  STO  WAS                                3B104460
0B00 0 F0E1                  EOR  SLDBE     DATA CORRECT             3B104470
0B01 0 4420 0B8E             BSI  L ERROR,Z *NO, BRANCH              3B104480
                       *                                             3B104490
0B03 0 C0DE                  LD   SLDBE                              3B104500
0B04 0 F400 0A7E             EOR  L COMPL   LAST SHIFT               3B104510
0B06 0 4C04 0B0A             BSC  L *+2,E   *NO, BRANCH              3B104520
                       *                                             3B104530
0B08 0 1801                  SRA  1         SHIFT DATA               3B104540
0B09 0 70EF                  MDX  FLOAT+4                            3B104550
                       *                                             3B104560
0B0A 0 CCD8                  LD   ADDRS                              3B104570
0B0B 0 F0E0                  EOR  UPRLM                              3B104580
0B0C 0 4C98 0AF5             BSC  I FLOAT,+-  BR IF LAST ADDRESS     3B104590
                       *                                             3B104600
0B0E 0 C0D4                  LD   ADDRS                              3B104610
0B0F 0 80D4                  A    H0001     INCRE ADDRESS            3B104620
0B10 0 70E6                  MDX  FLOAT+2                            3B104630
                       *                                             3B104640
                       *          STORE WORST CASE PATTERN           3B104650
                       *                                             3B104660
0B11 0 0000            WORST DC   *-*                                3B104670
0B12 0 C0D8                  LD   LWRLM                              3B104680
0B13 0 D0CF                  STO  ADDRS     SAVE ADDRESS             3B104690
0B14 0 4400 0B4E             BSI  L FIND    FIND IF 0000 OR FFFF     3B104700
0B16 0 D480 0AE3             STO  I ADDRS   STORE DATA               3B104710
0B18 0 C0CA                  LD   ADDRS                              3B104720
0B19 0 F0D2                  EOR  UPRLM                              3B104730
0B1A 0 4C98 0B11             BSC  I WORST,+-  BR IF LAST ADDRESS     3B104740
                       *                                             3B104750
0B1C 0 C0C6                  LD   ADDRS                              3B104760
0B1D 0 80C6                  A    H0001     INCRE ADDRESS            3B104770
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0B1E 0 70F4                  MDX  WORST+2                            3B104780
                       *                                             3B104790
                       *          CHECK WORST CASE PATTERN           3B104800
                       *                                             3B104810
0B1F 0 0000            CHECK DC   *-*                                3B104820
0B20 0 C0CA                  LD   LWRLM                              3B104830
0B21 0 D0C1                  STO  ADDRS     SAVE ADDRESS             3B104840
0B22 0 C480 0AE3             LD   I ADDRS                            3B104850
0B24 0 D0C1                  STO  WAS                                3B104860
0B25 0 4C18 0B2A             BSC  L *+3,+-  BR IF DATA ZERO          3B104870
                       *                                             3B104880
0B27 0 F0BD                  EOR  HFFFF     COMPLEMENT DATA          3B104890
0B28 0 4420 0B69             BSI  L ERR,Z   BR TO ERROR RTN IF NOT 0 3B104900
                       *                                             3B104910
0B2A 0 C0B8                  LD   ADDRS                              3B104920
0B2B 0 F0C0                  EOR  UPRLM                              3B104930
0B2C 0 4C98 0B1F             BSC  I CHECK,+-  BR IF LAST ADDRESS     3B104940
                       *                                             3B104950
0B2E 0 C0B4                  LD   ADDRS                              3B104960
0B2F 0 80B4                  A    H0001     INCRE ADDRESS            3B104970
0B30 0 70F0                  MDX  CHECK+2                            3B104980
                       *                                             3B104990
                       *          CK AND COMPLEMENT 4 TIMES          3B105000
                       *                                             3B105010
0B31 0 0000            SHAKE DC   *-*                                3B105020
0B32 0 C0B8                  LD   LWRLM                              3B105030
0B33 0 D0AF                  STO  ADDRS     SAVE ADDRESS             3B105040
0B34 0 C480 0AE3             LD   I ADDRS                            3B105050
0B36 0 D0AF                  STO  WAS                                3B105060
0B37 0 4C18 0B4C             BSC  L INVRT,+-  BR DATA WORD ZERO      3B105070
                       *                                             3B105080
0B39 0 F0AB                  EOR  HFFFF     COMPL DATA               3B105090
0B3A 0 4420 0B69             BSI  L ERR,Z   BR IF NOT ZERO           3B105100
                       *                                             3B105110
0B3C 0 D480 0AE3       STORE STO  I ADDRS   STORE NEW DATA           3B105120
0B3E 0 74FF 0A7B             MDX  L COUNT,-1                         3B105130
0B40 0 70F3                  MDX  SHAKE+3                            3B105140
                       *                                             3B105150
0B41 0 C0A1                  LD   ADDRS                              3B105160
0B42 0 F0A9                  EOR  UPRLM                              3B105170
0B43 0 4C98 0B31             BSC  I SHAKE,+-  BR IF LAST ADDRESS     3B105180
                       *                                             3B105190
0B45 0 C400 0A7F             LD   L H0004                            3B105200
0B47 0 D400 0A7B             STO  L COUNT                            3B105210
0B49 0 C099                  LD   ADDRS                              3B105220
0B4A 0 8099                  A    H0001     INCRE ADDRESS            3B105230
0B4B 0 70E7                  MDX  SHAKE+2                            3B105240
                       *                                             3B105250
0B4C 0 F098            INVRT EOR  HFFFF     COMPLEMENT DATA          3B105260
0B4D 0 70EE                  MDX  STORE                              3B105270
                       *                                             3B105280
                       *          DETERMINE IF DATA S/B 0000 OR FFFF 3B105290
                       *                                             3B105300
0B4E 0 0000            FIND  DC   *-*                                3B105310
0B4F 0 C093                  LD   ADDRS                              3B105320
0B50 0 1806                  SRA  6                                  3B105330
0B51 0 D097                  STO  TEMP                               3B105340
0B52 0 1802                  SRA  2         ADDRS BITS 7 AND 9       3B105350
0B53 0 F095                  EOR  TEMP        BOTH 0 OR BOTH 1       3B105360
0B54 0 4C04 0B58             BSC  L *+2,E   *NO, BRANCH              3B105370
                       *                                             3B105380
0B56 0 1010                  SLA  16                                 3B105390
0B57 0 7001                  MDX  *+1                                3B105400
                       *                                             3B105410
0B58 0 C08C                  LD   HFFFF     COMPLEMENT DATA FOR      3B105420
0B59 0 F400 0A7E             EOR  L COMPL     COMPLEMENT WORST CASE  3B105430
0B5B 0 D086                  STO  SLDBE                              3B105440
0B5C 0 C400 0A7B             LD   L COUNT   DATA COMPL ODD NO. TIMES 3B105450
```

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0B5E 0 4C04 0B63          BSC  L  *+3,E      *YES, BRANCH                3B105460
                          *                                               3B105470
0B60 0 C081               LD      SLDBE                                   3B105480
0B61 0 4C80 0B4E          BSC  I  FIND                                    3B105490
                          *                                               3B105500
0B63 0 C400 0AE2          LD   L  SLDBE                                   3B105510
0B65 0 F400 0AE5          EOR  L  HFFFF       COMPLEMENT DATA             3B105520
0B67 0 4C80 0B4E          BSC  I  FIND                                    3B105530
                          *                                               3B105540
                          *       ERROR IN WORST CASE PATTERN             3B105550
                          *                                               3B105560
0B69 0 0000               ERR  DC     *-*                                 3B105570
0B6A 0 4400 0B4E          BSI  L  FIND        FIND GOOD DATA              3B105580
0B6C 0 D400 0AE2          STO  L  SLDBE                                   3B105590
0B6E 0 4400 0B8E          BSI  L  ERROR       GO TO ERROR RTN             3B105600
0B70 0 F400 0AE5          EOR  L  HFFFF                                   3B105610
0B72 0 4C80 0B69          BSC  I  ERR                                     3B105620
                          *                                               3B105630
                          *       CK PASS COUNT AND LOCK ON ERR           3B105640
                          *                                               3B105650
0B74 0 0000               LOKFN DC    *-*                                 3B105660
0B75 0 7401 0A80          MDX  L  PASS,1                                  3B105670
0B77 0 C400 0A80          LD   L  PASS                                    3B105680
0B79 0 4C84 0B74          BSC  I  LOKFN,E     BR IF COUNT ODD             3B105690
0B7B 0 1010               SLA     16                                      3B105700
0B7C 0 D400 0A80          STO  L  PASS                                    3B105710
0B7E 0 7400 0C09          MDX  L  ERRSW       ERROR SW ON                 3B105720
0B80 0 7004               MDX     *+4         *YES BRANCH                 3B105730
                          *                                               3B105740
0B81 0 7401 0B74          MDX  L  LOKFN,1     ADD ONE TO RETURN           3B105750
0B83 0 4C80 0B74          BSC  I  LOKFN                                   3B105760
                          *                                               3B105770
0B85 0 086C               XIO     RDSWS       READ SWITCHES               3B105780
0B86 0 C400 0C0B          LD   L  SWS                                     3B105790
0B88 0 100C               SLA     12          LOCK ON ERR FUNC SELECTED   3B105800
0B89 0 4CA8 0B74          BSC  I  LOKFN,Z+    *YES, BRANCH                3B105810
                          *                                               3B105820
0B8B 0 1010               SLA     16                                      3B105830
0B8C 0 D07C               STO     ERRSW       CLEAR ERROR SW              3B105840
0B8D 0 70F3               MDX     LOKFN+13                                3B105850
                          *                                               3B105860
                          ********************************************** 3B105870
                          *                                               3B105880
                          *       ERROR ROUTINE                           3B105890
                          *                                               3B105900
                          ********************************************** 3B105910
                          *                                               3B105920
0B8E 0 0000               ERROR DC    *-*                                 3B105930
0B8F 0 CC00 0000          LDD  L  0                                       3B105940
0B91 0 DC00 0C00          STD  L  SAVE1                                   3B105950
0B93 0 C85C               LDD     LINK                                    3B105960
0B94 0 DC00 0000          STD  L  0           SET UP RESTART              3B105970
0B96 0 085B               XIO     RDSWS       READ SWS                    3B105980
0B97 0 C073               LD      SWS                                     3B105990
0B98 0 E06E               AND     H00AE                                   3B106000
0B99 0 F06E               EOR     H0006       ILLEGAL SWITCH COMBINATION  3B106010
0B9A 0 4C20 0B9E          BSC  L  *+2,Z       *NO, BRANCH                 3B106020
                          *                                               3B106030
0B9C 0 3007               WAIT    7           ERR-ILLEGAL SWS             3B106040
0B9D 0 70F5               MDX     ERROR+5                                 3B106050
                          *                                               3B106060
0B9E 0 C400 0C0A          LD   L  FUNNO                                   3B106070
0BA0 0 8400 0AE4          A    L  H0001                                   3B106080
0BA2 0 8069               A       NOTBL                                   3B106090
0BA3 0 0001               STO     *+1                                     3B106100
0BA4 0 C400 0000          LD   L  *-*                                     3B106110
0BA6 0 D400 0C36          STO  L  MSG07+3     PUT FUNC. NO. IN MSG        3B106120
0BA8 0 4400 0C23          BSI  L  PRINT       PRINT ERROR MSG             3B106130
```



