

TABLE OF CONTENTS - 1130 MAINTENANCE DIAGNOSTICS

VOLUME 1

PROG. ID.	NAME	P/N
	TABLE OF CONTENTS	2191292
	CPU TEST INDEX	2191290
03A1	CPU FUNCTION TEST	
	DESCRIPTION	2191206
	LISTING	2191204
	** DECK/TAPE	2191205
03A3	BASIC DIAGNOSTIC LOADER	
	DESCRIPTION	2191254
	LISTING	2191252
	DECK/TAPE	2191253
03A5	ONE-CARD DIAGNOSTIC PROGRAMS	
	DESCRIPTION	2191262
	LISTING	2191260
	DECK/TAPE	2191261
03AD	BASIC DIAGNOSTIC LOADER - 2501	
	DESCRIPTION	2243561
	LISTING	2243559
	DECK	2243560

VOLUME 2

PROG. ID.	NAME	P/N
0380	CORE STORAGE FUNCTION TEST	
03B1	****	
	LISTING - HI CORE	2243964
	DECK/TAPE	2243965
	DESCRIPTION	2243966
	LISTING - LO CORE	2243967
	DECK/TAPE	2243968
03A4	METER TEST	

	DESCRIPTION	2191250
	LISTING	2191248
	DECK/TAPE	2191249
03A6	CORE STORAGE ADJUSTMENT TEST	

	DESCRIPTION	2191246
	LISTING	2191244
	DECK/TAPE	2191245
03AB	INTERRUPT TEST	
*		
	DESCRIPTION	2191270
	LISTING	2191268
	** DECK/TAPE	2191269
030A	CE UTILITY PROGRAMS	

	DISK ADJUSTMENT	
	DESC/LIST	2243957
	DECK/TAPE	2243958
03A0	SCOPE LOOPS	
	DESC/LIST	2243962
	DECK/TAPE	2243963
0302	DIMAL	

	DESCRIPTION	2243961
	DECK/TAPE	2243960

VOLUME 3

PROG. ID.	NAME	P/N
	I/O TEST INDEX	2191291
0300	DIAGNOSTIC MONITOR	

	DESCRIPTION	2191202
	LISTING	2191200
	** DECK/TAPE	2191201
0308	2315 DISK INITIALIZATION	
X		
	DESCRIPTION	2191218
	LISTING	2191216
	DECK/TAPE	2191217
0309	DISK STORAGE FUNCTION TEST	
	DESCRIPTION	2191214
	LISTING	2191212
	DECK/TAPE	2191213
03AA	RELOCATING LOADER - 1442	
	DESCRIPTION	2191283
	LISTING	2191281
	DECK	2191282
03AB	RELOCATING LOADER - 2501	
	DESCRIPTION	****
	LISTING	2191284
	DECK	2191285
03AC	RELOCATING LOADER - PAPER TAPE	
	DESCRIPTION	2191288
	LISTING	2191286
	TAPE	2191287
0314	1231 FUNCTION TEST (NOTE 2)	
	DESCRIPTION	2243555
	LISTING	2243553
	DECK/TAPE	2243554
0300	1403 PRINTER FUNCTION TEST	
	DESCRIPTION	2243558
	LISTING	2243556
	DECK/TAPE	2243557

VOLUME 4

PROG. ID.	NAME	P/N
0304	KEYBOARD/CONSOLE PRINTER TEST	
	DESCRIPTION	2191242
	LISTING	2191240
	DECK/TAPE	2191241
0305	1627 PLOTTER FUNCTION TEST	
	DESCRIPTION	2191238
	LISTING	2191236
	DECK/TAPE	2191237
0308	1134/1055 FUNCTION TEST	
	DESCRIPTION	2191234
	LISTING	2191232
	DECK/TAPE	2191233
030C	1132 PRINTER FUNCTION TEST	
	DESCRIPTION	2191222
	LISTING	2191220
	DECK/TAPE	2191221
030F	1442 FUNCTION TEST	
	DESCRIPTION	2191226
	LISTING	2191224
	DECK	2191225
032F	1442 TIMING TEST	
	DESCRIPTION	2191230
	LISTING	2191228
	DECK	2191229
030E	2501/1442-5 F.T.	
	DESCRIPTION	2243552
	LISTING	2243550
	DECK/TAPE	2243551
	TEST CARDS	2243549

VOLUME 5 ***

PROG. ID.	NAME	P/N
0318	SCA INSTRUCTION FUNCTION TEST	
	DESCRIPTION	2243567
	LISTING	2243565
	DECK/TAPE	2243566
0311	SCA WRT/RD BFR, LINE NOISE DETECTION	
	DESCRIPTION	2191274
	LISTING	2191272
	DECK/TAPE	2191273
0319	SCA WRAP AROUND TEST	
	DESCRIPTION	2243570
	LISTING	2243568
	DECK/TAPE	2243569
03AE	SCA TRANSMIT/RECEIVE - STR	

	DESCRIPTION	2191280
	LISTING	2191278
	** DECK/TAPE	2191279
03AF	SCA DISPLAY PROGRAM	

	DESCRIPTION	2243564
	LISTING	2243562
	** DECK/TAPE	2243563
0317	SCA TRANSMIT/RECEIVE-BSC POINT TO POINT	
	DESCRIPTION	2243973
	LISTING	2243971
	DECK/TAPE	2243972
031A	SCA TRANSMIT/RECEIVE-BSC MULTI POINT	
	DESCRIPTION	2243976
	LISTING	2243974
	DECK/TAPE	2243975

* THESE TESTS MUST USE THE BASIC DIAGNOSTIC LOADER: 03A3 OR 03AD
 ** TAPE CONTAINS THE P.T. LOADER
 *** SUPPLIED ONLY ON SYSTEMS WITH A SYNCHRONOUS COMMUNICATIONS ADAPTER
 **** USE RELOCATING LOADER 03AA, 03AB, OR 03AC
 ***** REFER TO P/N 2191283 (PID 03AA)

- NOTES:
- ALL TESTS IN VOLUMES 3, 4, AND 5 RUN UNDER CONTROL OF THE DIAGNOSTIC MONITOR: 0300, EXCEPT PID 03AE AND PID 03AF.
 - DOCUMENTATION IS PRESENT ONLY ON SYSTEMS WITH A 1231.

PID 037F SYS/7

DATE	EC NUMBER	DATE	EC NUMBER	TABLE OF CONTENTS		
5 NOV 68	571005			MAINTENANCE DIAGNOSTICS		
15 JUL 69	571013			DATE	JUN 67	P/N 2191292
6 AUG 69	571053					TYPE .131
				IBM		03A1-0A

IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1130 SYSTEM
CPU TEST INDEX

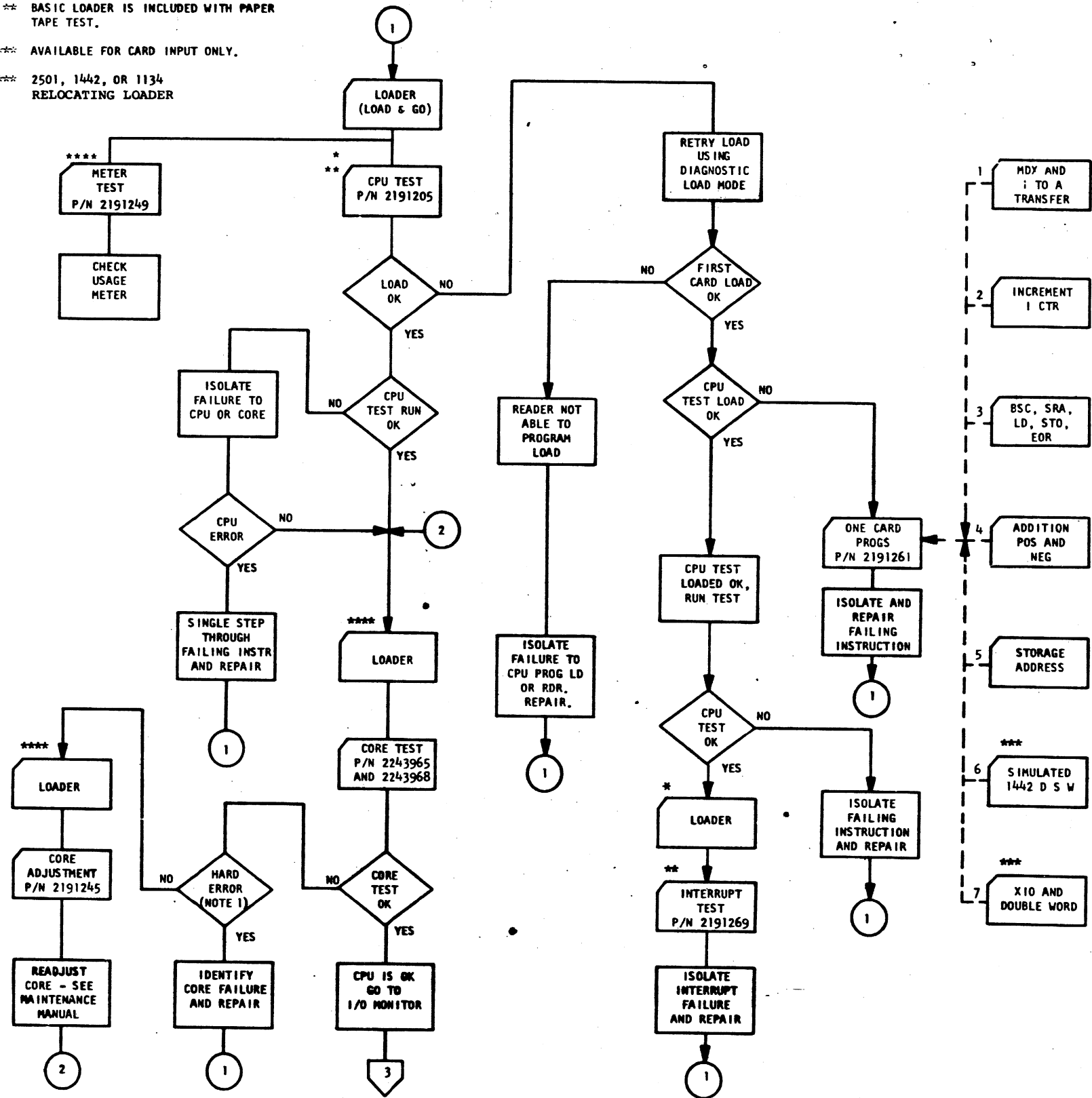
CPU NORMAL OPERATION SUMMARY

* 2501, 1442 OR 1134 BASIC LOADER.

** BASIC LOADER IS INCLUDED WITH PAPER TAPE TEST.

*** AVAILABLE FOR CARD INPUT ONLY.

**** 2501, 1442, OR 1134 RELOCATING LOADER



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. 012D.
4. SET ALL BIT SWITCHES TO FFFF AND PRESS PROG START.
5. PROG WILL STOP WITH B REG AT 3001 ADDR. 02B4.
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 0F62.
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 BK.
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.

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

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

TABLE OF CONTENTS

PARAGRAPH	PAGE
1. PURPOSE	1A
2. REQUIREMENTS	1A
2.1 PROGRAM REQUIREMENTS	
2.2 EQUIPMENT REQUIREMENTS	
3. USE PROCEDURE	1A
3.1 LOADING PROGRAM	
3.2 PROGRAM OPERATION	
3.3 TERMINATION	
3.4 RESTART PROCEDURE	
3.5 ERROR WAITS	
4. PRINTOUTS (NONE)	
5. COMMENTS	2A
6. APPENDIX (NONE)	

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

THE 1130 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          * DESCRIPTION *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *          *
*          . . . . . 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.
ERROR WAITS

3.5

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 CONTINUOUSLY 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 OCCURRING 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 OCCURRING 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 -----

```

0000          ABS          3A100020
              ORG  /3000  3A100030
*****
              *          3A100040
              *          3A100050
              *          3A100060
              *          3A100070
              *          3A100080
              *          3A100090
              *          3A100100
              *          3A100110
              *          3A100120
              *          3A100130
              *          3A100140
              *          3A100150
              *          3A100160
              *          3A100170
              *          3A100180
              *          3A100190
              *          3A100200
*****
              *          3A100210
              *          3A100220
              *          3A100230
              *          3A100240
              *          3A100250
              *          3A100260
              *          3A100270
              *          3A100280
              *          3A100290
              *          3A100300
              *          3A100310
              *          3A100320
              *          3A100330
              *          3A100340
              *          3A100350
              *          3A100360
              *          3A100370
              *          3A100380
              *          3A100390
              *          3A100400
              *          3A100410
              *          3A100420
              *          3A100430
              *          3A100440
              *          3A100450
              *          3A100460
              *          3A100470
              *          3A100480
              *          3A100490
              *          3A100500
              *          3A100510
              *          3A100520
              *          3A100530
*****
              *          3A100540
              *          3A100550
              *          3A100560
              *          3A100570
              *          3A100580
              *          3A100590
              *          3A100600
              *          3A100610
              *          3A100620
              *          3A100630
              *          3A100640
              *          3A100650
              *          3A100660
              *          3A100670
              *          3A100680
              *          3A100690

```

```

3002 0 02C6      DC      X003E1  SET SWITCHES FOR OPTIONS  3A100700
                  *          AND PRESS START                3A100710
                  *          3A100720
3003 0 0F63      DC      X007E1  PROGRAM COMPLETED        3A100730
                  *          3A100740
                  *          3A100750
                  *          3A100760
                  *          3A100770
                  *          3A100780
                  *          3A100790
                  *          3A100800
                  *          3A100810
*****          3A100820
                  *          3A100830
                  *          3A100840
                  *          3A100850
                  *          3A100860
                  *          3A100870
3004 0 012E      DC      A080      MDX          3A100880
                  *          SHORT FORM MDX FAILED TO MODIFY I CTR &1  3A100890
                  *          3A100900
                  *          3A100910
3005 0 012E      DC      A080      MDX          MODE&0  3A100920
3006 0 012E      DC      A080      MDX          &1
                  *          SHORT FORM MDX-SHOULD HAVE MODIFIED I CTR  3A100930
                  *          &2 BUT MODIFIED BY 0 OR &1  3A100940
                  *          3A100950
                  *          3A100960
                  *          3A100970
3007 0 012E      DC      A080      MDX          MODE&0  3A100980
3008 0 012E      DC      A080      MDX          &1
3009 0 012E      DC      A080      MDX          &2  3A100990
300A 0 012E      DC      A080      MDX          &3  3A101000
                  *          SHORT FORM MDX SHOULD HAVE MODIFIED I CTR  3A101010
                  *          &4 BUT MODIFIED BY 0, &1, &2 OR &3  3A101020
                  *          3A101030
                  *          3A101040
                  *          3A101050
300B 0 012E      DC      A080      MDX          3A101060
                  *          MDX SHORT FORM FAILED TO MODIFY I CTR  3A101070
                  *          3A101080
                  *          3A101090
300C 0 012E      DC      A080      MDX          MODE&0  3A101100
300D 0 012E      DC      A080      MDX          &1
300E 0 012E      DC      A080      MDX          &2  3A101110
                  *          MDX SHORT FORM-SHOULD HAVE MODIFIED I CTR  3A101120
                  *          -2, DID MODIFY BY 0, &1 OR &2  3A101130
                  *          3A101140
                  *          3A101150
                  *          3A101160
300F 0 013F      DC      A0C0      BSC,C      C&0  3A101170
                  *          N/A      N/A      N/A      N/A      N/A      3A101180
                  *          BSC SKIPPED-SHOULD NOT HAVE  3A101190
                  *          3A101200
                  *          3A101210
3010 0 013F      DC      A0C0      BSC,0      3A101220
3011 0 013F      DC      A0C0
                  *          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
                  *          3A101250
                  *          FIRST BSC SKIPPED-SHOULD NOT HAVE  3A101260
                  *          SECOND BSC FAILED TO SKIP-INDICATING 1ST BSC  3A101270
                  *          FAILED TO TURN OFF OVERFLOW  3A101280
                  *          3A101290
                  *          3A101300
3012 0 013F      DC      A0C0      BSC,C      3A101310
                  *          N/A      N/A      N/A      N/A      N/A      OFF  3A101320
                  *          BSC DID NOT SKIP WITH OVERFLOW OFF  3A101330
                  *          3A101340
                  *          3A101350
3013 0 014C      DC      A100      LD          3A101360
                  *          0000      N/A      N/A      N/A      N/A      N/A  3A101370
                  *          ACCUM NOT EQUAL TO 0000

```

CPU FUNCTION TEST

```

*
*****3A101380
*****3A101390
ADDRESS *
OF *
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS
*****3A101400
*****3A101410
*****3A101420
*****3A101430
3014 0 014C DC A100 LD 3A101440
* 0000 N/A N/A N/A N/A 1ST LD 3A101450
* 0000 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 1ST VALVE 3A101590
* FFFF 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
* 3A101650
3017 0 0154 DC A140 BSC,E 3A101660
* FFFF N/A N/A N/A N/A N/A 3A101670
* 3A101680
* 3A101690
3018 0 0154 DC A140 BSC,E 3A101700
* FFFF N/A N/A N/A N/A N/A 3A101710
* BSC SKIPPED SHOULD NOT HAVE 3A101720
* 3A101730
* 3A101740
3019 0 0154 DC A140 ACCUM NOT EQUAL 7FFF 3A101750
301A 0 0154 DC A140 ACCUM NOT EQUAL 3FFF 3A101760
301B 0 0154 DC A140 ACCUM NOT EQUAL 1FFF 3A101770
301C 0 0154 DC A140 ACCUM NOT EQUAL 0FFF 3A101780
301D 0 0154 DC A140 ACCUM NOT EQUAL 07FF 3A101790
301E 0 0154 DC A140 ACCUM NOT EQUAL 03FF 3A101800
301F 0 0154 DC A140 ACCUM NOT EQUAL 01FF 3A101810
3020 0 0154 DC A140 ACCUM NOT EQUAL 00FF 3A101820
3021 0 0154 DC A140 ACCUM NOT EQUAL 007F 3A101830
3022 0 0154 DC A140 ACCUM NOT EQUAL 003F 3A101840
3023 0 0154 DC A140 ACCUM NOT EQUAL 001F 3A101850
3024 0 0154 DC A140 ACCUM NOT EQUAL 000F 3A101860
3025 0 0154 DC A140 ACCUM NOT EQUAL 0007 3A101870
3026 0 0154 DC A140 ACCUM NOT EQUAL 0003 3A101880
3027 0 0154 DC A140 ACCUM NOT EQUAL 0001 3A101890
3028 0 0154 DC A140 ACCUM NOT EQUAL 0000 3A101900
3029 0 0154 DC A140 ACCUM NOT EQUAL 0000 3A101910
* FFFF N/A N/A N/A N/A N/A LOADED 3A101920
* 0000 N/A N/A N/A N/A N/A AFTER SRAQS 3A101930
* THE ABOVE WAITS OCCUR AS A RESULT OF A 3A101940
* FAILURE ON A ROUTINE THAT LOADS FFFF ON 3A101950
* 0000 AND CHECKS USING SRA 1 AND BSC E. 3A101960
* 3A101970
* 3A101980
302A 0 01A0 DC A180 ACCUM NOT EQUAL FFFF 3A101990
302B 0 01A0 DC A180 ACCUM NOT EQUAL FFFF 3A102000
302C 0 01A0 DC A180 ACCUM NOT EQUAL 7FFF 3A102010
302D 0 01A0 DC A180 ACCUM NOT EQUAL 3FFF 3A102020
302E 0 0154 DC A140 ACCUM NOT EQUAL 1FFF 3A102030
302F 0 01A0 DC A180 ACCUM NOT EQUAL 0FFF 3A102040
3030 0 01A0 DC A180 ACCUM NOT EQUAL 07FF 3A102050
3031 0 01A0 DC A180 ACCUM NOT EQUAL 03FF

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CPU FUNCTION TEST

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*****3A102060
ADDRESS *
OF *
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS
*****3A102070
*****3A102080
*****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 SRAQS 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 01EB 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 01EB 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
* 3A102520
3041 0 01F5 DC A1D0 EOR 3A102530
* FFFF N/A N/A N/A N/A N/A LOADED & EOR 3A102540
* 0000 N/A N/A N/A N/A N/A SHOULD BE 3A102550
* WITH ACCUM EQUAL FFFF AN EOR USING FFFF DID 3A102560
* NOT RESULT IN ACCUM EQUAL 0000 3A102570
* 3A102580
* 3A102590
3042 0 01F5 DC A1D0 EOR 3A102600
3043 0 01F5 DC A1D0 3A102610
* 0000 N/A N/A N/A N/A N/A BEFORE 3A102620
* FFFF N/A N/A N/A N/A N/A S/B AFTER 3A102630
* WITH ACCUM EQUAL 0000 AN EOR USING FFFF DID 3A102640
* NOT RESULT IN ACCUM EQUAL FFFF 3A102650
* 3A102660
* 3A102670
3044 0 01F5 DC A1D0 EOR 3A102680
* FFFF N/A N/A N/A N/A N/A BEFORE EOR 3A102690
* FFFF N/A N/A N/A N/A N/A S/B AFTER 3A102700
* WITH ACCUM EQUAL FFFF AN EOR USING 0000 DID 3A102710
* NOT RESULT IN ACCUM EQUAL FFFF 3A102720
* 3A102730

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CPU FUNCTION TEST

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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
* RESULT IN ACCM 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
* 3A102990
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&D S/B AT TEST 3A103390
* BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH 3A103400
* 3A103410

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CPU FUNCTION TEST

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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&D 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,E- 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,E- 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,E- 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 X10 SENSE/PROG SWS 3A104150
* FFOO N/A N/A N/A N/A S/B AT TEST 3A104160
* ACCUM NOT EQUAL TO FFOO-- SENSE/PROG SWS 3A104170
* WERE INCORRECTLY SENSED 3A104180
* 3A104190
3067 0 0282 DC A900 X10 DATA ENTRY SWS 3A104200
* FFOO 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 X10 SENSE/PROG SWS 3A104260
* FFOO 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 X10 NT/B AT TEST 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
* 3A104420
* THE FOLLOWING ERRORS ARE HANDLED BY THE 3A104430
* COMMON ERROR CONTROL ROUTINE. THE ID NUMBER 3A104440
* SHOWN FOR EACH ERROR WILL APPEAR IN BITS 3A104450
* 5 THRU 15 OF THE WAIT INSTRUCTION. 3A104460
* 3A104470
*****3A104480
306A 0 02D8 DC A280 SRA 16 3A104490
* FFFF N/A N/A N/A N/A S/B AFTER LD 3A104500
* 0000 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 S/B AFTER LD 3A104560
* 0001 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 S/B AFTER LD 3A104620
* 5555 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 S/B AFTER LD 3A104680
* 2AAA 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 S/B AFTER LD 3A104750
* 0001 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
306F 0 0318 DC A2C0 AND-MEMORY#0000 3A104830
* 0000 N/A N/A N/A N/A S/B AFTER LD 3A104840
* 0000 N/A N/A N/A N/A AFTER AND 3A104850
* ACCUM NOT EQUAL 0000 3A104860
* 3A104870
* 3A104880
* 3A104890
* 3A104900
3070 0 0322 DC A2C4 AND-MEMORY#FFFF 3A104910
* 0000 N/A N/A N/A N/A 3A104920
* 0000 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 3A104980
* 0000 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 3A105040
* FFFF 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 AFTER LD&OR 3A105100
* 0000 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 AFTER LD & OR 3A105160
* FFFF 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 AFTER LD&OR 3A105220
* FFFF 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 BEFORE RTE 3A105280
* 0000 FFFF 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 BEFORE RTE 3A105340
* FFFF 0000 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 BEFORE SRT 3A105400
* FFFF FFFF N/A N/A N/A AFTER SRT 3A105410
* ACCUM NOT EQUAL FFFF 3A105420
* 3A105430
* 3A105440
* 3A105450

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CPU FUNCTION TEST

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*****3A105460
ADDRESS * 3A105470
OF * 3A105480
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A105490
*****3A105500
3079 0 0380 * DC A380 SRT 32 & RTE 16 3A105510
* 8000 N/A N/A N/A N/A N/A BEFORE SRT 3A105520
* FFFF FFFF N/A N/A N/A N/A AFTER SRT&RTE 3A105530
* ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED 3A105540
* 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 03BC * 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 SRT&S 3A105860
* ACCUM NOT EQUAL 0000 3A105870
* 3A105880
* 3A105890
307F 0 03BC * 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 SRT&S 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
* 3A105990
3080 0 03DC * DC A3C0 RTE 15 3A106000
* 5555 AAAA N/A N/A N/A N/A AFTER LD&S 3A106010
* 5554 AAAB N/A N/A N/A N/A AFTER RTE 15 3A106020
* ACCUM NOT EQUAL 5554 - RTE 15 Q TO A FAILED 3A106030
* 3A106040
* 3A106050
3081 0 03DC * DC A3C0 RTE 15 & RTE 16 3A106060
* 5555 AAAA N/A N/A N/A N/A AFTER LD&S 3A106070
* 5554 AAAB N/A N/A N/A N/A AFTER RTE 15 3A106080
* AAAB 5554 N/A N/A N/A N/A AFTER RTE 16 3A106090
* ACCUM NOT EQUAL AAAB-INDICATING Q REG FAILED 3A106100
* 3A106110
* 3A106120
* 3A106130

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CPU FUNCTION TEST

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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 RTE&S 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 RTE&S 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 AFTER SLA 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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CPU FUNCTION TEST

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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
308B 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 0 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 0 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 0 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 048D 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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CPU FUNCTION TEST

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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 048D 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 048D DC A440 SLT 32 & RTE 16 3A107610
* 0000 0001 N/A N/A N/A N/A AFTER LD 3A107620
* 0000 0000 N/A N/A N/A N/A AFTER SLT 32 3A107630
* 0000 0000 N/A N/A N/A N/A 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 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 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 32 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 N/A AFTER SLT 32 3A108160
* CARRY NOT ON 3A108170

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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
* * * 3A108240
* * * *TOTAL SHIFTS & 3A108250
* * * *RTE 16 3A108260
* 0000 0001 N/A N/A N/A N/A AFTER LD 3A108270
* 0000 0000 N/A N/A N/A N/A AFTER SLTAS 3A108280
* 0000 0000 N/A N/A N/A N/A AFTER RTE 16 3A108290
* ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED 3A108300
* 3A108310
* 3A108320
309F 0 0542 DC A480 STO 3A108330
* 0000 N/A N/A N/A N/A N/A N/A 3A108340
* STORING 0000 INTO A STORAGE LOCATION 3A108350
* CONTAINING FFFF DID NOT RETURN 0000 WHEN 3A108360
* RELOADED IN THE ACCUM 3A108370
* 3A108380
* 3A108390
30A0 0 054E DC A482 STO 3A108400
* FFFF N/A N/A N/A N/A N/A 3A108410
* STORING FFFF INTO A STORAGE LOCATION 3A108420
* CONTAINING 0000 DID NOT RETURN FFFF WHEN 3A108430
* RELOADED IN THE ACCUM 3A108440
* 3A108450
* 3A108460
30A1 0 055F DC A4C0 STS 3A108470
* N/A N/A N/A N/A N/A ON AFTER LDS 3 3A108480
* N/A N/A N/A N/A N/A OFF AFTER LDS 0 3A108490
* N/A N/A N/A N/A N/A OFF AFTER STS 3A108500
* LDS 0 FAILED TO RESET CARRY AND OVERFLOW OR 3A108510
* STS FAILED TO STORE INDICATORS. 3A108520
* 3A108530
* 3A108540
30A2 0 056E DC A4C2 STS 3A108550
* N/A N/A N/A N/A N/A C&D AFTER LDS 3A108560
* N/A N/A N/A N/A N/A OFF AFTER STS 3A108570
* STS DID NOT CLEAR CARRY 3A108580
* 3A108590
* 3A108600
30A3 0 056B DC A4C2 STS CK ACC 3A108610
* INITIALLY ACC HAS CORE LOCATION OF 3A108620
* SYMBOLIC LABEL A4C2 3A108630
* ACC DESTROYED AFTER STS 3A108640
* 3A108650
* 3A108660
30A4 0 056B DC A4C2 STS 3A108670
* N/A N/A N/A N/A N/A C&D AFTER LDS 3A108680
* N/A N/A N/A N/A N/A OFF AFTER STS 3A108690
* STS DID NOT CLEAR OVERFLOW 3A108700
* 3A108710
* 3A108720
30A5 0 056B DC A4C2 STS 3A108730
* N/A N/A N/A N/A N/A BEFORE LD 3A108740
* 0003 AFTER LD 3A108750
* STS OF 0003 INTO A STORAGE LOCATION 3A108760
* CONTAINING 0000 DID NOT RETURN 0003 WHEN 3A108770
* RELOADED IN THE ACCUM 3A108780
* 3A108790
30A6 0 0590 DC A4C8 STS 3A108800
* N/A N/A N/A N/A N/A C&D AFTER LDS 3 3A108810
* N/A N/A N/A N/A N/A C AFTER LDS 2 3A108820
* N/A N/A N/A N/A N/A OFF AFTER STS 3A108830
* 0002 N/A N/A N/A N/A OFF AFTER LD 3A108840
* STS FAILED TO STORE OR LDS 2 FAILED TO RESET 3A108850
* OVERFLOW.
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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&D 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
* 3A108980
30A8 0 05A7 DC A4CC STS 3A108990
* N/A N/A N/A N/A N/A C&D AFTER LDS 3 3A109000
* N/A N/A N/A N/A N/A D AFTER LDS 1 3A109010
* N/A N/A N/A N/A N/A OFF AFTER STS 3A109020
* LDS 1 FAILED, IF ACCUMULATOR IS OTHER THAN /0001 3A109030
* 3A109040
* 3A109050
30A9 0 05A7 DC A4CC STS 3A109060
* N/A N/A N/A N/A N/A C&D AFTER LDS 3 3A109070
* N/A N/A N/A N/A N/A D AFTER LDS 1 3A109080
* N/A N/A N/A N/A N/A OFF AFTER STS 3A109090
* STS FAILED TO RESET INDICATORS. 3A109100
* 3A109110
* 3A109120
* 3A109130
30AA 0 05C4 DC A500 BSC,0&EZC 3A109140
* 8001 N/A N/A N/A N/A C&D 3A109150
* BSC SKIPPED-SHOULD NOT HAVE 3A109160
* 3A109170
* 3A109180
30AB 0 05CF DC A502 BSC,-DC& 3A109190
* 0000 N/A N/A N/A N/A C&D 3A109200
* BSC SKIPPED-SHOULD NOT HAVE 3A109210
* 3A109220
* 3A109230
30AC 0 05DA DC A504 BSC,0-E 3A109240
* 8000 N/A N/A N/A N/A C&D 3A109250
* BSC FAILED TO SKIP 3A109260
* 3A109270
* 3A109280
30AD 0 05DA DC A504 BSC,0 3A109290
* 8000 N/A N/A N/A N/A C 3A109300
* BSC FAILED TO CLEAR OVERFLOW 3A109310
* 3A109320
30AE 0 05F1 DC A508 BSC,C&Z 3A109330
* 0001 N/A N/A N/A N/A OFF 3A109340
* BSC FAILED TO SKIP 3A109350
* 3A109360
* 3A109370
30AF 0 05FC DC A50A BSC,&DCE LONG FORM 3A109380
* 8001 N/A N/A N/A N/A C&D 3A109390
* BSC DID NOT BRANCH - SHOULD HAVE 3A109400
* 3A109410
* 3A109420
30B0 0 05FC DC A50A BSC,&DCE LONG FORM 3A109430
* 8001 N/A N/A N/A N/A C&D 3A109440
* BSC SKIPPED-SHOULD BRANCH 3A109450
* 3A109460
* 3A109470
30B1 0 0619 DC A50C BSC,-Z LONG FORM 3A109480
* 0004 N/A N/A N/A N/A C&D 3A109490
* BSC DID NOT BRANCH - SHOULD HAVE 3A109500
* 3A109510
* 3A109520
30B2 0 0619 DC A50C BSC,-Z LONG FORM 3A109530
* 0004 N/A N/A N/A N/A C&D
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CPU FUNCTION TEST

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* BSC SKIPPED-SHOULD BRANCH
*****
ADDRESS *
OF *
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS
*****
30B3 0 062D      DC      A50E      BSC,&E0CZ LONG
*
* 8001 N/A      N/A      N/A      N/A      C&D
* BSC BRANCHED-SHOULD NOT
*
30B4 0 062D      DC      A50E      BSC,&E0CZ LONG
*
* 8001 N/A      N/A      N/A      N/A      C&D
* BSC SKIPPED-SHOULD NOT
*
30B5 0 0641      DC      B500      BSC,&E
* 0001 N/A      N/A      N/A      N/A      C&D
* BSC ON PLUS CLEARED THE OVERFLOW F-F
*
30B6 0 0641      DC      B500      BSC,&E
* 0001 N/A      N/A      N/A      N/A      N/A
* BSC FAILED TO SKIP
*
30B7 0 0660      DC      A540      BSI,E0C&Z LONG
*
* 8001 N/A      N/A      N/A      N/A      C&D
* BSI DID NOT BRANCH - SHOULD HAVE
*
30B8 0 0560      DC      A540      BSI,E0C&Z LONG
*
* 8001 N/A      N/A      N/A      N/A      C&D
* BSI SKIPPED-SHOULD BRANCH
*
30B9 0 0660      DC      A540      BSI,E0C&Z LONG
*
* 8001 N/A      N/A      N/A      N/A      C&D AFTER LDS
* 8001 N/A      N/A      N/A      N/A      C AFTER BSI
* BSI DID NOT CLEAR OVERFLOW
*
30BA 0 0681      DC      A544      BSI,Z- LONG FORM
* 0002 N/A      N/A      N/A      N/A      N/A
* BSI DID NOT BRANCH - SHOULD HAVE
*
30BB 0 0681      DC      A544      BSI,Z- LONG FORM
* 0002 N/A      N/A      N/A      N/A      N/A
* BSI SKIPPED-SHOULD BRANCH
*
30BC 0 0696      DC      A546      BSI,Z LONG FORM
* 0000 N/A      N/A      N/A      N/A      N/A
* BSI BRANCHED-SHOULD NOT
*
30BD 0 0696      DC      A546      BSI,Z LONG FORM
* 0000 N/A      N/A      N/A      N/A      N/A
* BSI SKIPPED-SHOULD NOT U
*
3A109540
3A109550
3A109560
3A109570
3A109580
3A109590
3A109600
3A109610
3A109620
3A109630
3A109640
3A109650
3A109660
3A109670
3A109680
3A109690
3A109700
3A109710
3A109720
3A109730
3A109740
3A109750
3A109760
3A109770
3A109780
3A109790
3A109800
3A109810
3A109820
3A109830
3A109840
3A109850
3A109860
3A109870
3A109880
3A109890
3A109900
3A109910
3A109920
3A109930
3A109940
3A109950
3A109960
3A109970
3A109980
3A109990
3A110000
3A110010
3A110020
3A110030
3A110040
3A110050
3A110060
3A110070
3A110080
3A110090
3A110100
3A110110
3A110120
3A110130
3A110140
3A110150
3A110160
3A110170
3A110180
3A110190
3A110200
3A110210

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CPU FUNCTION TEST

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*****
ADDRESS *
OF *
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS
*****
30BE 0 06A9      DC      A54B      BSI,- LONG FORM
* 8001 N/A      N/A      N/A      N/A      N/A
* BSI SKIPPED-SHOULD NOT
*
30BF 0 06A9      DC      A54B      BSI,- LONG FORM
* 8001 N/A      N/A      N/A      N/A      N/A
* BSI BRANCHED-SHOULD NOT
*
30C0 0 06BB      DC      A54A      BSI,E LONG FORM
* 0002 N/A      N/A      N/A      N/A      N/A
* BSI SKIPPED-SHOULD NOT
*
30C1 0 06BB      DC      A54A      BSI,E LONG FORM
* 0002 N/A      N/A      N/A      N/A      N/A
* BSI BRANCHED-SHOULD NOT
*
30C2 0 06CD      DC      A54C      BSI,E LONG FORM
* 0002 N/A      N/A      N/A      N/A      N/A
* BSI SKIPPED-SHOULD NOT
*
30C3 0 06CD      DC      A54C      BSI,E LONG FORM
* 0002 N/A      N/A      N/A      N/A      N/A
* BSI BRANCHED-SHOULD NOT
*
30C4 0 06DF      DC      A54E      BSI,C LONG FORM
* N/A      N/A      N/A      N/A      C
* BSI SKIPPED-SHOULD NOT
*
30C5 0 06DF      DC      A54E      BSI,C LONG FORM
* N/A      N/A      N/A      N/A      C
* BSI BRANCHED SHOULD NOT
*
30C6 0 06F1      DC      A54F      BSI,D LONG FORM
* N/A      N/A      N/A      N/A      0
* BSI SKIPPED-SHOULD NOT
*
30C7 0 06F1      DC      A54F      BSI,D LONG FORM
* N/A      N/A      N/A      N/A      0
* BSI BRANCHED-SHOULD NOT
*
30C8 0 0704      DC      A580      LDD
* 0000 0000 N/A      N/A      N/A      N/A
* ACCUM NOT EQUAL 0000
*
30C9 0 0704      DC      A580      LDD & RTE 16
* 0000 0000 N/A      N/A      N/A      N/A AFTER LDD
* 0000 0000 N/A      N/A      N/A      N/A AFTER RTE 16
* ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED
*
30CA 0 0717      DC      A584      LDD
* FFFF FFFF N/A      N/A      N/A      N/A

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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 0728 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 0728 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 0730 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 0730 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
30DD 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
3001 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
3002 0 076A DC A5C8 STD ODD ADDRESS 3A111340
* 0000 0000 N/A N/A N/A N/A 3A111350
* STD USING ODD ADDRESS-ACCUM NOT STORED IN EA 3A111360
* 3A111370
* 3A111380
3003 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
3004 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
3005 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
3006 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
*****
ADDRESS * 3A112270
OF * 3A112280
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A112290
*****
30E4 0 086A * DC A64C STX 3 3A112300
* N/A N/A N/A N/A FFFF N/A 3A112310
* INDEX REG 3 NOT STORED BY STX 3A112320
* 3A112330
* 3A112340
* 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 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 N/A N/A N/A C&O AFTER A 3A112930
```

```
* ADD 8000 & 8000 DID NOT TURN ON OVERFLOW 3A112940
*****
ADDRESS * 3A112950
OF * 3A112960
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A112970
*****
30EF 0 092C * DC B680 ADD 3A112980
* 8000 N/A N/A N/A N/A OFF AFTER LD 3A112990
* 0000 N/A N/A N/A N/A C&O AFTER A 3A113000
* ADD 8000 & 8000 DID NOT TURN ON CARRY 3A113010
* 3A113020
* 3A113030
* 3A113040
* 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 0998 * 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 0998 * 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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CPU FUNCTION TEST

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*
***** 3A113620
ADDRESS * 3A113630
OF * 3A113640
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A113650
***** 3A113660
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 0AAB 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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CPU FUNCTION TEST

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*
***** 3A114300
ADDRESS * 3A114310
OF * 3A114320
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A114330
***** 3A114340
3104 0 0AAB DC A740 AD-0000 0000 3A114350
* FFFF FFFF N/A N/A N/A N/A AFTER ADD 3A114360
* FFFF FFFF N/A N/A N/A N/A AFTER RTE 3A114370
* Q REG NOT EQUAL FFFF 3A114380
* 3A114390
* 3A114400
* 3A114410
3105 0 0AAB DC A740 AD-0000 0000 3A114420
* FFFF FFFF N/A N/A N/A OFF AFTER LDD 3A114430
* OVERFLOW SET SHOULD NOT BE 3A114440
* 3A114450
* 3A114460
* 3A114470
3106 0 0AAB 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

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*
*****3A114980
*****3A114990
ADDRESS *
OF *
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS
*****3A115000
*****3A115010
*****3A115020
*****3A115030
310E 0 0B03 DC A74C AD-FFFF FFFF 3A115040
* FFFF FFFF N/A N/A N/A OFF AFTER LDD 3A115050
* FFFF FFFE N/A N/A N/A C AFTER AD 3A115060
* CARRY NOT ON-SHOULD BE 3A115070
* 3A115080
* 3A115090
310F 0 0B2D DC B742 AD-FFFF FFFF 3A115100
* FFFF 7FFF N/A N/A N/A N/A AFTER LDD 3A115110
* FFFF 7FFE N/A N/A N/A N/A AFTER AD 3A115120
* ACCUM NOT EQUAL FFFF 3A115130
* 3A115140
* 3A115150
3110 0 0B2D DC B742 AD-FFFF FFFF 3A115160
* FFFF 7FFF N/A N/A N/A N/A AFTER LDD 3A115170
* FFFF 7FFE N/A N/A N/A N/A AFTER AD 3A115180
* Q REG NOT EQUAL 7FFE 3A115190
* 3A115200
* 3A115210
3111 0 0B2D DC B742 AD-FFFF FFFF 3A115220
* FFFF 7FFF N/A N/A N/A OFF AFTER LDD 3A115230
* FFFF 7FFE N/A N/A N/A C AFTER AD 3A115240
* OVERFLOW SET-SHOULD NOT BE 3A115250
* 3A115260
* 3A115270
3112 0 0B2D DC B742 AD-FFFF FFFF 3A115280
* FFFF 7FFF N/A N/A N/A OFF AFTER LDD 3A115290
* FFFF 7FFE N/A N/A N/A C AFTER AD 3A115300
* CARRY NOT SET-SHOULD BE 3A115310
* 3A115320
* 3A115330
3113 0 0B57 DC B747 AD-0001 ODD LOC 3A115340
* 0000 0001 N/A N/A N/A N/A AFTER LDD 3A115350
* 0001 0002 N/A N/A N/A N/A AFTER AD 3A115360
* ACCUM NOT EQUAL 0001 3A115370
* 3A115380
* 3A115390
3114 0 0B57 DC B747 AD-0001 ODD LOC 3A115400
* 0000 0001 N/A N/A N/A N/A AFTER LDD 3A115410
* 0001 0002 N/A N/A N/A N/A AFTER AD 3A115420
* Q REG NOT EQUAL 0002 3A115430
* 3A115440
* 3A115450
3115 0 0B79 DC A780 SD-0000 0001 3A115460
* 0000 0000 N/A N/A N/A N/A AFTER LDD 3A115470
* FFFF FFFF N/A N/A N/A N/A AFTER SD 3A115480
* ACCUM NOT EQUAL FFFF 3A115490
* 3A115500
* 3A115510
3116 0 0B79 DC A780 SD-0000 0001 3A115520
* 0000 0000 N/A N/A N/A N/A AFTER LDD 3A115530
* FFFF FFFF N/A N/A N/A N/A AFTER SD 3A115540
* Q REG NOT EQUAL FFFF 3A115550
* 3A115560
* 3A115570
3117 0 0B79 DC A780 SD-0000 0001 3A115580
* 0000 0000 N/A N/A N/A OFF AFTER LDD 3A115590
* FFFF FFFF N/A N/A N/A C AFTER SD 3A115600
* OVERFLOW ON-SHOULD NOT BE 3A115610
* 3A115620
* 3A115630
* 3A115640
* 3A115650

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*
*****3A115660
*****3A115670
ADDRESS *
OF *
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS
*****3A115680
*****3A115690
*****3A115700
*****3A115710
*****3A115720
3118 0 0B79 DC A780 SD-0000 0001 3A115730
* 0000 0000 N/A N/A N/A OFF AFTER LDD 3A115740
* FFFF FFFF N/A N/A N/A C AFTER SD 3A115750
* CARRY NOT ON-SHOULD BE 3A115760
* 3A115770
* 3A115780
3119 0 0BA3 DC A786 SD-FFFF FFFF 3A115790
* 0000 0000 N/A N/A N/A N/A AFTER LDD 3A115800
* 0000 0001 N/A N/A N/A N/A AFTER SD 3A115810
* ACCUM NOT EQUAL TO 0000 3A115820
* 3A115830
* 3A115840
311A 0 0BA3 DC A786 SD-FFFF FFFF 3A115850
* 0000 0000 N/A N/A N/A N/A AFTER LDD 3A115860
* 0000 0001 N/A N/A N/A N/A AFTER SD 3A115870
* Q REG NOT EQUAL 0001 3A115880
* 3A115890
* 3A115900
311B 0 0BB8 DC A78A SD-FFFF FFFF 3A115910
* 0000 C000 N/A N/A N/A N/A AFTER LDD 3A115920
* 0000 C001 N/A N/A N/A N/A AFTER SD 3A115930
* ACCUM NOT EQUAL 0000 3A115940
* 3A115950
* 3A115960
311C 0 0BB8 DC A78A SD-FFFF FFFF 3A115970
* 0000 C000 N/A N/A N/A N/A AFTER LDD 3A115980
* 0000 C001 N/A N/A N/A N/A AFTER SD 3A115990
* Q REG NOT EQUAL C001 3A116000
* 3A116010
* 3A116020
311D 0 0BCC DC A78E SD-FFFF ODD LOC 3A116030
* 0000 0000 N/A N/A N/A N/A AFTER LDD 3A116040
* 0000 0001 N/A N/A N/A N/A AFTER SD 3A116050
* ACCUM NOT EQUAL 0000 3A116060
* 3A116070
* 3A116080
311E 0 0BCC DC A78E SD-FFFF ODD LOC 3A116090
* 0000 0000 N/A N/A N/A N/A AFTER LDD 3A116100
* 0000 0001 N/A N/A N/A N/A AFTER SD 3A116110
* Q REG NOT EQUAL 0001 3A116120
* 3A116130
* 3A116140
311F 0 0BEC DC A7C0 MULT-2AAA 3A116150
* 5555 N/A N/A N/A N/A N/A AFTER LD 3A116160
* 0E38 9C72 N/A N/A N/A N/A AFTER M 3A116170
* ACCUM NOT EQUAL 0E38 3A116180
* 3A116190
* 3A116200
3120 0 0BEC DC A7C0 MULT-2AAA 3A116210
* 5555 N/A N/A N/A N/A N/A AFTER LD 3A116220
* 0E38 9C72 N/A N/A N/A N/A AFTER M 3A116230
* Q REG NOT EQUAL 9C72 3A116240
* 3A116250
* 3A116260
3121 0 0C01 DC A7C4 MULT-FFFF 3A116270
* FFFF N/A N/A N/A N/A N/A AFTER LD 3A116280
* 0000 0001 N/A N/A N/A N/A AFTER M 3A116290
* ACCUM NOT EQUAL 0000 3A116300
* 3A116310
* 3A116320
* 3A116330

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CPU FUNCTION TEST

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*****
*                               3A116340
*                               3A116350
* ADDRESS                        * 3A116360
* OF                              * 3A116370
* B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A116380
*****
3122 0 0C01      DC      A7C4      MULT-FFFF      3A116400
* FFFF N/A N/A N/A N/A N/A AFTER LD 3A116410
* 0000 0001 N/A N/A N/A N/A AFTER M 3A116420
* Q REG NOT EQUAL 0001 3A116430
* 3A116440
* 3A116450
3123 0 0C15      DC      A7C8      MULT-FFFF      3A116460
* 0000 N/A N/A N/A N/A N/A AFTER LD 3A116470
* 0000 0000 N/A N/A N/A N/A AFTER M 3A116480
* ACCUM NOT EQUAL 0000 3A116490
* 3A116500
* 3A116510
3124 0 0C15      DC      A7C8      MULT-FFFF      3A116520
* 0000 N/A N/A N/A N/A N/A AFTER LD 3A116530
* 0000 0000 N/A N/A N/A N/A AFTER M 3A116540
* Q REG NOT EQUAL 0000 3A116550
* 3A116560
* 3A116570
3125 0 0C28      DC      A7CC      MULT-0000      3A116580
* FFFF N/A N/A N/A N/A N/A AFTER LD 3A116590
* 0000 0000 N/A N/A N/A N/A AFTER M 3A116600
* ACCUM NOT EQUAL 0000 3A116610
* 3A116620
* 3A116630
3126 0 0C28      DC      A7CC      MULT-0000      3A116640
* FFFF N/A N/A N/A N/A N/A AFTER LD 3A116650
* 0000 0000 N/A N/A N/A N/A AFTER M 3A116660
* Q REG NOT EQUAL 0000 3A116670
* 3A116680
* 3A116690
3127 0 0C43      DC      A800      DVD-8000      3A116700
* 4000 7FFF N/A N/A N/A N/A AFTER LDD 3A116710
* 8000 7FFF N/A N/A N/A N/A AFTER D 3A116720
* ACCUM NOT EQUAL 8000 3A116730
* 3A116740
* 3A116750
3128 0 0C43      DC      A800      DVD-8000      3A116760
* 4000 7FFF N/A N/A N/A N/A AFTER LDD 3A116770
* 8000 7FFF N/A N/A N/A N/A AFTER D 3A116780
* Q REG NOT EQUAL 7FFF 3A116790
* 3A116800
* 3A116810
3129 0 0C43      DC      A800      DVD-8000      3A116820
* 4000 7FFF N/A N/A N/A OFF AFTER LDD 3A116830
* 8000 7FFF N/A N/A N/A N/A AFTER D 3A116840
* OVERFLOW ON-SHOULD NOT BE 3A116850
* 3A116860
* 3A116870
312A 0 0C43      DC      A800      DVD-8000      3A116880
* 4000 7FFF N/A N/A N/A OFF AFTER LDD 3A116890
* 8000 7FFF N/A N/A N/A N/A AFTER D 3A116900
* CARRY ON-SHOULD NOT BE 3A116910
* 3A116920
* 3A116930
312B 0 0C71      DC      A806      DVD-5555      3A116940
* 1C71 BBE3 N/A N/A N/A N/A AFTER LDD 3A116950
* 5555 2DAA N/A N/A N/A N/A AFTER D 3A116960
* ACCUM NOT EQUAL 5555 3A116970
* 3A116980
* 3A116990
* 3A117000
* 3A117010

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CPU FUNCTION TEST

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*****
*                               3A117020
*                               3A117030
* ADDRESS                        * 3A117040
* OF                              * 3A117050
* B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A117060
*****
312C 0 0C71      DC      A806      DVD-5555      3A117070
* 1C71 BBE3 N/A N/A N/A N/A AFTER LDD 3A117080
* 5555 2DAA N/A N/A N/A N/A AFTER D 3A117090
* Q REG NOT EQUAL 2DAA 3A117100
* 3A117110
* 3A117120
* 3A117130
312D 0 0C71      DC      A806      DVD-5555      3A117140
* 1C71 BBE3 N/A N/A N/A OFF AFTER LDD 3A117150
* 5555 2DAA N/A N/A N/A N/A AFTER D 3A117160
* OVERFLOW ON-SHOULD NOT BE 3A117170
* 3A117180
* 3A117190
312E 0 0C71      DC      A806      DVD-5555      3A117200
* 1C71 BBE3 N/A N/A N/A OFF AFTER LDD 3A117210
* 5555 2DAA N/A N/A N/A N/A AFTER D 3A117220
* CARRY ON-SHOULD NOT BE 3A117230
* 3A117240
* 3A117250
312F 0 0C9A      DC      A80C      DVD-0000      3A117260
* 0000 0001 N/A N/A N/A OFF AFTER LDD 3A117270
* N/A N/A N/A N/A N/A 0 AFTER D 3A117280
* OVERFLOW NOT ON-SHOULD BE OR Q-REG NOT 1 3A117290
* 3A117300
* 3A117310
3130 0 0CA9      DC      A80E      DVD-0001      3A117320
* 4000 0000 N/A N/A N/A OFF AFTER LDD 3A117330
* N/A N/A N/A N/A N/A 0 AFTER D 3A117340
* OVERFLOW NOT ON-SHOULD BE 3A117350
* 3A117360
* 3A117370
3131 0 0CB4      DC      B800      DVD-4000      3A117380
* A000 0000 N/A N/A N/A OFF AFTER LDD 3A117390
* N/A N/A N/A N/A N/A 0 AFTER D 3A117400
* OVERFLOW NOT ON-SHOULD BE 3A117410
* 3A117420
* 3A117430
3132 0 0CBF      DC      B802      DVD-8000      3A117440
* C000 0000 N/A N/A N/A OFF AFTER LDD 3A117450
* N/A N/A N/A N/A N/A 0 AFTER D 3A117460
* OVERFLOW OFF--SHOULD BE ON 3A117470
* 3A117480
* 3A117490
3133 0 0CCA      DC      B804      DVD-0001      3A117500
* 0000 FFFF N/A N/A N/A OFF AFTER LDD 3A117510
* N/A N/A N/A N/A N/A 0 AFTER D 3A117520
* OVERFLOW OFF--SHOULD BE ON 3A117530
* 3A117540
* 3A117550
3134 0 0CD5      DC      B806      DVD-0001      3A117560
* FFFF 7FFF N/A N/A N/A OFF AFTER LDD 3A117570
* N/A N/A N/A N/A N/A 0 AFTER D 3A117580
* OVERFLOW OFF--SHOULD BE ON 3A117590
* 3A117600
* 3A117610
3135 0 0D56      DC      A840      MDX 1      3A117620
* N/A N/A 0000 N/A N/A N/A AFTER LDX 3A117630
* N/A N/A FFFF N/A N/A N/A AFTER MDX 1 3A117640
* INDEX REG 1 NOT EQUAL FFFF WHEN MODIFIED 3A117650
* BY MINUS 1 3A117660
* 3A117670
* 3A117680
3136 0 0D64      DC      A842      MDX LONG FORM 3A117690

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```
* ADD C1 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
*
3137 0 0D79 DC A844 MDX 2 LONG FORM 3A117760
* N/A N/A N/A FFFE N/A N/A AFTER LDX 3A117770
* N/A N/A N/A FFFF N/A N/A AFTER MDX 2 3A117780
* INDEX REG 2 NOT EQUAL TO FFFF AFTER MDX C1 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 C1 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 FFDD 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 FFDD 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
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* 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 B882 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 B882 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 B882 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 B884 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 B884 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 B884 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 0E8A DC B885 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
ADDRESS * 3A119080
OF * 3A119090
B-KEG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A119100
*****3A119110
* 3A119120
* 3A119130
314B 0 0ED6 * DC B8A0 CMP A GREATER M 3A119140
* 4000 N/A N/A N/A N/A N/A 3A119150
* A GREATER THAN M CMP FAILED 3A119160
* 3A119170
* 3A119180
314C 0 0ED6 * DC B8A0 CMP A GREATER M 3A119190
* 4000 N/A N/A N/A N/A N/A AFTER LD 3A119200
* 4000 N/A N/A N/A N/A N/A AFTER CMP 3A119210
* ACC DESTROYED AFTER CMP 3A119220
* 3A119230
* 3A119240
314D 0 0EF1 * DC B8A1 CMP A LESS M 3A119250
* 0000 N/A N/A N/A N/A N/A 3A119260
* ACC LESS THAN M FAILS 3A119270
* 3A119280
* 3A119290
314E 0 0EFB * DC B8A2 CMP A LESS M 3A119300
* 0000 N/A N/A N/A N/A N/A 3A119310
* ACC LESS THAN M FAILS 3A119320
* 3A119330
* 3A119340
314F 0 0F05 * DC B8A3 CMP A LESS M 3A119350
* 0000 N/A N/A N/A N/A N/A 3A119360
* ACC LESS THAN M FAILS 3A119370
* 3A119380
* 3A119390
3150 0 0F0F * DC B8A4 CMP A LESS M 3A119400
* 8000 N/A N/A N/A N/A N/A 3A119410
* ACC LESS THAN M FAILS 3A119420
* 3A119430
* 3A119440
3151 0 0F19 * DC B8A5 CMP A EQ M 3A119450
* 1000 N/A N/A N/A N/A N/A 3A119460
* ACC EQ M FAILED 3A119470
* 3A119480
* 3A119490
3152 0 0F24 * DC B8C0 DCM AQ GTR M,M&1 3A119500
* 8000 0001 N/A N/A N/A N/A 3A119510
* DCM AQ GREATER THAN M, M&1 FAILED 3A119520
* 3A119530
* 3A119540
3153 0 0F24 * DC B8C0 DCM AQ GTR M, M&1 3A119550
* 8000 0001 N/A N/A N/A N/A 3A119560
* ACC DESTROYED AFTER DCM 3A119570
* 3A119580
* 3A119590
3154 0 0F24 * DC B8C0 DCM AQ GTR M,M&1 3A119600
* 8000 0001 N/A N/A N/A N/A 3A119610
* Q REG DESTROYED AFTER DCM 3A119620
* 3A119630
* 3A119640
3155 0 0F3E * DC B8C1 DCM AQ LESS M,M&1 3A119650
* 0000 8000 N/A N/A N/A N/A 3A119660
* DCM FAILED WHEN A,Q LESS THAN M, M&1 3A119670
* 3A119680
* 3A119690
3156 0 0F46 * DC B8C2 DCM AQ EQ M,M&1 3A119700
* 0000 8000 N/A N/A N/A N/A 3A119710
* DCM FAILED WHEN A,Q EQ M, M&1 3A119720
* 3A119730
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* 3A119740
*****3A119750
ADDRESS * 3A119760
OF * 3A119770
B-KEG 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#5 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#5 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#5 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#5 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#5 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#5 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 XX#1 3A120210
* 3A120220
* 3A120230
315E 0 09ER * 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 XX#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 XX#3 3A120370
* 3A120380
* 3A120390
* 3A120400
* 3A120410
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CPU FUNCTION TEST

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*
***** 3A120420
ADDRESS * 3A120430
OF * 3A120440
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A120450
***** 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 FF00 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 N/A AFTER LDX&LD 3A120740
* 0001 N/A N/A N/A N/A N/A AFTER 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 DESTROYED AFTER INDEXED BSC 3A120820
* 3A120830
* 3A120840
3166 0 0A29 DC A6F1 INDIR, INDEX BSC 3A120850
* N/A N/A 0001 N/A N/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 DESTROYED 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 DESTROYED AFTER MDX 3A121000
* 3A121010
* 3A121020
3169 0 08C9 DC A670 ACC DECODE 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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CPU FUNCTION TEST

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*
***** 3A121100
ADDRESS * 3A121110
OF * 3A121120
B-REG ROUTINE * A-REG Q-REG XR-1 XR-2 XR-3 STATUS 3A121130
***** 3A121140
***** 3A121150
316A 0 0D04 DC B807 DVD OVFLD 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
* OVFLD NOT ON 3A121190
* 3A121200
* 3A121210
316B 0 0D0F DC B808 DVD OVFLD 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
* OVFLD NOT ON 3A121250
* 3A121260
* 3A121270
316C 0 0D1A DC B809 DVD NO OVFLD 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
* OVFLD 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 DESTROYED 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 DESTROYED 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 SKIPPED, SHOULD NOT HAVE 3A121610
* 3A121620
* 3A121630
* 3A121640
3173 0 0E48 DC A88A SW 15 NO INDEX 3A121650
* 0000 FFFF 0010 0010 0010 N/AFTER LDX&S 3A121660
* 7FFF N/A N/A N/A N/A N/AFTER 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

