

8CU10B
7080 CPU ERROR DETECTION TEST
WITH OPTIONAL CHANNEL OVERLAP

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8CU10

A. PURPOSE

8CU10 is an error detection diagnostic program to indicate failures in any circuit that can be reached by an ALU instruction given in either the 7080 or 705 III modes.

A four channel interrupt program is included in 8CU10 and can be used at the option of the operator to test ALU circuits associated with channel operation.

8CU10 is not meant to test all areas of channel operation alone, the non-stop feature, or variations in ALU instructions when either the 705 I/II or 40K switches are on.

B. METHOD

8CU10 is made up of 455 "ROUTINES", each of which is intended to test a small portion of the machine. These routines are sequentially numbered and arranged in order of increasing complexity of machine operation.

Each routine is a small independent program in itself which is contained on one or less pages of the program listings. Some pages contain 2 or 3 routines per page along with the constants and data associated with each routine.

A general picture of what is in 8CU10 may be obtained by referring to the index located at the end of this write-up starting with page x. The index lists and briefly describes all routines and other parts of 8CU10. General descriptions of the parts of 8CU10 are as follows:

1. INITIAL HOUSEKEEPING (refer to first page of the program listings)

When the program is initially loaded into memory, the following things happen:

- a. Typeout the settings for check switches.
- b. Reset all channels and interrupt triggers.
- c. Leave interrupt mode.
- d. Reset all ALU check triggers.
- e. Leave 7080 mode and transfer to Routine #001.

2. ROUTINES

Each routine can be considered as having four parts:

- a. Housekeeping instructions to set up fields and initial conditions.
- b. Testing instructions to check a particular circuit, a group of circuits or the instruction itself.
- c. Instructions to check results of the test.
- d. A group of seven instructions to indicate errors by typeout, to halt on error, to bypass both error typeouts and halts, and to repeat the routine if desired.

This group of seven instructions is the last part of each and every Routine and is labeled in the program listings as "ERROR ROUTINE."

3. ERROR SUB-ROUTINE (refer to second page of the program listings)

At location 00204 is an error sub-routine to verify that all ALU check triggers are off at selected points in a program pass. If a check trigger is found on at this time, a typeout will identify it.

Entry to this sub-routine is made by the instructions:

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RECEIVE                                RCV      0306
TRANSFER STORE LOCATION TR      01 0204
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These instructions are given at points in-between the routines. To leave the error sub-routine, a transfer is made to the location following the TR 01 instruction.

4. PASS COUNTER, 914 and 916 SWITCHES

At the end of a program pass, the following things happen:

- a. A counter is increased by 1, and when the number of passes reaches 100, a "Z" is typed out to indicate that the program is running properly.
- b. The 914 switch is interrogated and if it is on, the program will continue looping. If the 914 switch is off, all channels are reset and a transfer is made to location 18219 to call in the next program from tape.
- c. The 916 switch is interrogated and if it is on, channels will be started. If the 916 switch is off, channels will be reset, and a transfer is made to routine #001 to start another pass.

There are four program switches which are set at this point. If the 916 switch is on, the switches are set to transfer, and if the 916 switch is off, the switches are set to NOP. One of the four switches immediately follows the 916 switch to allow an initial TIP to start each channel. The other three switches at the beginning of routines #340, #419, and #446 will bypass a total of 61 routines that use instructions that would interfere with channel operation or vice-versa.

5. CHANNEL INTERRUPT PROGRAM

Each of channels 20, 21, 22, and 23 has a similar interrupt program to write a record, backspace, and read the record. The write field is a 200 character block that is repeated 10 times to obtain a total field of 2000 characters. The write field is used for all channels, however each channel has a separate read area.

Checks are made for false interrupts, channel checks and bad characters in the read field. In checking the read field, 200 known characters are compared versus the read field at a time. After each compare the 901 trigger and the equal condition are checked and the compare is repeated for the next 200 characters. A total of 10 compares is done to reach the end of the read field.

Channel operation will use the first ready tape drive available on an address of #1 through #9. Tape #0 is avoided since it may contain the input program tape. If the tape on a particular channel reaches end of file, it is rewound and the next ready tape is used. If no other tapes are available, than the program will idle in a program loop until rewind is finished, and then channel operation will continue.

Channel operation is strictly optional in 8CU10. Channels that are not ready will be ignored. When starting operation, the operator must visually verify that all desired channels are in motion.

C. AREA OF MACHINE REQUIRED

1. UNITS

7080 CPU with 80K or 160K memory.

7621 Tape Control is optional.

729 II or 729 IV Tape Units are optional.

Tape address must be #1 through #9 on each channel.

Set tape unit on either hi or lo density. Hi density is preferred.

2. MEMORY LOCATIONS

00000 - 00125	Initial Housekeeping
00200 - 00397	Error Sub-Routine
00400 - 18141	Routines #001 through #195 (no forced errors)
18200 - 18799	Reserved for load programs.
18800 - 37298	Routines #196 through #378 (no forced errors)
37290 - 52604	Routines #390 through #484 (All forced errors)
52605 - 53799	Routines #485 through #489 (no forced errors)
53800 - 54054	Pass Counter, 914 switch, 916 switch
54055 - 70084	4 Channel Interrupt Programs
70085 - 79499	Unused
79500 - 79999	Work Area

D. LOADING PROCEDURE

Card input is from the 714 card reader using the load program 8LD01 with 00 transfer card 8TR02 following the 8CU10 program deck.

Tape input is from:

1. A card image tape created off line with 8LD02 load cards.
2. A program input tape as generated by 8TR06.

E. PROGRAM CONTROL

1. ALTERATION SWITCHES

911 switch on - Bypass Error Typeouts and Halts
 912 switch on - Repeat Routine
 913 switch on - Halt on Error
 914 switch on - Repeat Program
 If the 914 switch is off, a transfer is made to location 18219 to call in the next diagnostic program from tape.

915 switch on - Bypass All Forced Error Routines
 916 switch on - Start Channels
 If the 916 switch is off, all channels are reset.

2. OTHER SWITCHES

705 I/II switch OFF
 40K switch OFF
 I/O Interpret switch OFF
 Non-Stop switch OFF
 Normally, All Check Switches to PROGRAM.
 If the 915 alteration switch is on to bypass forced errors, check switches can be put on CHECK-STOP.

3. PROGRAM LISTINGS

The 314 pages of program listings of 8CU10 are in what is called "flow-chart" form. Instructions are grouped together inside blocks as an aid to understanding what is being done in each Routine. Transfer type instructions have lines to show where each transfer is going to. When the transfer goes to another page, it is tagged with the page number and one or two alphabetic characters. For example, on the bottom of the first page of the listings, a transfer goes to A on page 03. Over on page 03 is an input line which is labeled A01 to show where the input transfer came from.

4. CHECK TRIGGER FAILURES

Locating the source of a 901 or other check can best be done as follows:

First, throw the 915 switch on to bypass all forced errors. If the check is still occurring, put all check switches on "Check-Stop." When the check occurs, IC will then be plus 5 from the instruction causing the error.

If the indication disappears with the 915 switch on, turn the 915 switch off, leave the check switches in "Program" and half-step the routine prior to the IC value given in the check identification typeout.

5. ROUTINE FAILURES

When errors are occurring, throw the 913 switch on to stop on each error. If possible, continue the program by starting after each error halt and obtain a set of the routine numbers that are failing. Reference to the Routine Index on pages x through xxiii may then yield some information as to the nature of the failures. On one of the error halts, throw the 912 switch on to repeat the routine. Generally, the first failing routine should be used, however if there are additional failing routines, refer to the program listings and take the easiest routine. With the 912 switch on. START, and make sure that the failure will repeat. Then use half-step to go through the routine and locate the failing instruction. The 911 switch can then be thrown on to bypass both error typeouts and halts when using a scope.

6. MANUAL OPERATIONS

A RESET-START operation may cause a once-only failure because of the creating of redundant characters in forced error Routines that were not corrected because of the RESET. If the program has been stopped at an IC location of from 37294 to 52579, half-step through the Routine before doing a RESET.

Routines or whole groups of Routines may be bypassed by storing appropriate transfers at the end of a Routine. When storing a transfer, and if channels are going to be used, do not cause a transfer into the area which is bypassed during Channel operation. This area is Routines #340 to #378, #419 to #435, and #446 to #450.

F. NORMAL HALTS

HLT 1111

This halt is for the purpose of setting up switches when the program is loaded. It will also occur when RESET-START is used. START to continue the program.

G. ERROR HALTS

HLT 400

This is one example of a halt on routine failure. The halt address matches the routine number. This halt will occur only if the 913 switch is on, and will be bypassed if the 911 switch is on. This halt is preceded by a typeout of the routine number.

HLT 2X00

This halt occurs on an error in the channel interrupt program. "X" will be 0, 1, 2 or 3 to designate the channel. This halt will occur only if the 913 switch is on, and will be bypassed if the 911 switch is on. This halt will be preceded by a typeout to identify the channel operation failure.

H. NORMAL TYPEOUTS

900, 1, 2, 3, 4, 5 to PROGRAM

This typeout occurs when the program is loaded, or restarted after RESET. It gives the check-switch set-up.

Z

This typeout occurs every 27 seconds to indicate that the program has completed 100 good passes.

I. ERROR TYPEOUTS

302

400C

451S

These are examples of the error typeouts that occur on routine failure.

Routine #302 is not a forced error routine.

Routine #400 is a forced error routine intended to test a Check circuit.

Routine #451 is a forced error routine intended to test a check Suppression circuit.

Typeouts like these will be bypassed if the 911 switch is on. A halt of the same number follows each such typeout if the 913 switch is on.

901 CHK PRIOR TO IC - 38879

This typeout originates in the Error Sub-Routine if a check trigger is found on when it should be off. Instead of 901, the typeout might also indicate 900, 902, 903, 904, 905 or ART check triggers.

This particular example is for a failure which turned on the 901 check in Routine #400 which is just prior to location 38879.

INT 200 AFTER WR AND NOT RDY
INT 200 AFTER BSP AND NOT RDY
INT 200 AFTER RD AND NOT RDY

These typeouts result from a not ready condition after interrupt has occurred into a channel interrupt program. At the completion of a WR, BSP or RD operation, the channel should be ready.

Channels 21, 22 and 23 have a similar set of three typeouts. All typeouts will be bypassed if the 911 switch is on and an error halt will follow each typeout if the 913 switch is on.

CHAN CHK ON WR 2001
CHAN CHK ON RD 2001

These typeouts result from a channel check being on at the time that interrupt occurs after completion of a WR or RD operation on tape #2001.

Channels 21, 22 and 23 have a similar pair of typeouts. All these typeouts identify the tape address. The 911 switch will bypass these typeouts if desired. An error halt follows each typeout if the 913 switch is on.

WR-RD DATA UNEQUAL 2001

This typeout originates in each channel interrupt program. After a Read operation is completed, the read field is compared against the write data in blocks of 200 characters at a time. Anytime the comparison is not equal or the 901 check trigger is found to be on, the typeout results. This typeout can be bypassed if the 911 switch is on. An error halt follows this typeout if the 913 switch is on.

INDEX OF ROUTINES PAGE 1

THIS INDEX LISTS ALL ROUTINES AND THEIR INTENDED FUNCTIONS. ALSO INCLUDED IN THIS INDEX ARE ALL OTHER SIGNIFICANT PARTS OF 8CU10 SUCH AS BYPASS SWITCHES AND CHANNEL INTERRUPT PROGRAMS.

INITIAL TYPEOUT FOR SWITCH SETTINGS, RESET ALL CHANNELS AND TURN OFF ALL ALU CHECK TRIGGERS. GO TO ROUTINE # 001

ERROR ROUTINE FOR MONITORING OF ALU CHECK TRIGGERS. THIS SUB-ROUTINE IS USED AT VARIOUS POINTS IN THE PROGRAM TO INDICATE FALSE TURN ON OF A CHECK TRIGGER. THE FIRST ENTRY TO THE SUB-ROUTINE IS AFTER THE COMPLETION OF ROUTINE # 104. ON ERROR, THE SUB-ROUTINE WILL TYPEOUT AND CONTINUE WITHOUT STOPPING. TO STOP ON ERROR, STORE A J AT LOCATION 0340 AND TURN THE 913 SWITCH ON.

#001 EXECUTE EEM, CNO AND TRS INSTRUCTIONS. TEST FOR NO 900 CHECK. THIS ROUTINE HAS HALF-STEP PROVISION FOR SETTING ALL ORDERS OF MAC-1 AND IAR

#002 EXECUTE LEM, NOP AND SEL INSTRUCTIONS. TEST FOR NO 900 CHECK. THIS ROUTINE HAS HALF-STEP PROVISION FOR SETTING ALL ORDERS OF SSR AND SR.

#003 EXECUTE RCV AND SPC INSTRUCTIONS. TEST FOR NO 900 CHECK. THIS ROUTINE HAS HALF-STEP PROVISION FOR SETTING ALL ORDERS OF MAC-2, SPC AND SAC

#004 TURN OFF ALL ALU CHECK TRIGGERS AND THEN TEST FOR PHONY TRIGGER TURN ON OR FALSE TRANSFERS.

#005 EXECUTE TZB 00 AND TZB 15 ON A GROUP MARK. TEST FOR NO FALSE TRANSFER ON TZB, NO 900 CHECK AND NO 901 CHECK.

#006 DO RCV-TZB TO PLACE BA8421 BITS IN MBR CHAR. 0. TEST ALL BITS

#007 DO RCV-TZB TO PLACE BA8421 BITS IN MBR CHAR. 1. TEST ALL BITS

#008 DO RCV-TZB TO PLACE BA8421 BITS IN MBR CHAR. 2. TEST ALL BITS

#009 DO RCV-TZB TO PLACE BA8421 BITS IN MBR CHAR. 3. TEST ALL BITS

#010 DO RCV-TZB TO PLACE BA8421 BITS IN MBR CHAR. 4. TEST ALL BITS

#011 EXECUTE SB 00 AND SB 15 ON AN X. TEST FOR NO 900 CHECK.

#012 DO SB 02 ON 1 BIT IN MBR CHAR. 0 TO TEST ADDER 1 BIT. MBR EQUALS 11111

#013 DO SB 01 ON 2 BIT IN MBR CHAR. 0 TO TEST ADDER 2 BIT. MBR EQUALS 22222

#014 DO SB 01 ON 4 BIT IN MBR CHAR. 0 TO TEST ADDER 4 BIT. MBR EQUALS 44444

#015 DO SB 01 ON 8 BIT IN MBR CHAR. 0 TO TEST ADDER 8 BIT. MBR EQUALS 88888

#016 DO SB 01 ON BLANK IN MBR CHAR. 0 TO TEST EMIT A BIT. 5 BLANKS IN MBR

#017 DO SB 01 ON DASH IN MBR CHAR. 0 TO TEST EMIT B BIT. 5 DASHES IN MBR

#018 DO SB 01 FOLLOWED BY SB 09 ON A 5 TO TEST SUP 1 BIT AND 1 TO AD.

#019 DO SB 02 FOLLOWED BY SB 10 ON A 0 TO TEST SUP 2 BIT AND 2 TO AD.

#020 DO SB 03 FOLLOWED BY SB 11 ON A 6 TO TEST SUP 4 BIT AND 4 TO AD.

#021 DO SB 04 FOLLOWED BY SB 12 ON A 9 TO TEST SUP 8 BIT AND 8 TO AD.

#022 DO SB 09 ON A # TO TEST SUP AD CARRY ROUTING.

#023 USE SB 09 TO TEST MBR CHAR. 0 FOR BIT PICKS OR DROPS. MBR EQUALS 7HHHH

#024 USE SB 12 TO TEST MBR CHAR. 0 FOR BIT PICKS OR DROPS. MBR EQUALS H7777

#025 USE SB 09 TO TEST MBR CHAR. 1 FOR BIT PICKS OR DROPS. MBR EQUALS H7HHH

#026 USE SB 12 TO TEST MBR CHAR. 1 FOR BIT PICKS OR DROPS. MBR EQUALS 7H777

#027 USE SB 09 TO TEST MBR CHAR. 2 FOR BIT PICKS OR DROPS. MBR EQUALS HH7HH

#028 USE SB 12 TO TEST MBR CHAR. 2 FOR BIT PICKS OR DROPS. MBR EQUALS 77H77

#029 USE SB 09 TO TEST MBR CHAR. 3 FOR BIT PICKS OR DROPS. MBR EQUALS HHH7H

#030 USE SB 12 TO TEST MBR CHAR. 3 FOR BIT PICKS OR DROPS. MBR EQUALS 777H7

#031 USE SB 09 TO TEST MBR CHAR. 4 FOR BIT PICKS OR DROPS. MBR EQUALS HHHH7

#032 USE SB 12 TO TEST MBR CHAR. 4 FOR BIT PICKS OR DROPS. MBR EQUALS 7777H

#033 EXECUTE SGN, RAD, TRZ AND TRP. TEST FOR NO 900 CHECK AND FOR RAD RESULT OF ZERO AND PLUS.

#034 TEST RAD FOR TF ACC DZT AND SET SIGN PLUS. RAD PLUS 1.

#035 TEST RAD FOR TF ACC DZT AND SET SIGN MINUS. RAD MINUS 1.

#036 EXECUTE RSU ON A MINUS 1. TEST FOR NO 900 CHECK, NOT ZERO AND PLUS.

#037 EXECUTE ADD ZERO TO ZERO. TEST FOR NO 900 CHECK AND ZERO RESULT.

#038 EXECUTE SUB PLUS 1 FROM PLUS 1. TEST FOR NO 900 CHECK AND ZERO RESULT.

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#039 TEST ADD, SUB AND DIGIT ADDER. ADD &1 TO &1, SUB &2 FROM &2.
#040 TEST ADD, SUB AND DIGIT ADDER. ADD -0 TO -1, SUB -1 FROM -1.
#041 TEST ADD, SUB AND DIGIT ADDER. SUB &0 FROM -1, ADD &1 TO -1.
#042 TEST ADD, SUB AND DIGIT ADDER. SUB -0 FROM &1, ADD -1 TO &1.
#043 USE ADD-SUB TO TEST DIG AD. ADD &0 TO &8, SUB &8 FROM &8.
#044 USE ADD-SUB TO TEST DIG AD. ADD &4 TO &4, SUB &8 FROM &8.
#045 USE ADD-SUB TO TEST DIG AD. ADD &2 TO &2, &4, &6, SUB &8 FROM &8.
#046 USE ADD-SUB TO TEST DIG AD. ADD &1 TO &1,2,3,4,5,6,7, SUB &8 FROM &8.
#047 USE ADD-SUB TO TEST DIG AD. ADD &3 TO &3, SUB &6 FROM &6.
#048 USE ADD-SUB TO TEST DIG AD. SUB &2 FROM &1, ADD &1 TO -1.

#049 TEST SUB TC 2. SUB &0 FROM &1, RECOMP ON 9 TO GET 0.
#050 TEST SUB TC 2. SUB &1 FROM &8, RECOMP ON 3 TO GET 7.

#051 USE ADD-SUB TO TEST DIG AD CARRY. ADD &6 TO &6, SUB &12 FROM &12.
#052 TEST ADD WITH STORAGE GREATER THAN MEMORY. ADD &1 TO &10.
#053 TEST SUB WITH MEMORY GREATER THAN STORAGE. SUB &001 FROM &2.

#054 USE ADD-SUB TO TEST DEC. CORRECTION. ADD &8 TO &8, SUB &16 FROM &16.
#055 USE ADD-SUB TO TEST DEC. CORRECTION. ADD &9 TO &07, SUB &16 FROM &16.
#056 USE ADD-SUB TO TEST DEC. CORRECTION. ADD &08 TO & 04, SUB &6 TWICE.

#057 USE RAD TO TEST TN ASU DZT AND TF ASU SIGN TRIGGERS.
#058 USE RAD TO TEST TF ASU DZT AND TF ASU SIGN TRIGGERS.
#059 USE RAD TO TEST TF ASU DZT AND TN ASU SIGN TRIGGERS.
#060 USE SUB TO TEST TF ASU DZT AND TN ASU SIGN TRIGGERS.

#061 USE RAD TO TEST FOR FALSE TN OR TF OF DZT AND SIGN TRIGGERS
#062 USE RAD AND ADD TO TEST FOR FALSE TN OR TF OF ACC DZT.
#063 EXECUTE CMP 0 VERSUS 0. TEST FOR NO 900 CHECK, NOT HI AND EQUAL.
#064 TEST CMP 2 VERSUS 1 FOR NOT EQUAL AND HI.
#065 TEST CMP 1 VERSUS A FOR NOT EQUAL AND HI.
#066 TEST CMP 19 VERSUS 20 FOR NOT HI, NOT EQUAL AND LO.
#067 EXECUTE SET 0000. TEST FOR NO 900 CHECK, ZERO AND PLUS.
#068 TEST CMP WITH STORAGE LENGTH ZERO FOR EQUAL.
#069 TEST SET 0002 ACROSS STORAGE MARK. CMP STORAGE RESULT 00.
#070 TEST SET 0001 ACROSS 1. CMP STORAGE RESULT 1 AND TEST DZT OFF.
#071 TEST SET 0002 ACROSS 00 FOR TN DZT.
#072 TEST SET 0001 ACROSS AMPERSAND. CMP STORAGE RESULT FOR AMPERSAND.

#073 EXECUTE LOD AND TEST FOR NO 900 CHECK.
#074 TEST LOD FOR TN DZT. LOD A SINGLE ZERO AND TRZ.
#075 TEST LOD FOR SET SIGN PLUS. LOD J AND TEST PLUS.
#076 TEST LOD FOR TF DZT. LOD 1 AND CHECK DZT OFF.
#077 TEST LOD FOR TF DZT. LOD - AND CHECK DZT OFF.

#078 TEST LOD AND CMP. LOD 1 AND CMP EQUAL.
#079 TEST LOD AND CMP. LOD 12, CMP VERSUS 11 AND TEST HI, THEN CMP EQUAL.

#080 TEST LOD,CMP AND ADDER. LOD A, CMP VERSUS 1 AND CHECK LO.
#081 TEST LOD,CMP AND ADDER. LOD J, CMP VERSUS 1 AND CHECK LO.
#082 TEST LOD,CMP AND ADDER. LOD S, CMP VERSUS 2 AND CHECK LO.
#083 TEST LOD,CMP AND ADDER. LOD B, CMP VERSUS S AND CHECK LO.
#084 TEST LOD,CMP AND ADDER. LOD A, CMP VERSUS J AND CHECK LO.
#085 TEST LOD,CMP AND ADDER. LOD J, CMP VERSUS A AND CHECK HI.
#086 TEST LOD,CMP AND ADDER. LOD S, CMP VERSUS K AND CHECK HI.
#087 TEST LOD,CMP AND ADDER. LOD S, CMP VERSUS B AND CHECK HI.

#088 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD AMP, CMP VERSUS BL FOR HI.
#089 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD AMP, CMP VERSUS # FOR HI.
#090 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD L, CMP VERSUS $ FOR HI.
#091 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD BL, CMP VERSUS AMP FOR LO.
#092 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD #, CMP VERSUS AMP FOR LO.
#093 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD %, CMP VERSUS U FOR LO.
#094 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD AND CMP / FOR EQUAL.
#095 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD AND CMP BL FOR EQUAL.
#096 TEST LOD,CMP AND MBR,SBR RECOGNITION. LOD AND CMP * FOR EQUAL.

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- #097 EXECUTE UNL AND TEST FOR NO 900 CHECK.
- #098 TEST UNL INSTRUCTION. UNL 3
 #099 TEST UNL INSTRUCTION. UNL AMPERSAND
 #100 TEST UNL INSTRUCTION. UNL □
 #101 TEST UNL INSTRUCTION. UNL PZ
- #102 TEST TSL INSTRUCTION. STORE IC VALUE 6669
 #103 TEST TSL INSTRUCTION. STORE IC VALUE 19984
 #104 TEST TSL INSTRUCTION. STORE IC VALUE 159694 IN 7080 MODE.
 AFTER ROUTINE #104 USE THE ERROR SUB-ROUTINE FOR THE FIRST TIME.
- #105 TEST MEMORY RD MODE ON LOOK AHEAD. LOD 3456 FROM MBR CHAR 1
 INTO SBR CHAR 0 AND COMPARE THE STORAGE RESULT.
- #106 TEST MEMORY RD MODE ON INITIAL ADDRESS 0/5. LOD 12345 FROM MBR CHAR 0
 INTO SBR CHAR 0 AND COMPARE THE STORAGE RESULT.
- #107 TEST MEMORY RD-WR MODE ON LOOK AHEAD. UNL 23456 FROM SBR CHAR 0
 TO MBR CHAR 1 AND COMPARE THE MEMORY RESULT.
- #108 TEST MEMORY RD-WR MODE ON INITIAL ADDRESS 0/5. UNL 12345 FROM SBR
 CHAR 0 TO MBR CHAR 0 AND COMPARE THE MEMORY RESULT.
- #109 TEST STORAGE MODES FOR LOOK AHEAD. LOD 1076 FROM MBR CHAR 4 INTO
 SBR CHAR 6 AND COMPARE THE STORAGE RESULT.
- #110 TEST STORAGE MODES ON INITIAL SBR LOCATION 7. LOD 2107 FROM MBR
 CHAR 4 INTO SBR CHAR 7 AND COMPARE STORAGE RESULT.
- #111 USE LOD AND CMP TO TEST STORAGE AND MEMORY MODES TOGETHER ON LOOK
 AHEAD. LOD MBR CHAR 2,1,1 INTO SBR CHAR 6,6,5 RESPECTIVELY.
- #112 USE LOD AND CMP TO TEST STORAGE AND MEMORY MODES TOGETHER ON LOOK
 AHEAD. LOD MBR CHAR 0,0,1 INTO SBR CHAR 6,7,7 RESPECTIVELY.
- #113 USE UNL AND CMP TO TEST STORAGE AND MEMORY MODES TOGETHER ON LOOK
 AHEAD. UNL SBR CHAR 5,6,6 INTO MBR CHAR 1,1,2 RESPECTIVELY.
- #114 USE UNL AND CMP TO TEST STORAGE AND MEMORY MODES TOGETHER ON LOOK
 AHEAD. UNL SBR CHAR 6,7,7 INTO MBR CHAR 0,0,1 RESPECTIVELY.
 FOLLOWING #114, USE THE ERROR SUB-ROUTINE.
- #115 USE LOD AND CMP TO TEST ALL SBR FOR BIT PICK OR DROP. LOD 70H70H70H7
 #116 USE LOD AND CMP TO TEST ALL SBR FOR BIT PICK OR DROP. LOD H70H70H70H
 #117 USE LOD AND CMP TO TEST ALL SBR FOR BIT PICK OR DROP. LOD 0H70H70H70
- #118 USE UNL,CMP TO TEST BIT PATHS IN THE ALU TO MEM SWITCH. UNL 0H70H70H7
 #119 USE UNL,CMP TO TEST BIT PATHS IN THE ALU TO MEM SWITCH. UNL 70H70H70H
 #120 USE UNL,CMP TO TEST BIT PATHS IN THE ALU TO MEM SWITCH. UNL H70H70H70
 FOLLOWING #120, USE THE ERROR SUB-ROUTINE.
- #121 EXECUTE SHR 0000. TEST FOR NO 900 CHECK AND DZT ON.
- #122 TEST SHR 0000 FOR TF DZT AND SIGN UNCHANGED.
 #123 TEST SHR 0001 ON STORAGE EQUAL MINUS 1. CHECK DZT ON AND SIGN PLUS.
 #124 TEST SHR 0001 ON STORAGE EQUAL MINUS 001. CHECK DZT ON AND SIGN PLUS.
 #125 TEST SHR 0001 ON FIELD OF MINUS 101. CHECK RESULT OF MINUS 10.
- #126 EXECUTE LNG 0000. TEST FOR NO 900 CHECK.
- #127 TEST LNG 0001 ON 1 IN STORAGE AND CHECK RESULT OF 10.
 #128 TEST LNG 0001 ON 1 IN STORAGE WITH 2 AT RIGHT OF SPC. TEST RESULT 10.
 #129 TEST LNG 0002 ACROSS BOUNDARY. TEST FOR STORAGE MARK ON RIGHT END.
- #130 TEST SPC 1,2 AND 4 TRIGGERS USING SPC 0000, SET AND CMP INSTRUCTIONS.
 #131 TEST SPC 8 AND 16 TRIGGERS USING SPC 0000, SET AND CMP INSTRUCTIONS.
 #132 TEST SPC 32, 64 AND 128 TRIGGERS. USE SPC 0000, LNG, LOD AND CMP.
- #133 TEST SAC AND SPC STEP &1 USING SHR INSTRUCTION.
 #134 TEST SAC AND SPC STEP -1 USING LNG AND SHR INSTRUCTIONS.
- #135 TEST SSR TO SAC ROUTINGS FOR ASU 01 TO 08
 #136 TEST SSR TO SAC ROUTINGS FOR ASU 09 TO 15
- #137-#149 ROUTINE NUMBERS ARE NOT USED. NEXT ROUTINE IS #150

#150 TEST SB 05 AND SB 13. SB 05 ON X, SB 13 ON 7 AND CMP BOTH RESULTS.
 #151 TEST SB 07 ON Z AND ON 9. CMP BOTH RESULTS.
 #152 TEST SB 06 AND SB 14. SB 06 ON N, SB 14 ON 5 AND CMP BOTH RESULTS.
 FOLLOWING #152, USE THE ERROR SUB-ROUTINE

#153 TEST INDIRECT ADDRESSING IN 705-3 MODE USING A LOD INSTRUCTION.
 #154 TEST INDIRECT ADDRESSING IN 7080 MODE USING A LOD INSTRUCTION.

#155 EXECUTE ST WITH FIELD LENGTH OF ZERO. TEST NO 900 CHECK.

#156 TEST ST FOR EMIT ZONES TO MEMORY CHAR. ON END OP.
 #157 TEST ST ON A STORAGE FIELD OF MINUS 1
 #158 TEST ST ON A STORAGE FIELD OF PLUS 11
 #159 TEST ST ON A STORAGE FIELD OF #@. CORRECT RESULT IS #□
 #160 TEST ST ON A STORAGE FIELD OF PLUS 1. CHECK FOR NO CHANGE IN
 NON-NUMERIC CHARACTER TO LEFT OF STORE FIELD IN MEMORY.
 FOLLOWING #160, USE THE ERROR SUB-ROUTINE.

#161 EXECUTE RND 0000. TEST FOR NO 900 CHECK AND STORAGE UNCHANGED.

#162 TEST RND 0001 ON 12 AND CHECK RESULT OF 1
 #163 TEST RND 0001 ON 15 AND CHECK RESULT OF 2
 #164 TEST RND 0001 ON 096 AND CHECK RESULT OF 10
 #165 TEST RND 0002 ON 0000 AND CHECK DZT STILL ON.

#166 TEST SGN ON 1 FOR SET STORAGE SIGN PLUS,
 #167 TEST SGN ON MINUS 1 FOR SET STORAGE SIGN MINUS.
 #168 TEST SGN ON 1 FOR IF DZT.
 #169 TEST SGN ON \$ FOR SUP AD CAR AND ROUTING TEST CHAR. BACK TO MEMORY AS
 #170 TEST SGN ON - FOR MEMORY RESULT OF BLANK.
 #171 TEST SGN ON 1 FOR PLUS ZONE EMITTED TO STORAGE
 #172 TEST SGN ON MINUS 1 FOR MINUS ZONE EMITTED TO STORAGE.
 FOLLOWING #172, USE THE ERROR SUB-ROUTINE

#173 TEST LFC FOUR CHARACTERS WITH NO ZONES OR C BITS. CMP STORAGE RESULT.
 #174 TEST LFC ONE AMPERSAND INTO PRESET STORAGE WORD. CMP STORAGE RESULT.
 #175 TEST LFC THREE CHARACTERS, DILROY, LOZENGE AND GROUP MARK.
 #176 DO LFC TWO CHARACTERS TO TEST DILROY RECOGNITION.
 #177 TEST LFC FIVE CHARACTERS

#178 TEST LSB IN BANK 0 ON 255 BLANKS.
 #179 TEST LSB IN BANK 0 FOR DILROY TO STORAGE MARK GENERATION.
 #180 TEST LSB IN BANK 1 ON MIXED CHARACTERS IN FIRST AND LAST STORAGE WORDS
 AND ZEROS IN REST OF FIELD. CHECK ALL STORAGE CHARACTERS.

#181 TEST UFC TWO CHARACTERS, ZONES ONLY.
 #182 TEST UFC FOUR CHARACTERS FOR STORAGE MARK TO DILROY GENERATION.
 #183 TEST UFC FIVE MIXED CHARACTERS.

#184 TEST USB USING BANK 0 AND A TEST FIELD OF MIXED CHARACTERS IN FIRST
 AND LAST STORAGE WORDS WITH ZERO IN THE REMAINING STORAGE POSITIONS.
 FOLLOWING #184, USE THE ERROR SUB-ROUTINE

#185 EXECUTE NTR AND TEST FOR NO 900 CHECK AND NO TRANSFER ON SINGLE ZERO.

#186 TEST NTR FOR NO TRANSFER ON ZERO FIELD LENGTH OR ON NON-ZERO CHARACTER
 #187 TEST NTR ON 00 FOR CORRECT TRANSFER.
 #188 TEST NTR FOR REMOVAL OF ZEROS FROM LEFT END OF STORAGE FIELD.
 #189 TEST NTR FOR ROUTING STORAGE CHARACTERS UNCHANGED BACK TO STORAGE.
 FOLLOWING #189, USE THE ERROR SUB-ROUTINE

#190 EXECUTE SPR WITH STORAGE PLUS. TEST NO 900 CHECK AND EMIT BL TO MEMORY.

#191 TEST SPR TC 2,3 FOR REPLACEMENT OF 2 INSIGNIFICANT ZEROS WITH BLANKS.
 #192 TEST SPR ON A MINUS 1 FOR MEMORY RESULT OF 1-
 #193 TEST SPR 00 INTO MEMORY EQUAL ,.11 RESULT IS BL BL .,0 BL
 #194 TEST SPR ON NON-NUMERIC CHARACTERS A&-
 #195 TEST SPR ON # FOR SUP AD CARRY ROUTING.
 FOLLOWING #195, USE ERROR SUB-ROUTINE

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#196 EXECUTE ADM WITH NO STORAGE FIELD. TEST NO 900 CHECK AND MEMORY SAME.
#197 TEST ADM SIGNED &1 TO &1. DO TRUE ADD IN TC 1.
#198 TEST ADM SIGNED -1 TO -1. DO TRUE ADD IN TC 1.
#199 TEST ADM SIGNED -1 TO &1. DO COMP ADD IN TC 1.
#200 TEST ADM SIGNED &2 TO -2. DO COMP ADD IN TC 1.
#201 TEST ADM SIGNED -22 TO &33. DO COMP ADD IN TC 1.
#202 TEST ADM SIGNED -33 TO &22. DO COMP ADD IN TC 1, COMP MBR IN TC 2.
#203 TEST ADM SIGNED &33 TO -22. DO COMP ADD IN TC 1, COMP MBR IN TC 2.

#204 USE ADM TO TEST ADDER INPUTS ON COMP MBR 1234567 IN ADM TC 2.
ADM &9876544 TO -1111111 TO GET ANSWER &8765433 IN MEMORY.

#205 TEST ADM UNSIGNED. ADM 1 TO 1.
#206 TEST ADM UNSIGNED. ADM AMPERSAND TO 1
#207 TEST ADM UNSIGNED. ADM 088 TO 077.
#208 TEST ADM UNSIGNED. ADM 2 BLANKS TO 2 BLANKS, RESULT IS 2 MINUS ZEROS.
#209 TEST ADM UNSIGNED. ADM BBB TO AA BLANK, RESULT IS CC2.
#210 TEST ADM UNSIGNED. ADM 6 TO 6, DO TC 3.
#211 TEST ADM UNSIGNED. ADM 2& TO 2S, DO TC 3, RESULT IS A2
      FOLLOWING #211, USE ERROR SUB-ROUTINE

#212 EXECUTE MPY TC 1 AND 5. TEST FOR NO 900 CHECK AND ZERO IN STORAGE.

#213 TEST MPY &0 BY &0 FOR TN DZT.
#214 TEST MPY &0 BY &1 FOR TN DZT.
#215 TEST MPY &0 BY -1 FOR SET SIGN PLUS.
#216 TEST MPY &1 BY &1 FOR TF DZT.
#217 TEST MPY -1 BY -1 FOR SET SIGN PLUS.
#218 TEST MPY -1 BY &1 FOR SET SIGN MINUS.
#219 TEST MPY ROUTINGS. MPY &1 BY &1 AND CHECK ANSWER 01

#220 TEST MPY LOGIC. MPY 0 BY 2. TEST ANSWER 0
#221 TEST MPY LOGIC. MPY 1 BY 2. CMP ANSWER 02
#222 TEST MPY LOGIC. MPY 2 BY 2. CMP ANSWER 04
#223 TEST MPY LOGIC. MPY 4 BY 2. CMP ANSWER 08
#224 TEST MPY LOGIC. MPY 5 BY 2. CMP ANSWER 10
#225 TEST MPY LOGIC. MPY 3 BY 2. CMP ANSWER 06
#226 TEST MPY LOGIC. MPY 8 BY 2. CMP ANSWER 16
      MPY 9 BY 2. CMP ANSWER 18
#227 TEST MPY LOGIC. MPY 0 BY 4. TEST ANSWER 0
#228 TEST MPY LOGIC. MPY 1 BY 4. CMP ANSWER 04
#229 TEST MPY LOGIC. MPY 2 BY 4. CMP ANSWER 08
#230 TEST MPY LOGIC. MPY 5 BY 4. CMP ANSWER 20
#231 TEST MPY LOGIC. MPY 4 BY 4. CMP ANSWER 16
#232 TEST MPY LOGIC. MPY 3 BY 4. CMP ANSWER 12

#233 TEST MPY WITH 2 DIGIT MULTIPLICAND. MPY 11 BY 1 AND CMP ANSWER 011

#234 TEST MPY LOGIC. MPY 15 BY 4. CMP ANSWER 060
#235 TEST MPY LOGIC. MPY 25 BY 4. CMP ANSWER 100
#236 TEST MPY LOGIC. MPY 45 BY 4. CMP ANSWER 180
#237 TEST MPY LOGIC. MPY 0 BY 5. TEST ANSWER 0
#238 TEST MPY LOGIC. MPY 1 BY 5. CMP ANSWER 05
#239 TEST MPY LOGIC. MPY 2 BY 5. CMP ANSWER 10
#240 TEST MPY LOGIC. MPY 4 BY 5. CMP ANSWER 20
#241 TEST MPY LOGIC. MPY 8 BY 5. CMP ANSWER 40
#242 TEST MPY LOGIC. MPY 12 BY 5. CMP ANSWER 060
#243 TEST MPY LOGIC. MPY 16 BY 5. CMP ANSWER 080
#244 TEST MPY LOGIC. MPY 18 BY 5. CMP ANSWER 090
#245 TEST MPY LOGIC. MPY 1 BY 3 TEST ANSWER 03 WITH SUB 3,TRZ.
#246 TEST MPY LOGIC. MPY 1 BY 6 TEST ANSWER 06 WITH SUB 6,TRZ.
#247 TEST MPY LOGIC. MPY 1 BY 7 TEST ANSWER 07 WITH SUB 7,TRZ.
#248 TEST MPY LOGIC. MPY 1 BY 8 TEST ANSWER 08 WITH SUB 8,TRZ.
#249 TEST MPY LOGIC. MPY 1 BY 9 TEST ANSWER 09 WITH SUB 9,TRZ.
#250 TEST MPY LOGIC. MPY 2 BY 8. CMP ANSWER 16
#251 TEST MPY LOGIC. MPY 3 BY 8. CMP ANSWER 24
#252 TEST MPY LOGIC. MPY 9 BY 3. CMP ANSWER 27
#253 TEST MPY LOGIC. MPY 6 BY 7. CMP ANSWER 42
#254 TEST MPY LOGIC. MPY 6 BY 3. CMP ANSWER 18
#255 TEST MPY LOGIC. MPY 4 BY 8. CMP ANSWER 32
#256 TEST MPY LOGIC. MPY 8 BY 8. CMP ANSWER 64

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- #257 TEST MPY BY A 2 DIGIT MULTIPLIER. MPY 1 BY 11 AND CMP ANSWER 011
- #258 TEST MPY 11 BY 11 AND CMP ANSWER 0121
- #259 TEST MPY 78 BY 78 AND CMP ANSWER 6084
- #260 TEST MPY ON LARGE FIELDS. SQUARE 9876543210
ANSWER IS 97546105778997104100.
- #261 TEST MPY 11 BY 11 FOR MULTIPLIER UNCHANGED AFTER MPY.
FOLLOWING #261, USE ERROR SUB-ROUTINE
- #262 EXECUTE DIV TC 1,2,3. TEST FOR NO 900 CHECK AND TN DZT IN TC 1.
- #263 TEST DIV TC 1,2,3. CHECK FOR STORAGE MARK PLACED TO RIGHT OF DIVIDEND.
- #264 TEST DIV TC 1,2,3. CHECK FOR STORAGE MARK PLACED TO LEFT OF QUOTIENT.
- #265 TEST DIV TC 1,2,3. CROSS STORAGE BOUNDARY IN TC 3.
- #266 TEST DIV ALL TC. DIV 00 BY 0. CHECK DZT OFF AND QUOTIENT OF 1.
- #267 TEST DIV TC 4 FOR SET SIGNS. DIV &00 BY -0 AND TEST MINUS.
DIV &00 BY &0 AND TEST PLUS.
- #268 TEST DIV ALL TC. DIV 00 BY 1 AND CHECK DZT ON AND QUOTIENT OF 0.
- #269 TEST DIV TC 4 FOR SET SIGN PLUS. DIV &00 BY -1 AND TEST PLUS.
- #270 TEST DIV TC 4,5 VARIATIONS. DIV 10 BY 5 AND CMP QUOTIENT 2.
- #271 TEST DIV TC 4,5 VARIATIONS. DIV 19 BY 8 CHECK QUOT. 2 AND REMAINDER 03
- #272 TEST DIV TC 4,5 VARIATIONS. DIV 15 BY 2 CHECK QUOT. 7 AND REMAINDER 01
- #273 TEST DIV 032 BY 3. CHECK QUOTIENT OF 10 AND REMAINDER 002.
- #274 TEST DIV -09825 BY -25. CHECK SIGN PLUS, QUOT. OF 393 AND REM. ZEROS.
- #275 TEST DIV &1234 BY -98. CHECK QUOTIENT OF -12 AND REMAINDER OF 0058.
- #276 TEST DIV ON LARGE FIELDS. DIV 97546105779984758421 BY 9876543210
CHECK QUOTIENT OF 9876543210 AND REMAINDER OF 0987654321.
- #277 EXECUTE LDA AND TEST FOR NO 900 CHECK AND SET SIGN PLUS.
- #278 TEST LDA IN 7080 MODE. LDA 9876 AND CMP STORAGE RESULT 009876.
- #279 TEST LDA IN 7080 MODE. LDA EDCB AND CMP STORAGE RESULT 155432.
- #280 TEST LDA FOR TN DZT. LDA 0000
- #281 TEST LDA FOR TF DZT. LDA 0001
- #282 TEST LDA IN 705-3 MODE. LDA AAAA AND CMP STORAGE RESULT 71111.
FOLLOWING #282, USE ERROR SUB-ROUTINE
- #283 EXECUTE ULA AND TEST FOR NO 900 CHECK.
- #284 TEST ULA IN 7080 MODE. ULA 360000 AND TEST MEMORY RESULT 0000.
- #285 TEST ULA IN 7080 MODE. ULA 076543 INTO MEMORY FIELD CONTAINING ASU
ZONES ON CHAR 2 AND 3. CHECK MEMORY RESULT OF FEDL.
- #286 TEST ULA IN 7080 MODE. ULA WITH ZONES IN STORAGE FIELD. ULA FIELD IS
12FHA3 WHICH IS EQUIVALENT TO 126813. TEST MEMORY RESULT OF 681C.
- #287 TEST ULA IN 7080 MODE WITH 4 POSITION FIELD. ULA 5682 AND CHECK RESULT.
- #288 TEST ULA IN 705-3 MODE WITH 6 POSITION FIELD. ULA 159999 INTO MEMORY
FIELD CONTAINING A BIT IN UNITS POSITION. CHECK RESULT OF J11/
- #289 TEST ULA IN 705-3 MODE. ULA 180000 INTO MEMORY FIELD CONTAINING B BITS
IN ASU POSITIONS. TEST RESULT OF 0--0
- #290 TEST ULA IN 705-3 MODE WITH 3 POSITION FIELD. ULA 456, RESULT IS 0456.
FOLLOWING #290, USE ERROR SUB-ROUTINE

- #291 EXECUTE AAM AND TEST FOR NO 900 CHECK
- #292 TEST AAM IN 7080 MODE. AAM 000000 TO 5555.
#293 TEST AAM IN 7080 MODE. AAM 142232 ASU 15 TO 136882 ASU 10 IN MEMORY
RESULT IS IJ/U WHICH REPRESENTS 119114 ASU 09.
- #294 TEST AAM IN 7080 MODE. AAM 760000 ASU 10 TO 88654 ASU 06 IN MEMORY
RESULT IS 865U WHICH REPRESENTS 88654 ASU 00.
- #295 TEST AAM IN 7080 MODE. AAM 079231 TO 150769 ASU 15 IN MEMORY.
RESULT IS &&&- WHICH REPRESENTS 70000 ASU 15.
- #296 TEST AAM IN 7080 MODE. AAM 321 TO 150000 ASU 15 IN MEMORY.
RESULT IS &&&& WHICH REPRESENTS 150321 ASU 15.
- #297 TEST AAM IN 705-3 MODE. AAM 115432 ASU 03 TO 40876 ASU 03 IN MEMORY.
RESULT IS WT-H WHICH REPRESENTS 56308 ASU 06.
- #298 TEST AAM IN 705-3 MODE. AAM 9876 TO 73334. RESULT IS 3210.
#299 TEST AAM IN 705-3 MODE. AAM 13257 TO 24678. RESULT IS 37935
FOLLOWING #299, USE THE ERROR SUB-ROUTINE
- #300 USE ULA TO TEST SET MAC I TO IAR ROUTINGS. SET MAC I TO IAR 6669
#301 USE ULA TO TEST SET MAC I TO IAR ROUTINGS. SET MAC I TO IAR 159994
- #302 EXECUTE BLM 0000 AND TEST FOR NO 900 CHECK.
- #303 TEST BLM 0000 FOR NO BLANKS IN MEMORY FIELD.
#304 TEST BLM 0003 FOR BLANKING 15 MEMORY POSITIONS.
- #305 TEST BLMS 0000 FOR NO BLANKS IN MEMORY FIELD.
#306 TEST BLMS 0015 FOR BLANKING 15 MEMORY POSITIONS.
FOLLOWING #306, USE THE ERROR SUB-ROUTINE
- #307 EXECUTE TMTS AND TEST FOR NO 900 CHECK.
- #308 TEST TMTS ON 3 CHARACTERS WITH NO NUMERIC BITS.
#309 TEST TMTS ON 4 BLANKS ACROSS MEMORY BOUNDARY AT 79999 IN 705-3 MODE
#310 TEST TMTS ON 2 NUMBERS
#311 TEST TMTS ON 5 BLANKS ACROSS MEMORY BOUNDARY AT 159999 IN 7080 MODE.
- #312 TEST TMT ON 5 CHARACTERS WITH NO NUMERIC BITS.
#313 TEST TMT ON 10 MIXED CHARACTERS IN 705-3 MODE. RCV LOCATION IS 79999.
#314 TEST TMT ON 10 MIXED CHARACTERS IN 7080 MODE. RCV LOCATION IS 159999.
FOLLOWING #314, USE THE ERROR SUB-ROUTINE
- #315 EXECUTE SND AND TEST FOR NO 900 CHECK.
- #316 TEST SND ON 15 MIXED CHARACTERS.
#317 TEST SND ON STORAGE LENGTH OF ZERO FOR NO CHANGE IN THE RCV FIELD.
#318 TEST SND ON 10 MIXED CHARACTERS FROM LOCATION 79999 IN 705-3 MODE.
#319 TEST SND ON 10 MIXED CHARACTERS FROM LOCATION 159999 IN 7080 MODE.
- #320 EXECUTE RWW-SND AND TEST FOR NO 900 CHECK.
- #321 TEST RWW-SND FOR NO DATA SENT TO THE MAC-2 LOCATION.
#322 TEST RWW-SND FOR TF SIM R-W TRIGGER.
FOLLOWING #322, USE THE ERROR SUB-ROUTINE
- #323 TEST TCT ON 10 NUMBERS. CHECK FOR NO 900 OR 901 CHECKS.
#324 TEST TCT ON 10 NUMBERS USING INDIRECT ADDRESS. VERIFY STEP MAC-2.
#325 TEST TCT ON 30 MIXED CHARACTERS
- #326 USE CMP TO TEST STEP MAC-1 MINUS 1 ACROSS MEMORY BOUNDARIES. CMP 10
CHARACTERS AT LOCATION 0004 BOTH IN 7080 AND 705-3 MODES.
- #327 USE TSL TO TEST STEP IC 80K TRIGGER ON IN 7080 MODE.
#328 USE TSL TO TEST STEP IC FROM 79999 TO 0004 IN 705-3 MODE.
#329 USE TSL TO TEST STEP IC FROM 159999 TO 0004 IN 7080 MODE.
FOLLOWING #329, USE THE ERROR SUB-ROUTINE
- #330-#339 ROUTINE NUMBERS ARE NOT USED. NEXT ROUTINE IS #340

PRIOR TO #340 IS A BYPASS SWITCH. THIS SWITCH IS A NOP WHEN CHANNELS ARE NOT USED. ON CHANNEL OPERATION THIS SWITCH IS A TRANSFER TO ROUTINE #390 TO BYPASS TIP AND LIP TESTS.