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0BAA 0 8C7A               DC      MSG05+/8000                             3B106140
0BAB 0 8C7E               DC      MSG06+/8000                             3B106150
0BAC 0 0C83               DC      MSG07                                   3B106160
                          *                                               3B106170
0BAD 0 C05D               LD      SWS                                     3B106180
0BAE 0 100E               SLA     14                                      3B106190
0BAF 0 4C28 0BC2          BSC  L  NWAIT,Z+    BY IF BYPASS WAIT           3B106200
                          *                                               3B106210
0BB1 0 C400 0AE2          LD   L  SLDBE       GET GOOD DATA               3B106220
0BB3 0 1890               SRT     16          PUT IN Q                    3B106230
0BB4 0 C400 0AE6          LD   L  WAS         BAD DATA IN A               3B106240
0BB6 0 3004               WAIT    4           ERROR WAIT                  3B106250
                          *                                               3B106260
0BB7 0 C400 0C0A          LD   L  FUNNO                                   3B106270
0BB9 0 8400 0AE4          A    L  H0001                                   3B106280
0BBB 0 1888               SRT     8           PUT FUNCTION NO.            3B106290
0BBC 0 C400 09D5          LD   L  RID          AND RTN NO.                3B106300
0BBE 0 1888               SRT     8             IN Q REG                  3B106310
0BBF 0 C400 0AE3          LD   L  ADDRS       ADDRS IN ACC                3B106320
0BC1 0 3005               WAIT    5           ERROR WAIT                  3B106330
                          *                                               3B106340
0BC2 0 082F               NWAIT XIO   RDSWS   READ SWS                    3B106350
0BC3 0 C047               LD      SWS                                     3B106360
0BC4 0 D044               STO     ERRSW       SET ERROR SWITCH            3B106370
0BC5 0 1008               SLA     8                                       3B106380
0BC6 0 4C28 0BD2          BSC  L  LOOPA,Z+    BR TO LOOP ADDRESS          3B106390
                          *                                               3B106400
0BC8 0 CC00 0C00          LDD  L  SAVE1                                   3B106410
0BCA 0 DC00 0000          STD  L  0                                       3B106420
0BCC 0 C400 0AE2          LD   L  SLDBE                                   3B106430
0BCE 0 D480 0AE3          STO  I  ADDRS                                   3B106440
0BD0 0 4C80 0B8E          BSC  I  ERROR                                   3B106450
0BD2 0 C400 0A7C          LOOPA LD  L  ALTNT                              3B106460
                          *                                               3B106470
0BD4 0 8031               A       H7000       FIND LAST GOOD DATA         3B106480
0BD5 0 D001               STO     *+1          WORD STORED                3B106490
0BD6 0 C400 0AE2          LD   L  SLDBE                                   3B106500
0BD8 0 7000               MDX     *                                       3B106510
                          *                                               3B106520
0BD9 0 7011               MDX     ALT00                                   3B106530
0BDA 0 7013               MDX     ALT01                                   3B106540
                          *                                               3B106550
0BDB 0 1001               ALT02 SLA   1                                   3B106560
0BDC 0 8400 0AE4          A    L  H0001                                   3B106570
0BDE 0 D480 0AE3          STO  I  ADDRS       STD LAST GOOD DATA          3B106580
0BE0 0 C400 0AE2          LD   L  SLDBE                                   3B106590
0BE2 0 D480 0AE3          STO  I  ADDRS       STD LAST BAD DATA           3B106600
0BE4 0 C480 0AE3          LD   I  ADDRS                                   3B106610
0BE6 0 F400 0AE2          EOR  L  SLDBE       DATA GOOD NOW               3B106620
0BE8 0 4C20 0B8F          BSC  L  ERROR+1,Z   *NO,BRANCH                  3B106630
                          *                                               3B106640
0BEA 0 70D7               MDX     NWAIT                                   3B106650
                          *                                               3B106660
0BEB 0 F400 0AE5          ALT00 EOR  L  HFFFF                             3B106670
0BED 0 70F0               MDX     ALT02+3                                 3B106680
                          *                                               3B106690
0BEE 0 1001               ALT01 SLA   1                                   3B106700
0BEF 0 70EE               MDX     ALT02+3                                 3B106710
                          *                                               3B106720
                          *       CONSTANTS   IOCC TABLE                  3B106730
                          *                                               3B106740
0BF0    0000              BSS  E                                          3B106750
0BF0 0 4C00 0961          LINK  BSC  L  CRSIZ                             3B106760
0BF2 0 0C08               RDSWS DC      SWS                               3B106770
0BF3 0 3A00               DC            /3A00                             3B106780
0BF4 0 0C5D               VECTR DC      INT                               3B106790
0BF5 0 0C61               DC            STOP                              3B106800
0BF6 0 0000               SENSE DC      0                                 3B106810
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0BF7 0 0F01                DC      /0F01                                3B106820
0BF8 0 0C04          RETRN DC      CR                                   3B106830
0BF9 0 0900                DC      /0900                                3B106840
0BFA 0 0BFE          PRNT1 DC      CHAR1                                3B106850
0BFB 0 0900                DC      /0900                                3B106860
0BFC 0 0BFF          PRNT2 DC      CHAR2                                3B106870
0BFD 0 0900                DC      /0900                                3B106880
0BFE 0 0000          CHAR1 DC      *-*                                  3B106890
0BFF 0 0000          CHAR2 DC      *-*                                  3B106900
0C00 0 0000          SAVE1 DC      *-*                                  3B106910
0C01 0 0000                DC      *-*                                  3B106920
0C02 0 0000          SAVE2 DC      *-*                                  3B106930
0C03 0 0000                DC      0                                    3B106940
0C04 0 8500          CR    DC      /8500                                3B106950
0C05 0 0000          MSGAD DC      *-*                                  3B106960
0C06 0 7000          H7000 DC      /7000                                3B106970
0C07 0 00AE          H00AE DC      /00AE                                3B106980
0C08 0 0006          H0006 DC      /0006                                3B106990
0C09 0 0000          ERRSW DC      0                                    3B107000
0C0A 0 0000          FUNNO DC      *-*                                  3B107010
0C0B 0 0000          SWS   DC      *-*                                  3B107020
0C0C 0 0C0C          NOTBL DC      NOTBL                                3B107030
0C0D 0 C4FC                DC      /C4FC       01                       3B107040
0C0E 0 C4D8                DC      /C4D8       02                       3B107050
0C0F 0 C4DC                DC      /C4DC       03                       3B107060
0C10 0 C4F0                DC      /C4F0       04                       3B107070
0C11 0 C4F4                DC      /C4F4       05                       3B107080
0C12 0 C4D0                DC      /C4D0       06                       3B107090
0C13 0 C4D4                DC      /C4D4       07                       3B107100
                     *                                                  3B107110
                     ************************************************** 3B107120
                     *                                                  3B107130
                     *            PROGRAM END ROUTINE                   3B107140
                     *                                                  3B107150
                     ************************************************** 3B107160
                     *                                                  3B107170
0C14 0 4400 0C23     END   BSI  L  PRINT       PRINT END MSG            3B107180
0C16 0 8C69                DC      MSG02+/8000                          3B107190
0C17 0 0C6C                DC      MSG03                                3B107200
0C18 0 C8D7                LDD     LINK                                 3B107210
0C19 0 DC00 0000           STD  L  0                                    3B107220
0C1B 0 08D6                XIO     RDSWS       READ SWS                 3B107230
0C1C 0 C0EE                LD      SWS                                  3B107240
0C1D 0 1008                SLA     11          LOOP PROGRAM             3B107250
0C1E 0 4C28 098A           BSC  L  START,Z+    *YES, BRANCH             3B107260
                     *                                                  3B107270
0C20 0 3002                WAIT    2           END PROGRAM              3B107280
                     *                                                  3B107290
0C21 0 4C00 0961           BSC  L  CRSIZ                                3B107300
                     *                                                  3B107310
                     ************************************************** 3B107320
                     *                                                  3B107330
                     *            PRINT ROUTINE                         3B107340
                     *                                                  3B107350
                     ************************************************** 3B107360
                     *                                                  3B107370
0C23 0 0000          PRINT DC      *-*                                  3B107380
0C24 0 08CD                XIO     RDSWS       READ SWS                 3B107390
0C25 0 C0E5                LD      SWS                                  3B107400
0C26 0 100D                SLA     13          BYPASS PRINT ON          3B107410
0C27 0 4C10 0C30           BSC  L  PRNIT,-     *NO, BRANCH              3B107420
                     *                                                  3B107430
0C29 0 7401 0C23     GTOUT MDX  L  PRINT,1                              3B107440
0C2B 0 C480 0C23           LD   I  PRINT                                3B107450
0C2D 0 4C10 0C55           BSC  L  OUT,-                                3B107460
                     *                                                  3B107470
0C2F 0 70F9                MDX     GTOUT                                3B107480
                     *                                                  3B107490
```



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0C30 0 CC00 000C     PRNIT LDD  L  12                                   3B107500
0C32 0 DC00 0C02           STD  L  SAVE2                                3B107510
0C34 0 C88F                LDD     VECTR                                3B107520
0C35 0 DC00 000C           STD  L  12          SET INT VECTOR           3B107530
0C37 0 08C0                XIO     RETRN       CARRIER RETURN           3B107540
0C38 0 3006                WAIT    6                                    3B107550
                     *                                                  3B107560
0C39 0 C480 0C23     GTADR LD   I  PRINT       GET MSG ADDRS            3B107570
0C3B 0 D0C9                STO     MSGAD                                3B107580
0C3C 0 C480 0C05           LD   I  MSGAD       GET CHAR TO PRINT        3B107590
0C3E 0 F400 0AE5           EOR  L  HFFFF                                3B107600
0C40 0 4C18 0C4E           BSC  L  MSGEN,+-    BR IF TERMINATOR         3B107610
                     *                                                  3B107620
0C42 0 F400 0AE5           EOR  L  HFFFF                                3B107630
0C44 0 D0B9                STO     CHAR1       STO FIRST CHAR           3B107640
0C45 0 1008                SLA     8                                    3B107650
0C46 0 D0B8                STO     CHAR2       STO SECOND CHAR          3B107660
0C47 0 08B2                XIO     PRNT1       PRINT FIRST CHAR         3B107670
0C48 0 3006                WAIT    6                                    3B107680
                     *                                                  3B107690
0C49 0 08B2                XIO     PRNT2       PRINT SECOND CHAR        3B107700
0C4A 0 3006                WAIT    6                                    3B107710
                     *                                                  3B107720
0C4B 0 7401 0C05           MDX  L  MSGAD,1     INCRE MSG TABLE ADDRS    3B107730
0C4D 0 70EE                MDX     GTADR+3                              3B107740
                     *                                                  3B107750
0C4E 0 C480 0C23     MSGEN LD   I  PRINT                                3B107760
0C50 0 4C10 0C55           BSC  L  OUT,-       BR IF LAST MSG SECTION   3B107770
                     *                                                  3B107780
0C52 0 7401 0C23           MDX  L  PRINT,1                              3B107790
0C54 0 70E4                MDX     GTADR                                3B107800
                     *                                                  3B107810
0C55 0 7401 0C23     OUT   MDX  L  PRINT,1                              3B107820
0C57 0 CC00 0C02           LDD  L  SAVE2                                3B107830
0C59 0 DC00 000C           STD  L  12                                   3B107840
0C5B 0 4C80 0C23           BSC  I  PRINT                                3B107850
0C5D 0 0000          INT   DC      *-*                                  3B107860
0C5E 0 0897                XIO     SENSE       SENSE DSW AND RESET      3B107870
0C5F 0 4CC0 0C5D           BOSC I  INT                                  3B107880
                     *                                                  3B107890
0C61 0 0000          STOP  DC      *-*                                  3B107900
0C62 0 3008                WAIT    8           PROG STOP WAIT           3B107910
0C63 0 4CC0 0C61           BOSC I  STOP                                 3B107920
                     *                                                  3B107930
0C65 0 9A9E          MSG01 DC      /9A9E       ST                       3B107940
0C66 0 3E62                DC      /3E62       AR                       3B107950
0C67 0 9E21                DC      /9E21       T                        3B107960
0C68 0 FFFF                DC      /FFFF                                3B107970
                     *                                                  3B107980
0C69 0 3676          MSG02 DC      /3676       EN                       3B107990
0C6A 0 3221                DC      /3221       D                        3B108000
0C6B 0 FFFF                DC      /FFFF                                3B108010
                     *                                                  3B108020
0C6C 0 5E52          MSG03 DC      /5E52       LO                       3B108030
0C6D 0 9221                DC      /9221       W                        3B108040
0C6E 0 1E52                DC      /1E52       CO                       3B108050
0C6F 0 6236                DC      /6236       RE                       3B108060
0C70 0 219E                DC      /219E        T                       3B108070
0C71 0 369A                DC      /369A       ES                       3B108080
0C72 0 9E21                DC      /9E21       T                        3B108090
0C73 0 FFFF                DC      /FFFF                                3B108100
                     *                                                  3B108110
0C74 0 1E52          MSG04 DC      /1E52       CO                       3B108120
0C75 0 6236                DC      /6236       RE                       3B108130
0C76 0 219A                DC      /219A        S                       3B108140
0C77 0 22A2                DC      /22A2       IZ                       3B108150
0C78 0 3621                DC      /3621       E                        3B108160
0C79 0 FFFF                DC      /FFFF                                3B108170
```

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                        *
0C7A 0 0936             MSG05 DC      /0936       SR E
0C7B 0 6262                   DC      /6262       RR
0C7C 0 2121                   DC      /2121
0C7D 0 FFFF                   DC      /FFFF
                        *
0C7E 0 629E             MSG06 DC      /629E       RT
0C7F 0 7621                   DC      /7621       N
0C80 0 0000                   DC      *-*         XX
0C81 0 2121                   DC      /2121
0C82 0 FFFF                   DC      /FFFF
                        *
0C83 0 2112             MSG07 DC      /2112        F
0C84 0 B276                   DC      /B276       UN
0C85 0 1E21                   DC      /1E21       C
0C86 0 0000                   DC      *-*         YY
0C87 0 FFFF                   DC      /FFFF
0C88   0961                   END     CRSIZ
 NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

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3B108180
3B108190
3B108200
3B108210
3B108220
3B108230
3B108240
3B108250
3B108260
3B108270
3B108280
3B108290
3B108300
3B108310
3B108320
3B108330
3B108340
3B108350
```


C R O S S - R E F E R E N C E

NAME	VALUE	REFERENCES
ADDRS	0AE3	09EF,09F1,09F7,0A12,0A16,0A1B,0A21,0A84,0A86,0A88,0A8C,0A90,0A91 0A98,0A9A,0A9E,0AA8,0AAB,0AB3,0AB5,0AB9,0AC2,0AC3,0ACB,0ACE,0AD2 0AF7,0AFB,0AFD,0B0A,0B0E,0B13,0B16,0B18,0B1C,0B21,0B22,0B2A,0B2E 0B33,0B34,0B3C,0B41,0B49,0B4F,0B8F,0BCF,0BDE,0BE2,0BE4
ADRCK	0AA7	09FE,0A07,0ABB,0ABF
ADVNC	09A2	09A9
ALTNT	0A7C	0993,0A4B,0A55,0BD2
ALTOO	0BEB	0BD9
ALTO1	0BEE	0BDA
ALTO2	0BDB	0BED,0BEF
CHAR1	0BFE	0BFA,0C44
CHAR2	0BFF	0BFC,0C46
CHECK	0B1F	0A66,0B2C,0B30
CHEX	0AC1	0A2F,0A42,0AD4,0AD8
CNTRL	0992	09EC,0A0C,0A47,0A5F,0A75
COMPL	0A7E	0997,0A0E,0A14,0A19,0A27,0A29,0A38,0A3A,0A3C,0A58,0A79,0A97,0AA2 0AA9,0ABC,0ABE,0AD5,0AD7,0AF9,0B04,0B59
COUNT	0A7B	0A62,0A6E,0B3E,0B47,0B5C
CR	0C04	0BF8
CRSIZ	0961	0971,0984,0BF0,0C21,0C88
DOWN	0AED	09E5,0A05,0A40,0AF3
END	0C14	09A6
ENDPT	0AE7	0A9B,0AB6,0ACF,0ADE,0AF1
ERR	0B69	0B28,0B3A,0B72
ERROR	0B8E	0A95,0AAF,0AC7,0B01,0B6E,0B9D,0BD0,0BE8
ERRSW	0C09	0990,0B7E,0B8C,0BC4
FFFF	09D6	09D9,0A18,0A56
FILL	0A81	09DA,0A8A,0A8E
FIND	0B4E	0814,0B61,0B67,0B6A
FLIP	0A8F	09DE,09E7,0AA0,0AA5
FLOAT	0AF5	0A4D,0A5A,0B09,0B0C,0B10
FNDSZ	0985	096C,0979
FUNNO	0C0A	0999,09E3,0A03,0A34,0A52,0A6B,0B9E,0BB7
FUN11	09DC	09E2
FUN12	09E5	09EB
FUN21	09FC	0A02
FUN22	0A05	0A0B
FUN31	0A29	0A33
FUN32	0A3A	0A46
FUN42	0A54	0A5E
FUN61	0A66	0A6A
FUN62	0A6D	0A74
GTADR	0C39	0C4D,0C54
GTOUT	0C29	0C2F
HFFFF	0AE5	0A77,0AA3,0AB2,0ABD,0ACA,0AD6,0AEE,0B27,0B39,0B4C,0B58,0B65,0B70 0BEB,0C3E,0C42
H00AE	0C07	0B98
H000A	09D4	
H0001	0AE4	0986,09F9,0A23,0A49,0A8D,0ADB,0B0F,0B1D,0B2E,0B4A,0B5D,0B89,0BDC
H0002	0A7D	0A54
H0004	0A7F	0A6D,0B45
H0006	0C08	0B99
H1000	09D3	0961
H5555	09D7	0A0D,0A26
H7000	0C06	0BD4
H8000	0AEA	0AF8
INCRE	0AE8	0A9F,0ABA,0AD3,0ADC,0AEF
INT	0C5D	0BF4,0C5F
INVRT	0B4C	0B37
LINK	0BF0	0966,0973,097B,0B93,0C18
LOKFN	0B74	09E0,09E9,0A00,0A09,0A31,0A44,0A4F,0A5C,0A68,0A72,0A79,0B81,0B83 0B89,0B8D
LOUPA	0BD2	0BC6
LPRTN	09A8	09C1,09C4,09CA
LRTN	09D8	09A5,09C3
MARLA	0AEB	09ED,0A83,0ADF,0AF0-0AF6,0B12,0B20,0B32

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MSGAD   0C05  0C3B,0C3C,0C4B
MSGEN   0C4E  0C40
MSG01   0C65  098C,09BC
MSG02   0C69  0C16
MSG03   0C6C  098D,0C17
MSG04   0C74  0982
MSG05   0C7A  0981,0BAA
MSG06   0C7E  0983,09BD,0BAB
MSG07   0C83  0BA6,0BAC
NOTBL   0C0C  09AE,0BA2,0C0C
NWAIT   0BC2  0BAF,0BEA
OUT     0C55  0C2D,0C50
PASS    0A80  0995,0B75,0B77,0B7C
PRINT   0C23  097F,098A,09BA,0BA8,0C14,0C29,0C2B,0C39,0C4E,0C52,0C55,0C5B
PRNIT   0C30  0C27
PRNT1   0BFA  0C47
PRNT2   0BFC  0C49
RDSWS   0BF2  099B,0B85,0B96,0BC2,0C1B,0C24
RETRN   0BF8  0C37
RID     09D5  098F,09A2,09A4,09A8,09AD,09C9,0BBC
RTN1    09D9  09CC
RTN2    09ED  09CD,09FB
RTN3    0A0D  09CE,0A25
RTN4    0A49  09CF,0A51
RTN5    0A61  09D0,0A7A
RTN6    0A77  09D1
RTTBL   09CB  09AB,09CB
SAVE1   0C00  0B91,0BC8
SAVE2   0C02  0C32,0C57
SENSE   0BF6  0C5E
SHAKE   0B31  0A70,0B40,0B43,0B4B
SIZE    09D2  0962,0968,096E,0970,0975,0985,0988
SLDBE   0AE2  0A2B,0A36,0A3E,0A82,0A85,0A94,0AA1,0AA4,0AAA,0AAE,0AB1,0AC6,0AC9
              0ACD,0AFA,0B00,0B03,0B5B,0B60,0B63,0B6C,0BB1,0BCC,0BD6,0BE0,0BE6
SLRTN   09C0  09A0
START   098A  0C1E
STUP    0C61  0BF5,0C63
STURE   0B3C  0B4D
STRTN   09BE  09AC,09B8
SWS     0C0B  099D,0985,09C6,0886,0B97,0BAD,0BC3,0BF2,0C1C,0C25
TEMP    0AE9  0B51,0B53
UP      0ADA  09DC,09FC,0A10,0A2D,0AE0
UPRLM   0AEC  09F3,0A1D,0A89,0ADD,0AF2,0B0B,0B19,0B2B,0B42
VECTR   0BF4  0C34
WAS     0AE6  0A93,0AAD,0AC5,0AFF,0B24,0B36,0BB4
WORST   0B11  0A64,0B1A,0B1E

END OF ASSEMBLY
```

LAST PAGE

TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE 1627 PLOTTER DIAGNOSTIC TEST IS TO EXECUTE THE DIFFERENT MOVEMENTS OF THE PLOTTER AND TO CHECK THE CABLES FOR CORRECT ADJUSTMENT.