```

```

*
*****
*
3175          ORG      300
012C 0 03A1  DC      /03A1  PID
*
*****
*
TEST MDX OPERATION
*****
*
CORE  DATA OR  *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
012D 0 3000    X000 DC      /3000    SET SWITCHES TO RUN
012E 0 7001    A080 MDX    G080
012F 0 3004          DC      /3004    ERR ID & ERR WAIT
                                MDX BY 1 FAILED
0130 0 7002    G080 MDX    G081
0131 0 3005          DC      /3005    ERR ID & ERR WAIT
                                MDX BY 2 FAILED
0132 0 3006          DC      /3006    ERR ID & ERR WAIT
                                MDX BY 2 FAILED
0133 0 7004    G081 MDX    G082
0134 0 3007          DC      /3007    ERR ID & ERR WAIT
                                MDX BY 4 FAILED
0135 0 3008          DC      /3008    ERR ID & ERR WAIT
                                MDX BY 4 FAILED
0136 0 3009          DC      /3009    ERR ID & ERR WAIT
                                MDX BY 4 FAILED
0137 0 300A          DC      /300A    ERR ID & ERR WAIT
                                MDX BY 4 FAILED
0138 0 7002    G082 MDX    G084
0139 0 300B          DC      /300B    ERR ID & ERR WAIT
                                MDX BY 2 FAILED
013A 0 7004    G083 MDX    A0C0
013B 0 70FE    G084 MDX    G083
013C 0 300C          DC      /300C    ERR ID & ERR WAIT
                                MDX BY -2 FAILED
013D 0 300D          DC      /300D    ERR ID & ERR WAIT
                                MDX BY -2 FAILED
013E 0 300E          DC      /300E    ERR ID & ERR WAIT
                                MDX BY -2 FAILED
*
*
TEST OF BSC SKIP WHEN IT
SHOULD NOT
*****
013F 0 2003    A0C0 LDS      3      SET C AND OF ON
0140 0 4802          BSC      C      SK IF CARRY IS OFF
0141 0 7002          MDX    G0C1
0142 0 300F          DC      /300F    ERR ID & ERR WAIT
                                BSC-CARRY FAILED
*
0143 0 0000    N100 DC      0
0144 0 4801    G0C1 BSC      0
0145 0 7001          MDX    G0C2
0146 0 3010          DC      /3010    ERR ID & ERR WAIT
                                BSC-OVERFLOW FAILED
0147 0 4801    G0C2 BSC      0
0148 0 3011          DC      /3011    ERR ID & ERR WAIT
                                BSC-OVFLW SKPD-SHOULD
                                *NOT HAVE
0149 0 2000          LDS      0
014A 0 4802          BSC      C
014B 0 3012          DC      /3012    RESET CARRY TO OFF
                                SK IF CARRY IS OFF
                                ERR ID & ERR WAIT
                                BSC-C DID NOT SKIP
*
*

```

```

*
*
TEST OF ACC ABILITY TO HOLD
ALL ZEROS
*
*****
*
CORE  DATA OR  *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
014C 0 C0F6    A100 LD      N100    LD /0000
014D 0 4820          BSC      Z      SK IF ZERO
014E 0 3013          DC      /3013    ERR ID & ERR WAIT
                                LD ACC TO 0 FAILED
*
014F 0 C0F3          LD      N100    ACC#0,RELOAD TO 0
0150 0 4820          BSC      Z      SK IF ZERO
0151 0 3014          DC      /3014    ERR ID & ERR WAIT
                                LD ACC TO 0 FAILED
*
0152 0 4804          BSC      E
0153 0 3015          DC      /3015    ERR ID & ERR WAIT
                                BSC ON EVEN FAILED
*
*
CONTAIN ALL ONES
*****
0154 0 C04A    A140 LD      N140    ACC.#0,RELOAD TO ONES
0155 0 4810          BSC      -      SK IF MINUS
0156 0 3016          DC      /3016    ERR ID & ERR WAIT
                                LOAD ACC. FAILED OR
                                *BSC ON NEG. FAILED
*
0157 0 4808          BSC      6
0158 0 7001          MDX    G140
0159 0 3017          DC      /3017    ERR ID & ERR WAIT
                                BSC ON & SKPD-
                                *SHOULD NOT HAVE
*
015A 0 4804    G140 BSC      E
015B 0 7001          MDX    G141
015C 0 3018          DC      /3018    ERR ID & ERR WAIT
                                BSC ON-E SKPD-
                                *SHOULD NOT HAVE
*
015D 0 1801    G141 SRA      1
015E 0 4804          BSC      E
015F 0 7001          MDX    G142
0160 0 3019          DC      /3019    ERR ID & ERR WAIT
                                ACC NOT # 7FFF
*
0161 0 1801    G142 SRA      1
0162 0 4804          BSC      E
0163 0 7001          MDX    G143
0164 0 301A          DC      /301A    ERR ID & ERR WAIT
                                ACC NOT # 3FFF
*
0165 0 1801    G143 SRA      1
0166 0 4804          BSC      E
0167 0 7001          MDX    G144
0168 0 301B          DC      /301B    ERR ID & ERR WAIT
                                ACC NOT # 1FFF
*
0169 0 1801    G144 SRA      1
016A 0 4804          BSC      E
016B 0 7001          MDX    G145
016C 0 0000          DC      /301C    ERR ID & ERR WAIT
                                ACC NOT # OFFF
*
016D 0 1801    G145 SRA      1
016E 0 4804          BSC      E
016F 0 7001          MDX    G146
0170 0 301D          DC      /301D    ERR ID & ERR WAIT
                                ACC NOT # 07FF
*
0171 0 1801    G146 SRA      1
0172 0 4804          BSC      E
0173 0 7001          MDX    G147
0174 0 301E          DC      /301E    ERR ID & ERR WAIT
                                ACC NOT # 03FF
*
0175 0 1801    G147 SRA      1
0176 0 4804          BSC      E

```


CPU FUNCTION TEST

```

01DC 0 1801      G18D SRA 1      3A124500
01DD 0 4804      BSC E      3A124510
01DE 0 7001      MDX G18E 3A124520
01DF 0 3039      DC /3039 3A124530
                *          3A124540
                *          3A124550
                *          3A124560
                *          3A124570
                *          3A124580
                *          3A124590
                *          3A124600
                *          3A124610
                *          3A124620
                *          3A124630
                *          3A124640
                *          3A124650
                *          3A124660
                *          3A124670
                *          3A124680
                *          3A124690
                *          3A124700
                *          3A124710
                *          3A124720
                *          3A124730
                *          3A124740
                *          3A124750
                *          3A124760
                *          3A124770
                *          3A124780
                *          3A124790
                *          3A124800
                *          3A124810
                *          3A124820
                *          3A124830
                *          3A124840
                *          3A124850
                *          3A124860
                *          3A124870
                *          3A124880
                *          3A124890
                *          3A124900
                *          3A124910
                *          3A124920
                *          3A124930
                *          3A124940
                *          3A124950
                *          3A124960
                *          3A124970
                *          3A124980
                *          3A124990
                *          3A125000
                *          3A125010
                *          3A125020
                *          3A125030
                *          3A125040
                *          3A125050
                *          3A125060
                *          3A125070
                *          3A125080
                *          3A125090
                *          3A125100
                *          3A125110
                *          3A125120
                *          3A125130
                *          3A125140
                *          3A125150
                *          3A125160
                *          3A125170

```

CPU FUNCTION TEST

```

0207 0 C009      LD N100 3A125180
0208 0 F009      EOR N1D1 3A125190
0209 0 482C      BSC &EZ 3A125200
020A 0 4810      BSC - 3A125210
020B 0 3044      DC /3044 3A125220
                *          3A125230
                *          3A125240
                *          3A125250
                *          3A125260
                *          3A125270
                *          3A125280
                *          3A125290
                *          3A125300
                *          3A125310
                *          3A125320
                *          3A125330
                *          3A125340
                *          3A125350
                *          3A125360
                *          3A125370
                *          3A125380
                *          3A125390
                *          3A125400
                *          3A125410
                *          3A125420
                *          3A125430
                *          3A125440
                *          3A125450
                *          3A125460
                *          3A125470
                *          3A125480
                *          3A125490
                *          3A125500
                *          3A125510
                *          3A125520
                *          3A125530
                *          3A125540
                *          3A125550
                *          3A125560
                *          3A125570
                *          3A125580
                *          3A125590
                *          3A125600
                *          3A125610
                *          3A125620
                *          3A125630
                *          3A125640
                *          3A125650
                *          3A125660
                *          3A125670
                *          3A125680
                *          3A125690
                *          3A125700
                *          3A125710
                *          3A125720
                *          3A125730
                *          3A125740
                *          3A125750
                *          3A125760
                *          3A125770
                *          3A125780
                *          3A125790
                *          3A125800
                *          3A125810
                *          3A125820
                *          3A125830
                *          3A125840
                *          3A125850

```


CPU FUNCTION TEST

02A4 0 70F8 * MDX G902 * EQUAL TO /FF00 3A127220
02A5 0 C02D G901 LD F920 REPEAT TEST 3A127230
02A6 0 D022 STO F903 1130 CPU LD /3A00 3A127240
02A7 0 D400 OF67 STO L N8C2 * AREA- FUNCTION & 3A127250
02A9 0 D400 OFD3 STO L F004 * MODIFIER FOR READING 3A127260
02AB 0 D02B STO F007 * DATA ENTRY SWITCHES 3A127270
02AC 0 081B G900 XIO F902 TEST DATA ENTRY SMS 3A127280
02AD 0 C022 LD F917 * FOR /FFFF 3A127290
02AE 0 F01F EOR F915 3A127300
02AF 0 4C18 02B4 BSC L X001,&- BRANCH ON ZERO 3A127310
02B1 0 F01C EOR F915 3A127320
02B2 0 3067 DC /3067 ERR ID & ERR WAIT 3A127330
DATA ENTRY SMS NOT 3A127340
EQUAL TO /FFFF 3A127350
02B3 0 70F8 MDX G900 3A127360
02B4 0 3001 X001 DC /3001 SET SENSE/PROG AND 3A127370
DATA ENTRY SMS TO 3A127380
ZEROS AND PUSH START 3A127390
CK FOR 1130 3A127400
%3A00-1130 3A127410
02B5 0 C013 LD F903 XFER IF 1130 3A127420
02B6 0 F01C EOR F920 TEST SENSE/PROG SMS 3A127430
02B7 0 4C18 02BF BSC L G904,&- IGNORE CE SMS. %/FF00 3A127440
02B9 0 081A G903 XIO F922 BRANCH IF OK 3A127450
02BA 0 E01B AND F923 3A127460
02BB 0 4C18 02BF BSC L G904,&- ERR ID & ERR WAIT 3A127470
02BD 0 3068 DC /3068 SENSE/PROG SMS NOT 3A127480
* EQUAL TO /0000 3A127490
02BE 0 70FA MDX G903 REPEAT TEST 3A127500
02BF 0 0808 G904 XIO F902 TEST DATA ENTRY SMS 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
EXIT TO NEXT ROUTINE 3A127610
02C6 0 7011 MDX A280 3A127620
02C8 0 0000 BSS E 3A127630
02C8 0 02D0 F902 DC F917 EQUAL /3A00 IN 1130 3A127640
02C9 0 0240 F903 DC /0240 3A127650
02CA 0 02CA F904 DC F904 3A127660
02CB 0 02CC F911 DC F912 3A127670
02CC 0 0000 F912 DC /0000 3A127680
02CD 0 0000 F913 DC /0000 3A127690
02CE 0 FFFF F915 DC /FFFF 3A127700
02CF 0 0002 F916 DC /0002 3A127710
02D0 0 0000 F917 DC /0000 3A127720
02D1 0 0000 F918 DC /0000 3A127730
02D2 0 0240 F919 DC /0240 1800 READ BIT SMS CONSTANT 3A127740
02D3 0 3A00 F920 DC /3A00 1130 READ BIT SMS CONSTANT 3A127750
02D4 0 0000 F922 DC 0 SENSE SENSE/PROG CON 3A127760
02D5 0 0760 DC /0760 3A127770
02D6 0 FF00 F923 DC /FF00 3A127780
02D7 0 0240 F007 DC /0240 EQUAL /3A00 IN 1130 3A127790
***** 3A127800
* BEGINING OF SECTION OF 3A127810
* PROGRAM USING COMMON ERROR 3A127820
* CONTROL ROUTINE 3A127830
* 3A127840
***** 3A127850
* TEST OF SRA OPERATION 3A127860
* 3A127870
* 3A127880
* 3A127890

CPU FUNCTION TEST

***** 3A127900
CORE DATA OR *LA- OPER- 3A127910
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A127920
***** 3A127930
02D8 0 C039 A280 LD N280 3A127940
02D9 0 1810 SRA 16 3A127950
02DA 0 4C18 02DF BSC L G280,&- BRANCH ON ZERO 3A127960
02DC 0 4400 OF69 BSI L F000 SRA 16 FAILED 3A127970
02DE 0 306A DC /306A ERR ID 3A127980
02DF 0 4400 OFC4 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 OF69 BSI L F000 SRA 15 FAILED 3A128070
02E9 0 3068 DC /3068 ERR ID 3A128080
02EA 0 4400 OFC4 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 OF69 BSI L F000 SRA 1 FAILED 3A128160
02F4 0 306C DC /306C ERR ID 3A128170
02F5 0 4400 OFC4 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 OF69 BSI L F000 SRA 1 FAILED 3A128250
02FF 0 306D DC /306D ERR ID 3A128260
0300 0 4400 OFC4 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 OF69 BSI L F000 COMB SRA FAILED 3A128370
030D 0 306E DC /306E ERR ID 3A128380
030E 0 4400 OFC4 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
CORE DATA OR *LA- OPER- 3A128520
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A128530
***** 3A128540
0318 0 C029 A2C0 LD N2C0 LD /0000 3A128550
0319 0 E028 AND N2C0 AND /0000 3A128560

CPU FUNCTION TEST

```

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
*****
0322 0 C01F          A2C4 LD   N2C0     LD /0000            3A128630
0323 0 E01F          AND   N2C2     LD /FFFF            3A128640
0324 0 4C18 0329      BSC L G2C4,&-  BRANCH ON ZERO      3A128650
0326 0 4400 0F69      BSI L F000     AND OF 0 AND 1 FAILED 3A128660
0328 0 3070           DC   /3070     ERR ID              3A128670
0329 0 4400 0FC4      G2C4 BSI L F005  CK LOCK ON ERROR    3A128680
032B 0 70F6           MDX  A2C4     LOOP              3A128690
*****
032C 0 C016          A2C8 LD   N2C2     LD /FFFF            3A128700
032D 0 E014          AND   N2C0     AND /0000            3A128710
032E 0 4C18 0333      BSC L G2C8,&-  BRANCH ON ZERO      3A128720
0330 0 4400 0F69      BSI L F000     AND OF 1 AND 0 FAILED 3A128730
0332 0 3071           DC   /3071     ERR ID              3A128740
0333 0 4400 0FC4      G2C8 BSI L F005  CK LOCK ON ERROR    3A128750
0335 0 70F6           MDX  A2C8     LOOP              3A128760
*****
0336 0 C00C          A2CC LD   N2C2     LD /FFFF            3A128770
0337 0 E008          AND   N2C2     AND /FFFF            3A128780
0338 0 F00A           EOR   N2C2     ZERO WITH /FFFF     3A128790
0339 0 4C18 033E      BSC L G2CC,&-  BRANCH ON ZERO      3A128800
033B 0 4400 0F69      BSI L F000     AND OF 1 AND 1 FAILED 3A128810
033D 0 3072           DC   /3072     ERR ID              3A128820
033E 0 4400 0FC4      G2CC BSI L F005  CK LOCK ON ERROR    3A128830
0340 0 70F5           MDX  A2CC     LOOP              3A128840
0341 0 7002           MDX  A300     EXIT TO NEXT ROUTINE 3A128850
0342 0 0000          N2C0 DC   /0000            3A128860
0343 0 FFFF          N2C2 DC   /FFFF            3A128870
*****
                                3A128880
                                3A128890
                                3A128900
                                3A128910
                                3A128920
                                3A128930
                                3A128940
                                3A128950
                                3A128960
                                3A128970
                                3A128980
                                3A128990
                                3A129000
                                3A129010
                                3A129020
                                3A129030
                                3A129040
                                3A129050
                                3A129060
                                3A129070
                                3A129080
                                3A129090
                                3A129100
                                3A129110
                                3A129120
                                3A129130
                                3A129140
                                3A129150
                                3A129160
                                3A129170
                                3A129180
                                3A129190
                                3A129200
                                3A129210
                                3A129220
                                3A129230
                                3A129240
                                3A129250

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TEST OF OR FUNCTION

```

CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****

```

```

0344 0 C020          A300 LD   N300     LD /0000            3A128970
0345 0 E81F          OR   N300     OR /0000            3A128980
0346 0 4C18 0348      BSC L G300,&-  BRANCH ON ZERO      3A128990
0348 0 4400 0F69      BSI L F000     OR OF 0 AND 0 FAILED 3A129000
034A 0 3073           DC   /3073     ERR ID              3A129010
034B 0 4400 0FC4      G300 BSI L F005  CK LOCK ON ERROR    3A129020
034D 0 70F6           MDX  A300     LOOP              3A129030
*****
034E 0 C016          A302 LD   N300     LD /0000            3A129040
034F 0 E816          OR   N302     OR /FFFF            3A129050
0350 0 F015           EOR   N302     ZERO WITH /FFFF     3A129060
0351 0 4C18 0356      BSC L G302,&-  BRANCH ON ZERO      3A129070
0353 0 4400 0F69      BSI L F000     OR OF 0 AND 1 FAILED 3A129080
0355 0 3074           DC   /3074     ERR ID              3A129090
0356 0 4400 0FC4      G302 BSI L F005  CHECK LOOP SWITCH    3A129100
0358 0 70F5           MDX  A302     LOOP              3A129110
*****
0359 0 C00C          A304 LD   N302     LD /FFFF            3A129120
035A 0 E808          OR   N302     OR /FFFF            3A129130
035B 0 F00A           EOR   N302     EOR IN /FFFF        3A129140
035C 0 4C18 0361      BSC L G304,&-  BRANCH ON ZERO      3A129150
035E 0 4400 0F69      BSI L F000     OR OF 1 AND 1 FAILED 3A129160
0360 0 3075           DC   /3075     ERR ID              3A129170
0361 0 4400 0FC4      G304 BSI L F005  CK LOCK ON ERRCR    3A129180
0363 0 70F5           MDX  A304     LOOP              3A129190
0364 0 7002           MDX  A340     EXIT TO NEXT ROUTINE 3A129200
0365 0 0000          N300 DC   /0000            3A129210

```

CPU FUNCTION TEST

```

0366 0 FFFF          N302 DC   /FFFF            3A129260
*
*
* TEST OF RTE 16 OPERATION
*
*****
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
0367 0 C016          A340 LD   N340     LD /0000            3A129310
0368 0 18D0          RTE   16        PLACE /0000 IN Q REG 3A129320
0369 0 C015          LD   N341     LD /FFFF            3A129330
036A 0 18D0          RTE   16        NOW A#/0000 Q#/FFFF 3A129340
036B 0 4C18 0370      BSC L G340,&-  BRANCH ON ZERO      3A129350
036D 0 4400 0F69      BSI L F000     ALL 0 THRU Q FAILED 3A129360
036F 0 3076           DC   /3076     ERR ID              3A129370
0370 0 4400 0F98      G340 BSI L F00E  CK LOCK ON ERROR    3A129380
0372 0 70F4           MDX  A340     LOOP              3A129390
0373 0 18D0          RTE   16        NOW A#/FFFF Q#/0000 3A129400
0374 0 F00A           EOR   N341     ZERO WITH /FFFF     3A129410
0375 0 4C18 037A      BSC L G342,&-  BRANCH ON ZERO      3A129420
0377 0 4400 0F69      BSI L F000     ALL 1 THRU Q FAILED 3A129430
0379 0 3077           DC   /3077     ERR ID              3A129440
037A 0 4400 0FC4      G342 BSI L F005  CK LOCK ON ERROR    3A129450
037C 0 70EA           MDX  A340     LOOP              3A129460
037D 0 7002           MDX  A380     EXIT TO NEXT ROUTINE 3A129470
037E 0 0000          N340 DC   /0000            3A129480
037F 0 FFFF          N341 DC   /FFFF            3A129490
*
*
* TEST OF SRT OPERATION
*
*****
0380 0 C055          A380 LD   N380     LD /8000            3A129500
0381 0 18A0          SRT   32        NOW A#/FFFF Q#/FFFF 3A129510
0382 0 F054          EOR   N381     EOR IN /FFFF        3A129520
0383 0 4C18 0388      BSC L G380,&-  BRANCH ON ZERO      3A129530
0385 0 4400 0F69      BSI L F000     SRT 32-A REG FAILED 3A129540
0387 0 3078           DC   /3078     ERR ID              3A129550
0388 0 4400 0F98      G380 BSI L F00E  CK LOCK ON ERROR    3A129560
038A 0 70F5           MDX  A380     LOOP              3A129570
038B 0 18D0          RTE   16        NOW A#/FFFF Q#/0000 3A129580
038C 0 F04A           EOR   N381     EOR IN /FFFF        3A129590
038D 0 4C18 0392      BSC L G382,&-  BRANCH ON ZERO      3A129600
038F 0 4400 0F69      BSI L F000     SRT 32-Q REG FAILED 3A129610
0391 0 3079           DC   /3079     ERR ID              3A129620
0392 0 4400 0FC4      G382 BSI L F005  CK LOCK ON ERROR    3A129630
0394 0 70EB           MDX  A380     LOOP              3A129640
*****
0395 0 C042          A384 LD   N382     LD /4000            3A129650
0396 0 18A0          SRT   32        NOW A#/0000 Q#/0000 3A129660
0397 0 4C18 039C      BSC L G384,&-  BRANCH ON ZERO      3A129670
0399 0 4400 0F69      BSI L F000     SRT 32-A REG FAILED 3A129680
039B 0 307A           DC   /307A     ERR ID              3A129690
039C 0 4400 0FC4      G384 BSI L F005  CK LOCK ON ERROR    3A129700
039E 0 70F6           MDX  A384     LOOP              3A129710
039F 0 18D0          RTE   16        NOW A#/0000 Q#/0000 3A129720
03A0 0 4C18 03A5      BSC L G386,&-  BRANCH ON ZERO      3A129730
03A2 0 4400 0F69      BSI L F000     SRT 32-Q REG FAILED 3A129740
03A4 0 307B           DC   /307B     ERR ID              3A129750
03A5 0 4400 0FC4      G386 BSI L F005  CK LOCK ON ERROR    3A129760
03A7 0 70ED           MDX  A384     LOOP              3A129770
*****
03A8 0 C030          A388 LD   N383     LD /5555            3A129780
03A9 0 188F          SRT   15        NOW A#/0000 Q#/0000 3A129790
03AA 0 4C18 03AF      BSC L G388,&-  BRANCH ON ZERO      3A129800
03AC 0 4400 0F69      BSI L F000     SRT 15-A REG FAILED 3A129810
03AE 0 307C           DC   /307C     ERR ID              3A129820
03AF 0 4400 0F98      G388 BSI L F00E  CK LOCK ON ERROR    3A129830

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CPU FUNCTION TEST

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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 BS! L F005  CK LOCK ON ERROR 3A130000
03BB 0 70EC      MDX      A388      LOOP      3A130010
*****
CORE DATA DR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
03BC 0 C01C      A38C LD      N383      LD /5555      3A130020
03BD 0 188D      SRT      0        NOW A#/5555 Q#/0000 3A130030
03BE 0 1882      SRT      2        NOW A#/1555 Q#/4000 3A130040
03BF 0 1884      SRT      4        /0155 /5400      3A130050
03C0 0 1886      SRT      6        /0005 /5550      3A130060
03C1 0 1888      SRT      8        /0000 /0555      3A130070
03C2 0 188A      SRT     10        /0000 /0001      3A130080
03C3 0 4C18 03C8 BSC L G38C,&-  BRANCH ON ZERO 3A130090
03C5 0 4400 0F69 BSI L F000      SERIES SRT FAILED 3A130100
03C7 0 307E      DC      /307E     ERR ID      3A130110
03C8 0 4400 0F98 G38C BSI L F00E  CK LOCK ON ERROR 3A130120
03CA 0 70F1      MDX      A38C      LOOP      3A130130
03CB 0 18D0      RTE      16        NOW A#/0001 Q#/0000 3A130140
03CC 0 F00E      EOR      N385      ZERO WITH /0001 3A130150
03CD 0 4C18 03D2 BSC L G38E,&-  BRANCH ON ZERO 3A130160
03CF 0 4400 0F69 BSI L F000      SERIES SRT FAILED 3A130170
03D1 0 307F      DC      /307F     ERR ID      3A130180
03D2 0 4400 0FC4 G38E BSI L F005  CK LOCK ON ERROR 3A130190
03D4 0 70E7      MDX      A38C      LOOP      3A130200
03D5 0 7006      MDX      A3C0      EXIT TO NEXT ROUTINE 3A130210
03D6 0 8000      N380 DC      /8000      3A130220
03D7 0 FFFF      N381 DC      /FFFF      3A130230
03D8 0 4000      N382 DC      /4000      3A130240
03D9 0 5555      N383 DC      /5555      3A130250
03DA 0 AAAA      N384 DC      /AAAA      3A130260
03DB 0 0001      N385 DC      /0001      3A130270
*
* TEST OF RTE OPERATION
*
*****
03DC 0 C02F      A3C0 LD      N3C1      LD /AAAA      3A130280
03DD 0 18D0      RTE      16        NOW A#/0000 Q#/AAAA 3A130290
03DE 0 C02C      LD      N3C0      NOW A#/5555 Q#/AAAA 3A130300
03DF 0 18CF      RTE      15        NOW A#/5554 Q#/AAAB 3A130310
03E0 0 F02E      EOR      N3C4      ZERO WITH /5554 3A130320
03E1 0 4C18 03E6 BSC L G3C0,&-  BRANCH ON ZERO 3A130330
03E3 0 4400 0F69 BSI L F000      RTE 15-Q TO A FAILED 3A130340
03E5 0 308D      DC      /308D     ERR ID      3A130350
03E6 0 4400 0F98 G3C0 BSI L F00E  CK LOCK ON ERROR 3A130360
03E8 0 70F3      MDX      A3C0      LOOP      3A130370
03E9 0 18D0      RTE      16        NOW A#/AAAB Q#/5554 3A130380
03EA 0 F025      EOR      N3C5      ZERO WITH /AAAB 3A130390
03EB 0 4C18 03F0 BSC L G3C2,&-  BRANCH ON ZERO 3A130400
03ED 0 4400 0F69 BSI L F000      RTE 15-A TO Q FAILED 3A130410
03EF 0 3081      DC      /3081     ERR ID      3A130420
03F0 0 4400 0FC4 G3C2 BSI L F005  CK LOCK ON ERROR 3A130430
03F2 0 70E9      MDX      A3C0      LOOP      3A130440
*****
CORE DATA DR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
03F3 0 C01A      A3C4 LD      N3C3      LD /8000      3A130450
03F4 0 18D0      RTE      16        NOW A#/XXXX Q#/8000 3A130460
03F5 0 C017      LD      N3C2      LD /0000      3A130470

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CPU FUNCTION TEST

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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 F000      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
0408 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
*
* TEST OF SLA OPERATION
*
*****
0412 0 C400 04B6 A400 LD      L      N400      LD /FFFF      3A130840
0414 0 18D0      RTE      16        NOW A#/XXXX Q#/FFFF 3A130850
0415 0 C400 04B6 LD      L      N400      LD /FFFF      3A130860
0417 0 1010      SLA      16        NOW A#/0000 Q#/FFFF 3A130870
0418 0 4C02 041D BSC L G404,C   BR ON CARRY      3A130880
041A 0 4400 0F69 BSI L F000      SLA 15-CARRY FAILED 3A130890
041C 0 3085      DC      /3085     ERR ID      3A130900
041D 0 4400 0F98 G404 BSI L F00E  CK LOCK ON ERROR 3A130910
041F 0 70F2      MDX      A400      LOOP      3A130920
0420 0 4C18 0425 BSC L G400,&-  BRANCH ON ZERO 3A130930
0422 0 4400 0F69 BSI L F000      SLA 16-A REG FAILED 3A130940
0424 0 3084      DC      /3084     ERR ID      3A130950
0425 0 4400 0F98 G400 BSI L F00E  CK LOCK ON ERROR 3A130960
0427 0 70EA      MDX      A400      LOOP      3A130970
0428 0 18D0      RTE      16        NOW A#/FFFF Q#/0000 3A130980
0429 0 F400 04B6 EOR L N400      ZERO WITH /FFFF 3A130990
042B 0 4C18 0430 BSC L G406,&-  BRANCH ON ZERO 3A131000
042D 0 4400 0F69 BSI L F000      SLA 16-AFFECTED Q REG 3A131010
042F 0 3086      DC      /3086     ERR ID      3A131020
0430 0 4400 0FC4 G406 BSI L F005  CK LOCK ON ERROR 3A131030
0432 0 70DF      MDX      A400      LOOP      3A131040
*****
CORE DATA DR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
0433 0 C400 04B8 A408 LD      L      N405      LD /0000      3A131050
0435 0 18D0      RTE      16        NOW A#/XXXX Q#/0000 3A131060
0436 0 C400 04BC LD      L      N406      /FFFF /0000 3A131070
0438 0 1010      SLA      16        /0000 /0000 3A131080
0439 0 4C02 043C BSC L G407,C   BR ON CARRY      3A131090
043B 0 7003      MDX      G40C      3A131100
043C 0 4400 0F69 G407 BSI L F000  SLA 16- CARRY FAILED 3A131110
043E 0 3088      DC      /3088     ERR ID      3A131120
043F 0 4400 0F98 G40C BSI L F00E  CK LOCK ON ERROR 3A131130
0441 0 70F1      MDX      A408      LOOP      3A131140
0442 0 4C18 0447 BSC L G408,&-  BRANCH ON ZERO 3A131150
0444 0 4400 0F69 BSI L F000      SLA 16-A REG FAILED 3A131160
0446 0 3087      DC      /3087     ERR ID      3A131170
0447 0 4400 0F98 G408 BSI L F00E  CK LOCK ON ERROR 3A131180
0449 0 70E9      MDX      A408      LOOP      3A131190
044A 0 18D0      RTE      16        NOW A#/0000 Q#/0000 3A131200

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CPU FUNCTION TEST

044B 0 4C18 0450 BSC L G40E,C- 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