- #340 EXECUTE CHR, EIM AND LIM INSTRUCTIONS. TEST FOR NO 900 OR 901 CHECKS. FOLLOWING #340, USE THE ERROR SUB-ROUTINE
- #341 TEST LIP 0009 FOR ABILITY TO SET IC AND RESET 900-905 STATUS TRIGGERS.
 #342 TEST LIP 0009 FOR ABILITY TO SET IC TO WR 9999.
 #343 TEST LIP 0009 FOR ABILITY TO SET IC TO WR 6664.
 #344 TEST LIP 0009 FOR ABILITY TO SET IC 150004 FROM WR EQUAL 100D.
 #345 TEST LIP 0009 FOR ABILITY TO SET STATUS TRIGGERS. STATUS IN WR IS K--D
 #346 TEST LIP 0009 FOR ABILITY TO SET STATUS TRIGGERS. STATUS IN WR IS J&-D
 #347 TEST LIP 0009 FOR NO STORING OF IC AND STATUS AT LIP ADDRESS.
- #348 TEST LIP 0000 FOR STORE IC VALUE 9999 AT LIP ADDRESS.
 #349 TEST LIP 0000 FOR STORE IC VALUE 6664 AT LIP ADDRESS.
 #350 TEST LIP 0000 FOR STORE IC VALUE 150009 AT LIP ADDRESS. FOLLOWING #350, USE THE ERROR SUB-ROUTINE.
- #351 TEST LIP 3700 FOR STORE STATUS VALUE -&-- AT LIP ADDRESS. FOLLOWING #351, USE THE ERROR SUB-ROUTINE.
- #352 TEST LIP 3700 FOR STORE STATUS VALUE -&-- WHEN SBR CONTAINS GROUP MARKS FOLLOWING #352, USE THE ERROR SUB-ROUTINE.
- #353 TEST LIP 3700 FOR STORE STATUS VALUE J&-L FOLLOWING #353, USE THE ERROR SUB-ROUTINE.
- #354 TEST LIP 3700 FOR STORE STATUS VALUE K&-D FOLLOWING #354, USE THE ERROR SUB-ROUTINE.
- #355 USE LIP 3700 TO TEST C BIT GEN ON CHAR. 4 AND 7 OF ALU TO STOR. SW. FOLLOWING #355, USE THE ERROR SUB-ROUTINE.
- #356 TEST TIP FOR ABILITY TO TRANSFER AND STORE IC AND STATUS.
 #357 TEST TIP FOR ROUTING SET SPC 512.
 #358 TEST TIP FOR STORE SPC VALUE OF 7737.
 #359 TEST TIP FOR STORE SPC VALUE OF 0000.
 #360 TEST TIP FOR STORE MAC-2 VALUE OF 6666.
 #361 TEST TIP FOR STORE MAC-2 VALUE OF 159999.
 #362 TEST TIP FOR STORE SR VALUE OF 6666.
 #363 TEST TIP FOR STORE SR VALUE OF 9999.
 #364 TEST TIP FOR GENERATE ZEROS AND STORAGE MARKS IN WORDS 1,2,3 OF CASU 15
 #365 TEST TIP FOR GENERATE ZEROS AND STORAGE MARKS IN WORDS 1,2,3 OF CASU 15
- #366 TEST LIP FOR SET SPC, MAC-2 AND SR TO WR EQUAL 0000
 #367 TEST LIP FOR SET SPC TO WR EQUAL 3313.
 #368 TEST LIP FOR SET SPC TO WR EQUAL 4424.
 #369 TEST LIP FOR SET MAC-2 EQUAL 159999 FROM WR EQUAL 199I.
 #370 TEST LIP FOR SET MAC-2 TO WR EQUAL 6666.
 #371 TEST LIP FOR SET SR TO WR EQUAL 9999.
 #372 TEST LIP FOR SET SR TO WR EQUAL 6669.
- #373 TEST MODE GATING USING A LIP TO TRY AND SET MAC-2 80K TRIGGER WHEN LIP ALSO SETS 705-3 MODE 80 K SHOULD BE BLOCKED OFF
- #374 TEST LIP FOR SET SPC 1111, SET MAC-2 0000, SET SR 0000 WHEN WR WORDS ARE, WORD 1 9999, WORD 2 0000, WORD 3 0000
- #375 TEST LIP FOR SET SPC 2222, SET MAC-2 2222, SET SR 2222 WHEN WR WORDS ARE, WORD 1 2222, WORD 2 2222, WORD 3 2222.
- #376 TEST LIP FOR SET SPC 1111, SET MAC-2 1111, SET SR 1111 WHEN WR WORDS ARE, WORD 1 ####, WORD 2 #### WORD 3 ####.
- #377 TEST LIP FOR SET MAC-2 TO WR EQUAL 6667 WHEN MAC-1 EQUALS 159998.
 #378 TEST LIP FOR SET MAC-2 TO 159998 FROM WR EQUAL 199H WHEN MAC-1 IS 6667 FOLLOWING #378, USE THE ERROR SUB-ROUTINE
- #379-#389 ROUTINE NUMBERS ARE NOT USED. NEXT ROUTINE IS #390

THE ONE INTERROGATION OF THE 915 SWITCH IS LOCATED JUST PRIOR TO ROUTINE #390 FOR BYPASSING ALL FORCED ERROR ROUTINES. IF THE 915 SWITCH IS ON, TRANSFER TO ROUTINE #485

- #390 USE LFC IN 705-3 MODE TO FORCE AN OP CHECK AND EARLY END OP.
FOLLOWING #390, USE THE ERROR SUB-ROUTINE
- #391 USE NOP TO TEST TN 900 CHECK FROM DR VRC.
FOLLOWING #391, USE THE ERROR SUB-ROUTINE
- #392 USE NOP TO TEST TN 900 CHECK FROM 4/9 CHECK ON INDIRECT ADDRESSING.
FOLLOWING #392, USE THE ERROR SUB-ROUTINE
- #393 TEST TN 900 CHECK FROM 4/9 CHECKS IN TR, TRS, TRA AND TRE INSTRUCTIONS
FOLLOWING #393, USE THE ERROR SUB-ROUTINE
- #394 TEST TN 900 CHECK FROM 4/9 CHECKS IN TRH, TRZ, TRP AND TZB INSTRUCTIONS
FOLLOWING #394, USE THE ERROR SUB-ROUTINE
- #395 TEST TN 900 CHECK FROM 4/9 CHECKS IN NTR AND TIP INSTRUCTIONS.
FOLLOWING #395, USE THE ERROR SUB-ROUTINE
- #396 TEST TN 900 CHECK FROM 4/9 CHECKS IN TMT AND SND AND A 9 CHECK ON TCT.
FOLLOWING #396, USE THE ERROR SUB-ROUTINE
- #397 TEST TN 900 CHECK FROM 4/9 CHECKS IN LDA, ULA AND AAM INSTRUCTIONS.
FOLLOWING #397, USE THE ERROR SUB-ROUTINE
- #398 TEST TN 900 CHECK FROM 4/9 CHECK DURING I/A TIME. ALSO TEST THAT IN
I/A TIME, CHAR. 0 IS NOT CODE CHECKED.
FOLLOWING #398, USE THE ERROR SUB-ROUTINE
- #399 TEST TN 900 CHECK FROM OP CHECK ON OP CODES OF AMPERSAND, ZERO,
LOZENGE AND GROUP MARK.
FOLLOWING #399, USE THE ERROR SUB-ROUTINE
- #400 FORCE 900 CHECKS ON NOP TO TEST DR VRC CHAR 4.
FOLLOWING #400, USE THE ERROR SUB-ROUTINE
- #401 FORCE 900 CHECKS ON NOP TO TEST DR VRC CHAR 3.
FOLLOWING #401, USE THE ERROR SUB-ROUTINE
- #402 FORCE 900 CHECKS ON NOP TO TEST DR VRC CHAR 2.
FOLLOWING #402, USE THE ERROR SUB-ROUTINE
- #403 FORCE 900 CHECKS ON NOP TO TEST DR VRC CHAR 1.
FOLLOWING #403, USE THE ERROR SUB-ROUTINE
- #404 FORCE 900 CHECKS ON REDUNDANT OP CODES TO TEST DR VRC CHAR 0.
FOLLOWING #404, USE THE ERROR SUB-ROUTINE
- #405 TN 900 CHECK AND TEST FOR NO BIT PICK UP IN ALU TO STOR. SW CHAR 5.
ALSO TEST FOR TF 900 TRIGGER ON TRS 10 ONLY.
FOLLOWING #405, USE THE ERROR SUB-ROUTINE
- #406 TEST TN 901 CHECK VIA NO AUTO-STOP LINE USING SB 08. ALSO CHECK FOR
PROPER TF OF THE 901 TRIGGER.
FOLLOWING #406, USE THE ERROR SUB-ROUTINE
- #407 TEST TN 901 CHECK VIA MBR VRC USING SB 09. ALSO TEST FOR PROPER
TF OF THE 901 TRIGGER.
FOLLOWING #407, USE THE ERROR SUB-ROUTINE
- #408 FORCE 901 CHECKS ON TZB TO TEST MBR VRC.
FOLLOWING #408, USE THE ERROR SUB-ROUTINE
- #409 FORCE 901 CHECKS ON TZB TO TEST MBR VRC.
FOLLOWING #409, USE THE ERROR SUB-ROUTINE

- #410 TEST TN 901 CHECK VIA SBR VRC USING SET LEFT.
FOLLOWING #410, USE THE ERROR SUB-ROUTINE
- #411 TEST FOR NO 901 CHECK FROM WR VRC DURING A NOP. ALSO TEST FOR NO BIT
PICK UP IN THE ALU TO STOR. SW CHAR 5 WHEN THE 901 TRIGGER IS ON.
FOLLOWING #411, USE THE ERROR SUB-ROUTINE
- #412 FORCE 901 CHECKS ON SET LEFT TO TEST SBR VRC.
FOLLOWING #412, USE THE ERROR SUB-ROUTINE
- #413 TEST TN 901 CHECK VIA RR VRC USING STORE INSTRUCTION.
FOLLOWING #413, USE THE ERROR SUB-ROUTINE
- #414 FORCE 901 CHECKS ON STORE TO TEST RR VRC.
FOLLOWING #414, USE THE ERROR SUB-ROUTINE
- #415 TEST TN 901 CHECK VIA DR VRC DURING SND AND TMT
FOLLOWING #415, USE THE ERROR SUB-ROUTINE
- #416 TEST TN 901 CHECK VIA DR VRC DURING TCT
FOLLOWING #416, USE THE ERROR SUB-ROUTINE
- #417 TEST TN 901 CHECK VIA DR VRC DURING RWW-SND OPERATION AND DURING A
TMT INSTRUCTION WHICH IS PRECEDED BY RWW.
FOLLOWING #417, USE THE ERROR SUB-ROUTINE
- #418 FORCE 901 CHECKS ON SND TO TEST DR VRC CHAR 0,1,2,3,4 ON NO BITS.
FOLLOWING #418, USE THE ERROR SUB-ROUTINE
- PRIOR TO #419 IS A BYPASS SWITCH. THIS SWITCH IS A NOP WHEN
CHANNELS ARE NOT USED. ON CHANNEL OPERATION THIS SWITCH IS
A TRANSFER TO ROUTINE #436 TO BYPASS TIP AND LIP INSTRUCTIONS.
- #419 TEST TN 901 CHECK VIA WR VRC USING LIP INSTRUCTION. TEST FOR NO 901
WHEN WR IS REDUNDANT BUT NOT INTERROGATED.
FOLLOWING #419, USE THE ERROR SUB-ROUTINE
- #420 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR 0.
FOLLOWING #420, USE THE ERROR SUB-ROUTINE
- #421 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 1
FOLLOWING #421, USE THE ERROR SUB-ROUTINE
- #422 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 2
FOLLOWING #422, USE THE ERROR SUB-ROUTINE
- #423 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 3
FOLLOWING #423, USE THE ERROR SUB-ROUTINE
- #424 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 4
FOLLOWING #424, USE THE ERROR SUB-ROUTINE
- #425 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 5
FOLLOWING #425, USE THE ERROR SUB-ROUTINE
- #426 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 6
FOLLOWING #426, USE THE ERROR SUB-ROUTINE
- #427 FORCE 901 CHECKS ON LIP TO TEST WR VRC CHAR. 7
FOLLOWING #427, USE THE ERROR SUB-ROUTINE
- #428 TEST TN AND TF 900 AND 901 CHECKS FROM STATUS BITS DURING LIP.
FOLLOWING #428, USE THE ERROR SUB-ROUTINE
- #429 TEST STORE STATUS BITS FOR 900 AND 901 CHECKS DURING TIP.
FOLLOWING #429, USE THE ERROR SUB-ROUTINE

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- #430 TEST 902 CHECK TRIGGER USING STATUS BIT ON LIP. ALSO TEST FOR NO FALSE TRANSFERS WHEN 902 IS ON, AND FOR CORRECT TF 902 ON TRS.
FOLLOWING #430, USE THE ERROR SUB-ROUTINE
- #431 FORCE 902 CHECK USING LIP STATUS BIT AND TEST FOR CORRECT TRS.
FOLLOWING #431, USE THE ERROR SUB-ROUTINE
- #432 TEST 903 CHECK TRIGGER USING STATUS BIT ON LIP. ALSO TEST FOR NO FALSE TRANSFERS WHEN 903 IS ON, AND FOR CORRECT TF 903 ON TRS.
FOLLOWING #432, USE THE ERROR SUB-ROUTINE
- #433 FORCE 903 CHECK USING LIP STATUS BIT AND TEST FOR CORRECT TRS.
FOLLOWING #433, USE THE ERROR SUB-ROUTINE
- #434 TEST TF 902 AND 903 TRIGGERS FROM STATUS BITS DURING LIP.
FOLLOWING #434, USE THE ERROR SUB-ROUTINE
- #435 TEST STORE STATUS BITS FOR 902 AND 903 CHECKS DURING TIP. ALSO TEST FOR NO BIT PICK UP IN ALU TO STOR SW CHAR. 5 WITH 902 AND 903 ON.
FOLLOWING #435, USE THE ERROR SUB-ROUTINE
- #436 TEST 904 CHECK TRIGGER USING ADD. CHECK CORRECT TF 904 ON TRS.
FOLLOWING #436, USE THE ERROR SUB-ROUTINE
- #437 FORCE 904 CHECK ON SUB AND TEST CORRECT TRANSFER AND TF 904 ON TRS.
FOLLOWING #437, USE THE ERROR SUB-ROUTINE
- #438 TEST 904 CHECK ON RND. ALSO TEST FOR NO BIT PICK UP IN THE ALU TO STOR. SW CHAR 6 WHEN 904 IS ON.
FOLLOWING #438, USE THE ERROR SUB-ROUTINE
- #439 FORCE 904 CHECK ON RND AND TEST FOR OVERFLOW DIGIT IN STORAGE RESULT.
FOLLOWING #439, USE THE ERROR SUB-ROUTINE
- #440 TEST OVERFLOW AND 904 CHECKS IN DIV.
FOLLOWING #440, USE THE ERROR SUB-ROUTINE
- #441 TEST 905 CHECK TRIGGER USING RAD. CHECK CORRECT TF 905 ON TRS.
FOLLOWING #441, USE THE ERROR SUB-ROUTINE
- #442 FORCE 905 CHECK ON RAD. TEST CORRECT TRS AND FOR NO BIT PICK UP IN THE ALU TO STOR. SW CHAR 6 WHEN 905 IS ON.
FOLLOWING #442, USE THE ERROR SUB-ROUTINE
- #443 TEST TN 905 CHECKS DURING MPY AND DIV.
FOLLOWING #443, USE THE ERROR SUB-ROUTINE
- #444 TEST TN THE ANY TRIGGER AND CORRECT TF ANY TRIGGER ON TRA.
FOLLOWING #444, USE THE ERROR SUB-ROUTINE
- #445 TEST TN ANY TRIGGER FROM 900, 901, 904 AND 905 CHECKS.
FOLLOWING #445, USE THE ERROR SUB-ROUTINE
- PRIOR TO #446 IS A BYPASS SWITCH. THIS SWITCH IS A NOP WHEN CHANNELS ARE NOT USED. ON CHANNEL OPERATION THIS SWITCH IS A TRANSFER TO ROUTINE #451 TO BYPASS TIP AND LIP INSTRUCTIONS.
- #446 TEST STORE STATUS BITS FOR ANY, 904 AND 905 TRIGGERS ON TIP.
FOLLOWING #446, USE THE ERROR SUB-ROUTINE
- #447 TEST TN ANY, 904 AND 905 TRIGGERS FROM STATUS BITS ON LIP.
FOLLOWING #447, USE THE ERROR SUB-ROUTINE
- #448 TEST TF ANY, 904 AND 905 TRIGGERS FROM STATUS BITS ON LIP.
FOLLOWING #448, USE THE ERROR SUB-ROUTINE
- #449 TEST BL AD TGR ROUTING ON TIP.
FOLLOWING #449, USE THE ERROR SUB-ROUTINE

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- #450 TEST BL AD TGR ROUTING ON LIP. ALSO TEST FOR NO FALSE 901 FROM WR VRC.
FOLLOWING #450, USE THE ERROR SUB-ROUTINE
- #451 TEST BL AD TGR ROUTING ON TZB.
FOLLOWING #451, USE THE ERROR SUB-ROUTINE
- #452 TEST SB FOR NO FALSE 900 OR 901 CHECKS.
FOLLOWING #452, USE THE ERROR SUB-ROUTINE
- #453 TEST SB FOR BL AD TGR ROUTING AND NO FALSE TN OF THE ANY TRIGGER.
FOLLOWING #453, USE THE ERROR SUB-ROUTINE
- #454 TEST SGN FOR BL AD TGR AND SUP SBR CHECK ROUTINGS.
FOLLOWING #454, USE THE ERROR SUB-ROUTINE
- #455 TEST TSL FOR SUP MBR CHECK AND SUP SBR CHECK ROUTINGS.
FOLLOWING #455, USE THE ERROR SUB-ROUTINE
- #456 TEST BLM FOR SUP MBR CHECK, SUP SBR CHECK AND BL AD TGR ROUTINGS.
FOLLOWING #456, USE THE ERROR SUB-ROUTINE
- #457 TEST SND FOR SUP MBR CHECK AND SUP SBR CHECK ROUTINGS. ALSO TEST
RWW-SND OPERATION FOR NO FALSE TN ANY TGR WHEN 901 COMES ON.
FOLLOWING #457, USE THE ERROR SUB-ROUTINE
- #458 TEST RWW-SND OPERATION FOR PROPER END OP BY ATTEMPTING TO CODE CHECK
REDUNDANCIES ABOVE THE END OF A MEMORY QUADRANT.
FOLLOWING #458, USE THE ERROR SUB-ROUTINE
- #459 TEST TMTS FOR SUP MBR CODE CHECK ROUTING.
FOLLOWING #459, USE THE ERROR SUB-ROUTINE
- #460 TEST TMT FOR CHECK SUPPRESSION. CHECK FOR NO 901 FROM REDUNDANCIES
LEFT OVER FROM I TIME, IN THE RCV ADDRESS, OR TO RIGHT OF THE TMT FIELD
FOLLOWING #460, USE THE ERROR SUB-ROUTINE
- #461 TEST TCT FOR BL AD TGR ROUTING.
FOLLOWING #461, USE THE ERROR SUB-ROUTINE
- #462 TEST SET LEFT FOR BL AD TGR AND SUP SBR CHECK ROUTINGS.
FOLLOWING #462, USE THE ERROR SUB-ROUTINE
- #463 TEST SET LEFT FOR SUP MBR CHECK ROUTING AND NO FALSE 901 FROM DR VRC.
FOLLOWING #463, USE THE ERROR SUB-ROUTINE
- #464 TEST RND FOR SUP MBR CHECK ROUTINGS.
FOLLOWING #464, USE THE ERROR SUB-ROUTINE
- #465 TEST RND FOR BL AD TGR ROUTINGS.
FOLLOWING #465, USE THE ERROR SUB-ROUTINE
- #466 TEST LNG FOR SUP MBR CHECK, SUP SBR CHECK AND BL AD TGR ROUTINGS.
FOLLOWING #466, USE THE ERROR SUB-ROUTINE
- #467 TEST NTR FOR SUP MBR CHECK ROUTINGS.
FOLLOWING #467, USE THE ERROR SUB-ROUTINE
- #468 TEST MEM RD MODE FOR BL AD TGR ROUTING USING LOD. ALSO TEST LOD AND
CMP FOR SUP MBR CHECK ROUTINGS.
FOLLOWING #468, USE THE ERROR SUB-ROUTINE
- #469 TEST LOD AND LDA FOR SUP SBR CHECK ROUTINGS.
FOLLOWING #469, USE THE ERROR SUB-ROUTINE
- #470 FORCE 901 CHECKS FROM MBR AND SBR VRC DURING CMP. TEST THAT 901 CHECK
CAME ON AND THAT CMP RESULT WAS EQUAL IN EACH CASE.
FOLLOWING #470, USE THE ERROR SUB-ROUTINE

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- #471 TEST BL AD TGR ROUTING IN MEM RD-WR MODE USING UNL. ALSO TEST SUP MBR CHECK ON UNL.
FOLLOWING #471, USE THE ERROR SUB-ROUTINE
- #472 TEST STORE FOR SUP MBR CHECK ROUTING AND NO FALSE RR VRC TO 901 CHECK.
FOLLOWING #472, USE THE ERROR SUB-ROUTINE
- #473 TEST ULA FOR SUP MBR CHECK ROUTINGS.
FOLLOWING #473, USE THE ERROR SUB-ROUTINE
- #474 TEST SPR FOR CHECK SUPPRESSION.
FOLLOWING #474, USE THE ERROR SUB-ROUTINE
- #475 TEST ADD TYPE CYCLE 2 FOR CHECK SUPPRESSION.
FOLLOWING #475, USE THE ERROR SUB-ROUTINE
- #476 TEST ADM SIGNED FOR CHECK SUPPRESSION.
FOLLOWING #476, USE THE ERROR SUB-ROUTINE
- #477 TEST ADM UNSIGNED TYPE CYCLE 3 FOR BL AD TGR AND SUP MBR CHECK ROUTINGS
FOLLOWING #477, USE THE ERROR SUB-ROUTINE
- #478 TEST MPY FOR SUP MBR CHECK ROUTING.
FOLLOWING #478, USE THE ERROR SUB-ROUTINE
- #479 TEST MPY TYPE CYCLE 2 FOR SUP SBR CHECK ROUTING. CHECK MPY PRODUCT.
FOLLOWING #479, USE THE ERROR SUB-ROUTINE
- #480 TEST MPY TYPE CYCLES 3 AND 4 FOR BL AD TGR ROUTINGS
FOLLOWING #480, USE THE ERROR SUB-ROUTINE
- #481 TEST DIV TYPE CYCLE 1 FOR BL AD TGR AND FOR STORAGE CHECK SUPPRESSION
FOLLOWING #481, USE THE ERROR SUB-ROUTINE
- #482 TEST DIV FOR SUP MBR CHECK.
FOLLOWING #482, USE THE ERROR SUB-ROUTINE
- #483 TEST DIV FOR CHECK SUPPRESSION IN TYPE CYCLES 5 AND 2.
FOLLOWING #483, USE THE ERROR SUB-ROUTINE
- #484 TEST DIV FOR NO SPC STEP ON AUTO-TSN FROM 901 CHECK.
FOLLOWING #484, USE THE ERROR SUB-ROUTINE
- #485 TEST TIP FOR TN IP TRIGGER. STEP MAC-1 MINUS 1 THROUGH 20000 POSITIONS
AND CHECK VERSUS SAC STEPPING.
FOLLOWING #485, USE THE ERROR SUB-ROUTINE
- #486 EXERCISE RD MEM AND MBR TO MEM ROUTINGS USING SPR TYPE CYCLES 2 AND 3.
FOLLOWING #486, USE THE ERROR SUB-ROUTINE
- #487 EXERCISE STEP MAC-1 AND MAC-2 PLUS 5 BY DOING TCT ON 18200 CHARACTER
FIELD. COMPARE ALL 18200 CHARACTERS.
FOLLOWING #487, USE THE ERROR SUB-ROUTINE
- #488 EXERCISE STATUS TRIGGERS AND ARITHMETIC INSTRUCTIONS
FOLLOWING #488, USE THE ERROR SUB-ROUTINE
- #489 EXERCISE MPY AND DIV INSTRUCTIONS. THIS IS THE LAST ROUTINE
FOLLOWING #489, USE THE ERROR SUB-ROUTINE

END OF PROGRAM PASS. DO THE FOLLOWING THINGS IN SEQUENCE.

1. COUNT THE NUMBER OF PASSES MADE AND TYPEOUT Z ON 100 PASSES
2. INTERROGATE THE 914 SWITCH. IF THE 914 SWITCH IS OFF, RESET ALL CHANNELS AND TRANSFER TO LOCATION 18219 TO CALL IN THE NEXT PROGRAM FROM TAPE. IF 914 ON, CONTINUE 8CU10.
3. INTERROGATE THE 916 SWITCH. IF THE 916 SWITCH IS OFF, RESET ALL CHANNELS, RESET THE FOUR CHANNEL BYPASS SWITCHES TO NOP AND TRANSFER TO ROUTINE #001. IF THE 916 SWITCH IS ON, DO A OR B BELOW
 - A. 916 IS ON OTHER THAN FIRST TIME, TRANSFER TO ROUTINE #001
 - B. 916 IS ON FIRST TIME ONLY. SET FOUR CHANNEL BYPASS SWITCHES TO TR. THESE SWITCHES ARE LOCATED IN ROUTINES #340, # 419 AND #446 AND AT LOCATION 53935. SET TAPE ADDRESSES ON CHANNELS 20, 21, 22 AND 23 TO #1. SET UP A 2000 CHARACTER WRITE FIELD FOR ALL CHANNELS. TIP TO START EACH READY CHANNEL AND THEN TRANSFER TO ROUTINE #001 AFTER CHANNELS ARE STARTED.

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TEST ALL CHANNELS FOR READY ON TAPE #1-#9 INCLUSIVE. IF READY, START CHANNEL. IF NOT READY, DO LIP 0009.

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INTERRUPT PROGRAM FOR CHANNEL 20.
CHANNEL 20 END OF FILE REWIND, ERROR TYPEOUTS AND HALT.

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INTERRUPT PROGRAM FOR CHANNEL 21.
CHANNEL 21 END OF FILE REWIND, ERROR TYPEOUTS AND HALT.

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INTERRUPT PROGRAM FOR CHANNEL 22.
CHANNEL 22 END OF FILE REWIND, ERROR TYPEOUTS AND HALT.

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INTERRUPT PROGRAM FOR CHANNEL 23
CHANNEL 23 END OF FILE REWIND, ERROR TYPEOUTS AND HALT.

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COMMON WRITE FIELD AND SEPARATE READ FIELDS FOR CHANNELS.

8CU10B 9-1-61
7080 MAIN DIAGNOSTIC
FOR ERROR DETECTION

ALL CHECK SWITCHES TO PROGRAM

ALTERATION SWITCHES
911- BYPASS ERROR
TYPEOUTS AND HALTS
912- LOOP IN ROUTINE
913- HALT ON ERROR
914- LOOP IN PROGRAM
915- BYPASS FORCED ERRORS
916- CHANNEL OPERATION

□	00004	SEL	2		0500		□
□	00009	WR	R		0095		□
□	00014	HLT	J		1111		□
□	00019	EEM	3	14	0000	0&-0	□
□	00024	CHR	3	13	0000	0& 0	□
□	00029	LIM	3	07	0000	0 & 0	□
□	00034	CHR	3	13	0000	0& 0	□
□	00039	TRS	0	09	0044	0-U4	□
□	00044	TRS	0	10	0049	0-M9	□
□	00049	TRS	0	11	0054	0-E4	□
□	00054	TRS	0	12	0059	0&59	□
□	00059	TRS	0	13	0064	0&W4	□
□	00064	TRS	0	14	0069	0&09	□
□	00069	TRS	0	15	0074	0&G4	□
□	00074	TRA	I		0079		□
□	00079	LEM	3	15	0000	0&&0	□
□	00084	TR	1		0404		□
□	00089	HLT	J		0000		□
□	00094	TR	1		0404		□

TYPEOUT SWITCH SETTINGS

ENTER 7080 MODE
AND RESET
CHANNELS

TURN
OFF
ALL
CHECK
TRIGGERS

LEAVE 7080 MODE
TRANSFER TO TEST ROUTINES
SAFETY HALT AFTER INITIAL
TRANSFER

2 030 00124
2 001 00125

900, 1, 2, 3, 4, 5 TO PROGRAM
□

CHECK TRIGGER
SUB-ROUTINE
INTERROGATE AND TURN OFF
ALL CPU CHECK TRIGGERS.

```

#####
00204 LDA # 0309
00209 SET B 0006
00214 UNL 7 0396
00219 SET B 0003
00224 TRA I 0229-----
#####
I
#####
I
I 00229 EEM 3 14 0000 06-0.
I 00234 LOD 8 0352
I 00239 TRS 0 09 0314 0L/4-
I 00244 LOD 8 0355
I 00249 TRS 0 10 0314 0LJ4-
I 00254 LOD 8 0358
I 00259 TRS 0 11 0314 0LA4-
I 00264 LOD 8 0361
I 00269 TRS 0 12 0314 0C14-
I 00274 LOD 8 0364
I 00279 TRS 0 13 0314 0C/4-
I 00284 LOD 8 0367
I 00289 TRS 0 14 0314 0CJ4-
I 00294 LOD 8 0370
I 00299 TRS 0 15 0314 0CA4-
#####
I
I
I 00304 LEM 3 15 0000 06&0
I 00309 TR 1 0000
I
#####
I
I 00314 TRA I 01 0349 03U9-
I 00319 UNL 7 0373
I 00324 SEL 2 0500
I 00329 WR R 0371
I 00334 TRA I 03 0344 03D4-
I 00339 TR 1 0349-----
I 00344 NOP A 0999.....
I 00349 TR 1 0229.....
#####

```

PUT IC LOCATION AT TIME
OF CHECK INTO TYPEOUT

SET ACC TO 3 POSITIONS
TURN OFF ANY

TEST ART

TEST 900

TEST 901

TEST 902

TEST 903

TEST 904

TEST 905

RETURN TRANSFER

DO TYPEOUT

2 021 00370
2 026 00396
2 001 00397

ART900901902903904905
--- CHK PRIOR TO IC-000000
□

ROUTINE #001
EXECUTE EEM,CNO,AND TRS.
TEST 900 CHECK.

```

A01.....00404 EEM 3 14 0000 06-0
I 00409 CNO , 11 66666 00FO
I 00414 CNO , 11 0000 0-60
I 00419 CNO , 11 99999 ZRIZ
I 00424 TRS 0 10 0434 OML4-
I 00429 TR 1 0464-----
I
I
I
I 00434 TRA I 01 0464 04W4-
I 00439 SEL 2 0500
I 00444 WR R 0470
I 00449 TRA I 03 0459 04E9-
I 00454 TR 1 0464-----
I 00459 HLT J 0001.....
+ 00464 TRA I 02 0404 04-4.
  00469 TR 1 0479-----
I
I
I

```

SET IAR,MAC-1 TO 66666
SET IAR,MAC-1 TO 99999

ERROR ROUTINE

2 003 00472 001
2 001 00473

ROUTINE #002
EXECUTE LEM,SEL,AND NOP.
TEST 900 CHECK.

```

.....00479 LEM 3 15 0000 06-0.
I 00484 NOP A 15 0000 06-0
I 00489 NOP A 0000
I 00494 SEL 2 6666
I 00499 NOP A 0000
I 00504 SEL 2 9999
I 00509 SEL 2 0000
I 00514 SEL 2 0900
I 00519 TRS 0 0529-----
I 00524 TR 1 0559-----
I
I
I
I 00529 TRA I 01 0559 05V9-
I 00534 SEL 2 0500
I 00539 WR R 0565
I 00544 TRA I 03 0554 05E4-
I 00549 TR 1 0559-----
I 00554 HLT J 0002.....
+ 00559 TRA I 02 0479 04P9.
  00564 TR 1 0574-----B04
I
I
I

```

SET SSR ALL ON
SET SEL REG TO 6666
SET SEL REG TO 9999

ERROR ROUTINE

TO NEXT ROUTINE

2 003 00567 002
2 001 00568

ROUTINE #003
EXECUTE RCV AND SPC.
TEST 900 CHECK.

```

B03..... 00574 EEM 3 14 0000 0&-0
I 00579 RCV U 66666 0660
I 00584 RCV U 0000
I 00589 RCV U 99999 Z99Z
I 00594 RCV U 0000
I 00599 SPC , 7737
I 00604 NOP A 0000
I 00609 SPC , 0000
I 00614 TRS O 10 0624 00K4-
I 00619 TR 1 0654-----
I
I
I 00624 TRA I 01 0654 06V4-
I 00629 SEL 2 0500
I 00634 WR R 0660
I 00639 TRA I 03 0649 06D9-
I 00644 TR 1 0654-----
I 00649 HLT J 0003.....
+ 00654 TRA I 02 0574 05P4....
  00659 TR 1 0669-----
I
I
I

```

SET MAC-2 TO 66666
SET MAC-2 TO 99999
SET SPC ALL ON
SET SAC ALL ON

ERROR ROUTINE

2 003 00662 003
2 001 00663

```

I
I
I 00669 EEM 3 14 0000 0&-0...
I 00674 TRS O 09 0679 00X9-
I 00679 TRS O 10 0684 00Q4-
I 00684 TRS O 11 0689 00H9-
I 00689 TRS O 12 0694 0F94-
I 00694 TRS O 13 0699 0FZ9-
I 00699 TRS O 14 0704 0G-4-
I 00704 TRS O 15 0709 0G&9-
I
I
I 00709 NOP A 0000.....
I 00714 TRS O 09 0754 0PV4-
I 00719 TRS O 10 0754 0PN4-
I 00724 TRS O 11 0754 0PE4-
I 00729 TRS O 12 0754 0G54-
I 00734 TRS O 13 0754 0GV4-
I 00739 TRS O 14 0754 0GN4-
I 00744 TRS O 15 0754 0GE4-
I 00749 TR 1 0784-----
I
I
I

```

ROUTINE #004
TURN OFF ALL ALU CHECK
TRIGGERS AND THEN TEST
FOR FALSE CHECKS OR
FALSE TRANSFERS.

TEST
ART ERROR
900 ERROR
901 ERROR
902 ERROR
903 ERROR
904 ERROR
905 ERROR

```

I
I
I 00754 TRA I 01 0784 07Y4-
I 00759 SEL 2 0500
I 00764 WR R 0790
I 00769 TRA I 03 0779 07G9-
I 00774 TR 1 0784-----
I 00779 HLT J 0004.....
+ 00784 TRA I 02 0669 0609....
  00789 TR 1 0799-----
I
I
I

```

ERROR ROUTINE

TO NEXT ROUTINE

2 003 00792 004
2 001 00793

ROUTINE #005
EXECUTE TZB AND TEST FOR
FALSE TRANSFERS OR 900.901
CHECKS.

```

C04.....000799 LEM 3 15 0000 0660 0
I 00804 RCV U      0874      0
I 00809 TZB .      0834-----+
I 00814 TZB . 15 0834 0HC4---+
I 00819 TRS 0 10 0834 0QL4---+
I 00824 TRS 0 11 0834 0QC4---+
I 00829 TR 1      0864-----+
I 00834 TRA I 01 0864 08W4---+
I 00839 SEL 2      0500      0
I 00844 WR R      0871      0
I 00849 TRA I 03 0859 08E9---+
I 00854 TR 1      0864-----+
I 00859 HLT J      0005.....
+ 00864 TRA I 02 0799 07R9....
  00869 TR 1      0879-----+

```

ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

2 004 00873 005
2 001 00874 0

ROUTINE #006
USE RCV-TZB TO TEST FOR
BA8421 BITS IN MBR CHAR 0.

```

.....000879 RCV U      0970.....
I 00884 TZB . 07 0894 0YI4---+
I 00889 TR 1      0934-----+
I 00894 TRS 0 11 0934 0RC4---+
I 00899 TZB . 01 0934 09T4---+
I 00904 TZB . 02 0934 09L4---+
I 00909 TZB . 03 0934 09C4---+
I 00914 TZB . 04 0934 0Z34---+
I 00919 TZB . 05 0934 0ZT4---+
I 00924 TZB . 06 0934 0ZL4---+
I 00929 TR 1      0964-----+
I 00934 TRA I 01 0964 09W4---+
I 00939 SEL 2      0500      0
I 00944 WR R      0975      0
I 00949 TRA I 03 0959 09E9---+
I 00954 TR 1      0964-----+
I 00959 HLT J      0006.....
+ 00964 TRA I 02 0879 08P9....
  00969 TR 1      0984-----+

```

ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

2 001 00970 0
2 004 00974 1111
2 003 00977 006
2 001 00978 0

TO NEXT ROUTINE

ROUTINE #007
USE RCV-TZB TO TEST FOR
BA8421 BITS IN MBR CHAR 1.

```

D05.....
  00984 RCV U      1076
  00989 TZB . 07  0999 0Z19-
  00994 TR  1     1039-----
  00999 TRS 0 11  1039 1-C9-
  01004 TZB . 01  1039 10T9-
  01009 TZB . 02  1039 10L9-
  01014 TZB . 03  1039 10C9-
  01019 TZB . 04  1039 1 39-
  01024 TZB . 05  1039 1 T9-
  01029 TZB . 06  1039 1 L9-
  01034 TR  1     1069-----
  01039 TRA I 01  1069 10W9-
  01044 SEL 2     0500
  01049 WR  R     1080
  01054 TRA I 03  1064 10F4-
  01059 TR  1     1069-----
  01064 HLT J     0007.....
  01069 TRA I 02  0984 09Q4.....
  01074 TR  1     1089-----

```

ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

- 2 001 01075 1
- 2 001 01076 □
- 2 003 01079 111
- 2 003 01082 007
- 2 001 01083 □

ROUTINE #008
USE RCV-TZB TO TEST FOR
BA8421 BITS IN MBR CHAR 2.

```

  01089 RCV U      1182.....
  01094 TZB . 07  1104 1/G4-
  01099 TR  1     1144-----
  01104 TRS 0 11  1144 1JD4-
  01109 TZB . 01  1144 11U4-
  01114 TZB . 02  1144 11M4-
  01119 TZB . 03  1144 11D4-
  01124 TZB . 04  1144 1/44-
  01129 TZB . 05  1144 1/U4-
  01134 TZB . 06  1144 1/M4-
  01139 TR  1     1174-----
  01144 TRA I 01  1174 11X4-
  01149 SEL 2     0500
  01154 WR  R     1185
  01159 TRA I 03  1169 11F9-
  01164 TR  1     1174-----
  01169 HLT J     0008.....
  01174 TRA I 02  1089 10Q9.....
  01179 TR  1     1194-----E07

```

ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

- 2 002 01181 11
- 2 001 01182 □
- 2 002 01184 11
- 2 003 01187 008
- 2 001 01188 □

TO NEXT ROUTINE

ROUTINE #009
 USE RCV-TZB TO TEST FOR
 BA8421 BITS IN MBR CHAR 3.

```
E06.....
  01194 RCV U      1288
  01199 TZB . 07  1209 1S&9-
  01204 TR  1     1249-----
  01209 TRS 0 11  1249 1KD9-
  01214 TZB . 01  1249 12U9-
  01219 TZB . 02  1249 12M9-
  01224 TZB . 03  1249 12D9-
  01229 TZB . 04  1249 1S49-
  01234 TZB . 05  1249 1SU9-
  01239 TZB . 06  1249 1SM9-
  01244 TR  1     1279-----
  01249 TRA I 01  1279 12X9-
  01254 SEL 2     0500
  01259 WR  R     1290
  01264 TRA I 03  1274 12G4-
  01269 TR  1     1279-----
  01274 HLT J     0009.....
  01279 TRA I 02  1194 11R4-
  01284 TR  1     1299-----
```

ERROR
 ERROR
 ERROR
 ERROR
 ERROR
 ERROR
 ERROR
 ERROR

ERROR ROUTINE

2 003	01287	111
2 001	01288	□
2 001	01289	1
2 003	01292	009
2 001	01293	□

ROUTINE #010
 USE RCV-TZB TO TEST FOR
 BA8421 BITS IN MBR CHAR 4.

```

  01299 RCV U      1394.....
  01304 TZB . 07  1314 1TA4-
  01309 TR  1     1354-----
  01314 TRS 0 11  1354 1LE4-
  01319 TZB . 01  1354 13V4-
  01324 TZB . 02  1354 13N4-
  01329 TZB . 03  1354 13E4-
  01334 TZB . 04  1354 1T54-
  01339 TZB . 05  1354 1TV4-
  01344 TZB . 06  1354 1TN4-
  01349 TR  1     1384-----
  01354 TRA I 01  1384 13Y4-
  01359 SEL 2     0500
  01364 WR  R     1395
  01369 TRA I 03  1379 13G9-
  01374 TR  1     1384-----
  01379 HLT J     0010.....
  01384 TRA I 02  1299 12R9-
  01389 TR  1     1404-----F08
```

ERROR
 ERROR
 ERROR
 ERROR
 ERROR
 ERROR
 ERROR

ERROR ROUTINE

2 004	01393	1111
2 001	01394	□
2 003	01397	010
2 001	01398	□

TO NEXT ROUTINE

ROUTINE #011
EXECUTE SB 00 AND SB 15
TEST 900.

```

F07.....01404 SB % 1460
I 01409 SB % 15 1460 1DF0
I 01414 TRS 0 10 1424 1MK4
I 01419 TR 1 1454
I
I
I 01424 TRA I 01 1454 14V4
I 01429 SEL 2 0500
I 01434 WR R 1461
I 01439 TRA I 03 1449 14D9
I 01444 TR 1 1454
I 01449 HLT J 0011
+ 01454 TRA I 02 1404 14-4
  01459 TR 1 1469
I
I

```

ERROR ROUTINE

```

2 004 01463 X011
2 001 01464

```

```

.....01469 RCV U 1530
I 01474 SB % 02 1530 15L0
I 01479 TRS 0 11 1494 1MI4
I 01484 TZB . 01 1494 14Z4
I 01489 TR 1 1524
I
I
I 01494 TRA I 01 1524 15S4
I 01499 SEL 2 0500
I 01504 WR R 1535
I 01509 TRA I 03 1519 15A9
I 01514 TR 1 1524
I 01519 HLT J 0012
+ 01524 TRA I 02 1469 1409
  01529 TR 1 1544
I
I

```

ROUTINE #012
USE SB TO TEST MBR 1 BIT TO
ADDER,RR AND BACK TO MBR.

ERROR ROUTINE

```

2 005 01534 11111
2 003 01537 012
2 001 01538

```

```

.....01544 RCV U 1605
I 01549 SB % 01 1605 16 5
I 01554 TRS 0 11 1569 1NF9
I 01559 TZB . 02 1569 1509
I 01564 TR 1 1599
I
I
I 01569 TRA I 01 1599 15Z9
I 01574 SEL 2 0500
I 01579 WR R 1610
I 01584 TRA I 03 1594 1514
I 01589 TR 1 1599
I 01594 HLT J 0013
+ 01599 TRA I 02 1544 15M4
  01604 TR 1 1619
I
I

```

ROUTINE #013
USE SB TO TEST MBR 2 BIT TO
ADDER,RR AND BACK TO MBR.

ERROR ROUTINE

```

2 005 01609 22222
2 003 01612 013
2 001 01613

```

-----G09 TO NEXT ROUTINE

gscans/g0013858.png

```

H09.....01844 RCV U      1905
I 01849 SB % 01 1905 19 5
I 01854 TRS 0 11 1869 1QF9
I 01859 TZB . 06 1869 1Y09
I 01864 TR 1 1899
I
I
I
I 01869 TRA I 01 1899 18Z9
I 01874 SEL 2 0500
I 01879 WR R 1910
I 01884 TRA I 03 1894 1814
I 01889 TR 1 1899
I 01894 HLT J 0017
+ 01899 TRA I 02 1844 18M4
  01904 TR 1 1919
I
I
I

```

```

2 005 01909 -----
2 003 01912 017
2 001 01913

```

ROUTINE #017
 USE SB TO TEST EMIT B BIT
 TO RR AND BACK TO MBR.