2. PREREQUISITES

2.1*** PROGRAM PREREQUISITES

1130 DIAGNOSTIC MONITOR II.

2.2*** EQUIPMENT PREREQUISITES

1. 1131 CENTRAL PROCESSING UNIT (CPU) WITH PROGRAM LOAD FROM CARD READER OR PAPER TAPE.
2. 1627 PLOTTER MODEL 1 OR 2.
3. 1000 AVAILABLE CORE POSITIONS OF CORE STORAGE

3. OPERATING PROCEDURE

THESE OPERATING PROCEDURES APPLY TO SINGLE PROGRAM OPERATION ONLY. FOR OVERLAP OPERATION, REFER TO SECTION 3.2.3 OF THE 1130 DIAGNOSTIC MONITOR II DOCUMENTATION.

3.1*** PROGRAM LOADING

STANDARD MONITOR LOADING PROCEDURES APPLY

THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. SET FIRST TYPEWRITER TAB 20 CHARACTERS FROM LEFT MARGIN.
2. SET BIT SWITCH 15 OFF - LOAD AND GO
   ON - TO HALT AFTER LOADING

   IF HALT AFTER LOADING, SELECT PROGRAM OPTIONS THEN TURN OFF HALT SWITCH OR FOLLOW NORMAL RESTART PROCEDURE (SECTION 3.5).
3. LOAD DIAGNOSTIC MONITOR AND THIS PROGRAM.
4. SELECT PROGRAM OPTIONS, IF DESIRED.

******

3.2*** PROGRAM OPERATION.

3.2.1 PROGRAM CONTROL - FUNCTION 0

1. SET SWITCHES 0-7 TO 01.
2. SET SWITCHES 8-15 AS DESIRED.

SW	FUNCTION
8	RESTART
9	ROUTINE START MESSAGE
10	LOCK ON FUNCTION
11	LOOP PROGRAM
12	LOOP ON ERROR
13	BYPASS ERROR PRINTOUT
14	HALT ON ERROR
15	HALT

3. PRESS INT REQ KEY ON CONSOLE.

**

3.2.2 ROUTINE SELECTION - FUNCTION 1

THE SELECTED ROUTINE WILL LOOP UNTIL A NEW ROUTINE IS SELECTED OR ROUTINE SELECTION IS RESET.

1. TO SET ROUTINE SELECTION

   A. SET SWITCHES 0-7 TO 41.
   B. SET ROUTINE NUMBER IN SWITCHES 12-15.

RTN		DESCRIPTION	
1		PEN UP-PEN DOWN OCTAGON TEST.	NORMAL ROUTINES- THE PROGRAM STARTS WITH ROUTINE 1, RUNS EACH ROUTINE IN SEQUENCE THEN TERMINATES AFTER ROUTINE 4.
2		REGISTRATION TEST	
3		SWING TEST	
4.		STRESS TEST	
5.	*	SELECTION COMMAND	OPTIONAL ROUTINES THESE ROUTINES RUN ONLY IF SELECTED.

* - REFER TO SECTION 3.2.2.3 FOR SPECIAL INSTRUCTION

   C. PRESS INT REQ KEY ON CONSOLE.

2. TO RESET ROUTINE SELECTION, SET AS IF SELECTING ROUTINE ZERO.

**

3. PROGRAM OPTIONS

ROUTINE 5 - SELECTION COMMAND

AFTER SELECTION BY FUNCTION 1, THE CONTROL COMMAND DATA IS TAKEN FIRST FROM BITS 0-5 AND THEN FROM 8-13.

ACTION OR MOTION	BITS	
LOWER PEN TO PAPER	0 OR	8
UP (PAPER MOVES DOWN)	1	9
DOWN (PAPER MOVES UP)	2	10
RIGHT	3	11
LEFT	4	12
RAISE PEN FROM PAPER	5	13

******

3.2.3 SPECIAL SELECTION - FUNCTION 2

1. SET SWITCHES 0-7 TO 81.
2. SET SWITCHES 8-15 AS DESIRED.

SW	FUNCTION
15	LOCK OUT MONITOR. THIS WILL BYPASS MONITOR TO ALLOW THE PLOTTER TO RECEIVE COMMANDS FASTER AND TEST FOR SLOW OR BINDING TRANSPORT. ALL OVERLAP FUNCTIONS ARE BYPASSED WHILE MONITOR LOCK-OUT OPTION IS SELECTED.

3. PRESS INT REQ KEY ON CONSOLE. SWITCH SETTINGS MAY NOT BE LOGGED BECAUSE OF THE LOCK OUT TIMING.

3.3*** PROGRAM HALTS

3.3.1 NORMAL HALTS

HALT NO. (B REG).	DESCRIPTION	RESTART ACTION
3001	PROGRAM STOP OR ADDRESS STOP	PRESS START
3002	HALT ON ERROR	PDISPLAY MODE-PRESS START RUN MODE-PRESS START

3.3.2 ERROR HALTS

HALT NO. (B REG).	DESCRIPTION	RESTART ACTION
30E1	CHECK SUM ERROR ON FIRST CARD OF LOADER	RELOAD
30E2	READER DSW ERROR WHEN LOADING LOADER	RELOAD
30E3	CARD 2 OF LOADER DID NOT LOAD	RELOAD
30E4	CAN NOT CLEAR CORE - DUE TO ERROR IN ADDRESSING UPPER CORE.	
30E5	READER CHECK WHEN LOADING MONITOR OR TEST PROGRAM	NPRO THEN PLACE CARDS RUN OUT IN FRONT OF REMAINING DECK AND PRESS START.
30E6	MONITOR DID NOT LOAD	RELOAD
30E7	CHECK SUM WHEN LOADING MONITOR	RELOAD
30E8	READER NOT READY	MAKE READER READY
30E9	INVALID INTERRUPT WHICH WILL NOT RESET	PRESS RESET AND START
30EA	CONSOLE PRINTER HANG UP - BUSY WILL NOT GO OFF	FIX THE CONSOLE PRINTER

******

3.4*** PROGRAM TERMINATION

IF LOOP PROGRAM HAS NOT BEEN SPECIFIED THE PROGRAM WILL TERMINATE AT THE END OF ROUTINE 4. ROUTINE 5 WILL ONLY RUN IF SELECTED.

IF ANY ROUTINE IS SELECTED THAT ROUTINE WILL LOOP AND WILL NOT TERMINATE.

******

3.5*** RESTART

1. SET SWITCHES 0-7 TO 01.
2. TURN ON SWITCH 8.
3. SET DESIRED CONTROL IN SWITCHES 9-14.
4. PRESS INTERRUPT REQUEST KEY.

4. PRINTOUTS

ALL PRINTOUTS ARE IN THE STANDARD FORMAT.

```
APPNN 00RR AAAA                (MESSAGE)
OR
EPPNN 00RR AAAA                (MESSAGE)
```

```
WHERE       A  IDENTIFIES STATUS MESSAGES
            E  IDENTIFIES ERROR MESSAGES
           PP  IS THE PID OF THE PROGRAM CAUSING THE MESSAGE

               THIS WILL BE EITHER 00 FOR MESSAGES
               ORIGINATED BY THE MONITOR OR
               OR FOR MESSAGES ORIGINATED BY
               THIS PROGRAM.

           NN  IS THE MESSAGE SEQUENCE NUMBER
           RR  IS THE ROUTINE NUMBER
         AAAA  IS THE ADDRESS OF THE ROUTINE
      MESSAGE  IS ANY VARIABLE INFORMATION
```

4.1*** STATUS MESSAGES

```
A0000                          NUM  PID  ADRS RELF  LD
                               XXXX XXXX XXXX XXXX
```

THIS MESSAGE IS PRINTED FOLLOWING THE LOADING OF ANY PROGRAM (EXCEPT MONITOR), THE MESSAGE GIVES THE LOAD SEQUENCE NUMBER, THE PROGRAM ID, THE ADDRESS INTO WHICH THE PROGRAM WAS LOADED, AND THE RELOCATION FACTOR.

```
A0001                          SWS  PID
                               XXXX XXXX
```

THIS MESSAGE IS PRINTED EACH TIME A VALID SWITCH ENTRY IS READ BY THE MONITOR. THE MESSAGE CONTAINS THE SWITCH SETTING READ TOGETHER WITH THE PROGRAM ID OF THE PROGRAM INTO WHICH THE CONTENTS OF SWITCHES 8-15 WERE STORED. IF THE SWITCH ENTRY CALLED FOR HALT OF ANY PROGRAM, THE WORD HALT WILL FOLLOW THE MESSAGE.

```
A0500 00RR AAAA
```

ROUTINE START MESSAGE - IF SWITCH 9, FUNCTION 0, IS TURNED ON, THIS MESSAGE WILL BE PRINTED BEFORE THE START OF EACH ROUTINE. R IS THE NUMBER OF THE NEXT ROUTINE AND AAAA IS THE STARTING ADDRESS.

```
A0505 00RR                     NRDY
```

PLOTTER POWER IS TURNED OFF.

```
A0508 00RR                     PROG HALT
```

INDICATES PROGRAM HAS BEEN HALTED BY BIT SWITCH 15 FUNCTION 00 BEING SET ON. SET BIT 15 OFF TO CONTINUE.

4.2*** ERROR MESSAGES

THE DSW IS CHECKED FOR ABSOLUTE CORRECTNESS AT ALL TIMES. IF AN ERROR IS DETECTED ONE OF THE MESSAGES BELOW WILL INDICATE THE PROBLEM. IT IS LEFT TO THE OPERATOR TO ANALYZE THE DSW FOR THE SPECIFIC PROBLEM AREA.

THE PLOTTER DSW

BIT	
0	PLOTTER RESPONSE
1	NOT USED
2	NOT USED
3	NOT USED
4	NOT USED
5	NOT USED
6	NOT USED
7	NOT USED
8	NOT USED
9	NOT USED
10	NOT USED
11	NOT USED
12	NOT USED
13	NOT USED
14	BUSY
15	NOT READY

```
E0001                          SWS  INVLD
                               XXXX
```

THE SETTING OF SWITCHES 4-7 DID NOT EQUAL THE LOAD SEQUENCE NUMBER OF ANY PROGRAM IN CORE.

```
E0003                          OVR CORE
```

THE PROGRAM WHICH THE LOADER WAS ATTEMPTING TO LOAD EXCEEDED AVAILABLE CORE. LOADING WAS TERMINATED.

```
E0004                          CKSUM
```

A CHECK SUM ERROR WAS DETECTED WHILE LOADING A TEST PROGRAM. THIS ERROR OCCURS UNDER ANY OF THE FOLLOWING CONDITIONS.

1. A CARD IS MISSING OR IS OUT OF SEQUENCE.
2. THERE IS AN EXTRA CARD IN THE DECK.
3. THE PUNCHED INFORMATION ON THE CARD IS NOT CORRECT.
4. DATA WAS LOST OR PICKED UP DUE TO A MACHINE MALFUNCTION.
5. DUE TO A CPU MALFUNCTION, THE CHECK SUM WAS NOT CORRECTLY CALCULATED.

WHEN THIS ERROR OCCURS ATTEMPT TO RELOAD THE PROGRAM.

E0005 000N XXXX

THIS ERROR WILL OCCUR IS AN INTERRUPT OCCURS, BUT THE ILSW WAS NOT CORRECT. N IS THE INTERRUPT LEVEL AND XXXX IS THE ILSW. THIS PRINTOUT WILL ONLY OCCUR IF THE INTERRUPT IS RESET BY A BOSC. NO ATTEMPT IS MADE BY THE ERROR ROUTINE TO RESET THE REQUEST BIT.

E0501 000R AAAA WAS S/B DSW
XXXX 0000

STATIC DSW ERROR. THIS DSW WAS SENSED BEFORE GIVING A CONTROL COMMAND TO THE 1627. ANY BITS ON INDICATE AN ERROR. IF BIT 15 IS ON (NOT READY), CHECK FOR 1627 POWER ON.

E0502 000R AAAA WAS S/B BUSY DSW
XXXX 0002

BUSY DSW ERROR. THIS DSW WAS SENSED IMMEDIATELY AFTER A CONTROL COMMAND WAS GIVEN TO THE 1627. IT SHOULD SHOW THE 1627 BUSY. NO OTHER BITS SHOULD BE ON.
IF THIS ERROR OCCURS DURING OVERLAP, SEE NOTE ON I/O TEST INDEX PAGE, P/N 2191291.

E0503 000R AAAA DSW NO INTRPT
XXXX

NO INTERRUPT WAS RECEIVED AFTER A CONTROL COMMAND TO THE 1627. THE DSW WAS SENSED AT LEAST 2 SECONDS AFTER THE 1627 COMMAND.

IF A BUSY DSW ERROR (E0502) IS ALSO INDICATED, THE CONTROL COMMAND WAS NOT RECEIVED BY THE 1627.

E0504 000R AAAA WAS S/B INTRPT DSW

INTERRUPT DSW ERROR. THIS DSW WAS SENSED IN INTERRUPT. IT SHOULD SHOW THE RESPONSE BIT ON AND ALL OTHER BITS OFF.

---

5. COMMENTS

5.1*** ROUTINE 1 (PEN UP-PEN DOWN OCTAGON TEST)

THE PURPOSE OF THIS ROUTINE IS TO TEST THE CAPABILITY OF THE PLOTTER TO EXECUTE THE PEN UP AND PEN DOWN PLOTTER COMMANDS. IN THIS ROUTINE, AS IN THE OTHER PLOTTER PATTERN GENERATING ROUTINES, AN ADDRESS TABLE IS USED TO SELECT THE CORRECT PLOTTER COMMANDS. THE ADDRESS TABLE, IN TURN, POINTS TO A PAIR OF COMPUTER WORDS. ONE WORD CONTAINS A NUMBER WHICH INDICATES THE NUMBER OF TIMES THE OTHER WORD (THE PLOTTER COMMAND) IS TO BE EXECUTED.

THE PATTERN PLOTTED IN THIS FUNCTION TEST CONTAINS TWO ADJACENT OCTAGONS, WHOSE SIDES ARE ONE AND ONE HALF INCHES IN LENGTH. OCTAGON NO. 1 (LEFTMOST OCTAGON) IS PLOTTED IN A CLOCKWISE DIRECTION. OCTAGON NO. 2 (RIGHTMOST OCTAGON) IS PLOTTED IN A COUNTER CLOCKWISE DIRECTION.

THIS ROUTINE IS DESIGNED SO THAT, IF A PEN UP COMMAND IS NOT EXECUTED AS IT SHOULD BE, A LINE WILL BE DRAWN IN THE INNER PORTION OF THE OCTAGON. IF A PEN DOWN COMMAND IS NOT EXECUTED, A SIDE OF THE OCTAGON WILL BE MISSING. FIGURE 1 SHOWS AN EXAMPLE OF THE OUTPUT OF THIS ROUTINE.