0453 0 C067 B400 LD N405 LD /0000 3A131350
0454 0 1800 RTE 16 NOW A#/XXXX Q#/0000 3A131360
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 3088 DC /3088 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,C- 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 1800 RTE 16 NOW A#/0000 Q#/5554 3A131510
0469 0 4C18 046E BSC L H404,C- 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

0471 0 C049 B406 LD N405 LD /0000 3A131570
0472 0 1800 RTE 16 NOW A#/XXXX Q#/0000 3A131580
0473 0 C044 LD N402 LD /5555 3A131590
0474 0 1001 SLA 1 NOW A#/AAAA Q#/0000 3A131600
0475 0 4C02 0478 BSC L H407,C BR ON CARRY 3A131610
0477 0 7003 MDX H405 3A131620
0478 0 4400 0F69 H407 BSI L F000 SLA 1-CARRY FAILED 3A131630
047A 0 308E DC /308E ERR ID 3A131640
047B 0 4400 0F98 H405 BSI L F00E CK LOCK ON ERROR 3A131650
047D 0 70F3 MDX B406 LOOP 3A131660
047E 0 F03A EOR N403 ZERO WITH /AAAA 3A131670
047F 0 4C18 0484 BSC L H406,C- BRANCH ON ZERO 3A131680
0481 0 4400 0F69 BSI L F000 SLA 1-A REG FAILED 3A131690
0483 0 308D DC /308D ERR ID 3A131700
0484 0 4400 0F98 H406 BSI L F00E CK LOCK ON ERROR 3A131710
0486 0 70EA MDX B406 LOOP 3A131720
0487 0 1800 RTE 16 NOW A#/0000 Q#/AAAA 3A131730
0488 0 4C18 048D BSC L H408,C- BRANCH ON ZERO 3A131740
048A 0 4400 0F69 BSI L F000 SLA 1-AFFECTED Q REG 3A131750
048C 0 308F DC /308F ERR ID 3A131760
048D 0 4400 0FC4 H408 BSI L F005 CK LOCK ON ERROR 3A131770
048F 0 70E1 MDX B406 LOOP 3A131780

CORE DATA OR *LA- OPER- ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A131800

0490 0 C02A B40A LD N405 LD /0000 3A131810
0491 0 1800 RTE 16 NOW A#/XXXX Q#/0000 3A131820
0492 0 C024 LD N401 LD /0001 3A131830
0493 0 6101 LDX 1 1 3A131840
0494 0 6204 LDX 2 4 3A131850
0495 0 6303 LDX 3 3 3A131860
0496 0 1000 SLA 0 NOW A#/0001 Q#/0000 3A131870
0497 0 1100 SLA 1 0 /0002 /0000 3A131880
0498 0 1002 SLA 2 /0008 /0000 3A131890
0499 0 1200 SLA 2 0 /0080 /0000 3A131900
049A 0 1006 SLA 6 /2000 /0000 3A131910
049B 0 1300 SLA 3 0 /0000 /0000 3A131920
049C 0 4C02 04A1 BSC L H40D,C BRANCH ON CARRY 3A131930
3A131940
3A131950
3A131960
3A131970

CPU FUNCTION TEST

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,C- 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 1800 RTE 16 3A132070
04AD 0 4C18 04B2 BSC L H40E,C- 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

04BD 0 C07E A440 LD N440 LD /0001 3A132240
04BE 0 1800 RTE 16 NOW A#/XXXX Q#Q#/0001 3A132250
04BF 0 C07D LD N441 LD /0000 3A132260
04C0 0 10A0 SLT 32 /0000 Q#/0000 3A132270
04C1 0 4C02 04C6 BSC L G442,C BRANCH ON CARRY 3A132280
04C3 0 4400 0F69 BSI L F000 SLT 32-CARRY FAILED 3A132290
04C5 0 3094 DC /3094 ERR ID 3A132300
04C6 0 4400 0F98 G442 BSI L F00E CK LOCK ON ERROR 3A132310
04C8 0 70F4 MDX A440 LOOP 3A132320
04C9 0 4C18 04CE BSC L G440,C- BRANCH ON ZERO 3A132330
04CB 0 4400 0F69 BSI L F000 SLT 32-A REG FAILED 3A132340
04CD 0 3093 DC /3093 ERK ID 3A132350
04CE 0 4400 0F98 G440 BSI L F00E CK LOCK ON ERROR 3A132360
04D0 0 70EC MDX A440 LOOP 3A132370
04D1 0 1800 RTE 16 NOW A#/0000 Q#/0000 3A132380
04D2 0 4C18 04D7 BSC L G443,C- BRANCH ON ZERO 3A132390
04D4 0 4400 0F69 BSI L F000 SLT 32-Q REG FAILED 3A132400
04D6 0 3095 DC /3095 ERR ID 3A132410
04D7 0 4400 0FC4 G443 BSI L F005 CK LOCK ON ERROR 3A132420
04D9 0 70E3 MDX A440 LOOP 3A132430

CORE DATA OR *LA- OPER- ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A132440

04DA 0 C063 A444 LD N442 LD /FFFF 3A132450
04DB 0 1800 RTE 16 NOW A#/XXXX Q#/FFFF 3A132460
04DC 0 C060 LD N441 LD /0000 3A132470
04DD 0 1090 SLT 16 NOW A#/FFFF Q#/0000 3A132480
04DE 0 4C02 04E1 BSC L G446,C BR ON CARRY 3A132490
04E0 0 7003 MDX G447 3A132500
04E1 0 4400 0F69 G446 BSI L F000 SLT 16-CARRY FAILED 3A132510
04E3 0 3097 DC /3097 ERR ID 3A132520
04E4 0 4400 0F98 G447 BSI L F00E CK LOCK ON ERROR 3A132530
04E6 0 70F3 MDX A444 LOOP 3A132540
04E7 0 F056 EOR N442 ZERO WITH /FFFF 3A132550
04E8 0 4C18 04ED BSC L G444,C- BRANCH ON ZERO 3A132560
04EA 0 4400 0F69 BSI L F000 SLT 16-A REG FAILED 3A132570
04EC 0 3096 DC /3096 ERR ID 3A132580
04ED 0 4400 0F98 G444 BSI L F00E CK LOCK ON ERROR 3A132590
04EF 0 70EA MDX A444 LOOP 3A132600
3A132610
3A132620
3A132630
3A132640
3A132650

CPU FUNCTION TEST

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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
*****
04F9 0 C045         A44A LD      N443     LD /5555            3A132720
04FA 0 18D0          RTE      16      NOW A#/XXXX Q#/5555  3A132730
04FB 0 C041         LD      N441     /0000 /5555        3A132740
04FC 0 108F         SLT     15      /2AAA /8000        3A132750
04FD 0 4C02 0500    BSC L  G44C,C    BR ON CARRY        3A132760
04FF 0 7003         MDX     G44D     LOOP              3A132770
0500 0 4400 0F69    G44C BSI L  F000     SLT 15-CARRY FAILED 3A132780
0502 0 309A         DC      /309A     ERR ID              3A132790
0503 0 4400 0F98    G44D BSI L  F00E     CK LOCK ON ERROR    3A132800
0505 0 70F3         MDX     A44A     LOOP              3A132810
0506 0 F039         EOR     N444     ZERO WITH /2AAA    3A132820
0507 0 4C18 050C    BSC L  G44A,&-  BRANCH ON ZERO    3A132830
0509 0 4400 0F69    BSI L  F000     SLT 15-A REG FAILED 3A132840
050B 0 3099         DC      /3099     ERR ID              3A132850
050C 0 4400 0F98    G44A BSI L  F00E     CK LOCK ON ERROR    3A132860
050E 0 70EA         MDX     A44A     LOOP              3A132870
050F 0 18D0          RTE      16      NOW A#/8000 Q#/0000  3A132880
0510 0 F030         EOR     N445     ZERO WITH /8000    3A132890
0511 0 4C18 0516    BSC L  G44E,&-  BRANCH ON ZERO    3A132900
0513 0 4400 0F69    BSI L  F000     SLT 15-Q REG FAILED 3A132910
0515 0 3098         DC      /3098     ERR ID              3A132920
0516 0 4400 0FC4    G44E BSI L  F005     CK LOCK ON ERROR    3A132930
0518 0 70E0         MDX     A44A     LOOP              3A132940
*****
COKE  DATA OR      *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT 3A132950
*****
0519 0 C022         B440 LD      N440     LD /0001            3A132960
051A 0 18D0          RTE      16      NOW A#/XXXX Q#/0001  3A132970
051B 0 C021         LD      N441     LD /0000            3A132980
051C 0 1080         SLT     0      NOW A#/0000 Q#/0001  3A132990
051D 0 1081         SLT     1      /0000 /0002        3A133000
051E 0 1085         SLT     5      /0000 /0040        3A133010
051F 0 1087         SLT     7      /0000 /2000        3A133020
0520 0 1089         SLT     9      /0040 /0000        3A133030
0521 0 108A         SLT    10      /0000 /0000        3A133040
0522 0 4C02 0527    BSC L  H443,C    BR ON CARRY        3A133050
0524 0 4400 0F69    BSI L  F000     COMB SLT-CARRY FAILED 3A133060
0526 0 309D         DC      /309D     ERR ID              3A133070
0527 0 4400 0F98    H443 BSI L  F00E     CK LOCK ON ERROR    3A133080
0529 0 70EF         MDX     B440     LOOP              3A133090
052A 0 4C18 052F    BSC L  H440,&-  BRANCH ON ZERO    3A133100
052C 0 4400 0F69    BSI L  F000     COMB SLT-A REG FAILE 3A133110
052E 0 309C         DC      /309C     ERR ID              3A133120
052F 0 4400 0F98    H440 BSI L  F00E     CK LOCK ON ERROR    3A133130
0531 0 70E7         MDX     B440     LOOP              3A133140
0532 0 18D0          RTE      16      NOW A#/0000 Q#/0000  3A133150
0533 0 4C18 0538    BSC L  H444,&-  BRANCH ON ZERO    3A133160
0535 0 4400 0F69    BSI L  F000     COMB SLT-Q REG FAILE 3A133170
0537 0 309E         DC      /309E     ERR ID              3A133180
0538 0 4400 0FC4    H444 BSI L  F005     CK LOCK ON ERROR    3A133190
053A 0 70DE         MDX     B440     LOOP              3A133200
053B 0 7006         MDX     A480     EXIT TO NEXT ROUTINE 3A133210
053C 0 0001         N440 DC      /0001            3A133220
053D 0 0000         N441 DC      /0000            3A133230
053E 0 FFFF         N442 DC      /FFFF            3A133240
053F 0 5555         N443 DC      /5555            3A133250
0540 0 2AAA         N444 DC      /2AAA            3A133260
0541 0 8000         N445 DC      /8000            3A133270
*

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CPU FUNCTION TEST

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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     STO /0000            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
CORE  DATA OR      *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT 3A133650
*****
055F 0 2003         A4C0 LDS     3      3A133660
0560 0 2000         LDS     0      SET C AND OF OFF    3A133670
0561 0 285D         STS     N4C0     3A133680
0562 0 C05C         LD      N4C0     3A133690
0563 0 4C18 0568    BSC L  G4C0,&-  3A133700
0565 0 4400 0F69    BSI L  F000     STS FAILED TO STORE 3A133710
0567 0 30A1         DC      /30A1     ERR ID              3A133720
0568 0 4400 0FC4    G4C0 BSI L  F005     CK LOCK ON ERROR    3A133730
056A 0 70F4         MDX     A4C0     LOOP              3A133740
***** 3A133750
056B 0 C0FF         A4C2 LD      A4C2     3A133760
056C 0 2003         LDS     3      3A133770
056D 0 2851         STS     N4C0     3A133780
056E 0 F0FC         EOR     A4C2     3A133790
056F 0 4C18 0574    BSC L  H4C3,&-  BRANCH ON ZERO    3A133800
0571 0 4400 0F69    BSI L  F000     ACC GONE AFT LDS-STS 3A133810
0573 0 30A3         DC      /30A3     ERR ID              3A133820
0574 0 4C02 0577    H4C3 BSC L  H4C2,C  BR IF CARRY IS NO  3A133830
0576 0 7003         MDX     G4C2     3A133840
0577 0 4400 0F69    H4C2 BSI L  F000     STS NOT CLEAR CARRY 3A133850
0579 0 30A2         DC      /30A2     ERR ID              3A133860
057A 0 4400 0F98    G4C2 BSI L  F00E     CK LOCK ON ERROR    3A133870
057C 0 70EE         MDX     A4C2     LOOP              3A133880
057D 0 4C01 0580    BSC L  H4C4,0  BR IF CARRY IS ON  3A133890
057F 0 7003         MDX     G4C4     3A133900
0580 0 4400 0F69    H4C4 BSI L  F000     STS NOT CLEAR OVERFLW 3A133910
0582 0 30A4         DC      /30A4     ERR ID              3A133920
0583 0 4400 0F98    G4C4 BSI L  F00E     CK LOCK ON ERROR    3A133930
0585 0 70E5         MDX     A4C2     LOOP              3A133940
0586 0 C038         LD      N4C0     3A133950
0587 0 F038         EOR     N4C1     3A133960
0588 0 4C18 058D    BSC L  G4C6,&-  BRANCH ON ZERO    3A133970
058A 0 4400 0F69    BSI L  F000     STS FAILED TO STORE 3A133980

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CPU FUNCTION TEST

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058C 0 30A5          DC      /30A5      ERR ID      3A134020
058D 0 4400 OFC4    G4C6  BSI  L  F005      CK LOCK ON ERROR 3A134030
058F 0 70DB          MDX      A4C2          LOOP          3A134040
*****
0590 0 2002          A4C8  LDS   2          SET C ON OF OFF  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 OF69    BSI  L  F000         STS FAILED TO STORE 3A134130
059A 0 30A6          DC      /30A6      ERR ID          3A134140
059B 0 4400 OF98    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 OF69    BSI  L  F000         STS NOT CLEAR CARRY 3A134190
05A3 0 30A7          DC      /30A7      ERR ID          3A134200
05A4 0 4400 OFC4    G4CA  BSI  L  F005      CK LOCK ON ERROR 3A134210
05A6 0 70E9          MDX      A4C8          LOOP          3A134220
*****
05A7 0 2003          A4CC  LDS   3          SET C-OFF OF - ON 3A134230
05A8 0 2001          LDS   1          SET C-OFF OF - ON 3A134240
05A9 0 2815          STS   N4C0         SET /0001 IN N4C0 3A134250
05AA 0 2816          STS   N4C2         SET /0000 IN N4C2 3A134260
05AB 0 C013          LD    N4C0         LD /0001          3A134270
05AC 0 F016          EOR   N4C4         ZERO WITH /0001   3A134280
05AD 0 4C18 05B2    BSC  L  G4CC,&-    BRANCH ON ZERO   3A134290
05AF 0 4400 OF69    BSI  L  F000         STS FAILED TO STORE 3A134300
05B1 0 30A8          DC      /30A8      ERR ID          3A134310
05B2 0 4400 OF98    G4CC  BSI  L  F00E      CK LOCK ON ERROR 3A134320
05B4 0 70F2          MDX      A4CC          LOOP          3A134330
05B5 0 C00B          LD    N4C2         LD STATUS STORED  3A134340
05B6 0 4C18 05B8    BSC  L  G4CD,&-    BRANCH ON ZERO   3A134350
05B8 0 4400 OF69    BSI  L  F000         STS NOT CLEAR OVERFL 3A134360
05BA 0 30A9          DC      /30A9      ERR ID          3A134370
05BB 0 4400 OFC4    G4CD  BSI  L  F005      CK LOCK ON ERROR 3A134380
05BD 0 70E9          MDX      A4CC          LOOP          3A134390
05BE 0 7005          MDX      A500         EXIT TO NEXT ROUTINE 3A134400
05BF 0 0003          N4C0  DC      /0003         3A134410
05C0 0 0003          N4C1  DC      /0003         3A134420
05C1 0 0000          N4C2  -DC     /0000         3A134430
05C2 0 0002          N4C3  DC      /0002         3A134440
05C3 0 0001          N4C4  DC      /0001         3A134450
*****
*                                TEST OF BSC OPERATION                                *
*****
CURE  DATA OR *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
05C4 0 2003          A500  LDS   3          SET C AND OF ON  3A134510
05C5 0 C400 0658    LD    L  N500         LD /8001          3A134520
05C7 0 482F          BSC   0&E2C         SK IF OF OFF, PLUS, EVEN, 3A134530
*                                * ZERO OR CARRY OFF.                                *
05C8 0 7003          MDX   G500          3A134540
05C9 0 4400 OF69    BSI  L  F000         BSC SKPD-SHOULD NOT 3A134550
05CB 0 30AA          DC      /30AA      ERR ID          3A134560
05CC 0 4400 OFC4    G500  BSI  L  F005      CK LOCK ON ERROR 3A134570
05CE 0 70F5          MDX      A500          LOOP          3A134580
*****
05CF 0 2003          A502  LDS   3          SET C & OF ON    3A134590
05D0 0 C400 0659    LD    L  N501         LD /0000          3A134600
05D2 0 481B          BSC   -0CC         SK IF MINUS, OF OFF, CARRY 3A134610
*                                *OFF OR PLUS                                *
05D3 0 7003          MDX   G502          3A134620

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CPU FUNCTION TEST

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05D4 0 4400 OF69    BSI  L  F000         BSC SKPD-SHOULD NOT 3A134700
05D6 0 30AB          DC      /30AB      ERR ID          3A134710
05D7 0 4400 OFC4    G502  BSI  L  F005      CK LOCK ON ERROR 3A134720
05D9 0 70F5          MDX      A502          LOOP          3A134730
*****
05DA 0 2003          A504  LDS   3          SET C AND OF ON  3A134740
05DB 0 C07E          LD    N502         LD /8000          3A134750
05DC 0 2809          STS   N507         SET /0003 IN N507 3A134760
05DD 0 4815          BSC   0-E          SK IF OF OFF,MUNIS OR EVEN 3A134770
05DE 0 7001          MDX   G504          3A134780
05DF 0 7003          MDX   G505          3A134790
05E0 0 4400 OF69    G504  BSI  L  F000         BSC FAILED TO SKIP 3A134800
05E2 0 30AC          DC      /30AC      ERR ID          3A134810
05E3 0 4400 OF98    G505  BSI  L  F00E      CK LOCK ON ERROR 3A134820
05E5 0 70F4          MDX      A504          LOOP          3A134830
05E6 0 2000          N507  LDS   *-          3A134840
05E7 0 4801          BSC   0          SKIP IF OVERFLOW IS OFF 3A134850
05E8 0 4801          BSC   0          3A134860
05E9 0 7001          MDX   G506          3A134870
05EA 0 7003          MDX   G507          3A134880
05EB 0 4400 OF69    G506  BSI  L  F000         BSC NOT CLEAR OVERFLW 3A134890
05ED 0 30AD          DC      /30AD      ERR ID          3A134900
05EE 0 4400 OFC4    G507  BSI  L  F005      CK LOCK ON ERROR 3A134910
05F0 0 70E9          MDX      A504          LOOP          3A134920
*****
05F1 0 2000          A50B  LDS   0          SET C AND OF OFF  3A134930
05F2 0 C068          LD    N503         LD /0001          3A134940
05F3 0 482A          BSC   C&Z         SK IF CARRY OFF, PLUS 3A134950
*                                * OR ZERO                                *
05F4 0 7001          MDX   G508          3A134960
05F5 0 7003          MDX   H508          3A134970
05F6 0 4400 OF69    G508  BSI  L  F000         BSC FAILED TO SKIP 3A134980
05F8 0 30AE          DC      /30AE      ERR ID          3A134990
05F9 0 4400 OFC4    H508  BSI  L  F005      CK LOCK ON ERROR 3A135000
05FB 0 70F5          MDX      A508          LOOP          3A135010
*****
05FC 0 2003          A50A  LDS   3          SET C AND OF ON  3A135020
05FD 0 C05A          LD    N500         LD /8001          3A135030
05FE 0 4C0F 060F    BSC  L  G50A,&OCE    BR ON NOT PLUS, OF ON, 3A135040
*                                * CARRY ON OR NOT EVEN                                *
0600 0 7001          MDX   H50A          3A135050
0601 0 7007          MDX   J50A          3A135060
0602 0 4400 OF69    H50A  BSI  L  F000         BSC FELL THRU      3A135070
0604 0 30AF          DC      /30AF      ERR ID          3A135080
0605 0 4400 OF98    BSI  L  F00E      CK LOCK ON ERROR 3A135090
0607 0 70F4          MDX   A50A          LOOP          3A135100
0608 0 7006          MDX   G50A          3A135110
0609 0 4400 OF69    J50A  BSI  L  F000         BSC SKPD-SHOULD BRNCH 3A135120
060B 0 30B0          DC      /30B0      ERR ID          3A135130
060C 0 4400 OF98    BSI  L  F00E      CK LOCK ON ERROR 3A135140
060E 0 70ED          MDX   A50A          LOOP          3A135150
060F 0 F048          G50A  EOR   N500         ZERO WITH /8001   3A135160
0610 0 4820          BSC   Z          SK ON ZERO       3A135170
0611 0 7001          MDX   H50B          3A135180
0612 0 7003          MDX   K50B          3A135190
0613 0 4400 OF69    H50B  BSI  L  F000         ACC DESTROYED AFTER BSC 3A135200
0615 0 3170          DC      /3170      ERR ID          3A135210
0616 0 4400 OFC4    K50B  BSI  L  F005      CK LOCK ON ERROR 3A135220
0618 0 7000          MDX      A50C          EXIT TO NEXT ROUTINE 3A135230
*****
CORE  DATA OR *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
0619 0 2003          A50C  LDS   3          SET C & OF ON    3A135240
061A 0 C041          LD    N504         LD /0004          3A135250
061B 0 4C30 061F    BSC  L  G50C,-Z     BR NOT MINUS OR NOT ZERO 3A135260
061D 0 7002          MDX   H50C          3A135270

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CPU FUNCTION TEST

CPU FUNCTION TEST

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061E 0 7008 MDX J50C 3A135380
061F 0 700A G50C MDX K50C 3A135390
0620 0 4400 OF69 H50C BSI L F000 BSC FELL THRU 3A135400
0622 0 30B1 DC /30B1 ERR ID 3A135410
0623 0 4400 OFC4 BSI L F005 CK LOCK ON ERROR 3A135420
0625 0 70F3 MDX A50C LOOP 3A135430
0626 0 7006 MDX A50E 3A135440
0627 0 4400 OF69 J50C BSI L F000 BSC SKPD-SHOULD BRNC 3A135450
0629 0 30B2 DC /30B2 ERR ID 3A135460
062A 0 4400 OFC4 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
*****
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 700B MDX H50E 3A135560
0633 0 7007 MDX J50E 3A135570
0634 0 4400 OF69 G50E BSI L F000 BSC BRNCHED-SHOULDNT 3A135580
0636 0 30B3 DC /30B3 ERR ID 3A135590
0637 0 4400 OFC4 BSI L F005 CK LOCK ON ERROR 3A135600
0639 0 70F3 MDX A50E LOOP 3A135610
063A 0 7006 MDX B500 3A135620
063B 0 4400 OF69 J50E BSI L F000 BSC SKPD-SHOULDNT 3A135630
063D 0 30B4 DC /30B4 ERR ID 3A135640
063E 0 4400 OFC4 H50E BSI L F005 CK LOCK ON ERROR 3A135650
0640 0 70EC MDX A50E LOOP 3A135660
*****
0641 0 2003 B500 LDS 3 SET C AND OF ON 3A135680
0642 0 C018 LD N503 LD /0001 3A135690
0643 0 4808 BSC E 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 OF69 BSI L F000 BSC & CLEARED OVFLW 3A135760
064C 0 30B5 DC /30B5 ERR ID 3A135770
064D 0 4400 OFC4 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 OF69 S501 BSI L F000 BSC FAILED TO SKP 3A135810
0653 0 30B6 DC /30B6 ERR ID 3A135820
0654 0 4400 OFC4 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
*****
0660 0 2003 A540 LDS 3 SET C AND OF ON 3A135980
0661 0 C0F6 LD N500 LD /8001 3A135990
0662 0 442F 0674 BSI L G540,ECO&Z BR ON NOT EVEN, CARRY, OF, 3A136000
0664 0 7001 MDX H540 * NOT PLUS OR NOT ZERO 3A136010

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0665 0 7007 MDX J540 3A136060
0666 0 4400 OF69 H540 BSI L F000 BSI FELL THRU 3A136070
0668 0 30B7 DC /30B7 ERR ID 3A136080
0669 0 4400 OF98 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 OF69 J540 BSI L F000 BSI SKPD-SHOULD BRNCH 3A136120
066F 0 30B8 DC /30B8 ERR ID 3A136130
0670 0 4400 OF98 BSI L F00E CK LOCK ON ERROR 3A136140
0672 0 70ED MDX A540 LOOP 3A136150
0673 0 7001 MDX G540&E1 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 OF69 BSI L F000 BSI NOT CLEAR OVERFLOW 3A136220
067D 0 30B9 DC /30B9 ERR ID 3A136230
067E 0 4400 OFC4 G542 BSI L F005 CK LOCK ON ERROR 3A136240
0680 0 70DF MDX A540 LOOP 3A136250
*****
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 OF69 H544 BSI L F000 BSI DID NOT BRANCH 3A136310
0689 0 30BA DC /30BA ERR ID 3A136320
068A 0 4400 OFC4 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 OF69 J544 BSI L F000 BSI SKPD-SHOULD BRNC 3A136360
0690 0 30BB DC /30BB ERR ID 3A136370
0691 0 4400 OFC4 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
*****
0696 0 C0C2 A546 LD N501 3A136420
0697 0 4420 069B BSI L G546,Z BR WHEN NOT ZERO 3A136430
0699 0 700C MDX J546 3A136440
069A 0 7008 MDX H546 3A136450
069B 0 0000 G546 DC /0000 3A136460
069C 0 4400 OF69 BSI L F000 BSI BRNCHD-SHOULD NO 3A136470
069E 0 30BC DC /30BC ERR ID 3A136480
069F 0 4400 OFC4 BSI L F005 CK LOCK ON ERROR 3A136490
06A1 0 70F4 MDX A546 LOOP 3A136500
06A2 0 7006 MDX A548 EXIT TO NEXT ROUTINE 3A136510
06A3 0 4400 OF69 H546 BSI L F000 BSI SKPD-SHOULD NOT 3A136520
06A5 0 30BD DC /30BD ERR ID 3A136530
06A6 0 4400 OFC4 J546 BSI L F005 CK LOCK ON ERROR 3A136540
06A8 0 70ED MDX A546 LOOP 3A136550
*****
06A9 0 COAE A548 LD N500 3A136570
06AA 0 4410 06B4 BSI L G548,- BR WHEN NOT MINUS 3A136580
06AC 0 700B MDX H548 3A136590
06AD 0 4400 OF69 BSI L F000 BSI SKP-ON COND TRUE 3A136600
06AF 0 30BF DC /30BF ERR ID 3A136610
06B0 0 4400 OFC4 BSI L F005 CK LOCK ON ERROR 3A136620
06B2 0 70F6 MDX A548 LOOP 3A136630
06B3 0 7007 MDX A544 EXIT TO NEXT ROUTINE 3A136640
06B4 0 0000 G548 DC /0000 3A136650
06B5 0 4400 OF69 BSI L F000 BSI BRNCHD-SHOULD NOT 3A136660
06B7 0 30BF DC /30BF ERR ID 3A136670
06B8 0 4400 OFC4 H548 BSI L F005 CK LOCK ON ERROR 3A136680

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CPU FUNCTION TEST

06BA 0 70EE MDX A548 LOOP 3A136740

 06BB 0 COA3 A54A LD N542 3A136750
 06BC 0 4408 06C6 BSI L G54A,E BR WHEN NOT PLUS 3A136760
 06BE 0 7008 MDX H54A 3A136770
 06BF 0 4400 0F69 BSI L F000 BSI SKPD ON COND TRUE 3A136780
 06C1 0 30C0 DC /30C0 ERR ID 3A136790
 06C2 0 4400 0FC4 BSI L F005 CK LOCK ON ERROR 3A136800
 06C4 0 70F6 MDX A54A LOOP 3A136810
 06C5 0 7007 MDX A54C EXIT TO NEXT ROUTINE 3A136820
 06C6 0 0000 G54A DC /0000 3A136830
 06C7 0 4400 0F69 BSI L F000 BSI BRNCMD-SHOULD NOT 3A136840
 06C9 0 30C1 DC /30C1 ERR ID 3A136850
 06CA 0 4400 0FC4 H54A BSI L F005 CK LOCK ON ERROR 3A136860
 06CC 0 70EE MDX A54A LOOP 3A136870
 ***** 3A136880
 06CD 0 C091 A54C LD N542 3A136890
 06CE 0 4404 06D8 BSI L G54C,E BR WHEN NOT EVEN 3A136900
 06D0 0 7008 MDX H54C 3A136910
 06D1 0 4400 0F69 BSI L F000 BSI SKPD ON COND TRUE 3A136920
 06D3 0 30C2 DC /30C2 ERR ID 3A136930
 06D4 0 4400 0FC4 BSI L F005 CK LOCK ON ERROR 3A136940
 06D6 0 70F6 MDX A54C LOOP 3A136950
 06D7 0 7007 MDX A54E EXIT TO NEXT ROUTINE 3A136960
 06D8 0 0000 G54C DC /0000 3A136970
 06D9 0 4400 0F69 BSI L F000 BSI BRNCMD-SHOULD NOT 3A136980
 06DB 0 30C3 DC /30C3 ERR ID 3A136990
 06DC 0 4400 0FC4 H54C BSI L F005 CK LOCK ON ERROR 3A137000
 06DE 0 70EE MDX A54C LOOP 3A137010
 ***** 3A137020
 06DF 0 2000 A54E LDS 0 SET C AND OF OFF 3A137030
 06E0 0 4402 06EA BSI L G54E,C BR IF CARRY IS ON 3A137040
 06E2 0 7008 MDX H54E 3A137050
 06E3 0 4400 0F69 BSI L F000 BSI SKPD ON COND TRUE 3A137060
 06E5 0 30C4 DC /30C4 ERR ID 3A137070
 06E6 0 4400 0FC4 BSI L F005 CK LOCK ON ERROR 3A137080
 06E8 0 70F6 MDX A54E LOOP 3A137090
 06E9 0 7007 MDX A54F EXIT TO NEXT ROUTINE 3A137100
 06EA 0 0000 G54E DC /0000 3A137110
 06EB 0 4400 0F69 BSI L F000 BSI BRNCMD-SHOULD NOT 3A137120
 06ED 0 30C5 DC /30C5 ERR ID 3A137130
 06EE 0 4400 0FC4 H54E BSI L F005 CK LOCK ON ERROR 3A137140
 06FO 0 70EE MDX A54E LOOP 3A137150
 ***** 3A137160
 06F1 0 2000 A54F LDS 0 SET C AND OF OFF 3A137170
 06F2 0 4401 06FD BSI L G54F,D BR ON OVERFLOW 3A137180
 06F4 0 700C MDX H54F 3A137190
 06F5 0 4400 0F69 BSI L F000 BSI SKPD ON COND TRUE 3A137200
 06F7 0 30C6 DC /30C6 ERR ID 3A137210
 06F8 0 30C6 DC /30C6 ERR ID 3A137220
 06F9 0 4400 0FC4 BSI L F005 CK LOCK ON ERROR 3A137230
 06FB 0 70F5 MDX A54F LOOP 3A137240
 06FC 0 7007 MDX A580 EXIT TO NEXT ROUTINE 3A137250
 06FD 0 0000 G54F DC /0000 3A137260
 06FE 0 4400 0F69 BSI L F000 BSI BRNCMD-SHOULD NOT 3A137270
 0700 0 30C7 DC /30C7 ERR ID 3A137280
 0701 0 4400 0FC4 H54F BSI L F005 CK LOCK ON ERROR 3A137290
 0703 0 70ED MDX A54F LOOP 3A137300
 ***** 3A137310
 * TEST OF LDD OPERATION 3A137320
 * 3A137330
 * 3A137340
 ***** 3A137350
 * 3A137360
 * 3A137370
 * 3A137380
 * 3A137390

 CORE DATA OR *LA- OPER- 3A137400
 ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A137410

 0704 0 CC00 0788 A580 LDD L N5C1 LDD A#/0000 Q#/0000 3A137400
 0706 0 4C18 0708 BSC L G580,E- BRANCH ON ZERO 3A137410

CPU FUNCTION TEST

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,E- 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 LDD A#/FFFF Q#/FFFF 3A137530
 0718 0 F072 EOR N5C4 ZERO WITH /FFFF 3A137540
 0719 0 4C18 071E BSC L G584,E- 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,E- 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 LDD A#/0000 Q#/0000 3A137680
 072C 0 4C18 0731 BSC L G588,E- 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,E- 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 LDD A#/0000 Q#/0000 3A137880
 073E 0 D84D STD N5C5 3A137890
 073F 0 C04C LD N5C5 LDD A#/0000 Q#/0000 3A137900
 0740 0 4C18 0745 BSC L G5C0,E- 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 LDD /FFFF 3A137960
 0749 0 4C18 074E BSC L G5C2,E- BRANCH ON ZERO 3A137970
 074B 0 4400 0F69 BSI L F000 STD-EAG1 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 LDD /0000 3A138030
 0752 0 D039 STO N5C5 STORE /0000 3A138040
 0753 0 D039 STO N5C6 STORE /0000 3A138050
 0754 0 C835 LDD N5C3 LDD A#/FFFF Q#/FFFF 3A138060
 0755 0 D836 STD N5C5 STORE /FFFF AND /FFFF 3A138070
 0756 0 C035 LD N5C5 LDD /FFFF 3A138080
 0757 0 F032 EOR N5C3 ZERO WITH /FFFF 3A138090

CPU FUNCTION TEST

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 30D1 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

076A 0 C01F A5C8 LD N5C3 LD /FFFF 3A138220
076B 0 D020 STD N5C5 STORE /FFFF 3A138230
076C 0 D020 STD N5C6 3A138240
076D 0 D020 STD N5C7 3A138250
076E 0 C819 LDD N5C1 LD A#/0000 Q#/0000 3A138260
076F 0 D81D STD N5C6 STORE IN N5C6 & N5C7 3A138270
0770 0 C017 LD N5C1 LD /0000 3A138280
0771 0 CG18 LD N5C6 LD /0000 3A138290
0772 0 4C18 0777 BSC L G5C8,&- BRANCH ON ZERO 3A138300
0774 0 4400 0F69 BSI L F000 STD-ODD-EA INCORRECT 3A138310
0776 0 30D2 DC /30D2 ERR ID 3A138320
0777 0 4400 0F98 G5C8 BSI L F00E CK LOCK ON ERROR 3A138330
0779 0 70F0 MDX A5C8 LOOP 3A138340
077A 0 C013 LD N5C7 LD /FFFF 3A138350
077B 0 F00E EOR N5C3 ZERO WITH /FFFF 3A138360
077C 0 4C18 0781 BSC L G5CA,&- BRANCH ON ZERO 3A138370
077E 0 4400 0F69 BSI L F000 STD-ODD-EA&1 LOADED 3A138380
0780 0 30D3 DC /30D3 ERR ID 3A138390
0781 0 4400 0FC4 G5CA BSI L F005 CK LOCK ON ERROR 3A138400
0783 0 70E6 MDX A5C8 LOOP 3A138410
0784 0 C005 LD N5C3 LD /FFFF 3A138420
0785 0 D007 STD N5C6 3A138430
0786 0 D007 STD N5C7 3A138440
0787 0 7007 MDX A600 EXIT TO NEXT ROUTINE 3A138450
0788 0 0000 BSS E 3A138460
0788 0 0000 N5C1 DC /0000 3A138470
0789 0 0000 DC /0000 3A138480
078A 0 FFFF N5C3 DC /FFFF 3A138490
078B 0 FFFF N5C4 DC /FFFF 3A138500
078C 0 FFFF N5C5 DC /FFFF 3A138510
078D 0 FFFF N5C6 DC /FFFF 3A138520
078E 0 FFFF N5C7 DC /FFFF 3A138530
* 3A138540
* 3A138550
* 3A138560
* 3A138570
* 3A138580
* 3A138590

TEST OF LDX OPERATION

CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT

078F 0 6500 0792 A600 LDX L1 G600 LD XR 1 WITH ADDR OF G600 3A138600
0791 0 7003 MDX H600 3A138610
0792 0 4400 0F69 G600 BSI L F000 TAG REG BIT 7 FAILED 3A138620
0794 0 30D4 DC /30D4 ERR ID 3A138630
0795 0 4400 0FC4 H600 BSI L F005 CK LOCK ON ERROR 3A138640
0797 0 70F7 MDX A600 LOOP 3A138650

0798 0 6600 0798 A602 LDX L2 G602 LD XR 2 WITH ADDR OF G602 3A138660
079A 0 7003 MDX H602 3A138670
079B 0 4400 0F69 G602 BSI L F000 TAG REG BIT 6 FAILED 3A138680
079D 0 30D5 DC /30D5 ERR ID 3A138690
079E 0 4400 0FC4 H602 BSI L F005 CK LOCK ON ERROR 3A138700
07A0 0 70F7 MDX A602 LOOP 3A138710

07A1 0 6100 A604 LDX 1 0 LD DISP#0 TO XR 1 3A138720

CPU FUNCTION TEST

07A? 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

07AD 0 6200 A606 LDX 2 0 LD DISP#0 TO XR 2 3A138850
07AE 0 C05F LD N603 LD /FFFF 3A138860
07AF 0 C600 080C LD L2 N601 LD ADDR OF N601 & XR 2 3A138870
07B1 0 F05A EOR N601 ZERO WITH ADDR OF N601 3A138880
07B2 0 4C18 07B7 BSC L G606,&- BRANCH ON ZERO 3A138890
07B4 0 4400 0F69 BSI L F000 XR 2 NOT LOADED 3A138900
07B6 0 30D7 DC /30D7 ERR ID 3A138910
07B7 0 4400 0FC4 G606 BSI L F005 CK LOCK ON ERROR 3A138920
07B9 0 70F3 MDX A606 LOOP 3A138930

07BA 0 6300 A608 LDX 3 0 LD DISP#0 TO XR 3 3A138940
07BB 0 C052 LD N603 LD /FFFF 3A138950
07BC 0 C700 080C LD L3 N601 LD ADDR OF N601 & XR 3 3A138960
07BE 0 F04D EOR N601 ZERO WITH ADDR OF N601 3A138970
07BF 0 4C18 07C4 BSC L G608,&- BRANCH ON ZERO 3A138980
07C1 0 4400 0F69 BSI L F000 XR 3 NOT LOADED 3A138990
07C3 0 30D8 DC /30D8 ERR ID 3A139000
07C4 0 4400 0FC4 G608 BSI L F005 CK LOCK ON ERROR 3A139010
07C6 0 70F3 MDX A608 LOOP 3A139020

07C7 0 61FF A60A LDX 1 -1 LD XR 1 WITH -1 3A139030
07C8 0 C045 LD N603 LD /1111 3A139040
07C9 0 C500 080C LD L1 N601 LD ADDR OF N601 & XR 1 3A139050
07CB 0 F03F EOR N600 ZERO WITH ADDR OF N600 3A139060
07CC 0 4C18 07D1 BSC L G60A,&- BRANCH ON ZERO 3A139070
07CE 0 4400 0F69 BSI L F000 XR 1 NOT LOADED 3A139080
07D0 0 30D9 DC /30D9 ERR ID 3A139090
07D1 0 4400 0FC4 G60A BSI L F005 CK LOCK ON ERROR 3A139100
07D3 0 70F3 MDX A60A LOOP 3A139110

07D4 0 62FF A60C LDX 2 -1 LD XR 2 WITH -1 3A139120
07D5 0 C038 LD N603 LD /FFFF 3A139130
07D6 0 C600 080C LD L2 N601 LD ADDR OF N601 & XR 2 3A139140
07D8 0 F032 EOR N600 ZERO WITH ADDR OF N600 3A139150
07D9 0 4C18 07DE BSC L G60C,&- BRANCH ON ZERO 3A139160
07DB 0 4400 0F69 BSI L F000 XR 2 NOT LOADED 3A139170
07DD 0 30DA DC /30DA ERR ID 3A139180
07DE 0 4400 0FC4 G60C BSI L F005 CK LOCK ON ERROR 3A139190
07E0 0 70F3 MDX A60C LOOP 3A139200

07E1 0 63FF A60E LDX 3 -1 LD XR 3 WITH -1 3A139210
07E2 0 C028 LD N603 LD /FFFF 3A139220
07E3 0 C700 080C LD L3 N601 LD ADDR OF N601 & XR 3 3A139230
07E5 0 F025 EOR N600 ZERO WITH ADDR OF N600 3A139240
07E6 0 4C18 07EB BSC L G60E,&- BRANCH ON ZERO 3A139250
07E8 0 4400 0F69 BSI L F000 XR 3 NOT LOADED 3A139260
07EA 0 30D8 DC /30D8 ERR ID 3A139270
07EB 0 4400 0FC4 G60E BSI L F005 CK LOCK ON ERROR 3A139280
07ED 0 70F3 MDX A60E LOOP 3A139290

07EE 0 6500 0001 B600 LDX L1 1 LD XR 3 WITH &1 3A139300
07F0 0 C01D LD N603 LD /FFFF 3A139310
07F1 0 C500 080C LD L1 N601 LD ADDR OF N601 & XR 1 3A139320
07F3 0 F019 EOR N602 ZERO WITH ADDR OF N602 3A139330
07F4 0 4C18 07F9 BSC L J600,&- BRANCH ON ZERO 3A139340
07F6 0 4400 0F69 BSI L F000 LONG FORM LDX-FAILED 3A139350
07F8 0 30DC DC /30DC ERR ID 3A139360
07F9 0 4400 0FC4 J600 BSI L F005 CK LOCK ON ERROR 3A139370
07FB 0 70F2 MDX B600 LOOP 3A139380

3A139400

CPU FUNCTION TEST

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

TEST OF STX OPERATION

CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT

0810 0 C06D A640 LD N644 LD /FFFF 3A139660
0811 0 D069 STO N640 SAVE 3A139670
0812 0 C0FF M640 LD M640 LD /COFF 3A139680
0813 0 6867 STX N640 STORE INST REG AT N640 3A139690
0814 0 F0FD K640 EOR M640 CK THAT ACC WAS NOT * RESET BY STX 3A139700
0815 0 4C18 081D BSC L G640, &- BRANCH ON ZERO 3A139710
0817 0 4400 0F69 BSI L F000 ACC GONE AFTER STX 3A139720
0819 0 3167 DC /3167 ERR ID 3A139730
081A 0 4400 0F98 BSI L F00E CK LOCK ON ERROR 3A139740
081C 0 70F3 MDX A640 3A139750
081D 0 C05D G640 LD N640 CK THAT STX STORED CORECT 3A139760
081E 0 F05D EOR N642 3A139770
081F 0 4C18 0824 BSC L G641, &- BRANCH ON ZERO 3A139780
0821 0 4400 0F69 BSI L F000 I CTR NOT STORED 3A139790
0823 0 30DE DC /30DE ERR ID 3A139800
0824 0 4400 0FC4 G641 BSI L F005 CK LOCK ON ERROR 3A139810
0826 0 70E9 MDX A640 LOOP 3A139820

0827 0 C056 A642 LD N644 LD /FFFF 3A139830
0828 0 D052 STO N640 SAVE 3A139840
0829 0 6100 LDX 1 0 LD XR 1 WITH /0000 3A139850
082A 0 6950 STX 1 N640 STORE C&XR 1 AT N640 3A139860
082B 0 C04F LD N640 LD C&N640 3A139870
082C 0 4C18 0831 BSC L G642, &- BRANCH ON ZERO 3A139880
082E 0 4400 0F69 BSI L F000 XR 1 NOT STORED 3A139890
0830 0 30DF DC /30DF ERR ID 3A139900
0831 0 4400 0FC4 G642 BSI L F005 CK LOCK ON ERROR 3A139910
0833 0 70F3 MDX A642 LOOP 3A139920

0834 0 C049 A644 LD N644 LD /FFFF 3A139930
0835 0 D045 STO N640 SAVE 3A139940
0836 0 6200 LDX 2 0 LD XR 2 WITH /0000 3A139950
0837 0 6A43 STX 2 N640 STORE C&XR 2 AT N640 3A139960
0838 0 C042 LD N640 LD C&N640 3A139970
0839 0 4C18 083E BSC L G644, &- BRANCH ON ZERO 3A139980
083B 0 4400 0F69 BSI L F000 XR 2 NOT STORED 3A139990
083D 0 30E0 DC /30E0 ERR ID 3A140000
083E 0 4400 0FC4 G644 BSI L F005 CK LOCK ON ERROR 3A140010
0840 0 70F3 MDX A644 LOOP 3A140020