ERROR ROUTINE

ROUTINE #018
 USE SB 01 TO TEST SUP 1 BIT
 TO AD. THEN SB 09 TO TEST
 1 TO AD ROUTING.

```

.....01919 RCV U      2010
I 01924 SB % 01 2010 20/0
I 01929 TRS 0 11 1964 1RF4
I 01934 TZB . 01 1944 19U4
I 01939 TR 1 1964
I
I
I
I 01944 SB % 09 2010 2-/0
I 01949 TZB . 01 1969 19W9
I 01954 TRS 0 11 1974 1RG4
I 01959 TR 1 2004
I 01964 SB % 09 2010 2-/0
I 01969 TRS 0 11 1974 1RG4
I
I
I
I 01974 TRA I 01 2004 20 4
I 01979 SEL 2 0500
I 01984 WR R 2015
I 01989 TRA I 03 1999 1919
I 01994 TR 1 2004
I 01999 HLT J 0018
+ 02004 TRA I 02 1919 19J9
  02009 TR 1 2024-----J11
I
I
I

```

```

2 005 02014 55555
2 003 02017 018
2 001 02018

```

SUP 1 BIT TO AD
 TEST 901 ERROR

ERROR

1 TO AD VIA DEC CARRY IN
 ERROR
 ERROR

ERROR RESET
 AND TF 901

ERROR ROUTINE

TO NEXT ROUTINE

ROUTINE #019
USE SB02 TO TEST SUP 2 BIT
TO AD. THEN SB 10 TO TEST
2 TO AD ROUTING.

```

J10.....
I 02024 RCV U      2115
I 02029 SB % 02   2115 21J5
I 02034 TRS 0 11  2069 2-F9
I 02039 TZB . 02   2049 20M9
I 02044 TR  1      2069
I
I
I 02049 SB % 10   2115 2JJ5
I 02054 TZB . 02   2074 20P4
I 02059 TRS 0 11  2079 2-G9
I 02064 TR  1      2109
I 02069 SB % 10   2115 2JJ5
I 02074 TRS 0 11  2079 2-G9
I
I
I 02079 TRA I 01   2109 21 9
I 02084 SEL 2      0500
I 02089 WR  R      2120
I 02094 TRA I 03   2104 21&4
I 02099 TR  1      2109
I 02104 HLT J      0019
+ 02109 TRA I 02   2024 20K4
  02114 TR  1      2129
I
I
I

```

SUP 2 BIT TO AD
TEST 901 ERROR

ERROR

ROUTE 2 TO AD
ERROR
ERROR

ERROR RESET
AND TF 901

ERROR ROUTINE

```

2 005 02119      00000
2 003 02122      019
2 001 02123      0

```

ROUTINE #020
USE SB 03 TO TEST SUP 4 BIT
TO AD. THEN SB 11 TO TEST
4 TO AD ROUTING.

```

I
I 02129 RCV U      2220
I 02134 SB % 03   2220 22B0
I 02139 TRS 0 11  2174 2JG4
I 02144 TZB . 03   2154 21E4
I 02149 TR  1      2174
I
I
I 02154 SB % 11   2220 2KB0
I 02159 TZB . 03   2179 21G9
I 02164 TRS 0 11  2184 2JH4
I 02169 TR  1      2214
I 02174 SB % 11   2220 2KB0
I 02179 TRS 0 11  2184 2JH4
I
I
I 02184 TRA I 01   2214 22/4
I 02189 SEL 2      0500
I 02194 WR  R      2225
I 02199 TRA I 03   2209 22&9
I 02204 TR  1      2214
I 02209 HLT J      0020
+ 02214 TRA I 02   2129 21K9
  02219 TR  1      2234
I
I
I

```

SUP 4 BIT TO AD
ERROR

ERROR

ROUTE 4 TO AD
ERROR
ERROR

ERROR RESET
AND TF 901

ERROR ROUTINE

```

2 005 02224      66666
2 003 02227      020
2 001 02228      0

```

TO NEXT ROUTINE

ROUTINE #021
USE SB 04 TO TEST SUP 8 BIT
TO AD. THEN SB 12 TO TEST
8 TO AD ROUTING.

```

K11..... 02234 RCV U      2325
I 02239 SB % 04      2325 2T25
I 02244 TRS 0 11     2279 2KG9
I 02249 TZB . 04     2259 2S59
I 02254 TR 1         2279
I
I
I 02259 SB % 12      2325 2C25
I 02264 TZB . 04     2284 2S84
I 02269 TRS 0 11     2289 2KH9
I 02274 TR 1         2319
I 02279 SB % 12      2325 2C25
I 02284 TRS 0 11     2289 2KH9
I
I
I 02289 TRA I 01     2319 23/9
I 02294 SEL 2         0500
I 02299 WR R         2330
I 02304 TRA I 03     2314 23A4
I 02309 TR 1         2319
I 02314 HLT J         0021
+ 02319 TRA I 02     2234 22L4
  02324 TR 1         2339
I
I
I

```

SUP 8 BIT TO AD
ERROR
ERROR

ROUTE 8 TO AD
ERROR
ERROR
ERROR RESET
AND TF 901

ERROR ROUTINE

```

2 005 02329      99999
2 003 02332      021
2 001 02333      □

```

ROUTINE #022
USE SB 09 TO TEST
SUP AD CARRY ROUTING.

```

..... 02339 RCV U      2410
I 02344 SB % 09      2410 2M/0
I 02349 TRS 0 11     2374 2LG4
I 02354 TZB . 01     2374 23X4
I 02359 TZB . 02     2374 23P4
I 02364 TZB . 04     2374 2T74
I 02369 TZB . 03     2404 24G4
I
I
I 02374 TRA I 01     2404 24 4
I 02379 SEL 2         0500
I 02384 WR R         2415
I 02389 TRA I 03     2399 23I9
I 02394 TR 1         2404
I 02399 HLT J         0022
+ 02404 TRA I 02     2339 23L9
  02409 TR 1         2424
I
I

```

SB 09 ON #
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

-----L13 TO NEXT ROUTINE

```

2 005 02414      #####
2 003 02417      022
2 001 02418      □

```

ROUTINE #023
USE SB TO TEST MBR CHAR. 0
FOR PICKING OR DROPPING BITS.

```

L12.....I .02424 RCV U      2525      I
I .02429 SB  % 09    2525 2NS5  I
I .02434 TZB  . 01    2489 24Y9-#-----*
I .02439 TZB  . 02    2489 24Q9-#-----*
I .02444 TZB  . 03    2489 24H9-#-----*
I .02449 TZB  . 04    2459 2U59-#-----I
I .02454 TR   1      2489-----#-----*
I .02459 TZB  . 05    2469 2UW9#-----I
I .02464 TR   1      2489-----#-----*
I .02469 TZB  . 06    2479 2UP9#-----I
I .02474 TR   1      2489-----#-----*
I .02479 TRS  0 11   2489 2MH9#-----*
I .02484 TR   1      2519-----#-----I
I ##### I I
I ##### I I
I .02489 TRA  I 01   2519 25/9#-----*
I .02494 SEL  2      0500      I
I .02499 WR   R      2530      I
I .02504 TRA  I 03   2514 25A4-#-----I
I .02509 TR   1      2519-----#-----*
I .02514 HLT  J      0023.....#...I
+---02519 TRA  I 02   2424 24K4.#...I
I .02524 TR   1      2539-----#-----I
I ##### I I
I ##### I I

```

```

MBR CHAR 0 EQUALS 7
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
TEST 901

```

ERROR ROUTINE

```

2 005 02529      7HHHH
2 003 02532      023
2 001 02533      I

```

ROUTINE #024
USE SB TO TEST MBR CHAR 0
FOR PICKING OR DROPPING BITS.

```

##### I
I .02539 RCV U      2640.....#...I
I .02544 SB  % 12    2640 2F40  I
I .02549 TZB  . 04    2604 2W04-#-----*
I .02554 TZB  . 05    2604 2W 4-#-----*
I .02559 TZB  . 06    2604 2W-4-#-----*
I .02564 TZB  . 01    2574 25X4-#-----I
I .02569 TR   1      2604-----#-----*
I .02574 TZB  . 02    2584 25Q4#-----I
I .02579 TR   1      2604-----#-----*
I .02584 TZB  . 03    2594 25I4#-----I
I .02589 TR   1      2604-----#-----*
I .02594 TRS  0 11   2604 20G4#-----*
I .02599 TR   1      2634-----#-----I
I ##### I I
I ##### I I
I .02604 TRA  I 01   2634 26T4#-----*
I .02609 SEL  2      0500      I
I .02614 WR   R      2645      I
I .02619 TRA  I 03   2629 26B9-#-----I
I .02624 TR   1      2634-----#-----*
I .02629 HLT  J      0024.....#...I
+---02634 TRA  I 02   2539 25L9.#...I
I .02639 TR   1      2654-----#-----M14
I ##### I I

```

```

MBR CHAR 0 EQUALS H
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
TEST 901

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 02644      H7777
2 003 02647      024
2 001 02648      I

```

ROUTINE #025
USE SB TO TEST MBR CHAR 1
FOR PICKING OR DROPPING BITS.

```

M13.....
02654 RCV U      2756
I 02659 SB % 09  2756 2PV6
I 02664 TZB . 01  2719 27/9-
I 02669 TZB . 02  2719 27J9-
I 02674 TZB . 03  2719 27A9-
I 02679 TZB . 04  2689 2W89-
I 02684 TR 1     2719-
I 02689 TZB . 05  2699 2WZ9-
I 02694 TR 1     2719-
I 02699 TZB . 06  2709 2X-9-
I 02704 TR 1     2719-
I 02709 TRS O 11  2719 2PA9-
I 02714 TR 1     2749-
I
I
I
I 02719 TRA I 01  2749 27U9-
I 02724 SEL 2     0500
I 02729 WR R      2760
I 02734 TRA I 03  2744 27D4-
I 02739 TR 1     2749-
I 02744 HLT J     0025.....
+ 02749 TRA I 02  2654 26N4.
  02754 TR 1     2769-
I
I
I
I
2 005 02759      H7HHH
2 003 02762      025
2 001 02763      □

```

MBR CHAR. 1 EQUALS 7
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
TEST 901

ERROR ROUTINE

ROUTINE #026
USE SB TO TEST MBR CHAR 1
FOR PICKING OR DROPPING BITS

```

02769 RCV U      2871.....
I 02774 SB % 12  2871 2H71
I 02779 TZB . 04  2834 2Y34-
I 02784 TZB . 05  2834 2YT4-
I 02789 TZB . 06  2834 2YL4-
I 02794 TZB . 01  2804 28 4-
I 02799 TR 1     2834-
I 02804 TZB . 02  2814 28J4-
I 02809 TR 1     2834-
I 02814 TZB . 03  2824 28B4-
I 02819 TR 1     2834-
I 02824 TRS O 11  2834 2QC4-
I 02829 TR 1     2864-
I
I
I
I 02834 TRA I 01  2864 28W4-
I 02839 SEL 2     0500
I 02844 WR R      2875
I 02849 TRA I 03  2859 28E9-
I 02854 TR 1     2864-
I 02859 HLT J     0026.....
+ 02864 TRA I 02  2769 2709.
  02869 TR 1     2884-
I
I
I
I
2 005 02874      7H777
2 003 02877      026
2 001 02878      □

```

MBR CHAR. 1 EQUALS H
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

TO NEXT ROUTINE

ROUTINE #027
USE SB TO TEST MBR CHAR 2
FOR PICKING OR DROPPING BITS

```

N14..... 02884 RCV U      2987      □
I □ 02889 SB % 09      2987 2RY7 □
I □ 02894 TZB . 01      2949 29U9-#-----
I □ 02899 TZB . 02      2949 29M9-#-----
I □ 02904 TZB . 03      2949 29D9-#-----
I □ 02909 TZB . 04      2919 2Z19-#-----
I □ 02914 TR 1          2949-----#-----
I □ 02919 TZB . 05      2929 2ZS9-#-----
I □ 02924 TR 1          2949-----#-----
I □ 02929 TZB . 06      2939 2ZL9-#-----
I □ 02934 TR 1          2949-----#-----
I □ 02939 TRS 0 11      2949 2RD9-#-----
I □ 02944 TR 1          2979-----#-----
I □ 02949 TRA I 01      2979 29X9-#-----
I □ 02954 SEL 2          0500      □
I □ 02959 WR R          2990      □
I □ 02964 TRA I 03      2974 29G4-#-----
I □ 02969 TR 1          2979-----#-----
I □ 02974 HLT J          0027.....
+ - 02979 TRA I 02      2884 28Q4.....
□ 02984 TR 1          2999-----#-----

```

```

MBR CHAR. 2 EQUALS 7
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

```

ERROR ROUTINE

```

2 005 02989      HH7HH
2 003 02992      027
2 001 02993      □

```

ROUTINE #028
USE SB TO TEST MBR CHAR 2
FOR PICKING OR DROPPING BITS.

```

..... 02999 RCV U      3102.....
I □ 03004 SB % 12      3102 3A02 □
I □ 03009 TZB . 04      3064 3 64-#-----
I □ 03014 TZB . 05      3064 3 W4-#-----
I □ 03019 TZB . 06      3064 3 04-#-----
I □ 03024 TZB . 01      3034 30T4-#-----
I □ 03029 TR 1          3064-----#-----
I □ 03034 TZB . 02      3044 30M4-#-----
I □ 03039 TR 1          3064-----#-----
I □ 03044 TZB . 03      3054 30E4-#-----
I □ 03049 TR 1          3064-----#-----
I □ 03054 TRS 0 11      3064 3-F4-#-----
I □ 03059 TR 1          3094-----#-----
I □ 03064 TRA I 01      3094 30Z4-#-----
I □ 03069 SEL 2          0500      □
I □ 03074 WR R          3105      □
I □ 03079 TRA I 03      3089 30H9-#-----
I □ 03084 TR 1          3094-----#-----
I □ 03089 HLT J          0028.....
+ - 03094 TRA I 02      2999 29R9.....
□ 03099 TR 1          3114-----#-----

```

```

MBR CHAR. 2 EQUALS H
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

```

ERROR ROUTINE

```

2 005 03104      77H77
2 003 03107      028
2 001 03108      □

```

TO NEXT ROUTINE

ROUTINE #029
USE SB TO TEST MBR CHAR 3
FOR PICKING OR DROPPING BITS.

```

P15..... 03114 RCV U 3218
I 03119 SB % 09 3218 3K/8
I 03124 TZB . 01 3179 31X9-
I 03129 TZB . 02 3179 31P9-
I 03134 TZB . 03 3179 31G9-
I 03139 TZB . 04 3149 3/49-
I 03144 TR 1 3179-
I 03149 TZB . 05 3159 3/V9-
I 03154 TR 1 3179-
I 03159 TZB . 06 3169 3/O9-
I 03164 TR 1 3179-
I 03169 TRS 0 11 3179 3JG9-
I 03174 TR 1 3209-
I
I
I
I 03179 TRA I 01 3209 32 9-
I 03184 SEL 2 0500
I 03189 WR R 3220
I 03194 TRA I 03 3204 32G4-
I 03199 TR 1 3209-
I 03204 HLT J 0029.....
+--03209 TRA I 02 3114 31J4-
I 03214 TR 1 3229-
I
I
I

```

```

MBR CHAR. 3 EQUALS 7
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

```

ERROR ROUTINE

```

2 005 03219 HHH7H
2 003 03222 029
2 001 03223

```

ROUTINE #030
USE SB TO TEST MBR CHAR 3
FOR PICKING OR DROPPING BITS.

```

03229 RCV U 3333.....
I 03234 SB % 12 3333 3C33
I 03239 TZB . 04 3294 3S94-
I 03244 TZB . 05 3294 3SZ4-
I 03249 TZB . 06 3294 3SR4-
I 03254 TZB . 01 3264 32W4-
I 03259 TR 1 3294-
I 03264 TZB . 02 3274 32P4-
I 03269 TR 1 3294-
I 03274 TZB . 03 3284 32H4-
I 03279 TR 1 3294-
I 03284 TRS 0 11 3294 3KI4-
I 03289 TR 1 3324-
I
I
I
I 03294 TRA I 01 3324 33S4-
I 03299 SEL 2 0500
I 03304 WR R 3335
I 03309 TRA I 03 3319 33A9-
I 03314 TR 1 3324-
I 03319 HLT J 0030.....
+--03324 TRA I 02 3229 32K9-
I 03329 TR 1 3344-
I
I

```

```

MBR CHAR. 3 EQUALS H
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 03334 777H7
2 003 03337 030
2 001 03338

```


ROUTINE #031
USE SB TO TEST MBR CHAR 4
FOR PICKING OR DROPPING BITS.

MBR CHAR. 4 EQUALS 7
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

ROUTINE #032
USE SB TO TEST MBR CHAR 4
FOR PICKING OR DROPPING BITS.

MBR CHAR. 4 EQUALS H
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

ERROR ROUTINE

TO NEXT ROUTINE

```

Q16..... 03344 RCV U      3449
I 03349 SB % 09 3449 3MU9
I 03354 TZB . 01 3409 34 9-
I 03359 TZB . 02 3409 34-9-
I 03364 TZB . 03 3409 34&9-
I 03369 TZB . 04 3379 3T79-
I 03374 TR 1 3409-
I 03379 TZB . 05 3389 3TY9-
I 03384 TR 1 3409-
I 03389 TZB . 06 3399 3TR9-
I 03394 TR 1 3409-
I 03399 TRS 0 11 3409 3M69-
I 03404 TR 1 3439-
I
I
I
I 03409 TRA I 01 3439 34T9-
I 03414 SEL 2 0500
I 03419 WR R 3450
I 03424 TRA I 03 3434 34C4-
I 03429 TR 1 3439-
I 03434 HLT J 0031.....
+ 03439 TRA I 02 3344 33M4.....
  03444 TR 1 3459-
I
I
I

```

2 005 03449 HHHH7
2 003 03452 031
2 001 03453

```

..... 03459 RCV U      3564.....
I 03464 SB % 12 3564 3E64
I 03469 TZB . 04 3524 3V24-
I 03474 TZB . 05 3524 3VS4-
I 03479 TZB . 06 3524 3VK4-
I 03484 TZB . 01 3494 34Z4-
I 03489 TR 1 3524-
I 03494 TZB . 02 3504 35-4-
I 03499 TR 1 3524-
I 03504 TZB . 03 3514 35A4-
I 03509 TR 1 3524-
I 03514 TRS 0 11 3524 3NB4-
I 03519 TR 1 3554-
I
I
I
I 03524 TRA I 01 3554 35V4-
I 03529 SEL 2 0500
I 03534 WR R 3565
I 03539 TRA I 03 3549 35D9-
I 03544 TR 1 3554-
I 03549 HLT J 0032.....
+ 03554 TRA I 02 3459 34N9.....
  03559 TR 1 3574-
I
I
I

```

2 005 03564 7777H
2 003 03567 032
2 001 03568

ROUTINE #033
EXECUTE SGN,RAD,TRZ AND TRP
TEST ZERO, PLUS AND NO 900 CHK

```

R17.....
03574 EEM 3 14 0000 06-0
I 03579 SPC      0000
I 03584 SGN T    3660
I 03589 RAD H    3664
I 03594 TRZ N    3604-----
I 03599 TR 1     3624-----
I 03604 TRP M    3614-----
I 03609 TR 1     3624-----
I 03614 TRS O 10 3624 30K4-----
I 03619 TR 1     3654-----
I
I
I
I 03624 TRA I 01 3654 36V4-----
I 03629 SEL 2     0500
I 03634 WR R     3665
I 03639 TRA I 03 3649 36D9-----
I 03644 TR 1     3654-----
I 03649 HLT J    0033.....
+ 03654 TRA I 02 3574 35P4.....
  03659 TR 1     3674-----
I
I
I

```

TN DZT, SET SIGN PLUS
TEST ZERO
TEST PLUS
TEST NO 900 CHECK

ERROR ROUTINE

```

2 005 03664      0 -
2 003 03667      033
2 001 03668      0

```

ROUTINE #034
RAD PLUS 1 AND TEST
TURN OFF OF DZT.

```

03674 RAD H    3729.....
I 03679 TRZ N    3689-----
I 03684 TRP M    3719-----
I
I
I
I 03689 TRA I 01 3719 37/9-----
I 03694 SEL 2     0500
I 03699 WR R     3730
I 03704 TRA I 03 3714 37A4-----
I 03709 TR 1     3719-----
I 03714 HLT J    0034.....
+ 03719 TRA I 02 3674 36P4.....
  03724 TR 1     3739-----S19
I
I
I

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 03729      A
2 003 03732      034
2 001 03733      0

```

```

S18.....I 03739 RAD H      3799      I
I 03744 TRZ N      3759-----I
I 03749 TRP M      3759-----I
I 03754 TR 1       3789-----I
I 03759 TRA I 01   3789 37Y9---I
I 03764 SEL 2      0500      I
I 03769 WR R       3800      I
I 03774 TRA I 03   3784 37H4---I
I 03779 TR 1       3789-----I
I 03784 HLT J      0035.....I
+ 03789 TRA I 02   3739 37L9...I
I 03794 TR 1       3809-----I

```

ROUTINE #035
 RAD MINUS 1, TEST NOT ZERO
 AND SIGN MINUS.

ERROR ROUTINE

```

2 005 03799      J
2 003 03802      035
2 001 03803      I

```

```

I 03809 RSU Q      3869.....I
I 03814 TRS O 10   3829 3QK9---I
I 03819 TRZ N      3829-----I
I 03824 TRP M      3859-----I
I 03829 TRA I 01   3859 38V9---I
I 03834 SEL 2      0500      I
I 03839 WR R       3870      I
I 03844 TRA I 03   3854 38E4---I
I 03849 TR 1       3859-----I
I 03854 HLT J      0036.....I
+ 03859 TRA I 02   3809 38-9...I
I 03864 TR 1       3879-----I

```

ROUTINE #036
 EXECUTE RSU MINUS 1 . TEST
 NO 900, NOT ZERO AND SIGN PLUS

ERROR ROUTINE

```

2 005 03869      J
2 003 03872      036
2 001 03873      I

```

```

I 03879 RAD H      3939.....I
I 03884 ADD G      3939      I
I 03889 TRS O 10   3899 3QR9---I
I 03894 TRZ N      3929-----I
I 03899 TRA I 01   3929 39S9---I
I 03904 SEL 2      0500      I
I 03909 WR R       3940      I
I 03914 TRA I 03   3924 39B4---I
I 03919 TR 1       3929-----I
I 03924 HLT J      0037.....I
+ 03929 TRA I 02   3879 38P9...I
I 03934 TR 1       3949-----I

```

ROUTINE #037
 EXECUTE ADD ZERO TO ZERO.
 TEST FOR ZERO AND NO 900 CHECK

ERROR ROUTINE

```

2 005 03939      G
2 003 03942      037
2 001 03943      I

```

-----T20 TO NEXT ROUTINE

ROUTINE #038
EXECUTE SUB AND CHECK FOR 900
ON SUB; DO COMPL. ADDITION

```
T19.....
03949 RAD H      4014
I 03954 ADD G      4013
I 03959 SUB P      4013
I 03964 TRS O 10 3974 3RP4
I 03969 TRZ N      4004
I 03974 TRA I 01 4004 40 4
I 03979 SEL 2      0500
I 03984 WR R       4015
I 03989 TRA I 03 3999 39I9
I 03994 TR 1       4004
I 03999 HLT J      0038
-04004 TRA I 02 3949 39M9
 04009 TR 1        4024
```

ADD PLUS 1 TO PLUS 0.
SUB PLUS 1 FROM PLUS 1.
TEST ZERO

ERROR ROUTINE

```
2 004 04013      A
2 001 04014      G
2 003 04017      038
2 001 04018      0
```

```
04024 RAD H      4083
I 04029 ADD G      4083
I 04034 SUB P      4084
I 04039 TRZ N      4074
I 04044 TRA I 01 4074 40X4
I 04049 SEL 2      0500
I 04054 WR R       4085
I 04059 TRA I 03 4069 40F9
I 04064 TR 1       4074
I 04069 HLT J      0039
-04074 TRA I 02 4024 40K4
 04079 TR 1        4094
```

ROUTINE #039
ADD PLUS 1 TO PLUS 1.
SUB PLUS 2 FROM PLUS 2.

ERROR ROUTINE

```
2 004 04083      A
2 001 04084      B
2 003 04087      039
2 001 04088      0
```

TO NEXT ROUTINE

```

U20.....04094 RAD H      4164      □
I □ 04099 ADD G      4163      □
I □ 04104 SUB P      4164      □
I □ 04109 TRP M      4119-----□
I □ 04114 TR  1      4124-----□
I □ 04119 TRZ N      4154-----□
I □ 04124 TRA I 01    4154 41V4-----□
I □ 04129 SEL 2      0500      □
I □ 04134 WR  R      4165      □
I □ 04139 TRA I 03    4149 41D9-----□
I □ 04144 TR  1      4154-----□
I □ 04149 HLT J      0040.....□
+---04154 TRA I 02    4094 40R4.....□
□ 04159 TR  1      4174-----□

```

2 005 04164
2 003 04167
2 001 04168

```

ROUTINE #040
ADD MINUS 0 TO MINUS 1
SUB MINUS 1 FROM MINUS 1
TEST PLUS
TEST ZERO

```

ERROR ROUTINE

```

04174 RSU Q      4234.....□
I □ 04179 SUB P      4233      □
I □ 04184 ADD G      4234      □
I □ 04189 TRZ N      4224-----□
I □ 04194 TRA I 01    4224 42S4-----□
I □ 04199 SEL 2      0500      □
I □ 04204 WR  R      4235      □
I □ 04209 TRA I 03    4219 42A9-----□
I □ 04214 TR  1      4224-----□
I □ 04219 HLT J      0041.....□
+---04224 TRA I 02    4174 41P4.....□
□ 04229 TR  1      4244-----□

```

2 005 04234
2 003 04237
2 001 04238

```

ROUTINE #041
SUB PLUS 0 FROM MINUS 1.
ADD PLUS 1 TO MINUS 1

```

ERROR ROUTINE

```

04244 RSU Q      4304.....□
I □ 04249 SUB P      4303      □
I □ 04254 ADD G      4304      □
I □ 04259 TRZ N      4294-----□
I □ 04264 TRA I 01    4294 42Z4-----□
I □ 04269 SEL 2      0500      □
I □ 04274 WR  R      4305      □
I □ 04279 TRA I 03    4289 42H9-----□
I □ 04284 TR  1      4294-----□
I □ 04289 HLT J      0042.....□
+---04294 TRA I 02    4244 42M4.....□
□ 04299 TR  1      4314-----V22

```

2 005 04304
2 003 04307
2 001 04308

```

ROUTINE #042
SUB MINUS 0 FROM PLUS 1
ADD MINUS 1 TO PLUS 1

```

ERROR ROUTINE

TO NEXT ROUTINE

```

gscans/g00.....
V21.....
I 04314 RAD H      4374
I 04319 ADD G      4373
I 04324 SUB P      4374
I 04329 TRZ N      4364-----
I
I
I
I 04334 TRA I 01  4364 43W4-----
I 04339 SEL 2      0500
I 04344 WR R       4375
I 04349 TRA I 03  4359 43E9-----
I 04354 TR 1       4364-----
I 04359 HLT J      0043.....
+---04364 TRA I 02  4314 43J4.....
  04369 TR 1       4384-----
I
I

```

```

2 005 04374          GH
2 003 04377          043
2 001 04378          □

```

ROUTINE #043
TEST DIGIT ADDER WITH ADD
ZERO TO PLUS 8 AND THEN SUB
PLUS 8 FROM PLUS 8.

ERROR ROUTINE

```

I
I
I
I 04384 RAD H      4444.....
I 04389 ADD G      4444
I 04394 SUB P      4443
I 04399 TRZ N      4434-----
I
I
I
I 04404 TRA I 01  4434 44T4-----
I 04409 SEL 2      0500
I 04414 WR R       4445
I 04419 TRA I 03  4429 44B9-----
I 04424 TR 1       4434-----
I 04429 HLT J      0044.....
+---04434 TRA I 02  4384 43Q4.....
  04439 TR 1       4454-----
I
I

```

```

2 005 04444          HD
2 003 04447          044
2 001 04448          □

```

ROUTINE #044
TEST DIGIT ADDER WITH ADD
PLUS 4 TO PLUS 4 AND THEN SUB
PLUS 8 FROM PLUS 8.

ERROR ROUTINE

```

I
I
I
I 04454 RAD H      4524.....
I 04459 ADD G      4524
I 04464 ADD G      4524
I 04469 ADD G      4524
I 04474 SUB P      4523
I 04479 TRZ N      4514-----
I
I
I
I 04484 TRA I 01  4514 45/4-----
I 04489 SEL 2      0500
I 04494 WR R       4525
I 04499 TRA I 03  4509 45G9-----
I 04504 TR 1       4514-----
I 04509 HLT J      0045.....
+---04514 TRA I 02  4454 44N4.....
  04519 TR 1       4534-----
I
I

```

```

2 005 04524          HB
2 003 04527          045
2 001 04528          □

```

ROUTINE #045
TEST DIGIT ADDER WITH ADD
PLUS 2 TO PLUS 2, PLUS 2 TO
PLUS 4, PLUS 2 TO PLUS 6,
THEN SUB PLUS 8 FROM PLUS 8.

ERROR ROUTINE

TO NEXT ROUTINE

ROUTINE #046
TEST DIGIT ADDER WITH
ADD SIGNS ALIKE PLUS.

```

w22.....04534 RAD H      4623      □
I □ 04539 ADD G      4623      □
I □ 04544 ADD G      4623      □
I □ 04549 ADD G      4623      □
I □ 04554 ADD G      4623      □
I □ 04559 ADD G      4623      □
I □ 04564 ADD G      4623      □
I □ 04569 ADD G      4623      □
I □ 04574 SUB P      4624      □
I □ 04579 TRZ N      4614-----
I □ 04584 TRA I 01  4614 46/4-#-#-#
I □ 04589 SEL 2      0500      □ I
I □ 04594 WR R      4625      □ I
I □ 04599 TRA I 03  4609 46G9-#-#-#
I □ 04604 TR 1      4614-----#-#-#
I □ 04609 HLT J      0046.....#.#.#
+---04614 TRA I 02  4534 45L4.#.#.#
□ 04619 TR 1      4634-----#-#-#

```

```

RAD PLUS 1
ADD 1 TO 1
ADD 1 TO 2
ADD 1 TO 3
ADD 1 TO 4
ADD 1 TO 5
ADD 1 TO 6
ADD 1 TO 7
SUB PLUS 8 FROM PLUS 8.

```

ERROR ROUTINE

```

2 004 04623      A
2 001 04624      H
2 003 04627      046
2 001 04628      □

```

ROUTINE #047
TEST DIGIT ADDER WITH ADD, SUB

```

.....04634 RAD H      4693.....#.#.#
I □ 04639 ADD G      4693      □
I □ 04644 SUB P      4694      □
I □ 04649 TRZ N      4684-----#-#-#
I □ 04654 TRA I 01  4684 46Y4-#-#-#
I □ 04659 SEL 2      0500      □ I
I □ 04664 WR R      4695      □ I
I □ 04669 TRA I 03  4679 46G9-#-#-#
I □ 04674 TR 1      4684-----#-#-#
I □ 04679 HLT J      0047.....#.#.#
+---04684 TRA I 02  4634 46L4.#.#.#
□ 04689 TR 1      4704-----#-#-#-X24

```

```

ADD PLUS 3 TO PLUS 3
SUB PLUS 6 FROM PLUS 6

```

ERROR ROUTINE

```

2 004 04693      C
2 001 04694      F
2 003 04697      047
2 001 04698      □

```

TO NEXT ROUTINE

```

gscans/g0013852.....
X23.....
I 04704 RAD H 4769
I 04709 SUB P 4768
I 04714 TRP M 4729-----
I 04719 ADD G 4769
I 04724 TRZ N 4759-----
I
I
I
I 04729 TRA I 01 4759 47V9-----
I 04734 SEL 2 0500
I 04739 WR R 4770
I 04744 TRA I 03 4754 47E4-----
I 04749 TR 1 4759-----
I 04754 HLT J 0048.....
+ 04759 TRA I 02 4704 47-4.....
  04764 TR 1 4779-----
I
I

```

ROUTINE #048
 TEST SUB. ON SUB DO COMPLEMENT
 ADDITION AND SET SIGN MINUS.

ERROR ROUTINE

```

2 005 04769          BA
2 003 04772          048
2 001 04773          □

```

```

I
I
I 04779 RAD H 4839.....
I 04784 SUB P 4838
I 04789 SUB P 4839
I 04794 TRZ N 4829-----
I
I
I
I 04799 TRA I 01 4829 48S9-----
I 04804 SEL 2 0500
I 04809 WR R 4840
I 04814 TRA I 03 4824 48B4-----
I 04819 TR 1 4829-----
I 04824 HLT J 0049.....
+ 04829 TRA I 02 4779 47P9.....
  04834 TR 1 4849-----
I
I

```

ROUTINE #049
 TEST TYPE CYCLE 2 ON FIRST SUB
 THEN SUB PLUS 1 FROM PLUS 1.

ERROR ROUTINE

```

2 005 04839          GA
2 003 04842          049
2 001 04843          □

```

```

I
I
I 04849 RAD H 4909.....
I 04854 SUB P 4907
I 04859 SUB P 4908
I 04864 TRZ N 4899-----
I
I
I
I 04869 TRA I 01 4899 48Z9-----
I 04874 SEL 2 0500
I 04879 WR R 4910
I 04884 TRA I 03 4894 48I4-----
I 04889 TR 1 4899-----
I 04894 HLT J 0050.....
+ 04899 TRA I 02 4849 48M9.....
  04904 TR 1 4919-----
I
I

```

ROUTINE #050
 TEST TYPE CYCLE 2 ON FIRST SUB
 THEN SUB PLUS 7 FROM PLUS 7.

ERROR ROUTINE

```

2 005 04909          AGH
2 003 04912          050
2 001 04913          □

```

-----Y25 TO NEXT ROUTINE

ROUTINE #051
DO ADD, SUB TO TEST DIG ADDER
CARRY OUT AND CARRY IN.

ADD PLUS 6 TO PLUS 6
SUB PLUS 12 FROM PLUS 12

ERROR ROUTINE

ROUTINE #052
TEST ADD WITH STORAGE
GREATER THAN MEMORY

ADD PLUS 1 TO PLUS 10
SUB PLUS 11 FROM PLUS 11.

ERROR ROUTINE

TO NEXT ROUTINE

```

Y24..... 04919 RAD H      4979      □
I □ 04924 ADD G      4979      □
I □ 04929 SUB P      4984      □
I □ 04934 TRZ N      4969-----□
I □ 04939 TRA I 01  4969 49W9-□-□
I □ 04944 SEL 2      0500      □
I □ 04949 WR R      4985      □
I □ 04954 TRA I 03  4964 49F4-□-□
I □ 04959 TR 1      4969-----□
I □ 04964 HLT J      0051.....□
+ □ 04969 TRA I 02  4919 49J9.□...
  □ 04974 TR 1      4994-----□

```

```

2 005 04979      OF
2 005 04984      1B
2 003 04987      051
2 001 04988      □

```

```

04994 RAD H      5053.....□
I □ 04999 ADD G      5054      □
I □ 05004 SUB P      5059      □
I □ 05009 TRZ N      5044-----□
I □ 05014 TRA I 01  5044 50U4-□-□
I □ 05019 SEL 2      0500      □
I □ 05024 WR R      5060      □
I □ 05029 TRA I 03  5039 50C9-□-□
I □ 05034 TR 1      5044-----□
I □ 05039 HLT J      0052.....□
+ □ 05044 TRA I 02  4994 49R4.□...
  □ 05049 TR 1      5069-----□

```

```

2 004 05053      1G
2 001 05054      A
2 005 05059      1A
2 003 05062      052
2 001 05063      □

```

ROUTINE #053
TEST SUB WITH MEMORY
GREATER THAN STORAGE.
DO TYPE CYCLE 2.

```

Z25.....05069 RAD H      5134      □
I □ 05074 RAD H      5144      □
I □ 05079 SUB P      5139      □
I □ 05084 SUB P      5139      □
I □ 05089 TRZ N      5124-----□
I □□□□□□□□□□□□□□□□□□□□□□□□ I
I □□□□□□□□□□□□□□□□□□□□□□□□ I
I □ 05094 TRA I 01 5124 51S4---□*
I □ 05099 SEL 2      0500      □ I
I □ 05104 WR R      5145      □ I
I □ 05109 TRA I 03 5119 51A9---□*
I □ 05114 TR 1      5124-----□*
I □ 05119 HLT J      0053.....□ I
+---05124 TRA I 02 5069 5009.□.□
□ 05129 TR 1      5154-----□
□□□□□□□□□□□□□□□□□□□□□□□□ I
I
I

```

RAD PLUS 2
SUB PLUS 001 FROM PLUS 2
SUB PLUS 001 FROM PLUS 001

ERROR ROUTINE

- 2 005 05134 77G
- 2 005 05139 00A
- 2 005 05144 B
- 2 003 05147 053
- 2 001 05148 □

ROUTINE #054
DO ADD, SUB TO TEST DIG ADDER
CARRY AND DEC. CORRECTION.

```

□□□□□□□□□□□□□□□□□□□□□□□□ I
..05154 RAD H      5214.....□.□
I □ 05159 ADD G      5214      □
I □ 05164 SUB P      5219      □
I □ 05169 TRZ N      5204-----□
I □□□□□□□□□□□□□□□□□□□□□□□□ I
I □□□□□□□□□□□□□□□□□□□□□□□□ I
I □ 05174 TRA I 01 5204 52 4---□*
I □ 05179 SEL 2      0500      □ I
I □ 05184 WR R      5220      □ I
I □ 05189 TRA I 03 5199 5119---□*
I □ 05194 TR 1      5204-----□*
I □ 05199 HLT J      0054.....□ I
+---05204 TRA I 02 5154 51N4.□.□
□ 05209 TR 1      5229-----□ AA27
□□□□□□□□□□□□□□□□□□□□□□□□ I

```

ADD PLUS 08 TO PLUS 08
SUB PLUS 16 FROM PLUS 16.

ERROR ROUTINE

- 2 005 05214 OH
- 2 005 05219 1F
- 2 003 05222 054
- 2 001 05223 □

TO NEXT ROUTINE

ROUTINE #055
DO ADD, SUB TO TEST DIG ADDER
CARRY AND DEC. CORRECTION

```

AA26.....05229 RAD H      5288      □
I □ 05234 ADD G      5289      □
I □ 05239 SUB P      5294      □
I □ 05244 TRZ N      5279-----□
I □ 05249 TRA I 01  5279 52X9-□-Y
I □ 05254 SEL 2      0500      □ I
I □ 05259 WR R      5295      □ I
I □ 05264 TRA I 03  5274 52G4-□-I
I □ 05269 TR 1      5279-----□-Y
I □ 05274 HLT J      0055.....□ I
+ □ 05279 TRA I 02  5229 52K9.□.I
  □ 05284 TR 1      5304-----□

```

ADD PLUS 9 TO PLUS 07
SUB PLUS 16 FROM PLUS 16

ERROR ROUTINE

```

2 004 05288      OG
2 001 05289      I
2 005 05294      IF
2 003 05297      055
2 001 05298      □

```

ROUTINE #056
DO ADD, SUB TO TEST DIG ADDER
CARRY AND DEC. CORRECTION.

```

.....05304 RAD H      5369.....□ I
I □ 05309 ADD G      5373      □
I □ 05314 SUB P      5374      □
I □ 05319 SUB P      5374      □
I □ 05324 TRZ N      5359-----□
I □ 05329 TRA I 01  5359 53V9-□-Y
I □ 05334 SEL 2      0500      □ I
I □ 05339 WR R      5375      □ I
I □ 05344 TRA I 03  5354 53E4-□-I
I □ 05349 TR 1      5359-----□-Y
I □ 05354 HLT J      0056.....□ I
+ □ 05359 TRA I 02  5304 53-4.□.I
  □ 05364 TR 1      5384-----□

```

ADD PLUS 08 TO PLUS 04
SUB PLUS 6 FROM PLUS 12
SUB PLUS 6 FROM PLUS 06

ERROR ROUTINE

```

2 005 05369      OD
2 004 05373      OH
2 001 05374      F
2 003 05377      056
2 001 05378      □

```

AB28 TO NEXT ROUTINE

gscans/g001850
AB27.....

```

.....05384 RAD H 01 5444 54U4
I 05389 TRZ N 01 5399 53Z9-
I 05394 TR 1 5404-----
I 05399 TRP M 01 5434 54T4-
I
I
I
I 05404 TRA I 01 5434 54T4-
I 05409 SEL 2 0500
I 05414 WR R 5445
I 05419 TRA I 03 5429 54B9-
I 05424 TR 1 5434-----
I 05429 HLT J 0057.....
+ 05434 TRA I 02 5384 53Q4.
  05439 TR 1 5454-----
I
I
I

```

```

2 005 05444
2 003 05447
2 001 05448

```

```

-
057

```

```

ROUTINE #057
DO RAD TO TEST TN ASU DZT
AND TF ASU SIGN.

```

ERROR ROUTINE

```

.....05454 RAD H 01 5509 55 9.
I 05459 TRZ N 01 5469 54W9-
I 05464 TRP M 01 5499 54Z9-
I
I
I
I 05469 TRA I 01 5499 54Z9-
I 05474 SEL 2 0500
I 05479 WR R 5510
I 05484 TRA I 03 5494 54I4-
I 05489 TR 1 5499-----
I 05494 HLT J 0058.....
+ 05499 TRA I 02 5454 54N4.
  05504 TR 1 5519-----
I
I
I

```

```

2 005 05509
2 003 05512
2 001 05513

```

```

A
058

```

```

ROUTINE #058
DO RAD TO TEST TF ASU DZT
AND TF ASU SIGN.

```

ERROR ROUTINE

```

.....05519 RAD H 01 5579 55X9.
I 05524 TRZ N 01 5539 55T9-
I 05529 TRP M 01 5539 55T9-
I 05534 TR 1 5569-----
I
I
I
I 05539 TRA I 01 5569 55W9-
I 05544 SEL 2 0500
I 05549 WR R 5580
I 05554 TRA I 03 5564 55F4-
I 05559 TR 1 5569-----
I 05564 HLT J 0059.....
+ 05569 TRA I 02 5519 55J9.
  05574 TR 1 5589-----AC29
I
I
I

```

```

2 005 05579
2 003 05582
2 001 05583

```

```

J
059

```

```

ROUTINE #059
DO RAD TO TEST TF ASU DZT
AND TN ASU SIGN.

```

ERROR ROUTINE

TO NEXT ROUTINE

ROUTINE #060
DO SUB TO TEST TF ASU DZT
AND TN ASU SIGN MINUS.

```

AC28.....05589 RAD H 01 5653 56V3 0
I 05594 SUB P 01 5654 56V4 0
I 05599 TRZ N 01 5614 56/4-0-0
I 05604 TRP M 01 5614 56/4-0-0
I 05609 TR 1 5644-----0-0-0
I 05614 TRA I 01 5644 56U4-0-0-0
I 05619 SEL 2 0500 0 I
I 05624 WR R 5655 0 I
I 05629 TRA I 03 5639 56C9-0-0-0
I 05634 TR 1 5644-----0-0-0
I 05639 HLT J 0060.....0-0-0
+05644 TRA I 02 5589 55Q9.....0-0-0
05649 TR 1 5664-----0-0-0

```

DZT OFF, SIGN ON

ERROR ROUTINE

```

2 004 05653
2 001 05654
2 003 05657
2 001 05658

```

```

A
B
060
0

```

ROUTINE #061
DO RAD TO TEST FOR FALSE TN
OR TF OF DZT AND SIGN
TRIGGERS.

```

05664 RAD H 5779.....0-0-0
I 05669 RAD H 01 5778 57X8 0
I 05674 TRZ N 5739-----0-0-0
I 05679 TRP M 5739-----0-0-0
I 05684 TRZ N 01 5694 56Z4-0-0-0
I 05689 TR 1 5739-----0-0-0
I 05694 TRP M 01 5704 57 4-0-0-0
I 05699 TR 1 5739-----0-0-0
I 05704 RAD H 01 5779 57X9.....0-0-0
I 05709 RAD H 5778 0 I
I 05714 TRZ N 01 5739 57T9-0-0-0
I 05719 TRP M 01 5739 57T9-0-0-0
I 05724 TRZ N 5734-----0-0-0
I 05729 TR 1 5739-----0-0-0
I 05734 TRP M 5769.....0-0-0
I 05739 TRA I 01 5769 57W9-0-0-0
I 05744 SEL 2 0500 0 I
I 05749 WR R 5780 0 I
I 05754 TRA I 03 5764 57F4-0-0-0
I 05759 TR 1 5769-----0-0-0
I 05764 HLT J 0061.....0-0-0
+05769 TRA I 02 5664 5604.....0-0-0
05774 TR 1 5789-----0-0-0

```

ACC DZT OFF, SIGN ON
ASU DZT ON, SIGN OFF

ASU DZT OFF, SIGN ON.
ACC DZT ON, SIGN OFF.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 05779
2 003 05782
2 001 05783

```

```

-J
061
0

```

ROUTINE #062
DO RAD AND ADD TO TEST FOR
FALSE TN AND TF OF ACC DZT.

RAD 500. TO TF DZT

ADD &0 TO TF DZT

RAD 000 TO TN DZT

ERROR ROUTINE

ROUTINE #063
EXECUTE CMP AND TEST FOR 900.
TEST NOT HIGH AND EQUAL

CMP ZERO VERSUS ZERO

ERROR ROUTINE

AE31 TO NEXT ROUTINE

```

AD29..... 05789 RAD H 5859
I 05794 TRZ N 5819
I 05799 ADD G 5856
I 05804 TRZ N 5819
I 05809 RAD H 5862
I 05814 TRZ N 5849
I
I
I 05819 TRA I 01 5849 58U9
I 05824 SEL 2 0500
I 05829 WR R 5863
I 05834 TRA I 03 5844 58D4
I 05839 TR 1 5849
I 05844 HLT J 0062
+ 05849 TRA I 02 5789 57Q9
  05854 TR 1 5874
I
I
I
I

```

```

2 002 05856
2 003 05859
2 003 05862
2 003 05865
2 001 05866

```

506
006
062

```

05874 RAD H 5948
I 05879 CMP 4 5949
I 05884 TRH K 5909
I 05889 TRE L 5899
I 05894 TR 1 5909
I 05899 TRS 0 10 5909 5R-9
I 05904 TR 1 5939
I
I
I 05909 TRA I 01 5939 59T9
I 05914 SEL 2 0500
I 05919 WR R 5950
I 05924 TRA I 03 5934 59C4
I 05929 TR 1 5939
I 05934 HLT J 0063
+ 05939 TRA I 02 5874 58P4
  05944 TR 1 5959
I
I
I
I

```

```

2 004 05948
2 001 05949
2 003 05952
2 001 05953

```

0
063

ROUTINE #064
CMP 2 VERSUS 1 AND TEST HIGH

AE30.....

```

#####
I .05959 RAD H      6018      □
I □ 05964 CMP 4    6019      □
I □ 05969 TRE L    5979-----+
I □ 05974 TRH K    6009-----+
I #####          #####      II
I          I          II
I #####          #####      II
I □ 05979 TRA I 01 6009 60 9---+
I □ 05984 SEL 2    0500      □ I
I □ 05989 WR  R    6020      □ I
I □ 05994 TRA I 03 6004 60G4---+
I □ 05999 TR  1    6009-----+
I □ 06004 HLT J    0064.....+
+---06009 TRA I 02 5959 59N9...+
□ 06014 TR  1    6029-----+
#####          #####      I
I
I

```

TURN ON HIGH

ERROR ROUTINE

```

2 004 06018      B
2 001 06019      1
2 003 06022      064
2 001 06023      □

```

ROUTINE #065
CMP 1 VERSUS A AND TEST HIGH

```

##### I
. .06029 RAD H    6089.....+
I □ 06034 CMP 4    6089      □
I □ 06039 TRE L    6049-----+
I □ 06044 TRH K    6079-----+
I #####          #####      II
I          I          II
I #####          #####      II
I □ 06049 TRA I 01 6079 60X9---+
I □ 06054 SEL 2    0500      □ I
I □ 06059 WR  R    6090      □ I
I □ 06064 TRA I 03 6074 60G4---+
I □ 06069 TR  1    6079-----+
I □ 06074 HLT J    0065.....+
+---06079 TRA I 02 6029 60K9...+
□ 06084 TR  1    6099-----+
#####          #####

```

TURN ON HIGH

ERROR ROUTINE

```

2 005 06089      A
2 003 06092      065
2 001 06093      □

```

TO NEXT ROUTINE

Handwritten calculation:

$$\begin{array}{r} 560 \\ + 0 \\ \hline \end{array}$$

ROUTINE #066
CMP 19 VERSUS 20 AND TEST LO.

ON CMP, TURN HIGH ON FIRST
FOLLOWED BY TURN ON LO.

ERROR ROUTINE

ROUTINE #067
EXECUTE SET AND TEST 900
TEST FOR DZT ON AND SIGN PLUS

RSU TO TF DZT AND SET SIGN -
SET, TN DZT AND SET SIGN PLUS

ERROR ROUTINE

AG33 TO NEXT ROUTINE

```

AF31.....
I 06099 RAD H 6164
I 06104 CMP 4 6169
I 06109 TRH K 6124
I 06114 TRE L 6124
I 06119 TR 1 6154
I 06124 TRA I 01 6154 61V4
I 06129 SEL 2 0500
I 06134 WR R 6170
I 06139 TRA I 03 6149 61D9
I 06144 TR 1 6154
I 06149 HLT J 0066
+ 06154 TRA I 02 6099 60R9
  06159 TR 1 6179

```

```

2 005 06164
2 005 06169
2 003 06172
2 001 06173

```

```

I 06179 RSU Q 6249
I 06184 SET B 0000
I 06189 TRS 0 10 6209 6K-9
I 06194 TRZ N 6204
I 06199 TR 1 6209
I 06204 TRP M 6239
I 06209 TRA I 01 6239 62T9
I 06214 SEL 2 0500
I 06219 WR R 6250
I 06224 TRA I 03 6234 62C4
I 06229 TR 1 6239
I 06234 HLT J 0067
+ 06239 TRA I 02 6179 61P9
  06244 TR 1 6259

```

```

2 005 06249
2 003 06252
2 001 06253

```


ROUTINE #068
TEST CMP FOR RESET
HIGH TRIGGER IN CYCLE 2.

```

AG32.....06259 RAD H      6338      □
I 06264 CMP 4      6339      □
I 06269 TRH K      6279-----*
I 06274 TR 1      6299-----*
I 06279 SET B      0000.....*
I 06284 CMP 4      6339      □ I
I 06289 TRH K      6299-----*
I 06294 TRE L      6329-----*
I .....
I .....
I .....
I 06299 TRA I 01 6329 63S9-----*
I 06304 SEL 2      0500      □ I
I 06309 WR R      6340      □ I
I 06314 TRA I 03 6324 63B4-----*
I 06319 TR 1      6329-----*
I 06324 HLT J      0068.....*
+ 06329 TRA I 02 6259 62N9-----*
  06334 TR 1      6349-----*
I .....
I .....

```

FIRST CMP TURNS ON HI.

SECOND CMP RESETS HIGH
AND ENDS OP IN CYCLE 2.

ERROR ROUTINE

```

2 004 06338      A
2 001 06339
2 003 06342      068
2 001 06343      □

```

ROUTINE #069
TEST SET LEFT FOR EMIT
ZEROS WHEN SMT COMES ON.

```

.....06349 RAD H      6414.....*
I 06354 SET B      0000      □
I 06359 SET B      0002      □
I 06364 CMP 4      6419      □
I 06369 TRE L      6404-----*
I .....
I .....
I .....
I 06374 TRA I 01 6404 64 4-----*
I 06379 SEL 2      0500      □
I 06384 WR R      6420      □
I 06389 TRA I 03 6399 6319-----*
I 06394 TR 1      6404-----*
I 06399 HLT J      0069.....*
+ 06404 TRA I 02 6349 63M9-----*
  06409 TR 1      6429-----*
I .....

```

RESULT 00 TO SBR
CMP 00 VERSUS 00.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 06414      A
2 005 06419      00
2 003 06422      069
2 001 06423      □

```

ROUTINE #070
TEST SET LEFT ACROSS A ONE
FOR SBR TO AD ROUTING
AND TF DZT.

```

AH33.....06429 RAD H      6493      □
I □ 06434 SET B      0001      □
I □ 06439 CMP 4      6494      □
I □ 06444 TRZ N      6454-----+
I □ 06449 TRE L      6484-----+
I □ 06454 TRA I 01  6484 64Y4-----+
I □ 06459 SEL 2      0500      □ I
I □ 06464 WR R      6495      □ I
I □ 06469 TRA I 03  6479 64G9-----+
I □ 06474 TR 1      6484-----+
I □ 06479 HLT J      0070.....+
+ □ 06484 TRA I 02  6429 64K9.....+
  □ 06489 TR 1      6504-----+

```

CMP VERSUS 1
TEST DZT OFF

ERROR ROUTINE

```

2 004 06493      A
2 001 06494      1
2 003 06497      070
2 001 06498      □

```

ROUTINE #071
TEST RAD AND SET FOR
TN AND TF DZT.

```

.....06504 RAD H      6574.....+
I □ 06509 TRZ N      6534-----+
I □ 06514 TRP M      6524-----+
I □ 06519 TR 1      6534-----+
I □ 06524 SET B      0002.....+
I □ 06529 TRZ N      6564-----+
I □ 06534 TRA I 01  6564 65W4-----+
I □ 06539 SEL 2      0500      □ I
I □ 06544 WR R      6575      □ I
I □ 06549 TRA I 03  6559 65E9-----+
I □ 06554 TR 1      6564-----+
I □ 06559 HLT J      0071.....+
+ □ 06564 TRA I 02  6504 65-4.....+
  □ 06569 TR 1      6584-----+AJ35

```

RAD AND TF DZT

SET TO TN DZT

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 06574      106
2 003 06577      071
2 001 06578      □

```

ROUTINE #072
DO SET ACROSS AMPERSAND
TO TEST A AND B BITS THROUGH
ZONE ADDER.

```

AJ34..... 06584 SGN T      6644      □
I □ 06589 SET B      0001      □
I □ 06594 CMP 4      6643      □
I □ 06599 TRE L      6634-----□
I □ 06604 TRA I 01   6634 66T4-□-+
I □ 06609 SEL 2      0500      □ I
I □ 06614 WR R      6645      □ I
I □ 06619 TRA I 03   6629 66B9-□-+
I □ 06624 TR 1      6634-----□-+
I □ 06629 HLT J      0072.....□ I
+ □ 06634 TRA I 02   6584 65Q4.□.□
  □ 06639 TR 1      6704-----□

```

SGN TO PLACE AMPERSAND

ERROR ROUTINE

```

2 005 06644      60
2 003 06647      072
2 001 06648      □

```

ROUTINE #073
EXECUTE LOD AND TEST 900.

```

06704 SET B      0000.....□.□
I □ 06709 LOD B      6764      □
I □ 06714 TRS 0 10   6724 6PK4-□-+
I □ 06719 TR 1      6754-----□-+
I □ 06724 TRA I 01   6754 67V4-□-+
I □ 06729 SEL 2      0500      □ I
I □ 06734 WR R      6765      □ I
I □ 06739 TRA I 03   6749 67D9-□-+
I □ 06744 TR 1      6754-----□-+
I □ 06749 HLT J      0073.....□ I
+ □ 06754 TRA I 02   6704 67-4.□.□
  □ 06759 TR 1      6774-----□-+ AK36

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 06764      073
2 003 06767      □
2 001 06768

```

gscans/g0013846.pgs
AK35.....

```

I 06774 RAD H      6829
I 06779 LOD 8     6827
I 06784 TRZ N     6819-----
I
I
I
I 06789 TRA I 01  6819 68/9---X
I 06794 SEL 2     0500
I 06799 WR R      6831
I 06804 TRA I 03  6814 68A4---I
I 06809 TR 1      6819-----X
I 06814 HLT J     0074.....I
+--06819 TRA I 02  6774 67P4...I
  06824 TR 1      6839-----
  I
  I
  I

```

ROUTINE #074
TEST LOD FOR TURN ON DZT

ERROR ROUTINE

```

2 005 06829      0 A
2 001 06830      0
2 003 06833     074
2 001 06834      □

```

```

I
I 06839 RAD H     6899.....I
I 06844 TRP M     6859-----I
I 06849 LOD 8     6899
I 06854 TRP M     6889-----X
I
I
I
I 06859 TRA I 01  6889 68Y9---X
I 06864 SEL 2     0500
I 06869 WR R      6900
I 06874 TRA I 03  6884 68H4---I
I 06879 TR 1      6889-----X
I 06884 HLT J     0075.....I
+--06889 TRA I 02  6839 68L9...I
  06894 TR 1      6909-----
  I
  I
  I

```

ROUTINE #075
TEST LOD FOR SET SIGN PLUS

ERROR ROUTINE

```

2 005 06899      J
2 003 06902     075
2 001 06903      □

```

```

I
I 06909 SET B     0000.....I
I 06914 SET B     0001
I 06919 LOD 8     6974
I 06924 TRZ N     6934-----
I 06929 TR 1      6964-----X
I
I
I
I 06934 TRA I 01  6964 69W4---X
I 06939 SEL 2     0500
I 06944 WR R      6975
I 06949 TRA I 03  6959 69E9---I
I 06954 TR 1      6964-----X
I 06959 HLT J     0076.....I
+--06964 TRA I 02  6909 69-9...I
  06969 TR 1      6984-----AL37
  I
  I
  I

```

ROUTINE #076
TEST LOD FOR TURN OFF DZT

ERROR ROUTINE

```

2 005 06974      1
2 003 06977     076
2 001 06978      □

```

TO NEXT ROUTINE

ROUTINE #077
TEST LOD FOR TURN OFF DZT
WHEN MBR EQUALS HYPERSAND.