5.2*** ROUTINE 2 REGISTRATION TEST

THE FUNCTION OF THIS ROUTINE IS TO DETERMINE IF ANY ADJUSTMENTS ARE NEEDED IN THE PEN OR DRUM MOVEMENT MECHANISMS. FIGURE 2 SHOWS THE PATTERN GENERATED BY THIS ROUTINE. IF ANY OF THE LINES FAIL TO INTERSECT, MECHANICAL ADJUSTMENT OF THE PLOTTER IS NECESSARY.

5.3*** ROUTINE 3 SWING TEST

THE PURPOSE OF THIS ROUTINE IS TO TEST THE ABILITY OF THE PLOTTER TO PLOT LONG LINE SEGMENTS IN VARIOUS DIRECTIONS. THE PATTERN GENERATED BY THIS ROUTINE IS SO DESIGNED, THAT IF PLOTTER COMMANDS ARE NOT EXECUTED OR EXTRA COMMANDS ARE EXECUTED, THE CORNERS OF THE PATTERN WILL NOT JOIN. THIS TEST WILL ALSO SHOW UP ANY MALADJUSTMENT IN THE PEN OR DRUM MECHANISM.

THE METHOD USED IN GENERATING THE PATTERN IS AS FOLLOWS,

A. THE LEFT AND TOP SIDES OF A SERIES OF SQUARES ARE DRAWN AS A CONTINUOUS LINE, VARYING IN SIZE FROM 10 TO 2 INCHES.

B. THE RIGHT AND BOTTOM SIDES OF THE SERIES OF SQUARES ARE DRAWN IN ONE QUARTER INCH LINE SEGMENTS, JOINED TOGETHER, AND TOTALING THE LENGTH OF THE LEFT AND TOP SIDES.

C. ON COMPLETING THE PLOTTING OF THE SQUARES, LINES ARE DRAWN (BOTH SEGMENTED AND CONTINEOUS) THRU THE CORNERS OF THE SQUARES. ALL OF THESE DIAGONAL LINES SHOULD INTERSECT THE CORNERS OF THE SQUARES PERFECTLY.

FIGURE 3 SHOWS THE PLOTTER PATTERN GENERATED BY THIS ROUTINE.

5.4*** ROUTINE 4 STRESS TEST (WINDMILL PATTERN)

THE PURPOSE OF THIS ROUTINE IS TO EXERCISE ALL OF THE MECHANICAL FUNCTIONS OF THE PLOTTER. THIS OBJECTIVE IS ACCOMPLISHED BY PLOTTING A PATTERN OF TRIANGLES, ROUGHLY RESEMBELING A WINDMILL. EACH SIDE OF THE TRIANGLE CONSISTS OF A SERIES OF SHORT SAWTOOTH-LIKE SEGMENTS, WHICH TESTS THE ABILITY OF THE PLOTTER TO PLOT SHORT LINE SEGMENTS WITH ABRUPT CHANGES IN DIRECTION. A SET OF FIVE TRIANGLES IS PLOTTED, THE AXIS IS THEN ROTATED 90 DEGREES AND FIVE MORE TRIANGLES ARE PLOTTED IN THE SAME MANNER UNTIL, FINALLY, FOUR SETS OF TRIANGLES HAVE BEEN PLOTTED. WHEN THE TRIANGLES HAVE BEEN PLOTTED, A LINE IS DRAWN THRU THE INNERMOST POINTS OF THE TRIANGLES. THE RESULTANT PATTERN THEN APPEARS AS A WINDMILL WITH A DIAMOND SHAPED PATTERN CONNECTING THE INNER POINTS OF THE TRIANGLES. THE DIAMOND DESIGN SHOULD INTERSECT ALL OF THE INNER POINTS OF THE TRIANGLES IF THE PLOTTER IS ADJUSTED CORRECTLY. FIGURE 4 SHOWS THE PLOTTER PATTERN GENERATED BY THE ROUTINE.

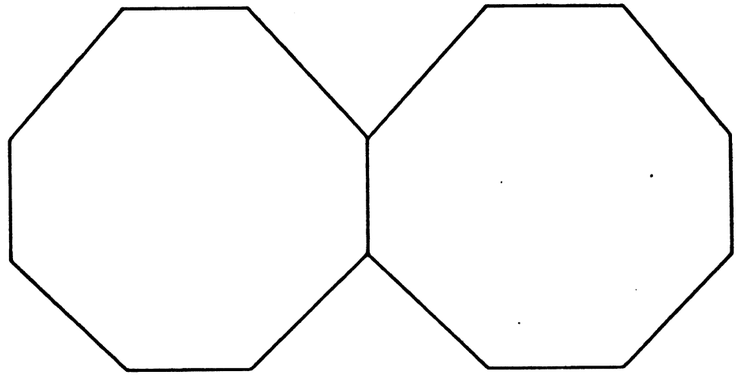
5.5*** ROUTINE 5 SELECT COMMAND

ROUTINE 5 WILL NOT RUN UNLESS SELECTED. THIS ROUTINE ALLOWS THE FIELD ENGINEER TO EXECUTE ANY DESIRED COMBINATION OF TWO PLOTTER COMMANDS. ONE COMMAND IS SET IN SWITCHES 0-5, THE OTHER IS SWITCHES 8-13. THE SWITCHES ARE READ DIRECTLY BY THIS ROUTINE. THUS ANY CHANGE IN SWITCH SETTING WILL RESULT IN AN IMMEDIATE CHANGE IN THE COMMAND. THE PROGRAM WILL RUN IN THIS ROUTINE UNTIL ANOTHER ROUTINE IS SELECTED.

6. APPENDIX

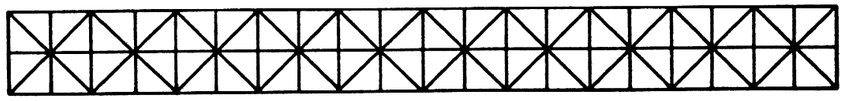
THE FOLLOWING PAGES CONTAIN THE PLOTTER OUTPUT PATTERNS.