0841 0 C03C A646 LD N644 LD /FFFF 3A140030
0842 0 D038 STO N640 SAVE 3A140040
0843 0 6300 LDX 3 0 LD XR 3 WITH /0000 3A140050
0844 0 6836 STX 3 N640 STORE C&XR 3 AT N640 3A140060

CPU FUNCTION TEST

0845 0 C035 LD N640 LD C&N640 3A140140
0846 0 4C18 0848 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

084E 0 C02E A648 LD N643 LD /0000 3A140200
084F 0 D028 STO N640 SAVE 3A140210
0850 0 61FF LDX 1 -1 LD XR 1 WITH /FFFF 3A140220
0851 0 6929 STX 1 N640 STORE C&XR 1 AT N640 3A140230
0852 0 C028 LD N640 LD C&N640 3A140240
0853 0 F02A EOR N644 ZERO WITH /FFFF 3A140250
0854 0 4C18 0859 BSC L G648, &- BRANCH ON ZERO 3A140260
0856 0 4400 0F69 BSI L F000 XR 1 NOT STORED 3A140270
0858 0 30E2 DC /30E2 ERR ID 3A140280
0859 0 4400 0FC4 G648 BSI L F005 CK LOCK ON ERROR 3A140290
085B 0 70F2 MDX A648 LOOP 3A140300

085C 0 C020 A64A LD N643 LD /0000 3A140310
085D 0 D01D STO N640 SAVE 3A140320
085E 0 62FF LDX 2 -1 LD XR 2 WITH /FFFF 3A140330
085F 0 6A1B STX 2 N640 STORE C&XR 2 AT N640 3A140340
0860 0 C01A LD N640 LD C&N640 3A140350
0861 0 F01C EOR N644 ZERO WITH /FFFF 3A140360
0862 0 4C18 0867 BSC L G64A, &- BRANCH ON ZERO 3A140370
0864 0 4400 0F69 BSI L F000 XR 2 NOT STORED 3A140380
0866 0 30E3 DC /30E3 ERR ID 3A140390
0867 0 4400 0FC4 G64A BSI L F005 CK LOCK ON ERROR 3A140400
0869 0 70F2 MDX A64A LOOP 3A140410

086A 0 C012 A64C LD N643 LD /0000 3A140420
086B 0 D00F STO N640 SAVE 3A140430
086C 0 63FF LDX 3 -1 LD XR 3 WITH /FFFF 3A140440
086D 0 680D STX 3 N640 STORE C&XR 3 AT N640 3A140450
086E 0 C00C LD N640 LD C&N640 3A140460
086F 0 F00E EOR N644 ZERO WITH /FFFF 3A140470
0870 0 4C18 0875 BSC L G64C, &- BRANCH ON ZERO 3A140480
0872 0 4400 0F69 BSI L F000 XR 3 NOT STORED 3A140490
0874 0 30E4 DC /30E4 ERR ID 3A140500
0875 0 4400 0FC4 G64C BSI L F005 CK LOCK ON ERROR 3A140510
0877 0 70F2 MDX A64C LOOP 3A140520
0878 0 C004 LD N643 LD /0000 3A140530
0879 0 D001 STO N640 RESTORE N640 TO /0000 3A140540
087A 0 7004 MDX A660 EXIT TO NEXT ROUTINE 3A140550
087B 0 0000 N640 DC /0000 3A140560
087C 0 0814 N642 DC K640 3A140570
087D 0 0000 N643 DC /0000 3A140580
087E 0 FFFF N644 DC /FFFF 3A140590

CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT

087F 0 6100 A660 LDX 1 0 LD XR 1 WITH /0000 3A140600
0880 0 6200 LDX 2 0 LD XR 2 WITH /0000 3A140610
0881 0 6300 LDX 3 0 LD XR 3 WITH /0000 3A140620
0882 0 61FF LDX 1 -1 LD XR 1 WITH /FFFF 3A140630
0883 0 6A44 STX 2 N660 CK FOR DISTRUCTION OF 3A140640
0884 0 C043 LD N660 OTHER INDEXES 3A140650
0885 0 4C18 088A BSC L G660, &- BRANCH ON ZERO 3A140660
0887 0 4400 0F69 BSI L F000 XR 2 CHANGED 3A140670
0889 0 3157 DC /3157 ERR ID 3A140680
088A 0 4400 0F98 G660 BSI L F00E CK LOCK ON ERROR 3A140690
088C 0 70F2 MDX A660 LOOP 3A140700
088D 0 6B3A STX 3 N660 STORE C&XR 3 AT N660 3A140710
088E 0 C039 LD N660 LD C&N660 3A140720
088F 0 4C18 0894 BSC L G661, &- BRANCH ON ZERO 3A140730

CPU FUNCTION TEST

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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 RSI L F005  CK LOCK ON ERROR  3A140840
0896 0 70E8          MDX A660        LOOP               3A140850
*****
0897 0 6100          A662 LDX 1 0     LD XR 1 WITH /0000 3A140860
0898 0 6200          LDX 2 0         LD XR 2 WITH /0000 3A140870
0899 0 6300          LDX 3 0         LD XR 3 WITH /0000 3A140880
089A 0 62FF          LDX 2 -1        LD XR 2 WITH /FFFF 3A140890
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      CK LOCK ON ERROR  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
*****
08AF 0 6100          A664 LDX 1 0     CK DISTRUCTION OF 3A141050
08B0 0 6200          LDX 2 0         OTHER INDEXES      3A141060
08B1 0 6300          LDX 3 0         XR&S HAVE /0000   3A141070
08B2 0 63FF          LDX 3 -1        LD XR 3 WITH /FFFF 3A141080
08B3 0 6914          STX 1 N660      STORE C&XR 1 AT N660 3A141090
08B4 0 C013          LD N660         LD C&N660         3A141100
08B5 0 4C18 08BA      BSC L G664,&-   BRANCH ON ZERO     3A141110
08B7 0 4400 0F69      BSI L F000      CK LOCK ON ERROR  3A141120
08B9 0 3158          DC /3158        ERR ID              3A141130
08BA 0 4400 0F98      G664 BSI L F00E  CK LOCK ON ERROR  3A141140
08BC 0 70F2          MDX A664        LOOP               3A141150
08BD 0 6A0A          STX 2 N660      STORE C&XR 2 AT N660 3A141160
08BE 0 C009          LD N660         LD C&N660         3A141170
08BF 0 4C18 08C4      BSC L G665,&-   BRANCH ON ZERO     3A141180
08C1 0 4400 0F69      BSI L F000      CK LOCK ON ERROR  3A141190
08C3 0 315C          DC /315C        ERR ID              3A141200
08C4 0 4400 0FC4      G665 BSI L F005  CK LOCK ON ERROR  3A141210
08C6 0 70E8          MDX A664        LOOP               3A141220
08C7 0 7001          MDX A670        EXIT TO NEXT ROUTINE 3A141230
08C8 0 0000          N660 DC 0       *****          3A141240
*****
08C9 0 6110          A670 LDX 1 16    LD XR 1 WITH /0010 3A141250
08CA 0 C010          LD N670         LOAD ONE           3A141260
08CB 0 4C18 08D4      G671 BSC L G670,&- NOT BR FOR CORRECT OP 3A141270
08CD 0 1001          G672 SLA 1       *****          3A141280
08CE 0 71FF          MDX 1 -1        -1 FROM C&XR 1    3A141290
08CF 0 70FB          MDX G671        *****          3A141300
08D0 0 4400 0FC4      BSI L F005      CK LOCK ON ERROR  3A141310
08D2 0 70F6          MDX A670        LOOP               3A141320
08D3 0 7008          MDX A680        EXIT TO NEXT ROUTINE 3A141330
08D4 0 4400 0F69      G670 BSI L F000  WRONG DECODE OF ZERO ACC 3A141340
08D6 0 3169          DC /3169        ERR ID              3A141350
08D7 0 4400 0F98      BSI L F00E      CK LOCK ON ERROR  3A141360
08D9 0 70EF          MDX A670        LOOP               3A141370
08DA 0 70F2          MDX G672        *****          3A141380
08DB 0 0001          N670 DC 1       *****          3A141390
*****
*
* TEST OF ADD OPERATION
*
*****
CORE DATA CR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
3A141400
3A141410
3A141420
3A141430
3A141440
3A141450
3A141460
3A141470
3A141480
3A141490

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CPU FUNCTION TEST

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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 G680,0    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
08FO 0 70E8          MDX A680        LOOP               3A141640
*****
08F1 0 2000          A684 LDS 0       SET C AND OF OFF  3A141650
08F2 0 C059          LD N680         LD /FFFF          3A141660
08F3 0 805A          A N682          A /0001           3A141670
08F4 0 4C02 08F9      BSC L G684,C    CK IF CARRY OCCURED 3A141680
08F6 0 4400 0F69      BSI L F000      CARRY NOT ON      3A141690
08F8 0 30E7          DC /30E7        ERR ID             3A141700
08F9 0 4400 0F98      G684 BSI L F00E  CK LOCK ON ERROR  3A141710
08FB 0 70F5          MDX A684        LOOP               3A141720
08FC 0 4C18 0901      BSC L G686,&-   BRANCH ON ZERO     3A141730
08FE 0 4400 0F69      BSI L F000      ADD FFFF&0001 FAILED 3A141740
0900 0 30E8          DC /30E8        ERR ID             3A141750
0901 0 4400 0FC4      G686 BSI L F005  CK LOCK ON ERROR  3A141760
0903 0 70ED          MDX A684        LOOP               3A141770
*****
0904 0 2000          A688 LDS 0       SET C AND OF OFF  3A141780
0905 0 C046          LD N680         LD /FFFF          3A141790
0906 0 8045          A N680          A /FFFF          3A141800
0907 0 4C02 090C      BSC L G688,C    BR ON CARRY        3A141810
0909 0 4400 0F69      BSI L F000      CARRY NOT ON      3A141820
090B 0 30E9          DC /30E9        ERR ID             3A141830
090C 0 4400 0F98      G688 BSI L F00E  CK LOCK ON ERROR  3A141840
090E 0 70F5          MDX A688        LOOP               3A141850
090F 0 F042          EOR N687        ZERO WITH /FFFF   3A141860
0910 0 4C18 0915      BSC L G68A,&-   BRANCH ON ZERO     3A141870
0912 0 4400 0F69      BSI L F000      ADD FFFF&FFFF FAILED 3A141880
0914 0 30FA          DC /30FA        ERR ID             3A141890
0915 0 4400 0FC4      G68A BSI L F005  CK LOCK ON ERROR  3A141900
0917 0 70EC          MDX A688        LOOP               3A141910
*****
0918 0 2000          A68C LDS 0       SET C AND OF OFF  3A141920
0919 0 C035          LD N683         LD /4000           3A141930
091A 0 8034          A N683          A /4000           3A141940
091B 0 4C01 0920      BSC L G68C,0    BR IF OF NOT ON    3A141950
091D 0 4400 0F69      BSI L F000      OVERFLOW NOT ON    3A141960
091F 0 30EB          DC /30EB        ERR ID             3A141970
0920 0 4400 0F98      G68C BSI L F00E  CK LOCK ON ERROR  3A141980
0922 0 70F5          MDX A68C        LOOP               3A141990
0923 0 F02C          EOR N684        ZERO WITH /8000   3A142000
0924 0 4C18 0929      BSC L G68E,&-   BRANCH ON ZERO     3A142010
0926 0 4400 0F69      BSI L F000      ADD 4000&4000 FAILED 3A142020
0928 0 30EC          DC /30EC        ERR ID             3A142030
0929 0 4400 0FC4      G68E BSI L F005  CK LOCK ON ERROR  3A142040
092B 0 70EC          MDX A68C        LOOP               3A142050
*****
092C 0 2000          B680 LDS 0       SET C AND OF OFF  3A142060
092D 0 C022          LD N684         LD /8000           3A142070
092E 0 8021          A N684          A /8000           3A142080
092F 0 2823          STS N688        STORE C AND OF COND 3A142090
0930 0 4C18 0935      BSC L J680,&-   BRANCH ON ZERO     3A142100
0932 0 4400 0F69      BSI L F000      ADD 8000&8000 FAILED 3A142110
0934 0 30ED          DC /30ED        ERR ID             3A142120
0935 0 4400 0F98      J680 BSI L F00E  CK LOCK ON ERROR  3A142130

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CPU FUNCTION TEST

CPU FUNCTION TEST

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0937 0 70F4      MDX      B680      LOOP
0938 0 C01A      LD        N688      LD C AND OF COND
0939 0 F017      EOR      N686      ZERO WITH /0003
093A 0 4C18 0948 BSC L J682, &-    BRANCH ON ZERO
093C 0 4C04 0945 BSC L K682, E     BR ON NOT EVEN
093E 0 4400 0F69 BSI L F000      CARRY NOT ON
0940 0 30EF      DC        /30EF    ERR ID
0941 0 4400 0FC4 BSI L F005      CK LOCK ON ERROR
0943 0 70E8      MDX      B680      LOOP
0944 0 700F      MDX      A6C0      EXIT TO NEXT ROUTINE
0945 0 4400 0F69 K682 BSI L F000      OVERFLOW NOT ON
0947 0 30EE      DC        /30EE    ERR ID
0948 0 4400 0FC4 J682 BSI L F005      CK LOCK ON ERROR
094A 0 70E1      MDX      B680      LOOP
094B 0 7008      MDX      A6C0      EXIT TO NEXT ROUTINE
094C 0 FFFF      N680 DC /FFFF
094D 0 0000      N681 DC /0000
094E 0 0001      N682 DC /0001
094F 0 4000      N683 DC /4000
0950 0 8000      N684 DC /8000
0951 0 0003      N686 DC /0003
0952 0 FFFE      N687 DC /FFE
0953 0 0000      N688 DC /0000

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STORAGE

INDEXING TEST

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*****
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
0954 0 61FC      A6C0 LDX 1 -4      LD XR 1 WITH -4
0955 0 C500 09D0 LD L1 N6C4      LD C&N6C4&XR 1#
0957 0 F074      EOR      N6C0      ZERO ACC IF CORRECT OP
0958 0 4C20 0966 BSC L M6C0, Z     BR IF NOT ZERO
095A 0 697A      STX 1 N6C9      STORE C&XR 1# AT N6C9
095B 0 C079      LD        N6C9      GET XR 1 VALUE
095C 0 F079      EOR      N6CA      ZERO ACC IF CORRECT
095D 0 4C18 0969 BSC L G6C0, &-    BRANCH ON ZERO
095F 0 4400 0F69 BSI L F000      XR 1 LOADED WRONG
0961 0 30F0      DC        /30F0    ERR ID
0962 0 4400 0FC4 BSI L F005      CK LOCK ON ERROR
0964 0 70EF      MDX      A6C0      LOOP
0965 0 7006      MDX      A6C2      EXIT TO NEXT ROUTINE
0966 0 4400 0F69 H6C0 BSI L F000      WRONG LOCATION
0968 0 30F1      DC        /30F1    ERR ID
0969 0 4400 0FC4 G6C0 BSI L F005      CK LOCK ON ERROR
096B 0 70E8      MDX      A6C0      LOOP
*****
096C 0 6204      A6C2 LDX 2 4      LD XR 2 WITH &4
096D 0 C600 09D0 LD L2 N6C4      LD C&N6C4&XR 2#
096F 0 F064      EOR      N6C8      ZERO ACC IF CORRECT
0970 0 4C20 097E BSC L M6C2, Z     BR IF NOT ZERO
0972 0 6A62      STX 2 N6C9      STORE XR 2 AT N6C9
0973 0 C061      LD        N6C9      GET XR 2 VALUE
0974 0 F062      EOR      N6CB      ZERO ACC IF CORRECT
0975 0 4C18 0981 BSC L G6C2, &-    BRANCH ON Z'RO
0977 0 4400 0F69 BSI L F000      XR 2 LOADED WRONG
0979 0 30F2      DC        /30F2    ERR ID
097A 0 4400 0FC4 BSI L F005      CK LOCK ON ERROR
097C 0 70EF      MDX      A6C2      LOOP
097D 0 7006      MDX      A6C4      EXIT TO NEXT ROUTINE
097E 0 4400 0F69 H6C2 BSI L F000      WRONG LOCATION
0980 0 30F3      DC        /30F3    ERR ID
0981 0 4400 0FC4 G6C2 BSI L F005      CK LOCK ON ERROR
0983 0 70E8      MDX      A6C2      LOOP
*****
0984 0 6300      A6C4 LDX 3 0      SET XR 3 TO ZERO

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3A142180
3A142190
3A142200
3A142210
3A142220
3A142230
3A142240
3A142250
3A142260
3A142270
3A142280
3A142290
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3A142490
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3A142770
3A142780
3A142790
3A142800
3A142810
3A142820
3A142830
3A142840
3A142850

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0985 0 C700 09D0 LD L3 N6C4      LD C&N6C4&XR 3#
0987 0 F048      EOR      N6C4      ZERO ACC IF CORRECT
0988 0 4C20 0995 BSC L M6C4, Z     BR IF NOT ZERO
098A 0 6B4A      STX 3 N6C9      STORE XR 3 AT N6C9
098B 0 C049      LD        N6C9      LD /0000
098C 0 4C10 0998 BSC L G6C4, &-    BRANCH ON ZERO
098E 0 4400 0F69 BSI L F000      XR 3 LOADED WRONG
0990 0 30F4      DC        /30F4    ERR ID
0991 0 4400 0FC4 BSI L F005      CK LOCK ON ERROR
0993 0 70F0      MDX      A6C4      LOOP
0994 0 7006      MDX      A6C6      EXIT TO NEXT ROUTINE
0995 0 4400 0F69 H6C4 BSI L F000      WRONG LOCATION
0997 0 30F5      DC        /30F5    ERR ID
0998 0 4400 0FC4 G6C4 BSI L F005      CK LOCK ON ERROR
099A 0 70E9      MDX      A6C4      LOOP
*****
099B 0 6301      A6C6 LDX 3 1      SET XR 3 TO &1
099C 0 C700 09D0 LD L3 N6C4      LD C&N6C4&XR 3#
099E 0 F032      EOR      N6C5      ZERO FOR CORRECT OP
099F 0 4C20 09AD BSC L M6C6, Z     BR IF NOT ZERO
09A1 0 6B33      STX 3 N6C9      STORE XR 3 AT N6C9
09A2 0 C032      LD        N6C9      LD C&N6C9#
09A3 0 F034      EOR      N6C0      ZERO ACC FOR CORRECT OP
09A4 0 4C18 09B0 BSC L G6C6, &-    BRANCH ON ZERO
09A6 0 4400 0F69 BSI L F000      XR 3 LOADED WRONG
09A8 0 30F6      DC        /30F6    ERR ID
09A9 0 4400 0FC4 BSI L F005      CK LOCK ON ERROR
09AB 0 70EF      MDX      A6C6      LOOP
09AC 0 7006      MDX      A6C8      EXIT TO NEXT ROUTINE
09AD 0 4400 0F69 H6C6 BSI L F000      WRONG LOCATION
09AF 0 30F7      DC        /30F7    ERR ID
09B0 0 4400 0FC4 G6C6 BSI L F005      CK LOCK ON ERROR
09B2 0 70E8      MDX      A6C6      LOOP
*****
09B3 0 63FF      A6C8 LDX 3 -1      SET XR 3 TO -1
09B4 0 C780 09DA LD L3 N6CF      LD C&N6CF&XR 3#
09B6 0 F019      EOR      N6C4      ACC NOW ZERO
09B7 0 4C20 09C5 BSC L M6C8, Z     BR IF NOT ZERO
09B9 0 6B1B      STX 3 N6C9      STORE XR 3 AT N6C9
09BA 0 C01A      LD        N6C9      LD C&N6C9#
09BB 0 F01E      EOR      N6CF      ZERO WITH /FFFF
09BC 0 4C18 09C8 BSC L G6C8, &-    BRANCH ON ZERO
09BE 0 4400 0F69 BSI L F000      XR 3-LOADED WRONG
09C0 0 30F8      DC        /30F8    ERR ID
09C1 0 4400 0FC4 BSI L F005      CK LOCK ON ERROR
09C3 0 70EF      MDX      A6C8      LOOP
09C4 0 7017      MDX      A6D0      EXIT TO NEXT ROUTINE
09C5 0 4400 0F69 H6C8 BSI L F000      WRONG LOCATION
09C7 0 30F9      DC        /30F9    ERR ID
09C8 0 4400 0FC4 G6C8 BSI L F005      CK LOCK ON ERROR
09CA 0 70E8      MDX      A6C8      LOOP
09CB 0 7010      MDX      A6D0      EXIT TO NEXT ROUTINE
09CC 0 09CC      N6C0 DC N6C0
09CD 0 09CD      N6C1 DC N6C1
09CE 0 09CE      N6C2 DC N6C2
09CF 0 09CF      N6C3 DC N6C3
09D0 0 09D0      N6C4 DC N6C4
09D1 0 09D1      N6C5 DC N6C5
09D2 0 09D2      N6C6 DC N6C6
09D3 0 09D3      N6C7 DC N6C7
09D4 0 09D4      N6C8 DC N6C8
09D5 0 0000      N6C9 DC /0000
09D6 0 FFFC      N6CA DC /FFFC
09D7 0 0004      N6CB DC /0004
09D8 0 0001      N6CD DC /0001
09D9 0 09D0      DC N6C4
09DA 0 FFFF      N6CF DC /FFFF
09DB 0 70D7      MDX A6C8      LOOP

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3A142860
3A142870
3A142880
3A142890
3A142900
3A142910
3A142920
3A142930
3A142940
3A142950
3A142960
3A142970
3A142980
3A142990
3A143000
3A143010
3A143020
3A143030
3A143040
3A143050
3A143060
3A143070
3A143080
3A143090
3A143100
3A143110
3A143120
3A143130
3A143140
3A143150
3A143160
3A143170
3A143180
3A143190
3A143200
3A143210
3A143220
3A143230
3A143240
3A143250
3A143260
3A143270
3A143280
3A143290
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3A143410
3A143420
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3A143460
3A143470
3A143480
3A143490
3A143500
3A143510
3A143520
3A143530

```

CPU FUNCTION TEST

```

*****
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
09DC 0 6500 09CD A6D0 LDX L1 N6C1 LD XR 1 WITH ADDRESS 3A143540
* * OF N6C1 3A143550
09DE 0 C1FF LD 1 -1 SHORT FORM INDEXING 3A143560
09DF 0 FOEC EOR N6C0 ZERO IF CORRECT 3A143570
09E0 0 4C18 09E5 BSC L H6D0,&- BRANCH ON ZERO 3A143580
09E2 0 4400 0F69 BSI L F000 INDEXED LD INST. FAILED 3A143590
09E4 0 315D DC /315D ERR ID 3A143600
09E5 0 4400 0FC4 H6D0 BSI L F005 CK LOCK ON ERROR 3A143610
09E7 0 70F4 MDX A6D0 LOOP 3A143620
*****
09E8 0 6600 09CD A6D2 LDX L2 N6C1 LD XR 2 WITH ADDRESS 3A143630
* * OF N6C1 3A143640
09EA 0 C201 LD 2 1 LD C%OF ADDRESS IN XR 1&1 3A143650
09EB 0 FOE2 EOR N6C2 ZERO IF CORRECT 3A143660
09EC 0 4C18 09F1 BSC L H6D2,&- BRANCH ON ZERO 3A143670
09EE 0 4400 0F69 BSI L F000 INDEXED LD INST. FAILED 3A143680
09F0 0 315E DC /315E ERR ID 3A143690
09F1 0 4400 0FC4 H6D2 BSI L F005 CK LOCK ON ERROR 3A143700
09F3 0 70F4 MDX A6D2 LOOP 3A143710
*****
09F4 0 6700 09CD A6D3 LDX L3 N6C1 LD XR 3 WITH ADD OF N6C1 3A143720
09F6 0 C300 LD 3 0 LD C%OF ADD IN XR 3 & 0 3A143730
09F7 0 F0D5 EOR N6C1 ZERO IF CORRECT 3A143740
09F8 0 4C18 09FD BSC L H6D3,&- BRANCH ON ZERO 3A143750
09FA 0 4400 0F69 BSI L F000 INDEXED LD INST. FAILED 3A143760
09FC 0 315F DC /315F ERR ID 3A143770
09FD 0 4400 0FC4 H6D3 BSI L F005 CK LOCK ON ERROR 3A143780
09FF 0 70F4 MDX A6D3 LOOP 3A143790
*****
0A00 0 6102 A6D5 LDX 1 2 LD XR 1 WITH &2 3A143800
0A01 0 C0D6 LD N6CD LD /0001 3A143810
0A02 0 1101 SLA 1 1 NOW A#/0004 3A143820
0A03 0 F0D3 EOR N6CB NOW A#/0000 3A143830
0A04 0 4C18 0A09 BSC L H6D5,&- BRANCH ON ZERO 3A143840
0A06 0 4400 0F69 BSI L F000 INDEXED SLA FAILED 3A143850
0A08 0 3163 DC /3163 ERR ID 3A143860
0A09 0 4400 0FC4 H6D5 BSI L F005 CK LOCK ON ERROR 3A143870
0A0B 0 70F4 MDX A6D5 LOOP 3A143880
*****
0A0C 0 6202 A6D6 LDX 2 2 LD /00004 3A143890
0A0D 0 C0C9 LD N6CB NOW A#/0001 3A143900
0A0E 0 1A01 SRA 2 1 ZERO ACC 3A143910
0A0F 0 F0C8 EOR N6CD ZERO WITH /0001 3A143920
0A10 0 4C18 0A15 BSC L H6D6,&- BRANCH ON ZERO 3A143930
0A12 0 4400 0F69 BSI L F000 INDEXED SRA FAILED 3A143940
0A14 0 3164 DC /3164 ERR ID 3A143950
0A15 0 4400 0FC4 H6D6 BSI L F005 CK LOCK ON ERROR 3A143960
0A17 0 70F4 MDX A6D6 LOOP 3A143970
*****
* 3A143980
* TEST INDEXED BSC 3A143990
* 3A144000
* 3A144010
* 3A144020
* 3A144030
* 3A144040
* 3A144050
* 3A144060
* 3A144070
* 3A144080
* 3A144090
* 3A144100
* 3A144110
* 3A144120
* 3A144130
* 3A144140
* 3A144150
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
0A18 0 6301 A6F0 LDX 3 1 LD XR 3 WITH &1 3A144160
0A19 0 C0DE LD N6F1 LD C%OF LABEL N6F1 3A144170
0A1A 0 4F00 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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CPU FUNCTION TEST

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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
*****
0A29 0 6201 A6F1 LDX 2 1 LD XR 2 WITH &1 3A144290
0A2A 0 4E80 0A2D BSC 12 N6F2 BR TO N6F2&1 INDIRECT 3A144300
0A2C 0 7005 MDX H6F1 BSC FAILED 3A144310
0A2D 0 7004 N6F2 MDX H6F1 BSC FAILED 3A144320
0A2E 0 0A31 DC N6F3 3A144330
0A2F 0 7002 MDX H6F1 BSC FAILED 3A144340
0A30 0 7001 MDX H6F1 BSC FAILED 3A144350
0A31 0 7003 N6F3 MDX H6F2 3A144360
0A32 0 4400 0F69 H6F1 BSI L F000 BSC DID NOT BRANCH 3A144370
0A34 0 3166 DC /3166 ERR ID 3A144380
0A35 0 4400 0FC4 H6F2 BSI L F005 CK LOCK ON ERROR 3A144390
0A37 0 70F1 MDX A6F1 LOOP 3A144400
*****
* 3A144410
* TEST OF SUBTRACT OPERATION 3A144420
* 3A144430
* 3A144440
* 3A144450
*****
0A38 0 2000 A700 LDS 0 SET C AND OF OFF 3A144460
0A39 0 C066 LD N700 LD /0000 3A144470
0A3A 0 9066 S N701 S /0001 A NOW /FFFF 3A144480
0A3B 0 2866 STS N702 STORE CARRY IND. TO N702 3A144490
0A3C 0 F066 EOR N703 ZERO ACC IF CORRECT 3A144500
0A3D 0 4C18 0A42 BSC L G700,&- BRANCH ON ZERO 3A144510
0A3F 0 4400 0F69 BSI L F000 0000 MINUS 0001 FAILED 3A144520
0A41 0 30FA DC /30FA ERR ID 3A144530
0A42 0 4400 0F98 G700 BSI L F00E CK LOCK ON ERROR 3A144540
0A44 0 70F3 MDX A700 LOOP 3A144550
0A45 0 C05C LD N702 LD CARRY INDICATION 3A144560
0A46 0 F05D EOR N704 ZERO IF CORRECT 3A144570
0A47 0 4C18 0A4C BSC L G702,&- BRANCH ON ZERO 3A144580
0A49 0 4400 0F69 BSI L F000 CARRY NOT ON 3A144590
0A4B 0 30FB DC /30FB ERR ID 3A144600
0A4C 0 4400 0FC4 G702 BSI L F005 CK LOCK ON ERROR 3A144610
0A4E 0 70E9 MDX A700 LOOP 3A144620
*****
0A4F 0 2000 A704 LDS 0 SET C AND OF OFF& 3A144630
0A50 0 C04F LD N700 LD /0000 3A144640
0A51 0 9051 S N703 S /FFFF 3A144650
0A52 0 284F STS N702 STORE CARRY ON CONDITION 3A144660
0A53 0 F04D EOR N701 ZERO WITH /0001 3A144670
0A54 0 4C18 0A59 BSC L G704,&- BRANCH ON ZERO 3A144680
0A56 0 4400 0F69 BSI L F000 0000 MINUS FFFF FAILED 3A144690
0A58 0 30FC DC /30FC ERR ID 3A144700
0A59 0 4400 0F98 G704 BSI L F00E CK LOCK ON ERROR 3A144710
0A5B 0 70F3 MDX A704 LOOP 3A144720
0A5C 0 C045 LD N702 LD CARRY COND FROM N702 3A144730
0A5D 0 F046 EOR N704 ZERO ACC IF CORRECT 3A144740
0A5E 0 4C18 0A63 BSC L G706,&- BRANCH ON ZERO 3A144750
0A60 0 4400 0F69 BSI L F000 CARRY NOT SET 3A144760
0A62 0 30FD DC /30FD ERR ID 3A144770
0A63 0 4400 0FC4 G706 BSI L F005 CK LOCK ON ERROR 3A144780
0A65 0 70E9 MDX A704 LOOP 3A144790
*****
* 3A144800
* 3A144810
* 3A144820
* 3A144830
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
0A66 0 2000 A708 LDS 0 SET C AND OF OFF 3A144840
0A67 0 C03D LD N705 LD /8000 3A144850
0A68 0 9038 S N701 S /0001 3A144860

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CPU FUNCTION TEST

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

0A7D 0 2000	A70C LDS	0	SET C AND OF OFF	3A145040
0A7E 0 C021	LD	N700	LD /0000	3A145050
0A7F 0 9025	S	N705	S /8000	3A145060
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 200F	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
* * TEST OF ADD DOUBLE *				

CORE	DATA OR	*LA- OPER-		3A145440
ADDR	INSTRUCTION	*BEL ATION FT OPERANDS & REMARKS	ID&SEQ# AT RIGHT	3A145450

0AA8 0 2000	A740 LDS	0	SET C AND OF OFF	3A145460
0AA9 0 CC00 0B6E	LDD	L N742	LD A#/FFFF Q#/FFFF	3A145470
0AAB 0 8C00 0B70	AD	L N744	A /0000 /0000	3A145480
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

CPU FUNCTION TEST

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
0ACO 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

0AD7 0 2000	A746 LDS	0	SET C AND OF OFF	3A145760
0AD8 0 CC00 0B72	LDD	L N746	LD A#/0000 Q#/0001	3A145770
0ADA 0 8C00 0B6E	AD	L N742	A /FFFF /FFFF	3A145780
0ADC 0 2C00 0B6D	STS	L N740	STORE COND OF C AND OF	3A145790
0ADE 0 4C18 0AE3	BSC	L G746,&-	BRANCH ON ZERO	3A145800
0AEO 0 4400 0F69	BSI	L F000	AD 0000&FFFF A FAILED	3A145810
0AE2 0 3107	DC	/3107	ERR ID	3A145820
0AE3 0 4400 0F98	G746 BSI	L F00E	CK LOCK ON ERROR	3A145830
0AE5 0 70F1	MDX	A746	LOOP	3A145840
0AE6 0 18D0	RTE	16	INTERCHANGE A AND Q	3A145850
0AE7 0 4C18 0AEC	BSC	L G748,&-	BRANCH ON ZERO	3A145860
0AE9 0 4400 0F69	BSI	L F000	AD 0J01&FFFF Q FAILED	3A145870
0AEB 0 3108	DC	/3108	ERR ID	3A145880
0AEC 0 4400 0F98	G748 BSI	L F00E	CK LOCK ON ERROR	3A145890
0AEE 0 70E8	MDX	A746	LOOP	3A145900
0AEF 0 C400 0B6D	LD	L N740	LD COND OF C AND OF	3A145910
0AF1 0 F0B2	EOR	N704	CHECK FOR CARRY	3A145920
0AF2 0 4C18 0B00	BSC	L G74A,&-	ZERO# C AND OF OK	3A145930
0AF4 0 4C04 0AFD	BSC	L H74A,E	CHECK FOR OVERFLOW %B15	3A145940
0AF6 0 4400 0F69	BSI	L F000	CARRY NOT ON	3A145950
0AF8 0 3109	DC	/3109	ERR ID	3A145960
0AF9 0 4400 0FC4	BSI	L F005	CK LOCK ON ERROR	3A145970
0AFB 0 70D8	MDX	A746	LOOP	3A145980
0AFC 0 7003	MDX	G74A		3A145990
0AFD 0 4400 0F69	H74A BSI	L F000	OVFLO ON	3A146000
0AFF 0 310A	DC	/310A	ERR ID	3A146010
0B00 0 4400 0FC4	G74A BSI	L F005	CK LOCK ON ERROR	3A146020
0B02 0 70D4	MDX	A746	LOOP	3A146030

CORE	DATA OR	*LA- OPER-		3A146060
ADDR	INSTRUCTION	*BEL ATION FT OPERANDS & REMARKS	ID&SEQ# AT RIGHT	3A146070

0B03 0 2000	A74C LDS	0	SET C AND OF OFF	3A146080
0B04 0 C869	LDD	N742	LD A#/FFFF Q#/FFFF	3A146090
0B05 0 8868	AD	N742	A /FFFF /FFFF	3A146100
0B06 0 2866	STS	N740	STORE C AND OF COND	3A146110
0B07 0 F066	EOR	N742	ZERO WITH /FFFF	3A146120
0B08 0 4C18 0B0D	BSC	L G74C,&-	BRANCH ON ZERO	3A146130
0B0A 0 4400 0F69	BSI	L F000	AD FFFF&FFFF ACC FAILED	3A146140
0B0C 0 3108	DC	/3108	ERR ID	3A146150
0B0D 0 4400 0F98	G74C BSI	L F00E	CK LOCK ON ERROR	3A146160
0B0F 0 70F3	MDX	A74C	LOOP	3A146170
0B10 0 18D0	RTE	16	INTERCHANGE A AND Q	3A146180
0B11 0 F062	EOR	N74A	ZERO WITH /FFFF	3A146190
0B12 0 4C18 0B17	BSC	L G74E,&-	BRANCH ON ZERO	3A146200
0B14 0 4400 0F69	BSI	L F000	AD FFFF&FFFF Q FAILED	3A146210
0B16 0 310C	DC	/310C	ERR ID	3A146220
0B17 0 4400 0F98	G74E BSI	L F00E	CK LOCK ON ERROR	3A146230

CPU FUNCTION TEST

OB19 0 70E9	MDX	A74C	LOOP	3A146260
OB1A 0 C052	LD	N740	CONDITION OF C AND OF	3A146270
OB1B 0 F05C	EOR	N748	CHECK FOR OVERFLOW	3A146280
OB1C 0 4C18 OB2A	BSC L	J740,E-	BRANCH ON ZERO	3A146290
OB1E 0 4C04 OB27	BSC L	K740,E	CHECK FOR CARRY	3A146300
OB20 0 4400 OF69	BSI L	F000	CARRY NOT ON	3A146310
OB22 0 310E	DC	/310E	ERR ID	3A146320
OB23 0 4400 OFC4	BSI L	F005	CK LOCK ON ERROR	3A146330
OB25 0 70DD	MDX	A74C	LOOP	3A146340
OB26 0 7003	MDX	J740		3A146350
OB27 0 4400 OF69	K740 BSI L	F000	OVFLO ON	3A146360
OB29 0 310D	DC	/310D	ERR ID	3A146370
OB2A 0 4400 OFC4	J740 BSI L	F005	CK LOCK ON ERROR	3A146380
OB2C 0 70D6	MDX	A74C	LOOP	3A146390

OB2D 0 2000	B742 LDS	0	SET C AND OF OFF	3A146410
OB2E 0 C847	LDD	N74C	LD A#/FFFF Q#/7FFF	3A146420
OB2F 0 883E	AD	N742	A /FFFF /FFFF	3A146430
OB30 0 283C	STS	N740	STORE CONDITION OF C & OF	3A146440
OB31 0 F03C	EOR	N742		3A146450
OB32 0 4C18 OB37	BSC L	J742,E-	BRANCH ON ZERO	3A146460
OB34 0 4400 OF69	BSI L	F000	AD FFFF&FFFF A FAILED	3A146470
OB36 0 310F	DC	/310F	ERR ID	3A146480
OB37 0 4400 OF98	J742 BSI L	F00E	CK LOCK ON ERROR	3A146490
OB39 0 70F3	MDX	B742	LOOP	3A146500
OB3A 0 18D0	RTE	16	INTERCHANGE A AND Q	3A146510
OB3B 0 F039	EOR	N748		3A146520
OB3C 0 4C18 OB41	BSC L	J744,E-	BRANCH ON ZERO	3A146530
OB3E 0 4400 OF69	BSI L	F000	AD /7FFF&FFFF Q /FAILED	3A146540
OB40 0 3110	DC	/3110	ERR ID	3A146550
OB41 0 4400 OF98	J744 BSI L	F00E	CK LOCK ON ERROR	3A146560
OB43 0 70E9	MDX	B742	LOOP	3A146570
OB44 0 C028	LD	N740	LD C AND OF CONDITION	3A146580
OB45 0 F032	EOR	N748	ZERO IF CARRY WAS ON	3A146590
OB46 0 4C18 OB54	BSC L	J746,E-	BRANCH ON ZERO	3A146600
OB48 0 4C04 OB51	BSC L	K746,E	CHECK FOR CARRY	3A146610
OB4A 0 4400 OF69	BSI L	F000	CARRY NOT ON	3A146620
OB4C 0 3112	DC	/3112	ERR ID	3A146630
OB4D 0 4400 OFC4	BSI L	F005	CK LOCK ON ERROR	3A146640
OB4F 0 70DD	MDX	B742	LOOP	3A146650
OB50 0 7003	MDX	J746		3A146660
OB51 0 4400 OF69	K746 BSI L	F000	OVFLO ON	3A146670
OB53 0 3111	DC	/3111	ERR ID	3A146680
OB54 0 4400 OFC4	J746 BSI L	F005	CK LOCK ON ERROR	3A146690
OB56 0 70D6	MDX	B742	LOOP	3A146700

CORE DATA OR	*LA- OPER-			3A146710
ADDR INSTRUCTION	*BEL ATION FT OPERANDS & REMARKS	ID&SEQ# AT RIGHT		3A146720

OB57 0 C81A	B747 LDD	N746	LD A#/0000 Q#/0001	3A146730
OB58 0 881A	AD	N747	A /0001 /0001	3A146740
OB59 0 F019	EOR	N747	ZERO ACC IF CORRECT OP	3A146750
OB5A 0 4C18 OB5F	BSC L	J748,E-	BRANCH ON ZERO	3A146760
OB5C 0 4400 OF69	BSI L	F000	AD-ODD A REG FAILED	3A146770
OB5E 0 3113	DC	/3113	ERR ID	3A146780
OB5F 0 4400 OF98	J748 BSI L	F00E	CK LOCK ON ERROR	3A146790
OB61 0 70F5	MDX	B747	LOOP	3A146800
OB62 0 18D0	RTE	16	NOW A#/0002 Q#/0000	3A146810
OB63 0 F014	EOR	N748	ZERO ACC IF CORRECT OP	3A146820
OB64 0 4C18 OB69	BSC L	J74A,E-	BRANCH ON ZERO	3A146830
OB66 0 4400 OF69	BSI L	F000	AD-ODD Q REG FAILED	3A146840
OB68 0 3114	DC	/3114	ERR ID	3A146850
OB69 0 4400 OFC4	J74A BSI L	F005	CK LOCK ON ERROR	3A146860
OB6B 0 70EB	MDX	B747	LOOP	3A146870
OB6C 0 700C	MDX	A780	EXIT TO NEXT ROUTINE	3A146880
OB6D 0 0000	N740 DC	/0000		3A146890
OB6E 0000	BSS E			3A146900

CPU FUNCTION TEST

OB6E 0 FFFF	N742 DC	/FFFF		3A146940
OB6F 0 FFFF	DC	/FFFF		3A146950
OB70 0 0000	N744 DC	/0000		3A146960
OB71 0 0000	DC	/0000		3A146970
OB72 0 0000	N746 DC	/0000		3A146980
OB73 0 0001	N747 DC	/0001		3A146990
OB74 0 FFFE	N74A DC	/FFFE		3A147000
OB75 0 7FFE	N74B DC	/7FFE		3A147010
OB76 0 FFFF	N74C DC	/FFFF		3A147020
OB77 0 7FFF	DC	/7FFF		3A147030
OB78 0 0002	N748 DC	/0002		3A147040

TEST SUB DOUBLE				

OB79 0 2000	A780 LDS	0	SET C AND OF OFF	3A147050
OB7A 0 C867	LDD	N782	LD A#/0000 Q#/0000	3A147060
OB7B 0 9868	SD	N784	S /0000 /0001	3A147070
OB7C 0 2864	STS	N780	STORE C AND OF CONDITION	3A147080
OB7D 0 F068	EOR	N786	ZERO WITH /FFFF	3A147090
OB7E 0 4C18 OB83	BSC L	G780,E-	BRANCH ON ZERO	3A147100
OB80 0 4400 OF69	BSI L	F000	SD 0000-0000 ACC FAILED	3A147110
OB82 0 3115	DC	/3115	ERR ID	3A147120
OB83 0 4400 OF98	G780 BSI L	F00E	CK LOCK ON ERROR	3A147130
OB85 0 70F3	MDX	A780	LOOP	3A147140
OB86 0 18D0	RTE	16	NOW A#/FFFF Q#/0000	3A147150
OB87 0 F05E	EOR	N786	ZERO WITH /FFFF	3A147160
OB88 0 4C18 OB8D	BSC L	G782,E-	BR ON ZERO	3A147170
OB8A 0 4400 OF69	BSI L	F000	SD 0000-0001 Q FAILED	3A147180
OB8C 0 3116	DC	/3116	ERR ID	3A147190
OB8D 0 4400 OF98	G782 BSI L	F00E	CK LOCK ON ERROR	3A147200
OB8F 0 70E9	MDX	A780	LOOP	3A147210
OB90 0 C050	LD	N780	LD C AND OF CONDITION	3A147220
OB91 0 F056	EOR	N788	ZERO IF CARRY WAS ON	3A147230
OB92 0 4C18 OBA0	BSC L	G784,E-	BRANCH ON ZERO	3A147240
OB94 0 4C04 OB9D	BSC L	H784,E	CHECK FOR CARRY	3A147250
OB96 0 4400 OF69	BSI L	F000	CARRY NOT ON	3A147260
OB98 0 3117	DC	/3117	ERR ID	3A147270
OB99 0 4400 OFC4	BSI L	F005	CK LOCK ON ERROR	3A147280
OB9B 0 70DD	MDX	A780	LOOP	3A147290
OB9C 0 7003	MDX	G784		3A147300
OB9D 0 4400 OF69	H784 BSI L	F000	OVFLO ON	3A147310
OB9F 0 3118	DC	/3118	ERR ID	3A147320
OBA0 0 4400 OFC4	G784 BSI L	F005	CK LOCK ON ERROR	3A147330
OBA2 0 70D6	MDX	A780	LOOP	3A147340