```

AL36.....06984 SET B      0000      □
I 06989 SET B      0001      □
I 06994 LOD 8      7049      □
I 06999 TRZ N      7009-----
I 07004 TR 1       7039-----
I ████████████████████████████████████████████████████████████ II
I ████████████████████████████████████████████████████████████ II
I 07009 TRA I 01   7039 70T9-----
I 07014 SEL 2      0500      □ I
I 07019 WR R       7050      □ I
I 07024 TRA I 03   7034 70C4-----
I 07029 TR 1       7039-----
I 07034 HLT J      0077.....
+ 07039 TRA I 02   6984 69Q4.....
  07044 TR 1       7059-----
██████████████████████████████████████████████████████████ I
I
I

```

ERROR ROUTINE

```

2 005 07049
2 003 07052          077
2 001 07053          □

```

ROUTINE #078
TEST LOD INSTRUCTION

```

.....07059 SET B      0001.....
I 07064 LOD 8      7119      □
I 07069 CMP 4      7119      □
I 07074 TRE L      7109-----
I ████████████████████████████████████████████████████████████ I
I ████████████████████████████████████████████████████████████ I
I 07079 TRA I 01   7109 71 9-----
I 07084 SEL 2      0500      □ I
I 07089 WR R       7120      □ I
I 07094 TRA I 03   7104 7164-----
I 07099 TR 1       7109-----
I 07104 HLT J      0078.....
+ 07109 TRA I 02   7059 70N9.....
  07114 TR 1       7129-----AM38
██████████████████████████████████████████████████████████ I

```

LOD A ONE
CMP VERSUS ONE

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 07119
2 003 07122          078
2 001 07123          □

```

ROUTINE #079
TEST LOD AND CMP INSTRUCTIONS

```

AM37.....
07129 SET B      0002
I 07134 LOD 8    7204
I 07139 CMP 4    7209
I 07144 TRH K    7154-----
I 07149 TR 1     7164-----
I 07154 CMP 4    7204.....
I 07159 TRE L    7194-----
I
I
I
I 07164 TRA I 01 7194 71Z4
I 07169 SEL 2    0500
I 07174 WR R     7210
I 07179 TRA I 03 7189 71H9
I 07184 TR 1     7194-----
I 07189 HLT J    0079.....
+ 07194 TRA I 02 7129 71K9
  07199 TR 1     7219-----

```

LOD 12
CMP VERSUS 11

CMP VERSUS 12

ERROR ROUTINE

```

2 005 07204      12
2 005 07209      11
2 003 07212      079
2 001 07213      □

```

ROUTINE #080
USE LOD AND CMP TO
TEST THE ZONE ADDER

```

07219 SET B      0001.....
I 07224 LOD 8    7288
I 07229 CMP 4    7289
I 07234 TRE L    7249-----
I 07239 TRH K    7249-----
I 07244 TR 1     7279-----
I
I
I
I 07249 TRA I 01 7279 72X9
I 07254 SEL 2    0500
I 07259 WR R     7290
I 07264 TRA I 03 7274 72G4
I 07269 TR 1     7279-----
I 07274 HLT J    0080.....
+ 07279 TRA I 02 7219 72J9
  07284 TR 1     7299-----AN39

```

LOD A
CMP VERSUS 1

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 07288      A
2 001 07289      1
2 003 07292      080
2 001 07293      □

```

ROUTINE #081
USE LOD AND CMP TO
TEST THE ZONE ADDER

```

AN38.....07299 SET B      0001      □
I □ 07304 LOD 8        7368      □
I □ 07309 CMP 4        7369      □
I □ 07314 TRE L        7329-----□
I □ 07319 TRH K        7329-----□
I □ 07324 TR 1         7359-----□
I □ 07329 TRA I 01     7359 73V9---□
I □ 07334 SEL 2         0500      □
I □ 07339 WR R         7370      □
I □ 07344 TRA I 03     7354 73E4---□
I □ 07349 TR 1         7359-----□
I □ 07354 HLT J         0081.....□
+---07359 TRA I 02     7299 72R9....□
□ 07364 TR 1          7379-----□

```

LOD J
CMP VERSUS 1

ERROR ROUTINE

```

2 004 07368      J
2 001 07369      1
2 003 07372      081
2 001 07373      □

```

ROUTINE #082
USE LOD AND CMP TO
TEST THE ZONE ADDER

```

.....07379 SET B      0001.....□
I □ 07384 LOD 8        7448      □
I □ 07389 CMP 4        7449      □
I □ 07394 TRE L        7409-----□
I □ 07399 TRH K        7409-----□
I □ 07404 TR 1         7439-----□
I □ 07409 TRA I 01     7439 74T9---□
I □ 07414 SEL 2         0500      □
I □ 07419 WR R         7450      □
I □ 07424 TRA I 03     7434 74C4---□
I □ 07429 TR 1         7439-----□
I □ 07434 HLT J         0082.....□
+---07439 TRA I 02     7379 73P9....□
□ 07444 TR 1          7459-----□

```

LOD S
CMP VERSUS 2

ERROR ROUTINE

```

2 004 07448      S
2 001 07449      2
2 003 07452      082
2 001 07453      □

```

AP40 TO NEXT ROUTINE

ROUTINE #083
USE LOD AND CMP TO
TEST THE ZONE ADDER.

```

AP39.....
  07459 SET B      0001
I 07464 LOD B      7528
I 07469 CMP 4      7529
I 07474 TR L       7489-----
I 07479 TRH K      7489-----
I 07484 TR 1       7519-----
I
I
I
I 07489 TRA I 01   7519 75/9
I 07494 SEL 2      0500
I 07499 WR R       7530
I 07504 TRA I 03   7514 75A4-----
I 07509 TR 1       7519-----
I 07514 HLT J      0083.....
+ 07519 TRA I 02   7459 74N9.....
  07524 TR 1       7539-----
I
I
I

```

LOD B
CMP VERSUS S

ERROR ROUTINE

```

2 004 07528      B
2 001 07529      S
2 003 07532      083
2 001 07533      □

```

ROUTINE #084
USE LOD AND CMP TO
TEST THE ZONE ADDER.

```

..... I
  07539 SET B      0001.....
I 07544 LOD B      7608
I 07549 CMP 4      7609
I 07554 TR L       7569-----
I 07559 TRH K      7569-----
I 07564 TR 1       7599-----
I
I
I
I 07569 TRA I 01   7599 75Z9
I 07574 SEL 2      0500
I 07579 WR R       7610
I 07584 TRA I 03   7594 7514-----
I 07589 TR 1       7599-----
I 07594 HLT J      0084.....
+ 07599 TRA I 02   7539 75L9.....
  07604 TR 1       7619-----AQ41
I
I
I

```

LOD A
CMP VERSUS J

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 07608      A
2 001 07609      J
2 003 07612      084
2 001 07613      □

```


ROUTINE #085
USE LOD AND CMP TO
TEST THE ZONE ADDER

```

AQ40.....07619 SET B      0001      □
I □ 07624 LOD 8        7683      □
I □ 07629 CMP 4        7684      □
I □ 07634 TRE L        7644-----□
I □ 07639 TRH K        7674-----□
I □ 07644 TRA I 01    7674 76X4-□
I □ 07649 SEL 2        0500      □
I □ 07654 WR R         7685      □
I □ 07659 TRA I 03    7669 76F9-□
I □ 07664 TR 1        7674-----□
I □ 07669 HLT J        0085.....□
I □ 07674 TRA I 02    7619 76J9-□
I □ 07679 TR 1        7694-----□

```

LOD J
CMP VERSUS A

ERROR ROUTINE

```

2 004 07683      J
2 001 07684      A
2 003 07687      085
2 001 07688      □

```

ROUTINE #086
USE LOD AND CMP TO
TEST THE ZONE ADDER

```

.....07694 SET B      0001.....□
I □ 07699 LOD 8        7758      □
I □ 07704 CMP 4        7759      □
I □ 07709 TRE L        7719-----□
I □ 07714 TRH K        7749-----□
I □ 07719 TRA I 01    7749 77U9-□
I □ 07724 SEL 2        0500      □
I □ 07729 WR R         7760      □
I □ 07734 TRA I 03    7744 77D4-□
I □ 07739 TR 1        7749-----□
I □ 07744 HLT J        0086.....□
I □ 07749 TRA I 02    7694 76R4-□
I □ 07754 TR 1        7769-----AR42

```

LOD S
CMP VERSUS K

ERROR ROUTINE

```

2 004 07758      S
2 001 07759      K
2 003 07762      086
2 001 07763      □

```

TO NEXT ROUTINE

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ROUTINE #087
USE LOD AND CMP TO
TEST THE ZONE ADDER.

```

AR41.....
I 07769 SET B 0001
I 07774 LOD 8 7833
I 07779 CMP 4 7834
I 07784 TRH L 7794
I 07789 TRH K 7824
I
I
I 07794 TRA I 01 7824 78S4
I 07799 SEL 2 0500
I 07804 WR R 7835
I 07809 TRA I 03 7819 78A9
I 07814 TR 1 7824
I 07819 HLT J 0087
I 07824 TRA I 02 7769 7709
I 07829 TR 1 7844
I

```

LOD S
CMP VERSUS B

ERROR ROUTINE

```

2 004 07833 S
2 001 07834 B
2 003 07837 087
2 001 07838

```

ROUTINE #088
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION.

```

I 07844 SET B 0001
I 07849 LOD 8 7909
I 07854 CMP 4 7908
I 07859 TRH L 7869
I 07864 TRH K 7899
I
I
I 07869 TRA I 01 7899 78Z9
I 07874 SEL 2 0500
I 07879 WR R 7910
I 07884 TRA I 03 7894 7814
I 07889 TR 1 7899
I 07894 HLT J 0088
I 07899 TRA I 02 7844 78M4
I 07904 TR 1 7919

```

LOD AMPERSAND
CMP VERSUS BLANK

ERROR ROUTINE

```

2 005 07909
2 003 07912 088
2 001 07913

```

AS43 TO NEXT ROUTINE

ROUTINE #089
TEST CMP INSTRUCTION AND
MBR.SBR RECOGNITION.

AS42.....

```

#####
I 07919 SET B      0001      □
I 07924 LOD 8      7983      □
I 07929 CMP 4      7984      □
I 07934 TRH L      7944-----
I 07939 TRH K      7974-----
I #####!##### II
I I II
I ##### II
I 07944 TRA I 01 7974 79X4
I 07949 SEL 2      0500      □ I
I 07954 WR R      7985      □ I
I 07959 TRA I 03 7969 79F9
I 07964 TR 1      7974-----
I 07969 HLT J      0089.....
+ 07974 TRA I 02 7919 79J9
  07979 TR 1      7994-----
#####
I
I
I

```

LOD AMPERSAND
CMP VERSUS LOZENGE

ERROR ROUTINE

```

2 004 07983      &
2 001 07984      □
2 003 07987      089
2 001 07988      □

```

ROUTINE #090
TEST CMP INSTRUCTION AND
MBR.SBR RECOGNITION.

```

##### I
.. 07994 SET B      0001.....
I 07999 LOD 8      8058      □
I 08004 CMP 4      8059      □
I 08009 TRH L      8019-----
I 08014 TRH K      8049-----
I #####!##### II
I I II
I ##### II
I 08019 TRA I 01 8049 80U9
I 08024 SEL 2      0500      □ I
I 08029 WR R      8060      □ I
I 08034 TRA I 03 8044 80D4
I 08039 TR 1      8049-----
I 08044 HLT J      0090.....
+ 08049 TRA I 02 7994 79R4
  08054 TR 1      8069-----AT44
#####

```

LOD L
CMP VERSUS \$

ERROR ROUTINE

```

2 004 08058      L
2 001 08059      $
2 003 08062      090
2 001 08063      □

```

TO NEXT ROUTINE

ROUTINE #091
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION.

AT43.....

08069	SET B	0001			
08074	LOD 8	8138			
08079	CMP 4	8139			
08084	TRH K	8099	-----		
08089	TRE L	8099	-----		
08094	TR 1	8129	-----		

.....

08099	TRA I 01	8129	8159	-----	
08104	SEL 2	0500			
08109	WR R	8140			
08114	TRA I 03	8124	8184	-----	
08119	TR 1	8129		-----	
08124	HLT J	0091		
08129	TRA I 02	8069	8009	-----	
08134	TR 1	8149		-----	

LOD BLANK
CMP VERSUS AMPERSAND

ERROR ROUTINE

2 005 08139
2 003 08142
2 001 08143

091
□

ROUTINE #092
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION.

08149	SET B	0001		
08154	LOD 8	8218			
08159	CMP 4	8219			
08164	TRH K	8179	-----		
08169	TRE L	8179	-----		
08174	TR 1	8209	-----		

.....

08179	TRA I 01	8209	82 9	-----	
08184	SEL 2	0500			
08189	WR R	8220			
08194	TRA I 03	8204	8284	-----	
08199	TR 1	8209		-----	
08204	HLT J	0092		
08209	TRA I 02	8149	81M9	-----	
08214	TR 1	8229		-----	

.....

LOD LOZENGE
CMP VERSUS AMPERSAND

ERROR ROUTINE

TO NEXT ROUTINE

2 004 08218
2 001 08219
2 003 08222
2 001 08223

092
□

ROUTINE #093
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION

```

AU44.....08229 SET B      0001      □
I □ 08234 LOD 8        8298      □
I □ 08239 CMP 4        8299      □
I □ 08244 TRE L        8259-----+
I □ 08249 TRH K        8259-----+
I □ 08254 TR 1         8289-----+
I □ 08259 TRA I 01    8289 82Y9---+
I □ 08264 SEL 2        0500      □ I
I □ 08269 WR R         8300      □ I
I □ 08274 TRA I 03    8284 82H4---+
I □ 08279 TR 1         8289-----+
I □ 08284 HLT J        0093.....+
+ □ 08289 TRA I 02    8229 82K9...+
  □ 08294 TR 1         8309-----+

```

LOD %
CMP VERSUS U.

ERROR ROUTINE

```

2 004 08298          %
2 001 08299          U
2 003 08302          093
2 001 08303          □

```

ROUTINE #094
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION.

```

.....08309 SET B      0001.....+
I □ 08314 LOD 8        8369      □
I □ 08319 CMP 4        8369      □
I □ 08324 TRE L        8359-----+
I □ 08329 TRA I 01    8359 83V9---+
I □ 08334 SEL 2        0500      □ I
I □ 08339 WR R         8370      □ I
I □ 08344 TRA I 03    8354 83E4---+
I □ 08349 TR 1         8359-----+
I □ 08354 HLT J        0094.....+
+ □ 08359 TRA I 02    8309 83-9...+
  □ 08364 TR 1         8379-----+

```

LOD /
CMP VERSUS /

ERROR ROUTINE

```

2 005 08369          /
2 003 08372          094
2 001 08373          □

```

TO NEXT ROUTINE

ROUTINE #095
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION.

```

AV45..... 08379 SET B      0001      □
I 08384 LOD 8        8439      □
I 08389 CMP 4        8439      □
I 08394 TRE L        8429-----*
I 08399 TRA I 01    8429 84S9---*
I 08404 SEL 2        0500      □ I
I 08409 WR R         8440      □ I
I 08414 TRA I 03    8424 84B4---*
I 08419 TR 1         8429-----*
I 08424 HLT J        0095.....*
+ 08429 TRA I 02    8379 83P9.....
  08434 TR 1         8449-----*

```

LOD BLANK
CMP VERSUS BLANK

ERROR ROUTINE

```

2 005 08439
2 003 08442
2 001 08443

```

095
□

ROUTINE #096
TEST CMP INSTRUCTION AND
MBR,SBR RECOGNITION.

```

..... 08449 SET B      0001.....*
I 08454 LOD 8        8509      □
I 08459 CMP 4        8509      □
I 08464 TRE L        8499-----*
I 08469 TRA I 01    8499 84Z9---*
I 08474 SEL 2        0500      □ I
I 08479 WR R         8510      □ I
I 08484 TRA I 03    8494 84I4---*
I 08489 TR 1         8499-----*
I 08494 HLT J        0096.....*
+ 08499 TRA I 02    8449 84M9.....
  08504 TR 1         8519-----*

```

LOD *
CMP VERSUS *

ERROR ROUTINE

```

2 005 08509
2 003 08512
2 001 08513

```

*
096
□

TO NEXT ROUTINE

ROUTINE #097
EXECUTE UNL AND TEST 900.

```

AW46.....08519 SET B      0000      □
I □ 08524 UNL 7        8579      □
I □ 08529 TRS 0 10    8539 8NL9-□-+
I □ 08534 TR 1        8569-----□-+
I □ 08539 TRA I 01    8569 85W9-□-+
I □ 08544 SEL 2        0500      □ I
I □ 08549 WR R        8580      □ I
I □ 08554 TRA I 03    8564 85F4-□-+
I □ 08559 TR 1        8569-----□-+
I □ 08564 HLT J        0097.....□ I
+□-08569 TRA I 02    8519 85J9.....□ I
□ 08574 TR 1        8589-----□-+

```

ERROR ROUTINE

```

2 005 08579
2 003 08582      097
2 001 08583      □

```

ROUTINE #098
TEST UNL INSTRUCTION FOR
ROUTE DIGIT ADDER OUT.

```

08589 SET B      0001.....□ I
I □ 08594 LOD 8    8672      □
I □ 08599 UNL 7    8673      □
I □ 08604 CMP 4    8673      □
I □ 08609 TRE L    8619-----□-+
I □ 08614 TR 1    8634-----□-+
I □ 08619 LOD 8    8674.....□ I
I □ 08624 UNL 7    8673      □ I
I □ 08629 TR 1    8664-----□-+
I □ 08634 TRA I 01 8664 86W4-□-+
I □ 08639 SEL 2    0500      □ I
I □ 08644 WR R    8675      □ I
I □ 08649 TRA I 03 8659 86E9-□-+
I □ 08654 TR 1    8664-----□-+
I □ 08659 HLT J    0098.....□ I
+□-08664 TRA I 02 8589 85Q9.....□ I
□ 08669 TR 1    8684-----AX48

```

LOD 3
UNL 3

RESET UNL FIELD TO BLANK
IF ROUTINE IS GOOD.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 003 08672      3
2 001 08673
2 001 08674
2 003 08677      098
2 001 08678      □

```

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ROUTINE #099
TEST UNL INSTRUCTION FOR
ROUTE ZONE ADDER OUT.

```

AX47..... 08684 SET B      0001
I 08689 LOD 8      8767
I 08694 UNL 7      8768
I 08699 CMP 4      8768
I 08704 TRE L      8714-----
I 08709 TR 1      8729-----
I
I
I 08714 LOD 8      8769.....
I 08719 UNL 7      8768
I 08724 TR 1      8759-----
I
I
I 08729 TRA I 01 8759 87V9
I 08734 SEL 2      5008
I 08739 WR R      8770
I 08744 TRA I 03 8754 87E4
I 08749 TR 1      8759-----
I 08754 HLT J      0099.....
+ 08759 TRA I 02 8684 86Q4
  08764 TR 1      8779-----
I
I
I

```

LOD AMPERSAND
UNL AMPERSAND

RESET UNL FIELD TO BLANK
IF ROUTINE IS GOOD.

ERROR ROUTINE

```

2 003 08767      &
2 001 08768
2 001 08769
2 003 08772      099
2 001 08773      □

```

```

..... 08779 SET B      0001.....
I 08784 LOD 8      8862
I 08789 UNL 7      8863
I 08794 CMP 4      8863
I 08799 TRE L      8809-----
I 08804 TR 1      8824-----
I
I
I 08809 LOD 8      8864.....
I 08814 UNL 7      8863
I 08819 TR 1      8854-----
I
I
I 08824 TRA I 01 8854 88V4
I 08829 SEL 2      0500
I 08834 WR R      8865
I 08839 TRA I 03 8849 88D9
I 08844 TR 1      8854-----
I 08849 HLT J      0100.....
+ 08854 TRA I 02 8779 87P9
  08859 TR 1      8874-----
I
I
I

```

ROUTINE #100
TEST UNL INSTRUCTION FOR
SUPPRESS ADDER CARRY.

RESET UNL FIELD TO BLANK
IF ROUTINE IS GOOD

ERROR ROUTINE

```

2 003 08862      □
2 001 08863
2 001 08864
2 003 08867      100
2 001 08868      □

```

AY49 TO NEXT ROUTINE

ROUTINE #101
TEST UNL INSTRUCTION

P Z
B421 A81

```

AY48.....08874 SET B      0002      □
I □ 08879 LOD 8          8964      □
I □ 08884 UNL 7          8969      □
I □ 08889 SET B          0003      □
I □ 08894 CMP 4          8969      □
I □ 08899 TRE L          8909      □
I □ 08904 TR 1           8924      □
I □ 08909 LOD 8          8974.....□
I □ 08914 UNL 7          8969      □
I □ 08919 TR 1           8954      □
I □ 08924 TRA 1 01      8954 89V4...□
I □ 08929 SEL 2          0500      □
I □ 08934 WR R           8975      □
I □ 08939 TRA 1 03      8949 89D9...□
I □ 08944 TR 1           8954      □
I □ 08949 HLT J          0101.....□
+---08954 TRA 1 02      8874 88P4...□
  □ 08959 TR 1           8984      □

```

LOD PZ
UNL PZ

RESET UNL FIELD
IF ROUTINE IS GOOD

911 ERROR ROUTINE

912
AZ50 TO NEXT ROUTINE

```

2 005 08964          PZ.
2 005 08969          0
2 005 08974          0
2 003 08977          101
2 001 08978          □

```

LOD - MEM → STORAGE
 UNL - STORAGE → MEM
 CMP

ROUTINE #102
TEST TRANSFER STORE LOCATION
STORE IC VALUE OF 6669

```

AZ49..... 08984 SET B      0000
I 08989 SET B      0005
I 08994 UNL 7      9094
I 08999 LOD 8      9029
I 09004 UNL 7      6664
I 09009 LOD 8      9034
I 09014 UNL 7      6669
I 09019 RCV U      9091
I 09024 TR 1       6664
I
I
I 09029 TR 1 01    9039 90T9
I 09034 TR 1      9054
I
I
I 09039 LOD 8      9099
I 09044 CMP 4      9094
I 09049 TRE L      9084
I
I
I 09054 TRA I 01   9084 90Y4
I 09059 SEL 2      0500
I 09064 WR R       9100
I 09069 TRA I 03   9079 90G9
I 09074 TR 1       9084
I 09079 HLT J      0102
I 09084 TRA I 02   8984 89Q4
I 09089 TR 1       9109

```

CLEAR RGV AREA
PLACE TSL INST AT 6664
PLACE TR INST AT 6669
TRANSFER TO 6664 TO DO TSL

CMP STORED IC VALUE

ERROR ROUTINE

BA51 TO NEXT ROUTINE

2 005 09094
2 005 09099
2 003 09102
2 001 09103

00000 RCV AREA
06669 CORRECT IC VALUE STORED
102
□

ROUTINE #103
TEST TRANSFER STORE LOCATION
STORE IC VALUE OF 19984

```

BA50.....09109 SET B      0000
I 09114 SET B      0004
I 09119 UNL 7      9224
I 09124 SET B      0005
I 09129 LOD 8      9159
I 09134 UNL 7      19979 Z979
I 09139 LOD 8      9164
I 09144 UNL 7      19984 Z984
I 09149 RCV U      9221
I 09154 TR 1       19979 Z979
I
I
I
I 09159 TR 1 01    9169 91W9
I 09164 TR 1      9184
I
I
I 09169 LOD 8      9229
I 09174 CMP 4      9224
I 09179 TRE L      9214
I
I
I 09184 TRA I 01   9214 92/4
I 09189 SEL 2      0500
I 09194 WR R       9230
I 09199 TRA I 03   9209 9269
I 09204 TR 1       9214
I 09209 HLT J      0103
+ 09214 TRA I 02   9109 91-9
  09219 TR 1       9239
I

```

CLEAR RCV AREA

PLACE TSL INST. AT 19979

PLACE TR INST. AT 19984

TRANSFER TO 19979 TO DO TSL

CMP STORED IC VALUE

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 09224
2 005 09229
2 003 09232
2 001 09233

```

```

-0000 RCV AREA
-Z984 CORRECT IC VALUE STORED
103

```

ROUTINE #104
TEST TRANSFER STORE LOCATION.
STORE IC 159694 IN 7080 MODE.

```

BB51..... 09239 EEM 3 14 0000 06-0
I 09244 SET B 0000
I 09249 SET B 0004
I 09254 UNL 7 9369
I 09259 SET B 0005
I 09264 LOD 8 9294
I 09269 UNL 7 159689 1681
I 09274 LOD 8 9299
I 09279 UNL 7 159694 169D
I 09284 RCV U 9366
I 09289 TR 1 159689 1681
I
I
I 09294 TR 1 01 9304 93 4-
I 09299 TR 1 9319-
I
I
I 09304 LOD 8 9374.....
I 09309 CMP 4 9369
I 09314 TRE L 9349-
I
I
I 09319 TRA I 01 9349 93U9-
I 09324 SEL 2 0500
I 09329 WR R 9375
I 09334 TRA I 03 9344 93D4-
I 09339 TR 1 9349-
I 09344 HLT J 0104.....
I 09349 TRA I 02 9239 92L9.....
I
I
I 09354 RCV U 0306
I 09359 TR 1 01 0204 02 4
I 09364 TR 1 9384-----BC53
I

```

CLEAR RCV AREA

PLACE TSL INST. AT 159689

PLACE TR INST. AT 159694

TRANSFER TO 159689 TO DO TSL

CMP IC VALUE STORED

ERROR ROUTINE

FIRST USE OF ERROR
SUB-ROUTINE
TO NEXT ROUTINE

```

2 005 09369 -0000 RCV AREA
2 005 09374 -169D CORRECT IC VALUE STORED
2 003 09377 104
2 001 09378

```

ROUTINE #105
USE LOD TO TEST LOOK AHEAD
DURING MEM RD MODE.

```

BC52..... 09384 EEM 3 14 0000 06-0
I 09389 SPC . 0000
I 09394 SET B 0000
I 09399 SET B 0004
I 09404 LOD 8 9491
I 09409 SPC . 0002
I 09414 CMP 4 9489
I 09419 TRE L 9429-----
I 09424 TR 1 9449-----
I 09429 SET B 0000.....
I 09434 SPC . 0000
I 09439 CMP 4 9491
I 09444 TRE L 9479-----
I .....
I .....
I .....
I 09449 TRA I 01 9479 94X9-----
I 09454 SEL 2 0500
I 09459 WR R 9495
I 09464 TRA I 03 9474 94G4-----
I 09469 TR 1 9479-----
I 09474 HLT J 0105.....
+ 09479 TRA I 02 9384 93Q4.....
  09484 TR 1 9504-----
I .....
I .....

```

LOD 3456 FROM CHAR. 1/6

CMP 34

CMP 56

ERROR ROUTINE

```

2 010 09494 0123456789
2 003 09497 105
2 001 09498

```

ROUTINE #106
USE LOD TO TEST MEM RD
MODE ON INITIAL ADDRESS 0/5.

```

..... 09504 EEM 3 14 0000 06-0
I 09509 SPC . 0000
I 09514 SET B 0000
I 09519 SET B 0005
I 09524 LOD 8 9580
I 09529 CMP 4 9589
I 09534 TRE L 9569-----
I .....
I .....
I .....
I 09539 TRA I 01 9569 95W9-----
I 09544 SEL 2 0500
I 09549 WR R 9590
I 09554 TRA I 03 9564 95F4-----
I 09559 TR 1 9569-----
I 09564 HLT J 0106.....
+ 09569 TRA I 02 9504 95-4.....
  09574 TR 1 9599-----BD54
I .....

```

LOD 12345 FROM CHAR. 0/5

ERROR ROUTINE

TO NEXT ROUTINE

```

2 010 09584 0123456789
2 005 09589 12345
2 003 09592 106
2 001 09593

```

ROUTINE #107
USE UNL TO TEST MEM
RD-WR MODE FOR TN MRT

```

BD53.....
      09599 EEM 3 14 0000 06-0
      09604 SPC      0000
      09609 SET 8    0000
      09614 SET 8    0005
      09619 UNL 7    9694
      09624 UNL 7    9689
      09629 LOD 8    9699
      09634 UNL 7    9691
      09639 CMP 4    9691
      09644 TRE L    9679-----
      I 09649 TRA I 01 9679 96X9-----
      I 09654 SEL 2    0500
      I 09659 WR  R    9700
      I 09664 TRA I 03 9674 96G4-----
      I 09669 TR  1    9679-----
      I 09674 HLT J    0107.....
      I 09679 TRA I 02 9599 95R9.....
      I 09684 TR  1    9709-----
  
```

CLEAR UNL
AREA
UNL 23456 TO CHAR. 1/6

ERROR ROUTINE

```

2 010 09694          0000000000
2 005 09699          23456
2 003 09702          107
2 001 09703          □
  
```

ROUTINE #108
USE UNL TO TEST MEM RD-WR
MODE WITH INITIAL ADDRESS 0/5.

```

      09709 EEM 3 14 0000 06-0
      09714 SPC      0000
      09719 SET 8    0000
      09724 SET 8    0005
      09729 UNL 7    9804
      09734 UNL 7    9799
      09739 LOD 8    9809
      09744 UNL 7    9800
      09749 CMP 4    9800
      09754 TRE L    9789-----
      I 09759 TRA I 01 9789 97Y9-----
      I 09764 SEL 2    0500
      I 09769 WR  R    9810
      I 09774 TRA I 03 9784 97H4-----
      I 09779 TR  1    9789-----
      I 09784 HLT J    0108.....
      I 09789 TRA I 02 9709 97-9.....
      I 09794 TR  1    9819-----BE55
  
```

CLEAR UNL AREA
UNL 12345 TO CHAR. 0/5

ERROR ROUTINE

TO NEXT ROUTINE

```

2 010 09804          0000000000
2 005 09809          12345
2 003 09812          108
2 001 09813          □
  
```


ROUTINE #111
USE LOD AND CMP TO TEST
LOOK AHEAD IN MEMORY AND
STORAGE MODES.

```

BF55..... 10034 EEM 3 14 0000 06-0
I 10039 SPC , 0005
I 10044 SET B 0000
I 10049 SET B 0005
I
I
I 10054 SPC , 0006
I 10059 LOD 8 10162 162
I 10064 CMP 4 10162 162
I 10069 TRE L 10079 079-
I 10074 TR 1 10119 119-
I
I
I 10079 LOD 8 10161 161.
I 10084 CMP 4 10161 161
I 10089 TRE L 10099 099-
I 10094 TR 1 10119 119-
I
I
I 10099 SPC , 0005.....
I 10104 LOD 8 10161 161
I 10109 CMP 4 10161 161
I 10114 TRE L 10149 149-
I
I
I 10119 TRA I 01 10149 1U9-
I 10124 SEL 2 0500
I 10129 WR R 10163 163
I 10134 TRA I 03 10144 1D4-
I 10139 TR 1 10149 149-
I 10144 HLT J 0111.....
+---10149 TRA I 02 10034 0L4.
  10154 TR 1 10174 174------BG57
I

```

CLEAR STORAGE FIELD

LOD 4 DIGITS FROM MEM. CHAR. 2
INTO SBR CHAR. 6 AND COMPARE.

LOD 4 DIGITS FROM MEM. CHAR. 1
INTO SBR CHAR. 6 AND COMPARE.

LOD 5 DIGITS FROM MEM. CHAR. 1
INTO SBR CHAR 5 AND COMPARE

ERROR ROUTINE

TO NEXT ROUTINE

```

2 008 10162 --789012
2 003 10165 111
2 001 10166

```


ROUTINE #112
USE LOD AND CMP TO TEST
MEMORY AND STORAGE MODES.
ON INITIAL ADDRESSES OF 0/5
IN MEM AND CHAR. 7 IN SBR

```

BG56.....10174 EEM 3 14 0000 06-0 0
I 10179 SPC , 0006 0
I 10184 SET B 0000 0
I 10189 SET B 0004 0
I
I
I 10194 LOD 8 10295 295 0
I 10199 CMP 4 10295 295 0
I 10204 TRE L 10214 214-0-0
I 10209 TR 1 10254 254-0-0
I
I
I 10214 SPC , 0007.....0
I 10219 LOD 8 10295 295 0
I 10224 CMP 4 10295 295 0
I 10229 TRE L 10239 239-0-0
I 10234 TR 1 10254 254-0-0
I
I
I 10239 LOD 8 10296 296 0
I 10244 CMP 4 10296 296 0
I 10249 TRE L 10284 284-0-0
I
I
I 10254 TRA I 01 10284 2Y4-0-0
I 10259 SEL 2 0500 0
I 10264 WR R 10297 297 0
I 10269 TRA I 03 10279 2G9-0-0
I 10274 TR 1 10284 284-0-0
I 10279 HLT J 0112.....0
I 10284 TRA I 02 10174 1P4.....0
I 10289 TR 1 10309 309-0-0-----BH58

```

CLEAR STORAGE FIELD

LOD 4 DIGITS FROM MEM. CHAR 0
INTO SBR CHAR 6 AND COMPARE.

LOD 3 DIGITS FROM MEM. CHAR 0
INTO SBR CHAR 7 AND COMPARE.

LOD 3 DIGITS FROM MEM. CHAR 1
INTO SBR CHAR 7 AND COMPARE.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 007 10296          78901
2 003 10299          112
2 001 10300          0

```

ROUTINE #113
USE UNL AND CMP TO TEST
LOOK AHEAD IN MEMORY
AND STORAGE MODES.

```

BH57.....10309 EEM 3 14 0000 06-0
I 10314 SPC 0000
I 10319 SET B 0000
I 10324 SET B 0006
I 10329 UNL 7 10452 452
I 10334 SPC 0005
I 10339 SET B 0005
I 10344 LOD 8 10459 459
I
I
I 10349 UNL 7 10451 451
I 10354 CMP 4 10451 451
I 10359 TRE L 10369 369
I 10364 TR 1 10409 409
I
I
I 10369 SPC 0006.....
I 10374 UNL 7 10451 451
I 10379 CMP 4 10451 451
I 10384 TRE L 10394 394
I 10389 TR 1 10409 409
I
I
I 10394 UNL 7 10452 452.....
I 10399 CMP 4 10452 452
I 10404 TRE L 10439 439
I
I
I 10409 TRA I 01 10439 4T9
I 10414 SEL 2 0500
I 10419 WR R 10460 460
I 10424 TRA I 03 10434 4C4
I 10429 TR 1 10439 439
I 10434 HLT J 0113.....
I 10439 TRA I 02 10309 3-9.....
I 10444 TR 1 10469 469-----BJ59

```

CLEAR MEMORY FIELD

LOD 10765 IN SBR CHAR 5

UNL 5 DIGITS FROM SBR CHAR. 5
TO MEM CHAR 1 AND COMPARE

UNL 4 DIGITS FROM SBR CHAR. 6
TO MEM CHAR 1 AND COMPARE

UNL 4 DIGITS FROM SBR CHAR. 6
TO MEM CHAR 2 AND COMPARE

ERROR ROUTINE

-----BJ59 TO NEXT ROUTINE

```

2 008 10452          --000000 MEM FIELD
2 002 10454
2 005 10459          10765 STOR. FIELD
2 003 10462          113
2 001 10463          □

```


ROUTINE #117
USE LOD AND CMP TO TEST
ALL CHAR. OF SBR FOR BIT
PICKS OR DROPS.

CLEAR STORAGE
LOD 10 CHARACTERS
AND COMPARE THEM.

ERROR ROUTINE

ROUTINE #118
USE UNL TO TEST FOR BIT
PICK OR DROP IN THE ALU TO
MEM SWITCH.

CLEAR MEM FIELD
UNL 9 TEST CHARACTERS

ERROR ROUTINE

-----BM62 TO NEXT ROUTINE

```

BL60.....
#####
I . 10814 EEM 3 14 0000 06-0
I 10819 SPC , 0000
I 10824 SET B 0000
I 10829 SET B 0010
I 10834 LOD 8 10894 894
I 10839 CMP 4 10894 894
I 10844 TRE L 10879 879
I #####
I I
I #####
I 10849 TRA I 01 10879 8X9
I 10854 SEL 2 0500
I 10859 WR R 10895 895
I 10864 TRA I 03 10874 8G4
I 10869 TR 1 10879 879
I 10874 HLT J 0117
+ 10879 TRA I 02 10814 8J4
 10884 TR 1 10904 904
#####
I
I
2 010 10894 0H70H70H70
2 003 10897 117
2 001 10898

```

```

##### I
. . 10904 EEM 3 14 0000 06-0 . .
I 10909 SPC , 0004
I 10914 SET B 0000
I 10919 SET B 0009
I 10924 UNL 7 10994 994
I 10929 LOD 8 11004 /004
I 10934 UNL 7 10994 994
I 10939 CMP 4 10994 994
I 10944 TRE L 10979 979
I #####
I I
I #####
I 10949 TRA I 01 10979 9X9
I 10954 SEL 2 0500
I 10959 WR R 11005 /005
I 10964 TRA I 03 10974 9G4
I 10969 TR 1 10979 979
I 10974 HLT J 0118
+ 10979 TRA I 02 10904 9-4
 10984 TR 1 11014 /014
#####
2 010 10994 -000000000 MEM FIELD
2 010 11004 -0H70H70H7 TEST FIELD
2 003 11007 118
2 001 11008

```

ROUTINE #119
USE UNL TO TEST FOR BIT
PICK OR DROP IN THE
ALU TO MEM. SWITCH.

```

BM61..... 11014 EEM 3 14 0000 06-0
I 11019 SPC 0004
I 11024 SET B 0000
I 11029 SET B 0009
I 11034 UNL 7 11104 /104
I 11039 LOD 8 11114 /114
I 11044 UNL 7 11104 /104
I 11049 CMP 4 11104 /104
I 11054 TRE L 11089 /089
I
I
I 11059 TRA I 01 11089 /0Y9
I 11064 SEL 2 0500
I 11069 WR R 11115 /115
I 11074 TRA I 03 11084 /0H4
I 11079 TR 1 11089 /089
I 11084 HLT J 0119
+ 11089 TRA I 02 11014 /0J4
  11094 TR 1 11124 /124

```

CLEAR MEM. FIELD
UNL 9 TEST CHARACTERS

ERROR ROUTINE

```

2 010 11104 -000000000 MEM. FIELD
2 010 11114 -70H70H70H TEST FIELD
2 003 11117 119
2 001 11118

```

ROUTINE #120
USE UNL TO TEST FOR BIT
PICK OR DROP IN THE
ALU TO MEM. SWITCH.

```

11124 EEM 3 14 0000 06-0
I 11129 SPC 0004
I 11134 SET B 0000
I 11139 SET B 0009
I 11144 UNL 7 11224 /224
I 11149 LOD 8 11234 /234
I 11154 UNL 7 11224 /224
I 11159 CMP 4 11224 /224
I 11164 TRE L 11199 /199
I
I
I 11169 TRA I 01 11199 /1Z9
I 11174 SEL 2 0500
I 11179 WR R 11235 /235
I 11184 TRA I 03 11194 /114
I 11189 TR 1 11199 /199
I 11194 HLT J 0120
+ 11199 TRA I 02 11124 /1K4
  11204 RCV U 0306
  11209 TR 1 01 0204 02 4
  11214 TR 1 11244 /244

```

CLEAR MEM. FIELD
UNL 9 TEST CHARACTERS

ERROR ROUTINE

-----BN63 TO NEXT ROUTINE

```

2 010 11224 -000000000 MEM. FIELD
2 010 11234 -H70H70H70
2 003 11237 120
2 001 11238

```

ROUTINE #121
EXECUTE SHR AND TEST FOR
NO 900 CHK AND DZT ON.

```

BN62.....11244 EEM 3 14 0000 06-0
I 11249 SPC , 0000
I 11254 SET B 0000
I 11259 SHR C 0000
I 11264 TRS O 10 11274 /KP4
I 11269 TRZ N 11304 /304
I
I
I
I 11274 TRA I 01 11304 /3 4
I 11279 SEL 2 0500
I 11284 WR R 11310 /310
I 11289 TRA I 03 11299 /219
I 11294 TR 1 11304 /304
I 11299 HLT J 0121
+ 11304 TRA I 02 11244 /2M4
  11309 TR 1 11319 /319
I
I
I

```

ERROR ROUTINE

```

2 003 11312          121
2 001 11313          □

```

```

11319 RSU Q 11381 /381
I 11324 SHR C 0000
I 11329 TRZ N 11344 /344
I 11334 TRP M 11344 /344
I 11339 TR 1 11374 /374
I
I
I
I 11344 TRA I 01 11374 /3X4
I 11349 SEL 2 0500
I 11354 WR R 11382 /382
I 11359 TRA I 03 11369 /3F9
I 11364 TR 1 11374 /374
I 11369 HLT J 0122
+ 11374 TRA I 02 11319 /3J9
  11379 TR 1 11394 /394
I
I
I

```

ROUTINE #122
TEST SHR FOR TF DZT AND LEAVE
SIGN MINUS IN TYPE CYCLE 2.

ERROR ROUTINE

```

2 002 11381          6 1
2 003 11384          122
2 001 11385          □

```

BP64 NEXT ROUTINE

ROUTINE #123
TEST SHR. REPEAT TYPE CYCLE 1
AND SET SIGN PLUS
IN TYPE CYCLE 2.

```

BP63..... 11394 RSU Q      11456 /456  □
I □ 11399 SHR C          0001      □
I □ 11404 TRZ N          11414 /414-□-+
I □ 11409 TR  1          11419 /419-□-+
I □ 11414 TRP M          11449 /449-□-+
I □ 11419 TRA I 01      11449 /4U9-□-+
I □ 11424 SEL 2          0500      □
I □ 11429 WR  R          11457 /457  □
I □ 11434 TRA I 03      11444 /4D4-□-+
I □ 11439 TR  1          11449 /449-□-+
I □ 11444 HLT J          0123.....
+ - 11449 TRA I 02      11394 /3R4-□-+
□ 11454 TR  1          11469 /469-□-

```

ERROR ROUTINE

```

2 002 11456      G 1
2 003 11459      123
2 001 11460      □

```

ROUTINE #124
TEST SHR. REPEAT TYPE
CYCLE 2 AND SET SIGN PLUS.

```

..... 11469 RSU Q      11533 /533-□-+
I □ 11474 SHR C          0001      □
I □ 11479 TRZ N          11489 /489-□-+
I □ 11484 TR  1          11494 /494-□-+
I □ 11489 TRP M          11524 /524-□-+
I □ 11494 TRA I 01      11524 /5S4-□-+
I □ 11499 SEL 2          0500      □
I □ 11504 WR  R          11534 /534  □
I □ 11509 TRA I 03      11519 /5A9-□-+
I □ 11514 TR  1          11524 /524-□-+
I □ 11519 HLT J          0124.....
+ - 11524 TRA I 02      11469 /409-□-+
□ 11529 TR  1          11544 /544-□-

```

ERROR ROUTINE

-----BQ65 NEXT ROUTINE

```

2 004 11533      G 001
2 003 11536      124
2 001 11537      □

```


ROUTINE #125
TEST SHR. REPEAT TYPE
CYCLE 2 AND TURN OFF DZT.

```

BQ64.....11544 RSU Q      11613 /613  0
I 11549 SHR C          0001           0
I 11554 TRZ N          11574 /574-  0
I 11559 TRP M          11574 /574-  0
I 11564 CMP 4          11615 /615  0
I 11569 TRE L          11604 /604-  0
I 11574 TRA I 01      11604 /6  4-  0
I 11579 SEL 2           0500           0
I 11584 WR R           11616 /616  0
I 11589 TRA I 03      11599 /519-  0
I 11594 TR 1           11604 /604-  0
I 11599 HLT J           0125.....  0
+11604 TRA I 02      11544 /5M4.  0
 11609 TR 1           11624 /624-  0

```

ERROR ROUTINE

```

2 004 11613          & 101
2 002 11615          10
2 003 11618          125
2 001 11619          0

```

ROUTINE #126
EXECUTE LNG AND TEST
FOR NO 900 CHECK.

```

...11624 RAD H        11686 /686.  0
+11629 ENG D          0000           0
I 11634 TRS O 10      11649 /OM9-  0
+11639 CMP 4          11687 /687  0
I 11644 TRE L          11679 /679-  0
I 11649 TRA I 01      11679 /6X9-  0
I 11654 SEL 2           0500           0
I 11659 WR R           11688 /688  0
I 11664 TRA I 03      11674 /6G4-  0
I 11669 TR 1           11679 /679-  0
I 11674 HLT J           0126.....  0
+11679 TRA I 02      11624 /6K4.  0
 11684 TR 1           11699 /699-  0

```

ERROR ROUTINE

NEXT ROUTINE

```

2 002 11686          & 1
2 001 11687          1
2 003 11690          126
2 001 11691          0

```

ROUTINE #127
TEST LNG FOR STEP MAC 1,
SAC AND SPC MINUS 1.

```

BR65.....
  .11699 RAD H      11756 /756
I  11704 LNG D      0001
I  11709 CMP 4      11758 /758
I  11714 TRE L      11749 /749
I  11719 TRA I 01  11749 /709
I  11724 SEL 2      0500
I  11729 WR R       11759 /759
I  11734 TRA I 03  11744 /704
I  11739 TR 1       11749 /749
I  11744 HLT J      0127
+ 11749 TRA I 02  11699 /699
  11754 TR 1       11769 /769

```

ERROR ROUTINE

```

2 002 11756      6 1
2 002 11758      10
2 003 11761      127
2 001 11762      0

```

ROUTINE #128
TEST LNG FOR EMIT ZERO
TO STORAGE.

```

  .11769 RAD H      11832 /832
I  11774 SHR C      0001
I  11779 LNG D      0001
I  11784 CMP 4      11834 /834
I  11789 TRE L      11824 /824
I  11794 TRA I 01  11824 /824
I  11799 SEL 2      0500
I  11804 WR R       11835 /835
I  11809 TRA I 03  11819 /819
I  11814 TR 1       11824 /824
I  11819 HLT J      0128
+ 11824 TRA I 02  11769 /709
  11829 TR 1       11844 /844

```

ERROR ROUTINE

```

2 003 11832      6 12
2 002 11834      10
2 003 11837      128
2 001 11838      0

```

BS67 NEXT ROUTINE

ROUTINE #129
TEST LNG FOR REPEAT TYPE
CYCLE 2 ON SAC NOT 1, 2, 4.
CHECK STOR. MARK GENERATION.

```

BS66.....
I 11844 EEM 3 14 0000 06-0
I 11849 SPC , 0010
I 11854 RAD H 11917 /917
I 11859 LNG D 0002
I 11864 SPC , 0005
I 11869 SET B 0003
I 11874 TRZ N 11909 /909
I
I
I 11879 TRA I 01 11909 /9 9
I 11884 SEL 2 0500
I 11889 WR R 11918 /918
I 11894 TRA I 03 11904 /964
I 11899 TR 1 11909 /909
I 11904 HLT J 0129
+ 11909 TRA I 02 11844 /8M4
  11914 TR 1 11929 /929

```

LOCATE STOR. MARK
SET LEFT ACROSS STOR. MARK

ERROR ROUTINE

```

2 003 11917 X1A
2 003 11920 129
2 001 11921

```

```

I 11929 EEM 3 14 0000 06-0
I 11934 SPC , 0000
I 11939 SET B 0007
I 11944 SPC , 0007
I 11949 CMP 4 11998 /998
I 11954 TRE L 11989 /989
I
I
I 11959 TRA I 01 11989 /9Y9
I 11964 SEL 2 0500
I 11969 WR R 11995 /995
I 11974 TRA I 03 11984 /9H4
I 11979 TR 1 11989 /989
I 11984 HLT J 0130
+ 11989 TRA I 02 11929 /9K9
  11994 TR 1 12004 S004

```

ROUTINE #130
TEST SPC 1, 2 AND 4 TRIGGERS
SET SPC TO CHAR 7
CMP STOR MARK VS GM
SHOULD BE EQUAL

ERROR ROUTINE

```

2 003 11997 130
2 001 11998

```

BT68 TO NEXT ROUTINE

gscans/g0012020

```

BT67.....12004 EEM 3 14 0000 06-0
I 12009 SPC , 0000
I 12014 SET B 0024
I 12019 SPC , 0030
I 12024 CMP 4 12073 S073
I 12029 TRE L 12064 S064
I
I
I 12034 TRA I 01 12064 S0W4
I 12039 SEL 2 0500
I 12044 WR R 12070 S070
I 12049 TRA I 03 12059 S0E9
I 12054 TR 1 12064 S064
I 12059 HLT J 0131
+---12064 TRA I 02 12004 S0-4
  12069 TR 1 12079 S079

```

ROUTINE #131
 TEST SPC 8 AND 16 TRIGGERS
 SPC TO WORD 3 CHAR. ZERO
 CMP STOR. MARK VS GM
 SHOULD BE EQUAL.

ERROR ROUTINE

2 003 12072 131
 2 001 12073

```

.....12079 EEM 3 14 0000 06-0
I 12084 SPC , 0000
I 12089 LNG D 0032
I 12094 SET B 0001
I 12099 LOD 8 12158 S158
I 12104 SPC , 0700
I 12109 CMP 4 12158 S158
I 12114 TRE L 12149 S149
I
I
I 12119 TRA I 01 12149 S1U9
I 12124 SEL 2 0500
I 12129 WR R 12155 S155
I 12134 TRA I 03 12144 S1D4
I 12139 TR 1 12149 S149
I 12144 HLT J 0132
+---12149 TRA I 02 12079 S0P9
  12154 TR 1 12164 S164

```

ROUTINE #132
 TEST SPC 32, 64, 128 TRIGGERS
 LNG TO STEP 32, 64, 128 ON.
 LOD GROUP MARK, SPC TO 0700
 AND CMP THE GROUP MARK

ERROR ROUTINE

2 003 12157 132
 2 001 12158

BU69 TO NEXT ROUTINE

ROUTINE #133
USE SHR TO TEST STEP
SAC AND SPC PLUS 1.