FIGURE 1 PATTERN FOR PEN UP/PEN DOWN TEST



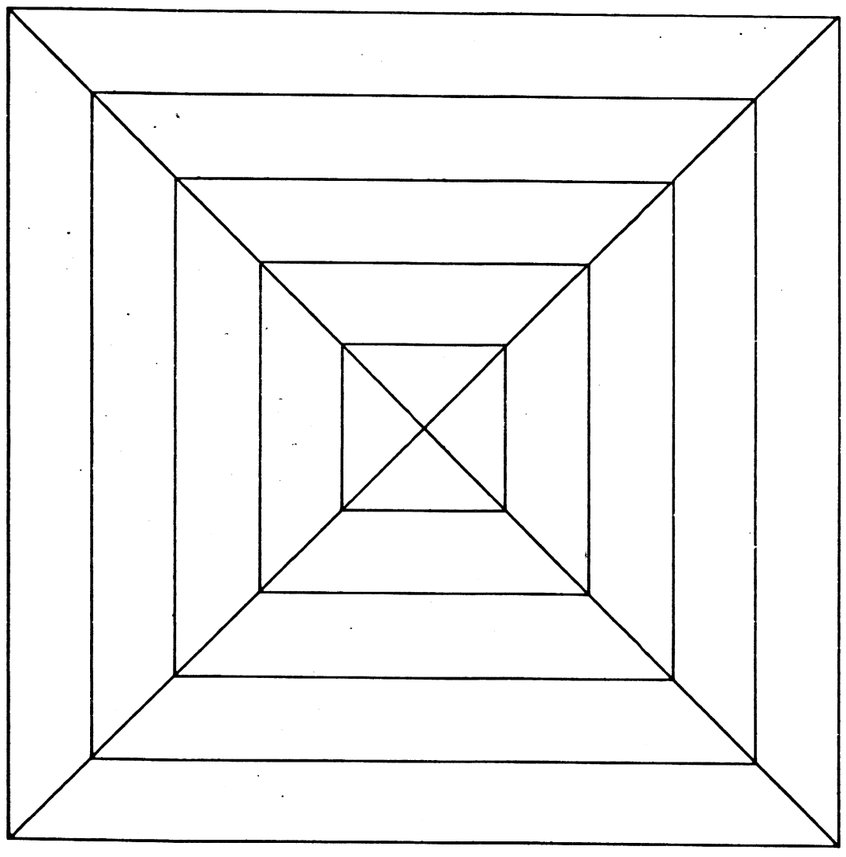
SCALE: 3/4 = 1

FIGURE 2 PATTERN FOR REGISTRATION TEST



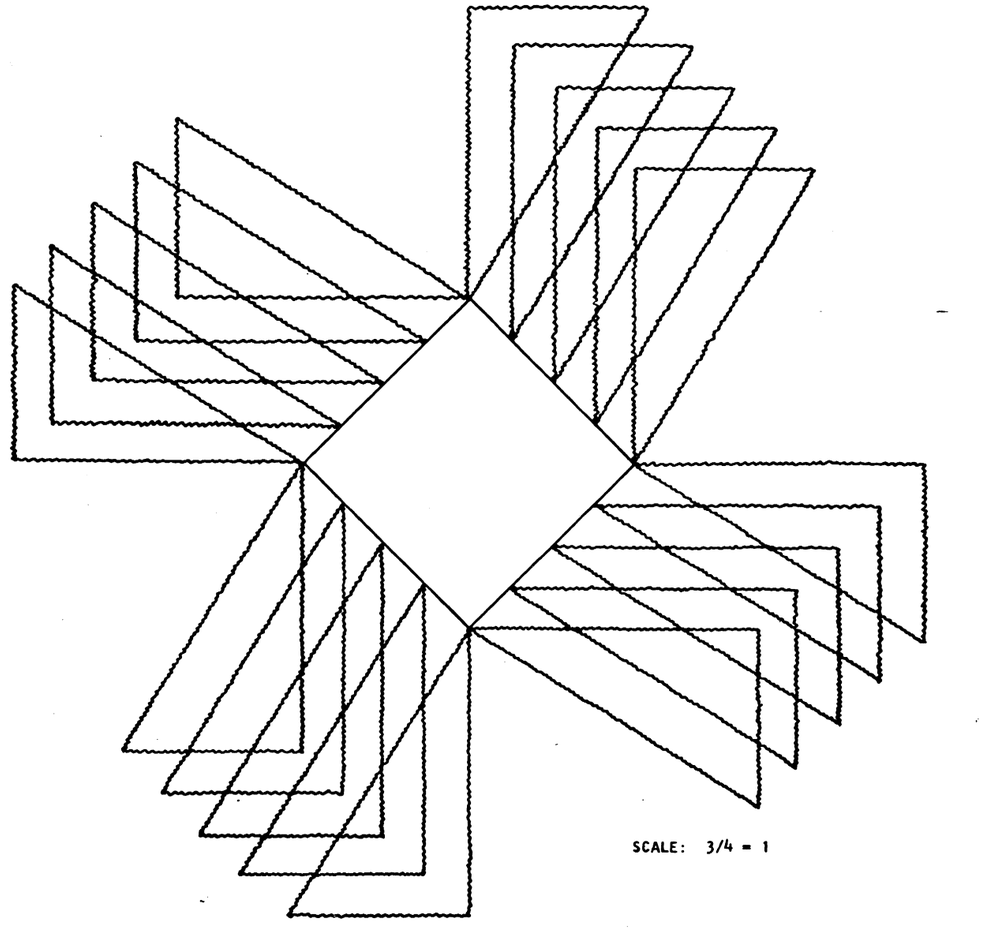
SCALE: 3/4 = 1

FIGURE 3 SWING TEST - PATTERN



SCALE: 3/4 = 1

FIGURE 4 STRESS TEST - WINDMILL PATTERN



SCALE: 3/4 = 1

```
                *****************************************************************  30500020
                *                                                               *  30500030
                *  THIS ENGINEERING CHANGE REFLECTS MAJOR                       *  30500040
                *  CHANGES TO THE DIAGNOSTIC MONITOR.  PREVIOUS                 *  30500050
                *  TESTS WILL NOT RUN WITH DIAGNOSTIC MONITOR II.               *  30500060
                *                                                               *  30500070
                *  THIS TEST WILL NOT RUN WITH PREVIOUS MONITORS.               *  30500080
                *                                                               *  30500090
                *  TESTS PRIOR TO EC 419643 DATED NOV 15, 1966                  *  30500100
                *  WILL NOT OPERATE PROPERLY WITH DIAGNOSTIC                    *  30500110
                *  MONITOR II.                                                  *  30500120
                *                                                               *  30500130
                *****************************************************************  30500140
                *-------------------------------------------------------------*  30500150
                *     1130 - 1627 PLOTTER FUNCTION TEST                       *  30500160
                *-------------------------------------------------------------*  30500170
                *********************************************                   30500180
                *              EQUATE TABLE                 *                   30500190
                *********************************************                   30500200
                *     THIS TABLE EQUATES TEST PROGRAM LABELS   *                30500210
                *     TO THEIR EQUIVALENT DIAGNOSTIC MONITOR   *                30500220
                *     ADDRESSES.                               *                30500230
                *                                              *                30500240
                *----------------------------------------------*                30500250
                *     MONITOR ENTRY ADDRESSES                  *                30500260
                *----------------------------------------------*                30500270
0160 0          BEGIN EQU     /160       BEGIN ROUTINE        *                30500280
0161 0          START EQU     BEGIN&1    SUPERVISOR ROUTINE   *                30500290
0162 0          ERROR EQU     START&1    ERROR LOG ROUTINE    *                30500300
0163 0          LOG   EQU     ERROR&1    STATUS LOG ROUTINE   *                30500310
0164 0          END   EQU     LOG&1      END ROUTINE          *                30500320
                *                                              *                30500330
                *----------------------------------------------*                30500340
                *     MONITOR CONTROL WORD ADDRESSES           *                30500350
                *----------------------------------------------*                30500360
0165 0          RTNSW EQU     END&1      ROUTINE START SW     *                30500370
0166 0          ERLCK EQU     END&2      LOCK ON ERROR CONTROL*                30500380
0167 0          LOGBY EQU     END&3      I/O BUSY SW ADDRS    *                30500390
                *                                              *                30500400
                *----------------------------------------------*                30500410
                *     INTERRUPT TRANSFER VECTOR ADDRESSES      *                30500420
                *----------------------------------------------*                30500430
017A 0          IL0   EQU     /17A       INTERRUPT LEVEL ZERO *                30500440
018A 0          IL1   EQU     IL0&16     INTERRUPT LEVEL ONE  *                30500450
019A 0          IL2   EQU     IL1&16     INTERRUPT LEVEL TWO  *                30500460
01AA 0          IL3   EQU     IL2&16     INTERRUPT LEVEL THREE*                30500470
01BA 0          IL4   EQU     IL3&16     INTERRUPT LEVEL FOUR *                30500480
01B8 0          RQTY  EQU     IL4&1      CONSOLE PRINTER REQUEST               30500490
01BC 0          RQKB  EQU     RQTY&1     USE KEYBOARD REQUEST                  30500500
01BD 0          SVKB  EQU     RQKB&1     KB SERVICE REQUEST                    30500510
                *                                                               30500520
                *****************************************                       30500530
                *              ORG     *&/05DC                                  30500540
                *----------------------------------------------*                30500550
                *     THE MONITOR USES CORE LOCATIONS 0-05DC.  *                30500560
                *     FOR CONTENTS OF THESE ADDRESSES REFER    *                30500570
                *     TO THE DIAGNOSTIC MONITOR LISTING.       *                30500580
                *----------------------------------------------*                30500590
                *                                                               30500600
                *****************************************                       30500610
                *              PROGRAM CONTROL TABLE        *                   30500620
                *****************************************                       30500630
                *                                                               30500640
05DC 0 0305     PRGID DC      /0305      PROGRAM ID                            30500650
05DD 0 0000     RID   DC      *-*        ROUTINE ID                            30500660
05DE 0 0000     RAD   DC      *-*        ROUTINE ADDRS                         30500670
05DF 0 0000     SW0   DC      *-*        PROGRAM CONTROL                       30500680
05E0 0 0000     SW1   DC      *-*        ROUTINE SELECTION                     30500690
```



```
05E1 0 0000     SW2   DC      *-*        LOCK-OUT MONITOR BIT 15               30500700
05E2 0 0000     SW3   DC      *-*                                              30500710
05E3 1 05E8           DC      STRT                                             30500720
05E4 1 05E8           DC      STRT       RESTART ADDRESS                       30500730
05E5 0 0000     MLSCF DC      *-*        SET BY WAIT RTN AND MON               30500740
05E6 0 0000           DC      *-*        SET BY CNTRL AND INRTPT               30500750
05E7 0 FFFF           DC      /FFFF      TERMINATOR                            30500760
                *                                                               30500770
                *****************************************                       30500780
                *              TEST INITIALIZATION          *                   30500790
                *****************************************                       30500800
                *                                                               30500810
05E8 0 4480 0160 BGIN  BSI  I  BEGIN                                            30500820
05EA 1 05DC           DC      PID        PCT ADDRESS                           30500830
                *                                                               30500840
                *----------------------------------------------*                30500850
                *  START OF TEST AND SINGLE PASS INITIALIZATION*                30500860
                *----------------------------------------------*                30500870
                *                                                               30500880
05EB 0 6100     STRT  LDX   1 0          SET TO START WITH                      30500890
05EC 0 69F0           STX   1 RID         FIRST ROUTINE                         30500900
05ED 1 6530 083A      LDX   L1 RECEV                                           30500910
05EF 0 6000 01AA      STX   L1 IL3                                             30500920
05F1 0 4000           BSI     CNTRL                                            30500930
                *                                                               30500940
                *****************************************                       30500950
                *              SEQUENCE CONTROL ROUTINE     *                   30500960
                *****************************************                       30500970
                *     THIS ROUTINE CHECKS SW1 AND CONTROLS     *                30500980
                *     THE SEQUENCE IN WHICH TEST ROUTINES      *                30500990
                *     ARE RUN.                                 *                30501000
                *----------------------------------------------*                30501010
                *                                                               30501020
05F2 0 0000     CNTRL DC      *-*                                              30501030
05F3 0 C0EC           LD      SW1                                              30501040
05F4 1 4C08 05FD      BSC  L  CN20,&     BR IF NO RTN SELECTD                  30501050
                *                                                               30501060
05F6 0 D0E6     CN10  STO     RID        SAVE NEW RTN NUMBER                   30501070
05F7 0 9017           S       RIDCK                                            30501080
05F8 1 4C08 0603      BSC  L  CN30,&     BR IF VALID RTN                       30501090
05FA 0 1810           SPA     16                                               30501100
05FB 0 D054           STO     SW1        IF INVALID RTN GO                     30501110
05FC 0 D0E0           STO     RID         TO RTN ONE                           30501120
                *                                                               30501130
05FD 1 7401 05DD CN20  MDX  L  RID,1     ADV TO NEXT RTN                       30501140
05FF 0 C0DD           LD      RID        CHECK FOR END OF                      30501150
0600 0 90UF           S       RTNOM       NORMAL SEQUENCE        *1             30501160
0601 0 4480 0164      BSI  I  END,-Z     END OF PROGRAM                        30501170
                *                                                               30501180
0603 1 6580 05DD CN30  LDX   I1 RID      XR1&NEW ROUTINE NUMBER                30501190
0605 1 C500 0610      LD      L1 RTBL-1  FETCH RTN ADDRS                       30501200
0607 0 D005           STO     RAD        STORE NEW RTN ADDRS                   30501210
0608 0 D03D           STO     MLSCF&1    SET MLSCF FOR RETURN                  30501220
0609 0 D400 0165      STO  L  RTNSW      SET RTN START SW                      30501230
0608 1 4400 07FE      BSI  L  CKLK       CHECK LOCK-OUT                        30501240
060D 1 4C80 05E5      BSC  I  MLSCF&1    CONTINUE WITHOUT MONITOR              30501250
                *                                                               30501260
060F 0 0005     RIDCK DC      LRTN-RTTBL&1                                     30501270
0610 0 0004     RTNOM DC      NRTN-RTTBL&1                          *2         30501280
                *----------------------------------------------*                30501290
                *     ROUTINE ADDRESS TABLE                    *                30501300
                *----------------------------------------------*                30501310
0611 1 0616     RTTBL DC      RT1        PEN UP-DOWN OCTAGON                   30501320
0612 1 062A           DC      RT2        REGISTRATION TEST                     30501330
0613 1 0673           DC      RT3        SWING TEST                            30501340
0614 1 06F3     NRTN  DC      RT4        WINDMILL TEST                         30501453
0615 1 0763     LRTN  DC      RT5        MANUAL CMD SELECTION                  30501360
                *                                                               30501370
```