CORE DATA OR	*LA- OPER-			3A147350
ADDR INSTRUCTION	*BEL ATION FT OPERANDS & REMARKS	ID&SEQ# AT RIGHT		3A147360

OBA3 0 2000	A786 LDS	0	SET C AND OF OFF	3A147370
OBA4 0 C83D	LDD	N782	LD A#/0000 Q#/0000	3A147380
OBA5 0 9840	SD	N786	/FFFF /FFFF	3A147390
OBA6 0 4C18 OBA8	BSC L	G786,E-	BRANCH ON ZERO	3A147400
OBA8 0 4400 OF69	BSI L	F000	SD 0000-FFFF A FAILED	3A147410
OBAA 0 3119	DC	/3119	ERR ID	3A147420
OBA8 0 4400 OF98	G786 BSI L	F00E	CK LOCK ON ERROR	3A147430
OBAE 0 70F5	MDX	A786	LOOP	3A147440
OBAE 0 18D0	RTE	16	NOW A#/0001 Q#/0000	3A147450
OBAF 0 F035	EOR	N785	ZERO WITH /0001	3A147460
OB80 0 4C18 OBB5	BSC L	G788,E-	BRANCH ON ZERO	3A147470
OB82 0 4400 OF69	BSI L	F000	SD 0000-FFFF Q FAILED	3A147480
OB84 0 311A	DC	/311A	ERR ID	3A147490
OB85 0 4400 OFC4	G788 BSI L	F005	CK LOCK ON ERROR	3A147500
OBB7 0 70EB	MDX	A786	LOOP	3A147510

OBB8 0 C831	A78A LDD	N78A	LD A#/0000 Q#/C000	3A147520
OBB9 0 982C	SD	N786	S /FFFF /FFFF	3A147530

OBBA 0 4C18 0BBF BSC L G78A,&- BRANCH ON ZERO 3A147620
OBBC 0 4400 0F69 BSI L F000 SD 0000-FFFF A FAILED 3A147630
0BBE 0 3118 DC /3118 ERR ID 3A147640
OBBF 0 4400 0F98 G78A BSI L F00E CK LOCK ON ERROR 3A147650
OBC1 0 70F6 MDX A78A LOOP 3A147660
OBC2 0 18D0 RTE 16 NOW A#/C001 Q#/0000 3A147670
OBC3 0 F025 EOR N78D ZERO WITH /C001 3A147680
OBC4 0 4C18 0BC9 BSC L G78C,&- BRANCH ON ZERO 3A147690
OBC6 0 4400 0F69 BSI L F000 SD C000-FFFF Q FAILED 3A147700
OBC8 0 311C DC /311C ERR ID 3A147710
OBC9 0 4400 0FC4 G78C BSI L F005 CK LOCK ON ERROR 3A147720
OBCB 0 70EC MDX A78A LOOP 3A147730
3A147740

OBCC 0 C815 A78E LDD N782 LD A#/0000 Q#/0000 3A147750
OBCD 0 9819 SD N787 S /FFFF /FFFF 3A147760
OBCE 0 4C18 0BD3 BSC L G78E,&- BRANCH ON ZERO 3A147770
OBDO 0 4400 0F69 BSI L F000 SD-ODD A FAILED 3A147780
GBD2 0 311D DC /311D ERR ID 3A147790
OBDS 0 4400 0F98 G78E BSI L F00E CK LOCK ON ERROR 3A147800
OBD5 0 70F6 MDX A78E LOOP 3A147810
OBD6 0 18D0 RTE 16 NOW A#/0001 Q#/0000 3A147820
OBD7 0 F00D EOR N785 ZERO WITH /0001 3A147830
OBD8 0 4C18 0BDD BSC L H780,&- BRANCH ON ZERO 3A147840
OBDA 0 4400 0F69 BSI L F000 SD-ODD Q FAILED 3A147850
OBDC 0 311E DC /311E ERR ID 3A147860
OBDD 0 4400 0FC4 H780 BSI L F005 CK LOCK ON ERROR 3A147870
OBDF 0 70EC MDX A78E LOOP 3A147880
OBE0 0 700B MDX A7C0 EXIT TO NEXT ROUTINE 3A147890
OBE1 0 0000 N780 DC /0000 STORAGE 3A147900
OBE2 0 0000 BSS E 3A147910
OBE3 0 0000 N782 DC /0000 3A147920
OBE4 0 0000 DC /0000 3A147930
OBE5 0 0001 N784 DC /0000 3A147940
OBE6 0 FFFF N785 DC /0001 3A147950
OBE7 0 FFFF N786 DC /FFFF 3A147960
OBE8 0 0002 N787 DC /FFFF 3A147970
OBE9 0 C001 N788 DC /0002 3A147980
OBEA 0 0000 N78D DC /C001 3A147990
OBEB 0 C000 N78A DC /0000 3A148000
DC /C000 3A148010
3A148020
3A148030
3A148040
3A148050

TEST OF MULTIPLY OPERATION

CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT

OBE0 0 C04F A7C0 LD N7C0 LD /5555 3A148070
OBE1 0 A04F M N7C1 M /2AAA 3A148080
OBE2 0 F04F EOR N7C2 ZERO WITH /0E38 3A148090
OBE3 0 4C18 0BF4 BSC L G7C0,&- BRANCH ON ZERO 3A148100
OBE4 0 4400 0F69 BSI L F000 M /5555X/2AAA ACC FAILED 3A148110
OBF3 0 311F DC /311F ERR ID 3A148120
OBF4 0 4400 0F98 G7C0 BSI L F00E CK LOCK ON ERROR 3A148130
OBF6 0 70F5 MDX A7C0 LOOP 3A148140
OBF7 0 18D0 RTE 16 NOW A#/9C72 Q#/0000 3A148150
OBF8 0 F046 EOR N7C3 ZERO WITH /9C72 3A148160
OBF9 0 4C18 0BFE BSC L G7C2,&- BRANCH ON ZERO 3A148170
OBF0 0 4400 0F69 BSI L F000 MULT 5555X/2AAA Q FAILED 3A148180
OBF1 0 3120 DC /3120 ERR ID 3A148190
OBF2 0 4400 0FC4 G7C2 BSI L F005 CK LOCK ON ERROR 3A148200
OC00 0 70EB MDX A7C0 LOOP 3A148210
3A148220
3A148230
3A148240
3A148250
3A148260
3A148270
3A148280
3A148290
OC01 0 C03E A7C4 LD N7C4 LD /FFFF
OC02 0 A03D M N7C4 M /FFFF
OC03 0 4C18 0C08 BSC L G7C4,&- BRANCH ON ZERO
OC05 0 4400 0F69 BSI L F000 M /FFFFX/FFFF ACC FAILED

OC07 0 3121 DC /3121 ERR ID 3A148300
OC08 0 4400 0F98 G7C4 BSI L F00E CK LOCK ON ERROR 3A148310
OC0A 0 70F6 MDX A7C4 LOOP 3A148320
OC0B 0 18D0 RTE 16 NOW A#/0001 Q#/0000 3A148330
OC0C 0 F034 EOR N7C5 ZERO WITH /0001 3A148340
OC0D 0 4C18 0C12 BSC L G7C6,&- BRANCH ON ZERO 3A148350
OC0F 0 4400 0F69 BSI L F000 M /FFFFX/FFFF Q REG FAILED 3A148360
OC11 0 3122 DC /3122 ERR ID 3A148370
OC12 0 4400 0FC4 G7C6 BSI L F005 CK LOCK ON ERROR 3A148380
OC14 0 70EC MDX A7C4 LOOP 3A148390
3A148400

OC15 0 C02C A7C8 LD N7C6 LD /0000 3A148410
OC16 0 A029 M N7C4 M /FFFF 3A148420
OC17 0 4C18 0C1C BSC L G7C8,&- BRANCH ON ZERO 3A148430
OC19 0 4400 0F69 BSI L F000 M /FFFFX/0000 ACC FAILED 3A148440
OC18 0 3123 DC /3123 ERR ID 3A148450
OC1C 0 4400 0F98 G7C8 BSI L F00E CK LOCK ON ERROR 3A148460
OC1E 0 70F6 MDX A7C8 LOOP 3A148470
OC1F 0 18D0 RTE 16 NOW A#/0000 Q#/0000 3A148480
OC20 0 4C18 0C25 BSC L G7CA,&- BRANCH ON ZERO 3A148490
OC22 0 4400 0F69 BSI L F000 M /FFFFX/0000 Q REG FAILED 3A148500
OC24 0 3124 DC /3124 ERR ID 3A148510
OC25 0 4400 0FC4 G7CA BSI L F005 CK LOCK ON ERROR 3A148520
OC27 0 70ED MDX A7C8 LOOP 3A148530
3A148540

OC28 0 C017 A7CC LD N7C4 LD /FFFF 3A148550
OC29 0 A018 M N7C6 M /0000 3A148560
OC2A 0 4C18 0C2F BSC L G7CC,&- BRANCH ON ZERO 3A148570
OC2C 0 4400 0F69 BSI L F000 M /0000X/FFFF ACC FAILED 3A148580
OC2E 0 3125 DC /3125 ERR ID 3A148590
OC2F 0 4400 0F98 G7CC BSI L F00E CK LOCK ON ERROR 3A148600
OC31 0 70F6 MDX A7CC LOOP 3A148610
OC32 0 18D0 RTE 16 NOW A#/0000 Q#/0000 3A148620
OC33 0 4C18 0C38 BSC L G7CE,&- BRANCH ON ZERO 3A148630
OC35 0 4400 0F69 BSI L F000 M /0000X/FFFF Q REG FAILED 3A148640
OC37 0 3126 DC /3126 ERR ID 3A148650
OC38 0 4400 0FC4 G7CE BSI L F005 CK LOCK ON ERROR 3A148660
OC3A 0 70ED MDX A7CC LOOP 3A148670
OC3B 0 7007 MDX A800 EXIT TO NEXT ROUTINE 3A148680
OC3C 0 5555 N7C0 DC /5555 3A148690
OC3D 0 2AAA N7C1 DC /2AAA 3A148700
OC3E 0 0E38 N7C2 DC /0E38 3A148710
OC3F 0 9C72 N7C3 DC /9C72 3A148720
OC40 0 FFFF N7C4 DC /FFFF 3A148730
OC41 0 0001 N7C5 DC /0001 3A148740
OC42 0 0000 N7C6 DC /0000 3A148750
3A148760
3A148770
3A148780
3A148790

TEST OF DIVIDE OPERATION

CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT

OC43 0 2000 A800 LDS 0 SET C AND OF OFF 3A148800
OC44 0 CC00 0CE2 LDD L N802 LD A#/4000 Q#/7FFF 3A148810
OC46 0 AC00 0CF2 D L N812 D /8000 3A148820
OC48 0 2C00 0CE1 STS L N800 STORE C AND OF CONDITION 3A148830
OC4A 0 F400 0CF2 EOR L N812 ZERO WITH /8000 3A148840
OC4C 0 4C18 0C51 BSC L G800,&- BR ON ZERO 3A148850
OC4E 0 4400 0F69 BSI L F000 DVD-A-REG INCORRECT 3A148860
OC50 0 3127 DC /3127 ERR ID 3A148870
OC51 0 4400 0F98 G800 BSI L F00E CK LOCK ON ERROR 3A148880
OC53 0 70EF MDX A800 LOOP 3A148890
OC54 0 18D0 RTE 16 NOW A#/7FFF Q#/0000 3A148900
OC55 0 F400 0CF1 EOR L N811 ZERO WITH /7FFF 3A148910
OC57 0 4C18 0C5C BSC L G802,&- BRANCH ON ZERO 3A148920
OC59 0 4400 0F69 BSI L F000 DVD-Q REG INCORRECT 3A148930

CPU FUNCTION TEST

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OC5B 0 3128          DC      /3128      ERR ID          3A148980
OC5C 0 4400 OF98    G802 BSI L F00E      CK LOCK ON ERROR 3A148990
OC5E 0 70E4          MDX      A800      LOOP            3A149000
OC5F 0 COE2          LD       N7C6      LD /0000        3A149010
OC60 0 4C18 OC6E    BSC L G804,E-     BRANCH ON ZERO   3A149020
OC62 0 4C04 OC6B    BSC L H804,E      BR ON NOT EVEN   3A149030
OC64 0 4400 OF69    BSI L F000        CARRY ON         3A149040
OC66 0 3129          DC      /3129      ERR ID          3A149050
OC67 0 4400 OFC4    BSI L F005        CK LOCK ON ERROR 3A149060
OC69 0 70D9          MDX      A800      LOOP            3A149070
OC6A 0 7006          MDX      A806      EXIT TO NEXT ROUTINE 3A149080
OC6B 0 4400 OF69    H804 BSI L F000        OVFLD ON         3A149090
OC6D 0 312A          DC      /312A      ERR ID          3A149100
OC6E 0 4400 OFC4    G804 BSI L F005        CK LOCK ON ERROR 3A149110
OC70 0 70D2          MDX      A800      LOOP            3A149120
*****
OC71 0 C872          A806 LDD N804      LD A#/1C71 Q#/BBE3 3A149130
OC72 0 AC00 OCF3    D L N813          D /5555          3A149140
OC74 0 286C          STS      N800      STORE C AND OF CONDITION 3A149150
OC75 0 F07D          EOR      N813          ZERO WITH /55555 3A149160
OC76 0 4C18 OC7B    BSC L G806,E-     BRANCH ON ZERO   3A149170
OC78 0 4400 OF69    BSI L F000        DVD-A REG INCORRECT 3A149180
OC7A 0 312B          DC      /312B      ERR ID          3A149190
OC7B 0 4400 OF98    G806 BSI L F00E      CK LOCK ON ERROR 3A149200
OC7D 0 70F3          MDX      A806      LOOP            3A149210
OC7E 0 18D0          RTE      16         NDM A#/BBE3 Q#/0000 3A149220
OC7F 0 F074          EOR      N816          ZERO WITH /2DAA 3A149230
OC80 0 4C18 OC85    BSC L G808,E-     BRANCH ON ZERO   3A149240
OC82 0 4400 OF69    BSI L F000        DVD-Q REG INCORRECT 3A149250
OC84 0 312C          DC      /312C      ERR ID          3A149260
OC85 0 4400 OF98    G808 BSI L F00E      CK LOCK ON ERROR 3A149270
OC87 0 70E9          MDX      A806      LOOP            3A149280
OC88 0 C058          LD       N800      LD C AND OF CONDITION 3A149290
OC89 0 4C18 OC97    BSC L G80A,E-     BRANCH ON ZERO   3A149300
OC8B 0 4C04 OC94    BSC L H80A,E      BR IF NOT EVEN   3A149310
OC8D 0 4400 OF69    BSI L F000        CARRY ON         3A149320
OC8F 0 312D          DC      /312D      ERR ID          3A149330
OC90 0 4400 OFC4    BSI L F005        CK LOCK ON ERROR 3A149340
OC92 0 70DE          MDX      A806      LOOP            3A149350
OC93 0 7006          MDX      A80C      EXIT TO NEXT ROUTINE 3A149360
OC94 0 4400 OF69    H80A BSI L F000        OVFLD ON         3A149370
OC96 0 312E          DC      /312E      ERR ID          3A149380
OC97 0 4400 OFC4    G80A BSI L F005        CK LOCK ON ERROR 3A149390
OC99 0 70D7          MDX      A806      LOOP            3A149400
*****
CODE  DATA OR      *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
OC9A 0 2000          A80C LDS 0          SET C AND OF OFF 3A149410
OC9B 0 C84A          LDD N806          SET A#/0000 Q#/0001 3A149420
OC9C 0 A851          D N80E           D /0000          3A149430
OC9D 0 4C01 OCA2    BSC L G80C,0     BRANCH ON OVERFLOW 3A149440
OC9F 0 4400 OF69    H80C BSI L F000        DVD BY 0- OFL OFF 3A149450
OCA1 0 312F          DC      /312F      ERR ID          3A149460
OCA2 0 4400 OFC4    G80C BSI L F005        CK LOCK ON ERROR 3A149470
OCA4 0 70F5          MDX      A80C      LOOP            3A149480
OCA5 0 18D0          RTE      16         SWAP A AND Q     3A149490
OCA6 0 F040          EOR      N807          ACC S/B /0000    3A149500
OCA7 0 4C20 OC9F    BSC L H80C,Z     BCH UNLESS ZERO   3A149510
*****
OCA9 0 2000          A80E LDS 0          SET C AND OF OFF 3A149520
OCAA 0 C83D          LDD N808          LD A#/4000 Q#/0000 3A149530
OCAB 0 A83B          D N807           D /0001          3A149540
OCAC 0 4C01 OCB1    BSC L G80E,0     BRANCH ON OVERFLOW 3A149550
OCAE 0 4400 OF69    BSI L F000        DVD-BY 1-OVRFLW OFF 3A149560
OCB0 0 3130          DC      /3130      ERR ID          3A149570
OCB1 0 4400 OFC4    G80E BSI L F005        CK LOCK ON ERROR 3A149580

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CPU FUNCTION TEST

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OCB3 0 70F5          MDX      A80E      LOOP            3A149660
*****
OCB4 0 2000          B800 LDS 0          SET C AND OF OFF 3A149670
OCB5 0 C834          LDD N80A          LD A#/A000 Q#/0000 3A149680
OCB6 0 A831          D N808           D /4000          3A149690
OCB7 0 4C01 OCBC    BSC L J800,0     BRANCH ON OVERFLOW 3A149700
OCB9 0 4400 OF69    BSI L F000        DVD/4000-OVRFLW OFF 3A149710
OCBB 0 3131          DC      /3131      ERR ID          3A149720
OCBC 0 4400 OFC4    J800 BSI L F005        CK LOCK ON ERROR 3A149730
OCBE 0 70F5          MDX      B800      LOOP            3A149740
*****
OCBF 0 2000          B802 LDS 0          SET C AND OF OFF 3A149750
OCC0 0 C82B          LDD N80C          LD A#/C000 Q#/0000 3A149760
OCC1 0 A830          D N812           D /8000          3A149770
OCC2 0 4C01 OCC7    BSC L J802,0     BR ON OF         3A149780
OCC4 0 4400 OF69    BSI L F000        DVD/8000-OVRFLW OFF 3A149790
OCC6 0 3132          DC      /3132      ERR ID          3A149800
OCC7 0 4400 OFC4    J802 BSI L F005        CHECK LOOP SWITCH 3A149810
OCC9 0 70F5          MDX      B802      LOOP            3A149820
*****
OCCA 0 2000          B804 LDS 0          SET C AND OF OFF 3A149830
OCCB 0 C822          LDD N80E          LD A#/0000 Q#/FFFF 3A149840
OCCD 0 A81A          D N807           D /0001          3A149850
OCCD 0 4C01 OCD2    BSC L J804,0     BR ON OF         3A149860
OCCF 0 4400 OF69    BSI L F000        DVD/0001-OVRFLW OFF 3A149870
OCD1 0 3133          DC      /3133      ERR ID          3A149880
OCD2 0 4400 OFC4    J804 BSI L F005        CK LOCK ON ERROR 3A149890
OCD4 0 70F5          MDX      B804      LOOP            3A149900
*****
OCD5 0 2000          B806 LDS 0          SET C AND OF OFF 3A149910
OCD6 0 C819          LDD N810          LD A#/FFFF Q#/7FFF 3A149920
OCD7 0 A80F          D N807           D /0001          3A149930
OCD8 0 4C01 OCDD    BSC L J806,0     BR ON OF         3A149940
OCDA 0 4400 OF69    BSI L F000        DVD/0001-OVRFLW OFF 3A149950
OCDC 0 3134          DC      /3134      ERR ID          3A149960
OCDD 0 4400 OFC4    J806 BSI L F005        CK LOCK ON ERROR 3A149970
OCDF 0 70F5          MDX      B806      LOOP            3A150000
OCE0 0 7023          MDX      B807          EXIT TO NEXT ROUTINE 3A150010
OCE1 0 0000          N800 DC /0000      STORAGE         3A150020
OCE2 0 0000          BSS E           3A150030
OCE3 0 4000          N802 DC /4000      3A150040
OCE4 0 7FFF          DC /7FFF        3A150050
OCE5 0 1C71          N804 DC /1C71      3A150060
OCE6 0 BBE3          DC /BBE3        3A150070
OCE7 0 0001          N806 DC /0001      3A150080
OCE8 0 4000          N807 DC /4000      3A150090
OCE9 0 0000          N808 DC /0000      3A150100
OCEA 0 A000          N80A DC /A000      3A150110
OCEB 0 0000          DC /0000        3A150120
OCEC 0 C000          N80C DC /C000      3A150130
OCED 0 0000          DC /0000        3A150140
OCEE 0 0000          N80E DC /0000      3A150150
OCEF 0 FFFF          N80F DC /FFFF      3A150160
OCF0 0 FFFF          N810 DC /FFFF      3A150170
OCF1 0 7FFF          N311 DC /7FFF      3A150180
OCF2 0 8000          N812 DC /8000      3A150190
OCF3 0 5555          N813 DC /5555      3A150200
OCF4 0 2DAA          N816 DC /2DAA      3A150210
OCF5 0 C000          N817 DC /C000      3A150220
OCF6 0 6100          N818 DC /6100      3A150230
OCF7 0 0000          DC /0000        3A150240
OCF8 0 8000          N819 DC /8000      3A150250
OCF9 0 0000          DC /0000        3A150260
OCFA 0 0002          N820 DC /0002      3A150270
OCFB 0 0000          N821 DC 0          3A150280
OCFC 0 2001          DC /2001        3A150290
OCFD 0 4000          CC /4000        3A150300

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CPU FUNCTION TEST

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OCFF 0 C000          DC      /C000          3A150340
OD00 0 0000          BSS E 0              3A150350
OD00 0 FFFF          N823 DC      /FFFF          3A150360
OD01 0 FFFF          DC      /FFFF          3A150370
OD02 0 0000          N824 DC      0          STORAGE 3A150380
OD03 0 0000          DC      0          STORAGE 3A150390
                      3A150400
                      3A150410
*****
COKE  DATA OR      *LA- OPER-          3A150420
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A150430
*****
OD04 0 2000          B807 LDS      0          SET C AND OF OFF 3A150450
OD05 0 C8F0          LDD      N818         LD A#/6100 Q#/0000 3A150460
OD06 0 A8EE          D        N817         D /C000              3A150470
OD07 0 4C01 OD0C     BSC L J808,0        BR ON OF              3A150480
OD09 0 4400 OF69     BSI L F000         OVERFLOW OFF        3A150490
OD0B 0 316A          DC      /316A        ERR ID               3A150500
OC0C 0 4400 OFC4     J808 BSI L F005        CK LOCK ON ERROR    3A150510
OD0E 0 70F5          MDX      B807         LOOP                 3A150520
                      3A150530
*****
OD0F 0 2000          B808 LDS      0          SET C AND OF OFF 3A150540
OD10 0 C8E7          LDD      N819         LD A#/8000 Q#/0000 3A150550
OD11 0 A8DD          D        N80F         D /FFFF              3A150560
OD12 0 4C01 OD17     BSC L J809,0        BR ON OF              3A150570
OD14 0 4400 OF69     BSI L F000         OVERFLOW OFF        3A150580
OD16 0 3168          DC      /3168        ERR ID               3A150590
OD17 0 4400 OFC4     J809 BSI L F005        CK LOCK ON ERROR    3A150600
OD19 0 70F5          MDX      B808         LOOP                 3A150610
                      3A150620
*****
OD1A 0 2000          B809 LDS      0          SET C AND OF OFF 3A150630
OD1B 0 C8E4          LDD      N823         LD A#/FFFF Q#/FFFF 3A150640
OD1C 0 A8DD          D        N820         D /0002              3A150650
OD1D 0 4C01 OD20     BSC L J815,0        BR ON OF              3A150660
OD1F 0 7003          MDX      J810         OVERFLOW OFF        3A150670
OD20 0 4400 OF69     J815 BSI L F000        CK LOCK ON ERROR    3A150680
OD22 0 316C          DC      /316C        ERR ID               3A150690
OD23 0 4400 OFC4     J810 BSI L F005        CK LOCK ON ERROR    3A150700
OD25 0 70F4          MDX      B809         LOOP                 3A150710
                      3A150720
*****
                      3A150730
                      3A150740
                      3A150750
                      3A150760
                      3A150770
                      3A150780
                      3A150790
                      3A150800
                      3A150810
                      3A150820
                      3A150830
                      3A150840
                      3A150850
                      3A150860
                      3A150870
                      3A150880
                      3A150890
                      3A150900
                      3A150910
                      3A150920
                      3A150930
                      3A150940
                      3A150950
                      3A150960
                      3A150970
                      3A150980
                      3A150990
                      3A151000
                      3A151010

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MULTIPLY-DIV TEST 88010

THIS TEST TAKES 4 NUMBERS /8000, /C000, /4000 AND /2001 AND MULTIPLIES AND DIVIDES THE RESULT OF THE MULTIPLICATION BY ALL VALUES OF NEGATIVE AND POSITIVE NUMBERS. THIS PROCEDURE IS REPETED UNTIL ALL FOUR NUMBERS HAVE BEEN USED.

- STEP1 SET MULTIPLICAND AND DIVISOR TO LARGEST NEG. NUMBER.
- STEP2 TAKE ONE OF FOUR NUMBERS AND USE IT AS THE MULTIPLIER
- STEP3 MULTIPLY
- STEP4 STORE RESULTS IN SYMBOLIC LOCATION N824
- STEP5 DIVIDE
- STEP6 CHECK RESULT
- STEP7 INCREMENT MULTIPLICAND

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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
* 3A151150
* NOTE -- THREE WORD LOCATIONS ARE AVAILABLE FOR 3A151160
* MANUAL INSERTION OF ANY VALUE DESIRED. 3A151170
* THEY ARE AT LABEL ADDRESS N821&1, N821&2, 3A151180
* AND N821&3. 3A151190
* 3A151200
* CAUTION ** DO NOT CHANGE THE WORD AT LABEL 3A151210
* LOCATION N822 % /8000=. 3A151220
* 3A151230
*****
CORE  DATA OR      *LA- OPER-          3A151240
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A151250
*****
OD26 0 6104          B810 LDX      1 4          LD XR 1 WITH /0004 3A151270
OD27 0 0C00 OFD2     J814 XIO L F003        CK BYPASS MPY/DIV SW 3A151280
OD29 0 C400 OFD5     LD      L Z000         LD SWITCH SETTINGS 3A151290
OD2B 0 1808          SRA      8            SHIFT BIT 7 TO BIT POS 15 3A151300
OD2C 0 4804          BSC      E            SK IF BIT 15#0      3A151310
OD2D 0 7028          MDX      A840         SW BIT 6 ON %BYPASS# 3A151320
OD2E 0 C0C9          LD      N819         CONST /8000         3A151330
OD2F 0 D0CB          STO      N821         STORE /8000 AT N821 3A151340
OD30 0 COCA          J811 LD      N821         LD C#N821# /8000    3A151350
OD31 0 A500 OCFB     M        L1 N821        3A151360
OD33 0 D8CE          STD      N824         STORE A AND Q       3A151370
OD34 0 2000          LDS      0            SET C AND OF OFF    3A151380
OD35 0 A8C5          D        N821         D /8000              3A151390
OD36 0 F500 OCFB     EOR L1 N821         ZERO WITH /8000     3A151400
OD38 0 4C18 OD3D     BSC L J812,C-        BRANCH ON ZERO      3A151410
OD3A 0 4400 OF69     BSI L F000         ACC NOT ZERO        3A151420
OD3C 0 316D          DC      /316D        ERR ID               3A151430
OD3D 0 4400 OF98     J812 BSI L F00E        CK LOCK ON ERROR    3A151440
OD3F 0 70F0          MDX      J811         LOOP ON MPL/DIV     3A151450
OD40 0 1800          RTE      16          NOW A#/0000 Q#/0000 3A151460
OD41 0 4C18 OD46     BSC L J813,C-        BRANCH ON ZERO      3A151470
OD43 0 4400 OF69     BSI L F000         REMAINDER IN Q REG 3A151480
OD45 0 316E          DC      /316E        ERR ID               3A151490
OD46 0 4400 OF98     J813 BSI L F00E        CK LOCK ON ERROR    3A151500
OD48 0 70E7          MDX      J811         LOOP ON MPL/DIV     3A151510
OD49 0 C0B1          J816 LD      N821         LD /8000              3A151520
OD4A 0 809C          A        N807         ADD ONE              3A151530
OD4B 0 D0AF          STO      N821         3A151540
OD4C 0 4C18 OD49     BSC L J816,C-        BRANCH ON ZERO      3A151550
OD4E 0 F0A9          EOR      N819        3A151560
OD4F 0 4C20 OD30     BSC L J811,Z        BR IF NOT ZERO      3A151570
OD51 0 71FF          MDX      1 -1        3A151580
OD52 0 70D4          MDX      J814         LOOP TO CK SWITCHES 3A151590
OD53 0 4400 OFC4     BSI L F005        CK LOCK ON ERROR    3A151600
OD55 0 70D0          MDX      B810         LOOP                 3A151610
                      3A151620
*****
* 3A151630
* TEST OF MDX OPERATION 3A151640
* 3A151650
* 3A151660
*****
OD56 0 6100          A840 LDX      1 0          LD XR 1 WITH ZERO 3A151670
OD57 0 71FF          MDX      1 -1        SK IF SIGN CHANGES 3A151680
OD58 0 3000          WAIT                               MDX FAILED TO SKIP 3A151690

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CPU FUNCTION TEST

CPU FUNCTION TEST

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OD59 0 696D          STX  1 N840    STORE CXXR 1# AT N840  3A151700
OD5A 0 C06C          LD      N84C    LD VALUE OF XR 1    3A151710
OD5B 0 F06C          EOR     N841    ZERO ACC WITH /FFFF  3A151720
OD5C 0 4C18 OD61     BSC  L G840,&-  BRANCH ON ZERO      3A151730
OD5E 0 4400 OF69     BSI  L F000    MDX XR 1 FAILED   3A151740
OD60 0 3135          DC     /3135    ERR ID              3A151750
OD61 0 4400 OFC4     G840 BSI  L F005  CK LOCK ON ERROR  3A151760
OD63 0 70F2          MDX   A840    LOOP              3A151770
                    *****
OD64 0 C068          A842 LD      N845    LD WITH ADDR OF     3A151780
                    *                                * LABEL N844     3A151790
                    *                                BR TO LABEL ADDR N842 &1 3A151800
OD65 0 7401 ODC9     MDX  L N842,1    LD A#/3000          3A151810
OD67 0 F065          EOR     N845    ACC NOW /0001      3A151820
OD68 0 4C18 OD6D     BSC  L H842,&-  BRANCH ON ZERO     3A151830
OD6A 0 4400 OF69     BSI  L F000    ACC DISTROYED AFTER MDX 3A151840
OD6C 0 316F          DC     /316F    ERR ID              3A151850
OD6D 0 C05B          H842 LD      N842    LD A#/3000          3A151860
OD6E 0 F05F          EOR     N846    ACC NOW /0001      3A151870
OD6F 0 4C18 OD74     BSC  L G842,&-  BRANCH ON ZERO     3A151880
OD71 0 4400 OF69     BSI  L F000    ADD TO MEM FAILED   3A151890
OD73 0 3136          DC     /3136    ERR ID              3A151900
OD74 0 C056          G842 LD      N843    LD /3000            3A151910
OD75 0 D053          STO     N842    LD /3000            3A151920
OD76 0 4400 OFC4     BSI  L F005    CK LOCK ON ERROR  3A151930
OD78 0 70E8          MDX   A842    LOOP              3A151940
                    *****
CORE  DATA OR      *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
OD79 0 6600 FFFE     A844 LDX  L2 -2    LD XR 2 WITH -2     3A151950
OD7B 0 7600 0001     MDX  L2  1      ADD ONE TO XR 2    3A151960
OD7D 0 6A49          STX  2 N840     STORE XR 2         3A151970
OD7E 0 C048          LD   N840      LD WITH XR 2 VALUE 3A152000
OD7F 0 F048          EOR  N841      ZERO ACC WITH /FFFF 3A152010
OD80 0 4C18 OD85     BSC  L G844,&-  BRANCH ON ZERO     3A152020
OD82 0 4400 OF69     BSI  L F000    MDX LONG XR 2 FAILED 3A152030
OD84 0 3137          DC   /3137    ERR ID              3A152040
OD85 0 4400 OFC4     G844 BSI  L F005  CK LOCK ON ERROR  3A152050
OD87 0 70F1          MDX   A844    LOOP              3A152060
                    *****
OD88 0 63FF          A846 LDX  3 -1    LD XR 3 WITH -1    3A152070
OD89 0 7301          MDX  3  1      ADD ONE TO XR 3    3A152080
OD8A 0 7001          MDX   G846     DID NOT SK ON MDX  3A152090
OD8B 0 7003          MDX   H846     DID NOT SK ON MDX  3A152100
OD8C 0 4400 OF69     G846 BSI  L F000  XR 3 NO SKIP AT 0  3A152110
OD8E 0 3138          DC   /3138    ERR ID              3A152120
OD8F 0 4400 OFC4     H846 BSI  L F005  CK LOCK ON ERROR  3A152130
OD91 0 70F6          MDX   A846    LOOP              3A152140
                    *****
OD92 0 61FF          A848 LDX  1 -1    LD XR 1 WITH -1    3A152150
OD93 0 7104          MDX  1  4      ADD 4 TO XR 1     3A152160
OD94 0 7001          MDX   G848     DID NOT SK ON MDX  3A152170
OD95 0 7003          MDX   H848     DID NOT SK ON MDX  3A152180
OD96 0 4400 OF69     G848 BSI  L F000  SIGN CHANGE-NO SKIP 3A152190
OD98 0 3139          DC   /3139    ERR ID              3A152200
OD99 0 4400 OFC4     H848 BSI  L F005  CK LOCK ON ERROR  3A152210
OD9B 0 70F6          MDX   A848    LOOP              3A152220
                    *****
OD9C 0 6500 FFFE     A849 LDX  L1 -2    LD XR 1 WITH -2    3A152230
OD9E 0 C0FF          H849 LD      H849    LD XR 1 WITH -2    3A152240
OD9F 0 7580 ODCD     MDX  I1 N845    LD XR 1 WITH -2    3A152250
ODA1 0 6925          STX  1 N840     STORE CXXR 1# AT N840 3A152260
ODA2 0 F0FB          EOR  H849      ZERO ACC WITH /FFFF 3A152270
ODA3 0 4C18 ODA8     BSC  L K849,&-  BRANCH ON ZERO     3A152280
ODA5 0 4400 OF69     BSI  L F000    ACC GONE AFTER MDX INDEXED 3A152290
ODA7 0 3168          DC   /3168    ERR ID              3A152300
ODA8 0 C01E          K849 LD      N840    LD VALUE OF XR 1 AFTER 3A152310

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* MDX OP
ODA9 0 F01E          EOR     N841    ZERO ACC WITH /FFFF  3A152380
ODAA 0 4C18 ODAF     BSC  L G849,&-  BRANCH ON ZERO      3A152390
ODAC 0 4400 OF69     BSI  L F000    BRANCH ON ZERO      3A152400
ODAE 0 313A          DC     /313A    INDIRECT MDX FAILED  3A152410
ODAF 0 4400 OFC4     G849 BSI  L F005  ERR ID              3A152420
ODB1 0 70EA          MDX   A849    CK LOCK ON ERROR    3A152430
                    *****
ODB2 0 7400 ODC6     A84A MDX  L N84A,0  TEST SKIP IF ZERO   3A152440
ODB4 0 7001          MDX   G84A     BYPASS IF CORRECT OP 3A152450
ODB5 0 7003          MDX   H84A     BYPASS IF CORRECT OP 3A152460
ODB6 0 4400 OF69     G84A BSI  L F000    MDX L FAILED TO SKIP 3A152470
ODB8 0 3171          DC     /3171    ERR ID              3A152480
ODB9 0 4400 OFC4     H84A BSI  L F005  CK LOCK ON ERROR    3A152490
ODBB 0 70F6          MDX   A84A    LOOP              3A152500
                    *****
ODBC 0 7400 ODC6     A85A MDX  L N84A,0  TEST NON SKIP       3A152510
ODBE 0 7003          MDX   H85A     TEST NON SKIP       3A152520
ODBF 0 4400 OF69     BSI  L F000    MDX L SKIPPED       3A152530
ODC1 0 3172          DC     /3172    ERR ID              3A152540
ODC2 0 4400 OFC4     H85A BSI  L F005  CK LOCK ON ERROR    3A152550
ODC4 0 70F7          MDX   A85A     CK LOCK ON ERROR    3A152560
ODC5 0 7009          MDX   A880     LOOP                3A152570
ODC6 0 0000          N84A DC     0      EXIT TO NEXT ROUTINE 3A152580
                    *****
CORE  DATA OR      *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
ODC7 0 0000          N840 DC     /0000    STORAGE              3A152590
ODC8 0 FFFF          N841 DC     /FFFF    STORAGE              3A152600
ODC9 0 3000          N842 WAIT                    ADD TO MEM FAILED   3A152610
ODCA 0 3000          N842 WAIT                    ADD TO MEM FAILED   3A152620
ODCB 0 3000          N843 WAIT                    ADD TO MEM FAILED   3A152630
ODCC 0 0001          N844 DC     /0001    ADD TO MEM FAILED   3A152640
ODCD 0 ODCC          N845 DC     N844    ADD TO MEM FAILED   3A152650
ODCE 0 3001          N846 DC     /3001    ADD TO MEM FAILED   3A152660
                    *****
*
* TEST OF SLC OPERATION
*
ODCF 0 610A          A880 LDX  1 10     LD XR 1 WITH &10    3A152670
ODD0 0 C000 OEC8     LDD  L N882    LD A#/0000 Q#/FFFF  3A152680
ODD2 0 2002          LDS  2         SET C ON             3A152690
ODD3 0 1140          SLCA 1 0      NOW A#/0000 Q#/FFFF 3A152700
ODD4 0 6D00 OEC7     STX  L1 N880  STORE CXXR 1#      3A152710
ODD6 0 2812          STS  G881     STORE CARRY CONDITION 3A152720
ODD7 0 4C18 ODDC     BSC  L G880,&-  BRANCH ON ZERO     3A152730
ODD9 0 4400 OF69     BSI  L F000    ACC NOT#ZERO       3A152740
ODDB 0 3138          DC   /3138    ERR ID              3A152750
ODDC 0 4400 OF98     G880 BSI  L F00E  CK LOCK ON ERROR    3A152760
ODDE 0 70F0          MDX   A880    LOOP              3A152770
ODDF 0 C400 OEC7     LD   L N880    LD PREVIOUS CXXR 1# 3A152780
ODE1 0 4C18 ODE6     BSC  L G882,&-  BRANCH ON ZERO     3A152790
ODE3 0 4400 OF69     BSI  L F000    XR 1 NOT#ZERO       3A152800
ODE5 0 313C          DC   /313C    ERR ID              3A152810
ODE6 0 4400 OF98     G882 BSI  L F00E  CK LOCK ON ERROR    3A152820
ODE8 0 70E6          MDX   A880    LOOP              3A152830
ODE9 0 2000          G881 LDS  0      SAVED BY STS ABOVE  3A152840
ODEA 0 4802          BSC  C        SK IF CARRY OFF    3A152850
ODEB 0 7004          MDX   G883     CARRY ON            3A152860
ODEC 0 4400 OFC4     BSI  L F005    CK LOCK ON ERROR    3A152870
ODEE 0 70E0          MDX   A880     LOOP                3A152880
ODEF 0 7006          MDX   A884     EXIT TO NEXT ROUTINE 3A152890
ODF0 0 4400 OF69     G883 BSI  L F000  CARRY ON %SHOULD NOT BE# 3A152900
ODF2 0 3160          DC   /3160    ERR ID              3A152910
ODF3 0 4400 OFC4     BSI  L F005    CK LOCK ON ERROR    3A152920
ODF5 0 70D9          MDX   A880    LOOP              3A152930

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*****  
3A153060  
ODF6 0 6580 OECB 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 O 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 OE04 BSC L G884,&- BRANCH ON ZERO 3A153130  
OE01 0 4400 OF69 BSI L F000 ACC NOT#/8000 3A153140  
OE03 0 3130 DC /3130 ERR ID 3A153150  
OE04 0 4400 OF98 G884 BSI L F00E CHECK LOOP SWITCH 3A153160  
OE06 0 70EF MDX A884 LOOP 3A153170  
OE07 0 6D00 OEC7 STX L1 N880 STORE C&XR 1 IN N880 3A153180  
OE09 0 C400 OEC7 LD L N880 LD C&N880 3A153190  
OE0B 0 F400 OED4 EOR L N88E ZERO WITH /FF01 3A153200  
OE0D 0 4C18 OE12 BSC L G886,&- BRANCH ON ZERO 3A153210  
OE0F 0 4400 OF69 BSI L F000 XR-1 NOT FF01 3A153220  
OE11 0 313E DC /313E ERR ID 3A153230  
OE12 0 4400 OF98 G886 BSI L F00E CK LOCK ON ERROR 3A153240  
OE14 0 70E1 MDX A884 LOOP 3A153250  
OE15 0 2000 G885 LDS O SAVED BY STS ABOVE 3A153260  
OE16 0 4802 BSC C SK IF CARRY OFF 3A153270  
OE17 0 7003 MDX G887 CARRY OFF, SHOULD BE ON 3A153280  
OE18 0 4400 OF69 BSI L F000 ERR ID 3A153290  
OE1A 0 3161 DC /3161 CK LOCK ON ERROR 3A153300  
OE1B 0 4400 OFC4 G887 BSI L F005 CK LOCK ON ERROR 3A153310  
OE1D 0 70D8 MDX A884 LOOP 3A153320  
*****  
3A153330  
CORE DATA OR *LA- OPER-  
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A153340  
*****  
OE1E 0 6580 OECB A888 LDX I1 N885 LD XR 1 WITH /0010 3A153350  
OE20 0 CC00 OECC LDD L N886 LD A#/8000 Q#/FFD0 3A153360  
OE22 0 1140 SLCA 1 0 ACC NOW /8000 3A153370  
OE23 0 F400 OECC EOR L N886 ZERO WITH /8000 3A153380  
OE25 0 4C18 OE2A BSC L G888,&- BRANCH ON ZERO 3A153390  
OE27 0 4400 OF69 BSI L F000 ACC NOT#8000 3A153400  
OE29 0 313F DC /313F ERR ID 3A153410  
OE2A 0 4400 OF98 G888 BSI L F00E CK LOCK ON ERROR 3A153420  
OE2C 0 70F1 MDX A888 LOOP 3A153430  
OE2D 0 6D00 OEC7 STX L1 N880 STORE C&XR 1 IN N880 3A153440  
OE2F 0 C400 OEC7 LD L N880 LD C&N880 3A153450  
OE31 0 F400 OECC EOR L N885 ZERO WITH /0010 3A153460  
OE33 0 4C18 OE38 BSC L G88A,&- BRANCH ON ZERO 3A153470  
OE35 0 4400 OF69 BSI L F000 XR 1 NOT#0010 3A153480  
OE37 0 3140 DC /3140 ERR ID 3A153490  
OE38 0 4400 OFC4 G88A BSI L F005 CK LOCK ON ERROR 3A153500  
OE3A 0 70E3 MDX A888 LOOP 3A153510  
*****  
3A153520  
OE3B 0 6110 A889 LDX 1 16 LD XR 1 WITH /0010 3A153520  
OE3C 0 6210 LDX 2 16 LD XR 2 WITH /0010 3A153530  
OE3D 0 6310 LDX 3 16 LD XR 3 WITH /0010 3A153540  
OE3E 0 C400 OECA LD L N884 LD A#/0001 3A153550  
OE40 0 1041 SLCA 1 ACC NOW /0002 3A153560  
OE41 0 F400 OED1 EOR L N888 ZERO WITH /0002 3A153570  
OE43 0 4C18 OE48 BSC L G889,&- BRANCH ON ZERO 3A153580  
OE45 0 4400 OF69 BSI L F000 NON INDEXED SLCA FAILED 3A153590  
OE47 0 3162 DC /3162 ERR ID 3A153600  
OE48 0 4400 OFC4 G889 BSI L F005 CK LOCK ON ERROR 3A153610  
OE4A 0 70F0 MDX A889 LOOP 3A153620  
*****  
3A153630  
OE4B 0 6110 A88A LDX 1 16 LD XR 1 WITH /0010 3A153630  
OE4C 0 6210 LDX 2 16 LD XR 2 WITH /0010 3A153640  
OE4D 0 6310 LDX 3 16 LD XR 3 WITH /0010 3A153650  
OE4E 0 CC00 OECC LDD L N882 LD A#/0000 Q#/FFFF 3A153660  
OE50 0 10CF SLC 15 NOW A#/7FFF Q#/1000 3A153670  
OE51 0 F400 OED5 EOR L N88F ZERO WITH /7FFF 3A153680
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```
OE53 0 4C18 OE56 BSC L G888,&- NON INDEXED SLC FAILED 3A153740  
OE55 0 3173 DC /3173 ERR ID 3A153750  
OE56 0 4400 OFC4 G888 BSI L F005 CK LOCK ON ERROR 3A153760  
OE58 0 70F2 MDX A88A LOOP 3A153770  
*****  
3A153780  
OE59 0 6580 OED2 A88C LDX I1 N88C LD XR 1 WITH /0020 3A153790  
OE5B 0 C872 LDD N888 LD A#/0000 Q#/0000 3A153800  
OE5C 0 11C0 SLC 1 0 ACC NOW A#/0000 Q#/0000 3A153810  
OE5D 0 4C18 OE62 BSC L G88C,&- BRANCH ON ZERO 3A153820  
OE5F 0 4400 OF69 BSI L F000 ACC NOT#0000 3A153830  
OE61 0 3141 DC /3141 ERR ID 3A153840  
OE62 0 4400 OF98 G88C BSI L F00E CK LOCK ON ERROR 3A153850  
OE64 0 70F4 MDX A88C LOOP 3A153860  
OE65 0 18D0 RTE 16 ACC NOW A#/0000 Q#/0000 3A153870  
OE66 0 4C18 OE68 BSC L G88E,&- BRANCH ON ZERO 3A153880  
OE68 0 4400 OF69 BSI L F000 Q REG NOT#0000 3A153890  
OE6A 0 3142 DC /3142 ERR ID 3A153900  
OE6B 0 4400 OF98 G88E BSI L F00E CK LOCK ON ERROR 3A153910  
OE6D 0 70EB MDX A88C LOOP 3A153920  
OE6E 0 6958 STX 1 N880 STORE C&XR 1 IN N880 3A153930  
OE6F 0 C057 LD N880 LD C&N880 3A153940  
OE70 0 4C18 OE75 BSC L J880,&- BRANCH ON ZERO 3A153950  
OE72 0 4400 OF69 BSI L F000 XR 1 NOT#0000 3A153960  
OE74 0 3143 DC /3143 ERR ID 3A153970  
OE75 0 4400 OFC4 J880 BSI L F005 CK LOCK ON ERROR 3A153980  
OE77 0 70E1 MDX A88C LOOP 3A153990  
*****  
3A154000  
CORE DATA OR *LA- OPER-  
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT 3A154010  
*****  
OE78 0 6580 OED3 B882 LDX I1 N88D LD XR 1 WITH /FFDF 3A154020  
OE7A 0 C855 LDD N88A LD A#/0000 Q#/0002 3A154030  
OE7B 0 11C0 SLC 1 0 NOW A#/8000 Q#/0000 3A154040  
OE7C 0 F04F EOR N886 ZERO WITH /8000 3A154050  
OE7D 0 4C18 OE82 BSC L J882,&- BRANCH ON ZERO 3A154060  
OE7F 0 4400 OF69 BSI L F000 ACC NOT#/8000 3A154070  
OE81 0 3144 DC /3144 ERR ID 3A154080  
OE82 0 4400 OF98 J882 BSI L F00E CK LOCK ON ERROR 3A154090  
OE84 0 70F3 MDX B882 LOOP 3A154100  
OE85 0 18D0 RTE 16 NOW A#/0000 Q#/8000 3A154110  
OE86 0 4C18 OE8B BSC L J884,&- BRANCH ON ZERO 3A154120  
OE88 0 4400 OF69 BSI L F000 Q REG NOT#0000 3A154130  
OE8A 0 3145 DC /3145 ERR ID 3A154140  
OE8B 0 4400 OF98 J884 BSI L F00E CK LOCK ON ERROR 3A154150  
OE8D 0 70EA MDX B882 LOOP 3A154160  
OE8E 0 6938 STX 1 N880 STORE C&XR 1 AT N880 3A154170  
OE8F 0 C037 LD N880 LD C&N880 3A154180  
OE90 0 F400 OED4 EOR L N88E ZERO WITH /FF01 3A154190  
OE92 0 4C18 OE97 BSC L J886,&- BRANCH ON ZERO 3A154200  
OE94 0 4400 OF69 BSI L F000 XR-1 NOT FF01 3A154210  
OE96 0 3146 DC /3146 ERR ID 3A154220  
OE97 0 4400 OFC4 J886 BSI L F005 CK LOCK ON ERROR 3A154230  
OE99 0 70DE MDX B882 LOOP 3A154240  
*****  
3A154250  
OE9A 0 C835 B884 LDD N88A LD A#/0000 Q#/0002 3A154250  
OE9B 0 611F LDX 1 31 LD XR 1 WITH /001F 3A154260  
OE9C 0 11C0 SLC 1 0 NOW A#/8000 Q#/0000 3A154270  
OE9D 0 4802 BSC C SK IF CARRY OFF 3A154280  
OE9E 0 7003 MDX J887 CARRY ON 3A154290  
OE9F 0 4400 OF69 BSI L F000 CARRY NOT ON 3A154300  
OE01 0 3147 DC /3147 ERR ID 3A154310  
OE02 0 4400 OF98 J887 BSI L F00E CK LOCK ON ERROR 3A154320  
OE04 0 70F5 MDX B884 LOOP 3A154330  
OE05 0 F026 EOR N886 ZERO WITH /8000 3A154340  
OE06 0 4C18 OEAB BSC L J888,&- BRANCH ON ZERO 3A154350  
OE08 0 4400 OF69 BSI L F000 ACC NOT EQUAL 8000 3A154360
```

CPU FUNCTION TEST