```

BU68.....
      12164 EEM 3 14 0000 0&-0
I 12169 SPC 0000
I 12174 SET B 0255
I 12179 LOD 8 12510 S510
I 12184 SHR C 0255
I 12189 TRZ N 12199 S199-
I 12194 TR 1 12219 S219-
I 12199 RAD H 12513 S513.
I 12204 SHR C 0001
I 12209 CMP 4 12512 S512
I 12214 TRE L 12249 S249-
I
I
I
I 12219 TRA I 01 12249 S2U9-
I 12224 SEL 2 0500
I 12229 WR R 12514 S514
I 12234 TRA I 03 12244 S2D4-
I 12239 TR 1 12249 S249-
I 12244 HLT J 0133.
+--12249 TRA I 02 12164 S104.
  12254 TR 1 12524 S524-

```

LOD 255 NON-ZERO CHARACTERS.
SHR TO STEP SAC AND SPC TO
STORAGE MARK POSITION.

RAD AND STEP ALL SAC OFF
SHR AND STEP ALL SPC OFF

ERROR ROUTINE

- 2 001 12255
- 2 031 12286
- 2 032 12318
- 2 032 12350
- 2 032 12382
- 2 032 12414
- 2 032 12446
- 2 032 12478
- 2 032 12510
- 2 003 12513
- 2 003 12516
- 2 001 12517

```

      255 CHAR. FIELD FOR ROUT. #133 AND #134
6666666555555554444444433333333
222222211111111ZZZZZZZZYYYYYYYY
XXXXXXXXXXWWWVVVVVVVVUUUUUUUU
TTTTTTTTSSSSSSSSRRRRRRRRQQQQQQQQ
PPPPPPPOOOOOOONNNNNNNMMMMMMM
LLLLLLLLKKKKKKKKJJJJJJJIIIIII
HHHHHHHGGGGGGGFFFFFFFFFFEEEEEEE
DDDDDDDDCGCCCCCBBBBBBBBBAAAAAAA
X9I
133

```

ROUTINE #134
USE LNG TO TEST STEP
SAC AND SPC MINUS 1

```

      12524 EEM 3 14 0000 0&-0.
I 12529 SPC 0000
I 12534 SET B 0255
I 12539 LOD 8 12510 S510
I 12544 LNG D 0254
I 12549 SHR C 0000
I 12554 TRZ N 12574 S574-
I 12559 LNG D 0001
I 12564 SHR C 0000
I 12569 TRZ N 12604 S604-
I
I
I
I 12574 TRA I 01 12604 S6 4-
I 12579 SEL 2 0500
I 12584 WR R 12610 S610
I 12589 TRA I 03 12599 S519-
I 12594 TR 1 12604 S604-
I 12599 HLT J 0134.
+--12604 TRA I 02 12524 S5K4.
  12609 TR 1 12619 S619-

```

LOD 255 NON-ZERO CHARACTERS
LNG TO STEP COUNTERS
SHR TO TEST SINGLE NON-ZERO
CHARACTER LEFT IN STORAGE
LNG TO STEP ONE MORE

ERROR ROUTINE

TO NEXT ROUTINE

- 2 003 12612
- 2 001 12613

134

ROUTINE #135
USE RAD AND SPC TO TEST
SET SAC TO SSR ROUTINGS
FOR ASU 01 TO ASU 08.

BV69.....
I 12619 EEM 3 14 0000 06-0
I 12624 SET B 01 0000 00 0
I 12629 SET B 01 0256 02V6
I 12634 RAD H 01 12876 S8X6
I 12639 RAD H 02 12877 S8P7
I 12644 RAD H 03 12878 S8G8
I 12649 RAD H 04 12879 SY79
I 12654 RAD H 05 12880 SY0
I 12659 RAD H 06 12881 SYQ1
I 12664 RAD H 07 12882 SYH2
I 12669 RAD H 08 12883 SQ83

CLEAR BANK 1 TO ZEROS
1 INTO ASU 01
2 INTO ASU 02
3 INTO ASU 03
4 INTO ASU 04
5 INTO ASU 05
6 INTO ASU 06
7 INTO ASU 07
8 INTO ASU 08

I 12674 SPC 1000
I 12679 CMP 4 12885 S885
I 12684 TRE L 12694 S694
I 12689 TR 1 12834 S834
I 12694 SPC 1020
I 12699 CMP 4 12886 S886
I 12704 TRE L 12714 S714
I 12709 TR 1 12834 S834
I 12714 SPC 1100
I 12719 CMP 4 12887 S887
I 12724 TRE L 12734 S734
I 12729 TR 1 12834 S834
I 12734 SPC 1120
I 12739 CMP 4 12888 S888
I 12744 TRE L 12754 S754
I 12749 TR 1 12834 S834
I 12754 SPC 1200
I 12759 CMP 4 12889 S889
I 12764 TRE L 12774 S774
I 12769 TR 1 12834 S834
I 12774 SPC 1220
I 12779 CMP 4 12890 S890
I 12784 TRE L 12794 S794
I 12789 TR 1 12834 S834
I 12794 SPC 1300
I 12799 CMP 4 12891 S891
I 12804 TRE L 12814 S814
I 12809 TR 1 12834 S834
I 12814 SPC 1320
I 12819 CMP 4 12892 S892
I 12824 SPC 0000
I 12829 TRE L 12869 S869

TEST ASU 01

TEST ASU 02

TEST ASU 03

TEST ASU 04

TEST ASU 05

TEST ASU 06

TEST ASU 07

TEST ASU 08

I 12834 SPC 0000
I 12839 TRA I 01 12869 S8W9
I 12844 SEL 2 0500
I 12849 WR R 12893 S893
I 12854 TRA I 03 12864 S8F4
I 12859 TR 1 12869 S869
I 12864 HLT J 0135
I 12869 TRA I 02 12619 S6J9
I 12874 TR 1 12904 S904

ERROR ROUTINE

TO NEXT ROUTINE

2 009 12883 -ABCDEFGH
2 009 12892 -12345678
2 003 12895 135
2 001 12896

ROUTINE #136
USE RAD AND SPC TO TEST
SET SAC TO SSR ROUTINGS
FOR ASU 09 TO ASU 15

```

BW70.....12904 EEM 3 14 0000 0&-0
I 12909 SET B 09 0000 0- 0
I 12914 SET B 09 0256 OKV6
I 12919 RAD H 09 13137 TJT7
I 12924 RAD H 10 13139 TJL9
I 12929 RAD H 11 13141 TJD1
I 12934 RAD H 12 13143 TA43
I 12939 RAD H 13 13145 TAU5
I 12944 RAD H 14 13147 TAM7
I 12949 RAD H 15 13149 TAD9
I
I
I
I 12954 SPC , 1400
I 12959 CMP 4 13152 T152
I 12964 TRE L 12974 S974
I 12969 TR 1 13094 T094
I 12974 SPC , 1420
I 12979 CMP 4 13154 T154
I 12984 TRE L 12994 S994
I 12989 TR 1 13094 T094
I 12994 SPC , 1500
I 12999 CMP 4 13156 T156
I 13004 TRE L 13014 T014
I 13009 TR 1 13094 T094
I 13014 SPC , 1520
I 13019 CMP 4 13158 T158
I 13024 TRE L 13034 T034
I 13029 TR 1 13094 T094
I 13034 SPC , 1600
I 13039 CMP 4 13160 T160
I 13044 TRE L 13054 T054
I 13049 TR 1 13094 T094
I 13054 SPC , 1620
I 13059 CMP 4 13162 T162
I 13064 TRE L 13074 T074
I 13069 TR 1 13094 T094
I 13074 SPC , 1700
I 13079 CMP 4 13164 T164
I 13084 SPC , 0000
I 13089 TRE L 13129 T129
I
I
I
I 13094 SPC , 0000
I 13099 TRA I 01 13129 T1S9
I 13104 SEL 2 0500
I 13109 WR R 13165 T165
I 13114 TRA I 03 13124 T1B4
I 13119 TR 1 13129 T129
I 13124 HLT J 0136
+ 13129 TRA I 02 12904 S9-4
  13134 TR 1 13554 T554
I

```

CLEAR BANK 1 TO ZEROS
9 INTO ASU 9
10 INTO ASU 10
11 INTO ASU 11
12 INTO ASU 12
13 INTO ASU 13
14 INTO ASU 14
15 INTO ASU 15

TEST ASU 09

TEST ASU 10

TEST ASU 11

TEST ASU 12

TEST ASU 13

TEST ASU 14

TEST ASU 15

ERROR ROUTINE

TO NEXT ROUTINE

```

2 015 13149 -011&1A1B1C1D1E
2 015 13164 -09101112131415
2 003 13167 136
2 001 13168

```



ROUTINE #150
TEST SET BIT 05 AND 13.

```

.....
..13554 SET B      0001  □
I 13559 LOD 8     13650 T650 □
I 13564 UNL 7     13652 T652 □
I .....
I .....
I .....
I 13569 SB % 05 13652 TWV2 □
I 13574 SET B 01 0001 00 1 □
I 13579 LOD 8 01 13651 T6V1 □
I 13584 CMP 4 01 13652 T6V2 □
I 13589 TRE L    13599 T599-#-+
I 13594 TR 1     13614 T614-#-+
I .....
I .....
I .....
I 13599 SB % 13 13652 T6V2.#.#.I
I 13604 CMP 4    13652 T652 □ I
I 13609 TRE L    13644 T644-#-+
I .....
I .....
I .....
I 13614 TRA I 01 13644 T6U4-#-+
I 13619 SEL 2    0500 □ I
I 13624 WR R     13653 T653 □ I
I 13629 TRA I 03 13639 T6C9-#-+
I 13634 TR 1     13644 T644-#-+
I 13639 HLT J    0150.....#.#.I
I 13644 TRA I 02 13554 T5N4.#.#.#.I
I 13649 TR 1     13664 T664-#-+-----A02
.....

```

RESET TEST CHAR. TO X

CHANGE X TO 7

TEST 7

CHANGE 7 TO X
TEST X

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 13651
2 001 13652
2 003 13655
2 001 13656

```

```

X7
X TEST CHAR.
150
□

```

13652
A + A
2 4 4 2
1 2 1
A +

ROUTINE #151
TEST SB 07 FOR REVERSE A BIT.

```

A01..... 13664 SET B      0001  □
I 13669 LOD 8      13760 T760  □
I 13674 UNL 7      13762 T762  □
I ██████████ ██████████
I
I ██████████ ██████████
I 13679 SB % 07 13762 TXF2  □
I 13684 SET B 01 0001 00 1  □
I 13689 LOD 8 01 13761 T7W1  □
I 13694 CMP 4 01 13762 T7W2  □
I 13699 TRE L      13709 T709-  □
I 13704 TR 1      13724 T724-  □
I ██████████ ██████████ II
I
I ██████████ ██████████ II
I 13709 SB % 07 13762 TXF2.  II
I 13714 CMP 4      13762 T762  I
I 13719 TRE L      13754 T754-  I
I ██████████ ██████████ II
I
I ██████████ ██████████ II
I 13724 TRA I 01 13754 T7V4-  I
I 13729 SEL 2      0500  □ I
I 13734 WR R      13763 T763  □ I
I 13739 TRA I 03 13749 T7D9-  I
I 13744 TR 1      13754 T754-  I
I 13749 HLT J      0151.....  I
I 13754 TRA I 02 13664 T604.  I
I 13759 TR 1      13774 T774-  B03
████████████████████████████████████████

```

RESET TEST CHAR. TO Z

CHANGE Z TO 9

TEST 9

CHANGE 9 TO Z
TEST Z

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 13761
2 001 13762
2 003 13765
2 001 13766

```

```

Z9
Z TEST CHAR.
151
□

```

ROUTINE #152
TEST SB 06 AND 14.

```

B02.....I 13774 SET B      0001  □
I 13779 LOD 8      13880 T880  □
I 13784 UNL 7      13882 T882  □
I 13789 SB % 06    13882 TYQ2  □
I 13794 SET B 01   0001 00 1  □
I 13799 LOD 8 01   13881 T8Y1  □
I 13804 CMP 4 01   13882 T8Y2  □
I 13809 TRE L      13819 T819-  □
I 13814 TR 1       13834 T834-  □
I 13819 SB % 14    13882 THQ2.  □
I 13824 CMP 4      13882 T882  □
I 13829 TRE L      13864 T864-  □
I 13834 TRA I 01   13864 T8W4.  □
I 13839 SEL 2      0500        □
I 13844 WR R       13883 T883  □
I 13849 TRA I 03   13859 T8E9-  □
I 13854 TR 1       13864 T864-  □
I 13859 HLT J      0152.....  □
I 13864 TRA I 02   13774 T7P4.  □
I 13869 RCV U      0306        □
I 13874 TR 1 01    0204 02 4  □
I 13879 TR 1       13894 T894-  □

```

RESET TEST CHAR. TO N

CHANGE N TO 5

TEST 5

CHANGE 5 TO N
TEST N

ERROR ROUTINE

-----C04 TO NEXT ROUTINE

```

2 002 13881
2 001 13882
2 003 13885
2 001 13886

```

```

N5
N TEST CHAR.
152
□

```

ROUTINE #153
TEST INDIRECT ADDRESSING
IN 705-3 MODE

```

C03.....
#####
I 13894 LEM 3 15 0000 0&60
I 13899 SB % 13 13909 T1 9
I 13904 SET B 0001
I 13909 LOD 8 13914 T914
I 13914 NOP A 13968 T968
I 13919 CMP 4 13968 T968
I 13924 TRE L 13959 T959
I #####
I I
I #####
I 13929 TRA I 01 13959 T9V9
I 13934 SEL 2 0500
I 13939 WR R 13965 T965
I 13944 TRA I 03 13954 T9E4
I 13949 TR 1 13959 T959
I 13954 HLT J 0153
+ 13959 TRA I 02 13894 T8R4
  13964 TR 1 13974 T974
#####
I
I

```

PLACE A BIT FOR I/A
LOD GROUP MARK INDIRECTLY

ERROR ROUTINE

2 003 13967 153
2 001 13968

ROUTINE #154
TEST INDIRECT ADDRESSING
IN 7080 MODE USING EIA.

```

##### I
. 13974 EEM 3 14 0000 06-0.
I 13979 SET B 0001
I 13984 EIA , 10 0000 0--0
I 13989 LOD 8 13994 T994
I 13994 NOP A 14048 U048
I 13999 CMP 4 14048 U048
I 14004 TRE L 14039 U039
I #####
I I
I #####
I 14009 TRA I 01 14039 U0T9
I 14014 SEL 2 0500
I 14019 WR R 14045 U045
I 14024 TRA I 03 14034 U0C4
I 14029 TR 1 14039 U039
I 14034 HLT J 0154
+ 14039 TRA I 02 13974 T9P4
  14044 TR 1 14054 U054-----D05
#####

```

LOD GROUP MARK INDIRECTLY

ERROR ROUTINE

TO NEXT ROUTINE

2 003 14047 154
2 001 14048

ROUTINE #155
EXECUTE STORE A BLANK AND
TEST FOR NO 900 CHECK.

ON STORE, RESULT A BLANK
BACK TO MEMORY.

ERROR ROUTINE

ROUTINE #156
TEST STORE FOR SMT ON TO ROUTE
DIG AD OUT, EMIT A, EMIT B.

RESET STORE FIELD

RESULT PLUS ZERO TO MEMORY

ERROR ROUTINE

TO NEXT ROUTINE

```

DO4.....
I 14054 SET B      0000
I 14059 ST  F     14126 U126
I 14064 TRS 0 10 14089 U-Q9-
I 14069 SET B      0001
I 14074 LOD  8     14125 U125
I 14079 CMP  4     14126 U126
I 14084 TRE  L     14119 U119-
I
I
I
I 14089 TRA  I 01 14119 U1/9-
I 14094 SEL  2      0500
I 14099 WR   R     14127 U127
I 14104 TRA  I 03 14114 U1A4-
I 14109 TR   1     14119 U119-
I 14114 HLT  J      0155
+---14119 TRA  I 02 14054 UON4.
I 14124 TR   1     14139 U139-
I
I
I

```

```

2 001 14125
2 001 14126
2 003 14129
2 001 14130

```

```

I
I 14139 SET B      0001.....
I 14144 LOD  8     14220 U220
I 14149 UNL  7     14222 U222
I
I
I
I 14154 SET B      0000
I 14159 ST  F     14222 U222
I 14164 SET B      0001
I 14169 LOD  8     14221 U221
I 14174 CMP  4     14222 U222
I 14179 TRE  L     14214 U214-
I
I
I
I 14184 TRA  I 01 14214 U2/4-
I 14189 SEL  2      0500
I 14194 WR   R     14223 U223
I 14199 TRA  I 03 14209 U2&9-
I 14204 TR   1     14214 U214-
I 14209 HLT  J      0156.....
+---14214 TRA  I 02 14139 U1L9.
I 14219 TR   1     14234 U234-
I
I
I

```

```

2 001 14220
2 001 14221
2 001 14222
2 003 14225
2 001 14226

```

ROUTINE #157
TEST STORE INSTRUCTION
STORE A MINUS ONE.

```

E05.....
#####
I 14234 SET B      0000      □
I 14239 SET B      0002      □
I 14244 UNL 7      14308 U308 □
I 14249 RSU Q      14306 U306 □
I 14254 ST F       14308 U308 □
I 14259 SUB P      14308 U308 □
I 14264 TRZ N      14299 U299----
I #####          I #####          I
I
I #####          I #####          I
I 14269 TRA I 01 14299 U2Z9----
I 14274 SEL 2      0500      □ I
I 14279 WR R       14309 U309 □ I
I 14284 TRA I 03 14294 U2I4---- I
I 14289 TR 1       14299 U299---- I
I 14294 HLT J      0157..... I
+---14299 TRA I 02 14234 U2L4.###
  14304 TR 1       14319 U319----
#####          I
I
I

```

RESET STORE FIELD
RSU MINUS 1
EMIT B BIT IN CYCLE 3 OF ST.

ERROR ROUTINE

```

2 002 14306      & 1
2 002 14308
2 003 14311      157
2 001 14312      □

```

ROUTINE #158
TEST STORE INSTRUCTION.
STORE PLUS 11.

```

##### I
..14319 SET B      0000.....
I 14324 SET B      0003      □
I 14329 UNL 7      14408 U408 □
I 14334 RAD H      14402 U402 □
I 14339 ST F       14408 U408 □
I 14344 SET B      0003      □
I 14349 LOD 8      14405 U405 □
I 14354 CMP 4      14408 U408 □
I 14359 TRE L      14394 U394----
I #####          I #####          I
I
I #####          I #####          I
I 14364 TRA I 01 14394 U3Z4----
I 14369 SEL 2      0500      □ I
I 14374 WR R       14409 U409 □ I
I 14379 TRA I 03 14389 U3H9---- I
I 14384 TR 1       14394 U394---- I
I 14389 HLT J      0158..... I
+---14394 TRA I 02 14319 U3J9.###
  14399 TR 1       14419 U419---- F07
#####

```

RESET STORE FIELD
RAD PLUS 11
ON ST, EMIT A, B BITS IN CYC 3

ERROR ROUTINE

TO NEXT ROUTINE

```

2 003 14402      & 11
2 003 14405      G1A
2 003 14408      000
2 003 14411      158
2 001 14412      □

```


ROUTINE #161
EXECUTE RND TYPE CYCLE 1 AND 2
ONLY. TEST FOR NO 900 CHECK.

```

G07.....14619 SET B      0001      □
I □ 14624 LOD 8        14685 U685 □
I □ 14629 RND E        0000      □
I □ 14634 TRS 0 10    14649 UOM9-□
I □ 14639 CMP 4        14685 U685 □ I
I □ 14644 TRE L        14679 U679-□
I □ □□□□□□□□□□□□□□□□□□□□□□□□ □ I
I □ □□□□□□□□□□□□□□□□□□□□□□□□ □ I
I □ 14649 TRA I 01    14679 U6X9-□
I □ 14654 SEL 2        0500      □ I
I □ 14659 WR R         14686 U686 □ I
I □ 14664 TRA I 03    14674 U6G4-□
I □ 14669 TR 1        14679 U679-□
I □ 14674 HLT J        0161.....□
+ - 14679 TRA I 02    14619 U6J9.□
□ 14684 TR 1         14694 U694-□
□□□□□□□□□□□□□□□□□□□□□□□□□□□ □ I
I
I

```

ERROR ROUTINE

```

2 001 14685      5
2 003 14688     161
2 001 14689      □

```

ROUTINE #162
TEST ROUND. DO TYPE CYCLE 3
TO ROUTE 1 AND 4 TO AD.
NO DEC CAR OUT.

```

□□□□□□□□□□□□□□□□□□□□□□□□□□□ □ I
..14694 SET B      0002.....□
I □ 14699 LOD 8        14756 U756 □
I □ 14704 RND E        0001      □
I □ 14709 CMP 4        14755 U755 □
I □ 14714 TRE L        14749 U749-□
I □ □□□□□□□□□□□□□□□□□□□□□□□□ □ I
I □ □□□□□□□□□□□□□□□□□□□□□□□□ □ I
I □ 14719 TRA I 01    14749 U7U9-□
I □ 14724 SEL 2        0500      □ I
I □ 14729 WR R         14757 U757 □ I
I □ 14734 TRA I 03    14744 U7D4-□
I □ 14739 TR 1        14749 U749-□
I □ 14744 HLT J        0162.....□
+ - 14749 TRA I 02    14694 U6R4.□
□ 14754 TR 1         14769 U769-□
□□□□□□□□□□□□□□□□□□□□□□□□□□□ □ I

```

TRANSFER =

ERROR ROUTINE 911 *bypass part*

913 *Halt on error*

912 *Repeat Routine*

H09 TO NEXT ROUTINE

```

2 001 14755      1
2 001 14756      2
2 003 14759     162
2 001 14760      □

```


ROUTINE #163
TEST ROUND FOR DEC. CARRY
IN TYPE CYCLE 3.

```

H08.....
#####
I .14769 RAD H      14827 U827  □
I □ 14774 RND E      0001      □
I □ 14779 SUB P      14828 U828  □
I □ 14784 TRZ N      14819 U819  -
I ##### I
I I
I ##### I
I □ 14789 TRA I 01 14819 U8/9 -
I □ 14794 SEL 2      0500      □ I
I □ 14799 WR R      14829 U829  □ I
I □ 14804 TRA I 03 14814 U8A4 -
I □ 14809 TR 1      14819 U819  -
I □ 14814 HLT J      0163..... I
+ - 14819 TRA I 02 14769 U709. . .
□ 14824 TR 1      14839 U839  -
##### I
I
I

```

ERROR ROUTINE

```

2 003 14827      & 15
2 001 14828      &2
2 003 14831      163
2 001 14832      □

```

ROUTINE #164
TEST ROUND INSTRUCTION
DEC. CARRY TWICE IN TC 3.

```

##### I
. . .14839 RAD H      14898 U898. . . I
I □ 14844 RND E      0001      □
I □ 14849 SUB P      14900 U900  □
I □ 14854 TRZ N      14889 U889  -
I ##### I
I I
I ##### I
I □ 14859 TRA I 01 14889 U8Y9 -
I □ 14864 SEL 2      0500      □ I
I □ 14869 WR R      14901 U901  □ I
I □ 14874 TRA I 03 14884 U8H4 -
I □ 14879 TR 1      14889 U889  -
I □ 14884 HLT J      0164..... I
+ - 14889 TRA I 02 14839 U8L9. . . I
□ 14894 TR 1      14909 U909  -
#####

```

ERROR ROUTINE

```

2 004 14898      & 096
2 002 14900      &10
2 003 14903      164
2 001 14904      □

```

TO NEXT ROUTINE

ROUTINE #165
TEST ROUND FOR NO TF DZT
IN TYPE CYCLE 2 OR 3.

```

J09..... 14909 SET B      0000      □
I □ 14914 SET B      0004      □
I □ 14919 RND E      0002      □
I □ 14924 TRZ N      14959 U959----
I □  
I □  
I □  
I □ 14929 TRA I 01 14959 U9V9----
I □ 14934 SEL 2      0500      □ I
I □ 14939 WR R      14965 U965 □ I
I □ 14944 TRA I 03 14954 U9E4----
I □ 14949 TR 1      14959 U959----
I □ 14954 HLT J      0165.....---
+--- 14959 TRA I 02 14909 U9-9.---
  □ 14964 TR 1      14974 U974----

```

ERROR ROUTINE

```

2 003 14967      165
2 001 14968      □

```

ROUTINE #166
TEST SIGN INSTRUCTION FOR
SET STORAGE SIGN PLUS.

```

..... 14974 RSU Q      15026 V026.---
I □ 14979 SGN T      15027 V027 □
I □ 14984 TRP M      15019 V019----
I □  
I □  
I □  
I □ 14989 TRA I 01 15019 V0/9----
I □ 14994 SEL 2      0500      □ I
I □ 14999 WR R      15028 V028 □ I
I □ 15004 TRA I 03 15014 V0A4----
I □ 15009 TR 1      15019 V019----
I □ 15014 HLT J      0166.....---
+--- 15019 TRA I 02 14974 U9P4.---
  □ 15024 TR 1      15039 V039---------K11

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 15026      6 1
2 001 15027      1
2 003 15030      166
2 001 15031      □

```

ROUTINE #167
TEST SIGN INSTRUCTION FOR
SET STORAGE SIGN MINUS.

```

K10.....
#####
I 15039 SET B 0001
I 15044 LOD 8 15105 V105
I 15049 UNL 7 15106 V106
I 15054 SGN T 15106 V106
I 15059 TRP M 15069 V069
I 15064 TR 1 15099 V099
#####
I
I
I #####
I 15069 TRA I 01 15099 VOZ9
I 15074 SEL 2 0500
I 15079 WR R 15107 V107
I 15084 TRA I 03 15094 V014
I 15089 TR 1 15099 V099
I 15094 HLT J 0167
+ 15099 TRA I 02 15039 VOL9
  15104 TR 1 15119 V119
#####
I
I
I

```

RESET SIGN CHAR.

ERROR ROUTINE

```

2 001 15105 J
2 001 15106 J
2 003 15109 167
2 001 15110

```

ROUTINE #168
TEST SGN INSTRUCTION
FOR TURN OFF DZT.

```

#####
. 15119 SET B -0000
I 15124 SGN T 15175 V175
I 15129 TRZ N 15139 V139
I 15134 TR 1 15169 V169
#####
I
I
I #####
I 15139 TRA I 01 15169 V1W9
I 15144 SEL 2 0500
I 15149 WR R 15176 V176
I 15154 TRA I 03 15164 V1F4
I 15159 TR 1 15169 V169
I 15164 HLT J 0168
+ 15169 TRA I 02 15119 V1J9
  15174 TR 1 15184 V184 -----L12
#####

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 001 15175 1
2 003 15178 168
2 001 15179

```

ROUTINE #169
TEST SGN FOR SUP AD CARRY AND
ROUTINGS TO PLACE CHARACTER
BACK IN MEMORY.

RESET SGN CHAR.
ON SGN, CHANGE \$ TO #

ERROR ROUTINE

ROUTINE #170
TEST SGN FOR EMIT BLANK TO
MEMORY ON MBR BL HYP AMP SM.

RESET SGN CHAR.
ON SGN CHANGE DASH TO BLANK

ERROR ROUTINE

TO NEXT ROUTINE

```

L11.....
I 15184 SET B 0001
I 15189 LOD 8 15255 V255
I 15194 UNL 7 15257 V257
I 15199 SGN T 15257 V257
I 15204 LOD 8 15257 V257
I 15209 CMP 4 15256 V256
I 15214 TRE L 15249 V249
I
I
I
I 15219 TRA I 01 15249 V2U9
I 15224 SEL 2 0500
I 15229 WR R 15258 V258
I 15234 TRA I 03 15244 V2D4
I 15239 TR 1 15249 V249
I 15244 HLT J 0169
+ 15249 TRA I 02 15184 V1Q4
  15254 TR 1 15269 V269
I
I

```

```

2 001 15255 $
2 001 15256 #
2 001 15257 $
2 003 15260 169
2 001 15261

```

```

I
I 15269 SET B 0001
I 15274 LOD 8 15340 V340
I 15279 UNL 7 15342 V342
I 15284 SGN T 15342 V342
I 15289 LOD 8 15342 V342
I 15294 CMP 4 15341 V341
I 15299 TRE L 15334 V334
I
I
I
I 15304 TRA I 01 15334 V3T4
I 15309 SEL 2 0500
I 15314 WR R 15343 V343
I 15319 TRA I 03 15329 V3B9
I 15324 TR 1 15334 V334
I 15329 HLT J 0170
+ 15334 TRA I 02 15269 V209
  15339 TR 1 15354 V354-----M13
I

```

```

2 001 15340 -
2 001 15341 -
2 001 15342 -
2 003 15345 170
2 001 15346

```

ROUTINE #171
TEST SGN FOR EMIT A AND B BITS
TO STORAGE.

```

M12.....
#####
I .15354 SGN T      15415 V415  □
I □ 15359 CMP 4      15415 V415  □
I □ 15364 TRE L      15379 V379-□
I □ 15369 CMP 4      15416 V416  □ I
I □ 15374 TRE L      15409 V409-□
I ##### II
I I II
I ##### II
I □ 15379 TRA I 01 15409 V4 9-□
I □ 15384 SEL 2      0500      □ I
I □ 15389 WR R      15417 V417  □ I
I □ 15394 TRA I 03 15404 V4&4-□
I □ 15399 TR 1      15409 V409-□
I □ 15404 HLT J      0171.....□ I
I-15409 TRA I 02 15354 V3N4.□.□
□ 15414 TR 1      15429 V429-□
##### I
I
I

```

ERROR ROUTINE

- 2 001 15415 1
- 2 001 15416 G
- 2 003 15419 171
- 2 001 15420 □

ROUTINE #172
TEST SGN FOR EMIT B BIT ONLY
TO STORAGE.

```

##### I
..15429 SET B      0001.....□.□
I □ 15434 LOD 8      15515 V515  □
I □ 15439 UNL 7      15517 V517  □
I □ 15444 SGN T      15517 V517  □
I □ 15449 CMP 4      15515 V515  □
I □ 15454 TRE L      15469 V469-□
I □ 15459 CMP 4      15516 V516  □ I
I □ 15464 TRE L      15499 V499-□
I ##### II
I I II
I ##### II
I □ 15469 TRA I 01 15499 V4Z9-□
I □ 15474 SEL 2      0500      □ I
I □ 15479 WR R      15518 V518  □ I
I □ 15484 TRA I 03 15494 V4I4-□
I □ 15489 TR 1      15499 V499-□
I □ 15494 HLT J      0172.....□ I
I-15499 TRA I 02 15429 V4K9.□.□
□ 15504 RCV U      0306      □
□ 15509 TR 1 01 0204 02 4 □
□ 15514 TR 1      15529 V529-□-----N14
#####

```

RESET SGN CHAR.

ERROR ROUTINE

TO NEXT ROUTINE

- 2 001 15515 J
- 2 001 15516 -
- 2 001 15517 J
- 2 003 15520 172
- 2 001 15521 □

ROUTINE #173
TEST LFC INSTRUCTION, LFC 4
CHAR. NO ZONES, NO C BITS,
INTO STOR CHAR 0.

N13.....
I 15529 EEM 3 14 0000 06-0
I 15534 SPC 0000
I 15539 SET B 0000
I 15544 SET B 0008
I 15549 LFC 02 15609 V6-9
I 15554 TRS 0 11 15569 VNF9
I 15559 CMP 4 15617 V617
I 15564 TRE L 15599 V599
I 15569 TRA I 01 15599 V5Z9
I 15574 SEL 2 0500
I 15579 WR R 15618 V618
I 15584 TRA I 03 15594 V5I4
I 15589 TR 1 15599 V599
I 15594 HLT J 0173
I 15599 TRA I 02 15529 V5K9
I 15604 TR 1 15629 V629

RESET STORAGE WORD
TO ZEROS AND
LFC 3@05
TEST 901

ERROR ROUTINE

2 005 15609 X3@05 LFC FIELD
2 008 15617 00003@05 CORRECT RESULT
2 003 15620 173
2 001 15621

ROUTINE #174
TEST LFC INSTRUCTION,
LFC ONE CHARACTER, ZONES
ONLY, INTO STOR CHAR 0.

.....
I 15629 EEM 3 14 0000 06-0
I 15634 SPC 0000
I 15639 SET B 0008
I 15644 LOD 8 15709 V709
I 15649 LFC 02 15701 V7-1
I 15654 CMP 4 15710 V710
I 15659 TRE L 15694 V694
I 15664 TRA I 01 15694 V6Z4
I 15669 SEL 2 0500
I 15674 WR R 15711 V711
I 15679 TRA I 03 15689 V6H9
I 15684 TR 1 15694 V694
I 15689 HLT J 0174
I 15694 TRA I 02 15629 V6K9
I 15699 TR 1 15719 V719

RESET STORAGE WORD
TO XXXXXXXX
LFC AN AMPERSAND

ERROR ROUTINE

2 002 15701 X& LFC CHARACTER
2 009 15710 XXXXXXXX&
2 003 15713 174
2 001 15714

-----P15 TO NEXT ROUTINE

ROUTINE #175
TEST LFC INSTRUCTION -3 CHAR.
LFC A DILROY AND TWO OTHER
CHARACTERS INTO STOR. CHAR 5

```

P14.....
I 15719 EEM 3 14 0000 06-0
I 15724 SB % 12 15791 VG91
I 15729 SPC , 0005
I 15734 LFC , 02 15793 V7R3
I 15739 SET B 0004
I 15744 CMP 4 15797 V797
I 15749 TRE L 15784 V784
I
I
I 15754 TRA I 01 15784 V7Y4
I 15759 SEL 2 0500
I 15764 WR R 15798 V798
I 15769 TRA I 03 15779 V7G9
I 15774 TR 1 15784 V784
I 15779 HLT J 0175
I 15784 TRA I 02 15719 V7J9
I 15789 TR 1 15809 V809
I
I
I

```

MAKE A DILROY

LFC DILROY, LOZENGE AND GM
SET L ACROSS STOR. MARK
GENERATED BY DILROY AND
CMP THE RESULT

ERROR ROUTINE

- 2 003 15792 -F
- 2 001 15793
- 2 003 15796 00
- 2 001 15797
- 2 003 15800 175
- 2 001 15801

ROUTINE #176
TEST LFC 2 CHARACTERS
MADE UP OF B842 AND A842 BITS
LFC INTO STOR. CHAR. 7

```

I 15809 EEM 3 14 0000 06-0
I 15814 SB % 12 15886 VH86
I 15819 SB % 12 15887 VH87
I 15824 SPC , 0007
I 15829 LFC , 02 15887 V8Q7
I 15834 SET B 0002
I 15839 CMP 4 15887 V887
I 15844 TRE L 15879 V879
I
I
I 15849 TRA I 01 15879 V8X9
I 15854 SEL 2 0500
I 15859 WR R 15888 V888
I 15864 TRA I 03 15874 V8G4
I 15869 TR 1 15879 V879
I 15874 HLT J 0176
I 15879 TRA I 02 15809 V8-9
I 15884 TR 1 15899 V899
I
I
I

```

MAKE B842
MAKE A842

LFC TWO CHAR. TO TEST
DILROY RECOGNITION

ERROR ROUTINE

TO NEXT ROUTINE

- 2 003 15887 00W
- 2 003 15890 176
- 2 001 15891

ROUTINE #177
TEST LFC 5 CHARACTERS
LFC MIXED FIELD INTO
STORAGE CHAR. 5.

```

Q15.....
I 15899 EEM 3 14 0000 06-0
I 15904 SPC , 0005
I 15909 SET B 0000
I 15914 SET B 0006
I 15919 LFC , 02 15980 V9Q0
I 15924 SET B 0006
I 15929 CMP 4 15986 V986
I 15934 TRE L 15969 V969
I
I
I 15939 TRA I 01 15969 V9W9
I 15944 SEL 2 0500
I 15949 WR R 15987 V987
I 15954 TRA I 03 15964 V9F4
I 15959 TR 1 15969 V969
I 15964 HLT J 0177
+ 15969 TRA I 02 15899 V8R9
  15974 TR 1 15999 V999
I
I
I

```

CLEAR STORAGE
TO SIX ZEROS
LFC 5 CHARACTERS
CMP 6 CHAR.

ERROR ROUTINE

```

2 006 15980 X- 6G
2 006 15986 0- 6G
2 003 15989 177
2 001 15990

```

ROUTINE #178
TEST LSB ON ZONES ONLY.
LSB 255 BLANKS AND
COMPARE THEM.

```

I 15999 EEM 3 14 0000 06-0
I 16004 SPC , 0000
I 16009 SET B 0000
I 16014 SET B 0256
I 16019 LSB , 04 16414 WU14
I 16024 SET B 0255
I 16029 CMP 4 16414 W414
I 16034 TRE L 16069 W069
I
I
I 16039 TRA I 01 16069 W0W9
I 16044 SEL 2 0500
I 16049 WR R 16075 W075
I 16054 TRA I 03 16064 W0F4
I 16059 TR 1 16069 W069
I 16064 HLT J 0178
+ 16069 TRA I 02 15999 V9R9
  16074 TR 1 16084 W084-----R17
I
I

```

RESET SPC IN BANK 0
CLEAR BANK 0 TO ZEROS
LSB BLANKS
CMP BLANKS

ERROR ROUTINE

TO NEXT ROUTINE

```

2 003 16077 178
2 001 16078

```


ROUTINE #179
TEST LSB ON DILROY.
LSB 255 BLANKS PLUS DILROY
AND TEST FOR STOR. MARK

```

R16.....16084 EEM 3 14 0000 06-0 0
I 16089 SPC , 0000 0
I 16094 SB % 12 16415 WD15 0
I 16099 LSB , 04 16415 WU15 0
I 16104 SET B 0002 0
I 16109 CMP 4 16418 W418 0
I 16114 TRE L 16149 W149-0
I 16119 TRA I 01 16149 W1U9-0
I 16124 SEL 2 0500 0
I 16129 WR R 16419 W419 0
I 16134 TRA I 03 16144 W1D4-0
I 16139 TR 1 16149 W149-0
I 16144 HLT J 0179.....0
+16149 TRA I 02 16084 W0Q4.....0
16154 TR 1 16429 W429-0

```

MAKE F INTO DILROY

SET LEFT ACROSS STORAGE MARK
GENERATED AND CMP VS 00.

ERROR ROUTINE

-----S18 TO NEXT ROUTINE

- 2 050 16204
- 2 050 16254
- 2 050 16304
- 2 050 16354
- 2 050 16404
- 2 010 16414
- 2 004 16418
- 2 003 16421
- 2 001 16422

260 BLANKS FOR ROUTINES 178,179,184

FX00
179
0

ROUTINE #180
TEST LSB IN BANK 1
LSB ZEROS WITH BLOCKS
OF 8 OTHER CHARACTERS
ON EACH END OF FIELD

```

S17..... 16429 EEM 3 14 0000 0G-0 0
I 16434 SET B 01 0000 00 0 0
I 16439 SET B 01 0255 02V5 0
I 16444 UNL 7 01 79990 I9Z- 0
I 16449 SET B 02 0008 00-8 0
I 16454 LOD 8 02 16580 W5Q0 0
I 16459 UNL 7 02 79742 I7MK 0
I 16464 LOD 8 02 16572 W5P2 0
I 16469 UNL 7 02 79990 I9R- 0
I
I
I
I 16474 SPC . 1730 0
I 16479 LSB . 04 79990 IZ9- 0
I 16484 SET B 0016 0
I 16489 CMP 4 16580 W580 0
I 16494 TRE L 16504 W504- 0
I 16499 TR 1 16524 W524- 0
I
I
I 16504 LNG D 0001..... 0
I 16509 SHR C 0018 0
I 16514 SPC . 0000 0
I 16519 TRZ N 16559 W559- 0
I
I
I 16524 SPC . 0000..... 0
I
I
I 16529 TRA I 01 16559 W5V9- 0
I 16534 SEL 2 0500 0
I 16539 WR R 16581 W581 0
I 16544 TRA I 03 16554 W5E4- 0
I 16549 TR 1 16559 W559- 0
I 16554 HLT J 0180..... 0
+---16559 TRA I 02 16429 W4K9..... 0
 16564 TR 1 16589 W589- 0

```

CLEAR BANK 1
AND UNL ZEROS TO MEM. FIELD
AKTDQZ.*
UNL TO LEFT END OF FIELD
-G%GPXEN
UNL TO RIGHT END OF FIELD

SPC TO LAST WORD IN BANK 1
LSB FROM 79990
CMP FIRST AND LAST WORDS

PLACE SM TO RIGHT.
SHORTEN PAST SM ON
LEFT AND CHECK ZEROS.

RESET SPC ON ERROR

ERROR ROUTINE

-----T19 TO NEXT ROUTINE

```

2 008 16572 -G%GPXEN FIRST STORAGE WORD IN BANK 1
2 008 16580 AKTDQZ.* LAST STORAGE WORD IN BANK 1
2 003 16583 180
2 001 16584 0

```

ROUTINE #181
TEST UFC USING ZONES ONLY.
UFC 2 CHARACTERS.

```

T18.....
I 16589 EEM 3 14 0000 06-0
I 16594 SPC . 0000
I 16599 SET B 0000
I 16604 SET B 0003
I 16609 UNL 7 16687 W687
I 16614 LOD 8 16690 W690
I 16619 UFC . 03 16687 W6H7
I 16624 LOD 8 16693 W693
I 16629 CMP 4 16687 W687
I 16634 TRE L 16669 W669
I
I
I 16639 TRA I 01 16669 W6W9
I 16644 SEL 2 0500
I 16649 WR R 16694 W694
I 16654 TRA I 03 16664 W6F4
I 16659 TR 1 16669 W669
I 16664 HLT J 0181
I 16669 TRA I 02 16589 W5Q9
I 16674 RCV U 0306
I 16679 TR 1 01 0204 02 4
I 16684 TR 1 16704 W704

```

LOD -6
DO UFC
CMP 3 CHAR. IN MEMORY

ERROR ROUTINE

-----U20 TO NEXT ROUTINE

```

2 003 16687
2 003 16690
2 003 16693
2 003 16696
2 001 16697

```

```

000 UFC AREA
X-6 TEST CHARACTERS
0-6 CORRECT RESULT
181

```

ROUTINE #180
TEST LSB IN BANK 1
LSB ZEROS WITH BLOCKS
OF 8 OTHER CHARACTERS
ON EACH END OF FIELD

```

S17..... 16429 EEM 3 14 0000 0G-0
I 16434 SET B 01 0000 00 0
I 16439 SET B 01 0255 02V5
I 16444 UNL 7 01 79990 I9Z-
I 16449 SET B 02 0008 00-8
I 16454 LOD 8 02 16580 W5Q0
I 16459 UNL 7 02 79742 I7MK
I 16464 LOD 8 02 16572 W5P2
I 16469 UNL 7 02 79990 I9R-
I
I
I 16474 SPC . 1730
I 16479 LSB . 04 79990 IZ9-
I 16484 SET B 0016
I 16489 CMP 4 16580 W580
I 16494 TRE L 16504 W504-
I 16499 TR 1 16524 W524-
I
I
I 16504 LNG D 0001.....
I 16509 SHR C 0018
I 16514 SPC . 0000
I 16519 TRZ N 16559 W559-
I
I
I 16524 SPC . 0000.....
I
I
I 16529 TRA I 01 16559 W5V9-
I 16534 SEL 2 0500
I 16539 WR R 16581 W581
I 16544 TRA I 03 16554 W5E4-
I 16549 TR 1 16559 W559-
I 16554 HLT J 0180.....
+---16559 TRA I 02 16429 W4K9.....
 16564 TR 1 16589 W589-----T19

```

CLEAR BANK 1
AND UNL ZEROS TO MEM. FIELD
AKTDQZ.*
UNL TO LEFT END OF FIELD
-G%GPXEN
UNL TO RIGHT END OF FIELD

SPC TO LAST WORD IN BANK 1
LSB FROM 79990
CMP FIRST AND LAST WORDS

PLACE SM TO RIGHT.
SHORTEN PAST SM ON
LEFT AND CHECK ZEROS.

RESET SPC ON ERROR

ERROR ROUTINE

TO NEXT ROUTINE

2 008 16572
2 008 16580
2 003 16583
2 001 16584

-G%GPXEN FIRST STORAGE WORD IN BANK 1
AKTDQZ.* LAST STORAGE WORD IN BANK 1
180
□

```

U19..... 16704 EEM 3 14 0000 06-0
I 16709 SPC , 0000
I 16714 SET B 0005
I 16719 LOD 8 16834 W834
I 16724 UNL 7 16829 W829
I 16729 SB % 12 16838 WH38
I 16734 SB % 12 16837 WH37
I 16739 SET B 0000
I 16744 SET B 0004
I 16749 SET B 0002
I 16754 SET B 0001
I
I
I
I 16759 UFC , 03 16829 W8B9
I 16764 TRS 0 11 16789 WPH9-
I 16769 SET B 01 0005 00 5
I 16774 LOD 8 01 16839 W8T9
I 16779 CMP 4 01 16829 W8S9
I 16784 TRE L 16819 W819-
I
I
I
I 16789 TRA I 01 16819 W8/9-
I 16794 SEL 2 0500
I 16799 WR R 16840 W840
I 16804 TRA I 03 16814 W8A4-
I 16809 TR 1 16819 W819-
I 16814 HLT J 0182.....
+--16819 TRA I 02 16704 W7-4.
  16824 TR 1 16849 W849-
I
I
I

```

```

ROUTINE #182
TEST UFC. STORAGE MARK
TO DILROY GENERATION

RESET MEM FIELD TO BLANKS
MAKE TWO
DILROYS

PLACE STORAGE MARKS
IN STORAGE CHAR 1,2,4

```

```

DO UFC
TEST 901

LOD DILROYS AND
CMP VS UFC RESULT

```

ERROR ROUTINE

```

2 005 16829 ----- UFC AREA
2 005 16834          5 BLANKS
2 005 16839          OFFO CORRECT RESULT
2 003 16842          182
2 001 16843          □

```

```

..... 16849 EEM 3 14 0000 06-0.
I 16854 SPC , 0000
I 16859 SET B 0000
I 16864 SET B 0005
I 16869 UNL 7 16935 W935
I 16874 LOD 8 16941 W941
I 16879 UFC , 03 16935 W9C5
I 16884 CMP 4 16935 W935
I 16889 TRE L 16924 W924-
I
I
I
I 16894 TRA I 01 16924 W9S4-
I 16899 SEL 2 0500
I 16904 WR R 16942 W942
I 16909 TRA I 03 16919 W9A9-
I 16914 TR 1 16924 W924-
I 16919 HLT J 0183.....
+--16924 TRA I 02 16849 W8M9.
  16929 TR 1 16954 W954-
I
I
I

```

```

ROUTINE #183
TEST UFC-FIVE CHARACTERS

CLEAR MEMORY FIELD

DO UFC
COMPARE RESULT

```

ERROR ROUTINE

-----V21 TO NEXT ROUTINE

```

2 006 16935 X00000 UFC AREA
2 006 16941 XG8*,A CORRECT RESULT
2 003 16944 183
2 001 16945 □

```

ROUTINE #184
TEST USB USING BANK 0.
USB A FIELD WHICH HAS
MIXED CHARACTERS IN THE
FIRST AND LAST STORAGE
WORDS. REST OF BANK IS ZEROS

```

V20.....
I 16954 EEM 3 14 0000 06-0
I 16959 SPC , 0000
I 16964 SET B 0130
I 16969 LOD 8 16414 W414
I 16974 UNL 7 79990 199-
I 16979 UNL 7 79860 186-
I 16984 SET B 0008
I 16989 LOD 8 17132 X132
I 16994 SET B 0256
I 16999 SPC , 0730
I 17004 LOD 8 17140 X140
I 17009 SB % 12 17132 XA32
I
I
I 17014 USB , 05 79990 IZZ-
I 17019 SET B 01 0008 00 8
I 17024 LOD 8 01 17132 X1T2
I 17029 CMP 4 01 79990 I9Z-
I 17034 TRE L 17044 X044-
I 17039 TR 1 17079 X079-
I 17044 LOD 8 01 17140 X1U0.
I 17049 CMP 4 01 79742 I7UK
I 17054 TRE L 17064 X064-
I 17059 TR 1 17079 X079-
I
I
I 17064 SET B 01 0240 02U0.
I 17069 LOD 8 01 79982 I9YK
I 17074 TRZ N 01 17109 X1 9-
I
I
I 17079 TRA I 01 17109 X1 9-
I 17084 SEL 2 0500
I 17089 WR R 17141 X141
I 17094 TRA I 03 17104 X164-
I 17099 TR 1 17109 X109-
I 17104 HLT J 0184.
I 17109 TRA I 02 16954 W9N4.
I 17114 RCV U 0306
I 17119 TR 1 01 0204 02 4
I 17124 TR 1 17149 X149-

```

LOD 130 BLANKS FROM ROUT. #178
CLEAR LSB AREA
TO BLANKS

FIRST STORAGE WORD
PUT ZEROS IN REST OF BANK

LAST STORAGE WORD
MAKE F INTO DILROY

USB INTO 79990

CMP FIRST WORD RESULT

CMP LAST WORD RESULT

TEST FOR ZEROS
IN REST OF MEMORY FIELD
AT 79982

ERROR ROUTINE

TO NEXT ROUTINE

2 008 17132
2 008 17140
2 003 17143
2 001 17144

AKUHCN XF
G-#%&70
184
□

ROUTINE #185
EXECUTE NTR TYPE CYCLE 1 ONLY.
TEST NO TRANSFER, NO 900 CHECK

```

W21.....
I 17149 RAD H      17206 X206
I 17154 NTR X      17169 X169
I 17159 TRS O 10  17169 XJ09
I 17164 TR 1       17199 X199
I
I
I
I 17169 TRA I 01  17199 X1Z9
I 17174 SEL 2      0500
I 17179 WR R       17207 X207
I 17184 TRA I 03  17194 X1I4
I 17189 TR 1       17199 X199
I 17194 HLT J      0185
+ 17199 TRA I 02  17149 X1M9
  17204 TR 1       17219 X219
I
I
I

```

ERROR ROUTINE

```

2 002 17206      G 0
2 003 17209      185
2 001 17210      0

```

ROUTINE #186
TEST NTR FOR NO TRANSFER ON
ZERO FIELD LENGTH, OR ON
NON-ZERO CHARACTER.

```

I
I 17219 SET B      0000
I 17224 NTR X      17244 X244
I 17229 RAD H      17282 X282
I 17234 NTR X      17244 X244
I 17239 TR 1       17274 X274
I
I
I
I 17244 TRA I 01  17274 X2X4
I 17249 SEL 2      0500
I 17254 WR R       17283 X283
I 17259 TRA I 03  17269 X2F9
I 17264 TR 1       17274 X274
I 17269 HLT J      0186
+ 17274 TRA I 02  17219 X2J9
  17279 TR 1       17294 X294-----X23
I
I

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 003 17282      G 10
2 003 17285      186
2 001 17286      0

```

ROUTINE #187
TEST NTR FOR TRANSFER
ON ZERO CHAR. IN TC 2.

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X22.....17294 SET B      0000      □
I □ 17299 SET B      -0002      □
I □ 17304 NTR X      17339 X339----
I XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX I
I I
I XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX I
I □ 17309 TRA I 01 17339 X3T9----
I □ 17314 SEL 2      0500      □ I
I □ 17319 WR R      17345 X345 □ I
I □ 17324 TRA I 03 17334 X3C4----
I □ 17329 TR 1      17339 X339----
I □ 17334 HLT J      0187.....---
+---17339 TRA I 02 17294 X2R4.....---
□ 17344 TR 1      17354 X354----
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
I
I
I

```

ERROR ROUTINE

```

2 003 17347      187
2 001 17348      □

```

ROUTINE #188
TEST-NTR FOR REMOVAL OF
4 ZEROS FROM STORAGE FIELD

```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX I
...17354 RAD H      17451 X451.....---
I □ 17359 RAD H 01 17451 X4V1 □
I □ 17364 SET B 01 0005 00 5 □
I...17369 NTR X 01 17379 X3X9----
II □ 17374 TR 1      17389 X389----
II □ 17379 ADD G      17451 X451.....---
I+---17384 TR 1      17369 X369 □ I
I □ 17389 CMP 4      17453 X453.....---
I □ 17394 TRE L      17404 X404----
I □ 17399 TR 1      17414 X414----
I □ 17404 CMP 4 01 17452 X4V2.....---
I □ 17409 TRE L 01 17444 X4U4----
I XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX II
I I
I XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX II
I □ 17414 TRA I 01 17444 X4U4----
I □ 17419 SEL 2      0500      □ I
I □ 17424 WR R      17454 X454 □ I
I □ 17429 TRA I 03 17439 X4C9----
I □ 17434 TR 1      17444 X444----
I □ 17439 HLT J      0188.....---
+---17444 TRA I 02 17354 X3N4.....---
□ 17449 TR 1      17464 X464----
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

```

DO NTR 4 TIMES

TEST FOR A ONE LEFT IN
STORAGE FIELD.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 17451      A
2 002 17453      15
2 003 17456      188
2 001 17457      □

```


ROUTINE #189
TEST NTR FOR SUP AD CARRY
AND ZN AD OUT IN TYPE CYCLE 2.