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                        ********************************************
                        *****       ROUTINE 1- OCTAGON PEN UP-DOWN
                        ********************************************
                        *
0616 1 4400 07DF RT1    BSI  L  READY                              SC
0618 1 C400 0871        LD   L  K0150       CONSTANT OF 150
061A 0 62F1             LDX     2 -15       INSTR CT EQ 1.5 INCH
061B 1 D600 085D OCTGN  STO  L2 NN615       STORE MOVE COUNT
061D 0 7202             MDX     2 2
061E 0 70FC             MDX     OCTGN       FINISH STORING COUNT
061F 1 6500 0877        LDX  L1 RT1ST
0621 1 6D00 0874        STX  L1 LOOK
0623 1 4400 0792        BSI  L  DISP        CALL DISPATCH RTNE     SC
                        *
0625 1 7401 0874        MDX  L  LOOK,1      BUMP INSTR ADDR PNTR
0627 1 4400 0792        BSI  L  DISP        CALL DISPATCH RTNE     SC
0629 0 40C8             BSI     CNTRL       RETURN TO CONTROL RTN
                        *
                        ********************************************
                        *****       ROUTINE 2- REGISTRATION TEST **
                        ********************************************
                        *
062A 1 4400 07DF RT2    BSI  L  READY                              SC
                        *
062C 0 6700 0064        LDX  L3 100         INITIALIZE INSTR CTRS
062E 1 6F00 085C        STX  L3 NW          TO 100, EQUAL TO
0630 1 6F00 085A        STX  L3 SW          1 INCH OF PLTR O/P.
0632 1 6F00 084E        STX  L3 NN
0634 1 6F00 0850        STX  L3 S
0636 1 6F00 0856        STX  L3 NE
0638 1 6F00 0858        STX  L3 SE
063A 0 6700 0032        LDX  L3 50          INITIALIZE INSTR CTRS
063C 1 6F00 0852        STX  L3 EE          TO 50, EQUAL TO
063E 1 6F00 0854        STX  L3 WW          0.5 INCH OF PLTR O/P.
                        *
0640 1 6500 08CA        LDX  L1 RT2ST       STRING ADDR
0642 1 6D00 0874        STX  L1 LOOK        RT TWO STRING
0644 0 63FB             LDX     3 -5
0645 1 6F00 086D        STX  L3 EXTRA       CTR STG
0647 1 4400 0792        BSI  L  DISP        CALL DISPATCH RTNE     SC
0649 1 7401 0874        MDX  L  LOOK,1      BUMP INSTR ADDR PNTR
064B 0 6700 03E8        LDX  L3 1000        LOAD 10 INCH PLOT
064D 1 6F00 0852        STX  L3 EE          MOVEMENT TO EAST
064F 1 4400 0792 REG01  BSI  L  DISP        CALL DISPATCH RTNE     SC
                        *
0651 1 74FE 0874        MDX  L  LOOK,-2     BACK UP ADDR POINTER
0653 1 7401 086D        MDX  L  EXTRA,1
0655 0 70F9             MDX     REG01
0656 1 7403 0874        MDX  L  LOOK,3
0658 0 63FB             LDX     3 -5
0659 1 6F00 086D        STX  L3 EXTRA
                        *
065B 1 4400 0792 REG02  BSI  L  DISP        CALL DISPATCH RTNE     SC
065D 1 74FE 0874        MDX  L  LOOK,-2     BACK UP ADDR POINTER
065F 1 7401 0860        MDX  L  EXTRA,1
0661 0 70F9             MDX     REG02
                        *
0662 0 63F6             LDX     3 -10       LOAD XR 3
0663 1 6F00 086D        STX  L3 EXTRA
0665 1 7403 0874        MDX  L  LOOK,3
                        *
0667 1 4400 0792 REG03  BSI  L  DISP        CALL DISPATCH RTNE     SC
0669 1 74F8 0374        MDX  L  LOOK,-8     BACK UP ADDR POINTER
066B 1 7401 086D        MDX  L  EXTRA,1
066D 0 70F9             MDX     REG03
                        *
066E 1 7409 0874        MDX  L  LOOK,9      BUMP ADDR POINTER
0670 0 6332             LDX     3 50
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30501990
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0671 1 6F00 0850        STX  L3 S
0673 0 6700 03E8        LDX  L3 1000
0675 1 6F00 0854        STX  L3 WW
0677 1 4400 0792        BSI  L  DISP        CALL DISPATCH RTNE     SC
                        *
0679 1 4400 05F2        BSI  L  CNTRL       RETURN TO CONTROL RTN
                        *
                        ********************************************
                        *****       ROUTINE 3- SWING TEST *********
                        ********************************************
                        *
0678 1 44C0 07DF RT3    BSI  L  READY                              SC
067D 0 6328             LDX     3 40
067E 0 682C             STX     3 SWNG2&1   LINE LENGTH MODIFIED PR01
067F 0 6700 00C8        LDX  L3 200
0681 1 6F00 084E        STX  L3 NN
0683 0 6364             LDX     3 100
0684 1 6F00 0856        STX  L3 NE
0686 0 6332             LDX     3 50
0687 1 6F00 0852        STX  L3 EE
0689 1 6500 08E9        LDX  L1 RT3ST       LOAD ADDR STRING ADDR
068B 1 6D00 0874        STX  L1 LOOK        STO IN POINTER CTL WD
068D 1 4400 0792        BSI  L  DISP                               SC
068F 1 7401 0874        MDX  L  LOOK,1      BUMP INSTR ADDR PNTR
0691 0 6700 01F4        LDX  L3 500
0693 1 6F00 085C        STX  L3 NW
0695 1 6F00 0858        STX  L3 SE
0697 1 6F00 085A        STX  L3 SW
0699 0 6319             LDX     3 25
069A 1 6F00 0850        STX  L3 S
069C 1 6F00 0854        STX  L3 WW
069E 0 6700 03E8        LDX  L3 1000
06A0 1 6F00 084E        STX  L3 NN
06A2 1 6F00 0852        STX  L3 EE
06A4 0 6305             LDX     3 5
06A5 1 6F00 0875        STX  L3 SQRCT       INITIALIZE SQUARE CTR
                        *
06A7 0 6302 SWNG1       LDX     3 2
06A8 1 6F00 0876        STX  L3 TRICT
06AA 0 6700 0028 SWNG2  LDX  L3 40          LINE LENGTH CTL        PM01
06AC 1 6F00 086D        STX  L3 EXTRA
06AE 1 4400 0792 SWNG3  BSI  L  DISP        CALL DISPATCH RTNE     SC
06B0 1 74FF 0874        MDX  L  LOOK,-1     BACK UP ADDR POINTER
06B2 1 74FF 086D        MDX  L  EXTRA,-1
06B4 0 70F8             MDX     SWNG3       PLT NXT LINE SEGMENT
06B5 1 7402 0874        MDX  L  LOOK,2
06B7 1 74FF 0876        MDX  L  TRICT,-1
06B9 0 70F0             MDX     SWNG2
06BA 1 749C 084E        MDX  L  NN,-100
06BC 1 749C 084E        MDX  L  NN,-100
06BE 0 1000             NOP
06BF 1 749C 0852        MDX  L  EE,-100
06C1 1 749C 0852        MDX  L  EE,-100
06C3 0 1000             NOP
06C4 1 74F9 06AB        MDX  L  SWNG2&1,-8  ADJUST LINE LENGTH
06C6 0 1000       KEEP  NOP                 MDX WILL HOP THIS
06C7 1 4400 0792        BSI  L  DISP        CALL DISPATCH RTNE     SC
06C9 1 74F7 0874        MDX  L  LOOK,-9
06CB 1 74FF 0875        MDX  L  SQRCT,-1    REDUCE SQUARE CTR
06CD 0 7039             MDX     SWNG1       RE-INITIALIZE
06CE 1 740A 0874        MDX  L  LOOK,10     BUMP INSTR ADDR PNTR
06D0 0 6700 03E8        LDX  L3 1000
06D2 1 6F00 084E        STX  L3 NN
06D4 1 6F00 0850        STX  L3 S
06D6 1 4400 0792        BSI  L  DISP        CALL DISPATCH RTNE     SC
06D8 1 7401 0874        MDX  L  LOOK,1      BUMP INSTR ADDR PNTR
06DA 0 6302             LDX     3 2
06DB 1 6F00 0876        STX  L3 TRICT
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06DD 0 6319              LDX   3 25                                    30502740
06DE 1 6F00 085C         STX   L3 NW                                   30502750
06E0 1 6F00 0856         STX   L3 NE                                   30502760
06E2 0 6314        OLD   LDX   3 20                                    30502770
06E3 1 6F00 086D         STX   L3 EXTRA                                30502780
06E5 1 4400 0792   SWNG4 BSI   L  DISP       CALL DISPATCH RTNE   SC  30502790
06E7 1 74FF 0874         MDX   L  LOOK,-1                              30502800
06E9 1 74FF 086D         MDX   L  EXTRA,-1                             30502810
06EB 0 70F9              MDX      SWNG4                                30502820
                         *                                             30502830
06EC 1 7402 0874         MDX   L  LOOK,2                               30502840
06EE 1 74FF 0876         MDX   L  TRICT,-1                             30502850
06F0 0 70F1              MDX      OLD                                  30502860
                         *                                             30502870
06F1 1 4400 05F2         BSI   L  CNTRL      RETURN TO CONTROL RTN     30502880
                         *                                             30502890
                         *********************************************30502900
                         *****        ROUTINE 4- WINDMILL DESIGN ****  30502910
                         *********************************************30502920
                         *                                             30502930
06F3 1 4400 07DF   RT4   BSI   L  READY      CHECK STATUS         SC  30502940
06F5 0 6700 015F         LDX   L3 351        SET COUNT                 30502950
06F7 1 6F00 0856         STX   L3 NE                                   30502960
06F9 1 6F00 084E         STX   L3 NN                                   30502970
06FB 1 6700 0906         LDX   L3 RT4ST      LD RT4 CMD STRNG ADDR     30502980
06FD 1 6F00 0874         STX   L3 LOOK                                 30502990
06FF 1 4400 0792         BSI   L  DISP       CALL DISPATCH RTNE   SC  30503000
0701 1 7401 0874         MDX   L  LOOK,1     BUMP INSTR ADDR PNTR      30503010
0703 0 62F1              LDX   2 -15                                   30503020
0704 1 C400 086F         LD    L  K0002      MOVE COUNT                30503030
0706 1 D600 085D   WHIL1 STO   L2 NN&15       STORE MOVE COUNT          30503040
0708 0 7202              MDX   2 2                                     30503050
0709 0 70FC              MDX      WHIL1      FINISH LOADING COUNT      30503060
070A 1 6700 0856         LDX   L3 NE                                   30503070
070C 0 4019              BSI      TCNTL                                30503080
                         *                                             30503090
070D 1 6700 0858         LDX   L3 SE                                   30503100
070F 0 4016              BSI      TCNTL                                30503110
                         *                                             30503120
0710 1 6700 085A         LDX   L3 SW                                   30503130
0712 0 4013              BSI      TCNTL                                30503140
                         *                                             30503150
0713 1 6700 085C         LDX   L3 NW                                   30503160
0715 0 4010              BSI      TCNTL                                30503170
                         *                                             30503180
0716 0 6700 00C8         LDX   L3 200                                  30503190
0718 1 6F00 085C         STX   L3 NW                                   30503200
071A 1 6F00 0856         STX   L3 NE                                   30503210
071C 1 6F00 0858         STX   L3 SE                                   30503220
071E 1 6F00 085A         STX   L3 SW                                   30503230
0720 1 7401 0874         MDX   L  LOOK,1     BUMP INSTR ADDR PNTR      30503240
                         *                                             30503250
0722 1 4400 0792         BSI   L  DISP       DRAW SQUARE          SC  30503260
0724 1 4400 05F2         BSI   L  CNTRL      RETURN TO CONTROL RTN     30503270
                         *                                             30503280
                         *-------------------------------------------  30503290
                         *****        TRIANGLE CONTROL **************  30503300
                         *-------------------------------------------  30503310
                         *                                             30503320
0726 0 0000        TCNTL DC      *-*                                SE 30503330
0727 0 6829              STX   3 CHG1&1                                30503340
0728 0 682F              STX   3 CHG2&1                                30503350
0729 0 6835              STX   3 CHG3&1                                30503360
072A 0 6305              LDX   3 5           START TRIANGLE ONE        30503370
072B 1 6F00 0876         STX   L3 TRICT      TRIANGLE COUNT            30503380
                         *                                             30503390
072D 0 6700 0056   RUN   LDX   L3 86        START TRIANGLE            30503400
072F 1 6F00 086D         STX   L3 EXTRA                                30503410
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                         *                                             30503420
0731 1 4400 0792   SIDE1 BSI   L  DISP       PLOT SIDE ONE        SC  30503430
0733 1 74FE 0874         MDX   L  LOOK,-2                              30503440
0735 1 74FF 086D         MDX   L  EXTRA,-1                             30503450
0737 0 70F9              MDX      SIDE1                                30503460
                         *                                             30503470
0738 1 7403 0874         MDX   L  LOOK,3                               30503480
073A 0 6700 002B         LDX   L3 43                                   30503490
073C 1 6F00 086D         STX   L3 EXTRA                                30503500
                         *                                             30503510
073E 0 4053        SIDE2 BSI      DISP       PLOT SIDE TWO        SC  30503520
073F 1 74FE 0874         MDX   L  LOOK,-2                              30503530
0741 1 74FF 086D         MDX   L  EXTRA,-1                             30503540
0743 0 70FA              MDX      SIDE2                                30503550
                         *                                             30503560
0744 1 7403 0874         MDX   L  LOOK,3                               30503570
0746 0 6700 0056         LDX   L3 86                                   30503580
0748 1 6F00 086D         STX   L3 EXTRA                                30503590
                         *                                             30503600
074A 0 4047        SIDE3 BSI      DISP       PLOT SIDE THREE      SC  30503610
0748 1 74FD 0874         MDX   L  LOOK,-3                              30503620
074D 1 74FF 086D         MDX   L  EXTRA,-1                             30503630
074F 0 70FA              MDX      SIDE3                                30503640
                         *                                             30503650
0750 1 7430 0856   CHG1  MDX   L  NE,48                                30503660
0752 1 7404 0874         MDX   L  LOOK,4                               30503670
0754 1 74FF 0876         MDX   L  TRICT,-1   TRIANGLE COUNT            30503680
0756 0 7006              MDX      TOP                                  30503690
                         *                                             30503700
0757 1 7400 0856   CHG2  MDX   L  NE,-48                               30503710
0759 1 7403 0874         MDX   L  LOOK,3                               30503720
075B 1 4C80 0726         BSC   1  TCNTL                           SX   30503730
                         *                                             30503740
075D 0 4034        TOP   BSI      DISP                               SC 30503750
075E 1 7400 0856   CHG3  MDX   L  NE,-48                               30503760
0760 1 74F3 0874         MDX   L  LOOK,-13                             30503770
0762 0 70CA              MDX      RUN        DO ANOTHER TRIANGLE       30503780
                         *                                             30503790
                         *********************************************30503800
                         *****        ROUTINE 5- MANUAL CONTROL        30503810
                         *********************************************30503820
                         *                                             30503830
0763 0 4480 0163   RT5   BSI   I  LOG        TYPE SET SWS MSG          30503840
0765 1 0780              DC       SWMSG      TABLE ADDRESS             30503850
0766 1 6700 094B   RT5E  LDX   L3 RT5ST      PLACE CNTR ADDR IN        30503860
0768 1 6F00 0874         STX   L3 LOOK       O/P ROUTINE               30503870
076A 1 7400 078C         MDX   L  RT5SW,0    SKIP IF FIRST ENTRY       30503880
076C 0 7013              MDX      RT5C       BR IF 2ND ENTRY           30503890
                         *                                             30503900
076D 0 081C        RT5A  XIO      SWCOM      READ CONS SWS             30503910
076E 0 C01D              LD       RT5SW                                30503920
076F 0 1801              SRA      1          CHECK BIT 14              30503930
0770 0 4804              BSC      E          SKIP IF NOT ON            30503940
0771 0 7001              MDX      RT5B       BR IF SW 14 ON            30503950
0772 0 7007              MDX      RT5D       BR IF NOT ON              30503960
                         *                                             30503970
0773 0 1809        RT5B  SRA      9          CLEAR LOWER COMND         30503980
0774 0 100A              SLA      10         SHIFT COMND TO HIGH ORDER 30503990
0775 1 0400 0965         STO   L  SBSW2      STORE COMND               30504000
0777 1 4420 0792         BSI   L  DISP,Z     GO TO DISPATCH            30504010
0779 0 70EC              MDX      RT5E                                 30504020
                         *                                             30504030
077A 1 6700 076D   RT5D  LDX   L3 RT5A       RETURN POINT              30504040
077C 1 6F00 05E6         STX   L3 MLSCFE1                             30504050
077E 1 4C00 0789         BSC   L  WAIT4      CHK SW1 AND GO TO MON     30504060
                         *                                             30504070
0780 0 C00B        RT5C  LD       RT5SW      LOAD SW ENTRY             30504080
0781 0 1802              SRA      2          CLEAR BITS 14 AND 15      30504090
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0782 0 100A            SLA     10          SHIFT COMND TO HIGH ORDER   30504100
0783 1 D400 0865       STO  L  SBSW2       STORE COMND                 30504110
0785 0 6300            LDX  3  0                                       30504120
0786 0 6805            STX  3  RT5SW       CLEAR SW FOR NEXT ENTRY     30504130
0787 1 4420 0792       BSI  L  DISP,Z      GO TO DISPATCH              30504140
0789 0 70DC            MDX     RT5E                                    30504150
                       *                                               30504160
078A   0000            BSS  E  0                                       30504170
078A 1 078C    SWCOM   DC      RT5SW       READ CONS SW IOCC           30504180
078B 0 3A00            DC      /3A00                                   30504190
078C 0 0000    RT5SW   DC      *-*         SWITCH SETTING              30504200
078D 0 0001    SWMSG   DC      1           MSG NO                      30504210
078E 0 0000            DC      0                                       30504220
078F 0 0000            DC      0                                       30504230
0790 1 0967            DC      ASETS       ALPHA MESSAGE ADDR          30504240
0791 0 0000            DC      0                                       30504250
                       *                                               30504260
                       ********************************************  30504270
                       *****       DISPATCH CONTROL  **************  30504280
                       ********************************************  30504290
                       *                                               30504300
0792 0 0000    DISP    DC      *-*         RETURN ADDR           SE    30504310
0793 1 6580 0874       LDX  I1 LOOK        RESTORE XR 1                30504320
0795 0 CD80 0000       LDD  I1 0           GET COUNT & DIRECTION       30504330
0797 1 DC00 086A       STD  L  COUNT                                   30504340
                       *                                               30504350
0799 1 4C98 0792       BSC  I  DISP,&-     RETRN TO PROG ON ZERO  SX   30504360
0798 0 4043    PLOT    BSI     READY                                   30504370
079C 1 0C00 0868       XIO  L  MARK        MOVE COMMAND                30504380
079E 1 0C00 0866       XIO  L  SENSE       SENSE DSW                   30504390
07A0 1 D400 0836       STO  L  BDSW        SAVE ERROR DSW              30504400
                       *                                               30504410
                       ********************************************  30504420
                       *           INTERRUPT WAIT ROUTINE            30504430
                       ********************************************  30504440
                       *     THIS SUBROUTINE WAITS FOR INTERRUPT.      30504450
                       *     WHEN THE INTERRUPT IS RECEIVED IT WILL    30504460
                       *     CHECK THE ROUTINE SELECTION SWITCH.       30504470
                       *     IF A NEW ROUTINE HAS BEEN SELECTED IT     30504480
                       *     WILL BRANCH TO THE CONTROL ROUTINE.       30504490
                       *-----------------------------------------      30504500
                       *                                               30504510
07A2 0 6500 1000       WAIT    LDX  L1 /1000       SET INTERRUPT       30504520
07A4 0 6939                    STX     1 WCNT       WAIT CNT            30504530
                       *                                               30504540
07A5 1 6500 07AE       WAIT1   LDX  L1 WAIT3                           30504550
07A7 1 7400 05E6               MDX  L  MLSCF&1,0   CHECK FOR INTR      30504560
07A9 0 700F                    MDX     WAIT4       BR IF INTERRUPT OCCURED 30504570
                       *                                               30504580
07AA 1 6000 05E5       WAIT2   STX  L1 MLSCF       SET RETURN ADDRESS  30504590
07AC 1 4400 07FE               BSI  L  CKLK        CHECK LOCK-OUT      30504600
                       *                                               30504610
07AE 1 74FF 07DE       WAIT3   MDX  L  WCNT,-1     DECREMENT WAIT CNT  30504620
07B0 0 70F4                    MDX     WAIT1                           30504630
                       *                                               30504640
0781 1 C400 0836               LD   L  BDSW        CK BUSY DSW         30504650
07B3 1 F400 0837               EOR  L  BDSW&1      CHECK AGAINST EXPECTED  30504660
07B5 1 4420 0813               BSI  L  ERR2,Z                          30504670
                       *                                               30504680
07B7 1 4C00 081A               BSC  L  ERR3        PRINT NO INTRPT MSG 30504690
                       *                                               30504700
07B9 1 C4C0 05E0       WAIT4   LD   L  SW1                             30504710
07BB 1 4C08 07C1               BSC  L  WAIT5,&     BCH NO RTN SELECTED 30504720
07BD 1 9400 05DD               S    L  RID         CK FOR NEW ROUTINE  30504730
07BF 1 4420 05F2               BSI  L  CNTRL,Z     BR IF NEW RTN       30504740
07C1 1 4400 07FE       WAIT5   BSI  L  CKLK        CHECK LOCK-OUT      30504750
07C3 1 4C80 05E6               BSC  I  MLSCF&1     CONTINUE WITHOUT MONITOR  30504760
                       *                                               30504770
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07C5 0 C070            CONT    LD      BDSW        CK BUSY DSW         30504780
07C6 0 F070                    EOR     BDSW&1                          30504790
07C7 1 4420 0813               BSI  L  ERR2,Z                          30504800
                       *                                               30504810
07C9 0 C06E                    LD      IDSW        CK INTERRUPT DSW    30504820
07CA 0 F06E                    EOR     IDSW&1                          30504830
07CB 1 4C20 081E               BSC  L  ERR4,Z                          30504840
                       *                                               30504850
07CD 1 6580 05DD       CONT1   LDX  I1 RID         CK FOR RTN 5        30504860
07CF 0 71FC                    MDX     1 -4                            30504870
07D0 0 7095                    MDX     RT5E        BR IF RTN 5         30504880
                       *                                               30504890
07D1 1 C400 05DF       CONT2   LD   L  SW0         LD SW0              30504900
07D3 0 EC80 0166               OR   I  ERLCK       COMB WITH MONITOR SW0   30504910
07D5 0 100A                    SLA     10          CHECH LOCK SW       30504920
07D6 1 4C28 079B               BSC  L  PLOT,&Z     LOOP ON FUNC IF BR  30504930
                       *                                               30504940
07D8 1 74FF 086A               MDX  L  COUNT,-1    REDUCE COUNT        30504950
07DA 0 70C0                    MDX     PLOT                            30504960
07DB 1 7401 0874               MDX  L  LOOK,1      BUMP INSTR ADDR PNTR    30504970
07DD 0 7085                    MDX     NEXT                            30504980
                       *                                               30504990
                       *                                               30505000
07DE 0 0000            WCNT    DC      *-*         WAIT COUNT STORED HERE  30505010
                       *                                               30505020
                       ********************************************  30505030
                       *****       CHECK READY  *******************  30505040
                       ********************************************  30505050
                       *                                               30505060
07DF 0 0000            READY   DC      *-*         RETURN ADDR           SE  30505070
07E0 1 0C00 0866               XIO  L  SENSE       SENSE DSW           30505080
07E2 0 D051                    STD     DSW         SAVE DSW            30505090
07E3 1 4C98 07DF               BSC  I  READY,&-    RETURN IF READY     30505100
07E5 1 7400 0812               MDX  L  LKSW,0      IS LOCK-OUT MON SW SET  30505110
07E7 0 70F8                    MDX     READY&1     * YES               30505120
07E8 0 C85D                    LDD     MSG1                            30505130
07E9 0 6101                    LDX  1  1                               30505140
07EA 0 6203                    LDX  2  3                               30505150
07EB 0 4037                    BSI     ELOG        PRINT ERROR MSG     30505160
                       *                                               30505170
07EC 0 6500 7000               LDX  L1 /7000                           30505180
07EE 0 69EF                    STX  1  WCNT                            30505190
                       *                                               30505200
07EF 1 0C00 0866       NOT     XIO  L  SENSE       SENSE DSW           30505210
07F1 1 4C98 07DF               BSC  I  READY,&-    RETURN TO PROG ON 0  SX  30505220
07F3 1 6500 07EF               LDX  L1 NOT         GET MLSCF           30505230
                       *                                               30505240
07F5 1 74FF 07DE               MDX  L  WCNT,-1                         30505250
07F7 0 7001                    MDX     NOT1                            30505260
07F8 0 70E7                    MDX     READY&1     REPRINT MSG         30505270
                       *                                               30505280
07F9 1 6000 05E6       NOT1    STX  L1 MLSCF&1     SET MLSCF           30505290
07FB 1 4400 07FE               BSI  L  CKLK        CHECK LOCK-OUT      30505300
07FD 0 70F1                    MDX     NOT         ********************  30505310
                       *                                               30505320
                       *                                               30505330
                       *           CHECK LOCK-OUT OF MONITOR           30505340
                       *                                               30505350
                       *           IF BIT 15 OF FUNCTION 2 IS SET      30505360
                       *           MONITOR WILL BE BYPASSED TO CAUSE THE  30505370
                       *           PROGRAM TO ISSUE XIO COMMANDS AS    30505380
                       *           FAST AS POSSIBLE TO FIND A SLOW OR  30505390
                       *           BINDING PLOTTER                     30505400
                       *                                               30505410
                       ********************************************  30505420
07FE 0 0000            CKLK    DC      *-*         RTN ENTRY           30505430
07FF 1 7400 0812               MDX  L  LKSW,0      IS LOCK-OUT SW SET  30505440
0801 0 7009                    MDX     CKLK4       * YES               30505450
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0802 1 C400 05E1          LD   L  SW2        GET FUNCTION 2 AND CHECK   30505460
0804 0 4804               BSC    E           IS LOCK-OUT SET            30505470
0805 0 7002               MDX    CKLK2       * YES                      30505480
0806 0 4480 0161    CKLK1 BSI  I  START       * NO. GO TO MONITOR        30505490
                    *                                                    30505500
0808 0 6809         CKLK2 STX    LKSW        SET LOCK-OUT SWITCH        30505510
0809 1 4C80 07FE    CKLK3 BSC  I  CKLK        RTN EXIT TO PROGRAM        30505520
                    *                                                    30505530
080B 1 C400 05E1    CKLK4 LD   L  SW2        GET FUNCTION 2 TO CHECK    30505540
080D 0 4804               BSC    E           IS LOCK-OUT SW OFF         30505550