```

OEAA 0 3148          DC      /3148      ERR ID          3A154420
OEAB 0 4400 OF98    J888  BSI L F00E      CK LOCK ON ERROR 3A154430
OEAD 0 70EC          MDX      B884      LOOP            3A154440
OEAE 0 6D00 OEC7    STX L1 N880      STOR 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 OEB7    BSC L J889, &-    BRANCH ON ZERO    3A154480
OEB4 0 4400 OF69    BSI L F000      XR 1 NOT EQUAL 0001 3A154490
OEB6 0 3149          DC      /3149      ERR ID          3A154500
OEB7 0 4400 OFC4    J889  BSI L F005      CK LOCK ON ERROR 3A154510
OEB9 0 70E0          MDX      B884      LOOP            3A154520
*****
OEBA 0 611C          B885  LDX 1 28      LD XR 1 WITH /001C 3A154530
OEBB 0 C814          LDD      N88A      LD A#/0000 Q#/0002 3A154540
OEBE 0 1100          SLA 1 0           NOW A#/2000 Q#/0000 3A154550
OEBD 0 4802          BSC      C           SKIP IF CARRY OFF 3A154560
OEBE 0 7001          MDX      J88A      3A154570
OEBF 0 7003          MDX      J88B      3A154580
OEC0 0 4400 OF69    J88A  BSI L F000      CARRY IS ON       3A154590
OEC2 0 314A          DC      /314A      ERR ID          3A154600
OEC3 0 4400 OFC4    J88B  BSI L F005      CK LOCK ON ERROR 3A154610
OEC5 0 70F4          MDX      B885      LOOP            3A154620
OEC6 0 700F          MDX      B8A0      EXIT TO NEXT ROUTINE 3A154630
OEC7 0 0000          N880  DC      /0000      STORAGE         3A154640
OEC8 0000           BSS E           3A154650
OEC8 0 0000          N882  DC      /0000      3A154660
OEC9 0 FFFF          DC      /FFFF      3A154670
OECA 0 0001          N884  DC      /0001      3A154680
OECB 0 0010          N885  DC      /0010      3A154690
OEC4 0 8000          N886  DC      /8000      3A154700
OEC5 0 FF00          N887  DC      /FF00      3A154710
OEC6 0 0000          N888  DC      /0000      3A154720
OEC7 0 0000          DC      /0000      3A154730
OEC8 0 0000          N88A  DC      /0000      3A154740
OED0 0 0000          N88B  DC      /0002      3A154750
OED1 0 0002          N88C  DC      /0020      3A154760
OED2 0 0020          N88D  DC      /FF0F      3A154770
OED3 0 FF0F          N88E  DC      /FF01      3A154780
OED4 0 FF01          N88F  DC      /7FFF      3A154790
OED5 0 7FFF          *****        3A154800
*****
*
*          TEST COMPARE INSTRUCTION
*
*          A # ACCUMULATOR
*          Q # ACCUMULATOR EXTENTION
*          M # WORD BEING COMPARED
*          M&1 # 2ND WORD ON DCM
*
*          THE 1800 HAS A COMPARE INSTRUCTION
*          BUT THE 1130 DOES NOT. THIS ROUTINE
*          DETERMINES WHICH MACHINE IS BEING
*          TESTED BEFORE ATTEMPTING A COMPARE
*          INSTRUCTION.
*
*          INDEX REGISTERS ARE HARDWARE IN 1800
*          AND CORE STORAGE LOCATIONS IN 1130.
*
*****
CORE   DATA OR *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
OED6 0 1810          B8A0  SRA 16         CK FOR 1130 OR 1800 3A155000
OED7 0 D400 0001     STO L /0001      STORE /0000 AT ADDR /0001 3A155010
OED9 0 61FF          LDX 1 -1        LD XR 1 WITH /FFFF 3A155020
OEDA 0 C400 0001     LD L /0001      LD C#/0001#       3A155030
OEDC 0 4C20 OF5C     BSC L W8C0, 2   BRANCH IF 1130    3A155040
OEDE 0 C072          LD      N8A2      LD C#N8A2# /4000 3A155050

```

CPU FUNCTION TEST

```

OEDF 0 8075          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 OF69    BSI L F000      A GREATER THAN M FAILED 3A155130
OEE4 0 3148          DC      /3148      ERR ID          3A155140
OEE5 0 4400 OF98    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 OEF1    BSC L B8A1, &-    BRANCH ON ZERO    3A155180
OEEB 0 4400 OF69    BSI L F000      ACC CHANGED ERROR 3A155190
OEEC 0 314C          DC      /314C      ERR ID          3A155200
OEEE 0 4400 OFC4    BSI L F005      CK LOCK ON ERROR 3A155210
OEF0 0 70E5          MDX      B8A0      LOOP            3A155220
*****
OEF1 0 C063          B8A1  LD      N8A0      N8A0 #/0000       3A155230
OEF2 0 805D          CMP      N8A1      N8A1 #/1000       3A155240
OEF3 0 7001          MDX      J8A2      A LESS THAN M FAILED 3A155250
OEF4 0 7003          MDX      J8A1      A LESS THAN M     3A155260
OEF5 0 4400 OF69    J8A2  BSI L F000      A LESS THAN M FAILED 3A155270
OEF7 0 314D          DC      /314D      ERR ID          3A155280
OEF8 0 4400 OFC4    J8A1  BSI L F005      CK LOCK ON ERROR 3A155290
OEF9 0 70F6          MDX      B8A1      LOOP            3A155300
*****
OEFB 0 C059          B8A2  LD      N8A0      N8A0 #/0000       3A155310
OEF3 0 8055          CMP      N8A3      N8A3 #/2000       3A155320
OEF4 0 7001          MDX      J8A4      A LESS THAN M FAILED 3A155330
OEF5 0 7003          MDX      J8A3      A LESS THAN M     3A155340
OEF6 0 4400 OF69    J8A4  BSI L F000      A LESS THAN M FAILED 3A155350
OEF7 0 314E          DC      /314E      ERR ID          3A155360
OEF8 0 4400 OFC4    J8A3  BSI L F005      CK LOCK ON ERROR 3A155370
OEF9 0 70F6          MDX      B8A2      LOOP            3A155380
*****
OEF0 0 C04F          B8A3  LD      N8A0      N8A0 #/0000       3A155390
OEF1 0 804A          CMP      N8A2      N8A2 #/4000       3A155400
OEF2 0 7001          MDX      J8A6      A LESS THAN M FAILED 3A155410
OEF3 0 7003          MDX      J8A5      A LESS THAN M     3A155420
OEF4 0 4400 OF69    J8A6  BSI L F000      A LESS THAN M FAILED 3A155430
OEF5 0 314F          DC      /314F      ERR ID          3A155440
OEF6 0 4400 OFC4    J8A5  BSI L F005      CK LOCK ON ERROR 3A155450
OEF7 0 70F6          MDX      B8A3      LOOP            3A155460
*****
OEF8 0 C044          B8A4  LD      N8C5      LD /8000          3A155470
OEF9 0 8044          CMP      N8A0      COMPARE C#N8A0# /0000 3A155480
OEF0 0 7001          MDX      J8A8      A LESS THAN M FAILED 3A155490
OEF1 0 7003          MDX      J8A7      A LESS THAN M     3A155500
OEF2 0 4400 OF69    J8A8  BSI L F000      A LESS THAN M FAILED 3A155510
OEF3 0 3150          DC      /3150      ERR ID          3A155520
OEF4 0 4400 OFC4    J8A7  BSI L F005      CK LOCK ON ERROR 3A155530
OEF5 0 70F6          MDX      B8A4      LOOP            3A155540
*****
OEF6 0 C036          B8A5  LD      N8A1      LD /1000          3A155550
OEF7 0 8035          CMP      N8A1      CMP /1000          3A155560
OEF8 0 7002          MDX      J8AA      A EQUAL M FAILED 3A155570
OEF9 0 7001          MDX      J8AA      A EQUAL M FAILED 3A155580
OEF0 0 7003          MDX      J8A9      A#M             3A155590
OEF1 0 4400 OF69    J8AA  BSI L F000      A#M FAILED       3A155600
OEF2 0 3151          DC      /3151      ERR ID          3A155610
OEF3 0 4400 OFC4    J8A9  BSI L F005      CK LOCK ON ERROR 3A155620
OEF4 0 70F5          MDX      B8A5      LOOP            3A155630
*****
*          TEST DOUBLE COMPARE
*
*****
CORE   DATA OR *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
OF24 0 C831          B8C0  LDD      N8C6      LD A#/8000 Q#/0001 3A155670

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CPU FUNCTION TEST

```

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,C- 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 OF38  BSC  L  J8C2,C- 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
*****
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
*****
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 0 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
*****
*****
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
OF5C 0 0809      W8C0  XIO  N8C1      READ SWITCHES 3A156350
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 0 0000      BSS  E          3A156450

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CPU FUNCTION TEST

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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 8058      A     U006      ADD ONE 3A156690
OF79 0 D0EF      STO  F000      STORE NEW RETURN ADDRESS 3A156700
OF7A 0 C05A      FOOL  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  FO0F      CK FDR 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
* 3A156800
* SHOWS ERROR ID
* EXIT FROM ROUTINE 3A156810
* C%F000=15 NOW ONE 3A156820
* GREATER THAN AT THE 3A156830
* BEGINNING OF ROUTINE 3A156840
* 3A156850
* 3A156860
* 3A156870
* LOOP ON INSTRUCTION BEING 3A156880
* TESTED 3A156890
* 3A156900
*****
CORE DATA OR *LA- OPER-
ADDR INSTRUCTION *BEL ATION FT OPERANDS & REMARKS ID&SEQ# AT RIGHT
*****
OF85 0 C0E3      F00A  LD   F000      GET RETURN ADDR AT F000 3A156950
OF86 0 D010      STO  U008      STORE RETURN ADDRESS 3A156960
OF87 0 800D      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
* 3A157000
* CK FOR SW 8 OR 12 3A157010
OF8B 0 1802      FOOF  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  FO0B      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  FO0B      BR TO EXIT IF SW 8 ON 3A157060
OF91 0 C043      LD   Z000      LD SWITCH READINGS 3A157070
OF92 0 0000      DC   0          IMPROPER BIT SWS, 14 ON 3A157080
OF93 0 083E      XIO  F003      *WITHOUT 8 OR 12 ON 3A157090
OF94 0 70E5      MDX  FO0L      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

```

CPU FUNCTION TEST

```

*
*****
*
*          LOCK ON ERROR RT
*
*****
CORE  DATA OR  *LA- OPER-
ADDR  INSTRUCTION *BEL ATION FT OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
OF98 0 0000      FOOE DC 0          CONTAINS RETURN ADDRESS 3A157230
OF99 0 281A      STS  F00H        SAVE REGS C AND OF          3A157240
OF9A 0 003B      STO  U00X        ACCUMULATOR                3A157250
OF9B 0 1800      RTE  16          ACC EXTENTION            3A157260
OF9C 0 003A      STO  U00X&1       ACC EXTENTION            3A157270
*
*****
*  SET UP FOR RESTART
*
*  TO RESTART -- PRESS STOP, RESET AND START.
*
OF9D 0 C03A      LD  RST1      LD /6004
*
OF9E 0 D400 0000  STO L /0000    STO IN WORD ZERO
*
OFA0 0 C03B      LD  RST2      LD /4C00
*
OFA1 0 D400 0004  STO L /0004    STO IN WORD FOUR
*
OFA3 0 C036      LD  RST2&1    LD /012C
*
OFA4 0 D400 0005  STO L /0005    STO IN WORD FIVE
*
*****
OFA6 0 082B      XIO  F003      READ SWITCHES
OFA7 0 C02D      LD  Z000      CK LOOP ON INST BEING
OFA8 0 1807      SRA  7          * TESTED SW
OFA9 0 4804      BSC  E          SKIP IF EVEN
OFAA 0 700A      MDX  F008      EXIT TO LOOP INST
OFAB 0 C0EB      LD  U00B      CK IF ERROR HAS
OFAC 0 4820      BSC  Z          * OCCURRED
OFAD 0 7009      MDX  F009
OFAE 0 C0E9      FOOK LD F00E    GOT RETURN ADDR
OFAF 0 8024      A  U006      ADD ONE
OFB0 0 D0E7      STO  F00E    STORE RETURN ADDRESS
OFB1 0 C025      LD  U00X&1    RESTORE REGS
OFB2 0 1800      RTE  16
OFB3 0 C022      LD  U00X
OFB4 0 2000      F00H LDS 0      SET C AND OF OFF
OFB5 0 4C80 OF98  F008 BSC I F00E    BR TO RETURN ADDRESS
OFB7 0 C01D      F009 LD Z000      CHECK LOCK ON ERROR SW
OFB8 0 1803      SRA  3          SHIFT BIT 12 TO POS 15
OFB9 0 4804      BSC  E          SKIP IF OFF
OFBA 0 7003      MDX  F00C      ERROR SW %B 12 ON
OFBB 0 1810      SRA  16         RESET ERROR OCCURRED
OFBC 0 D0DA      STO  U00B      * CONTROL
OFBD 0 70F0      MDX  F00K      BR TO GET RETURN ADDRESS
OFBE 0 C0D9      F00C LD F00E    GOT ADDR
OFBF 0 80D6      A  U00A      ADD MINUS THREE
OFC0 0 F0D6      EOR  U00B      COMPARE TO ERR CONTR
*
* ADDR
*
OFC1 0 4820      BSC  Z          SKIP ON ZERO
OFC2 0 70EB      MDX  F00K      BR TO GET RETURN ADDRESS
OFC3 0 70F1      MDX  F008      EXIT
*
*****
*
*          CK LOOP RT. SW RT
*
*****
3A157140
3A157150
3A157160
3A157170
3A157180
3A157190
3A157200
3A157210
3A157220
3A157230
3A157240
3A157250
3A157260
3A157270
3A157280
3A157290
3A157300
3A157310
3A157320
3A157330
3A157340
3A157350
3A157360
3A157370
3A157380
3A157390
3A157400
3A157410
3A157420
3A157430
3A157440
3A157450
3A157460
3A157470
3A157480
3A157490
3A157500
3A157510
3A157520
3A157530
3A157540
3A157550
3A157560
3A157570
3A157580
3A157590
3A157600
3A157610
3A157620
3A157630
3A157640
3A157650
3A157660
3A157670
3A157680
3A157690
3A157700
3A157710
3A157720
3A157730
3A157740
3A157750
3A157760
3A157770
3A157780
3A157790
3A157800
3A157810

```

CPU FUNCTION TEST

```

CORE  DATA OR  *LA- OPER-
ADDR  INSTRUCTION *BEL ATION F1 OPERANDS & REMARKS  ID&SEQ# AT RIGHT
*****
OFC4 0 0000      F005 DC 0          WILL CONTAIN RETURN ADDR 3A157850
OFC5 0 080C      XIO  F003        READ SMS - PLACE IN LABEL 3A157860
*
* ADDRESS Z000
*
OFC6 0 C00E      LD  Z000        CK LOOP ROUTINE SW      3A157880
OFC7 0 1805      SRA  5          CHECK FOR BIT 11        3A157890
OFC8 0 4804      BSC  E          NO SKIP FOR LOOP        3A157900
OFC9 0 7003      MDX  F00G      LOOP ROUTINE SWITCH ON  3A157910
OFCa 0 C0F9      LD  F005        LD RETURN ADDRESS        3A157920
OFCB 0 D0CC      STO  F00E      SAVE FOR LOCK ON ERROR RTN 3A157930
OFCc 0 70CC      MDX  F00E&1    BR TO SAVE REGISTERS    3A157940
OFCd 0 4C80 OFC4  F00G BSC I F005    BR TO MAIN PROGRAM      3A157950
*
* RETURN ADDRESS
*
OFCF 0 0000      U000 DC /0000    A REG SAVED HERE        3A157970
OFD0 0 0000      U001 DC /0000    Q REG SAVED HERE        3A15798C
OFD2 0 0000      BSS  E
OFD2 0 OFD5      F003 DC Z000
OFD3 0 0240      F004 DC /0240    EQUAL /3A00 IN 1130    3A158000
OFD4 0 0001      U006 DC /0001
OFD5 0 0000      Z000 DC /0000    SW READING STORED HERE  3A158030
OFD6 0 0002      U00X BSS 2      SAVED FOR A&Q STORAGE  3A158040
OFD8 0 6004      RST1 LDX /0004
OFD9 0 4C00 012E RST2 BSC L A080
OFDC 0 012D      END  X000
3A158070
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY

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CROSS REFERENCE

NAME	VALUE	REFERENCES
A0C0	013F	013A,300F,3010,3011,3012
A0B0	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
A2C0	0336	0340,3072
A2C0	0318	0311,0321,306F
A2C4	0322	032B,3070
A2C8	032C	0335,3071
A200	022D	0229,304A,304B,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,306B
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	058E,05CE,30AA
A502	05CF	05D9,30AB
A504	05DA	05E5,05F0,30AC,30AD
A508	05F1	05FB,30AE
A54A	06BB	06B3,06C4,06CC,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,0672,0680,30B7,30B8,30B9
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,0964,096B,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	0A0B,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,30E8,30EC
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	0BEO,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,310B,310C,310D,310E
A740	0AA8	0A9B,0A9F,0AB8,0AC3,0ACF,0AD6,3103,3104,3105,3106
A746	0AD7	0AE5,0AEE,0AFB,0B02,3107,3108,3109,310A
A78A	08B8	08C1,08C8,311B,311C
A78E	08C0	08D5,08DF,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	02B2	3065,3066,3067,3068,3069

CPU FUNCTION TEST

B40A 0490 04A3,04AB,04B4,3090,3091,3092
 B400 0453 045E,0467,0470,308A,308B,308C
 B405 0471 047D,0486,048F,308D,308E,308F
 B440 0519 0529,0531,053A,309C,309D,309E
 B500 0641 063A,064F,0656,30B5,30B6
 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 0EC6,0EE7,0EFO,314B,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 0D19,316B
 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 0F8E 0F8A
 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,0669,0670,0708,071E,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,0C78,0C85,0D3D,0D46,0DDC
 0DE6,0E04,0E12,0E2A,0E62,0E6B,0E82,0E8B,0EA2,0EAB,0EE5,0F2A,0F32
 0FAE,0F80,0FB5,0FBE,0FCB,0FCC
 F00F 0F8B 0F7D
 F00G 0FCD 0FC9
 F00H 0FB4 0F99
 F00K 0FAE 0FBD,0FC2
 F00L 0F7A 0F94
 F00X 0F81 0F6A
 F000 0F69 02DC,02E7,02F2,02FD,0308,031C,0326,0330,0338,0348,0353,035E,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,0588,05C9
 05D4,05E0,05EB,05F6,0602,0609,0613,0620,0627,0634,063B,064A,0651
 0666,066D,0678,0687,068E,069C,06A3,06AD,0685,068F,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,0BF1,0BF8,0C05,0C0F,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

CPU FUNCTION TEST

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
 0688,06C2,06CA,06D4,06DC,06E6,06EE,06F9,0701,0714,0728,073A,074E
 0767,0781,0795,079E,07AA,07B7,07C4,07D1,07DE,07EB,07F9,0807,0824
 0831,083E,0848,0859,0867,0875,0894,08AC,08C4,08D0,08EE,0901,0915
 0929,0941,0948,0962,0969,097A,0981,0991,0998,09A9,09B0,09C1,09C8
 09E5,09F1,09FD,0A09,0A15,0A24,0A35,0A4C,0A63,0A7A,0A95,0A9C,0ACD
 0AD4,0AF9,0B00,0B23,0B2A,0B4D,0B54,0B69,0B99,0BA0,0BB5,0BC9,0BDD
 0BFE,0C12,0C25,0C38,0C67,0C6E,0C90,0C97,0CA2,0CB1,0CBC,0CC7,0CD2
 0CDD,0D0C,0D17,0D23,0D53,0D61,0D76,0D85,0D8F,0D99,0DAF,0DB9,0DC2
 0DEC,0DF3,0E18,0E38,0E48,0E56,0E75,0E97,0EB7,0EC3,0EEE,0EF8,0F02
 0F0C,0F16,0F21,0F3B,0F44,0F4D,0FCA,0FCD
 F007 02D7 029C,02AB
 F008 0FB5 0FAA,0FC3
 F009 0FB7 0FAD
 F902 02C8 02AC,02BF
 F903 02C9 0297,02A6,02B5
 F904 02CA 02CA
 F911 02C8 0282,0286
 F912 02CC 0283,0285,02CB
 F913 02CD 0284
 F915 02CE 02AE,02B1
 F916 02CF 028C
 F917 02D0 02AD,02C0,02C8
 F918 02D1 0289,028D
 F919 02D2 0296
 F920 02D3 02A5,02B6
 F922 02D4 029D,02B9
 F923 02D6 029E,029F,02A2,02BA
 G0C1 0144 0141
 G0C2 0147 0145
 G080 0130 012E
 G081 0133 0130
 G082 0138 0133
 G083 013A 013B
 G084 013B 0138
 G14A 0181 017F
 G14B 0185 0183
 G14C 0189 0187
 G14D 0180 018B
 G14E 0191 018F
 G14F 0195 0193
 G140 015A 0158
 G141 015D 015B
 G142 0161 015F
 G143 0165 0163
 G144 0169 0167
 G145 016D 0168
 G146 0171 016F
 G147 0175 0173
 G148 0179 0177
 G149 017D 017B
 G150 0199 0197
 G18A 01D0 01CE
 G18B 01D4 01D2
 G18C 01D8 01D6
 G18D 01DC 01DA
 G18E 01E0 01DE
 G18F 01E4 01E2
 G181 01AC 01AA
 G182 01B0 01AE
 G183 01B4 01B2
 G184 01B8 01B6

G185 01BC 01BA
G186 01C0 01BE
G187 01C4 01C2
G188 01C8 01C6
G189 01CC 01CA
G2CC 033E 0339
G2C0 031F 031A
G2C4 0329 0324
G2C8 0333 032E
G20A 025D 0259
G20B 0267 0265
G20C 026B 026F
G20D 0262 0260
G200 0231 022D
G201 0236 0232
G202 023A 0236
G203 023E 023A
G204 0242 0240
G205 0247 0243
G206 024F 024D
G207 0254 0252
G208 024B 0247
G209 0258 0256
G280 02DF 02DA
G281 02EA 02E5
G282 02F5 02F0
G283 0300 02FB
G284 030E 0309
G3C0 03E6 03E1
G3C2 03F0 03EB
G3C4 03FE 03F9
G3C6 0407 0402
G300 034B 0345
G3D2 0356 0351
G304 0361 035C
G340 0370 036B
G342 037A 0375
G38A 0389 0384
G38C 03C8 03C3
G38E 03D2 03CD
G380 0388 0383
G382 0392 038D
G384 039C 0397
G386 03A5 03A0
G388 03AF 03AA
G4CA 05A4 059F
G4CC 05B2 05AD
G4CD 058B 0586
G4C0 0568 0563
G4C2 057A 0576
G4C4 0583 057F
G4C6 058D 0588
G4C8 059B 0596
G40C 043F 043B
G40E 0450 044B
G400 0425 0420
G404 041D 041B
G406 0430 042B
G407 043C 0439
G408 0447 0442
G44A 050C 0507
G44C 0500 04FD
G44D 0503 04FF
G44E 0516 0511
G440 04CE 04C9
G442 04C6 04C1
G443 04D7 04D2
G444 04ED 04E8

G446 04E1 04DE
G447 04E4 04E0
G448 04F6 04F1
G480 054B 0546
G482 055B 0553
G5CA 0781 077C
G5C0 0745 0740
G5C2 074E 0749
G5C4 075D 075B
G5C6 0767 0762
G5C8 0777 0772
G50A 060F 05FE, 0608
G50C 061F 061B
G50E 0634 0630
G500 05CC 05CB
G502 05D7 05D3
G504 05E0 05DE
G505 05E3 05DF
G506 05E8 05E9
G507 05EE 05EA
G508 05F6 05F4
G54A 06C6 06BC
G54C 06D8 06CE
G54E 06EA 06E0
G54F 06FD 06F2
G540 0674 0662, 0673
G542 067E 0679
G544 0695 0683
G546 069B 0697
G548 0684 06AA
G58A 073A 0735
G580 070B 0706
G582 0714 070F
G584 071E 0719
G586 072B 0723
G588 0731 072C
G6C0 0969 095D
G6C2 0981 0975
G6C4 0998 098C
G6C6 0980 09A4
G6C8 09C8 09BC
G60A 07D1 07CC
G60C 07DE 07D9
G60E 07EB 07E6
G600 0792 078F
G602 079B 0798
G604 07AA 07A5
G606 07B7 07B2
G608 07C4 07BF
G64A 0867 0862
G64C 0875 0870
G640 081D 0815
G641 0824 081F
G642 0831 082C
G644 083E 0839
G646 084B 0846
G648 0859 0854
G660 088A 0885
G661 0894 088F
G662 08A2 089D
G663 08AC 08A7
G664 08BA 08B5
G665 08C4 08BF
G670 08D4 08CB
G671 08CB 08CF
G672 08CD 08DA
G68A 0915 0910
G68C 0920 091B

G68E 0929 0924
 G680 08E2 08DF
 G682 08EE 08E9
 G684 08F9 08F4
 G686 0901 08FC
 G688 090C 0907
 G7CA 0C25 0C20
 G7CC 0C2F 0C2A
 G7CE 0C38 0C33
 G7C0 0BF4 0BEF
 G7C2 0BFE 0BF9
 G7C4 0C08 0C03
 G7C6 0C12 0C0D
 G7C8 0C1C 0C17
 G70A 0A7A 0A75
 G70C 0A87 0A82
 G70E 0A9C 0A8C
 G700 0A42 0A3D
 G702 0A4C 0A47
 G704 0A59 0A54
 G706 0A63 0A5E
 G708 0A70 0A6B
 G74A 0B00 0AF2,0AFC
 G74C 0B0D 0B08
 G74E 0B17 0B12
 G740 0AB6 0AB1
 G742 0AC1 0ABC
 G744 0AD4 0AC6,0ADD
 G746 0AE3 0ADE
 G748 0AEC 0AE7
 G78A 0BBF 0BBA
 G78C 0BC9 0BC4
 G78E 0BD3 0BCE
 G780 0B83 0B7E
 G782 0B8D 0B88
 G784 0BA0 0B92,0B9C
 G786 0BAB 0BA6
 G788 0BB5 0BB0
 G80A 0C97 0C89
 G80C 0CA2 0C9D
 G80E 0CB1 0CAC
 G800 0C51 0C4C
 G802 0C5C 0C57
 G804 0C6E 0C60
 G806 0C7B 0C76
 G808 0C85 0C80
 G84A 0DB6 0DB4
 G840 0D61 0D5C
 G842 0D74 0D6F
 G844 0D85 0D80
 G846 0D8C 0D8A
 G848 0D96 0D94
 G849 0DAF 0DAA
 G88A 0E38 0E33
 G88B 0E56 0E53
 G88C 0E62 0E5D
 G88E 0E68 0E66
 G880 0DDC 0DD7
 G881 0DE9 0DD6
 G882 0DE6 0DE1
 G883 0DF0 0DEB
 G884 0E04 0DFF
 G885 0E15 0DFC
 G886 0E12 0E0D
 G887 0E18 0E17
 G888 0E2A 0E25
 G889 0E48 0E43
 G900 02AC 02A0,02B3

G901 02A5 0295
 G902 029D 02A4
 G903 02B9 02BE
 G904 02BF 02B7,02BB,02C4
 H4C2 0577 0574
 H4C3 0574 056F
 H4C4 0580 057D
 H40A 04A9 04A4
 H40D 04A1 049C
 H40E 0482 04AD
 H400 0465 0460
 H402 045C 0457
 H404 046E 0469
 H405 047B 0477
 H406 0484 047F
 H407 0478 0475
 H408 048D 0488
 H440 052F 052A
 H443 0527 0522
 H444 0538 0533
 H50A 0602 0600
 H50B 0613 0611
 H50C 0620 061D
 H50E 063E 0632
 H508 05F9 05F5
 H54A 06CA 06BE
 H54C 06DC 06D0
 H54E 06EE 06E2
 H54F 0701 06F4
 H540 0666 0664
 H544 0687 0685
 H546 06A3 069A
 H548 0688 06AC
 H6C0 0966 0958
 H6C2 097E 0970
 H6C4 0995 0988
 H6C6 09AD 099F
 H6C8 09C5 09B7
 H6D0 09E5 09E0
 H6D2 09F1 09EC
 H6D3 09FD 09F8
 H6D5 0A09 0A04
 H6D6 0A15 0A10
 H6F0 0A24 0A1F
 H6F1 0A32 0A2C,0A2D,0A2F,0A30
 H6F2 0A35 0A31
 H600 0795 0791
 H602 079E 079A
 H640 0812 0812,0814
 H680 08E5 08E1
 H74A 0AFD 0AF4
 H744 0AD1 0AC8
 H780 0BDD 0BD8
 H784 0B9D 0B94
 H80A 0C94 0C8B
 H80C 0C9F 0CA7
 H804 0C68 0C62
 H84A 0DB9 0DB5
 H842 0D6D 0D68
 H846 0D8F 0D8B
 H848 0D99 0D95
 H849 0D9E 0D9E,0DA2
 H85A 0DC2 0DBE
 J50A 0609 0601
 J50C 0627 061E
 J50E 063B 0633
 J540 066D 0665
 J544 068E 0686

CPU FUNCTION TEST

J546 06A6 0699
 J600 07F9 07F4
 J602 0807 0802
 J680 0935 0930
 J682 0948 093A
 J70E 0A99 0A90
 J74A 0B69 0B64
 J740 0B2A 0B1C,0B26
 J742 0B37 0B32
 J744 0B41 0B3C
 J746 0B54 0B46,0B50
 J748 0B5F 0B5A
 J8AA 0F1E 0F18,0F1C
 J8A0 0EE5 0EE0
 J8A1 0EF8 0EF4
 J8A2 0EF5 0EF3
 J8A3 0F02 0EFE
 J8A4 0EFF 0EFD
 J8A5 0F0C 0F08
 J8A6 0F09 0F07
 J8A7 0F16 0F12
 J8A8 0F13 0F11
 J8A9 0F21 0F1D
 J8C0 0F2A 0F26
 J8C1 0F32 0F2E
 J8C2 0F38 0F37
 J8C3 0F42 0F40
 J8C4 0F44 0F41
 J8C5 0F48 0F48,0F49
 J8C6 0F4D 0F4A
 J800 0C8C 0C87
 J802 0CC7 0CC2
 J804 0CD2 0CCD
 J806 0CDD 0CD8
 J808 0D0C 0D07
 J809 0D17 0D12
 J810 0D23 0D1F
 J811 0D30 0D3F,0D48,0D4F
 J812 0D3D 0D38
 J813 0D46 0D41
 J814 0D27 0D52
 J815 0D20 0D1D
 J816 0D49 0D4C
 J88A 0EC0 0EBE
 J88B 0EC3 0EBF
 J880 0E75 0E70
 J882 0E82 0E7D
 J884 0E8B 0E86
 J886 0E97 0E92
 J887 0EA2 0E9E
 J888 0EAB 0EA6
 J889 0EB7 0EB2
 K50B 0616 0612
 K50C 062A 061F
 K640 0814 087C
 K682 0945 093C
 K740 0827 081E
 K746 0851 0848
 K849 0DA8 0DA3
 N1C0 01F3 01EB
 N1C1 01F4 01EE
 N1D0 0211 01FB,01FC,01FF,0207
 N1D1 0212 01F5,01FB,0208
 N1D2 0213 0204,020D
 N1E0 021E 0218,021A,021E
 N1E1 021F 0214
 N1F0 022A 022C
 N1F1 022B 0224,0226,022B

CPU FUNCTION TEST

N1F2 022C 0220
 N100 0143 014C,014F
 N140 019F 0154
 N180 01EA 01A0,01A4
 N2C0 0342 0318,0319,0322,032D
 N2C2 0343 0323,032C,0336,0337,0338
 N200 026C 0231,025D
 N201 026D 0258
 N202 026E 0262
 N203 026F 0267
 N240 0271 0271,0275
 N241 0273 0270,0274
 N242 027C 027F
 N243 027D 0278,027E
 N280 0312 02D8
 N281 0313 02E2,0303
 N282 0314 02E4,0308
 N283 0315 02ED
 N284 0316 02EF,02F8
 N285 0317 02FA
 N3C0 0408 03DE
 N3C1 040C 03DC
 N3C2 040D 03F5
 N3C3 040E 03F3
 N3C4 040F 03E0
 N3C5 0410 03EA
 N3C6 0411 03F8
 N300 0365 0344,0345,034E
 N302 0366 034F,0350,0359,035A,035B
 N340 037E 0367
 N341 037F 0369,0374
 N380 03D6 0380
 N381 03D7 0382,038C
 N382 03D8 0395
 N383 03D9 03A8,038C
 N384 03DA 03B3
 N385 03DB 03CC
 N4C0 058F 0561,0562,056D,0586,0592,0594,05A9,05AB
 N4C1 05C0 0587
 N4C2 05C1 0593,059E,05AA,05B5
 N4C3 05C2 0595
 N4C4 05C3 05AC
 N400 0486 0412,0415,0429
 N401 0487 0492
 N402 0488 0473
 N403 0489 0455,047E
 N404 048A 045F
 N405 048B 0433,0453,0471,0490
 N406 048C 0436
 N440 053C 048D,0519
 N441 053D 048F,04DC,04FB,0518
 N442 053E 04DA,04E7
 N443 053F 04F9
 N444 0540 0506
 N445 0541 0510
 N480 055C 0542,0550
 N481 055D 0544,054E,0552
 N482 055E 0543,0545,054F,0551
 N5C1 0788 0700,072B,073D,0751,076E,0770
 N5C3 078A 0717,0754,0757,0761,076A,077B,0784
 N5C4 078B 0718,0722
 N5C5 078C 073E,073F,0752,0755,0756,076B
 N5C6 078D 0748,0753,0760,076C,076F,0771,0785
 N5C7 078E 076D,077A,0786
 N500 0658 05C5,05FD,060F,062F,0661,06A9
 N501 0659 05D0,0696
 N502 065A 05DB
 N503 065B 05F2,0642

CPU FUNCTION TEST

N504 065C 061A
 N505 065D 0645,0646,0675,0676
 N506 065E 0647
 N507 05E6 05DC
 N542 065F 0677,0681,0688,06CD
 N6CA 09D6 095C
 N6CB 09D7 0974,0A03,0A0D
 N6CD 09D8 09A3,0A01,0A0F
 N6CF 09DA 0984,098B
 N6C0 09CC 0957,09CC,09DF
 N6C1 09CD 09CD,09DC,09E8,09F4,09F7
 N6C2 09CE 09CE,09EB
 N6C3 09CF 09CF
 N6C4 09D0 0955,096D,0985,0987,099C,0986,09D0,09D9
 N6C5 09D1 099E,09D1
 N6C6 09D2 09D2
 N6C7 09D3 09D3
 N6C8 09D4 096F,09D4
 N6C9 09D5 095A,095B,0972,0973,098A,098B,09A1,09A2,09B9,09BA
 N6F0 0A1D 0A1A
 N6F1 0A28 0A19,0A1E,0A28
 N6F2 0A2D 0A2A
 N6F3 0A31 0A2E
 N600 080B 07CB,07D8,07E5,0801,080B
 N601 080C 07A2,07A4,07AF,07B1,07BC,07BE,07C9,07D6,07E3,07F1,07FF,080C
 N602 080D 07F3,080D
 N603 080E 07AE,07BB,07C8,07D5,07E2,07F0,07FC
 N604 080F 07FE
 N640 087B 0811,0813,081D,0828,082A,082B,0835,0837,0838,0842,0844,0845,084F
 0851,0852,085D,085F,0860,086B,086D,086E,0879
 N642 087C 081E
 N643 087D 084E,085C,086A,0878
 N644 087E 0810,0827,0834,0841,0853,0861,086F
 N660 08C8 0883,0884,088D,088E,089B,089C,08A5,08A6,08B3,08B4,08BD,08BE
 N670 08DB 08CA
 N680 094C 08DD,08E8,08F2,0905,0906
 N681 094D 08DE
 N682 094E 08F3
 N683 094F 0919,091A
 N684 0950 0923,092D,092E
 N686 0951 0939
 N687 0952 090F
 N688 0953 092F,0938
 N7C0 0C3C 08EC
 N7C1 0C3D 08ED
 N7C2 0C3E 08EE
 N7C3 0C3F 08F8
 N7C4 0C40 0C01,0C02,0C16,0C28
 N7C5 0C41 0C0C
 N7C6 0C42 0C15,0C29,0C5F
 N700 0AA0 0A39,0A50,0A7E
 N701 0AA1 0A3A,0A53,0A68,0A74,0A8F
 N702 0AA2 0A3B,0A45,0A52,0A5C,0A69,0A73,0A80,0A8A,0A8E
 N703 0AA3 0A3C,0A51
 N704 0AA4 0A46,0A5D,0AF1
 N705 0AA5 0A67,0A7F,0A81
 N706 0AA6 0A8B
 N707 0AA7 0A6A
 N74A 0B74 0B11
 N74B 0B75 0B3B
 N74C 0B76 0B2E
 N740 0B6D 0AAD,0AC4,0ADC,0AEF,0B06,0B1A,0B30,0B44
 N742 0B6E 0AA9,0AAF,0ABA,0ADA,0B04,0B05,0B07,0B2F,0B31
 N744 0B70 0AAB
 N746 0B72 0ADB,0B57
 N747 0B73 0B58,0B59
 N748 0B78 0B1B,0B45,0B63
 N78A 0BEA 0BB8

CPU FUNCTION TEST

N78D 0BE9 08C3
 N780 0BE1 0B7C,0B90
 N782 0BE2 0B7A,0BA4,0BCC
 N784 0BE4 0B7B
 N785 0BE5 0BAF,0BD7
 N786 0BE6 0B7D,0B87,0BA5,0BB9
 N787 0BE7 0BCD
 N788 0BE8 0B91
 N8A0 0F55 0EDF,0EF1,0EFB,0F05,0F10
 N8A1 0F50 0EF2,0F19,0F1A
 N8A2 0F51 0EDE,0EE8,0F06
 N8A3 0F52 0EFC
 N8C1 0F66 0F5C
 N8C2 0F67 0298,02A7
 N8C3 0F68 0F5D,0F66
 N8C5 0F54 0F0F,0F25
 N8C6 0F56 0F24,0F2D,0F36
 N8C7 0F58 0F3E,0F46,0F47
 N8C8 0F5A 0F3F
 N80A 0CEA 0C85
 N80C 0CEC 0CC0
 N80E 0CEE 0C9C,0CCB
 N80F 0CEF 0D11
 N800 0CE1 0C48,0C74,0C88
 N802 0CE2 0C44
 N804 0CE4 0C71
 N806 0CE6 0C9B
 N807 0CE7 0CA6,0CAB,0CCC,0CD7,0D4A
 N808 0CE8 0CAA,0C86
 N810 0CF0 0CD6
 N811 0CF1 0C55
 N812 0CF2 0C46,0C4A,0CC1
 N813 0CF3 0C72,0C75
 N816 0CF4 0C7F
 N817 0CF5 0D06
 N818 0CF6 0D05
 N819 0CF8 0D10,0D2E,0D4E
 N820 0CFA 0D1C
 N821 0CFB 0D2F,0D30,0D31,0D35,0D36,0D49,0D4B
 N823 0D00 0D1B
 N824 0D02 0D33
 N84A 0DC6 0D82
 N840 0DC7 0D59,0D5A,0D7D,0D7E,0DA1,0DA8
 N841 0DC8 0D5B,0D7F,0DA9
 N842 0DC9 0D65,0D6D,0D75
 N843 0DCB 0D74
 N844 0DCC 0DBC,0DCD
 N845 0DCD 0D64,0D67,0D9F
 N846 0DCE 0D6E
 N88A 0ED9 0E7A,0E9A,0E8B
 N88B 0ED1 0E41
 N88C 0ED2 0E59
 N88D 0ED3 0E78
 N88E 0ED4 0E0B,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 0E58
 RST1 0FDB 0F9D
 RST2 0FD9 0FA0,0FA3
 S501 0651 0644
 S503 0654 0648
 U00A 0F96 0FBF
 U00B 0F97 0F77,0F86,0FAB,0FBC,0FC0

CPU FUNCTION TEST

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

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

BASIC DIAGNOSTIC LOADER

TABLE OF CONTENTS

PARAGRAPH	PAGE
1. PURPOSE	01A
2. PREREQUISITES	01A
2.1 PROGRAM PREREQUISITES	
2.2 EQUIPMENT PREREQUISITES	
3. USE PROCEDURE	01A
3.1 NORMAL LOADING PROCEDURE	
3.2 DIAGNOSTIC LOADING PROCEDURE	
3.3 DIAGNOSTIC GUIDE	
3.4 ERROR WAITS	
4. PRINTOUTS (NONE)	
5. COMMENTS	02A
5.1 BASIC-LOADER FIRST-CARD FUNCTIONS	
5.2 FUNCTIONS OF BASIC-LOADER CARDS (TWO THRU FIVE)	
6. APPENDIX	03
6.1 PUNCHED-CARD 8-8 FORMAT	

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 ADDRESSES 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.

BASIC DIAGNOSTIC LOADER

- 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 EQUALLED 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.

BASIC DIAGNOSTIC LOADER

- 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 DETCTED, 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 COMPAPISON 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.

BASIC DIAGNOSTIC LOADER

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 CHECKSUM (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)