```

Y23.....
I 17464 SET B 0002
I 17469 LOD 8 17561 X561
I 17474 NTR X 17514 X514
I 17479 CMP 4 17561 X561
I 17484 TRE L 17494 X494
I 17489 TR 1 17514 X514
I
I
I
I 17494 LOD 8 17563 X563
I 17499 NTR X 17514 X514
I 17504 CMP 4 17563 X563
I 17509 TRE L 17544 X544
I
I
I
I 17514 TRA I 01 17544 X5U4
I 17519 SEL 2 0500
I 17524 WR R 17564 X564
I 17529 TRA I 03 17539 X5C9
I 17534 TR 1 17544 X544
I 17539 HLT J 0189
I 17544 TRA I 02 17464 X404
I 17549 RCV U 0306
I 17554 TR 1 01 0204 02 4
I 17559 TR 1 17574 X574
I
I
I

```

LOD #0

CMP #0

LOD 60

CMP 60

ERROR ROUTINE

```

2 002 17561 #0
2 002 17563 60
2 003 17566 189
2 001 17567

```

ROUTINE #190
EXECUTE SPR AND TEST FOR
EMIT BLANK AND NO 900 CHECK.

```

I 17574 RAD H 17657 X657
I 17579 UNL 7 17659 X659
I 17584 SET B 0000
I 17589 SPR 5 17659 X659
I 17594 TRS O 10 17619 X0J9
I 17599 SET B 0001
I 17604 LOD 8 17655 X655
I 17609 CMP 4 17659 X659
I 17614 TRE L 17649 X649
I
I
I
I 17619 TRA I 01 17649 X6U9
I 17624 SEL 2 0500
I 17629 WR R 17660 X660
I 17634 TRA I 03 17644 X6D4
I 17639 TR 1 17649 X649
I 17644 HLT J 0190
I 17649 TRA I 02 17574 X5P4
I 17654 TR 1 17669 X669
I
I
I

```

RESET SPR FIELD

ERROR ROUTINE

-----Z25 TO NEXT ROUTINE

```

2 003 17657 06
2 002 17659
2 003 17662 190
2 001 17663

```

ROUTINE #191
TEST SPR. PLACE 2 ZEROS IN
MEMORY IN TC 1. REPLACE ZEROS
WITH BLANKS IN TC 2 AND 3.

```

Z24.....
I 17669 SET B 0000
I 17674 SET B 0002
I 17679 SPR 5 17746 X746
I 17684 SET B 0003
I 17689 LOD 8 17742 X742
I 17694 CMP 4 17746 X746
I 17699 TRE L 17734 X734
I 17704 TRA I 01 17734 X7T4
I 17709 SEL 2 0500
I 17714 WR R 17747 X747
I 17719 TRA I 03 17729 X7B9
I 17724 TR 1 17734 X734
I 17729 HLT J 0191
I 17734 TRA I 02 17669 X609
I 17739 TR 1 17759 X759

```

ERROR ROUTINE

```

2 003 17742
2 004 17746
2 003 17749
2 001 17750

```

191
□

ROUTINE #192
TEST SPR ON STORAGE EQUAL
MINUS 1. EMIT B BIT IN TC 1.

```

I 17759 SET B 0003
I 17764 LOD 8 17844 X844
I 17769 UNL 7 17849 X849
I 17774 RSU Q 17841 X841
I 17779 SPR 5 17849 X849
I 17784 SET B 0002
I 17789 LOD 8 17846 X846
I 17794 CMP 4 17849 X849
I 17799 TRE L 17834 X834
I 17804 TRA I 01 17834 X8T4
I 17809 SEL 2 0500
I 17814 WR R 17850 X850
I 17819 TRA I 03 17829 X8B9
I 17824 TR 1 17834 X834
I 17829 HLT J 0192
I 17834 TRA I 02 17759 X7N9
I 17839 TR 1 17859 X859

```

RESET SPR FIELD

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 17841
2 005 17846
2 003 17849
2 003 17852
2 001 17853

```

& 1
1-
192
□

ROUTINE #193
TEST SPR WITH ZEROS STORED
INTO MEMORY FIELD CONTAINING
PERIOD AND COMMAS.

```
AA25..... 17859 SET B 0005 0
I 17864 LOD 8 17949 X949 0
I 17869 UNL 7 17961 X961 0
I 17874 SET B 0000 0
I 17879 SET B 0002 0
I 17884 SPR 5 17961 X961 0
I 17889 SET B 0006 0
I 17894 LOD 8 17955 X955 0
I 17899 CMP 4 17961 X961 0
I 17904 TRE L 17939 X939 0
I 17909 TRA I 01 17939 X9T9 0
I 17914 SEL 2 0500 0
I 17919 WR R 17962 X962 0
I 17924 TRA I 03 17934 X9C4 0
I 17929 TR 1 17939 X939 0
I 17934 HLT J 0193 0
+ 17939 TRA I 02 17859 X8N9 0
 17944 TR 1 17974 X974 0
```

RESET SPR FIELD

ERROR ROUTINE

```
2 005 17949      *..11
2 006 17955      ..+0
2 006 17961
2 003 17964      193
2 001 17965      0
```

ROUTINE #194
TEST SPR FOR ROUTE ZN AD OUT
BY STORING NON-NUMERICS

```
..... 17974 SET B 0003 0
I 17979 LOD 8 18047 Y047 0
I 17984 SPR 5 18055 Y055 0
I 17989 SET B 0004 0
I 17994 LOD 8 18051 Y051 0
I 17999 CMP 4 18055 Y055 0
I 18004 TRE L 18039 Y039 0
I 18009 TRA I 01 18039 Y0T9 0
I 18014 SEL 2 0500 0
I 18019 WR R 18056 Y056 0
I 18024 TRA I 03 18034 Y0C4 0
I 18029 TR 1 18039 Y039 0
I 18034 HLT J 0194 0
+ 18039 TRA I 02 17974 X9P4 0
 18044 TR 1 18064 Y064 0
```

ERROR ROUTINE

AB27 TO NEXT ROUTINE

```
2 003 18047      AG-
2 004 18051      AG-
2 004 18055
2 003 18058      194
2 001 18059      0
```

ROUTINE #195
TEST SPR FOR SUP AD CARRY.

```

AB26.....#.18064 SET B      0001      □
I □ 18069 LOD 8         18135 Y135 □
I □ 18074 SPR 5         18137 Y137 □
I □ 18079 CMP 4         18136 Y136 □
I □ 18084 TRE L         18119 Y119-#---
I □#####I##### I
I
I #####V##### I
I □ 18089 TRA I 01 18119 Y1/9-#---
I □ 18094 SEL 2         0500      □ I
I □ 18099 WR R          18138 Y138 □ I
I □ 18104 TRA I 03 18114 Y1A4-#---
I □ 18109 TR 1         18119 Y119-#---
I □ 18114 HLT J         0195.....#I
+---18119 TRA I 02 18064 Y004.###
  □ 18124 RCV U         0306      □
  □ 18129 TR 1 01 0204 02 4 □
  □ 18134 TR 1         18804 Y804-#---
##### I
I
I

```

ERROR ROUTINE

```

2 001 18135      #
2 002 18137
2 003 18140      195
2 001 18141      □

```

ROUTINE #196
EXECUTE ADM AND TEST FOR
MEMORY FIELD UNCHANGED
AND NO 900 CHECK

```

##### I
..#18804 RAD H      18881 Y881.###
I □ 18809 UNL 7      18883 Y883 □
I □ 18814 SET B      0000      □
I □ 18819 ADM 6      18883 Y883 □
I □ 18824 TRS 0 10 18844 YQM4-#---
I □ 18829 RAD H      18881 Y881 □ I
I □ 18834 CMP 4      18883 Y883 □ I
I □ 18839 TRE L      18874 Y874-#---
I □#####I##### II
I
I #####V##### II
I □ 18844 TRA I 01 18874 Y8X4-#---
I □ 18849 SEL 2         0500      □ I
I □ 18854 WR R          18884 Y884 □ I
I □ 18859 TRA I 03 18869 Y8F9-#---
I □ 18864 TR 1         18874 Y874-#---
I □ 18869 HLT J         0196.....#I
+---18874 TRA I 02 18804 Y8-4.###
  □ 18879 TR 1         18894 Y894-#-----AC28
#####

```

RESET ADM FIELD

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 18881      & 1
2 002 18883
2 003 18886      196
2 001 18887      □

```

ROUTINE #197
TEST SIGNED ADM. SIGNS ALIKE
PLUS. ADM &1 TO &1.

AC27.....

```

#####
I 18894 RAD H      18961 Y961 0
I 18899 ST F      18965 Y965 0
I 18904 ADM 6     18965 Y965 0
I 18909 LOD 8     18963 Y963 0
I 18914 CMP 4     18965 Y965 0
I 18919 TRE L     18954 Y954 0
I ##### I ##### I
I
I ##### I ##### I
I 18924 TRA I 01 18954 Y9V4 0
I 18929 SEL 2     0500      0 I
I 18934 WR R      18966 Y966 0 I
I 18939 TRA I 03 18949 Y9D9 0 I
I 18944 TR 1      18954 Y954 0 I
I 18949 HLT J     0197..... I
+ 18954 TRA I 02 18894 Y8R4 0 I
  18959 TR 1      18974 Y974 0
##### I
I

```

RESET MEMORY FIELD

ERROR ROUTINE

```

2 002 18961      & 1
2 002 18963      & 2
2 002 18965
2 003 18968      197
2 001 18969      0

```

ROUTINE #198
TEST SIGNED ADM. SIGNS ALIKE
MINUS. ADM -1 TO -1.

```

##### I
. 18974 RSU Q     19041 Z041 0 I
I 18979 ST F     19045 Z045 0
I 18984 ADM 6    19045 Z045 0
I 18989 LOD 8    19043 Z043 0
I 18994 CMP 4    19045 Z045 0
I 18999 TRE L    19034 Z034 0
I ##### I ##### I
I
I ##### I ##### I
I 19004 TRA I 01 19034 Z0T4 0
I 19009 SEL 2     0500      0 I
I 19014 WR R      19046 Z046 0 I
I 19019 TRA I 03 19029 Z0B9 0 I
I 19024 TR 1      19034 Z034 0 I
I 19029 HLT J     0198..... I
+ 19034 TRA I 02 18974 Y9P4 0 I
  19039 TR 1      19054 Z054 0 AD29
#####

```

RESET MEMORY FIELD

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 19041      & 1
2 002 19043      - 2
2 002 19045
2 003 19048      198
2 001 19049      0

```

ROUTINE #199
TEST SIGNED ADM. SIGNS
OPPOSITE. ADM -1 TO &1.
COMPL. ADDITION AND TC 1 ONLY

AD28.....

```

#####
I . 19054 RAD H      19126 Z126  □
I □ 19059 ST F      19130 Z130  □
I □ 19064 RSU Q      19126 Z126  □
I □ 19069 ADM 6      19130 Z130  □
I □ 19074 LOD 8      19128 Z128  □
I □ 19079 CMP 4      19130 Z130  □
I □ 19084 TRE L      19119 Z119  - - -
I ##### I ##### I
I I I
I ##### I ##### I
I □ 19089 TRA I 01 19119 Z1/9 - - -
I □ 19094 SEL 2      0500      □ I
I □ 19099 WR R      19131 Z131  □ I
I □ 19104 TRA I 03 19114 Z1A4 - - -
I □ 19109 TR 1      19119 Z119  - - -
I □ 19114 HLT J      0199..... I
+ - 19119 TRA I 02 19054 ZON4..... I
□ 19124 TR 1      19139 Z139  - - -
#####
I
I

```

RESET MEMORY FIELD

ERROR ROUTINE

```

2 002 19126      & 1
2 002 19128      & 0
2 002 19130
2 003 19133      199
2 001 19134      □

```

ROUTINE #200
TEST SIGNED ADM. SIGNS
OPPOSITE. ADM &2 TO -2.
COMPL. ADDITION AND TC 1 ONLY

```

##### I
. . . 19139 RSU Q      19211 Z211. . .
I □ 19144 ST F      19215 Z215  □
I □ 19149 RAD H      19211 Z211  □
I □ 19154 ADM 6      19215 Z215  □
I □ 19159 LOD 8      19213 Z213  □
I □ 19164 CMP 4      19215 Z215  □
I □ 19169 TRE L      19204 Z204  - - -
I ##### I ##### I
I I I
I ##### I ##### I
I □ 19174 TRA I 01 19204 Z2 4 - - -
I □ 19179 SEL 2      0500      □ I
I □ 19184 WR R      19216 Z216  □ I
I □ 19189 TRA I 03 19199 Z119 - - -
I □ 19194 TR 1      19204 Z204 - - -
I □ 19199 HLT J      0200..... I
+ - 19204 TRA I 02 19139 Z1L9. . .
□ 19209 TR 1      19224 Z224 - - - AE30
#####

```

RESET MEMORY FIELD

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 19211      & 2
2 002 19213      - 0
2 002 19215
2 003 19218      200
2 001 19219      □

```


ROUTINE #203
TEST SIGNED ADM, SIGNS
OPPOSITE. ADM &33 TO -22.
COMPL. MBR IN TYPE CYCLE 2.

```

AF30.....
I 19414 RSU Q      19487 Z487
I 19419 ST F      19496 Z496
I 19424 RAD H     19490 Z490
I 19429 ADM 6     19496 Z496
I 19434 LOD 8     19493 Z493
I 19439 CMP 4     19496 Z496
I 19444 TRE L     19479 Z479
I
I
I 19449 TRA I 01  19479 Z4X9
I 19454 SEL 2     0500
I 19459 WR R      19497 Z497
I 19464 TRA I 03  19474 Z4G4
I 19469 TR 1      19479 Z479
I 19474 HLT J      0203
+ 19479 TRA I 02  19414 Z4J4
  19484 TR 1      19509 Z509
I
I
I

```

RESET MEMORY FIELD

ERROR ROUTINE

- 2 003 19487 & 22
- 2 003 19490 & 33
- 2 003 19493 & 11
- 2 003 19496
- 2 003 19499 203
- 2 001 19500

ROUTINE #204
TEST SIGNED ADM, SIGNS
OPPOSITE. COMPL. MBR
EQUAL 1234567 IN TC 2.

```

I
I 19509 RAD H     19587 Z587
I 19514 ST F     19611 Z611
I 19519 LOD 8    19595 Z595
I 19524 ADM 6    19611 Z611
I 19529 LOD 8    19603 Z603
I 19534 CMP 4    19611 Z611
I 19539 TRE L    19574 Z574
I
I
I
I 19544 TRA I 01  19574 Z5X4
I 19549 SEL 2     0500
I 19554 WR R      19612 Z612
I 19559 TRA I 03  19569 Z5F9
I 19564 TR 1      19574 Z574
I 19569 HLT J      0204
+ 19574 TRA I 02  19509 Z5-9
  19579 TR 1      19624 Z624
I
I

```

RESET MEM FIELD TO -1111111
STORAGE FIELD TO &9876544

LOD AND CMP ANSWER
WHICH SHOULD BE &8765433

ERROR ROUTINE

AG32 TO NEXT ROUTINE

- 2 008 19587 X111111J
 - 2 008 19595 X9876544
 - 2 008 19603 X876543C
 - 2 008 19611 X
 - 2 003 19614 204
 - 2 001 19615
- ADM FIELD

ROUTINE #205
TEST UNSIGNED ADM, AUX 1
TGR IS ON IN TYPE CYCLE 1
ADM 1 TO 1.

```

AG31.....
I 19624 RAD H      19691 Z691 0
I 19629 UNL 7     19694 Z694 0
I 19634 ADM 6     19694 Z694 0
I 19639 LOD 8     19692 Z692 0
I 19644 CMP 4     19694 Z694 0
I 19649 TRE L     19684 Z684 0
I 19654 TRA I 01  19684 Z6Y4 0
I 19659 SEL 2     0500      0
I 19664 WR R      19695 Z695 0
I 19669 TRA I 03  19679 Z6G9 0
I 19674 TR 1      19684 Z684 0
I 19679 HLT J      0205.....
I 19684 TRA I 02  19624 Z6K4 0
I 19689 TR 1      19704 Z704 0

```

RESET MEMORY FIELD

ERROR ROUTINE

```

2 002 19691      & 1
2 001 19692      2
2 002 19694
2 003 19697      205
2 001 19698      0

```

ROUTINE #206
TEST UNSIGNED ADM, TC 1 ONLY
WITH AUX 1 ON.
ADM AN AMPERSAND TO A ONE.

```

I 19704 RAD H      19778 Z778 0
I 19709 UNL 7     19780 Z780 0
I 19714 SGN T     19780 Z780 0
I 19719 ADM 6     19780 Z780 0
I 19724 LOD 8     19778 Z778 0
I 19729 CMP 4     19780 Z780 0
I 19734 TRE L     19769 Z769 0
I 19739 TRA I 01  19769 Z7W9 0
I 19744 SEL 2     0500      0
I 19749 WR R      19781 Z781 0
I 19754 TRA I 03  19764 Z7F4 0
I 19759 TR 1      19769 Z769 0
I 19764 HLT J      0206.....
I 19769 TRA I 02  19704 Z7-4 0
I 19774 TR 1      19789 Z789 0

```

RESET MEMORY FIELD

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 19778      A
2 002 19780
2 003 19783      206
2 001 19784      0

```

ROUTINE #207
TEST UNSIGNED ADM. TC 1 ONLY
WITH AUX 1 ON.
ADM 088 TO 077.

```

AH32.....
I 19789 RAD H      19863 Z863 0
I 19794 UNL 7     19873 Z873 0
I 19799 LOD 8     19866 Z866 0
I 19804 ADM 6     19873 Z873 0
I 19809 LOD 8     19869 Z869 0
I 19814 CMP 4     19873 Z873 0
I 19819 TRE L     19854 Z854-
I
I
I
I 19824 TRA I 01 19854 Z8V4-
I 19829 SEL 2     0500      0
I 19834 WR R      19874 Z874 0
I 19839 TRA I 03 19849 Z8D9-
I 19844 TR 1      19854 Z854-
I 19849 HLT J     0207.....
+ 19854 TRA I 02 19789 Z7Q9.
  19859 TR 1      19884 Z884-

```

RESET MEMORY FIELD

ERROR ROUTINE

```

2 007 19866      X07G088
2 003 19869      165
2 004 19873
2 003 19876      207
2 001 19877      0

```

ROUTINE #208
TEST UNSIGNED ADM. TC 1 ONLY
WITH AUX 1 ON.
ADM BLANKS TO BLANKS

```

I
.. 19884 SET B     0002.....
I 19889 LOD 8     19956 Z956 0
I 19894 UNL 7     19961 Z961 0
I 19899 ADM 6     19961 Z961 0
I 19904 LOD 8     19958 Z958 0
I 19909 CMP 4     19961 Z961 0
I 19914 TRE L     19949 Z949-
I
I
I
I 19919 TRA I 01 19949 Z9U9-
I 19924 SEL 2     0500      0
I 19929 WR R      19962 Z962 0
I 19934 TRA I 03 19944 Z9D4-
I 19939 TR 1      19949 Z949-
I 19944 HLT J     0208.....
+ 19949 TRA I 02 19884 Z8Q4.
  19954 TR 1      20054 -054-

```

RESET MEMORY FIELD

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 19956      --
2 002 19958
2 003 19961
2 003 19964      208
2 001 19965      0

```

ROUTINE #209
TEST UNSIGNED ADM. TC 1 ONLY
WITH AUX 1 ON. ZONE ADDITION
AND ZONE CARRY.

AJ33.....

```

#####
I 20054 SET B 0003
I 20059 LOD 8 20132 -132
I 20064 UNL 7 20142 -142
I 20069 LOD 8 20135 -135
I 20074 ADM 6 20142 -142
I 20079 LOD 8 20138 -138
I 20084 CMP 4 20142 -142
I 20089 TRE L 20124 -124
I #####
I
I #####
I 20094 TRA I 01 20124 -1S4
I 20099 SEL 2 0500
I 20104 WR R 20143 -143
I 20109 TRA I 03 20119 -1A9
I 20114 TR 1 20124 -124
I 20119 HLT J 0209
+ 20124 TRA I 02 20054 -ON4
  20129 TR 1 20154 -154
#####
I
I
I

```

RESET MEMORY FIELD

ERROR ROUTINE

- 2 003 20132 AA
- 2 003 20135 BBB
- 2 003 20138 CC2
- 2 004 20142
- 2 003 20145 209
- 2 001 20146

ROUTINE #210
TEST UNSIGNED ADM, TYPE
CYCLE 3 WITH AUX 3 TGR OFF
ADM 6 TO 6

```

#####
I 20154 SET B 0001
I 20159 LOD 8 20225 -225
I 20164 UNL 7 20228 -228
I 20169 ADM 6 20228 -228
I 20174 LOD 8 20226 -226
I 20179 CMP 4 20228 -228
I 20184 TRE L 20219 -219
I #####
I
I #####
I 20189 TRA I 01 20219 -2/9
I 20194 SEL 2 0500
I 20199 WR R 20229 -229
I 20204 TRA I 03 20214 -2A4
I 20209 TR 1 20219 -219
I 20214 HLT J 0210
+ 20219 TRA I 02 20154 -1N4
  20224 TR 1 20239 -239
#####

```

RESET MEMORY FIELD

ERROR ROUTINE

AK35 TO NEXT ROUTINE

- 2 001 20225 6
- 2 001 20226 S
- 2 002 20228
- 2 003 20231 210
- 2 001 20232

ROUTINE #211
TEST UNSIGNED ADM, TYPE
CYCLE 3 WITH AUX 3 TGR ON.
ADM 2& TO ZS

AK34.....

```

#####
I  20239 SET B      0002  □
I  20244 LOD 8      20326 -326 □
I  20249 UNL 7      20335 -335 □
I  20254 LOD 8      20328 -328 □
I  20259 ADM 6      20335 -335 □
I  20264 LOD 8      20330 -330 □
I  20269 CMP 4      20335 -335 □
I  20274 TRE L      20309 -309-#---
I  #####
I  #####
I  #####
I  20279 TRA I 01 20309 -3 9-#---
I  20284 SEL 2      0500  □
I  20289 WR R      20336 -336 □
I  20294 TRA I 03 20304 -304-#---
I  20299 TR 1      20309 -309-#---
I  20304 HLT J      0211.....
+ 20309 TRA I 02 20239 -2L9.#...
  20314 RCV U      0306  □
  20319 TR 1 01 0204 02 4  □
  20324 TR 1      20344 -344-#-----AL36
#####

```

RESET MEMORY FIELD.

ERROR ROUTINE

2	002	20326	ZS
2	002	20328	2&
2	002	20330	A2
2	005	20335	
2	003	20338	211
2	001	20339	□

ROUTINE #212
EXECUTE MPY TC 1 AND 5 ONLY.
TEST FOR NO 900 CHECK.
TEST FOR REPLACEMENT OF
STOR. MARK WITH A ZERO.

PLACE STOR. MARKS
IN MULTIPLIER.

CHECK FOR MULTIPLIER
NOT EQUAL STOR. MARK
AND EQUAL ZERO AFTER MPY.

ERROR ROUTINE

ROUTINE #213
DO MPY TYPE CYCLES 1+2+3+4+5

ERROR ROUTINE

TO NEXT ROUTINE

```

AL35..... 20344 EEM 3 14 0000 0&-0 0
I 20349 SPC , 0000 0
I 20354 SET B 0001 0
I 20359 SET B 0000 0
I 20364 MPY V 20436 -436 0
I 20369 SPC , 0000 0
I 20374 TRS 0 10 20399 -LR9-0-0
I 20379 CMP 4 20441 -441 0 I
I 20384 TRE L 20399 -399-0-0
I 20389 CMP 4 20437 -437 0 I
I 20394 TRE L 20429 -429-0-0
I 20399 TRA I 01 20429 -4S9-0-0
I 20404 SEL 2 0500 0 I
I 20409 WR R 20438 -438 0 I
I 20414 TRA I 03 20424 -4B4-0-0
I 20419 TR 1 20429 -429-0-0
I 20424 HLT J 0212.....0000
+ 20429 TRA I 02 20344 -3M4.....0000
  20434 TR 1 20449 -449-0-0

```

```

2 002 20436      0
2 001 20437      0
2 003 20440     212
2 001 20441      0

```

```

..... 20449 RAD H 20501 -501.....0000
I 20454 MPY V 20501 -501 0
I 20459 TRZ N 20494 -494-0-0
I 20464 TRA I 01 20494 -4Z4-0-0
I 20469 SEL 2 0500 0 I
I 20474 WR R 20502 -502 0 I
I 20479 TRA I 03 20489 -4H9-0-0
I 20484 TR 1 20494 -494-0-0
I 20489 HLT J 0213.....0000
+ 20494 TRA I 02 20449 -4M9.....0000
  20499 TR 1 20514 -514-0-0

```

```

2 002 20501      0
2 003 20504     213
2 001 20505      0

```

```

AM36.....
#####
.20514 RAD H      20566 -566  □
I  20519 MPY V      20567 -567  □
I  20524 TRZ N      20559 -559-□---
I  #####
I  #####
I  #####
I  20529 TRA I 01 20559 -5V9-□---
I  20534 SEL 2      0500      □ I
I  20539 WR R      20568 -568  □ I
I  20544 TRA I 03 20554 -5E4-□---
I  20549 TR 1      20559 -559-□---
I  20554 HLT J      0214.....
+  20559 TRA I 02 20514 -5J4.....
  20564 TR 1      20579 -579-□---
#####
I
I
I

```

ROUTINE #214
TEST MPY FOR TURN ON DZT.

ERROR ROUTINE

```

2 002 20566      & 1
2 001 20567      60
2 003 20570      214
2 001 20571      □

```

```

#####
.20579 RSU Q      20631 -631.....
I  20584 MPY V      20632 -632  □
I  20589 TRP M      20624 -624-□---
I  #####
I  #####
I  #####
I  20594 TRA I 01 20624 -6S4-□---
I  20599 SEL 2      0500      □ I
I  20604 WR R      20633 -633  □ I
I  20609 TRA I 03 20619 -6A9-□---
I  20614 TR 1      20624 -624-□---
I  20619 HLT J      0215.....
+  20624 TRA I 02 20579 -5P9.....
  20629 TR 1      20644 -644-□---
#####
I
I
I

```

ROUTINE #215
TEST MPY FOR SET SIGN PLUS.

ERROR ROUTINE

```

2 002 20631      & 1
2 001 20632      60
2 003 20635      215
2 001 20636      □

```

```

#####
.20644 RAD H      20701 -701.....
I  20649 MPY V      20701 -701  □
I  20654 TRZ N      20664 -664-□---
I  20659 TR 1      20694 -694-□---
I  #####
I  #####
I  #####
I  20664 TRA I 01 20694 -6Z4-□---
I  20669 SEL 2      0500      □ I
I  20674 WR R      20702 -702  □ I
I  20679 TRA I 03 20689 -6H9-□---
I  20684 TR 1      20694 -694-□---
I  20689 HLT J      0216.....
+  20694 TRA I 02 20644 -6M4.....
  20699 TR 1      20714 -714-□---
#####

```

ROUTINE #216
TEST MPY FOR TURN OFF DZT.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 20701      & 1
2 003 20704      216
2 001 20705      □

```

AN37.....

```

#####
..20714 RAD H      20766 -766  □
I 20719 MPY V      20766 -766  □
I 20724 TRP M      20759 -759- □---
I #####
I #####
I 20729 TRA I 01 20759 -7V9- □---
I 20734 SEL 2      0500  □ I
I 20739 WR  R      20767 -767  □ I
I 20744 TRA I 03 20754 -7E4- □---
I 20749 TR  1      20759 -759- □---
I 20754 HLT J      0217.....
I 20759 TRA I 02 20714 -7J4.....
I 20764 TR  1      20779 -779- □---
#####
I
I

```

ROUTINE #217
 TEST MPY SIGNS ALIKE MINUS
 FOR SET SIGN PLUS.

ERROR ROUTINE

```

2 002 20766      - 1
2 003 20769      217
2 001 20770      □

```

```

##### I
..20779 RSU Q      20836 -836. □.
I 20784 MPY V      20836 -836  □ -
I 20789 TRP M      20799 -799- □---
I 20794 TR  1      20829 -829- □---
I #####
I #####
I 20799 TRA I 01 20829 -8S9- □---
I 20804 SEL 2      0500  □ I
I 20809 WR  R      20837 -837  □ I
I 20814 TRA I 03 20824 -8B4- □---
I 20819 TR  1      20829 -829- □---
I 20824 HLT J      0218.....
I 20829 TRA I 02 20779 -7P9.....
I 20834 TR  1      20849 -849- □---
#####
I
I

```

ROUTINE #218
 TEST MPY SIGNS OPPOSITE
 FOR SET SIGN MINUS.

ERROR ROUTINE

```

2 002 20836      - 1
2 003 20839      218
2 001 20840      □

```

```

##### I
..20849 RAD H      20906 -906. □.
I 20854 MPY V      20906 -906  □
I 20859 CMP 4      20908 -908  □
I 20864 TRE L      20899 -899- □---
I #####
I #####
I 20869 TRA I 01 20899 -8Z9- □---
I 20874 SEL 2      0500  □ I
I 20879 WR  R      20909 -909  □ I
I 20884 TRA I 03 20894 -814- □---
I 20889 TR  1      20899 -899- □---
I 20894 HLT J      0219.....
I 20899 TRA I 02 20849 -8M9.....
I 20904 TR  1      20919 -919- □---
#####

```

ROUTINE #219
 TEST MPY INSTRUCTION ROUTINGS.
 MPY 1 BY 1 AND CHECK.

ERROR ROUTINE

```

2 002 20906      & 1
2 002 20908      01
2 003 20911      219
2 001 20912      □

```

TO NEXT ROUTINE

ROUTINE #220
TEST MPY AND RELATED ADDER
INPUTS. MPY ZERO BY 2.

TN MC 2A, ROUTE SEL 2 MPL
WHEN MBR IS A ZERO.

ERROR ROUTINE

ROUTINE #221
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 2.

TN MC 2A, ROUTE SEL 2 MPL
WHEN MBR EQUALS 1.

ERROR ROUTINE

TO NEXT ROUTINE

```

AP38.....
                20919 RAD H      20971 -971  0
I  20924 MPY V      20972 -972  0
I  20929 TRZ N      20964 -964  0
                20934 TRA I 01 20964 -9W4  0
I  20939 SEL 2      0500
I  20944 WR R      20973 -973  0
I  20949 TRA I 03 20959 -9E9  0
I  20954 TR 1      20964 -964  0
I  20959 HLT J      0220
I  20964 TRA I 02 20919 -9J9  0
I  20969 TR 1      20984 -984  0

```

```

2 002 20971      & 2
2 001 20972      &0
2 003 20975      220
2 001 20976      0

```

```

                20984 RAD H      21041 J041  0
I  20989 MPY V      21042 J042  0
I  20994 CMP 4      21044 J044  0
I  20999 TRE L      21034 J034  0
                21004 TRA I 01 21034 J0T4  0
I  21009 SEL 2      0500
I  21014 WR R      21045 J045  0
I  21019 TRA I 03 21029 J0B9  0
I  21024 TR 1      21034 J034  0
I  21029 HLT J      0221
I  21034 TRA I 02 20984 -9Q4  0
I  21039 TR 1      21054 J054  0

```

```

2 002 21041      & 2
2 001 21042      &1
2 002 21044      02
2 003 21047      221
2 001 21048      0

```


ROUTINE #222
TEST MPY AND RELATED ADDER
INPUTS. MPY 2 BY 2.

```

AQ39.....
      21054 RAD H      21111 J111
I  21059 MPY V      21111 J111
I  21064 CMP 4      21113 J113
I  21069 TRE L      21104 J104
I  21074 TRA I 01 21104 J1 4
I  21079 SEL 2      0500
I  21084 WR R      21114 J114
I  21089 TRA I 03 21099 J019
I  21094 TR 1      21104 J104
I  21099 HLT J      0222
+ 21104 TRA I 02 21054 JON4
  21109 TR 1      21124 J124

```

TN MC 2A, ROUTE SEL 2 MPL
WHEN MBR EQUALS 2.

ERROR ROUTINE

```

2 002 21111      & 2
2 002 21113      04
2 003 21116      222
2 001 21117      0

```

ROUTINE #223
TEST MPY AND RELATED ADDER
INPUTS. MPY 4 BY 2.

```

      21124 RAD H      21181 J181
I  21129 MPY V      21182 J182
I  21134 CMP 4      21184 J184
I  21139 TRE L      21174 J174
I  21144 TRA I 01 21174 J1X4
I  21149 SEL 2      0500
I  21154 WR R      21185 J185
I  21159 TRA I 03 21169 J1F9
I  21164 TR 1      21174 J174
I  21169 HLT J      0223
+ 21174 TRA I 02 21124 J1K4
  21179 TR 1      21194 J194

```

TN MC 2A, ROUTE SEL 2 MPL
WHEN MBR EQUALS 4.

ERROR ROUTINE

```

2 002 21181      & 2
2 001 21182      04
2 002 21184      08
2 003 21187      223
2 001 21188      0

```

AR41 TO NEXT ROUTINE

ROUTINE #224
TEST MPY AND RELATED ADDER
INPUTS. MPY 5 BY 2.

```

AR40..... 21194 RAD H      21251 J251  □
I □ 21199 MPY V      21252 J252  □
I □ 21204 CMP 4      21254 J254  □
I □ 21209 TRE L      21244 J244  □
I □ 21214 TRA I 01 21244 J2U4  □
I □ 21219 SEL 2      0500      □
I □ 21224 WR R      21255 J255  □
I □ 21229 TRA I 03 21239 J2C9  □
I □ 21234 TR 1      21244 J244  □
I □ 21239 HLT J      0224.....
+---21244 TRA I 02 21194 J1R4  □
□ 21249 TR 1      21264 J264  □

```

TN MC 2A, ROUTE SEL 2 MPL
MBR EQUAL 5 - TURN ON DOUB CAR

ERROR ROUTINE

2	002	21251	& 2
2	001	21252	& 5
2	002	21254	10
2	003	21257	224
2	001	21258	□

ROUTINE #225
TEST MPY AND RELATED ADDER
INPUTS. MPY 3 BY 2 AND 8 BY 2.

```

..... 21264 RAD H      21346 J346  □
I □ 21269 MPY V      21347 J347  □
I □ 21274 CMP 4      21349 J349  □
I □ 21279 TRE L      21289 J289  □
I □ 21284 TR 1      21309 J309  □
I □ 21289 RAD H      21346 J346  □
I □ 21294 MPY V      21351 J351  □
I □ 21299 CMP 4      21353 J353  □
I □ 21304 TRE L      21339 J339  □
I □ 21309 TRA I 01 21339 J3T9  □
I □ 21314 SEL 2      0500      □
I □ 21319 WR R      21354 J354  □
I □ 21324 TRA I 03 21334 J3C4  □
I □ 21329 TR 1      21339 J339  □
I □ 21334 HLT J      0225.....
+---21339 TRA I 02 21264 J204  □
□ 21344 TR 1      21364 J364  □

```

TN MC 2A, ROUTE SEL 2 MPL
WHEN MBR EQUAL 3.

TN MC 2A, ROUTE SEL 2 MPL
MBR EQUAL 8 TURNS ON DOUB. CAR

ERROR ROUTINE

2	002	21346	& 2
2	001	21347	& 3
2	002	21349	06
2	002	21351	& 8
2	002	21353	16
2	003	21356	225
2	001	21357	□

-----AS42 TO NEXT ROUTINE

ROUTINE #226
TEST MPY AND RELATED ADDER
INPUTS. MPY 6 BY 2 AND 9 BY 2

```

AS41.....
      21364 RAD H      21446 J446
I  21369 MPY V      21447 J447
I  21374 CMP 4      21449 J449
I  21379 TRE L      21389 J389
I  21384 TR 1      21409 J409
I  21389 RAD H      21446 J446
I  21394 MPY V      21451 J451
I  21399 CMP 4      21453 J453
I  21404 TRE L      21439 J439
I  21409 TRA I 01 21439 J4T9
I  21414 SEL 2      0500
I  21419 WR R      21454 J454
I  21424 TRA I 03 21434 J4C4
I  21429 TR 1      21439 J439
I  21434 HLT J      0226
+ 21439 TRA I 02 21364 J304
  21444 TR 1      21464 J464

```

TN MC 2A. ROUTE SEL 2 MPL.
MBR EQUAL 6 TURNS ON DOUB CAR.

TN MC 2A. ROUTE SEL 2 MPL.
MBR EQUAL 9 TURNS ON DOUB CAR

ERROR ROUTINE

```

2 002 21446      & 2
2 001 21447      & 6
2 002 21449      12
2 002 21451      & 9
2 002 21453      18
2 003 21456      226
2 001 21457      0

```

ROUTINE #227
TEST MPY AND RELATED ADDER
INPUTS. MPY ZERO BY 4.

```

      21464 RAD H      21516 J516
I  21469 MPY V      21517 J517
I  21474 TRZ N      21509 J509
I  21479 TRA I 01 21509 J5 9
I  21484 SEL 2      0500
I  21489 WR R      21518 J518
I  21494 TRA I 03 21504 J564
I  21499 TR 1      21509 J509
I  21504 HLT J      0227
+ 21509 TRA I 02 21464 J404
  21514 TR 1      21529 J529

```

TN MC 2A AND MC 2B.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 21516      & 4
2 001 21517      & 0
2 003 21520      227
2 001 21521      0

```

ROUTINE #228
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 4.

```

AT42.....
      21529 RAD H      21586 J586
I 21534 MPY V      21587 J587
I 21539 CMP 4      21589 J589
I 21544 TRE L      21579 J579
I
I
I 21549 TRA I 01 21579 J5X9
I 21554 SEL 2      0500
I 21559 WR R      21590 J590
I 21564 TRA I 03 21574 J5G4
I 21569 TR 1      21579 J579
I 21574 HLT J      0228
I 21579 TRA I 02 21529 J5K9
I 21584 TR 1      21599 J599

```

TN MC 2A AND 2B.

ERROR ROUTINE

2 002	21586	G 4
2 001	21587	G1
2 002	21589	04
2 003	21592	228
2 001	21593	□

ROUTINE #229
TEST MPY AND RELATED ADDER
INPUTS. MPY 2 BY 4.

```

      21599 RAD H      21656 J656
I 21604 MPY V      21657 J657
I 21609 CMP 4      21659 J659
I 21614 TRE L      21649 J649
I
I
I 21619 TRA I 01 21649 J6U9
I 21624 SEL 2      0500
I 21629 WR R      21660 J660
I 21634 TRA I 03 21644 J6D4
I 21639 TR 1      21649 J649
I 21644 HLT J      0229
I 21649 TRA I 02 21599 J5R9
I 21654 TR 1      21669 J669

```

TN MC 2A AND MC 2B.

ERROR ROUTINE

2 002	21656	G 4
2 001	21657	G2
2 002	21659	08
2 003	21662	229
2 001	21663	□

TO NEXT ROUTINE

ROUTINE #230
TEST MPY AND RELATED ADDER
INPUTS. MPY 5 BY 4.

AU43.....

```

#####
I 21669 RAD H      21726 J726  □
I 21674 MPY V      21727 J727  □
I 21679 CMP 4      21729 J729  □
I 21684 TRE L      21719 J719  -
I #####          I #####          I
I I I I I I I I I I I I I I I I
I #####          I #####          I
I 21689 TRA I 01 21719 J7/9 - - -
I 21694 SEL 2      0500        □ I
I 21699 WR R      21730 J730  □ I
I 21704 TRA I 03 21714 J7A4 - - -
I 21709 TR 1      21719 J719  - - -
I 21714 HLT J      0230.....
+ 21719 TRA I 02 21669 J609.....
  21724 TR 1      21739 J739  - - -
#####
I
I

```

TN AND USE MC 2A, MC 2B
AND DOUB CAR.

ERROR ROUTINE

```

2 002 21726      & 4
2 001 21727      &5
2 002 21729      20
2 003 21732      230
2 001 21733      □

```

ROUTINE #231
TEST MPY AND RELATED ADDER
INPUTS. MPY 4 BY 4.

```

#####
I 21739 RAD H      21796 J796.....
I 21744 MPY V      21796 J796  □
I 21749 CMP 4      21798 J798  □
I 21754 TRE L      21789 J789  -
I #####          I #####          I
I I I I I I I I I I I I I I I I
I #####          I #####          I
I 21759 TRA I 01 21789 J7Y9 - - -
I 21764 SEL 2      0500        □ I
I 21769 WR R      21799 J799  □ I
I 21774 TRA I 03 21784 J7H4 - - -
I 21779 TR 1      21789 J789  - - -
I 21784 HLT J      0231.....
+ 21789 TRA I 02 21739 J7L9.....
  21794 TR 1      21809 J809  - - - AV45
#####

```

TN MC 2A, MC 2B. ADDER
CARRY TO GET RESULT OF 16.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 21796      & 4
2 002 21798      16
2 003 21801      231
2 001 21802      □

```

ROUTINE #232
TEST MPY AND RELATED ADDER
INPUTS. MPY 3 BY 4.

```

AV44..... 21809 RAD H      21866 J866  0
I 21814 MPY V      21867 J867  0
I 21819 CMP 4      21869 J869  0
I 21824 TRE L      21859 J859  0
I
I
I 21829 TRA I 01 21859 J8V9  0
I 21834 SEL 2      0500  0
I 21839 WR R      21870 J870  0
I 21844 TRA I 03 21854 J8E4  0
I 21849 TR 1      21859 J859  0
I 21854 HLT J      0232  0
+ 21859 TRA I 02 21809 J8-9  0
  21864 TR 1      21879 J879  0

```

TN MC 2A, MC 2B. ADDER
CARRY TO GET RESULT OF 12.

ERROR ROUTINE

2	002	21866	& 4
2	001	21867	&3
2	002	21869	12
2	003	21872	232
2	001	21873	0

ROUTINE #233
TEST MPY INSTRUCTION ON
A 2 DIGIT MULTIPLICAND.

```

..... 21879 RAD H      21936 J936  0
I 21884 MPY V      21938 J938  0
I 21889 CMP 4      21941 J941  0
I 21894 TRE L      21929 J929  0
I
I
I 21899 TRA I 01 21929 J9S9  0
I 21904 SEL 2      0500  0
I 21909 WR R      21942 J942  0
I 21914 TRA I 03 21924 J9B4  0
I 21919 TR 1      21929 J929  0
I 21924 HLT J      0233  0
+ 21929 TRA I 02 21879 J8P9  0
  21934 TR 1      21954 J954  0

```

MPY 11 BY 1.

ERROR ROUTINE

2	002	21936	& 1
2	002	21938	&11
2	003	21941	011
2	003	21944	233
2	001	21945	0

-----AW46 TO NEXT ROUTINE

ROUTINE #234
TEST MPY AND RELATED ADDER
INPUTS. MPY 15 BY 4.

```

AW45..... 21954 RAD H      22011 K011  □
I  21959 MPY V      22013 K013  □
I  21964 CMP 4      22016 K016  □
I  21969 TRE L      22004 K004  - - -
I  21974 TRA I 01 22004 K0 4  - - -
I  21979 SEL 2      0500      □  I
I  21984 WR R      22017 K017  □  I
I  21989 TRA I 03 21999 J919  - - -
I  21994 TR 1      22004 K004  - - -
I  21999 HLT J      0234.....  □  I
+ 22004 TRA I 02 21954 J9N4.....
  22009 TR 1      22029 K029  - - -

```

TN AND USE MC 2A, MC 2B
AND DOUB. CAR.

ERROR ROUTINE

```

2 002 22011      G 4
2 002 22013      G15
2 003 22016      060
2 003 22019      234
2 001 22020      □

```

ROUTINE #235
TEST MPY AND RELATED ADDER
INPUTS. MPY 25 BY 4.

```

..... 22029 RAD H      22086 K086.....
I  22034 MPY V      22088 K088  □
I  22039 CMP 4      22091 K091  □
I  22044 TRE L      22079 K079  - - -
I  22049 TRA I 01 22079 K0X9  - - -
I  22054 SEL 2      0500      □  I
I  22059 WR R      22092 K092  □  I
I  22064 TRA I 03 22074 K0G4  - - -
I  22069 TR 1      22079 K079  - - -
I  22074 HLT J      0235.....  □  I
+ 22079 TRA I 02 22029 K0K9.....
  22084 TR 1      22104 K104  - - - AX47

```

TN AND USE MC 2A, MC 2B
AND DOUB CAR.

ERROR ROUTINE

```

2 002 22086      G 4
2 002 22088      G25
2 003 22091      100
2 003 22094      235
2 001 22095      □

```

TO NEXT ROUTINE

ROUTINE #236
TEST MPY AND RELATED ADDER
INPUTS. MPY 45 BY 4.

```

AX46.....
I 22104 RAD H      22161 K161
I 22109 MPY V      22163 K163
I 22114 CMP 4      22166 K166
I 22119 TRE L      22154 K154
I
I
I 22124 TRA I 01 22154 K1V4
I 22129 SEL 2      0500
I 22134 WR R       22167 K167
I 22139 TRA I 03 22149 K1D9
I 22144 TR 1       22154 K154
I 22149 HLT J      0236
I 22154 TRA I 02 22104 K1-4
I 22159 TR 1       22179 K179

```

TN AND USE MC 2A, MC 2B
AND DOUB CAR.

ERROR ROUTINE

2 002	22161	G 4
2 002	22163	G45
2 003	22166	180
2 003	22169	236
2 001	22170	□

ROUTINE #237
TEST MPY AND RELATED ADDER
INPUTS. MPY ZERO BY 5.

```

I 22179 RAD H      22231 K231
I 22184 MPY V      22232 K232
I 22189 TRZ N      22224 K224
I
I
I 22194 TRA I 01 22224 K2S4
I 22199 SEL 2      0500
I 22204 WR R       22233 K233
I 22209 TRA I 03 22219 K2A9
I 22214 TR 1       22224 K224
I 22219 HLT J      0237
I 22224 TRA I 02 22179 K1P9
I 22229 TR 1       22244 K244

```

TN MC 5 TO ROUTE SEL 5 MPL
WHEN MBR EQUALS ZERO.

ERROR ROUTINE

2 002	22231	G 5
2 001	22232	G0
2 003	22235	237
2 001	22236	□

TO NEXT ROUTINE

ROUTINE #238
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 5.

```

AY47.....
      22244 RAD H      22301 K301
I 22249 MPY V      22302 K302
I 22254 CMP 4      22304 K304
I 22259 TRE L      22294 K294
I
I 22264 TRA I 01 22294 K2Z4
I 22269 SEL 2      0500
I 22274 WR R      22305 K305
I 22279 TRA I 03 22289 K2H9
I 22284 TR 1      22294 K294
I 22289 HLT J      0238
+ 22294 TRA I 02 22244 K2M4
  22299 TR 1      22314 K314
  
```

TN MC 5 TO ROUTE SEL 5 MPL
WHEN MBR EQUALS 1.

ERROR ROUTINE

```

2 002 22301          G 5
2 001 22302          G1
2 002 22304          05
2 003 22307          238
2 001 22308          0
  
```

ROUTINE #239
TEST MPY AND RELATED ADDER
INPUTS. MPY 2 BY 5.

```

      22314 RAD H      22371 K371
I 22319 MPY V      22372 K372
I 22324 CMP 4      22374 K374
I 22329 TRE L      22364 K364
I
I 22334 TRA I 01 22364 K3W4
I 22339 SEL 2      0500
I 22344 WR R      22375 K375
I 22349 TRA I 03 22359 K3E9
I 22354 TR 1      22364 K364
I 22359 HLT J      0239
+ 22364 TRA I 02 22314 K3J4
  22369 TR 1      22384 K384
  
```

TN AND USE MC 5, QUIN CAR 1
WHILE ROUTING NOT MBR TO AD.

ERROR ROUTINE

```

2 002 22371          G 5
2 001 22372          G2
2 002 22374          10
2 003 22377          239
2 001 22378          0
  
```

AZ49 TO NEXT ROUTINE

ROUTINE #240
TEST MPY AND RELATED ADDER
INPUTS. MPY 4 BY 5.

```

AZ48..... 22384 RAD H      22441 K441  0
I 22389 MPY V      22442 K442  0
I 22394 CMP 4      22444 K444  0
I 22399 TRE L      22434 K434  0
I 22404 TRA I 01 22434 K4T4  0
I 22409 SEL 2      0500          0
I 22414 WR R      22445 K445  0
I 22419 TRA I 03 22429 K4B9  0
I 22424 TR 1      22434 K434  0
I 22429 HLT J      0240          0
+ 22434 TRA I 02 22384 K3Q4  0
  22439 TR 1      22454 K454  0

```

TN AND USE MC 5. QUIN CAR 2
WHILE ROUTING NOT MBR TO AD.

ERROR ROUTINE

```

2 002 22441      6 5
2 001 22442      64
2 002 22444      20
2 003 22447      240
2 001 22448      0

```

ROUTINE #241
TEST MPY AND RELATED ADDER
INPUTS. MPY 8 BY 5.

```

22454 RAD H      22511 K511  0
I 22459 MPY V      22512 K512  0
I 22464 CMP 4      22514 K514  0
I 22469 TRE L      22504 K504  0
I 22474 TRA I 01 22504 K5 4  0
I 22479 SEL 2      0500          0
I 22484 WR R      22515 K515  0
I 22489 TRA I 03 22499 K419  0
I 22494 TR 1      22504 K504  0
I 22499 HLT J      0241          0
+ 22504 TRA I 02 22454 K4N4  0
  22509 TR 1      22524 K524  0

```

TN AND USE MC 5. QUIN CAR 4
WHILE ROUTING NOT MBR TO AD.