080E 0 70FA               MDX    CKLK3       * NO                       30505560
080F 0 1010               SLA    16          CLEAR ACC AND              30505570
0810 0 D001               STO    LKSW        * LOCK SWITCH              30505580
0811 0 70F4               MDX    CKLK1       * YES                      30505590
                    *                                                    30505600
0812 0 0000         LKSW  DC     *-*         NON-ZERO, LOCK OUT MON     30505610
                    *                                                    30505620
                    ********************************************       30505630
                    *****        ERROR MESSAGE SETUP  *********       30505640
                    ********************************************       30505650
                    *                                                    30505660
0813 0 0000         FRR2  DC     *-*         SET UP BUSY DSW ERR MSG    30505670
0814 0 6102               LDX    1 2                                     30505680
0815 0 620C               LDX    2 /000C                                 30505690
0816 0 C831               LDD    MSG2                                    30505700
0817 0 400B               BSI    ELOG                                    30505710
0818 1 4C80 0813          BSC  I ERR2                                    30505720
                    *                                                    30505730
081A 0 6103         ERR3  LDX    1 3         SET UP NO INTRPT ER MSG    30505740
0818 0 6201               LDX    2 /0001                                 30505750
081C 0 C82D               LDD    MSG3                                    30505760
081D 0 7003               MDX    ERRX                                    30505770
                    *                                                    30505780
081E 0 6104         ERR4  LDX    1 4         SET UP INTRPT DSW ER MSG   30505790
081F 0 6230               LDX    2 /0030                                 30505800
0820 0 C82B               LDD    MSG4                                    30505810
0821 0 4001         ERRX  BSI    ELOG                                    30505820
0822 0 70AA               MDX    CONT1                                   30505830
                    *                                                    30505840
                    *                                                    30505850
                    ********************************************       30505860
                    *            ERROR MESSAGE ROUTINE                   30505870
                    ********************************************       30505880
                    *     THIS ROUTINE PRINTS ALL THE ERROR MESSAGES.    30505890
                    *     UPON ENTRY THE MSG NO. MUST BE SET IN XR1,     30505900
                    *     THE DATA ID IN XR2, AND THE ALPHA ADDRS IN     30505910
                    *     THE ACCUM AND EXT.                             30505920
                    *-----------------------------------------------     30505930
                    *                                                    30505940
0823 0 0000         ELOG  DC     *-*                                     30505950
0824 0 690A               STX    1 EMSG      SET MSG NUMBER             30505960
0825 0 6A0B               STX    2 EMSG&2    SET DATA ID                30505970
0826 0 D80B               STD    EMSG&3      SET ALPHA ADDRS            30505980
0827 0 4480 0162          BSI  I ERROR       PRINT ERROR MSG            30505990
0829 1 082F               DC     EMSG                                    30506000
082A 1 0798         LOOP  DC     PLOT        LOOP ADDRS                 30506010
0828 1 4C80 0823          BSC  I ELOG        RETURN                     30506020
                    *                                                    30506030
                    *     ERROR MESSAGE TABLE                            30506040
082E    0001              BSS  E 1                                       30506050
082F 0 0000         EMSG  DC     *-*         MESSAGE NUMBER             30506060
0830 0 0000               DC     /0000       HEX/DEC SW                 30506070
0831 0 0000               DC     *-*         DATA I/D                   30506080
0832 0 0000               DC     *-*         ALPHA ADDRS1               30506090
0833 0 0000               DC     *-*         ALPHA ADDRS2               30506100
                    *                                                    30506110
0834 0 0000         DSW   DC     *-*         DSW WAS                    30506120
0835 0 0000               DC     /0000       DSW S/B                    30506130
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0836 0 0000         BDSW  DC     *-*         BUSY DSW WAS               30506140
0837 0 0002               DC     /0002       BUSY DSW S/B               30506150
0838 0 0000         IDSW  DC     *-*         INTERRUPT DSW WAS          30506160
0839 0 8000               DC     /8000       INTERRUPT DSW S/B          30506170
                    *                                                    30506180
                    ********************************************       30506190
                    *****        INTERRUPT ROUTINE ************       30506200
                    ********************************************       30506210
                    *                                                    30506220
083A 0 0000         RECEV DC     *-*         RETURN ADDR          SE    30506230
083B 1 0C00 0866          XIO  L SENSE       SENSE DSW                  30506240
083D 0 1000               NOP                USE FOR TRAP               30506250
083E 0 D0F9               STO    IDSW        SAVE DSW ERROR BITS        30506260
083F 1 6700 07C5          LDX  L3 CONT                                   30506270
0841 1 6F00 05E6          STX  L3 MLSCF&1                                30506280
0843 1 4C80 083A          BSC  I RECEV       RETURN TO MONITOR    SX    30506290
                    *                                                    30506300
                    ********************************************       30506310
                    *****        STORAGE AREA *****************       30506320
                    ********************************************       30506330
                    *                                                    30506340
0846    0000              BSS  E 0                                       30506350
0846 1 094D         MSG1  DC     AWSB                                    30506360
0847 1 0953               DC     ADSW                                    30506370
0848 1 094D         MSG2  DC     AWSB                                    30506380
0849 1 0962               DC     ABDSW                                   30506390
084A 1 0953         MSG3  DC     ADSW                                    30506400
084B 1 0956               DC     ANINT                                   30506410
084C 1 094D         MSG4  DC     AWSB                                    30506420
084D 1 095C               DC     AIDSW                                   30506430
084E 0 0000         NN    DC     /0000       MOVE COUNT                 30506440
084F 0 4000               DC     /4000       DIRECTION                  30506450
0850 0 0000         S     DC     /0000                                  30506460
0851 0 2000               DC     /2000                                  30506470
0852 0 0000         EE    DC     /0000                                  30506480
0853 0 1000               DC     /1000                                  30506490
0854 0 0000         WW    DC     /0000                                  30506500
0855 0 0800               DC     /0800                                  30506510
0856 0 0000         NE    DC     /0000                                  30506520
0857 0 5000               DC     /5000                                  30506530
0858 0 0000         SE    DC     /0000                                  30506540
0859 0 3000               DC     /3000                                  30506550
085A 0 0000         SW    DC     /0000                                  30506560
085B 0 2800               DC     /2800                                  30506570
085C 0 0000         NW    DC     /0000                                  30506580
085D 0 4800               DC     /4800                                  30506590
085E 0 0001         PENUP DC     /0001                                  30506600
085F 0 0400               DC     /0400                                  30506610
0860 0 0001         PENDW DC     /0001                                  30506620
0861 0 8000               DC     /8000                                  30506630
0862 0 044C         LEFT  DC     1100                                   30506640
0863 0 0800               DC     /0800                                  30506650
0864 0 1100         RSW01 DC     /1100       CMD EXECUTE CNTR           30506660
0865 0 0000         SRSW2 DC     *-*         PLOT CMD STORAGE.          30506670
0866 0 0000         SENSE DC     /0000       SENSE DSW & RESET          30506680
0867 0 2F01               DC     /2F01                                  30506690
                    *                                                    30506700
0868 1 086A         MARK  DC     COMAD       DIRECTION COMMAND          30506710
0869 0 2900               DC     /2900                                  30506720
086A 0 0000         COUNT DC     /0000                                  30506730
086B 0 0000         COMAD DC     /0000                                  30506740
086C 0 0000         CONST DC     /0000                                  30506750
086D 0 0000         EXTRA DC     /0000                                  30506760
086E 0 0000         K0000 DC     /0000       ZERO CONSTANT              30506770
086F 0 0002         K0002 DC     /0002                                  30506780
0870 0 0007         K0007 DC     /0007                                  30506790
0871 0 0096         K0150 DC     150         CONSTANT                   30506800
0872 0 BFFC         K4003 DC     /BFFC       CONSTANT                   30506810
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0873 0 8000     K8000 DC    /8000                                30506820
0874 0 0000     LOOK  DC    /0000      START OF STRING           30506830
0875 0 0000     SQRCT DC    /0000                                30506840
0876 0 0000     TRICT DC    /000       TRIANGLE COUNT            30506850
                *                                                30506860
                *                                                30506870
0877 1 085E     RT1ST DC    PENUP                                30506880
0878 1 0862           DC    LEFT                                 30506890
0879 1 0856           DC    NE                                   30506900
087A 1 0860           DC    PENDW      START OCTAGON NO. 1       30506910
087B 1 084E           DC    NN         1A                        30506920
087C 1 085E           DC    PENUP                                30506930
087D 1 0852           DC    EE                                   30506940
087E 1 0856           DC    NE                                   30506950
087F 1 0860           DC    PENDW                                30506960
0880 1 0858           DC    SE         2A                        30506970
0881 1 085E           DC    PENUP                                30506980
0882 1 085A           DC    SW                                   30506990
0883 1 0850           DC    S                                    30507000
0884 1 0860           DC    PENDW                                30507010
0885 1 0854           DC    WW         3A                        30507020
0886 1 085E           DC    PENUP                                30507030
0887 1 084E           DC    NN                                   30507040
0888 1 085C           DC    NW                                   30507050
0889 1 0860           DC    PENDW                                30507060
088A 1 0856           DC    NE         4A                        30507070
088B 1 085E           DC    PENUP                                30507080
088C 1 0858           DC    SE                                   30507090
088D 1 0852           DC    EE                                   30507100
088E 1 0860           DC    PENDW                                30507110
088F 1 0850           DC    S          5A                        30507120
0890 1 085E           DC    PENUP                                30507130
0891 1 0854           DC    WW                                   30507140
0892 1 085A           DC    SW                                   30507150
0893 1 0860           DC    PENDW                                30507160
0894 1 085C           DC    NW         6A                        30507170
0895 1 085E           DC    PENUP                                30507180
0896 1 0856           DC    NE                                   30507190
0897 1 084E           DC    NN                                   30507200
0898 1 0860           DC    PENDW                                30507210
0899 1 0852           DC    EE         7A                        30507220
089A 1 085E           DC    PENUP                                30507230
0898 1 0850           DC    S                                    30507240
089C 1 0858           DC    SE                                   30507250
089D 1 0860           DC    PENDW                                30507260
089E 1 085A           DC    SW         8A                        30507270
089F 1 085E           DC    PENUP                                30507280
08A0 1 0852           DC    EE                                   30507290
08A1 1 086E           DC    K0000                                30507300
08A2 1 0852           DC    EE                                   30507310
08A3 1 0860           DC    PENDW      START OCTAGON NO. 2       30507320
08A4 1 0852           DC    EE         1B                        30507330
08A5 1 085E           DC    PENUP                                30507340
08A6 1 084E           DC    NN                                   30507350
08A7 1 0856           DC    NE                                   30507360
08A8 1 0860           DC    PENDW      2B                        30507370
08A9 1 085C           DC    NW                                   30507380
08AA 1 085E           DC    PENUP                                30507390
08AB 1 085A           DC    SW                                   30507400
08AC 1 0854           DC    WW                                   30507410
08AD 1 0860           DC    PENDW      3B                        30507420
08AE 1 0850           DC    S                                    30507430
08AF 1 085E           DC    PENUP                                30507440
08B0 1 0852           DC    EE                                   30507450
08B1 1 0858           DC    SE                                   30507460
08B2 1 0860           DC    PENDW      4B                        30507470
08B3 1 0856           DC    NE                                   30507480
08B4 1 085E           DC    PENUP                                30507490
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08B5 1 085C           DC    NW                                   30507500
08B6 1 084E           DC    NN                                   30507510
08B7 1 0860           DC    PENDW      5B                        30507520
08B8 1 0854           DC    WW                                   30507530
08B9 1 085E           DC    PENUP                                30507540
08BA 1 0850           DC    S                                    30507550
08BB 1 085A           DC    SW                                   30507560
08BC 1 0860           DC    PENDW      6B                        30507570
08BD 1 0858           DC    SE                                   30507580
08BE 1 085E           DC    PENUP                                30507590
08BF 1 0856           DC    NE                                   30507600
08C0 1 0852           DC    EE                                   30507610
08C1 1 0860           DC    PENDW      7B                        30507620
08C2 1 084E           DC    NN                                   30507630
08C3 1 085E           DC    PENUP                                30507640
08C4 1 0854           DC    WW                                   30507650
08C5 1 085C           DC    NW                                   30507660
08C6 1 0860           DC    PENDW      8B                        30507670
08C7 1 085A           DC    SW                                   30507680
08C8 1 085E           DC    PENUP                                30507690
08C9 1 086E           DC    K0000      END OF ROUTINE            30507700
                *                                                30507710
08CA 1 085E     RT2ST DC    PENUP                                30507720
08CB 1 0862           DC    LEFT       PUT PEN AT LEFT MARGIN    30507730
08CC 1 0856           DC    NE         POSITION PEN FOR START    30507740
08CD 1 084E           DC    NN                                   30507750
08CE 1 0854           DC    WW                                   30507760
08CF 1 086E           DC    K0000                                30507770
08D0 1 0860           DC    PENDW                                30507780
08D1 1 0852           DC    EE         MOVE 10 INCHES EAST       30507790
08D2 1 085C           DC    NW         PLOT SAWTOOTH PATTERN     30507800
08D3 1 085A           DC    SW         FROM EAST TO WEST         30507810
08D4 1 086E           DC    K0000      REPEAT FIVE TIMES         30507820
08D5 1 084E           DC    NN                                   30507830
08D6 1 0858           DC    SE         PLOT SAWTOOTH PATTERN     30507840
08D7 1 0856           DC    NE         FROM WEST TO EAST         30507850
08D8 1 086E           DC    K0000                                30507860
08D9 1 0850           DC    S          PLOT PERPENDICULAR        30507870
08DA 1 085E           DC    PENUP      LINES, JOINING THE        30507880
08DB 1 0854           DC    WW           POINTS OF EACH          30507890
08DC 1 0860           DC    PENDW        SAWTOOTH.               30507900
08DD 1 084E           DC    NN                                   30507910
08DE 1 085E           DC    PENUP                                30507920
08DF 1 0854           DC    WW                                   30507930
08E0 1 0860           DC    PENDW                                30507940
08E1 1 086E           DC    K0000      RPT ABOVE SEQ 10 TIMES    30507950
08E2 1 0852           DC    EE         PLOT TOP OF PATTERN       30507960
08E3 1 085E           DC    PENUP                                30507970
08E4 1 0850           DC    S                                    30507980
08E5 1 0860           DC    PENDW                                30507990
08E6 1 0854           DC    WW         PLOT LINE THRU CENTER     30508000
08E7 1 085E           DC    PENUP      OF PATTERN                30508010
08E8 1 086E           DC    K0000      END OF ROUTINE            30508020
                *                                                30508030
08E9 1 085E     RT3ST DC    PENUP      RAISE PEN                 30508040
08EA 1 0862           DC    LEFT       PUT PEN AT LEFT MARGIN    30508050
08EB 1 0852           DC    EE         POSITION PEN TO START     30508060
08EC 1 084E           DC    NN         SWING TEST PATTERN.       30508070
08ED 1 086E           DC    K0000                                30508080
08EE 1 0860           DC    PENDW                                30508090
08EF 1 084E           DC    NN         PLOT LEFT SIDE OF SQ.     30508100
08F0 1 0852           DC    EE         PLOT TOP OF SQUARE.       30508110
08F1 1 0850           DC    S          PLOT 1/4 INCH SEGMENT     30508120
08F2 1 086E           DC    K0000                                30508130
08F3 1 0854           DC    WW         PLOT 1/4 INCH SEGMENT     30508140
08F4 1 086E           DC    K0000                                30508150
08F5 1 085E           DC    PENUP      POSITION PEN FOR NEXT     30508160
08F6 1 0856           DC    NE         SMALLER SQUARE.           30508170
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08F7 1 086E          DC    K0000                          30508180
08F8 1 0860          DC    PENDW    PLOT DIAGONAL LINES   30508190
08F9 1 0858          DC    SE       THRU THE SET OF       30508200
08FA 1 085E          DC    PENUP    SQUARES AND FINISH    30508210
08FB 1 084E          DC    NN       THE SWING TEST.       30508220
08FC 1 0860          DC    PENDW                          30508230
08FD 1 085A          DC    SW                             30508240
08FE 1 086E          DC    K0000                          30508250
08FF 1 085C          DC    NW                             30508260
0900 1 086E          DC    K0000                          30508270
0901 1 085E          DC    PENUP                          30508280
0902 1 0850          DC    S                              30508290
0903 1 0860          DC    PENDW                          30508300
0904 1 0856          DC    NE                             30508310
0905 1 086E          DC    K0000    END OF ROUTINE 3.     30508320
                     *                                    30508330
0906 1 085E    RT4ST DC    PENUP    PICK UP PEN AND PUT   30508340
0907 1 0852          DC    LEFT     IT AT LEFT MARGIN.    30508350
0908 1 0856          DC    NE                             30508360
0909 1 084E          DC    NN       POSITION PEN TO START 30508370
090A 1 084E          DC    NN       WINDMILL PATTERN      30508380
090B 1 086E          DC    K0000                          30508390
090C 1 0860          DC    PENDW                          30508400
090D 1 085A          DC    SW       SIDE 1 TRI 1          30508410
090E 1 085C          DC    NW                             30508420
090F 1 086E          DC    K0000                          30508430
0910 1 085C          DC    NW       SIDE 2 TRI 1          30508440
0911 1 0856          DC    NE                             30508450
0912 1 086E          DC    K0000                          30508460
0913 1 084E          DC    NN       SIDE 3 TRI 1          30508470
0914 1 0858          DC    SE                             30508480
0915 1 0858          DC    SE                             30508490
0916 1 086E          DC    K0000                          30508500
0917 1 085E          DC    PENUP    MOVE TO NEW LOCATION  30508510
0918 1 0856          DC    NE                             30508520
0919 1 086E          DC    K0000                          30508530
091A 1 0860          DC    PENDW                          30508540
091B 1 085C          DC    NW       SIDE 1 TRI 2          30508550
091C 1 0856          DC    NE                             30508560
091D 1 086E          DC    K0000                          30508570
091E 1 0855          DC    NE       SIDE 2 TRI 2          30508580
091F 1 0858          DC    SE                             30508590
0920 1 086E          DC    K0000                          30508600
0921 1 0852          DC    EE       SIDE 3 TRI 2          30508610
0922 1 085A          DC    SW                             30508620
0923 1 085A          DC    SW                             30508630
0924 1 086E          DC    K0000                          30508640
0925 1 085E          DC    PENUP                          30508650
0926 1 0858          DC    SE                             30508660
0927 1 086E          DC    K0000                          30508670
0928 1 0860          DC    PENDW                          30508680
0929 1 0856          DC    NE       SIDE 1 TRI 3          30508690
092A 1 0858          DC    SE                             30508700
092B 1 086E          DC    K0000                          30508710
092C 1 0858          DC    SE       SIDE 2 TRI 3          30508720
092D 1 085A          DC    SW                             30508730
092E 1 086E          DC    K0000                          30508740
092F 1 0850          DC    S        SIDE 3 TRI 3          30508750
0930 1 085C          DC    NW                             30508760
0931 1 085C          DC    NW                             30508770
0932 1 086E          DC    K0000                          30508780
0933 1 085E          DC    PENUP                          30508790
0934 1 085A          DC    SW                             30508800
0935 1 086E          DC    K0000                          30508810
0936 1 0860          DC    PENDW                          30508820
0937 1 0858          DC    SE       SIDE 1 TRI 4          30508830
0938 1 085A          DC    SW                             30508840
0939 1 086E          DC    K0000                          30508850
```



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093A 1 085A          DC    SW       SIDE 2 TRI 4          30508860
093B 1 085C          DC    NW                             30508870
093C 1 086E          DC    K0000                          30508880
093D 1 0854          DC    WW       SIDE 3 TRI 4          30508890
093E 1 0856          DC    NE                             30508900
093F 1 0856          DC    NE                             30508910
0940 1 086E          DC    K0000                          30508920
0941 1 085E          DC    PENUP                          30508930
0942 1 085C          DC    NW                             30508940
0943 1 086E          DC    K0000                          30508950
0944 1 0860          DC    PENDW                          30508960
0945 1 0856          DC    NE                             30508970
0946 1 0858          DC    SE                             30508980
0947 1 085A          DC    SW                             30508990
0948 1 085C          DC    NW                             30509000
0949 1 085E          DC    PENUP                          30509010
094A 1 086E          DC    K0000                          30509020
                     *                                    30509030
094B 1 0864    RT5ST DC    BSWCT                          30509040
094C 1 086E          DC    K0000                          30509050
                     *                                    30509060
                     *                                    30509070
                     ****************************************30509080
                     *          ALPHA MESSAGES              30509090
                     ****************************************30509100
                     *                                    30509110
094D 0 923E    AWSB  DC    /923E    WAS  S/B              30509120
094E 0 9A21          DC    /9A21                          30509130
094F 0 219A          DC    /219A                          30509140
0950 0 8C1A          DC    /8C1A                          30509150
0951 0 2121          DC    /2121                          30509160
0952 0 FFFF          DC    /FFFF                          30509170
0953 0 329A    ADSW  DC    /329A    DSW                   30509180
0954 0 9221          DC    /9221                          30509190
0955 0 FFFF          DC    /FFFF                          30509200
0956 0 7652    ANINT DC    /7652    NO INTRPT             30509210
0957 0 2100          DC    /2100                          30509220
0958 0 2276          DC    /2276                          30509230
0959 0 9E62          DC    /9E62                          30509240
095A 0 569E          DC    /569E                          30509250
095B 0 FFFF          DC    /FFFF                          30509260
095C 0 2276    AIDSW DC    /2276    INTRPT DSW            30509270
095D 0 9E62          DC    /9E62                          30509280
095E 0 569E          DC    /569E                          30509290
095F 0 2132          DC    /2132                          30509300
0960 0 9A92          DC    /9A92                          30509310
0961 0 FFFF          DC    /FFFF                          30509320
0962 0 1AB2    ABDSW DC    /1AB2    BUSY DSW              30509330
0963 0 9AA6          DC    /9AA6                          30509340
0964 0 2132          DC    /2132                          30509350
0965 0 9A92          DC    /9A92                          30509360
0966 0 FFFF          DC    /FFFF                          30509370
0967 0 9A36    ASETS DC    /9A36    SET COMMANDS IN SW 0-5 30509380
0968 0 9E21          DC    /9E21    T                     30509390
0969 0 1E52          DC    /1E52    CO                    30509400
096A 0 7272          DC    /7272    MM                    30509410
096B 0 3E76          DC    /3E76    AN                    30509420
096C 0 329A          DC    /329A    DS                    30509430
096D 0 2122          DC    /2122     I                    30509440
096E 0 7621          DC    /7621    N                     30509450
096F 0 9A92          DC    /9A92    SW                    30509460
0970 0 21C4          DC    /21C4     0                    30509470
0971 0 84F4          DC    /84F4    -5                    30509480
0972 0 213E          DC    /213E    AND 8-13              30509490
0973 0 7632          DC    /7632    ND                    30509500
0974 0 21E4          DC    /21E4     8                    30509510
0975 0 84FC          DC    /84FC    -1                    30509520
0976 0 DC21          DC    /DC21    3                     30509530
```