```

028C      ABS          CLD00000
          ORG          /0000    CLD00010
          *----- 1130 LOADER CARD 1 ----- CLD00020
          * LOAD WITH PROGRAM LOAD BUTTON
          *
0000 0  C02C      START LD   RDIN+1  CORRECT I/O CONT. COMM.  CLD00060
0001 0  1802      SRA      2          BY SHIFTING                CLD00070
0002 0  D02A      STO      RDIN+1  CLD00080
0003 0  C023      LD        STRD    CORRECT I/O CONT. COMM.  CLD00090
0004 0  1801      SRA      1          BY SHIFTING AND          CLD00100
0005 0  D021      STO      STRD    STORE WORD                CLD00110
0006 0  F038      EOR      STORE   SET UP STORE LONG INST   CLD00120
0007 0  D037      STO      STORE   PUT BACK INTO CORE.      CLD00130
0008 0  C022      LD        SENSE   CORRECT I/O CONT. COMM.  CLD00140
0009 0  1803      SRA      3          CLD00150
000A 0  D020      STO      SENSE   CLD00160
000B 0  F01D      EOR      RESET   CLD00170
000C 0  D01C      STO      RESET   CLD00180
000D 0  1805      SRA      5          MAKE STORE LONG INST.  CLD00190
000E 0  F031      EOR      STORE+1  CLD00200
000F 0  D030      STO      STORE+1  CLD00210
0010 0  C017      LD        INTAD   CLD00220
0011 0  D0F6      STO      /0008    CLD00230
0012 0  D0F9      STO      /000C    CLD00240
          *
0013 0  C016      STRT   LD   CHKSM   FORM CHECK SUM ,THIS CARD  CLD00250
0014 0  8000      A        *          FROM 0015 THRU 004D    CLD00260
0015 0  D014      STO      CHKSM   CLD00270
0016 0  C0FD      LD        STRT+1  CLD00280
0017 0  800E      A        K0001   MODIFY ADD INSTRUCTION  CLD00290
0018 0  D0FB      STO      STRT+1  CLD00300
0019 0  F008      EOR      CON1    CHECK THAT LAST LOC.CHECKD CLD00310
001A 0  4820      BSC      Z          SKIP WHEN DONE          CLD00320
001B 0  70F7      MDX      STRT    GO GET NEXT WORD          CLD00330
001C 0  C00D      LD        CHKSM   GET SUM OF 0013 THRU 004F  CLD00340
001D 0  482C      BSC      Z          -- SEE ACC IS 0000 IF SO GO  CLD00350
001E 0  30F1      WAIT     -15     CHECK SUM ERROR          CLD00360
001F 0  7010      ENDCK  MDX   SRTRD    START LOADING          CLD00370
          *
0020 0  8823      INT     DC      /B823   SENSE AND RESET DSW     CLD00380
0021 0  0806      XIO     RESET-1  B0SC    +-Z          CLD00390
0022 0  48F8      DC      /48F8   CLD00400
0023 0  0803      K0803 DC    /0803   CLD00410
0024 0  700E      MDX     PACK     CLD00420
          *
0025 0  8039      CON1   A      X  /C039   START RD,USED AS CONSTANT CLD00430
0026 0  0001      K0001 DC    /0001   /1404 SET BY PROG.      CLD00440
0027 0  2808      STRD   DC    /2808   RESET DSW CONTROL COMMAND CLD00450
0028 0  0020      INTAD  DC    INT     /1703 SET BY PROGRAM    CLD00460
0029 0  0003      RESET  DC    /0003   SENSE DSW CONTROL COMMAND CLD00470
002A 0  3829      CHKSM  DC    /3829   /1700 SET BY PROGRAM    CLD00480
002B 0  8800      SENSE  DC    /B800   READ IN LOCATIONS 0+1   CLD00490
002C 0  0000      RDIN   DC    /0000   /1200 SET BY PROGRAM    CLD00500
002D 0  4800      DC      /4800   CLD00510
          *
002E 0  F017      ERROR  EOR   K0800  RESTORE ACC. TO DSW     CLD00520
002F 0  30F2      WAIT   -14     **ERR. DSW IN ACC.   CLD00530
          *
0030 0  08F5      SRTRD  XIO   STRD-1  START READ              CLD00540
0031 0  08F6      XIO     RESET-1  RESET DSW                CLD00550
0032 0  08F7      XIO     SENSE-1  SENSE DSW FOR CRP      CLD00560
0033 0  F011      PACK   EOR   K0003  BITS 0 + 14 + 15 ONLY  CLD00570
0034 0  4820      BSC    7        SKIP IF BITS 0+14+15 ONLY CLD00580
0035 0  7011      MDX   CONT1   CONTINUE DSW ANALYSIS CLD00590
0036 0  08F5      XIO   RDIN    RD COL. ONE-HALF WORD  CLD00600
0037 0  C0F4      LD     RDIN    SWITCH READ IN AREA, EVEN CLD00610
0038 0  F0ED      EOR   K0001  COLS. IN 0 ODD IN 1    CLD00620
0039 0  D0F2      STO   RDIN    CLD00630

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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      R          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
          *
0045 0  8003      K8003 DC    /8003   CLD00820
0046 0  0800      K0800 DC    /0800   CLD00830
          *
0047 0  F003      CONT1  EOR   K8000  CHECK FOR BITS 14+15 ONLY CLD00840
0048 0  4820      BSC    Z          SKIP BUSY AND NOT READY  CLD00850
0049 0  7002      MDX    CONT2    CLD00860
004A 0  70E7      MDX    SRTRD+2  CLD00870
004B 0  8000      K8000 DC    /8000   CLD00880
          *
004C 0  F0D6      CONT2  EOR   K0803  CHECK FOR BIT 4 ONLY    CLD00890
004D 0  4820      BSC    Z          SKIP END OF CARD      CLD00900
004E 0  70DF      MDX    ERROR    CLD00910
004F 0  30F3      WAIT   -13     **ERR IF PRGM STOPS AT WAIT CLD00920
          *
          * CARD 2 IS READ IN AT THIS LOCATION WITH THE CLD00930
          * CHECK FOR READ OF 4 CARDS. CLD00940
          * END        START CLD00950
          * CLD00960
          * CLD00970
          * CLD00980
          * CLD00990
0050 0  0000      END

```

BASIC DIAGNOSTIC LOADER
LIST FOR CARD ONE (IPI)

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CHKSM	002A	0013,0015,001C
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	004B	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	0016,0018,0018

BASIC DIAGNOSTIC LOADER
LIST FOR CARDS TWO THROUGH FIVE

ADDRESS	OPERATION	OPERAND	DESCRIPTION	ADDRESS
02BC	ORG	/004F		CLD01000
004F 0	LD	COUNT	COUNT CARDS READ	CLD01010
0050 0	8020	K0001		CLD01020
0051 0	001E	COUNT		CLD01030
0052 0	F01F	K0004	CHECK FOR 4 CARDS READ	CLD01040
0053 0	4820	Z	SKIP 4 CARDS READ	CLD01050
0054 0	709B	MDX	GO TO START READ	CLD01060
				CLD01070
0055 0	0071	LD	MDX	CLD01080
0056 0	00F9	STO	RSTRT	CLD01090
0057 0	0070	LD	MDX0	CLD01100
0058 0	00A7	STO	/0000	CLD01110
				CLD01120
0059 0	0034	LD	CON1	CLD01130
005A 0	001D	STO	STORE	CLD01140
005B 0	0022	LD	CON2	CLD01150
005C 0	0027	STO	RDIN	CLD01160
005D 0	0022	LD	INTAD	CLD01170
005E 0	00A9	STO	/0008	CLD01180
005F 0	00AC	STO	/000C	CLD01190
				CLD01200
0060 0	081D	SRTRD	XIO	CLD01210
0061 0	081E	XIO	STRD-1	CLD01220
0062 0	081F	XIO	RESET-1	CLD01230
			SENSE-1	CLD01240
0063 0	F027	PACK	EOR	CLD01250
0064 0	4820	BSC	Z	CLD01260
0065 0	7031	MDX	CON1	CLD01270
0066 0	081D	XIO	RDIN	CLD01280
0067 0	001C	LD	RDIN	CLD01290
0068 0	F008	EOR	K0001	CLD01300
0069 0	001A	STO	RDIN	CLD01310
006A 0	F013	EOR	CON2	CLD01320
006B 0	4820	BSC	Z	CLD01330
006C 0	70F4	MDX	SRTRD+1	CLD01340
006D 0	0018	LD	RDEVN	CLD01350
006E 0	1808	SRA	8	CLD01360
006F 0	7007	MDX	/0077	CLD01370
0070 0	0000	COUNT	DC	CLD01380
0071 0	0001	K0001	DC	CLD01390
0072 0	0004	K0004	DC	CLD01400
				CLD01410
				CLD01420
				CLD01430
				CLD01440
				CLD01450
				CLD01460
				CLD01470
				CLD01480
				CLD01490
				CLD01500
				CLD01510
				CLD01520
				CLD01530
				CLD01540
				CLD01550
				CLD01560
0073		ORG	/0077	CLD01570
0077 0	F00F	EOR	R000D	CLD01580
0078 0	D097	STORE	STO	CLD01590
0079 0	00FE	LD	STORE	CLD01600
007A 0	80F6	A	K0001	CLD01610
007B 0	D0FC	STO	STORE	CLD01620
007C 0	70E4	MDX	SRTRD+1	CLD01630
007D 0	7096	HOP	MDX	CLD01640
007E 0	0086	CON2	DC	CLD01650
007F 0	1404	STRD	DC	CLD01660
0080 0	008F	INTAD	DC	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 0096      RDIN DC      RDEVN      READ COL. CONTROL COMMAND CLD01710
0085 0 1200      DC          /1200      CLD01720
0086 0 0000      RDEVN DC      /0000      CLD01730
0087 0 0000      RD000 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 0097      CON1 STO X    /0010-STORE-1 CLD01805
*
008F 0 0000      INT DC        0          CLD01810
0090 0 08EF      X10          RESET-1      SENSE AND RESET DSW      CLD01820
0091 0 4878      BOSC        +-2      BR OUT OF INTERRUPT      CLD01830
0092 0 0803      K0803 DC      /0803      CLD01840
0093 0 70CF      MDX         PACK      CLD01850
*
0094 0 F0F5      ERROR ENR    K0800      RESTORE ACC TO DSW      CLD01860
0095 0 30F4      WAIT        -12      **ERR. DSW IN ACC.      CLD01870
0096 0 70C2      MDX         LOAD      PRESS START TO RETRY      CLD01880
0097 0 F0F5      CONT1 FOR    K8000      CHECK FOR BITS 14+15 ONLY CLD01890
0098 0 4820      BSC         Z          SKIP BUSY AND NOT READY  CLD01900
0099 0 7005      MDX         CONT2      CLD01910
009A 0 70C7      MDX         SRTRD+2    CLD01920
*
* CARD 4 BEGINS HERE
*
009B          ORG          /009F      CLD01930
009F 0 F0F2      CONT2 EOR    K0803      CHECK FOR BIT 4 ONLY      CLD01940
00A0 0 4820      BSC         Z          SKIP END OF CARD          CLD01950
00A1 0 70F2      MDX         ERROR      CLD01960
*
*---CHECK FOR WORD COUNT OF ZERO---
*
00A2 0 C091      LD          /0034      GET WORD COUNT            CLD01970
00A3 0 4820      BSC         Z          SKIP IF WORD COUNT ZERO  CLD01980
00A4 0 7002      MDX         SUM1      CLD01990
00A5 0 30F5      WAIT        -11      **ERR. WORD COUNT IS ZERO CLD02000
00A6 0 70B2      MDX         LOAD      START CONTINUES LOADING CLD02010
*
*---FORM CHECK SUM OF CARD IMAGE LOCS. 00-26---
*
00A7 0 C0E4      SUM1 LD      K0010      SET ACC. TO /0010        CLD02020
00A8 0 D004      STO        CKL0D+1     CLD02030
00A9 0 1810      SRA        16          CLD02040
00AA 0 D007      STO        CKSUM       CLD02050
00AB 0 C0D6      LD         CKSUM       CLD02060
00AC 0 8400FFFF CKL0D A 1 /FFFF      FORM SUM OF LOCS.10 THRU 36 CLD02070
00AE 0 D0D3      STO        CKSUM       CLD02080
00AF 0 C0FD      LD         CKL0D+1     MODIFY ADDRESS            CLD02090
00B0 0 80C0      A          K0001      CLD02100
00B1 0 D0FB      STO        CKL0D+1     CLD02110
00B2 0 F006      EOR        K0037      CHECK THAT ALL WORDS DONE CLD02120
00B3 0 4820      BSC         Z          SKIP ALL LOCS. ADDED     CLD02130
00B4 0 70F6      MDX        CKL0D-1     CLD02140
00B5 0 C0CC      LD         CKSUM       LOAD SUM 10 THRU 36      CLD02150
00B6 0 4820      BSC         Z          SKIP SUM IS CORRECT      CLD02160
00B7 0 30F6      WAIT        -10      **ERR. IN CHECK SUM      CLD02170
*
* MOVE CARD IMAGE TO THE LOCS. BEGINING AT
* THE ADDRESS GIVEN IN LOC. /0025.-----
*
00B8 0 C4000035 MOVE LD L /0035      GET ADDRESS FOR FIRST WORD CLD02180
00BA 0 4820      BSC         Z          SKIP ADDRESS IS 0000     CLD02190

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BASIC DIAGNOSTIC LOADER
LIST FOR CARDS TWO THROUGH FIVE

```

00BB 0 7001      MDX         STRE      CLD02350
00BC 0 70C0      MDX         HGP       CLD02360
00BD 0 D00C      STRE STO     PUT+1    START PROGRAM VIA POP    CLD02370
00BE 0 C0CD      LD          K0010     SET FIRST WORD ADDRESS  CLD02380
00BF 0 D001      STO        GET+1     SET ACC. EQU. 0010      CLD02390
00C0 0 C400FFFF GET LD L /FFFF      SET TO GET FIRST WORD AT 0 CLD02400
00C2 0 7006      MDX         PUT       CLD02410
*
* CARD 5 BEGINS HERE
*
00C3          ORG          /00C7      CLD02420
00C7 0 7008      MDX MDX X  LOAD-RSTRT-1 CLD02430
00C8 0 7013      MDX0 MDX X  /0013      CLD02440
00C9 0 D400FFFF PUT STO L /FFFF      PUT PROG. WORD          CLD02450
00CB 0 C0FE      LD          PUT+1    MODIFY PUT              CLD02460
00CC 0 80A4      A          K0001     CLD02470
00CD 0 D0FC      STO        PUT+1    CLD02480
00CE 0 C0F2      LD          GET+1    MODIFY GET              CLD02490
00CF 0 80A1      A          K0001     CLD02500
00D0 0 D0F0      STO        GET+1    CLD02510
00D1 0 F0B6      EOR        K0034     CHECK FOR ALL WORDS MOVED CLD02520
00D2 0 4820      BSC         Z          SKIP ALL WORDS MOVED    CLD02530
00D3 0 70EC      MDX         GET       CLD02540
00D4 0 C4000035 SUM2 LD L /0035      GET ADDRESS OF FIRST WORD CLD02550
00D6 0 D003      STO        CKMOV+1  PUT IT INTO ROUTINE      CLD02560
00D7 0 C0B4      LD          K0010     SET TO GET FIRST WORD OF CLD02570
00D8 0 D003      STO        COMP+1   IMAGE                    CLD02580
00D9 0 C400FFFF CKMOV LD L /FFFF      GET WORD MOVED          CLD02590
00DB 0 F400FFFF COMP EOR L /FFFF      COMPARE WITH CARD IMAGE CLD02600
00DD 0 4820      BSC         Z          SKIP WORD STORED OK     CLD02610
00DE 0 30F7      WAIT        -9      **ERR. WORD NOT STORED OK. CLD02620
00DF 0 C0FA      LD          CKMOV+1  MODIFY FOR NEXT WORD     CLD02630
00E0 0 8090      A          K0001     CLD02640
00E1 0 D0F8      STO        CKMOV+1  CLD02650
00E2 0 C0F9      LD          COMP+1   MODIFY FOR NEXT COMPARE CLD02660
00E3 0 808D      A          K0001     CLD02670
00E4 0 D0F7      STO        COMP+1   CLD02680
00E5 0 F0A2      EOR        K0034     CHECK IF ALL DONE       CLD02690
00E6 0 4820      BSC         Z          SKIP ALL WORDS CHECKED  CLD02700
00E7 0 70F1      MDX        CKMOV     CLD02710
00E8 0 70BD      MDX        SUM1-1    GO GET NEXT CARD        CLD02720
00EA 0 0059      END         LOAD      CLD02730

```

BASIC DIAGNOSTIC LOADER
LIST FOR CARDS TWO THROUGH FIVE

BASIC DIAGNOSTIC LOADER
PAPER TAPE BASIC LOADER

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CKLDD	00AC	00A8,00AF,00B1,00B4
CKMOV	00D9	00D6,00DF,00E1,00E7
CKSUM	00B2	00AA,0CAB,00AE,00B5
COMP	00CB	00D8,0CE2,00E4
CONT1	0097	0065
CONT2	009F	0099
CON1	008E	0059
CON2	007E	005B,0C6A
COUNT	0070	004F,0051
ERROR	0094	00A1
GET	00C0	00BF,00CE,00D0,00D3
HDP	007D	00BC
INT	008F	0080
INTAD	0080	005D
K0001	0071	0050,0068,007A,0C80,0CCC,00CF,00E0,00E3
K0004	0072	0052
K0010	008C	00A7,0CBE,00D7
K0034	0088	00D1,00E5
K0037	0089	00B2
K0800	008A	0094
K0803	0092	009F
K8000	008D	0097
K8003	008B	0063
LOAD	0059	0096,0CA6,00C7,00E9
MDX	00C7	0055
MDX0	00C8	0057
MOVE	0088	
PACK	0063	0093
PJT	00C9	00BD,00C2,00CB,00CD
RDEVN	0086	006D,007E,0084
RDIN	0084	005C,0C66,0067,0069
RDDDD	0087	0077
RESET	0081	0061,0090
RSTRY	0050	0056,00C7
SENSE	0083	0062
SRTRD	0060	006C,007C,009A
STORE	0078	005A,0079,007B,008E
STRD	007F	0060
STRE	008D	00BB
SUM1	00A7	00A4,00E8
SUM2	00D4	

028C	ABS	ORG	LOAD WITH PROGRAM LOAD BUTTON	TDL0000
0000 0 7011	DC	MDX	STRT	TDL00010
0001 0 0000	DC			TDL00020
0002 0 0000	DC			TDL00030
0003 0 0000	DC			TDL00040
0004 0 0000	DC			TDL00050
0005 0 0000	DC			TDL00060
0006 0 0000	DC			TDL00070
0007 0 0000	DC			TDL00080
0008 0 0000	DC			TDL00090
0009 0 0000	DC			TDL00100
000A 0 0000	DC			TDL00110
000B 0 0000	DC			TDL00120
000C 0 003A	DC	INT		TDL00130
000D 0 0000	DC			TDL00140
000E 0 0000	DC			TDL00150
000F 0 0000	DC			TDL00160
0010 0 0000	DC			TDL00170
0011 0 0000	DC			TDL00180
0012 0 C00D	STRT	LD	CHKSM FORM CHECK SUM	TDL00190
0013 00 84000000	A	L	70000	TDL00200
0015 0 000A	STO		CHKSM	TDL00210
0016 0 C0FD	LD		STRT+2	TDL00220
0017 0 8064	A		K0001	TDL00230
0018 0 D0FB	STO		STRT+2	TDL00240
0019 0 F007	ENR		LAST	TDL00250
001A 0 4820	BSC	Z		TDL00260
001B 0 70F6	MDX	STRT		TDL00270
001C 0 C003	LD		CHKSM	TDL00280
001D 0 4820	BSC	Z		TDL00290
001E 0 30F1	WAIT	-15		TDL00300
001F 0 7030	MDX	LOAD		TDL00310
0020 0 2D6E	CHKSM	DC	72D6E	TDL00320
0021 0 00E9	LAST	DC	END	TDL00330
0022 0 FFFF	DC		/FFFF	TDL00340
0023 0 0000	DC			TDL00350
0024 0 0000	DC			TDL00360
0025 0 0000	DC			TDL00370
0026 0 0000	DC			TDL00380
0027 0 0000	DC			TDL00390
0028 0 0000	DC			TDL00400
0029 0 0000	DC			TDL00410
002A 0 0000	DC			TDL00420
002B 0 0000	DC			TDL00430
002C 0 0000	DC			TDL00440
002D 0 0000	DC			TDL00450
002E 0 0000	DC			TDL00460
002F 0 0000	DC			TDL00470
0030 0 0000	DC			TDL00480
0031 0 0000	DC			TDL00490
0032 0 0000	DC			TDL00500
0033 0 0000	DC			TDL00510
0034 0 0000	DC			TDL00520
0035 0 0000	DC			TDL00530
0036 0 0000	DC			TDL00540
0037 0 0000	DC			TDL00550
0038 0 0000	DC			TDL00560
0039 0 0000	DC			TDL00570
003A 0 0000	DC	INT		TDL00580
003B 0 0842	XIO	RESET	SENSE AND RESET DSW	TDL00590
003C 0 4878	BOSC	+-Z	BR OUT OF INTERRUPT	TDL00600
003D 0 0000	DC			TDL00610
003E 0 701F	MDX	PACK		TDL00620
003F 0 0000	DC			TDL00630
				TDL00640
				TDL00650
				TDL00660
				TDL00670

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0040 0 0000      DC      TDLC0680
0041 0 0000      DC      TDLC0690
0042 0 0000      DC      TDLC0700
0043 0 009F      CON1 STO X /0010-STORE-1 TDLC0710
0044 0 004E      CON2 DC RDEVN TDLC0720
0045 0 0028      CON3 DC 40 TDLC0730
0046 0 7F00      DELETE DC /7F00 TDLC0740
0047 0 7006      FIX MDX X Y-X-1 TDLC0750
0048 0 C0ED      REFIX LD X RDEVN-X-1 TDLC0760
0049 0 0000      WCNT DC 0 TDLC0770
004A 0 4C00      K4C00 DC /4C00 TDLC0780
004B 0 ECF0      KECF0 DC /ECF0 TDLC0790
004C 0 0C00      K0C00 DC /0C00 TDLC0800
004D 0 4000      K4000 DC /4000 TDLC0810
004E 0 0000      RDEVN DC /0000 TDLC0820
004F 0 0000      R0000 DC /0000 TDLC0830
*              TDLC0840
0050 0 C0F2      LOAD LD CON1 TDLC0850
0051 0 D01E      STO STORE RESTORE STORE INST. TDLC0860
0052 0 C0F1      LD CON2 TDLC0870
0053 0 D0E2      STO RDIN RESTORE RDIN LOC. TDLC0880
0054 0 C0F0      LD CON3 TDLC0890
0055 0 D0F3      STO WCNT TDLC0900
0056 0 C0F1      LD REFIX TDLC0910
0057 0 D008      STO X TDLC0920
*              TDLC0930
0058 0 0823      SRTRD XIO K0001 START READ TDLC0940
0059 0 0826      XIO SENSE SENSE DSW TDLC0950
005A 0 E0F0      AND KECF0 MASK OUT PUNCH BITS TDLC0960
005B 0 F0F1      EOR K4000 TDLC0970
005C 0 4820      BSC Z SKIP IF COL. REQUEST TDLC0980
005D 0 7039      MDX CONT1 TDLC0990
*              TDLC1000
005E 0 081F      PACK XIO RESET RESET DSW TDLC1010
005F 0 0822      XIO RDIN READ A COLUMN TDLC1020
0060 0 C0ED      X LD RDEVN TDLC1030
0061 0 90E4      S DELETE TDLC1040
0062 0 4820      BSC Z TDLC1050
0063 0 7001      MDX **1 TDLC1060
0064 0 70F3      MDX SRTRD TDLC1070
0065 0 C0E1      LD FIX TDLC1080
0066 0 D0F9      STO X TDLC1090
0067 0 C01A      Y LD RDIN SET NEXT READ IN LOCATION TDLC1100
0068 0 F013      EOR K0001 TDLC1110
0069 0 D018      STO RDIN TDLC1120
006A 0 F0D9      EOR CON2 TDLC1130
006B 0 4820      BSC Z SKIP IF BOTH HALF WORDS IN TDLC1140
006C 0 70EB      MDX SRTRD TDLC1150
006D 0 C0E0      LD RDEVN COMBINE HALF WORDS TDLC1160
006E 0 1808      SRA 8 TDLC1170
006F 0 F0DF      EOR R0000 TDLC1180
*              TDLC1190
0070 0 D09F      STORE STO /0010 STORE FULL WORD TDLC1200
0071 0 C0FE      LD STORE SET NEXT WORD LOCATION TDLC1210
0072 0 8009      A K0001 TDLC1220
0073 0 D0FC      STO STORE TDLC1230
0074 0 C0D4      LD WCNT TDLC1240
0075 0 9006      S K0001 TDLC1250
0076 0 D0D2      STO WCNT TDLC1260
0077 0 4820      BSC Z TDLC1270
0078 0 70DF      MDX SRTRD TDLC1280
0079 0 7028      MDX DATA TDLC1290
007A 0 7099      HDP MDX /0014 START PROGRAM TDLC1300
*              TDLC1310
007B 0 0000      CKSUM DC /0000 TDLC1320
007C 0 0001      K0001 DC /0001 READ CARD CONTROL COMMAND TDLC1330
007D 0 1C10      DC /1C10 TDLC1340
007E 0 0000      RESET DC /0000 RESET DSW CONTROL COMMAND TDLC1350

```

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007F 0 1F01      DC /1F01 TDLC1360
0080 0 0004      SENSE DC /0004 SENSE DSW CONTROL COMMAND TDLC1370
0081 0 1F00      DC /1F00 TDLC1380
0082 0 004E      RDIN DC RDEVN READ COL. CONTROL COMMAND TDLC1390
0083 0 1A00      DC /1A00 TDLC1400
0084 0 0037      K0037 DC /0037 TDLC1410
0085 0 0034      K0034 DC /0034 TDLC1420
0086 0 0010      K0010 DC /0010 TDLC1430
0087 0 0000      DC TDLC1440
0088 0 0000      DC TDLC1450
0089 0 0000      DC TDLC1460
008A 0 0000      DC TDLC1470
008B 0 0000      DC TDLC1480
008C 0 0000      DC TDLC1490
008D 0 0000      DC TDLC1500
008E 0 0000      DC TDLC1510
008F 0 0000      DC TDLC1520
0090 0 0000      DC TDLC1530
0091 0 0000      DC TDLC1540
0092 0 0000      DC TDLC1550
0093 0 0000      DC TDLC1560
*              TDLC1570
0094 0 F0B7      ERROR EOR K0000 RESTORE ACC TO DSW TDLC1570
0095 0 30F4      WAIT -12 **ERR. DSW IN ACC. TDLC1580
0096 0 70C2      MDX SRTRD+1 PRESS START TO RETRY TDLC1590
*              TDLC1600
0097 0 F0B2      * CONT1 EOR K4C00 CHK BITS 4 AND 5 ONLY TDLC1610
0098 0 4820      BSC Z SKIP BUSY AND NOT READY TDLC1620
0099 0 70FA      MDX ERROR TDLC1630
009A 0 70BE      MDX SRTRD+1 TDLC1640
009B 0 0000      DC TDLC1660
009C 0 0000      DC TDLC1670
009D 0 0000      DC TDLC1680
009E 0 0000      DC TDLC1690
009F 0 0000      DC TDLC1700
00A0 0 0000      DC TDLC1710
00A1 0 0000      DC TDLC1720
*              TDLC1730
*-----CHECK FOR WORD COUNT OF ZERO----- TDLC1740
*              TDLC1750
00A2 0 C091      DATA LD /0034 GET WORD COUNT TDLC1760
00A3 0 4820      BSC Z SKIP IF WORD COUNT ZERO TDLC1770
00A4 0 7002      MDX SUM1 TDLC1780
00A5 0 30F5      WAIT -11 **ERR. WORD COUNT IS ZERO TDLC1790
00A6 0 70A9      MDX LOAD START CONTINUES LOADING TDLC1800
*              TDLC1810
*-----FORM CHECK SUM OF CARD IMAGE LOCS. 10-36----- TDLC1820
*              TDLC1830
00A7 0 CODE      SUM1 LD K0010 SET ACC. TO /0010 TDLC1840
00A8 0 D004      STO CKLOD+1 TDLC1850
00A9 0 1810      SRA 16 TDLC1860
00AA 0 D0D0      STO CKSUM TDLC1870
00AB 0 C0CF      LD CKSUM TDLC1880
00AC 0 8400FFFF  CKLOD A L /FFFF FORM SUM OF LOCS. 10 THRU 36 TDLC1890
00AE 0 D0CC      STO CKSUM TDLC1900
00AF 0 C0FD      LD CKLOD+1 MODIFY ADDRESS TDLC1910
00B0 0 80CB      A K0001 TDLC1920
00B1 0 D0FB      STO CKLOD+1 TDLC1930
00B2 0 F0D1      EOR K0037 CHECK THAT ALL WORDS DONE TDLC1940
00B3 0 4820      BSC Z SKIP ALL LOCS. ADDED TDLC1950
00B4 0 70F6      MDX CKLOD-1 TDLC1960
00B5 0 C0C5      LD CKSUM LOAD SUM 10 THRU 36 TDLC1970
00B6 0 4820      BSC Z SKIP SUM IS CORRECT TDLC1980
00B7 0 30F6      WAIT -10 **ERR. IN CHECK SUM TDLC1990
*              TDLC2000
* MOVE CARD IMAGE TO THE LOCS. BEGINING AT TDLC2010
* THE ADDRESS GIVEN IN LOC. /0025.----- TDLC2020
*              TDLC2030

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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 708D		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 0003		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 809B		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		ENR	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

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CHKSM	0020	0012,0C15,001C
CKLDD	00AC	00A8,0CAF,00B1,00B4
CKMPV	00D9	00D6,00DF,00E1,00E7
CKSUM	0078	00AA,00AB,00AE,00B5
COMP	000B	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
KECFO	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	0082
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
R00DD	004F	006F
REFIX	0048	0056
RESET	007E	0038,005E
SENSE	0080	0059
SRTRD	0058	0064,006C,0078,0096,009A
STORE	0070	0043,0051,0071,0073
STRE	008D	0087
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

TABLE OF CONTENTS

PARAGRAPH		PAGE
1.	PURPOSE	01A
2.	PREREQUISITES.	01A
	2.1 PROGRAM PREREQUISITES	
	2.2 EQUIPMENT PREREQUISITES	
3.	USE PROCEDURE	01A
	3.1 GENERAL INFORMATION	
	3.2 OPERATING PROCEDURE	
4.	PRINTOUTS (NONE)	
5.	COMMENTS.	04
	5.1 FUNCTIONS OF ONE-CARD DIAGNOSTIC PROGRAMS	
	5.2 DESCRIPTION OF ONE-CARD PROGRAMS	
6.	APPENDIX.	06
	6.1 DATA-PATH TEST PROGRAM	
	6.1.1 TEST PROCEDURE	
	6.1.2 PROGRAM DESCRIPTION	
	6.2 ADD TEST PROGRAM	

LIST OF TABLES

TABLE		
1.	NORMAL WAITS.	02
2.	ERROR WAITS	03A

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 - 30FX. THE LAST DIGIT OF AN ERROR WAIT IDENTIFIES THE ONE-CARD PROGRAM WHERE WAIT OCCURS. THE NEXT TO LAST DIGIT, F, IDENTIFIES THE WAIT AS BEING AN ERROR WAIT. WHEN MORE THAN ONE ERROR WAIT OCCURS IN A ONE-CARD PROGRAM, REFERENCE TO THE INSTRUCTION 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 *
*****
* SBR * IAR *
*****
* 3001 * 0002 * ACCUMULATOR SHOULD READ F0F0. IF OK PRESS START.
* * * IF NOT F0F0 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 2 CAUSES A SKIP UNLESS ACCUMULATOR EQUALS ZERO.
*-----*

```

TABLE 1. NORMAL WAITS (CONTINUED)

```

*****
* WAITS *
*****
* SBR * IAR *
*****
* 3003 * 0025 * ACC SHOULD READ 0000. IF CK 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 CK 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 CK 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 CK 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 CK 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 CK 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 0F0F. IF OK LOAD CARD 06 BY PRESSING IMM STOP,
* * * RESET, AND PROGRAM LOAD BUTTONS.
* * * IF ACC IS NOT 0F0F, 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 * IAR *
*****
* 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 WAIT. 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 * IAR *
*****
* * *
* 30F1 * 0006 * STOPPING AT ANY ONE OF THIS WAITS INDICATES FAILURE OF MDX
* * * TO 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, RUN MANUAL-ENTRY ADD TEST (PARAGRAPH 6.2).
-----
* 30F5 * 001F * SUM OF LOCATIONS 0014 THROUGH 004F 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)
* * * COMPARE 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 LOADER. 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 THE FOLLOWING 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 00FE.
- 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-01 PROGRAM

THE CARD-01 PROGRAM LOADS ACCUMULATOR WITH F0F0 FROM LOCATION 0030 AND STOPS AT WAIT INSTRUCTION WITH INSTRUCTION ADDRESS INDICATING 0002, STORAGE BUFFER INDICATING 3001, AND ACCUMULATOR INDICATING F0F0. 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.

ONE-CARD DIAGNOSTIC PROGRAMS

ONE-CARD DIAGNOSTIC PROGRAMS

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 STOPPED 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 FOR.

IF PROGRAM SKIPS, PROGRAM PERFORMS EOR OF 0000 IN ACC WITH CONSTANT F0F0 IN SYMBOLIC LOCATION K0F0. 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 00FE. AFTER INITIAL SETUP, PROGRAM LOADS A WAIT INSTRUCTION AT LOCATION 00FF 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 00FE AND BRANCHES TO LOCATION 0050 TO EXECUTE THE BSI -1 CHAIN, WHICH CAUSES EACH LOCATION FROM 0050 THROUGH 00FE 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 00FE 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.

- 8003 BITS 0,14 AND 15 ON. COLUMN REQUESTS, BUSY, AND NOT READY.
- 0003 BITS 14 AND 15 ON. BUSY AND NOT READY.
- 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 (FFFF) AT ADDRESS STORED IN LOCATION FFFD. SET I COUNTER TO THAT ADDRESS AND ADD ONE TO I COUNTER.
FFFC	FFFF		ADDRESS POSITION OF BSI I INSTRUCTION.
FFFD	FFFF		THIS IS THE ACTUAL BRANCH ADDRESS FOR 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 FFFD 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 OF 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 E 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	F0FC	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

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 01

```

028C      ABS
          ORG      0
          * TFST MDX AND I TO A TRANSFER
          *      TEST READ IN ON PROG. LOAD.
0000 0  C02F      LD      /0030
0001 0  3001      WAIT    /0001  --SEE ACC IS F0F0
0002 0  C02E      LD      /0031
0003 0  3001      WAIT    /0001  --SEE ACC IS 080F
0004 0  703F      MDX     /0044
0005 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0006 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0007 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0008 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0009 0  30F1      WAIT    -15   **ERR., RESET THEN SI
000A 0  30F1      WAIT    -15   **ERR., RESET THEN SI
000B 0  30F1      WAIT    -15   **ERR., RESET THEN SI
000C 0  30F1      WAIT    -15   **ERR., RESET THEN SI
000D 0  30F1      WAIT    -15   **ERR., RESET THEN SI
000E 0  30F1      WAIT    -15   **ERR., RESET THEN SI
000F 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0010 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0011 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0012 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0013 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0014 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0015 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0016 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0017 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0018 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0019 0  30F1      WAIT    -15   **ERR., RESET THEN SI
001A 0  30F1      WAIT    -15   **ERR., RESET THEN SI
001B 0  30F1      WAIT    -15   **ERR., RESET THEN SI
001C 0  30F1      WAIT    -15   **ERR., RESET THEN SI
001D 0  30F1      WAIT    -15   **ERR., RESET THEN SI
001E 0  30F1      WAIT    -15   **ERR., RESET THEN SI
001F 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0020 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0021 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0022 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0023 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0024 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0025 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0026 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0027 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0028 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0029 0  30F1      WAIT    -15   **ERR., RESET THEN SI
002A 0  30F1      WAIT    -15   **ERR., RESET THEN SI
002B 0  30F1      WAIT    -15   **ERR., RESET THEN SI
002C 0  30F1      WAIT    -15   **ERR., RESET THEN SI
002D 0  30F1      WAIT    -15   **ERR., RESET THEN SI
002E 0  30F1      WAIT    -15   **ERR., RESET THEN SI
002F 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0030 0  F0F0      DC      /F0F0
0031 0  080F      DC      /080F
0032 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0033 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0034 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0035 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0036 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0037 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0038 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0039 0  30F1      WAIT    -15   **ERR., RESET THEN SI
003A 0  30F1      WAIT    -15   **ERR., RESET THEN SI
003B 0  30F1      WAIT    -15   **ERR., RESET THEN SI
003C 0  30F1      WAIT    -15   **ERR., RESET THEN SI
003D 0  30F1      WAIT    -15   **ERR., RESET THEN SI
003E 0  7000      MDX     *
003F 0  7000      MDX     /0040
    
```

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000020
000030
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000200
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000220
000230
000240
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000270
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000290
000300
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000320
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000390
000400
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000690
    
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0040 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0041 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0042 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0043 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0044 0  70F9      MDX     /003E
0045 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0046 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0047 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0048 0  30F1      WAIT    -15   **ERR., RESET THEN SI
0049 0  30F1      WAIT    -15   **ERR., RESET THEN SI
004A 0  30F1      WAIT    -15   **ERR., RESET THEN SI
004B 0  30F1      WAIT    -15   **ERR., RESET THEN SI
004C 0  30F1      WAIT    -15   **ERR., RESET THEN SI
004D 0  3001      WAIT    /0001  --STOP HERE INDICATES OK
004E 0  2000      DC      /2000  HEXIDECIMAL NUMBER 0
004F 0  1000      DC      /1000  HEXIDECIMAL NUMBER 1
0050      0000      END      0
    
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000700
000710
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000800
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000860
    
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 01

CROSS REFERENCE LISTING

SYMBOL VALUE REFERENCES

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 02

028C	ABS	000890
	ORG	000900
	/0000	000910
	* TEST ADD BY ONE AND INCREMENT I COUNTER	000920
0000 0 C03E	LD	000930
0001 0 803D	A	000940
0002 0 803C	A	000950
0003 0 803B	A	000960
0004 0 803A	A	000970
0005 0 8039	A	000980
0006 0 8038	A	000990
0007 0 8037	A	001000
0008 0 8036	A	001010
0009 0 8035	A	001020
000A 0 8034	A	001030
000B 0 8033	A	001040
000C 0 8032	A	001050
000D 0 8031	A	001060
000E 0 8030	A	001070
000F 0 802F	A	001080
0010 0 802E	A	001090
0011 0 802D	A	001100
0012 0 802C	A	001110
0013 0 802B	A	001120
0014 0 802A	A	001130
0015 0 8029	A	001140
0016 0 8028	A	001150
0017 0 8027	A	001160
0018 0 8026	A	001170
0019 0 8025	A	001180
001A 0 8024	A	001190
001B 0 8023	A	001200
001C 0 8022	A	001210
001D 0 8021	A	001220
001E 0 8020	A	001230
001F 0 801F	A	001240
0020 0 801E	A	001250
0021 0 801D	A	001260
0022 0 801C	A	001270
0023 0 801B	A	001280
0024 0 801A	A	001290
0025 0 8019	A	001300
0026 0 8018	A	001310
0027 0 8017	A	001320
0028 0 8016	A	001330
0029 0 8015	A	001340
002A 0 8014	A	001350
002B 0 8013	A	001360
002C 0 8012	A	001370
002D 0 8011	A	001380
002E 0 8010	A	001390
002F 0 800F	A	001400
0030 0 800E	A	001410
0031 0 800D	A	001420
0032 0 800C	A	001430
0033 0 800B	A	001440
0034 0 800A	A	001450
0035 0 8009	A	001460
0036 0 8008	A	001470
0037 0 8007	A	001480
0038 0 8006	A	001490
0039 0 8005	A	001500
003A 0 8004	A	001510
003B 0 8003	A	001520
003C 0 8002	A	001530
003D 0 8001	A	001540
003F 0 3002	WAIT	001550
003F 0 0001	DC	001560
0040 0 F8FF	DC	

ADD /0001 TO ACC. AT EACH INST. FROM LOC. /0000 TO LOC. /003E. TOTAL AT WAIT AT /003E SHOULD BE /003E.
IF ANSWER WRONG
1. DISPLAY LOCS. /003F /0040 /0000.
2. LOAD OK. CHECK THE FOLLOWING CARDS BY SWAP + RE-RUN QUAD + IBM. OR SINGLE INSTRUCTION FROM 70000 + SEE WHEN ACC. NOT EQU. I COUNTER.