ERROR ROUTINE

```

2 002 22511      6 5
2 001 22512      68
2 002 22514      40
2 003 22517      241
2 001 22518      0

```

TO NEXT ROUTINE

ROUTINE #242
TEST MPY AND RELATED ADDER
INPUTS. MPY 12 BY 5.

```

BA49.....I . 22524 RAD H      22581 K581  □
I  □ 22529 MPY V      22583 K583  □
I  □ 22534 CMP 4      22586 K586  □
I  □ 22539 TRE L      22574 K574-#---
I  □ 22544 TRA I 01 22574 K5X4-#---
I  □ 22549 SEL 2      0500      □  I
I  □ 22554 WR R      22587 K587  □  I
I  □ 22559 TRA I 03 22569 K5F9-#---
I  □ 22564 TR  1      22574 K574-#---
I  □ 22569 HLT J      0242.....
+---22574 TRA I 02 22524 K5K4.....
I  □ 22579 TR  1      22599 K599-#---

```

TN AND USE MC 5, QUIN CAR 2
WHEN MBR EQUALS 1.

ERROR ROUTINE

```

2 002 22581      & 5
2 002 22583      &12
2 003 22586      060
2 003 22589      242
2 001 22590      □

```

ROUTINE #243
TEST MPY AND RELATED ADDER
INPUTS. MPY 16 BY 5

```

.....I . 22599 RAD H      22656 K656.....
I  □ 22604 MPY V      22658 K658  □
I  □ 22609 CMP 4      22661 K661  □
I  □ 22614 TRE L      22649 K649-#---
I  □ 22619 TRA I 01 22649 K6U9-#---
I  □ 22624 SEL 2      0500      □  I
I  □ 22629 WR R      22662 K662  □  I
I  □ 22634 TRA I 03 22644 K6D4-#---
I  □ 22639 TR  1      22649 K649-#---
I  □ 22644 HLT J      0243.....
+---22649 TRA I 02 22599 K5R9.....
I  □ 22654 TR  1      22674 K674-#---

```

TN AND USE MC 5, QUIN CAR 1,
QUIN CAR 2, WHEN MBR IS 1.

ERROR ROUTINE

```

2 002 22656      & 5
2 002 22658      &16
2 003 22661      080
2 003 22664      243
2 001 22665      □

```

TO NEXT ROUTINE

ROUTINE #244
TEST MPY AND RELATED ADDER
INPUTS. MPY 18 BY 5.

```

BB50..... 22674 RAD H      22731 K731  0
I 22679 MPY V      22733 K733  0
I 22684 CMP 4      22736 K736  0
I 22689 TRF L      22724 K724  0
I
I
I
I 22694 TRA I 01 22724 K7S4  0
I 22699 SEL 2      0500      0
I 22704 WR R      22737 K737  0
I 22709 TRA I 03 22719 K7A9  0
I 22714 TR 1      22724 K724  0
I 22719 HLT J      0244..... 0
I 22724 TRA I 02 22674 K6P4  0
I 22729 TR 1      22749 K749  0
I
I
I

```

```

2 002 22731      6 5
2 002 22733      6 18
2 003 22736      090
2 003 22739      244
2 001 22740      0

```

TN AND USE MC 5. QUIN CAR 4
WHEN MBR EQUALS 1.

ERROR ROUTINE

ROUTINE #245
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 3.

```

..... 22749 RAD H      22806 K806  0
I 22754 MPY V      22807 K807  0
I 22759 SUB P      22806 K806  0
I 22764 TRZ N      22799 K799  0
I
I
I
I 22769 TRA I 01 22799 K7Z9  0
I 22774 SEL 2      0500      0
I 22779 WR R      22808 K808  0
I 22784 TRA I 03 22794 K7I4  0
I 22789 TR 1      22799 K799  0
I 22794 HLT J      0245..... 0
I 22799 TRA I 02 22749 K7M9  0
I 22804 TR 1      22819 K819  0
I
I
I

```

```

2 002 22806      6 3
2 001 22807      6 1
2 003 22810      245
2 001 22811      0

```

TN MC 1 AND MC 2A
WITH MBR EQUAL 1.

ERROR ROUTINE

TO NEXT ROUTINE

ROUTINE #246
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 6.

```

BC51..... 22819 RAD H      22876 K876  □
I □ 22824 MPY V      22877 K877  □
I □ 22829 SUB P      22876 K876  □
I □ 22834 TRZ N      22869 K869  □
I □ 22839 TRA I 01 22869 K8W9  □
I □ 22844 SEL 2      0500          □
I □ 22849 WR  R      22878 K878  □
I □ 22854 TRA I 03 22864 K8F4  □
I □ 22859 TR  1      22869 K869  □
I □ 22864 HLT  J      0246.....□
I □ 22869 TRA I 02 22819 K8J9  □
I □ 22874 TR  1      22889 K889  □

```

```

2 002 22876
2 001 22877
2 003 22880
2 001 22881

```

```

& 6
&1
246
□

```

TN MC 1 AND MC 5
WITH MBR EQUAL 1.

ERROR ROUTINE

ROUTINE #247
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 7.

```

..... 22889 RAD H      22946 K946  □
I □ 22894 MPY V      22947 K947  □
I □ 22899 SUB P      22946 K946  □
I □ 22904 TRZ N      22939 K939  □
I □ 22909 TRA I 01 22939 K9T9  □
I □ 22914 SEL 2      0500          □
I □ 22919 WR  R      22948 K948  □
I □ 22924 TRA I 03 22934 K9C4  □
I □ 22929 TR  1      22939 K939  □
I □ 22934 HLT  J      0247.....□
I □ 22939 TRA I 02 22889 K8Q9  □
I □ 22944 TR  1      22959 K959  □

```

```

2 002 22946
2 001 22947
2 003 22950
2 001 22951

```

```

& 7
&1
247
□

```

TN MC 2A AND MC 5
WITH MBR EQUAL 1.

ERROR ROUTINE

BD53 TO NEXT ROUTINE

ROUTINE #248
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 8.

```

BD52..... 22959 RAD H      23016 L016  0
I 22964 MPY V      23017 L017  0
I 22969 SUB P      23016 L016  0
I 22974 TRZ N      23009 L009  0
I
I
I
I 22979 TRA I 01 23009 L0 9  0
I 22984 SEL 2      0500      0
I 22989 WR R      23018 L018  0
I 22994 TRA I 03 23004 L064  0
I 22999 TR 1      23009 L009  0
I 23004 HLT J      0248.....
+ 23009 TRA I 02 22959 K9N9...
  23014 TR 1      23029 L029  0
I
I
I

```

TN MC 1, 2B AND MC 5
WITH MBR EQUAL 1.

ERROR ROUTINE

```

2 002 23016      6 8
2 001 23017      6 1
2 003 23020      248
2 001 23021      0

```

ROUTINE #249
TEST MPY AND RELATED ADDER
INPUTS. MPY 1 BY 9.

```

..... 23029 RAD H      23086 L086  0
. 23034 MPY V      23087 L087  0
I 23039 SUB P      23086 L086  0
I 23044 TRZ N      23079 L079  0
I
I
I
I 23049 TRA I 01 23079 L0X9  0
I 23054 SEL 2      0500      0
I 23059 WR R      23088 L088  0
I 23064 TRA I 03 23074 L064  0
I 23069 TR 1      23079 L079  0
I 23074 HLT J      0249.....
+ 23079 TRA I 02 23029 L0K9...
  23084 TR 1      23099 L099  0
I
I
I

```

TN MC 2A, MC 2B AND MC 5
WITH MBR EQUAL 1.

ERROR ROUTINE

```

2 002 23086      6 9
2 001 23087      6 1
2 003 23090      249
2 001 23091      0

```

BE54 TO NEXT ROUTINE

ROUTINE #250
TEST MPY AND RELATED ADDER
INPUTS. MPY 2 BY 8.

```

BE53..... 23099 RAD H      23156 L156  0
I 23104 MPY V      23157 L157  0
I 23109 CMP 4      23159 L159  0
I 23114 TRE L      23149 L149  0
I 23119 TRA I 01 23149 L109  0
I 23124 SEL 2      0500  0
I 23129 WR R      23160 L160  0
I 23134 TRA I 03 23144 L104  0
I 23139 TR 1      23149 L149  0
I 23144 HLT J      0250.....
+ 23149 TRA I 02 23099 L099  0
  23154 TR 1      23169 L169  0

```

TN MC 1, MC 2B AND MC 5
WITH MBR EQUAL 2.

ERROR ROUTINE

2 002	23156	6 8
2 001	23157	62
2 002	23159	16
2 003	23162	250
2 001	23163	0

ROUTINE #251
TEST MPY AND RELATED ADDER
INPUTS. MPY 3 BY 8.

```

.. 23169 RAD H      23226 L226  0
I 23174 MPY V      23227 L227  0
I 23179 CMP 4      23229 L229  0
I 23184 TRE L      23219 L219  0
I 23189 TRA I 01 23219 L219  0
I 23194 SEL 2      0500  0
I 23199 WR R      23230 L230  0
I 23204 TRA I 03 23214 L214  0
I 23209 TR 1      23219 L219  0
I 23214 HLT J      0251.....
+ 23219 TRA I 02 23169 L109  0
  23224 TR 1      23239 L239  0

```

TN MC 1, MC 2B AND MC 5
WITH MBR EQUAL 3.

ERROR ROUTINE

2 002	23226	6 8
2 001	23227	63
2 002	23229	24
2 003	23232	251
2 001	23233	0

ROUTINE #252
TEST MPY AND RELATED ADDER
INPUTS. MPY 9 BY 3.

```

BF54..... 23239 RAD H      23296 L296  □
I □ 23244 MPY V      23297 L297  □
I □ 23249 CMP 4      23299 L299  □
I □ 23254 TRE L      23289 L289  - - -
I □ 23259 TRA I 01  23289 L2Y9  - - -
I □ 23264 SEL 2      0500      □ I
I □ 23269 WR R      23300 L300  □ I
I □ 23274 TRA I 03  23284 L2H4  - - -
I □ 23279 TR 1      23289 L289  - - -
I □ 23284 HLT J      0252..... □ I
+ - - 23289 TRA I 02  23239 L2L9  . . .
□ 23294 TR 1      23309 L309  - - -

```

TN AND USE MC 1, MC 2A
AND DOUB CAR.

ERROR ROUTINE

2	002	23296	& 3
2	001	23297	69
2	002	23299	27
2	003	23302	252
2	001	23303	□

ROUTINE #253
TEST MPY AND RELATED ADDER
INPUTS. MPY 6 BY 7.

```

..... 23309 RAD H      23366 L366. . .
I □ 23314 MPY V      23367 L367  □
I □ 23319 CMP 4      23369 L369  □
I □ 23324 TRE L      23359 L359  - - -
I □ 23329 TRA I 01  23359 L3V9  - - -
I □ 23334 SEL 2      0500      □ I
I □ 23339 WR R      23370 L370  □ I
I □ 23344 TRA I 03  23354 L3E4  - - -
I □ 23349 TR 1      23359 L359  - - -
I □ 23354 HLT J      0253..... □ I
+ - - 23359 TRA I 02  23309 L3-9. . .
□ 23364 TR 1      23379 L379  - - -

```

USE MC 2A, MC 5, DOUB CAR,
QUIN CAR 1 AND QUIN CAR 2.

ERROR ROUTINE

2	002	23366	& 7
2	001	23367	66
2	002	23369	42
2	003	23372	253
2	001	23373	□

-----BG56 TO NEXT ROUTINE

ROUTINE #254
TEST MPY AND RELATED ADDER
INPUTS. MPY 6 BY 3.

```

BG55.....
I I 23379 RAD H      23436 L436  I
I I 23384 MPY V      23437 L437  I
I I 23389 CMP 4      23439 L439  I
I I 23394 TRE L      23429 L429  I
I I ..... I ..... I
I I ..... I ..... I
I I 23399 TRA I 01 23429 L4S9  I
I I 23404 SEL 2      -0500  I
I I 23409 WR R       23440 L440  I
I I 23414 TRA I 03 23424 L4B4  I
I I 23419 TR 1       23429 L429  I
I I 23424 HLT J       0254  I
I I 23429 TRA I 02 23379 L3P9  I
I I 23434 TR 1       23449 L449  I
I I ..... I ..... I
I I ..... I ..... I

```

TN AND USE MC 1, MC 2A,
AND DOUB CAR.

ERROR ROUTINE

2	002	23436	6-3
2	001	23437	66
2	002	23439	18
2	003	23442	254
2	001	23443	I

ROUTINE #255
TEST MPY AND RELATED ADDER
INPUTS. MPY 4 BY 8.

```

I I 23449 RAD H      23506 L506  I
I I 23454 MPY V      23507 L507  I
I I 23459 CMP 4      23509 L509  I
I I 23464 TRE L      23499 L499  I
I I ..... I ..... I
I I ..... I ..... I
I I 23469 TRA I 01 23499 L4Z9  I
I I 23474 SEL 2       0500  I
I I 23479 WR R       23510 L510  I
I I 23484 TRA I 03 23494 L414  I
I I 23489 TR 1       23499 L499  I
I I 23494 HLT J       0255  I
I I 23499 TRA I 02 23449 L4M9  I
I I 23504 TR 1       23519 L519  I
I I ..... I ..... I

```

TN AND USE MC 1, MC 2B,
MC 5 AND QUIN CAR 2.

ERROR ROUTINE

2	002	23506	6 8
2	001	23507	64
2	002	23509	32
2	003	23512	255
2	001	23513	I

BH57 TO NEXT ROUTINE

ROUTINE #256
TEST MPY AND RELATED ADDER
INPUTS. MPY 8 BY 8.

TN AND USE MC 1, MC 2B, MC 5.
DOUB CAR AND QUIN CAR 4.

ERROR ROUTINE

ROUTINE #257
TEST MPY INSTRUCTION ON
A 2 DIGIT MULTIPLIER.

MPY 1 BY 11.

ERROR ROUTINE

TO NEXT ROUTINE

```

BH56.....  23519 RAD H      23576 L576  0
I  23524 MPY V      23576 L576  0
I  23529 CMP 4      23578 L578  0
I  23534 TRE L      23569 L569  0
I  23539 TRA I 01  23569 L5W9  0
I  23544 SEL 2      0500          0
I  23549 WR R      23579 L579  0
I  23554 TRA I 03  23564 L5F4  0
I  23559 TR 1      23569 L569  0
I  23564 HLT J      0256          0
+ 23569 TRA I 02  23519 L5J9  0
  23574 TR 1      23589 L589  0

```

2	002	23576	6	8
2	002	23578		64
2	003	23581		256
2	001	23582		0

```

. 23589 RAD H      23647 L647  0
I  23594 MPY V      23648 L648  0
I  23599 CMP 4      23651 L651  0
I  23604 TRE L      23639 L639  0
I  23609 TRA I 01  23639 L6T9  0
I  23614 SEL 2      -0500          0
I  23619 WR R      23652 L652  0
I  23624 TRA I 03  23634 L6C4  0
I  23629 TR 1      23639 L639  0
I  23634 HLT J      0257          0
+ 23639 TRA I 02  23589 L5Q9  0
  23644 TR 1      23664 L664  0

```

2	003	23647	6	11
2	001	23648		61
2	003	23651		011
2	003	23654		257
2	001	23655		0

ROUTINE #258
TEST MPY INSTRUCTION
MPY 11 BY 11.

```

BJ57.....I .23664 RAD H      23722 L722  I
I  23669 MPY V      23722 L722  I
I  23674 CMP 4      23726 L726  I
I  23679 TRE L      23714 L714  I
I  I
I  I
I  I
I  23684 TRA I 01 23714 L7/4  I
I  23689 SEL 2      0500      I
I  23694 WR R      23727 L727  I
I  23699 TRA I 03 23709 L769  I
I  23704 TR 1      23714 L714  I
I  23709 HLT J      0258.....I
I  23714 TRA I 02 23664 L604  I
I  23719 TR 1      23739 L739  I
I  I
I  I

```

ERROR ROUTINE

```

2 003 23722      G 11
2 004 23726      0121
2 003 23729      258
2 001 23730      I

```

ROUTINE #259
TEST MPY INSTRUCTION
MPY 78 BY 78.

```

I .23739 RAD H      23797 L797  I
I  23744 MPY V      23797 L797  I
I  23749 SUB P      23801 L801  I
I  23754 TRZ N      23789 L789  I
I  I
I  I
I  I
I  23759 TRA I 01 23789 L7Y9  I
I  23764 SEL 2      0500      I
I  23769 WR R      23802 L802  I
I  23774 TRA I 03 23784 L7H4  I
I  23779 TR 1      23789 L789  I
I  23784 HLT J      0259.....I
I  23789 TRA I 02 23739 L7L9  I
I  23794 TR 1      23814 L814  I
I  I
I  I

```

ERROR ROUTINE

```

2 003 23797      G 78
2 004 23801      G6084
2 003 23804      259
2 001 23805      I

```

TO NEXT ROUTINE

ROUTINE #260
TEST MPY INSTRUCTION

BK58.....

```

#####
I 23814 RAD H      23885 L885  □
I 23819 MPY V      23885 L885  □
I 23824 SET B      0020      □
I 23829 CMP 4      23905 L905  □
I 23834 TRZ L      23869 L869  -
I #####
I
I #####
I 23839 TRA I 01 23869 L8W9 -
I 23844 SEL 2      0500      □
I 23849 WR R      23906 L906  □
I 23854 TRA I 03 23864 L8F4 -
I 23859 TR 1      23869 L869  -
I 23864 HLT J      0260.....
I 23869 TRA I 02 23814 L8J4.
I 23874 TR 1      23914 L914 -
#####
I
I
I

```

JUMBO MULTIPLY
9876543210 X 9876543210
ANS. 97546105778997104100

ERROR ROUTINE

2 011 23885
2 020 23905
2 003 23908
2 001 23909

6 9876543210
97546105778997104100
260
□

ROUTINE #261
TEST MPY. VERIFY
MULTIPLIER AFTER DOING MPY.

```

#####
I 23914 RAD H      23987 L987.
I 23919 MPY V      23987 L987  □
I 23924 SHR C      0128      □
I 23929 SUB P      23987 L987  □
I 23934 TRZ N      23969 L969  -
I #####
I
I #####
I 23939 TRA I 01 23969 L9W9 -
I 23944 SEL 2      0500      □
I 23949 WR R      23988 L988  □
I 23954 TRA I 03 23964 L9F4 -
I 23959 TR 1      23969 L969  -
I 23964 HLT J      0261.....
I 23969 TRA I 02 23914 L9J4.
I 23974 RCV U      0306      □
I 23979 TR 1 01 0204 02 4  □
I 23984 TR 1      23999 L999 -
#####

```

MPY 11 BY 11

ERROR ROUTINE

2 003 23987
2 003 23990
2 001 23991

6 11
261
□

BL60 TO NEXT ROUTINE

ROUTINE #262
EXECUTE DIV TC 1, 2, 3 ONLY.
TEST FOR NO 900 CHECK
TEST FOR TN DZT IN TC-1.

```

BL59..... 23999 EEM 3 14 0000 06-0
I 24004 SPC , 0001
I 24009 SET B 0000
I 24014 RAD H 01 24071 MOX1
I 24019 DIV W 24071 M071
I 24024 TRS O 10 24034 M-L4-
I 24029 TRZ N 24064 M064-
I
I
I
I 24034 TRA I 01 24064 MOW4-
I 24039 SEL 2 0500
I 24044 WR R 24072 M072
I 24049 TRA I 03 24059 MOE9-
I 24054 TR 1 24064 M064-
I 24059 HLT J 0262
+ 24064 TRA I 02 23999 L9R9
  24069 TR 1 24084 M084-
I
I
I

```

PLACE STORAGE MARK
TURN OFF DZT
DO DIVIDE

ERROR ROUTINE

```

2 002 24071      A
2 003 24074      262
2 001 24075      □

```

ROUTINE #263
TEST DIV. DO TC 1, 2, 3 ONLY.
TEST FOR STOR MARK PLACED AT
RIGHT OF DIVIDEND IN TC 1

```

..... 24084 EEM 3 14 0000 06-0
I 24089 SPC , 0001
I 24094 RAD H 24185 M185
I 24099 SET B 0000
I 24104 DIV W 24181 M181
I 24109 SPC , 0002
I 24114 CMP 4 24184 M184
I 24119 TRE L 24129 M129-
I 24124 TR 1 24144 M144-
I 24129 SPC , 0000
I 24134 CMP 4 24189 M189
I 24139 TRE L 24174 M174-
I
I
I
I 24144 TRA I 01 24174 M1X4-
I 24149 SEL 2 0500
I 24154 WR R 24186 M186
I 24159 TRA I 03 24169 M1F9-
I 24164 TR 1 24174 M174-
I 24169 HLT J 0263
+ 24174 TRA I 02 24084 M0Q4-
  24179 TR 1 24194 M194-
I
I
I

```

RAD 123 TO PRESET STORAGE
DIVIDEND IS A STORAGE MARK

SPC TO 12 AND CHECK THAT
AREA TO LEFT OF DIVIDEND
IS UNCHANGED

SPC TO STOR MARK PLACED
BY TC 2 AND CMP VS GROUP
MARK-SHOULD BE EQUAL.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 24181      & 1
2 004 24185      & 123
2 003 24188      263
2 001 24189      □

```

ROUTINE #264
TEST DIV. DO TC 1, 2, 3 ONLY.
TEST FOR STOR MARK PLACED AT
LEFT OF QUOTIENT AREA IN TC 2

```

BM60..... 24194 EEM 3 14 0000 0G-0
I 24199 SPC 0401
I 24204 RAD H 24300 M300
I 24209 SPC 0001
I 24214 SET B 0000
I 24219 DIV W 24296 M296
I 24224 SHR C 0128
I 24229 CMP 4 24304 M304
I 24234 TRE L 24244 M244
I 24239 TR 1 24259 M259
I 24244 SHR C 0001
I 24249 CMP 4 24299 M299
I 24254 TRE L 24289 M289
I 24259 TRA I 01 24289 M2Y9
I 24264 SEL 2 0500
I 24269 WR R 24301 M301
I 24274 TRA I 03 24284 M2H4
I 24279 TR 1 24289 M289
I 24284 HLT J 0264
I 24289 TRA I 02 24194 M1R4
I 24294 TR 1 24309 M309

```

PRESET QUOTIENT AREA TO 123

DIVIDEND IS A STORAGE MARK

SHR TO QUOTIENT STORAGE
MARK AND CMP VS GROUP MARK,
SHOULD BE EQUAL.

STEP OVER QUOT. STOR MARK
AND CMP VS 12

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 24296
2 004 24300
2 003 24303
2 001 24304

```

```

& 1
& 123
264

```

ROUTINE #265
TEST DIV. DO TC 1, 2, 3 ONLY
TN AUX 1 TO RD STORAGE IN TC
DIV 6000 BY 6000.

```

BN61.....
      24309 EEM 3 14 0000 06-0
I 24314 SPC , 0736
I 24319 RAD H 24391 M391
I 24324 DIV W 24391 M391
I 24329 CMP 4 24395 M395
I 24334 TRE L 24349 M349
I 24339 CMP 4 24387 M387
I 24344 TRE L 24379 M379
I
I
I
I 24349 TRA I 01 24379 M3X9
I 24354 SEL 2 0500
I 24359 WR R 24392 M392
I 24364 TRA I 03 24374 M3G4
I 24369 TR 1 24379 M379
I 24374 HLT J 0265
+ 24379 TRA I 02 24309 M3-9
  24384 TR 1 24404 M404

```

SPC TO CHAR. 6
DIVIDEND IS 000

TEST DIVIDEND NOT A STORAGE
MARK AND
EQUAL TO 000.

ERROR ROUTINE

```

2 003 24387          000
2 004 24391          6 000
2 003 24394          265
2 001 24395          0

```

ROUTINE #266
TEST DIV 00 BY 0. DO TYPE
CYCLES 1,2,3,4,5,4-END OP.
CHECK FOR QUOTIENT OF 1, AND
DZT OFF.

```

      24404 EEM 3 14 0000 06-0
I 24409 SPC , 0001
I 24414 RAD H 24488 M488
I 24419 DIV W 24486 M486
I 24424 TRZ N 24449 M449
I 24429 CMP 4 24493 M493
I 24434 TRE L 24449 M449
I 24439 CMP 4 24489 M489
I 24444 TRE L 24479 M479
I
I
I
I 24449 TRA I 01 24479 M4X9
I 24454 SEL 2 0500
I 24459 WR R 24490 M490
I 24464 TRA I 03 24474 M4G4
I 24469 TR 1 24479 M479
I 24474 HLT J 0266
+ 24479 TRA I 02 24404 M4-4
  24484 TR 1 24499 M499-----BP63

```

EVEN DIVISION FIRST TC 4.
IN TC 5-TF DZT. RESULT 1 TO
QUOT., STEP SPC - 1.

TEST QUOTIENT FOR NOT A STOR
MARK AND EQUAL 1.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 24486          6 0
2 002 24488          600
2 001 24489          1
2 003 24492          266
2 001 24493          0

```

ROUTINE #267
TEST DIV FOR SET STORAGE
SIGN MINUS IN END OP TC 4.
DIV AGAIN AND SET SIGN PLUS.

```

BP62..... 24499 RAD H      24567 M567  0
I 24504 DIV W      24569 M569  0
I 24509 TRP M      24529 M529  0
I 24514 RAD H      24567 M567  0 I
I 24519 DIV W      24571 M571  0 I
I 24524 TRP M      24559 M559  0
I 24529 TRA I 01  24559 M5V9  0
I 24534 SEL 2      0500          0 I
I 24539 WR R       24572 M572  0 I
I 24544 TRA I 03  24554 M5E4  0 I
I 24549 TR 1       24559 M559  0
I 24554 HLT J      0267..... 0 I
+ 24559 TRA I 02  24499 M4R9  0
  24564 TR 1       24584 M584  0

```

00
DIV 00 BY -0.
TEST NOT PLUS

DIV 00 BY 0.
TEST PLUS

ERROR ROUTINE

```

2 003 24567      & 00
2 002 24569      - 0
2 002 24571      & 0
2 003 24574      267
2 001 24575      0

```

ROUTINE #268
TEST DIVIDE TC 4 AND 5
VARIATIONS. DIVIDE 00 BY 1.
DO TC 1,2,3,4,5,4,5,4-END OP.

```

24584 EEM 3 14 0000 00-0. 0
I 24589 SPC , 0001 0
I 24594 RAD H 24663 M663 0
I 24599 DIV W 24661 M661 0
I 24604 CMP 4 24662 M662 0
I 24609 TRE L 24619 M619 0
I 24614 TR 1 24624 M624 0
I 24619 TRZ N 24654 M654 0
I 24624 TRA I 01 24654 M6V4 0
I 24629 SEL 2 0500 0 I
I 24634 WR R 24664 M664 0 I
I 24639 TRA I 03 24649 M6D9 0 I
I 24644 TR 1 24654 M654 0
I 24649 HLT J 0268..... 0 I
+ 24654 TRA I 02 24584 M5Q4 0
  24659 TR 1 24674 M674 0-----BQ64

```

00
RESULT A ZERO TO QUOTIENT.

TEST DZT ON.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 24661      A
2 002 24663      000
2 003 24666      268
2 001 24667      0

```


ROUTINE #269
TEST DIVIDE TC 4 FOR SET
SIGN PLUS WHEN DZT ON.
DIVIDE 600 BY -1.

```

BQ63.....
#####
I 24674 RAD H      24727 M727  □
I 24679 DIV W      24729 M729  □
I 24684 TRP M      24719 M719-  □
I #####
I
I #####
I 24689 TRA I 01 24719 M7/9-  □
I 24694 SEL 2      0500      □
I 24699 WR R       24730 M730  □
I 24704 TRA I 03 24714 M7A4-  □
I 24709 TR 1       24719 M719-  □
I 24714 HLT J      0269.....
I 24719 TRA I 02 24674 M6P4...
I 24724 TR 1       24739 M739-  □
#####
I
I
I

```

DZT ON-SET SIGN PLUS

ERROR ROUTINE

```

2 003 24727      & 00
2 002 24729      - 1
2 003 24732      269
2 001 24733      □

```

ROUTINE #270
TEST DIVIDE TC 4 AND 5
VARIATIONS. DIV 10 BY 5.
DO TC 1,2,3,4-5,4-5,4-END OP.

```

#####
I 24739 EEM 3 14 0000 06-0...
I 24744 SPC *      0001      □
I 24749 RAD H      24807 M807  □
I 24754 DIV W      24809 M809  □
I 24759 CMP 4      24810 M810  □
I 24764 TRE L      24799 M799-  □
I #####
I
I #####
I 24769 TRA I 01 24799 M7Z9-  □
I 24774 SEL 2      0500      □
I 24779 WR R       24811 M811  □
I 24784 TRA I 03 24794 M7I4-  □
I 24789 TR 1       24799 M799-  □
I 24794 HLT J      0270.....
I 24799 TRA I 02 24739 M7L9...
I 24804 TR 1       24819 M819-  □
#####

```

10
CHECK QUOTIENT EQUAL 2.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 003 24807      & 10
2 002 24809      & 5
2 001 24810      2
2 003 24813      270
2 001 24814      □

```

ROUTINE #271
TEST DIVIDE TC 4 AND 5
VARIATIONS. DIV 19 BY 8.
CHECK QUOT. 2 AND REM. 03.

```

BR64..... 24819 EEM 3 14 0000 06-0
I 24824 SPC , 0001
I 24829 RAD H 24907 M907
I 24834 DIV W 24909 M909
I 24839 CMP 4 24910 M910
I 24844 TRE L 24854 M854
I 24849 TR 1 24869 M869
I 24854 SPC , 0001
I 24859 CMP 4 24912 M912
I 24864 TRE L 24899 M899
I
I
I
I 24869 TRA I 01 24899 M8Z9
I 24874 SEL 2 0500
I 24879 WR R 24913 M913
I 24884 TRA I 03 24894 M814
I 24889 TR 1 24899 M899
I 24894 HLT J 0271
+ 24899 TRA I 02 24819 M8J9
  24904 TR 1 24924 M924
I
I
I

```

19

CMP QUOTIENT

SPC TO REMAINDER AND
CMP FOR 03.

ERROR ROUTINE

```

2 003 24907      & 19
2 002 24909      & 8
2 001 24910      2
2 002 24912      03
2 003 24915      271
2 001 24916      0

```

ROUTINE #272
TEST DIVIDE 15 BY 2
CHECK QUOT. AND REMAINDER.

```

..... 24924 RAD H 25003 N003
I 24929 DIV W 25001 N001
I 24934 CMP 4 25004 N004
I 24939 TRE L 24949 M949
I 24944 TR 1 24964 M964
I 24949 SHR C 0127
I 24954 CMP 4 25006 N006
I 24959 TRE L 24994 M994
I
I
I
I 24964 TRA I 01 24994 M9Z4
I 24969 SEL 2 0500
I 24974 WR R 25007 N007
I 24979 TRA I 03 24989 M9H9
I 24984 TR 1 24994 M994
I 24989 HLT J 0272
+ 24994 TRA I 02 24924 M9K4
  24999 TR 1 25019 N019
I
I
I

```

RAD 15

CHECK QUOTIENT 7

SHR TO REMAINDER
AND CMP VS 01.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 25001      & 2
2 002 25003      & 15
2 001 25004      7
2 002 25006      01
2 003 25009      272
2 001 25010      0

```

ROUTINE #273
TEST DIVIDE 032 BY 3
CHECK QUOT. AND REMAINDER

```

BS65..... 25019 RAD H      25099 N099  □
I □ 25024 DIV W      25096 N096  □
I □ 25029 CMP 4      25101 N101  □
I □ 25034 TRE L      25044 N044-□-□
I □ 25039 TR 1       25059 N059-□-□
I □ 25044 SHR C      0127.....□
I □ 25049 CMP 4      25104 N104  □
I □ 25054 TRE L      25089 N089-□-□
I □ 25059 TRA I 01  25089 NOY9-□-□
I □ 25064 SEL 2      0500      □
I □ 25069 WR R       25105 N105  □
I □ 25074 TRA I 03  25084 NOH4-□-□
I □ 25079 TR 1       25089 N089-□-□
I □ 25084 HLT J      0273.....□
+--25089 TRA I 02  25019 NOJ9.....□
  □ 25094 TR 1       25114 N114-□-□

```

CMP QUOTIENT OF 10

SHR TO REMAINDER
AND CMP VS 002

ERROR ROUTINE

```

2 002 25096      & 3
2 003 25099      &032
2 002 25101      10
2 003 25104      002
2 003 25107      273
2 001 25108      □

```

ROUTINE #274
TEST DIVIDE -09825 BY -25.
CHECK QUOTIENT OF 393 AND
REMAINDER OF 00000.
TEST SIGN PLUS.

```

..... 25114 RAD H      25202 N202.....□
I □ 25119 DIV W      25197 N197  □
I □ 25124 CMP 4      25205 N205  □
I □ 25129 TRE L      25139 N139-□-□
I □ 25134 TR 1       25159 N159-□-□
I □ 25139 TRP M      25149 N149-□-□
I □ 25144 TR 1       25159 N159-□-□
I □ 25149 SHR C      0126.....□
I □ 25154 TRZ N      25189 N189-□-□
I □ 25159 TRA I 01  25189 N1Y9-□-□
I □ 25164 SEL 2      0500      □
I □ 25169 WR R       25206 N206  □
I □ 25174 TRA I 03  25184 N1H4-□-□
I □ 25179 TR 1       25189 N189-□-□
I □ 25184 HLT J      0274.....□
+--25189 TRA I 02  25114 N1J4.....□
  □ 25194 TR 1       25214 N214-□-□

```

CHECK QUOTIENT

CHECK PLUS

SHR TO REMAINDER
AND TEST ZEROS

ERROR ROUTINE

```

2 003 25197      - 25
2 005 25202      -09825
2 003 25205      393
2 003 25208      274
2 001 25209      □

```

BT67 TO NEXT ROUTINE

ROUTINE #275
TEST DIVIDE G1234 BY -98
CHECK QUOTIENT OF 12,
REMAINDER OF 0058 AND
SIGN MINUS.

CHECK QUOTIENT OF 12

CHECK SIGN MINUS
SHR TO REMAINDER
AND CMP VS 0058

ERROR ROUTINE

ROUTINE #276
TEST DIVIDE INSTRUCTION

JUMBO DIVIDE
97546105779984758421
DIVIDED BY 9876543210
ANS. 9876543210 PLUS A
RMDR OF 0987654321

ERROR ROUTINE

-----BU68 TO NEXT ROUTINE

```

BT66.....
I 25214 RAD H 25301 N301
I 25219 DIV W 25297 N297
I 25224 CMP 4 25303 N303
I 25229 TRE L 25239 N239
I 25234 TR 1 25259 N259
I 25239 TRP M 25259 N259
I 25244 SHR C 0126
I 25249 CMP 4 25307 N307
I 25254 TRE L 25289 N289
I 25259 TRA 01 25289 N2Y9
I 25264 SEL 2 0500
I 25269 WR R 25308 N308
I 25274 TRA I 03 25284 N2H4
I 25279 TR 1 25289 N289
I 25284 HLT J 0275
I 25289 TRA I 02 25214 N2J4
I 25294 TR 1 25319 N319

```

```

2 003 25297 - 98
2 004 25301 G1234
2 002 25303 12
2 004 25307 0058
2 003 25310 275
2 001 25311

```

```

I 25319 RAD H 25435 N435
I 25324 DIV W 25445 N445
I 25329 SET B 0010
I 25334 CMP 4 25455 N455
I 25339 TRE L 25349 N349
I 25344 TR 1 25369 N369
I 25349 SHR C 0118
I 25354 SET B 0010
I 25359 CMP 4 25465 N465
I 25364 TRE L 25399 N399
I 25369 TRA I 01 25399 N3Z9
I 25374 SEL 2 0500
I 25379 WR R 25466 N466
I 25384 TRA I 03 25394 N3I4
I 25389 TR 1 25399 N399
I 25394 HLT J 0276
I 25399 TRA I 02 25319 N3J9
I 25404 RCV U 0306
I 25409 TR 1 01 0204 02 4
I 25414 TR 1 25474 N474

```

```

2 021 25435 G 97546105779984758421
2 010 25445 G9876543210
2 010 25455 9876543210
2 010 25465 0987654321
2 003 25468 276
2 001 25469

```

ROUTINE #277
TEST OF LDA INSTRUCTION
FOR EXECUTION & NO
OP CHECK

```

BU67.....
.....25474 SET B      0005
I 25479 LDA #        25534 N534
I 25484 TRS 0 10    25494 NMR4
I 25489 TRP M        25524 N524
I
I
I
I 25494 TRA I 01    25524 N5S4
I 25499 SEL 2        0500
I 25504 WR R         25535 N535
I 25509 TRA I 03    25519 N5A9
I 25514 TR 1         25524 N524
I 25519 HLT J        0277
+---25524 TRA I 02    25474 N4P4
  25529 TR 1         25544 N544
.....
I
I
I

```

TEST INSTRUCTION

ERROR ROUTINE

```

2 005 25534          9684
2 003 25537          277
2 001 25538

```

ROUTINE #278
TEST LDA IN 7080 MODE.
LDA 9876 AND TEST
STORAGE RESULT OF 009876.

```

.....25544 EEM 3 14    0000 06-0
I 25549 SET B        0005
I 25554 LOD 8        25629 N629
I 25559 LDA #        25634 N634
I 25564 UNL 7        25640 N640
I 25569 SET B        0006
I 25574 LOD 8        25646 N646
I 25579 CMP 4        25640 N640
I 25584 TRE L        25619 N619
I
I
I
I 25589 TRA I 01    25619 N6/9
I 25594 SEL 2        0500
I 25599 WR R         25647 N647
I 25604 TRA I 03    25614 N6A4
I 25609 TR 1         25619 N619
I 25614 HLT J        0278
+---25619 TRA I 02    25544 N5M4
  25624 TR 1         25659 N659-----BV69
.....

```

RESET STORAGE

CHECK RESULT

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 25629          66666
2 005 25634          9876
2 006 25640
2 006 25646          009876
2 003 25649          278
2 001 25650

```

ROUTINE #279
TEST LDA IN 7080 MODE
LDA EDCB AND TEST
STORAGE RESULT OF 155432.

```

BV68..... 25659 EEM 3 14 0000 06-0
I 25664 SET B 0003
I 25669 LOD 8 25749 N749
I 25674 LDA # 25744 N744
I 25679 UNL 7 25755 N755
I 25684 SET B 0006
I 25689 LOD 8 25761 N761
I 25694 CMP 4 25755 N755
I 25699 TRE L 25734 N734
I
I
I 25704 TRA I 01 25734 N7T4
I 25709 SEL 2 0500
I 25714 WR R 25762 N762
I 25719 TRA I 03 25729 N7B9
I 25724 TR 1 25734 N734
I 25729 HLT J 0279
+ 25734 TRA I 02 25659 N6N9
  25739 TR 1 25774 N774
I
I
I

```

RESET STORAGE

CHECK RESULT

ERROR ROUTINE

```

2 005 25744          EDCB
2 005 25749          0348
2 006 25755
2 006 25761          155432
2 003 25764          279
2 001 25765          0

```

ROUTINE #280
TEST OF LDA INSTRUCTION WITH
ADDRESS OF ZERO TO CHECK
THAT DZT COMES ON.

7080 MODE

MEMORY FIELD ZERO

ERROR ROUTINE

```

25774 EEM 3 14 0000 06-0
I 25779 SET B 0006
I 25784 LOD 8 25840 N840
I 25789 LDA # 25844 N844
I 25794 TRZ N 25829 N829
I
I
I 25799 TRA I 01 25829 N8S9
I 25804 SEL 2 0500
I 25809 WR R 25845 N845
I 25814 TRA I 03 25824 N8B4
I 25819 TR 1 25829 N829
I 25824 HLT J 0280
+ 25829 TRA I 02 25774 N7P4
  25834 TR 1 25854 N854
I
I
I

```

TO NEXT ROUTINE

```

2 006 25840          155432
2 004 25844          0000
2 003 25847          280
2 001 25848          0

```

```

BW69..... 000000000000000000000000000000000000
I 25854 LEM 3 15 0000 0&60
I 25859 SET B 0007
I 25864 LOD 8 25946 N946
I 25869 LDA # 25954 N954
I 25874 UNL 7 25961 N961
I 25879 TRZ N 25904 N904
I 25884 SET B 0005
I 25889 LOD 8 25966 N966
I 25894 CMP 4 25961 N961
I 25899 TRE L 25934 N934
I 25904 TRA I 01 25934 N9T4
I 25909 SEL 2 0500
I 25914 WR R 25967 N967
I 25919 TRA I 03 25929 N9B9
I 25924 TR 1 25934 N934
I 25929 HLT J 0281
+ 25934 TRA I 02 25854 N8N4
  25939 TR 1 25979 N979
000000000000000000000000000000000000

```

```

ROUTINE #281
TEST LDA INSTRUCTION
ON NON-ZERO ADDRESS.
CHECK FOR TF DZT.

```

DZT ON ERROR

CHECK STORAGE

ERROR ROUTINE

```

2 007 25946 1100000
2 008 25954 00001
2 007 25961
2 005 25966 00001
2 003 25969 281
2 001 25970

```

```

ROUTINE #282
TEST LDA IN 705-3 MODE.
LDA ON AAAA AND TEST
FOR STORAGE RESULT OF 71111.

```

```

000000000000000000000000000000000000 I
.. 25979 LEM 3 15 0000 0&60
I 25984 SET B 0004
I 25989 LOD 8 26074 0074
I 25994 LDA # 26079 0079
I 25999 SET B 0005
I 26004 UNL 7 26084 0084
I 26009 LOD 8 26089 0089
I 26014 CMP 4 26084 0084
I 26019 TRE L 26054 0054
I 26024 TRA I 01 26054 00V4
I 26029 SEL 2 0500
I 26034 WR R 26090 0090
I 26039 TRA I 03 26049 00D9
I 26044 TR 1 26054 0054
I 26049 HLT J 0282
+ 26054 TRA I 02 25979 N9P9
  26059 RCV U 0306
  26064 TR 1 01 0204 02 4
  26069 TR 1 26099 0099
000000000000000000000000000000000000

```

RESET STORAGE

CHECK STORAGE

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 26074 44444
2 005 26079 AAAA
2 005 26084
2 005 26089 71111
2 003 26092 282
2 001 26093

```

ROUTINE #283
TEST ULA FOR EXECUTION
& NO OP CHECK

```

BX70.....
      26099 SET B      0000
I 26104 SET B      0005
I 26109 ULA *      26164 0164
I 26114 TRS 0 10 26124 OJK4
I 26119 TR 1      26154 0154
I
I
I
I 26124 TRA I 01 26154 01V4
I 26129 SEL 2      0500
I 26134 WR R      26165 0165
I 26139 TRA I 03 26149 01D9
I 26144 TR 1      26154 0154
I 26149 HLT J      0283
+ 26154 TRA I 02 26099 00R9
  26159 TR 1      26174 0174
      26159 TR 1      26174 0174

```

ERROR ROUTINE

2	005	26164	
2	003	26167	283
2	001	26168	□

ROUTINE #284
TEST ULA IN 7080 MODE
ULA 360000 AND TEST
RESULT OF 0000 IN MEMORY

```

      26174 EEM 3 14 0000 0G-0
I 26179 SET B      0006
I 26184 LOD 8      26270 0270
I 26189 SET B 01 0006 00 6
I 26194 LOD 8 01 26278 02X8
I 26199 UNL 7 01 26274 02X4
I 26204 ULA *      26274 0274
I 26209 SET B      0004
I 26214 LOD 8      26282 0282
I 26219 CMP 4      26274 0274
I 26224 TRE L      26259 0259
I
I
I
I 26229 TRA I 01 26259 02V9
I 26234 SEL 2      0500
I 26239 WR R      26283 0283
I 26244 TRA I 03 26254 02E4
I 26249 TR 1      26259 0259
I 26254 HLT J      0284
+ 26259 TRA I 02 26174 01P4
  26264 TR 1      26294 0294

```

RESET MEMORY FIELD

ERROR ROUTINE

2	006	26270	360000
2	004	26274	
2	004	26278	5326
2	004	26282	0000
2	003	26285	284
2	001	26286	□

TO NEXT ROUTINE

ROUTINE #285
TEST ULA IN 7080 MODE
ULA 076543 INTO MEMORY
FIELD CONTAINING ASU ZONES.

```

BY71.....
I 26294 EEM 3 14 0000 0G-0
I 26299 SET B 0006
I 26304 LOD 8 26390 0390
I 26309 SET B 01 0004 00 4
I 26314 LOD 8 01 26398 03Z8
I 26319 UNL 7 01 26394 03Z4
I 26324 ULA * 26394 0394
I 26329 SET B 0004
I 26334 LOD 8 26402 0402
I 26339 CMP 4 26394 0394
I 26344 TRE L 26379 0379
I
I
I
I 26349 TRA I 01 26379 03X9
I 26354 SEL 2 0500
I 26359 WR R 26403 0403
I 26364 TRA I 03 26374 03G4
I 26369 TR 1 26379 0379
I 26374 HLT J 0285
+ 26379 TRA I 02 26294 02R4
  26384 TR 1 26414 0414
I
I
I

```

STORAGE FIELD FOR ULA

RESET MEMORY FIELD

ERROR ROUTINE

```

2 006 26390 076543
2 004 26394
2 004 26398 OBCZ
2 004 26402 FEDL
2 003 26405 285
2 001 26406

```

```

I
I
I
I 26414 EEM 3 14 0000 0G-0
I 26419 SET B 0006
I 26424 LOD 8 26510 0510
I 26429 SET B 01 0004 00 4
I 26434 LOD 8 01 26518 05/8
I 26439 UNL 7 01 26514 05/4
I 26444 ULA * 26514 0514
I 26449 SET B 0004
I 26454 LOD 8 26522 0522
I 26459 CMP 4 26514 0514
I 26464 TRE L 26499 0499
I
I
I
I 26469 TRA I 01 26499 04Z9
I 26474 SEL 2 0500
I 26479 WR R 26523 0523
I 26484 TRA I 03 26494 0414
I 26489 TR 1 26499 0499
I 26494 HLT J 0286
+ 26499 TRA I 02 26414 04J4
  26504 TR 1 26534 0534
I
I
I

```

ROUTINE #286
TEST ULA IN 7080 MODE
ULA 126813 AND TEST
MEMORY RESULT OF 681C
RESET MEMORY FIELD
ZONES IN STORAGE ON ULA

ERROR ROUTINE

TO NEXT ROUTINE

```

2 006 26510 12FHA3
2 004 26514
2 004 26518 R999
2 004 26522 681C
2 003 26525 286
2 001 26526

```

ROUTINE #287
TEST OF ULA WITH A
STORAGE LENGTH OF
4 IN 7080 MODE

```

BZ72.....I 26534 EEM 3 14 0000 06-0 0
I 26539 SET B 0004 0
I 26544 LOD 8 26630 0630 0
I 26549 SET B 01 0004 00 4 0
I 26554 LOD 8 01 26638 06T8 0
I 26559 UNL 7 01 26634 06T4 0
I 26564 ULA * 26634 0634 0
I 26569 SET B 0004 0
I 26574 LOD 8 26642 0642 0
I 26579 CMP 4 26634 0634 0
I 26584 TRE L 26619 0619-#---
I ##### I
I I I
I ##### I
I 26589 TRA I 01 26619 06/9-#---Y
I 26594 SEL 2 0500 0 I
I 26599 WR R 26643 0643 0 I
I 26604 TRA I 03 26614 06A4-#---I
I 26609 TR 1 26619 0619-#---+Y
I 26614 HLT J 0287.....#I
+---26619 TRA I 02 26534 05L4.#...I
I 26624 TR 1 26654 0654-#---Y
##### I
I
I

```

STORAGE FIELD FOR ULA

RESET MEMORY FIELD

ERROR ROUTINE

2	006	26630	145682
2	004	26634	
2	004	26638	1991
2	004	26642	5682
2	003	26645	287
2	001	26646	0

ROUTINE #288
TEST ULA IN 705-3 MODE
WITH STORAGE LENGTH
OF SIX.

RESET MEMORY FIELD

ERROR ROUTINE

TO NEXT ROUTINE

2	006	26750	159999
2	004	26754	
2	004	26758	J11/
2	004	26762	Z991
2	003	26765	288
2	001	26766	0

ROUTINE #291
TEST AAM FOR EXECUTION
& NO OP CHECK

```

CB74.....
I 27024 SET B      0000
I 27029 SET B      0005
I 27034 AAM @      27089 P089
I 27039 TRS 0 10 27049 P-M9
I 27044 TR 1      27079 P079
I
I
I 27049 TRA I 01 27079 P0X9
I 27054 SEL 2      0500
I 27059 WR R      27090 P090
I 27064 TRA I 03 27074 P0G4
I 27069 TR 1      27079 P079
I 27074 HLT J      0291
I 27079 TRA I 02 27024 P0K4
I 27084 TR 1      27099 P099

```

PUT ZEROS IN STORAGE

ERROR ROUTINE

```

2 005 27089      9999
2 003 27092      291
2 001 27093      0

```

ROUTINE #292
TEST AAM IN 7080 MODE.
WITH STORAGE FIELD OF
SIX ZEROS.

```

I 27099 EEM 3 14 0000 0G-0
I 27104 SET B      0006
I 27109 LOD 8      27205 P205
I 27114 SET B 01 0004 00 4
I 27119 LOD 8 01 27213 P2/3
I 27124 UNL 7 01 27209 P2 9
I 27129 AAM @      27209 P209
I 27134 CMP 4      27219 P219
I 27139 TRE L      27149 P149
I 27144 TR 1      27164 P164
I 27149 LOD 8 01 27213 P2/3
I 27154 CMP 4 01 27209 P2 9
I 27159 TRE L      27194 P194
I
I
I 27164 TRA I 01 27194 P1Z4
I 27169 SEL 2      0500
I 27174 WR R      27220 P220
I 27179 TRA I 03 27189 P1H9
I 27184 TR 1      27194 P194
I 27189 HLT J      0292
I 27194 TRA I 02 27099 P0R9
I 27199 TR 1      27229 P229

```

PUT PLUS ZEROS IN ACC.