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0977 0 8141            DC      /8141       *CR-TAB*              30509540
0978 0 9E26            DC      /9E26       THEN TN SW 14         30509550
0979 0 3676            DC      /3676       EN                    30509560
097A 0 219E            DC      /219E        T                    30509570
097B 0 7621            DC      /7621       N                     30509580
097C 0 9A92            DC      /9A92       SW                    30509590
097D 0 21FC            DC      /21FC        1                    30509600
097E 0 F021            DC      /F021       4                     30509610
097F 0 FFFF            DC      /FFFF                             30509620
                                                                 30509630
0980   05E8            END     BGIN                              30509640
  NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```



```
ABDSW   0962  0849
ADSW    0953  0847 084A
AIDSW   095C  084D
ANINT   0956  0848
ASETS   0967  0790
AWSB    094D  0846 0848 084C
BDSW    0836  07A0 07B1 07B3 07C5 07C6
BEGIN   0160  05E8
BGIN    05E8  0980
BSWCT   0864  0948
CHG1    0750  0727
CHG2    0757  0728
CHG3    075E  0729
CKLK    07FE  060B 07AC 07C1 07FB 0809
CKLK1   0806  0811
CKLK2   0808  0805
CKLK3   0809  080E
CKLK4   080B  0801
CNTRL   05F2  05F1 0629 0679 06F1 0724 078F
CN10    05F6
CN20    05FD  05F4
CN30    0603  05F8
COMAD   086B  0868
CONST   086C
CONT    07C5  083F
CONT1   07CD  0822
CONT2   07D1
COUNT   086A  0797 07D8
DISP    0792  0623 0627 0647 064F 065B 0667 0677 068D 06AE 06C7 06D6 06E5 06FF
              0722 0731 073E 074A 075D 0777 0787 0799
DSW     0834  07E2
EE      0852  063C 064D 0697 06A2 05BF 06C1 087D 088D 0899 08A0 08A2 08A4 0880
              08C0 08D1 08E2 08EB 08F0 0921
ELOG    0823  07EB 0817 0821 0828
EMSG    082F  0824 0825 0826 0829
END     0164  0601
ERLCK   0166  0709
ERROR   0162  0827
ERRX    0821  081D
ERR2    0813  07B5 07C7 0818
ERR3    081A  07B7
ERR4    081E  07CB
EXTRA   086D  0645 0653 0659 065F 0663 066B 06AC 06B2 06E3 06E9 072F 0735 073C
              0741 0748 074D
IDSW    0838  07C9 07CA 083E
IL0     017A
IL1     018A
IL2     019A
IL3     01AA  05EF
IL4     01BA
KEEP    06C6
K0000   086E  08A1 08C9 08CF 08D4 08D8 08E1 08E8 08ED 08F2 08F4 08F7 08FE 0900
              0905 0908 090F 0912 0916 0919 091D 0920 0924 0927 092B 092E 0932
              0935 0939 093C 0940 0943 094A 094C
K0002   086F  0704
K0007   0870
K0150   0871  0618
K4003   0872
K8000   0873
LEFT    0862  0878 08CB 08EA 0907
LKSW    0812  07E5 07FF 0808 0810
LOG     0163  0763
LOSBY   0167
LOOK    0874  0621 0625 0642 0649 0651 0656 065D 0665 0669 066E 0688 068F 06B0
              0685 06C9 06CE 06D8 06E7 06EC 06FD 0701 0720 0733 0738 073F 0744
              074B 0752 0759 0760 0768 0793 07D8
LOOP    082A
LRTN    0615  060F
```

```
MARK    0868  079C
MLSCF   05E5  0608 060D 077C 07A7 07AA 07C3 07F9 0841
MSG1    0846  07E8
MSG2    0848  0816
MSG3    084A  081C
MSG4    084C  0820
NE      0856  0636 0684 06E0 06F7 070A 071A 0750 0757 075E 0879 087E 088A 0896
              08A7 08B3 08BF 08CC 08D7 08F6 0904 0908 0911 0918 091C 091E 0929
              093E 093F 0945
NEXT    0793  07DD
NN      084E  061B 0632 0681 06A0 06BA 06BC 06D2 06F9 0706 087B 0887 0897 08A6
              08B6 08C2 08CD 08D5 08DD 08EC 08EF 08FB 0909 090A 0913
NOT     07EF  07F3 07FD
NOT1    07F9  07F7
NRTN    0614  0610
NW      085C  062E 0693 06DE 0713 0718 0888 0894 08A9 08B5 08C5 08D2 08FF 090E
              0910 091B 0930 0931 0938 0942 0948
OCTGN   061B  061E
OLD     06E2  06F0
PENDW   0860  087A 087F 0884 0889 088E 0893 0898 089D 08A3 08A8 08AD 08B2 08B7
              08BC 08C1 08C6 08D0 08DC 08E0 08E5 08EE 08F8 08FC 0903 090C 091A
              0928 0936 0944
PENUP   085E  0877 087C 0881 0836 088B 0890 0895 089A 089F 08A5 08AA 08AF 0884
              0889 088E 08C3 08C8 08CA 08DA 08DE 08E3 08E7 08E9 08F5 08FA 0901
              0906 0917 0925 0933 0941 0949
PID     05DC  05EA
PLOT    0798  07D6 07DA 082A
RAD     05DE  0607
READY   070F  0616 062A 0678 06F3 0798 07E3 07E7 07F1 07F8
RECEV   083A  05ED 0843
REG01   064F  0655
REG02   065B  0661
REG03   0667  0660
RID     05DD  05EC 05F6 05FC 05FD 05FF 0603 078D 07CD
RIDCK   060F  05F7
RQKB    018C
ROTY    018B
RTNOM   0610  0600
RTNSW   0165  0609
RTTBL   0611  0605 060F 0610
RT1     0616  0611
RT1ST   0877  061F
RT2     062A  0612
RT2ST   08CA  0640
RT3     0678  0613
RT3ST   08E9  0689
RT4     06F3  0614
RT4ST   0906  06F8
RT5     0763  0615
RT5A    0760  077A
RT5B    0773  0771
RT5C    0780  076C
RT5D    077A  0772
RT5E    0766  0779 0789 07D0
RT5ST   0948  0766
RT5SW   078C  076A 076E 0780 0786 078A
RUN     072D  0762
S       0850  0634 0671 069A 06D4 0883 088F 089B 08AE 08BA 08D9 08E4 08F1 0902
              092F
SBSW2   0865  0775 0783
SE      0858  0638 0695 0700 071C 0880 088C 089C 08B1 0680 08D6 08F9 0914 0915
              091F 0926 092A 092C 0937 0946
SENSE   0856  079E 07E0 07EF 0838
SIDE1   0731  0737
SIDE2   073E  0743
SIDE3   074A  074F
SQRCT   0875  06A5 06CB
START   0161  0806
```



```
STRT    05EB  05E3 05E4
SVKB    01BD
SW      085A  0630 0697 0710 071F 0882 0892 089E 08AB 08BB 08C7 08D3 08FD 09CD
              0922 0923 092D 0934 0938 093A 0947
SWCOM   078A  076D
SWMSG   078D  0765
SWNG1   06A7  06CD
SWNG2   06AA  067E 06B9 06C4
SWNG3   06AE  06B4
SWNG4   06E5  06EB
SW0     05DF  07D1
SW1     05E0  05F3 05FB 0789
SW2     05E1  0802 080B
SW3     05E2
TCNTL   0726  070C 070F 0712 0715 0758
TOP     075D  0756
TRICT   0876  06A8 06B7 06DB 06EE 072B 0754
WAIT    07A2
WAIT1   07A5  07B0
WAIT2   07AA
WAIT3   07AE  07A5
WAIT4   07B9  07?E 07A9
WAIT5   07C1  07BB
WCNT    07DE  07A4 07AE 07EE 07F5
WMILL   0706  0709
WW      0854  063E 0675 069C 0885 0891 08AC 08BB 08C4 08CE 08D8 08DF 08E6 08F3
              093D
END OF ASSEMBLY
```

LAST PAGE