--SEE ACC. IS 003E CONSTANT ADDED AT 0-3D CONSTANT TO CHECK CRD READ

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 02

0041	0000	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

```

028C      ABS
          ORG      /0000
          * CHECK BSC Z, SRA 1, AND EDR.
          * LOAD CARD AND RUN PROGRAM. PROGRAM SHOULD STOP
          * AT WAITS FOLLOWED BY -- FOR SEEING THAT THE REGS.
          * SHOWN ARE CORRECT, DIFFERENCES INDICATE ERRORS.
          * WAITS FOLLOWED BY ** OCCUR ONLY ON ERRORS.
          * THE FIRST TEST IS OF SRA 1 AND BSC Z.
          * A ONE IS PLACED INTO THE BIT ZERO POSITION AND
          * TESTED AT EACH TIME BY A BSC Z WHICH SHOULD NOT
          * SKIP THE ACC. IS SHOWN AFTER EACH SRA 1.
0000 0  C03C      LD      K8000      8000
0001 0  4820      BSC      Z          SHOULD NOT SKIP
0002 0  1801      SRA      1          4000
0003 0  4820      BSC      Z          SHOULD NOT SKIP
0004 0  1801      SRA      1          2000
0005 0  4820      BSC      Z          SHOULD NOT SKIP
0006 0  1801      SRA      1          1000
0007 0  4820      BSC      Z          SHOULD NOT SKIP
0008 0  1801      SRA      1          0800
0009 0  4820      BSC      Z          SHOULD NOT SKIP
000A 0  1801      SRA      1          0400
000B 0  4820      BSC      Z          SHOULD NOT SKIP
000C 0  1801      SRA      1          0200
000D 0  4820      BSC      Z          SHOULD NOT SKIP
000E 0  1801      SRA      1          0100
000F 0  4820      BSC      Z          SHOULD NOT SKIP
0010 0  1801      SRA      1          0080
0011 0  4820      BSC      Z          SHOULD NOT SKIP
0012 0  1801      SRA      1          0040
0013 0  4820      BSC      Z          SHOULD NOT SKIP
0014 0  1801      SRA      1          0020
0015 0  4820      BSC      Z          SHOULD NOT SKIP
0016 0  1801      SRA      1          0010
0017 0  4820      BSC      Z          SHOULD NOT SKIP
0018 0  1801      SRA      1          0008
0019 0  4820      BSC      Z          SHOULD NOT SKIP
001A 0  1801      SRA      1          0004
001B 0  4820      BSC      Z          SHOULD NOT SKIP
001C 0  1801      SRA      1          0002
001D 0  4820      BSC      Z          SHOULD NOT SKIP
001E 0  1801      SRA      1          0001
001F 0  4820      BSC      Z          SHOULD NOT SKIP
0020 0  3003      WAIT     /0003      -- I EQU. 0021 A EQU. 0001
          *      ERROR, RESET THEN SI, SEE EACH INST.
          *      OK      PRESS START
0021 0  1801      SRA      1          0000
0022 0  4820      BSC      Z          SHOULD SKIP
0023 0  30F3      WAIT     -13       **ERR. A SHOULD BE ZERO
0024 0  3003      WAIT     /0003      --I EQU. 0025 A EQU. 0000
          *      ERROR, RESET THEN SI, SEE EACH INST.
          *      OK      PRESS START
          *OK. SHOWS I CNTR. OK FROM 0000 TO /0025
          *      BSC Z SKIPS ONLY WHEN ACC = 0000
          *      SRA 1 OK FOR ONE BIT IN ANY POSITION
          *BEGIN TEST OF TRANSFERS OF B-D-A-M-----
          * AND A-U-A AND A-R
          * THE CONTENTS OF ACC. IS SHOWN AFTER EACH CHANGE
0025 0  C018      LD      KFOFO      FOFO
0026 0  D0D8      STO      /FFFF
0027 0  C0D7      LD      /FFFF
0028 0  D0D7      STO      /0000
0029 0  C0D6      LD      /0000
002A 0  1804      SRA      4          OFOF
002B 0  D0D3      STO      /FFFF
002C 0  C0D2      LD      /FFFF
002D 0  D0D2      STO      /0000
002E 0  C0D1      LD      /0000

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002000
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002100
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002120
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002290
002300

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ONE-CARD DIAGNOSTIC PROGRAMS
CARD 03

```

002F 0  3003      WAIT     /0003      --I EQU. 0030 A EQU. OFOF
          *      IF ERROR, LOAD I CTR. /0025, THEN SI AND
          *      SEE THAT REGS. AS SHOWN FOR EACH INSTRUCTION.
          *      QUAD CARDS GATE A2 ROWS 4,5
          *      IBM CARDS GATE A2 ROWS 6,7
          * BIT POS. -- 0-1 2-3 4-5 6-7 8-9 10-11 12-13 14-15
          * CARD COL.-- C D E F G H J K
          *      IF OK , PRESS START-----
          * TEST FOR
0030 0  F000      EOR      KFOFO      SET ACC TO FFFF
0031 0  D00D      STO      KFFFF      STORE IT
0032 0  3003      WAIT     /0003      --I EQU. 0033 A EQU. FFFF
0033 0  F00B      EOR      KFFFF      CLEAR ACC TO 0000
0034 0  4820      BSC      Z          SHOULD SKIP
0035 0  30F3      WAIT     -13       **ERR. ACC SHOULD BE 0000
0036 0  F009      EOR      K0000      ACC SHOULD STAY 0000
0037 0  4820      BSC      Z          SHOULD SKIP
0038 0  30F3      WAIT     -13       **ERR. ACC SHOULD BE 0000
0039 0  F004      EOR      KFOFO      ACC SHOULD GO TO FOFO
003A 0  F0C4      EOR      /FFFF      ACC SHOULD BE FFFF
          *      LOC. /FFFF SHOULD BE OFOF
003B 0  3003      WAIT     /0003      --I EQU. 003C A EQU. FFFF
          *      IF ERROR PUT IN SI MODE AND START
003C 0  70F1      MDX      /002E
          *      OK ,TEST ON THIS CARD COMPLETE.
          * NO ERRORS ON THIS TEST SHOW ALL BITS TRANSFER
          * CORRECTLY FROM CORE-B-D-A-M AND A-U-A-D-B-CORE.
          * THAT EDR WORKS RIGHT. THAT BSC Z WORKS RIGHT.
          * THAT ACC. WILL SHIFT A ONE BIT RIGHT FROM ANY
          * POSITION. THAT LD, STO, EDR, BSC Z, SRA 1, WAIT
          * INSTRUCTIONS OK. I CNTR. STEPS FROM /0000 TO/003C
003D 0  8000      K8000 DC /8000
003E 0  F0F0      KFOFO DC /FOFO
003F 0  FFFF      KFFFF DC /FFFF
0040 0  0000      K0000 DC /0000
0041 0  0000      BSS      /D
004F 0  2000      DC      /2000      HEXIDECIMAL NUMBER 0
004F 0  0040      DC      /0040      HEXIDECIMAL NUMBER 3
0050 0  0000      END      0
002310
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ONE-CARD DIAGNOSTIC PROGRAMS
CARD 03

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 04

CROSS REFERENCE LISTING

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

SYMBOL	VALUE	REFERENCES	ABS	ADDRESS
0000	0	C013	LD	K4000
0001	0	1804	SRA	4
0002	0	0012	STO	K0400
0003	0	F012	EOR	LD
0004	0	D011	STO	LD
0005	0	C00F	LD	K0400
0006	0	F012	EOR	EOR
0007	0	D011	STO	FDR
0008	0	C00C	LD	K0400
0009	0	F011	EOR	STO
000A	0	D010	STO	STO
000B	0	C009	LD	K0400
000C	0	F011	FDR	A
000D	0	D010	STO	A
000E	0	C006	LD	K0400
000F	0	F001	EOR	LDX
0010	0	D000	STO	LDX
0011	00	64000016	LDX	LDX L LD
0013	0	30F4	WAIT	-12
0014	0	4000	K4000	DC /4000
0015	0	0400	K0400	DC /0400
0016	00	C4000031	LD	LD L KFOFO
0018	0	1804	SRA	4
0019	00	F4000031	EOR	EOR L KFOFO
001B	00	D400002F	STO	STO L KFFFF
001D	0	3004	WAIT	/0004
001F	00	94000030	A	A L K0001
0020	0	D00D	STO	SUMPL
0021	0	D00B	STO	SUMMI
0022	0	3004	WAIT	/0004
0023	0	C009	BEGIN	LD SUMMI
0024	0	000A	A	KFFFF
0025	0	D007	STO	SUMMI
0026	0	C007	LD	SUMPL
0027	0	8008	A	K0001
0028	0	D005	STO	SUMPL
0029	0	8003	A	SUMMI
002A	0	4820	BSC	Z
002B	0	30F4	WAIT	-12
002C	0	70F6	MDX	BEGIN
002D	0	0000	SUMMI	DC /0000
002E	0	0000	SUMPL	DC /0000
002F	0	0000	KFFFF	DC /0000
0030	0	0001	K0001	DC /0001
0031	0	F0F0	KFOFO	DC /F0F0
0032	0	001C	BSS	/1C
004E	0	2000	DC	/2000
004F	0	0020	DC	/0020
0050	0	0000	END	0

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 04

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A	001F	000C,000D
BEGIN	0023	002C
END	0019	0006,0007
KFFFF	002F	0018,0024
K0000	0031	0016,0019
K0001	0030	001F,0027
K0400	0015	0002,0025,0008,000A,000F
K0000	0014	0000
LD	0016	0003,0004,0011
LDX	0011	000F,0010
STO	001A	0009,000A
SUMMI	002D	0021,0023,0025,0029
SUMPL	002F	0020,0026,0028

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 05

LOC	OP	ADDR	INSTR	COMMENT	LOC
028C	ABS				003100
	ORG	0			003110
				* TEST THAT LOCS. 0050 THRU FFF CAN BE ADDRESSED	003120
				* PROGRAM SHOULD STOP AT LOC. OFF WITH R 300A	003130
				* PRESS RESET AND START. PROGRAM THEN SHOULD STOP	003140
				* AT LOC. 004A WITH R 300A AND ACC. 0FAF WHICH	003150
				* IS THE NUMBER OF LOCATIONS TESTED. PROGRAM	003160
				* CAN BE RE-RUN BY PRESSING START.	003170
0000	LD	K1000		PROGRAM REPLACES THIS	003180
0001	SRA	2			003190
0002	EDR	STLN			003200
0003	STO	STWT		MAKE UP LONG INSTRUCTIONS	003210
0004	STQ	STLN			003220
0005	LD	K1000			003230
0006	SRA	2			003240
0007	EDR	CHCK			003250
0008	STO	CHCK			003260
0009	LD	KF000			003270
000A	SRA	4			003280
000B	EDR	STWT+1			003290
000C	STO	STWT+1			003300
000D	LD	CON1			003310
000E	STO	MOD1		MODIFY LOCATION 0000	003320
000F	LD	KWAIT			003330
0010	STO	L		PUT WAIT INTO /OFFF	003340
0011	LD	SUMC			003350
0012	A	MOD3+1		FORM CHECK SUM	003360
0013	STO	SUMC			003370
0014	LD	MOD3			003380
0015	A	K0001			003390
0016	STO	MOD3			003400
0017	EDR	CON3			003410
0018	BSC	Z			003420
0019	MDX	MOD3-1			003430
001A	LD	SUMC			003440
001B	RSC	Z		SHOULD SKIP	003450
001C	WAIT	-11		**ERR. SUM SHOULD BE 0000	003460
001D	MDX	RSTR			003470
001E	DC	/00DC		USED TO MAKE CHECK SUM	003480
001F	DC	/00DC		USED TO MAKE CHECK SUM	003481
0020	DC	/0001			003490
0021	DC	/5000			003500
0022	DC	/1000			003510
0023	DC	/F000			003520
0024	BSI	X			003530
0025	CON1	X		CHECK-MOD1-1	003540
0026	CON3	X		CON3-MOD3	003550
0027	SUMC	DC		/00FC	003560
0028	SUML	DC		/2030	003570
0029	RSTR	LD		KBGIN	003580
002A	SRA	8		LOAD ACC. TO 5000	003590
002B	STO	STLN+1		SHIFT TO /0050	003600
002C	STO	CHCK+1		RESTORE	003610
002D	SRA	16		RESTORE	003620
002E	STO	SUMI		ACC = /0000	003630
002F	LD	KBSI		RFSTORE	003640
0030	STLN	STO		PUT BSI-1 INTO CORE	003650
0031	LD	STLN+1			003660
0032	A	K0001		MODIFY STORE ADDRESS	003670
0033	STO	STLN+1			003680
0034	EDR	STWT+1			003690
0035	BSC	Z		SKIP WHEN LOC. OFFF STORED	003700
0036	MDX	STLN-1			003710
0037	MDX	/0050		RUN SERIES OF BSI-1 STORED	003720
0038	WAIT	-11		**ERR. ADDRESS PLUS ONE	003730
0039				* DOES NOT EQUAL ADDRESS OF LOCATION TESTED.	003740
003A	CHECK	LD		LOAD THE ADDRESS BEING	003750
003B	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 C0F7	LD SUML		003800
0042 0 80DE	A K0001	FORM SUM OF = LDCS. TESTED	003810
0043 0 00F5	STO SUML		003820
0044 0 C0F9	LD CHCK+1	MODIFY TO TEST NEXT LOC.	003830
0045 0 80DB	A K0001		003840
0046 0 D0F7	STO CHCK+1		003850
0047 0 F0C9	FOR STWT+1	CHECK IF ALL TESTED	003860
0048 0 4820	BSC Z	SKIP, ALL LDCS. 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. OFAF 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	FND 0		003960

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 05

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
BGIN	004F	0027
CHCK	003D	0007,0008,002D,003B,0044,0046,0049
CHECK	003B	0026,0040
CON1	0026	000D
CON3	0027	0018
KBGIN	0022	002A
KBSI	0025	0030
KFO00	0024	0009
KWAIT	004B	000F
K0001	0021	0016,0034,003C,0042,0045
K1000	0023	0000,0005
M001	0000	000E,0026
M003	0013	0013,0015,0017,001A,0027
RSTR	002A	001E,004C
STLN	0031	0002,0004,002C,0033,0035,0038
STWT	0010	0003,000B,000C,0036,0047
SUMC	0028	0012,0014,001B
SUML	0029	002F,0041,0043,004A

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 06

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 06

```

028C      ABS
          ORG      0
          * TEST OF LEADER CARD 1 FUNCTIONS
          * USING BIT SWITCHES FOR DSW + FOR COLUMN DATA
          * THIS PROG. IS IDENTICAL TO CARD 1 FROM 1D TO 4C
          * EXCEPT FOR XIO COMMANDS.
0000 0 0024  START LD  RDIN+1  SET UP I/O CONT. COMMANDS
0001 0 1804      SRA      4
0002 0 F024      EOR      RDSW+1
0003 0 0021      STO      RDIN+1
0004 0 0022      STO      RDSW+1
0005 0 0023      LD       SENSE+1  MAKE UP STORE LONG
0006 0 1801      SRA      1
0007 0 F034      EOR      STORE
0008 0 0033      STO      STORE
0009 0 0014      LD       CHKSM  MAKE UP ADDR. FOR STO LONG
000A 0 1808      SRA      8
000B 0 F031      EOR      STORE+1
000C 0 0030      STO      STORE+1
000D 0 701F      MDX     SRTRD
000E 0 0000      DC       0
000F 0 0000      DC       0
0010 0 0000      DC       0
0011 0 0000      DC       0
0012 0 0000      DC       0
0013 0 0000      DC       0
0014 0 0000      DC       0
0015 0 0000      DC       0
0016 0 0000      DC       0
0017 0 0000      DC       0
0018 0 0000      DC       0
0019 0 0000      DC       0
001A 0 0000      DC       0
001B 0 0000      DC       0
001C 0 0000      DC       0
001D 0 700F      ENDCK  MDX   SRTRD
001E 0 8800      CHKSM  DC    /8800
001F 0 0800      KOR00  DC    /0800
0020 0 8003      K8003  DC    /8003
0021 0 8000      K8000  DC    /8000
0022 0 0001      K0001  DC    /0001
0023 0 0000      DC       /0000
0024 0 0000      RDIN   DC    /0000  RD SWS. INTO LOCS. 0 OR 1
0025 0 4000      DC       /A000  /3A00 SET BY PROGRAM
0026 0 0028      RDSW   DC    SENSE  RD SWS. INTO LOC. SENSE
0027 0 3000      DC       /3000  /3A00 SET BY PROGRAM
0028 0 0004      SENSE  DC    /0004  SENSE DSW CONTROL COMMAND
0029 0 2808      DC       /2808
002A 0 0000      COUNT  DC    /0000
002B 0 F0F3      ERROR  EOR   K0800  RESTORE ACC. TO DSW
002C 0 30F6      WAIT   WAIT  -10   **ERR. STOP DSW NOT RIGHT
002D 0 3006      SRTRD  WAIT  /6    TO LOOP, REPLACE WAIT
002E 0 03F7      XIO    RDSW   READ SWITCHES INTO SENSE
002F 0 C0F8      LD       SENSE  LOAD BIT SWS. INTO ACC.
0030 0 F0FF      EOR      K8003  CHECK BITS 0,14+15 ONLY
0031 0 4820      BSC     Z      SKIP IF BITS 0,14+15 ONLY
0032 0 700F      MDX     CONT1  CONTINUE DSW ANALYSIS
0033 0 08F0      XIO    RDIN   READ BIT SWITCHES INTO 0,1
0034 0 C0EF      LD       RDIN
0035 0 F0FC      EOR      K0001  SWITCH READ IN AREA, EVEN
0036 0 00ED      STO      RDIN   TIMES IN 0 ODD IN 1
0037 0 4820      BSC     Z      SKIP 2 WORDS READ
0038 0 70F4      MDX     SRTRD
0039 0 C0C6      LD       START  GET FIRST WORD
003A 0 1808      SRA      8    SHIFT IT
003B 0 F0C5      EOR      START+1  EOR WITH SECOND WORD
003C 0 C004      STORE  DC    /C004  STORE LONG AT 4D
003D 0 00F5      DC       /00F5  SET UP BY PROG.
    
```

```

003990
004000
004010
004020
004030
004040
004050
004060
004070
004080
004090
004100
004110
004120
004130
004140
004150
004160
004170
004180
004190
004200
004210
004220
004230
004240
004250
004260
004270
004280
004290
004300
004310
004320
004330
004340
004350
004360
004370
004380
004390
004400
004410
004420
004430
004440
004450
004460
004470
004480
004490
004500
004510
004520
004530
004540
004550
004560
004570
004580
004590
004600
004610
004620
004630
004640
004650
004660
    
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003F 0 C0FF      LD       STORE+1
003E 0 80F3      A       K0001+1  DUMMY MODIFY OF STO L
0040 0 D0FC      STO      STORE+1
0041 0 70E8      MDX     SRTRD
0042 0 F0DF      CONT1  EOR   K8000  CHECK FOR BITS 14+15 ONLY
0043 0 4820      BSC     Z      SKIP BUSY AND NOT READY
0044 0 7001      MDX     CONT2
0045 0 70E7      MDX     SRTRD
0046 0 C0E1      CONT2  LD       SENSE  BIT SWS. LOADED TO ACC.
0047 0 F0D7      EOR      K0800  CHECK FOR BIT 4 ONLY
0048 0 4820      BSC     Z      SKIP END OF CARD
0049 0 70E1      MDX     ERRDR
004A 0 C0DF      LD       COUNT  COUNT PASSES
004B 0 80D6      A       K0001
004C 0 70E0      MDX     SRTRD
004D 0 9000      DC       0
004E 0 2000      DC       /2000  HEXIDECIMAL NUMBER 0
004F 0 0008      DC       /0008  HEXIDECIMAL NUMBER 6
0050 0 0000      END
    
```

```

004670
004680
004690
004700
004710
004720
004730
004740
004750
004760
004770
004780
004790
004800
004810
004820
004830
004840
004850
    
```

ONE-CARD DIAGNOSTIC PROGRAMS
CARD 06

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
CHKSM	001F	0009
CONT1	0042	0032
CONT2	0046	0044
COUNT	002A	004A
ENDCK	001D	
ERRDR	002B	0049
K0001	0022	0035,003F,004B
K0000	001F	002B,0047
K8000	0021	0042
K8003	0020	0030
RDIN	0024	0000,0003,0033,0034,0036
RDSW	0026	0002,0004,002F
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

ADDRESS	OPERATION	OPERAND	COMMENT	ADDRESS
028C	ABS			004880
	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	LD	KFOFO	SET UP CONSTANT /OFOF	004921
0001 0	SRA	4		004922
0002 0	STO	KFOFO+1		004923
0003 0	STO	KFOFO+2		004924
0004 0	LDD	KFOFO	TEST LOAD DOUBLE	004925
0005 0	AD	KFOFO+2	TEST ADD DOUBLE	004926
0006 0	WAIT	/0007	--SEE ACC. FFFF Q FFFF IF OK	004927
	*		CONT. IF NOT RESET AND SI.	004928
0007 0	START LD	RDIN+1	CORRECT I/O CONT. COMM.	004930
0008 0	SRA	2	SHIFT IT	004940
0009 0	STO	RDIN+1	STORE IT	004950
000A 0	LD	K0001+1	CORRECT I/O CONT. COMM.	004960
000B 0	SRA	1	SHIFT IT	004970
000C 0	STO	K0001+1	STORE IT	004980
000D 0	LD	SENSE+1	CORRECT I/O CONT. COMM.	004990
000E 0	SRA	3	SHIFT IT	005000
000F 0	STO	SENSE+1	STORE IT	005010
0010 0	FOR	RESET+1		005020
0011 0	STO	RESET+1		005030
0012 0	MDX	ENDCK		005040
0013 0	DC	0		005060
0014 0	DC	0		005070
0015 0	DC	0		005080
0016 0	DC	0		005090
0017 0	DC	0		005100
0018 0	KFOFO DC	/FOFO		005110
0019 0	DC	/OFOF		005120
001A 0	DC	/OFOF	PUT IN BY PROGRAM	005200
001B 0	DC	/FOFO		005210
001C 0	DC	0		005215
001D 0	ENDCK MDX	SRTRD		005220
001E 0	K0800 DC	/0800		005230
001F 0	K8003 DC	/8003		005240
0020 0	K8000 DC	/8000		005250
0021 0	DC	0		005260
0022 0	K0001 DC	/0001	START RD, USED AS CONSTANT	005270
0023 0	DC	/2808	/1404 SET BY PROG.	005280
0024 0	RDIN DC	/0000	READ IN LOCATIONS 0 AND 1	005290
0025 0	DC	/4800	/1200 SET BY PROG.	005300
0026 0	RESET DC	0	RESET DSW CONTROL COMMAND	005310
0027 0	DC	/0003	/1703 SET BY PROG.	005320
0028 0	SENSE DC	/0004	SENSE DSW CONTROL COMMAND	005330
0029 0	DC	/B800	/1700 SET BY PROG.	005340
002A 0	DC	0		005350
002B 0	ERROR FOR	K0800	RESTORE ACC. TO DSW	005360
002C 0	MDX	*	PUT WAIT HERE FOR ERR. STOP	005370
002D 0	SRTRD XIO	K0001	START READ	005380
002E 0	XIO	RESET	RESET DSW	005390
002F 0	XIO	SENSE	SENSE DSW FOR CRP	005400
0030 0	EDR	K8003	CHECK BITS 0,14+15 ONLY	005410
0031 0	BSC	Z	SKIP IF BITS 0,14+15 ONLY	005420
0032 0	MDX	CONT1	RD COL.	005430
0033 0	XIO	RDIN		005440
0034 0	LD	RDIN		005450
0035 0	FOR	K0001		005460
0036 0	STO	RDIN		005470
0037 0	BSC	Z	SKIP, ODD COL. JUST READ	005480
0038 0	MDX	HOP		005490
0039 0	LD	/0001	LOAD ODD COL. JUST READ	005500
003A 0	MDX	JUMP		005510
003B 0	HDP LD	/0000	LOAD EVEN COL. JUST READ	005520
003C 0	MDX	JUMP		005530

TABLE OF CONTENTS

PARAGRAPH	PAGE
1. PURPOSE	1
2. PREREQUISITES	1
2.1 PROGRAM PREREQUISITES	
2.2 EQUIPMENT PREREQUISITES	
3. USE PROCEDURE	1A
3.1 NORMAL LOADING PROCEDURE	
3.2 DIAGNOSTIC LOADING PROCEDURE	
3.3 DIAGNOSTIC GUIDE	
3.4 PROGRAM HALTS	
4. PRINTOUTS (NONE)	
5. COMMENTS	2
5.1 BASIC-LOADER FIRST-CARD FUNCTIONS	
5.2 FUNCTIONS OF BASIC-LOADER CARDS (TWO THRU FIVE)	
6. APPENDIX	3
6.1 PUNCHED-CARD 8-8 FORMAT	

1. PURPOSE
 TO LOAD PROGRAM DECKS PUNCHED IN THE FORMAT SUCH AS THE CPU AND CORE TESTS. THE LOADER IS CONSTRUCTED TO USE A MINIMAL INSTRUCTION SET, AND PROVIDE SOME DIAGNOSTIC ABILITY.
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. 2501 CARD READER WITH IPL.

3. USE PROCEDURE

3.1 NORMAL LOADING PROCEDURE

A. AT 2501 CARD READER,

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 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.

FAILURE DESCRIPTION	SUGGESTED ACTION + POSSIBLE CAUSE OF FAILURE
1. NO CARD FEEDS	POSSIBLE FAILURE OF EITHER PROGRAM-LOAD MODE OR READER.
2. FIRST CARD FEEDS BUT IS NOT READ CORRECTLY.	POSSIBLE FAILURE OF READER.
3. FIRST CARD IS READ CORRECTLY BUT NOT ABLE TO LOAD REMAINDER OF LOADER.	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*** PROGRAM HALTS

HALT NO. (B REG)	DESCRIPTION	RESTART ACTION
30F1	CHECK SUM ERROR ON FIRST CARD OF LOADER. EITHER THE CARD READ IN WRONG, OR THE VARIOUS WORDS WHICH ARE STORED BY THE FIRST CARD WERE NOT PROPERLY GENERATED.	RELOAD
30F5	READER CHECK WHEN LOADING TEST PROGRAM	NPRO THEN PLACE CARDS RUN OUT IN FRONT OF REMAINING DECK AND PRESS START.
30F7	CHECK SUM WHEN LOADING PROGRAM. CARD COLUMN 1-7B DID NOT HAVE ZERO CHECK SUM.	RELOAD OR PRESS START TO RETRY THE SAME CARD.
30F8	READER NOT READY BEFORE LOADING WAS COMPLETED.	MAKE READER READY, AND CHECK IF LAST CARD IS PROPER.
30FC	MOVE ERROR. MOVED DATA DID NOT COMPARE TO INPUT DATA.	NPRO THEN PLACE CARDS RUN OUT IN FRONT OF REMAINING DECK AND PRESS START.

- 4. PRINTOUTS (NONE)
- 5. COMMENTS

COMMENTS THE 2501 BASIC LOADER IS DESIGNED TO SUCCESSFULLY LOAD THE 8-8 FORMAT TESTS SUCH AS CPU AND CORE TESTS. THE LOADER USES A MINIMUM AMOUNT OF CIRCUITS. IT WILL RUN WITH OR WITHOUT INTERRUPT, USES NO INDEX REGISTERS, AND WILL LOOP ON EASILY SCOPED LOOPS FOR SOME ERRORS. THE CARD IMAGE IS PRESERVED IN CORE UNTIL IT HAS BEEN CHECK SUMMED, AND MOVED TO ITS PROPER LOCATIONS. THE CARD MAY BE DISPLAYED AND COMPARED MANUALLY TO VERIFY PROPER READING. EACH OPERATION, IE. CARD READ, CHECKSUM, MOVE AND CHECK ARE SELF CONTAINED AND DO NOT OVERLAP, ALLOWING A FAILING OPERATION TO BE REPEATED.

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, 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 CHECKSUM (TWO'S COMPLEMENT OF THE SUM OF ALL WORDS IN COLUMNS 1 THROUGH 76).
- E. COLUMNS 79 AND 80 CONTAIN THE CARD'S SEQUENCE NUMBER PUNCHED IN HOLLERITH/HEXADECIMAL FORMAT.

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

BASIC DIAGNOSTIC LOADER - 2501

BASIC DIAGNOSTIC LOADER - 2501

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0000          ABS          3AD00020
              ORG          0          3AD00030
              *          BOOTSTRAP CARD #1          3AD00040
              *-----*          3AD00050
              *          LOADED BY IPL. THESE INSTRUCTIONS          3AD00060
              *          BUILD LONG FORM INSTRUCTIONS          3AD00070
              *          NECESSARY TO LOAD THE REST OF          3AD00080
              *          THE LOADER.          3AD00090
              *-----*          3AD00100
0000 0 C037      START LD   PACK&1   8800          3AD00110
0001 0 1801      SRA      1         4400          3AD00120
0002 0 F034      EOR      PACK      C400          3AD00130
0003 0 D033      STO      PACK      C400   LD   L          3AD00140
0004 0 F037      EOR      STO      D400          3AD00150
0005 0 D036      STO      STO      D400   STO   L          3AD00160
0006 0 F033      EOR      EOR      F400          3AD00170
0007 0 D032      STO      EOR      F400   EOR   L          3AD00180
0008 0 1804      SRA      4         0F40          3AD00190
0009 0 F021      EOR      K4001     4F41          3AD00200
000A 0 D022      STO      RESET     4F41   RESET IOCC          3AD00210
000B 0 7001      MDX      *&1      4F41          3AD00220
000C 0 0031      DC        INT          3AD00230
000D 0 1808      SRA      8         004F          3AD00240
000E 0 D01B      STO      STRD     004F   START DR ADDR          3AD00250
000F 0 8020      A        ONE          0050          3AD00260
0010 0 D02A      STO      EOR&1     0050   1ST HALF WD ADDR          3AD00270
0011 0 D02B      STO      STO&1     0050   1ST STORE ADDR          3AD00280
0012 0 801D      A        ONE          0051          3AD00290
0013 0 D024      STO      PACK&1     0051   2ND HALF WD ADDR          3AD00300
0014 0 8017      A        LAST          0078          3AD00310
0015 0 D016      STO      LAST          0078   END STORE ADDR          3AD00320
0016 0 C014      LD        K4001     4001          3AD00330
0017 0 1806      SRA      6         0100          3AD00340
0018 0 F014      EOR      RESET     4E01          3AD00350
0019 0 D011      STO      STRD&1     4E01   START RD I/CC          3AD00360
001A 0 1808      SRA      8         004E          3AD00370
001B 0 D033      STO      WC          004E   WORD COUNT          3AD00380
              *          3AD00390
001C 0 C011      STRT  LD   CHKSM     FORM CHECK SUM, THIS CARD          3AD00400
001D 0 8006      A        *&6          FROM 0024 THRU 004F          3AD00410
001E 0 D00F      STO      CHKSM          3AD00420
001F 0 C0FD      LD        STRT&1          3AD00430
0020 0 800F      A        ONE          MODIFY ADD INST          3AD00440
0021 0 D0FB      STO      STRT&1          3AD00450
0022 0 F00C      EOR      CON1          CHECK THAT LAST LOC CHKD          3AD00460
0023 0 4820      BSC      Z          SKIP IF FINISHED          3AD00470
0024 0 601C      LDX      STRT          GO GET NEXT WORD          3AD00480
0025 0 C008      LD        CHKSM          GET SUM OF 0024 THRU 004F          3AD00490
0026 0 4820      BSC      Z          SKIP IF CHKSM ZERO          3AD00500
0027 0 30F1      WAIT     -15          CHECK SUM ERROR          3AD00510
0028 0 6033      ENDCK  LDX  SRTRD     START LOADING          3AD00520
              *          3AD00530
              *          3AD00540
0029 0 0800      K0800  DC   /0800          3AD00550
002A 0 0000      STRD  DC   0          3AD00560
002B 0 4001      K4001  DC   /4001          3AD00570
002C 0 0026      LAST  DC   /0026          3AD00580
002D 0 0000      RESET DC   *-*          3AD00590
002E 0 001B      CHKSM DC   /001B          3AD00600
002F 0 8031      CON1  A    X  80-STRT-3          3AD00610
0030 0 0001      ONE   DC   /0001          3AD00620
              *          3AD00630
              *          3AD00640
              *          THESE INSTRUCTIONS LOAD THE REST          3AD00650
              *          OF THE LOADER.          3AD00660
              *          3AD00670
              *          3AD00680
0031 0 0000      INT   DC   0          3AD00690

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0032 0 6037          LDX   PACK          3AD00700
              *          3AD00710
              SRTRD  XIO   STRD          3AD00720
              XIO   RESET-1          3AD00730
              BSC   E          3AD00740
              LDX   SRTRD&1          3AD00750
              *          3AD00760
              PACK  DC   /8000   LD   L  RDIN&1          3AD00770
              DC   /8800          3AD00780
              SRA   8          3AD00790
              EOR   DC   /2000   EOR   L  RDIN          3AD00800
              DC   0          3AD00810
              STO   DC   /1000   STO   L  RDIN          3AD00820
              DC   0          3AD00830
              LD   PACK&1          3AD00840
              A   ONE          3AD00850
              STO   EOR&1          3AD00860
              A   ONE          3AD00870
              STO   PACK&1   PACK AND          3AD00880
              LD   STO&1   STORE 8-8          3AD00890
              A   ONE   LOADER CARDS          3AD00900
              STO   STO&1          3AD00910
              EOR   LAST          3AD00920
              BSC   Z          3AD00930
              LDX   PACK          3AD00940
              MDX   CARD2          3AD00950
              ORG   79          3AD00960
              DC   78          3AD00970
              *          3AD00980
              *          3AD00990
              *          CARD 2 STARTS HERE          3AD01000
              *          3AD01010
              *          3AD01020
              RDIN  BSS   0          3AD01030
              CARD2 LD   WC          3AD01040
              STOWC STO  L  WC&78          3AD01050
              LD   STRD          3AD01060
              A   WC          3AD01070
              STO  STRD          3AD01080
              LD   STOWC&1          3AD01090
              A   WC          3AD01100
              STO  STOWC&1          3AD01110
              LD   WC          3AD01120
              SRA  1          3AD01130
              A   LAST          3AD01140
              STO  LAST          3AD01150
              LD   COUNT          3AD01160
              A   ONE          3AD01170
              STO  COUNT          3AD01180
              EOR  K0004          3AD01190
              BSC  Z          3AD01200
              MDX  SRTRD          3AD01210
              LDX  SRTR2          3AD01220
              *          3AD01230
              *          3AD01240
              *          CONSTANTS AND BUCKETS          3AD01250
              *          3AD01260
              *          3AD01270
              COUNT DC   0          3AD01280
              K0004 DC   /0004          3AD01290
              *          3AD01300
              INPUT EQU  /0010   CARD INPUT AREA          3AD01310
              INWC  EQU  INPUT&72  WORD COUNT IN CARD          3AD01320
              INWC1 EQU  INWC&1          3AD01330
              INAD  EQU  INPUT&74  ADDRESS IN CARD          3AD01340
              INAD1 EQU  INAD&1          3AD01350
              STRD2 DC   INPUT-1          3AD01360
              DC   /4E00          3AD01370

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0068 0 0000    CKSUM DC      0          3AD01380
0069 0 4F01    REST2 DC     /4F01      3AD01390
006A 0 0000    CDCNT DC     0          3AD01400
006B 0 000F    IPACK DC    INPUT-1     3AD01410
006C 0 0001    ONE2 DC     /0001      3AD01420
*              *              *              3AD01430
006D 0 0010    COL1 DC     /0010      INPUT AREA START 3AD01440
006E 0 0000    INCOL DC    *-*        ADDR OF FIRST HALF WD 3AD01450
006F 0 0000    DC         *-*        ADDR OF SECOND HALF WD 3AD01460
0070 0 0000    ADDR DC    *-*        CURRENT CORE ADDR 3AD01470
0071 0 0000    WDCNT DC    *-*        WORD COUNT 3AD01480
0072 0 005F    COL78 DC   INPUT&79  LAST CHECKSUM COL 3AD01490
0073 0 FFFF    NONE DC    -1          NEGATIVE ONE 3AD01500
0074 0 0002    TWO DC     /0002      3AD01510
0075 0 0086    INTE DC    INT4         INTERRUPT ENTRY 3AD01520
0076 0 004E    WC2 DC     /004E      WORD COUNT 3AD01530
0077 0 0003    K0003 DC   /0003      3AD01540
*              *              *              3AD01550
*              *              *              3AD01560
*              *              *              3AD01570
*              *              *              3AD01580
*              *              *              3AD01590
*              *              *              3AD01600
*              *              *              3AD01610
0078 0 C0FC    SRTR2 LD    INTE          3AD01620
0079 0 D092    STO        12          INTERRUPT VECTOR 3AD01630
007A 0 C0E8    LD         COUNT-1    INITIALIZE LOADER 3AD01640
007B 0 D0D4    STO        /0050      RETURN POINT 3AD01650
007C 0 C0F9    LD         WC2         3AD01660
007D 0 D091    STO        INPUT-1    WORD COUNT 3AD01670
*              *              *              3AD01680
*              *              *              3AD01690
*              *              *              3AD01700
*              *              *              3AD01710
*              *              *              3AD01720
*              *              *              3AD01730
*              *              *              3AD01740
007E 0 08E9    SRTR3 XIO   REST2-1    SENSE DSW 3AD01750
007F 0 4804    BSC        E          SKIP IF READY 3AD01760
0080 0 7001    MDX        *%1        3AD01770
0081 0 7002    MDX        *%2        3AD01780
0082 0 30F8    WAIT      -8          NOT READY 3AD01790
0083 0 70FA    MDX        *-6        LOOP 3AD01800
*              *              *              3AD01810
0084 0 08E1    XIO        STRD2      INITIATE READ 3AD01820
0085 0 4878    BOSC       &-Z        UNCOND LEAVE INTERRUPT 3AD01830
0086 0 0000    INT4 DC    *-*        INTERRUPT ENTRY 3AD01840
0087 0 08E0    XIO        REST2-1    SENSE RESET 3AD01850
0088 0 F0EE    EDR        K0003      CHECK FOR CHANGES 3AD01860
0089 0 4848    BOSC       &         SKIP IF ANY CHANGE 3AD01870
008A 0 70FC    MDX        *-4        LOOP TIL OP COMP 3AD01880
*              *              *              3AD01890
008B 0 08DC    XIO        REST2-1    SENSE DSW 3AD01900
008C 0 1002    SLA        2          3AD01910
008D 0 4810    BSC        -         SKIP IF ERROR 3AD01920
008E 0 7002    MDX        CDDK       BR ON NO ERROR 3AD01930
008F 0 30F5    WAIT      -11        2501 READ ERROR 3AD01940
0090 0 607E    LDX        SRTR3     RETRY 3AD01950
*              *              *              3AD01960
*              *              *              3AD01970
*              *              *              3AD01980
*              *              *              3AD01990
*              *              *              3AD02000
0091 0 1010    CDDK SLA    16          3AD02010
0092 0 D0D5    STO        CKSUM      CLEAR CHECKSUM 3AD02020
0093 0 C0D9    LD         COL1       SET UP 3AD02030
0094 0 D0D9    STO        INCOL      INPUT AREA 3AD02040
0095 0 80D6    A         ONE2        ADDRESSES 3AD02050
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0096 0 D0D8    STO        INCOL&1    3AD02060
*              *              *              3AD02070
0097 0 C480 006E CSLD LD I INCOL      LOAD FIRST HALF WD 3AD02080
0099 0 1808    SRA        8          SHIFT 3AD02090
009A 0 F480 006F EOR I INCOL&1    COMBINE SECONE HALF 3AD02100
009C 0 80CB    A         CKSUM      ADD TO CHECKSUM 3AD02110
009D 0 D0CA    STO        CKSUM      STORE RESULT 3AD02120
*              *              *              3AD02130
009E 0 C0CF    LD         INCOL      * 3AD02140
009F 0 80D4    A         TWO        INCREMENT 3AD02150
00A0 0 D0CD    STO        INCOL      INPUT AREA 3AD02160
00A1 0 80CA    A         ONE2        ADDRESSES 3AD02170
00A2 0 D0CC    STO        INCOL&1    * 3AD02180
00A3 0 F0CE    EOR        COL78     CHECK FOR LAST COL 3AD02190
00A4 0 4820    BSC        Z          SKIP IF LAST COL 3AD02200
00A5 0 70F1    MDX        CSLD      CONTINUE 3AD02210
*              *              *              3AD02220
00A6 0 C0C1    LD         CKSUM      CHECK FOR VALID CHECKSUM 3AD02230
00A7 0 4820    BSC        Z          SHIP IF OK 3AD02240
00A8 0 7001    MDX        *%1        3AD02250
00A9 0 7002    MDX        CSOK       BR TO MOVE ROUTINE 3AD02260
00AA 0 30F7    WAIT      -9         CHECKSUM ERROR 3AD02270
00AB 0 70E5    MDX        CDDK      RETRY CHECKSUM 3AD02280
*              *              *              3AD02290
*              *              *              3AD02300
*              *              *              3AD02310
*              *              *              3AD02320
*              *              *              3AD02330
*              *              *              3AD02340
*              *              *              3AD02350
*              *              *              3AD02360
*              *              *              3AD02370
00AC 0 C0C0    CSOK LD     COL1      SET 3AD02380
00AD 0 D0C0    STO        INCOL      INPUT AREA 3AD02390
00AE 0 80BD    A         ONE2        ADDRESSES 3AD02400
00AF 0 D0BF    STO        INCOL&1    3AD02410
*              *              *              3AD02420
0080 0 C0A9    LD         INAD       SET 3AD02430
0081 0 1808    SRA        8          CURRENT CORE 3AD02440
0082 0 F0A8    EOR        INAD1     LOCATION 3AD02450
0083 0 D0BC    STO        ADDR      FROM CARD 3AD02460
*              *              *              3AD02470
0084 0 C0A3    LD         INWC       SET NUMBER 3AD02480
0085 0 1808    SRA        8          OF WORDS 3AD02490
0086 0 F0A2    EOR        INWC1     TO BE MOVED 3AD02500
0087 0 D0B9    STO        WDCNT      3AD02510
0088 0 C480 006E MVLD LD I INCOL      LOAD AND 3AD02520
008A 0 1808    SRA        8          PACK 3AD02530
008B 0 F480 006F EOR I INCOL&1    THE WORD 3AD02540
008D 0 D480 0070 STO I ADDR      STO AT CURRENT ADDRESS 3AD02550
008F 0 F480 0070 EOR I ADDR      COMPARE TO ACC 3AD02560
00C1 0 4820    BSC        Z          SKIP IF MOVE OK 3AD02570
00C2 0 7001    MDX        *%1        ERROR 3AD02580
00C3 0 7002    MDX        MVOK       3AD02590
00C4 0 30FC    WAIT      -4         MOVE ERROR 3AD02600
00C5 0 70F2    MDX        MVLD      RETRY MOVE 3AD02610
*              *              *              3AD02620
00C6 0 C0AA    MVOK LD     WDCNT     CHECK IF ALL WORDS 3AD02630
00C7 0 80AB    A         NONE        MOVED 3AD02640
00C8 0 D0A8    STO        WDCNT     DECREMENTED WORD COUNT 3AD02650
00C9 0 4820    BSC        Z          SKIP IF LAST WORD 3AD02660
00CA 0 7008    MDX        MVIN      BR TO INCR ADDR AND CONT 3AD02670
*              *              *              3AD02680
*              *              *              3AD02690
*              *              *              3AD02700
*              *              *              3AD02710
*              *              *              3AD02720
*              *              *              3AD02730
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*
00CB 0 C0A4      LD      ADDR      CHECK FOR LAST CARD
00CC 0 1806      SRA      6          ADDR LESS THAN 40
00CD 0 4820      BSC      Z          SKIP IF LAST CARD
00CE 0 70AF      MDX      SRTR3     BR TO READ NEXT CARD
00CF 0 C093      LD      COUNT-1    INITIALIZE LOADER
00D0 0 D400 0050 STO L /0050    RETURN POINT
00D2 0 6004      LDX      /0004     BR TO BEGIN PROGRAM

*
00D3 0 C09A      MVIN   LD      INCOL    INCREMENT
00D4 0 809F      A       TWO          INPUT AREA
00D5 0 D098      STO     INCOL    ADDRESSES
00D6 0 8095      A       ONE2
00D7 0 D097      STO     INCOL&1

*
00D8 0 C097      LD      ADDR      INCREMENT
00D9 0 8092      A       ONE2     CURRENT
00DA 0 D095      STO     ADDR     STORE ADDRESS
00DB 0 70DC      MDX     MVL D     BR TO MOVE NEXT WORD
00DC 0 0000      END     0
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
    
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3AD02740
3AD02750
3AD02760
3AD02770
3AD02780
3AD02790
3AD02800
3AD02810
3AD02820
3AD02830
3AD02840
3AD02850
3AD02860
3AD02870
3AD02880
3AD02890
3AD02900
3AD02910
3AD02920
3AD02930
    
```

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C R D S S R E F E R E N C E
NAME VALUE REFERENCES
ADDR 0070 00B3,00BD,00BF,00CB,00D8,00DA
CARD2 0050 0049
CDCNT 006A
CDOK 0091 008E,00AB
CHKSM 002E 001C,001E,0025
CKSUM 0068 0092,009C,009D,00A6
COL1 006D 0093,00AC
COL78 0072 00A3
CON1 002F 0022
COUNT 0064 005D,005F,007A,00CF
CSLD 0097 00A5
CSOK 00AC 00A9
ENDCK 0028
END1 0049
EOR 003A 0006,0007,0010,0040
INAD 005A 00B0
INAD1 005B 00B2
INCOL 006E 0094,0096,0097,009A,009E,00A0,00A2,00AD,00AF,00B8,00BB,00D3,00D5,00D7
INPUT 0010 0066,006B,0072,007D
INT 0031 000C
INTE 0075 0078
INT4 0086 0075
INWC 0058 00B4
INWC1 0059 00B6
IPACK 006B
K0003 0077 0088
K0004 0065 0060
K0800 0029
K4001 002B 0009,0016
LAST 002C 0014,0015,0046,005B,005C
MVIN 00D3 00CA
MVL D 00B8 00C5,00DB
MVOK 00C6 00C3
NONE 0073 00C7
ONE 0030 000F,0012,0020,003F,0041,0044,005E
ONE2 006C 0095,00A1,00AE,00D6,00D9
PACK 0037 0000,0002,0003,0013,0032,003E,0042,0048
RDIN 0050
RESET 002D 000A,0018,0034
REST2 0069 007E,0087,008B
SRTRD 0033 0028,0036,0062
SRTR2 0078 0063
SRTR3 007E 0090,00CE
START 0000
STO 003C 0004,0005,0011,0043,0045
STOWC 0051 0056,0058
STRD 002A 000E,0019,0033,0053,0055
STRD2 0066 0084
STRT 001C 001F,0021,0024,002F
TWO 0074 009F,00D4
WC 004F 001B,0050,0051,0054,0057,0059
WC2 0076 007C
WDCNT 0071 00B7,00C6,00C8
    
```

END OF ASSEMBLY

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