RESET MEMORY FIELD

TEST STORAGE UNCHANGED

TEST MEMORY RESULT

ERROR ROUTINE

-----CC76 TO NEXT ROUTINE

```

2 006 27205      &&&00&
2 004 27209
2 004 27213      5555
2 006 27219      &&&00&
2 003 27222      292
2 001 27223      0

```

ROUTINE #293
TEST OF AAM INSTRUCTION
WITH ZONES IN BOTH STORAGE
& MEMORY. 7080 MODE

```

CC75.....
I 27229 EEM 3 14 0000 06-0
I 27234 SET B 0006
I 27239 LOD 8 27325 P325
I 27244 SET B 01 0004 00 4
I 27249 LOD 8 01 27333 P3T3
I 27254 UNL 7 01 27329 P3S9
I 27259 AAM @ 27329 P329
I 27264 SET B 0004
I 27269 LOD 8 27337 P337
I 27274 CMP 4 27329 P329
I 27279 TRE L 27314 P314
I
I
I
I 27284 TRA I 01 27314 P3/4
I 27289 SEL 2 0500
I 27294 WR R 27338 P338
I 27299 TRA I 03 27309 P369
I 27304 TR 1 27314 P314
I 27309 HLT J 0293
+ 27314 TRA I 02 27229 P2K9
  27319 TR 1 27349 P349
I
I
I
2 006 27325 ADBBCB
2 004 27329
2 004 27333 WQQB
2 004 27337 IJ/U
2 003 27340 293
2 001 27341

```

LOD STORAGE WITH ADBBCB

RESET MEMORY WITH WQQB
ADM RESULT EQUALS IJ/U

ERROR ROUTINE

CONSTANTS & WORK AREA

```

I
I
I
I 27349 EEM 3 14 0000 06-0
I 27354 SET B 0006
I 27359 LOD 8 27440 P440
I 27364 SET B 01 0004 00 4
I 27369 LOD 8 01 27444 P4U4
I 27374 UNL 7 01 27449 P4U9
I 27379 AAM @ 27449 P449
I 27384 LOD 8 01 27453 P4V3
I 27389 CMP 4 01 27449 P4U9
I 27394 TRE L 27429 P429
I
I
I
I 27399 TRA I 01 27429 P4S9
I 27404 SEL 2 0500
I 27409 WR R 27454 P454
I 27414 TRA I 03 27424 P4B4
I 27419 TR 1 27429 P429
I 27424 HLT J 0294
+ 27429 TRA I 02 27349 P3M9
  27434 TR 1 27464 P464-----CD77
I
I
2 006 27440 76----
2 004 27444 8WNU
2 005 27449
2 004 27453 865U
2 003 27456 294
2 001 27457

```

ROUTINE #294
TEST AAM INSTRUCTION
IN 7080 MODE FOR WRAP
AROUND. ASU ZONES IN STORAGE.

RESET MEMORY WITH 8WNU
AAM 76---- TO 8WNU
CMP MEMORY RESULT 865U

ERROR ROUTINE

TO NEXT ROUTINE

```

CD76.....
I 27464 EEM 3 14 0000 06-0
I 27469 SET B 0006
I 27474 LOD 8 27555 P555
I 27479 SET B 01 0004 00 4
I 27484 LOD 8 01 27559 P5V9
I 27489 UNL 7 01 27569 P5W9
I 27494 AAM @ 27569 P569
I 27499 LOD 8 27563 P563
I 27504 CMP 4 27569 P569
I 27509 TRE L 27544 P544
I
I
I
I 27514 TRA I 01 27544 P5U4
I 27519 SEL 2 0500
I 27524 WR R 27570 P570
I 27529 TRA I 03 27539 P5C9
I 27534 TR 1 27544 P544
I 27539 HLT J 0295
I 27544 TRA I 02 27464 P404
I 27549 TR 1 27579 P579
I
I
I

```

```

2 006 27555 079231
2 004 27559 &GFI
2 004 27563 &&&-
2 006 27569 FI
2 003 27572 295
2 001 27573

```

```

ROUTINE #295
TEST AAM INSTRUCTION IN
7080 MODE WITH A ZERO
IN STORAGE CHAR. 6.

&GFI IN MEMORY
AAM 079231 TO &GFI

CMP RESULT OF &&&-

```

ERROR ROUTINE

```

ROUTINE #296
TEST OF AAM INSTRUCTION
WITH A STORAGE LENGTH
OF 3. 7080 MODE

```

```

I 27579 EEM 3 14 0000 06-0
I 27584 SET B 0006
I 27589 LOD 8 27680 P680
I 27594 SET B 0003
I 27599 SET B 01 0004 00 4
I 27604 LOD 8 01 27684 P6Y4
I 27609 UNL 7 01 27689 P6Y9
I 27614 AAM @ 27689 P689
I 27619 SET B 0004
I 27624 LOD 8 27694 P694
I 27629 CMP 4 27689 P689
I 27634 TRE L 27669 P669
I
I
I
I 27639 TRA I 01 27669 P6W9
I 27644 SEL 2 0500
I 27649 WR R 27695 P695
I 27654 TRA I 03 27664 P6F4
I 27659 TR 1 27669 P669
I 27664 HLT J 0296
I 27669 TRA I 02 27579 P5P9
I 27674 TR 1 27704 P704
I
I
I

```

```

2 006 27680 179321
2 004 27684 &&&&
2 005 27689
2 005 27694 &CBA
2 003 27697 296
2 001 27698

```

LOD STORAGE WITH 179321

```

RESET MEMORY WITH &&&&
AAM RESULT EQUALS &CBA

```

ERROR ROUTINE

TO NEXT ROUTINE

ROUTINE #297
TEST OF AAM INSTRUCTION
WITH STORAGE LENGTH OF
6 IN 705 III MODE.

```

CE77.....
  27704 LEM 3 15 0000 0&&0
I 27709 SET B 0006
I 27714 LOD 8 27795 P795
I 27719 SET B 01 0004 00 4
I 27724 LOD 8 01 27799 P7Z9
I 27729 UNL 7 01 27804 P8 4
I 27734 AAM @ 27804 P804
I 27739 LOD 8 27810 P810
I 27744 CMP 4 27804 P804
I 27749 TRE L 27784 P784
I
I
I
I 27754 TRA I 01 27784 P7Y4
I 27759 SEL 2 0500
I 27764 WR R 27811 P811
I 27769 TRA I 03 27779 P7G9
I 27774 TR 1 27784 P784
I 27779 HLT J 0297
+ 27784 TRA I 02 27704 P7-4
  27789 TR 1 27819 P819
  
```

LOD STORAGE WITH 1154C2

RESET MEMORY WITH 08GF
AAM RESULT EQUALS WT-H

ERROR ROUTINE

- 2 006 27795 1154C2
- 2 004 27799 08GF
- 2 005 27804
- 2 006 27810 F WT-H
- 2 003 27813 297
- 2 001 27814

```

  27819 LEM 3 15 0000 0&&0
I 27824 SET B 0004
I 27829 LOD 8 27909 P909
I 27834 SET B 01 0004 00 4
I 27839 LOD 8 01 27914 P9/4
I 27844 UNL 7 01 27919 P9/9
I 27849 AAM @ 27919 P919
I 27854 LOD 8 27924 P924
I 27859 CMP 4 27919 P919
I 27864 TRE L 27899 P899
I
I
I
I 27869 TRA I 01 27899 P8Z9
I 27874 SEL 2 0500
I 27879 WR R 27925 P925
I 27884 TRA I 03 27894 P8I4
I 27889 TR 1 27899 P899
I 27894 HLT J 0298
+ 27899 TRA I 02 27819 P8J9
  27904 TR 1 27934 P934
  
```

ROUTINE #298
TEST AAM INSTRUCTION
IN 705-3 MODE WITH
STORAGE LENGTH OF FOUR.

RESET MEMORY WITH C33M
AAM STORAGE FIELD IS 987W

CMP AAM RESULT EQUAL 3210

ERROR ROUTINE

TO NEXT ROUTINE

- 2 005 27909 987W
- 2 005 27914 C33M
- 2 005 27919
- 2 005 27924 3210
- 2 003 27927 298
- 2 001 27928

ROUTINE #299
TEST OF AAM INSTRUCTION
FOR A STORAGE LENGTH
OF 5, IN 705 III MODE

```

CF78.....I 27934 LEM 3 15 0000 0&&0  I
I 27939 SET B 0005  I
I 27944 LOD 8 28034 Q034  I
I 27949 SET B 01 0004 00 4  I
I 27954 LOD 8 01 28039 Q0T9  I
I 27959 UNL 7 01 28044 Q0U4  I
I 27964 AAM @ 28044 Q044  I
I 27969 LOD 8 01 28049 Q0U9  I
I 27974 CMP 4 01 28044 Q0U4  I
I 27979 TRE L 28014 Q014-  I
I .....I ..... I
I I I
I .....I ..... I
I 27984 TRA I 01 28014 Q0/4-  I
I 27989 SEL 2 0500  I
I 27994 WR R 28050 Q050  I
I 27999 TRA I 03 28009 Q0&9-  I
I 28004 TR 1 28014 Q014-  I
I 28009 HLT J 0299.....I
+---28014 TRA I 02 27934 P9L4.....I
  28019 RCV U 0306  I
  28024 TR 1 01 0204 02 4  I
  28029 TR 1 28059 Q059-  I
.....I ..... I

```

LOD STORAGE WITH 13257

RESET MEMORY WITH M678

CMP AAM RESULT OF G935

ERROR ROUTINE

-----CG80 TO NEXT ROUTINE

2	005	28034	13257
2	005	28039	M678
2	005	28044	
2	005	28049	G935
2	003	28052	299
2	001	28053	I

ROUTINE #300
TEST SET MAC 1 TO IAR
ROUTINGS USING ULA

```

CG79.....
I 28059 LEM 3 15 0000 0&G0
I 28064 SET B 0004
I 28069 LOD 8 28154 Q154
I 28074 UNL 7 6669
I 28079 SET B 0005
I 28084 LOD 8 28159 Q159
I 28089 ULA * 6669
I 28094 SET B 0004
I 28099 LOD 8 28164 Q164
I 28104 CMP 4 6669
I 28109 TRE L 28144 Q144
I
I
I
I 28114 TRA I 01 28144 Q1U4
I 28119 SEL 2 0500
I 28124 WR R 28165 Q165
I 28129 TRA I 03 28139 Q1C9
I 28134 TR 1 28144 Q144
I 28139 HLT J 0300
+ 28144 TRA I 02 28059 Q0N9
  28149 TR 1 28174 Q174
I
I
I

```

705 III MODE

RESET MEMORY FIELD

SET MAC=1 TO IAR 6669

ERROR ROUTINE

```

2 005 28154 99999
2 005 28159 51327
2 005 28164 0732P
2 003 28167 300
2 001 28168

```

ROUTINE #301
TEST SET MAC 1 TO IAR
ROUTINGS USING ULA
7080 MODE

```

I 28174 EEM 3 14 0000 0&-0
I 28179 SET B 0004
I 28184 LOD 8 28269 Q269
I 28189 UNL 7 159994 I99D
+ 28194 SET B 0005
I 28199 LOD 8 28274 Q274
I 28204 ULA * 159994 I99D
+ 28209 SET B 0004
I 28214 LOD 8 28279 Q279
I 28219 CMP 4 159994 I99D
I 28224 TRE L 28259 Q259
I
I
I
I 28229 TRA I 01 28259 Q2V9
I 28234 SEL 2 0500
I 28239 WR R 28280 Q280
I 28244 TRA I 03 28254 Q2E4
I 28249 TR 1 28259 Q259
I 28254 HLT J 0301
+ 28259 TRA I 02 28174 Q1P4
  28264 TR 1 28289 Q289
I
I

```

RESET MEMORY FIELD

SET MAC=1 TO IAR 159994

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 28269 99999
2 005 28274 69783
2 005 28279 0R78L
2 003 28282 301
2 001 28283

```

ROUTINE #302
TEST BLM 00 FOR EXECUTION
& NO OP CHECK. USE ADDRESS
OF ZERO.

```

CH80.....
      28289 RCV U      28349 Q349
I 28294 BLM $      0000
I 28299 TRS 0 10 28309 QL-9-
I 28304 TR 1      28339 Q339-
I
I
I
I 28309 TRA 1 01 28339 Q3T9-
I 28314 SEL 2      0500
I 28319 WR R      28350 Q350
I 28324 TRA 1 03 28334 Q3C4-
I 28329 TR 1      28339 Q339-
I 28334 HLT J      0303
+ 28339 TRA 1 02 28289 Q2Q9-
  28344 TR 1      28359 Q359-
      28349 RCV U      28349 Q349
I
I

```

ERROR ROUTINE

```

2 005 28349
2 003 28352      302
2 001 28353      0

```

ROUTINE #303
TEST BLM 00+ WITH ZERO
ADDRESS. FOR END OP.

```

      28359 SET B      0005
I 28364 LOD 8      28434 Q434
I 28369 UNL 7      28439 Q439
I 28374 RCV U      28439 Q439
I 28379 BLM $      0000
I 28384 CMP 4      28439 Q439
I 28389 TRE L      28424 Q424-
I
I
I 28394 TRA 1 01 28424 Q4S4-
I 28399 SEL 2      0500
I 28404 WR R      28440 Q440
I 28409 TRA 1 03 28419 Q4A9-
I 28414 TR 1      28424 Q424-
I 28419 HLT J      0303
+ 28424 TRA 1 02 28359 Q3N9-
  28429 TR 1      28449 Q449-
      28429 TR 1      28449 Q449-

```

RCV ADDRESS FOR BLM
CHECK FOR NO BLANKS

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 28434      54321
2 005 28439
2 003 28442      303
2 001 28443      0

```

ROUTINE #304
TEST BLM 00 WITH ADDRESS
0003 TO CHECK THAT IT BLANKS
A FIELD OF 15 CHARACTERS.

```

CJ81.....
I 28449 SET B 0015
I 28454 LOD 8 28539 Q539
I 28459 UNL 7 28554 Q554
I 28464 RCV U 28544 Q544
I 28469 BLM $ 0003
I 28474 LOD 8 28569 Q569
I 28479 CMP 4 28554 Q554
I 28484 TRE L 28519 Q519
I
I
I
I 28489 TRA I 01 28519 Q5/9
I 28494 SEL 2 0500
I 28499 WR R 28570 Q570
I 28504 TRA I 03 28514 Q5A4
I 28509 TR 1 28519 Q519
I 28514 HLT J 0304
+ 28519 TRA I 02 28449 Q4M9
  28524 TR 1 28579 Q579
I
I
I

```

CHECK MEMORY FOR BLANKS

ERROR ROUTINE

```

2 015 28539 ABCDE6789303742
2 015 28554
2 015 28569
2 003 28572 304
2 001 28573

```

ROUTINE #305
TEST BLM 01 FOR END OP
ON ZERO ADDRESS.

```

I
I
I 28579 SET B 0005
I 28584 LOD 8 28654 Q654
I 28589 UNL 7 28659 Q659
I 28594 RCV U 28655 Q655
I 28599 BLM $ 01 0000 00-0
I 28604 CMP 4 28659 Q659
I 28609 TRE L 28644 Q644
I
I
I
I 28614 TRA I 01 28644 Q6U4
I 28619 SEL 2 0500
I 28624 WR R 28660 Q660
I 28629 TRA I 03 28639 Q6C9
I 28634 TR 1 28644 Q644
I 28639 HLT J 0305
+ 28644 TRA I 02 28579 Q5P9
  28649 TR 1 28669 Q669
I
I
I

```

CHECK FOR NO BLANKS

ERROR ROUTINE

```

2 005 28654 98765
2 005 28659
2 003 28662 305
2 001 28663

```

TO NEXT ROUTINE

ROUTINE #306
TEST BLM 01 WITH ADDRESS
0015 TO CHECK THAT IT BLANKS
A FIELD OF 15 CHARACTERS.

```

CK82.....
I 28669 SET B 0015
I 28674 LOD 8 28769 Q769
I 28679 UNL 7 28799 Q799
I 28684 RCV U 28785 Q785
I 28689 BLM $ 01 0015 00/5
I 28694 LOD 8 28784 Q784
I 28699 CMP 4 28799 Q799
I 28704 TRE L 28739 Q739
I
I
I
I 28709 TRA I 01 28739 Q7T9
I 28714 SEL 2 0500
I 28719 WR R 28800 Q800
I 28724 TRA I 03 28734 Q7C4
I 28729 TR 1 28739 Q739
I 28734 HLT J 0306
+ 28739 TRA I 02 28669 Q609
  28744 RCV U 0306
  28749 TR 1 01 0204 02 4
  28754 TR 1 28809 Q809
I
I
I

```

CHECK MEMORY FOR BLANKS

ERROR ROUTINE

```

2 015 28769 ABCDE5432198760
2 015 28784
2 015 28799
2 003 28802 306
2 001 28803

```

ROUTINE #307
TEST LO SPEED TMT FOR
EXECUTION & NO OP CHK.

```

I 28809 SET B 01 0001 00 1
I 28814 RCV U 28870 Q870
I 28819 TMT 9 01 28879 Q8X9
I 28824 TRS 0 10 28834 QQL4
I 28829 TR 1 28864 Q864
I
I
I
I 28834 TRA I 01 28864 Q8W4
I 28839 SEL 2 0500
I 28844 WR R 28880 Q880
I 28849 TRA I 03 28859 Q8E9
I 28854 TR 1 28864 Q864
I 28859 HLT J 0307
+ 28864 TRA I 02 28809 Q8-9
  28869 TR 1 28889 Q889-----CL84
I
I
I

```

TEST INSTRUCTION

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 28874 ABCDE
2 005 28879 307
2 003 28882
2 001 28883

```

ROUTINE #308
TEST LO SPEED TMT FOR
TRANSMISSION OF CHARACTERS
WITH NO NUMERIC PARTS.

```

CL83.....  28889 SET B      0005
I  28894 LOD 8      28974 Q974
I  28899 UNL 7      28979 Q979
I  28904 SET B 01   0003 00 3
I  28909 RCV U      28976 Q976
I  28914 TMT 9 01  28981 Q9Y1
I  28919 LOD 8      28984 Q984
I  28924 CMP 4      28979 Q979
I  28929 TRE L      28964 Q964
I  28934 TRA I 01  28964 Q9W4
I  28939 SEL 2      0500
I  28944 WR R      28985 Q985
I  28949 TRA I 03  28959 Q9E9
I  28954 TR 1      28964 Q964
I  28959 HLT J      0308
+ 28964 TRA I 02  28889 Q8Q9
  28969 TR 1      28994 Q994

```

RESET RCV AREA

CHECK RCV AREA

ERROR ROUTINE

```

2 005 28974      00000
2 005 28979
2 005 28984      0 -G0
2 003 28987      308
2 001 28988      0

```

ROUTINE #309
TEST LO SPEED TMT WITH
ASU 10 FOR STEP
MAC I &1 & STEP MAC II &1.

```

.. 28994 LEM 3 15   0000 0&G0
I  28999 SET B 15   0005 0&G5
I  29004 LOD 8 15   0004 0&G4
I  29009 RCV U      79999 199R
I  29014 BLM $      0001
I  29019 SET B 10   0004 0--4
I  29024 RCV U      79999 199R
I  29029 TMT 9 10  79998 IRRQ
I  29034 SET B      0004
I  29039 LOD 8      0002
I  29044 CMP 4      29098 R098
I  29049 UNL 7 15   0004 0&G4
I  29054 TRE L      29089 R089
I  29059 TRA I 01  29089 R0Y9
I  29064 SEL 2      0500
I  29069 WR R      29099 R099
I  29074 TRA I 03  29084 R0H4
I  29079 TR 1      29089 R089
I  29084 HLT J      0309
+ 29089 TRA I 02  28994 Q9R4
  29094 TR 1      29109 R109

```

SAVE ORIGINAL 0004 FIELD

RESET TMT FIELD AT 79999

RCV AT 79999
TMT 4 BLANKS FROM 79998

PUT 0004 FIELD BACK

ERROR ROUTINE

-----CM85 TO NEXT ROUTINE

```

2 004 29098
2 003 29101      309
2 001 29102      0

```

ROUTINE #310
TEST LO SPEED TMT
WITH ASU 01 FOR
END OP ON STORAGE MARK.

```

CM84.....
I 29109 SET B      0005
I 29114 LOD 8     29199 R199
I 29119 UNL 7     29204 R204
I 29124 SET B 01  0002 00 2
I 29129 RCV U     29203 R203
I 29134 TMT 9 01  29208 R2 8
I 29139 SET B     0005
I 29144 LOD 8     29207 R207
I 29149 CMP 4     29214 R214
I 29154 TRE L     29189 R189
I .....
I .....
I .....
I 29159 TRA I 01  29189 R1Y9
I 29164 SEL 2     0500
I 29169 WR R      29215 R215
I 29174 TRA I 03  29184 R1H4
I 29179 TR 1      29189 R189
I 29184 HLT J      0310
+---29189 TRA I 02  29109 R1-9
  29194 TR 1      29224 R224
I .....
I .....
I .....

```

RESET RCV AREA
TMT TWO CHARACTERS
CHECK RCV AREA
ERROR ROUTINE
TO NEXT ROUTINE

```

2 005 29199      00000
2 005 29204
2 005 29209      91
2 005 29214      91
2 003 29217      310
2 001 29218

```

ROUTINE #311
TEST LO SPEED TMT
WITH ASU 12 FOR STEP
MAC I &1 & STEP MAC II
&1 AT 159999.

```

I 29224 EEM 3 14  0000 00-0
I 29229 SET B 10  0005 0--5
I 29234 LOD 8 10  0004 0--4
I 29239 RCV U     159999 1991
I 29244 BLM $     0001
I 29249 SET B 12  0005 0005
I 29254 RCV U     159999 1991
I 29259 TMT 9 12  159996 119F
I 29264 SET B     0005
I 29269 LOD 8     0003
I 29274 CMP 4     29329 R329
I 29279 UNL 7 10  0004 0--4
I 29284 TRE L     29319 R319
I .....
I .....
I .....
I 29289 TRA I 01  29319 R3/9
I 29294 SEL 2     0500
I 29299 WR R      29330 R330
I 29304 TRA I 03  29314 R3A4
I 29309 TR 1      29319 R319
I 29314 HLT J      0311
+---29319 TRA I 02  29224 R2K4
  29324 TR 1      29339 R339
I .....

```

SAVE ORIGINAL 0004 FIELD
RESET TMT FIELD AT 159999
RCV AT 159999
TMT 5 BLANKS FROM 159996
PUT 0004 FIELD BACK
ERROR ROUTINE
TO NEXT ROUTINE

```

2 005 29329
2 003 29332      311
2 001 29333

```

ROUTINE #312
TEST TMT 00 FOR TRANSMISSION
OF CHARACTERS WITH ZONES ONLY

```

CN85.....
I 29339 SET B 0005
I 29344 LOD 8 29419 R419
I 29349 UNL 7 29424 R424
I 29354 RCV U 29424 R424
I 29359 TMT 9 29429 R429
I 29364 LOD 8 29429 R429
I 29369 CMP 4 29424 R424
I 29374 TRE L 29409 R409
I
I
I
I
I 29379 TRA I 01 29409 R4 9
I 29384 SEL 2 0500
I 29389 WR R 29430 R430
I 29394 TRA I 03 29404 R464
I 29399 TR 1 29409 R409
I 29404 HLT J 0312
I 29409 TRA I 02 29339 R3L9
I 29414 TR 1 29439 R439
I
I
I

```

RESET RCV AREA

CHECK RCV AREA

ERROR ROUTINE

```

2 005 29419 00000
2 005 29424
2 004 29428 G-
2 001 29429 #
2 003 29432 312
2 001 29433

```

ROUTINE #313
TEST TMT 00 FOR STEP
MAC I I &5 AT 79999. CHECK
FOR STEP MAC I &5.

```

I 29439 LEM 3 15 0000 0660
I 29444 SET B 14 0005 06-5
I 29449 LOD 8 14 0004 06-4
I 29454 UNL 7 14 79999 IIRR
I 29459 RCV U 79999 199R
I 29464 TMT 9 29534 R534
I 29469 SET B 0010
I 29474 LOD 8 29539 R539
I 29479 CMP 4 0004
I 29484 UNL 7 14 0004 06-4
I 29489 TRE L 29524 R524
I
I
I
I
I 29494 TRA I 01 29524 R5S4
I 29499 SEL 2 0500
I 29504 WR R 29540 R540
I 29509 TRA I 03 29519 R5A9
I 29514 TR 1 29524 R524
I 29519 HLT J 0313
I 29524 TRA I 02 29439 R4L9
I 29529 TR 1 29549 R549
I
I

```

SAVE ORIGINAL 0004 FIELD
RESET RCV AREA

PUT 0004 FIELD BACK

ERROR ROUTINE

TO NEXT ROUTINE

```

2 009 29538 AB98CD76N
2 001 29539 #
2 003 29542 313
2 001 29543

```

ROUTINE #314
TEST TMT 00 FOR STEP
MAC I1 &5 AT 159999. CHECK
FOR STEP MAC I &5

```

CP86..... 29549 EEM 3 14 0000 06-0 0
I 29554 SET B 11 0005 0-65 0
I 29559 LOD 8 11 0004 0-64 0
I 29564 UNL 7 11 159999 IRII 0
I 29569 RCV U 159999 1991 0
I 29574 TMT 9 29654 R654 0
I 29579 SET B 0010 0
I 29584 LOD 8 29659 R659 0
I 29589 CMP 4 0004 0
I 29594 UNL 7 11 0004 0-64 0
I 29599 TRE L 29634 R634-#---
I
I
I 29604 TRA I 01 29634 R6T4-#---
I 29609 SEL 2 0500 0 I
I 29614 WR R 29660 R660 0 I
I 29619 TRA I 03 29629 R6B9-#---
I 29624 TR 1 29634 R634-#---
I 29629 HLT J 0314.....#..I
+---29634 TRA I 02 29549 R5M9.#...I
  29639 RCV U 0306 0
  29644 TR 1 01 0204 02 4 0
  29649 TR 1 29669 R669-#---
I
I
I

```

SAVE ORIGINAL 0004 FIELD
RESET RCV AREA

PUT 0004 FIELD BACK

ERROR ROUTINE

```

2 009 29658 EV&0&J-GR
2 001 29659 #
2 003 29662 314
2 001 29663 0

```

ROUTINE #315
TEST SND FOR EXECUTION
& NO OP CHECK.

```

..... 29669 LEM 3 15 0000 06&0.#..I
I 29674 SET B 0001 0
I 29679 RCV U 29739 R739 0
I 29684 SND / 29744 R744 0
I 29689 TRS 0 10 29699 ROR9-#---
I 29694 TR 1 29729 R729-#---
I
I
I 29699 TRA I 01 29729 R7S9-#---
I 29704 SEL 2 0500 0 I
I 29709 WR R 29745 R745 0 I
I 29714 TRA I 03 29724 R7B4-#---
I 29719 TR 1 29729 R729-#---
I 29724 HLT J 0315.....#..I
+---29729 TRA I 02 29669 R609.#...I
  29734 TR 1 29754 R754-#-----CQ88
I
I
I

```

TEST INSTRUCTION

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 29739 6- 96
2 005 29744 315
2 003 29747 0
2 001 29748

```


ROUTINE #316
TEST SND FOR STEP MAC I
& MAC II &5

```

CQ87.....
I 29754 EEM 3 14 0000 0G-0
I 29759 SET B 0015
I 29764 LOD 8 29874 R874
I 29769 UNL 7 29889 R889
I 29774 SET B 0003
I 29779 RCV U 29879 R879
I 29784 SND / 29849 R849
I 29789 SET B 0015
I 29794 LOD 8 29859 R859
I 29799 CMP 4 29889 R889
I 29804 TRE L 29839 R839
I
I
I 29809 TRA I 01 29839 R8T9
I 29814 SEL 2 0500
I 29819 WR R 29890 R890
I 29824 TRA I 03 29834 R8C4
I 29829 TR 1 29839 R839
I 29834 HLT J 0316
+ 29839 TRA I 02 29754 R7N4
  29844 TR 1 29899 R899
I
I
I

```

RESET RCV AREA

CHECK RCV AREA

ERROR ROUTINE

```

2 015 29859 9650G -1638IJ/O
2 015 29874 0000000000000000
2 015 29889
2 003 29892 316
2 001 29893

```

ROUTINE #317
TEST SND FOR END OP
ON SM WITH A STORAGE
LENGTH OF ZERO.

```

I
I 29899 EEM 3 14 0000 0G-0
I 29904 SET B 0005
I 29909 LOD 8 29994 R994
I 29914 UNL 7 29999 R999
I 29919 SET B 0000
I 29924 RCV U 29999 R999
I 29929 SND / 30004 G004
I 29934 SET B 0005
I 29939 LOD 8 29999 R999
I 29944 CMP 4 29994 R994
I 29949 TRE L 29984 R984
I
I
I 29954 TRA I 01 29984 R9Y4
I 29959 SEL 2 0500
I 29964 WR R 30005 G005
I 29969 TRA I 03 29979 R9G9
I 29974 TR 1 29984 R984
I 29979 HLT J 0317
+ 29984 TRA I 02 29899 R8R9
  29989 TR 1 30014 G014-----CR89
I
I

```

SET RCV AREA

CHK RCV AREA

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 29994 UUUUU
2 005 29999 33333
2 005 30004 317
2 003 30007
2 001 30008

```

ROUTINE #318
TEST SND FOR STEP
MAC I &5 AT 79999.

```

CR88.....  30014 LEM 3 15 0000 0&&0  0
I  30019 SET B 08 0005 0-05  0
I  30024 LOD 8 08 0004 0-04  0
I  30029 UNL 7 08 30144 &J44  0
I  30034 SET B 0010  0
I  30039 LOD 8 30134 &134  0
I  30044 UNL 7 0004  0
I  30049 SET B 0002  0
I  30054 RCV U 30139 &139  0
I  30059 SND / 79999 199R  0
I  30064 SET B 0010  0
I  30069 LOD 8 30134 &134  0
I  30074 CMP 4 30144 &144  0
I  30079 UNL 7 08 0004 0-04  0
I  30084 TRE L 30119 &119-  0
I  30089 TRA I 01 30119 &119-  0
I  30094 SEL 2 0500  0
I  30099 WR R 30145 &145  0
I  30104 TRA I 03 30114 &114-  0
I  30109 TR I 30119 &119-  0
I  30114 HLT J 0318.....  0
+ 30119 TRA I 02 30014 &014-  0
  30124 TR I 30154 &154-  0

```

SAVE ORIGINAL 0004 FIELD
RESET RCV AREA

PUT SND FIELD AT 0004

PUT ORIGINAL FIELD BACK

ERROR ROUTINE

-----CS90 TO NEXT ROUTINE

```

2 010 30134      &- &-ARW4
2 010 30144
2 003 30147
2 001 30148      318

```

ROUTINE #319
TEST SND FOR STEP
MAC I &5 AT 159999.

```

CS89.....I 30154 EEM 3 14 0000 06-0 0
I 30159 SET B 09 0005 0- 5 0
I 30164 LOD 8 09 0004 0- 4 0
I 30169 UNL 7 09 30284 &KY4 0
I 30174 SET B 0010 0
I 30179 LOD 8 30274 &274 0
I 30184 UNL 7 0004 0
I 30189 SET B 0002 0
I 30194 RCV U 30279 &279 0
I 30199 SND / 159999 1991 0
I 30204 SET B 0010 0
I 30209 LOD 8 30274 &274 0
I 30214 CMP 4 30284 &284 0
I 30219 UNL 7 09 0004 0- 4 0
I 30224 TRE L 30259 &259 0
I .....I .....I
I .....I .....I
I 30229 TRA I 01 30259 &2V9 0
I 30234 SEL 2 0500 0
I 30239 WR R 30285 &285 0
I 30244 TRA I 03 30254 &2E4 0
I 30249 TR I 30259 &259 0
I 30254 HLT J 0319.....0
+---30259 TRA I 02 30154 &1N4.....0
  30264 TR I 30294 &294-----CT91
.....

```

SAVE ORIGINAL 0004 FIELD
RESET RCV AREA

PUT SND FIELD AT 0004

PUT ORIGINAL FIELD BACK

ERROR ROUTINE

TO NEXT ROUTINE

```

2 010 30274
2 010 30284
2 003 30287
2 001 30288

```

```

SRWA-& -&
319
0

```

ROUTINE #320
TEST SND CHK MEMORY FOR
EXECUTION & NO OP CHK.

```

CT90.....
#####
I .30294 RWW S      19994 Z994  □
I □ 30299 SND /      19994 Z994  □
I □ 30304 TRS 0 10 30314 &LJ4-□-□
I □ 30309 TR  1      30344 &344-□-□
I ##### II
I I
I ##### II
I □ 30314 TRA I 01 30344 &3U4-□-□
I □ 30319 SEL 2      0500      □ I
I □ 30324 WR  R      30350 &350  □ I
I □ 30329 TRA I 03 30339 &3C9-□-□
I □ 30334 TR  1      30344 &344-□-□
I □ 30339 HLT J      0320.....□ I
I □ 30344 TRA I 02 30294 &2R4.□.□
I □ 30349 TR  1      30359 &359-□-□
I ##### I
I I
I I

```

ERROR ROUTINE

```

2 003 30352      320
2 001 30353      □

```

ROUTINE #321
TEST SND CHK MEMORY
TO CHECK THAT NO TRANSMISSION
OF DATA TAKES PLACE.

```

##### I
. .30359 SET B      0010.....□
I □ 30364 LOD 8      30459 &459  □
I □ 30369 UNL 7      30469 &469  □
I □ 30374 LOD 8      30479 &479  □
I □ 30379 UNL 7      19999 Z999  □
I □ 30384 SET B 01  0002 00 2  □
I □ 30389 RWW S      30464 &464  □
I □ 30394 SND / 01  19994 Z9Z4  □
I □ 30399 LOD 8      30469 &469  □
I □ 30404 CMP 4      30459 &459  □
I □ 30409 TRE L      30444 &444-□-□
I ##### I
I I
I ##### I
I □ 30414 TRA I 01 30444 &4U4-□-□
I □ 30419 SEL 2      0500      □ I
I □ 30424 WR  R      30480 &480  □ I
I □ 30429 TRA I 03 30439 &4C9-□-□
I □ 30434 TR  1      30444 &444-□-□
I □ 30439 HLT J      0321.....□ I
I □ 30444 TRA I 02 30359 &3N9.□.□
I □ 30449 TR  1      30489 &489-□-□
I #####

```

RESET RCV AREA

SET UP A FIELD AT 19999

CHK RCV AREA

ERROR ROUTINE

TO NEXT ROUTINE

```

2 010 30459      0000000000
2 010 30469      1234567890
2 010 30479      321
2 003 30482      □
2 001 30483

```

ROUTINE #322
TEST SND CHK MEMORY
TO CHECK FOR TF OF RWW
TGR ON SND.

```

CU91..... 30489 RWW S      19994 Z994  □
I  30494 SND /      19994 Z994  □
I  30499 SET B        0005      □
I  30504 LOD 8      30599 6599  □
I  30509 UNL 7      30604 6604  □
I  30514 SET B        0001      □
I  30519 RCV U      30604 6604  □
I  30524 SND /      30609 6609  □
I  30529 SET B        0005      □
I  30534 LOD 8      30609 6609  □
I  30539 CMP 4      30604 6604  □
I  30544 TRE L      30579 6579  □
I  ##### I ##### I
I
I  ##### I ##### I
I  30549 TRA I 01 30579 65X9-  □
I  30554 SEL 2        0500      □
I  30559 WR  R      30610 6610  □
I  30564 TRA I 03 30574 6564-  □
I  30569 TR  1      30579 6579  □
I  30574 HLT J        0322.....  □
I  30579 TRA I 02 30489 64Q9-  □
I  30584 RCV U        0306      □
I  30589 TR  1 01  0204 02 4  □
I  30594 TR  1      30619 6619-  □
I  ##### I ##### I

```

SHOULD TF RWW TRIGGER

RESET RCV AREA

CHECK RCV AREA

ERROR ROUTINE

CV93 TO NEXT ROUTINE

```

2 005 30599      00000
2 005 30604
2 005 30609      6- 96
2 003 30612      322
2 001 30613      □

```

```

CV92.....
I 30619 EEM 3 14 0000 06-0
I 30624 SET B 0000
I 30629 SET B 0010
I 30634 UNL 7 30729 6729
I 30639 RCV U 30729 6729
I 30644 TCT 08 30719 6P19
I 30649 TRS 0 10 30674 6OP4
I 30654 TRS 0 11 30674 6OG4
I 30659 LOD 8 30719 6719
I 30664 CMP 4 30729 6729
I 30669 TRE L 30704 6704

```

ROUTINE #323
EXECUTE TCT AND TEST 900
AND 901. FIELD IS 111112222

```

I 30674 TRA I 01 30704 67 4
I 30679 SEL 2 0500
I 30684 WR R 30730 6730
I 30689 TRA I 03 30699 6619
I 30694 TR 1 30704 6704
I 30699 HLT J 0323
-30704 TRA I 02 30619 66J9
 30709 TR 1 30739 6739

```

ERROR ROUTINE

```

2 009 30718 111112222
2 001 30719 #
2 010 30729 0000000000 RCV FIELD
2 003 30732 323
2 001 30733

```

```

I 30739 EEM 3 14 0000 06-0
I 30744 RCV U 30829 6829
I 30749 EIA 10 0000 0-0
I 30754 TCT 08 30764 6P64
I 30759 NOP A 0000
I 30764 NOP A 30829 6829
I 30769 TRS 0 10 30784 6PQ4
I 30774 TZB 03 30784 67H4
I 30779 TZB 05 30814 6Y/4
I 30784 TRA I 01 30814 68/4
I 30789 SEL 2 0500
I 30794 WR R 30830 6830
I 30799 TRA I 03 30809 6869
I 30804 TR 1 30814 6814
I 30809 HLT J 0324
-30814 TRA I 02 30739 67L9
 30819 TR 1 30844 6844

```

ROUTINE #324
TEST TCT WITH INDIRECT
ADDRESS. TEST MAC-2 STEP
PLUS 10 ON TCT.

TEST 900
TEST MAC11 STEP PLUS 10

ERROR ROUTINE

```

2 009 30828 111122222
2 001 30829 #
2 003 30832 324
2 001 30833
2 006 30839 444444

```

TO NEXT ROUTINE

```

CW93..... 30844 EEM 3 14 0000 06-0 0
I 30849 SET B 0000 0
I 30854 SET B 0030 0
I 30859 UNL 7 30989 6989 0
I 30864 SB % 13 30969 61W9 0
I 30869 RCV U 30969 6969 0
I 30874 TCT 08 30939 6R39 0
I 30879 LOD 8 30959 6959 0
I 30884 CMP 4 30989 6989 0
I 30889 TRE L 30924 6924 0
I 30894 TRA 1 01 30924 69S4 0
I 30899 SEL 2 0500 0
I 30904 WR R 30990 6990 0
I 30909 TRA 1 03 30919 69A9 0
I 30914 TR 1 30924 6924 0
I 30919 HLT J 0325..... 0
+ 30924 TRA 1 02 30844 68M4..... 0
  30929 TR 1 30999 6999 0

```

ROUTINE #325
 TEST TCT USING A 30
 CHARACTER FIELD.
 MAKE A RECORD MK IN RCV AREA

ERROR ROUTINE

-----CX95 TO NEXT ROUTINE

```

2 004 30933
2 001 30934
2 024 30958
2 001 30959
2 030 30989
2 003 30992
2 001 30993

```

```

AAAA
#
-----GGGGGZZZZ#####NNNN TCT FIELD
#
RCV FIELD
325
0

```


ROUTINE #327
TEST STEP IC 80K ON
IN 7080 MODE.

```

CY95..... 31174 EEM 3 14 0000 0G-0
I 31179 SET B 0005
I 31184 LOD 8 31204 A204
I 31189 UNL 7 79999 I99R
I 31194 RCV U 31266 A266
I 31199 TR 1 79999 I99R
I 31204 TR 1 01 31209 A2 9-

```

PUT TR 01 IN 79999
TRANSFER TO 79999

```

I 31209 LOD 8 31264 A264
I 31214 CMP 4 31269 A269
I 31219 TRE L 31254 A254
I 31224 TRA I 01 31254 A2V4
I 31229 SEL 2 0500
I 31234 WR R 31270 A270
I 31239 TRA I 03 31249 A2D9
I 31244 TR 1 31254 A254
I 31249 HLT J 0327
+ 31254 TRA I 02 31174 A1P4
  31259 TR 1 31279 A279

```

ERROR ROUTINE

```

2 005 31264 0000U
2 005 31269 0 RCV AREA
2 003 31272 327
2 001 31273 0

```

ROUTINE #328
TEST WRAP AROUND OF IC
FROM 79999 TO 00004 IN
705-3 MODE.

```

.. 31279 LEM 3 15 0000 0G&0
I 31284 SET B 0005
I 31289 LOD 8 31309 A309
+ 31294 UNL 7 79999 I99R
I 31299 RCV U 31371 A371
I 31304 TR 1 79999 I99R
I 31309 TR 1 01 31314 A374
I 31314 LOD 8 31369 A369
I 31319 CMP 4 31374 A374
I 31324 TRE L 31359 A359
I 31329 TRA I 01 31359 A3V9
I 31334 SEL 2 0500
I 31339 WR R 31375 A375
I 31344 TRA I 03 31354 A3E4
I 31349 TR 1 31359 A359
I 31354 HLT J 0328
+ 31359 TRA I 02 31279 A2P9
  31364 TR 1 31384 A384

```

PUT TR 01 IN 79999
TRANSFER TO 79999

ERROR ROUTINE

```

2 005 31369 00004
2 005 31374 0 RCV AREA
2 003 31377 328
2 001 31378 0

```

TO NEXT ROUTINE

ROUTINE #329
TEST WRAP AROUND OF IC
FROM 159999 TO 00004
IN 7080 MODE.

```

CZ96..... 31384 EEM 3 14 0000 06-0 0
I 31389 SET B 0005 0
I 31394 LOD 8 31414 A414 0
I 31399 UNL 7 159999 1991 0
I 31404 RCV U 31486 A486 0
I 31409 TR 1 159999 1991 0
I 31414 TR 1 01 31419 A4/9-0-0
I
I
I 31419 LOD 8 31484 A484-0-0
I 31424 CMP 4 31489 A489 0
I 31429 TRE L 31464 A464-0-0
I
I
I 31434 TRA I 01 31464 A4W4-0-0
I 31439 SEL 2 0500 0
I 31444 WR R 31490 A490-0
I 31449 TRA I 03 31459 A4E9-0-0
I 31454 TR 1 31464 A464-0-0
I 31459 HLT J 0329.....0-0
I 31464 TRA I 02 31384 A3Q4-0-0
I 31469 RCV U 0306 0
I 31474 TR 1 01 0204 02-4 0
I 31479 TR 1 31564 A564 0

```

PUT TR 01 AT 159999
TRANSFER TO 159999

ERROR ROUTINE

TO NEXT ROUTINE

2 005 31484	00004	
2 005 31489	0	RCV AREA
2 003 31492	329	
2 001 31493	0	



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ROUTINE #340
EXECUTE CHR, EIM, LIM
AND TEST 900, 901.

```

#####
..# 31564 NQP A 37294 G294-#-----AH33
I #####
I
I #####
I # 31569 EEM 3 14 0000 06-0 #
I # 31574 CHR 3 13 0000 0& 0 #
I # 31579 EIM , 06 0000 0 -0 #
I # 31584 LIM , 07 0000 0 &0 #
I # 31589 TRS 0 10 31604 A0-4-#-#
I # 31594 TRS 0 11 31604 A0&4-#-#
I # 31599 TR 1 31634 A634-#-#
I #####
I
I #####
I # 31604 TRA I 01 31634 A6T4-#-#
I # 31609 SEL 2 0500 # I
I # 31614 WR R 31650 A650 # I
I # 31619 TRA I 03 31629 A6B9-#-#
I # 31624 TR 1 31634 A634-#-#
I # 31629 HLT J 0340.....#..!
I # 31634 TRA I 02 31564 A504.....#..!
I # 31639 RCV U 0306 #
I # 31644 TR 1 01 0204 02 4 #
I # 31649 TR 1 31659 A659-#-----A02
#####

```

SW-BYPASS IF CHAN. OPERATION

EXECUTE CHR
EIM AND
LIM
TEST 900
TEST 901

ERROR ROUTINE

TO NEXT ROUTINE

2 003 31652
2 001 31653

340
#

ROUTINE #341
EXECUTE LIP 0009, TEST ALL
CHECK TRIGGERS FOR OFF
AFTER LIP. ERROR SWITCH
IS IN CASE IC SETS WRONG TO WR

```

A01..... 31659 EEM 3 14 0000 06-0
I 31664 NOP A 31759 A759
I 31669 SPC , 3700
I 31674 SET B 0008
I 31679 LOD B 31812 A812
I 31684 SET B 0032
I 31689 SPC , 0000
I
I
I
I 31694 SGN T 31660 A660
I 31699 LIP , 15 0009 0&69
I 31704 TR 1 31759 A759
I
I
I 31709 TRS 0 10 31759 APN9
I 31714 TRS 0 11 31759 APE9
I 31719 TRS 0 12 31759 AG59
I 31724 TRS 0 13 31759 AGV9
I 31729 TRS 0 14 31759 AGN9
I 31734 TRS 0 15 31759 AGE9
I 31739 TRA I 31759 A759
I
I
I 31744 SB % 13 31660 AFW0
I 31749 SB % 14 31660 AF00
I 31754 TR 1 31799 A799
I 31759 SB % 13 31660 AFW0
I 31764 SB % 14 31660 AF00
I
I
I 31769 TRA I 01 31799 A7Z9
I 31774 SEL 2 0500
I 31779 WR R 31813 A813
I 31784 TRA I 03 31794 A714
I 31789 TR 1 31799 A799
I 31794 HLT J 0341
+ 31799 TRA I 02 31659 A6N9
  31804 TR 1 31824 A824

```

SWITCH- TR IF ERROR IN SET IC
ON LAST PASS.
LOD IC AND STATUS -G-- IN CASU
15, ZEROS IN REST OF CASU 15

SET SW TO TR
ON LIP-GO TO TEST 900 CHK
ERROR

ERROR
ERROR
ERROR
ERROR
ERROR
ERROR
ERROR

RESET SWITCH
ON GOOD

RESET SWITCH
ON ERROR

ERROR ROUTINE

-----B03 TO NEXT ROUTINE

```

2 004 31808 -G-- STATUS FOR LIP
3 31812 31709 A709 IC FOR LIP
2 003 31815 341
2 001 31816

```

ROUTINE #342
DO LIP 0009 TO TEST SET
IC 9999 FROM WR.
ERROR SWITCH IS IN CASE
IC DOES NOT SET CORRECTLY.

```

B02..... 31824 EEM 3 14 0000 06-0
I 31829 NOP A 31909 A909
I 31834 SPC 3700
I 31839 SET B 0005
I 31844 LOD 8 31884 A884
I 31849 UNL 7 9999
I 31854 SET B 0008
I 31859 LOD 8 31962 A962
I 31864 SET B 0032
I 31869 SPC 0000
I
I
I 31874 SGN T 31825 A825
I 31879 LIP 15 0009 06-9
I 31884 TR 1 31889 A889
I
I
I 31889 SPC 0000
I 31894 SB % 13 31825 AHS5
I 31899 SB % 14 31825 AHK5
I 31904 TR 1 31949 A949
I
I
I 31909 SB % 13 31825 AHS5
I 31914 SB % 14 31825 AHK5
I
I
I 31919 TRA I 01 31949 A9U9
I 31924 SEL 2 0500
I 31929 WR R 31963 A963
I 31934 TRA I 03 31944 A9D4
I 31939 TR 1 31949 A949
I 31944 HLT J 0342
+ 31949 TRA I 02 31824 A8K4
 31954 TR 1 31974 A974

```

SWITCH-TR ON ERROR IN SET IC
ON LAST PASS

LOD RETURN TRANSFER
UNL TO 9999

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

SET ERROR SWITCH
LIP TO 9999

RESET ERROR
SWITCH ON GOOD.

RESET ERROR
SWITCH ON ERROR.

ERROR ROUTINE

TO NEXT ROUTINE

2 008 31962
2 003 31965
2 001 31966

-6--9999 STATUS AND IC FOR LIP
342
□

ROUTINE #343
DO LIP 0009 TO TEST SET
IC 6664 FROM WR.
ERROR SWITCH IN CASE
IC DOES NOT SET CORRECTLY

```

C03.....  31974 EEM 3 14 0000 06-0  0
I  31979 NOP A 32059 B059-  0
I  31984 SPC , 3700  0
I  31989 SET B 0005  0
I  31994 LOD 8 32034 B034  0
I  31999 UNL 7 6664  0
I  32004 SET B 0008  0
I  32009 LOD 8 32112 B112  0
I  32014 SET B 0032  0
I  32019 SPC , 0000  0
I  32024 SGN T 31975 A975  0
I  32029 LIP + 15 0009 0669  0
I  32034 TR 1 32039 B039-  0
I  32039 SPC , 0000.....  0
I  32044 SB % 13 31975 AIX5  0
I  32049 SB % 14 31975 AIP5  0
I  32054 TR 1 32099 B099-  0
I  32059 SB % 13 31975 AIX5  0
I  32064 SB % 14 31975 AIP5  0
I  32069 TRA I 01 32099 B0Z9-  0
I  32074 SEL 2 0500  0
I  32079 WR R 32113 B113  0
I  32084 TRA I 03 32094 B014-  0
I  32089 TR 1 32099 B099-  0
I  32094 HLT J 0343.....  0
+ 32099 TRA I 02 31974 A9P4.....  0
  32104 TR 1 32124 B124-  0

```

SWITCH-TR ON ERROR IN SET IC
ON LAST PASS.

LOD RETURN TRANSFER
UNL TO 6664

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

SET ERROR SWITCH
LIP TO 6664

RESET ERROR
SWITCH ON GOOD.

RESET ERROR
SWITCH ON ERROR

ERROR ROUTINE

TO NEXT ROUTINE

2 008 32112
2 003 32115
2 001 32116

--6664 STATUS AND IC FOR LIP
343

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ROUTINE #344
DO LIP 0009 TO TEST SET
IC 159004 FROM WR.
ERROR SWITCH IN CASE
IC DOES NOT SET CORRECTLY.

```

DD4..... 32124 EEM 3 14 0000 06-0
I 32129 SPC , 0000
I 32134 SET B 01 0005 00 5
I 32139 LOD 8 01 159004 IO D
I
I
I 32144 NOP A 32229 B229
I 32149 SPC , 3700
I 32154 SET B 0005
I 32159 LOD 8 32199 B199
I 32164 UNL 7 159004 IO D
I 32169 SET B 0008
I 32174 LOD 8 32287 B287
I 32179 SET B 0032
I 32184 SPC , 0000
I
I
I 32189 SGN T 32140 B140
I 32194 LIP , 15 0009 06&9
I 32199 TR 1 32204 B204
I
I
I 32204 SPC , 0000
I 32209 UNL 7 01 159004 IO D
I 32214 SB % 13 32140 BAUO
I 32219 SB % 14 32140 BAMO
I 32224 TR 1 32274 B274
I
I
I 32229 UNL 7 01 159004 IO D
I 32234 SB % 13 32140 BAUO
I 32239 SB % 14 32140 BAMO
I
I
I 32244 TRA I 01 32274 B2X4
I 32249 SEL 2 0500
I 32254 WR R 32288 B288
I 32259 TRA I 03 32269 B2F9
I 32264 TR 1 32274 B274
I 32269 HLT J 0344
+---32274 TRA I 02 32124 B1K4
  32279 TR 1 32299 B299-----E06

```

SAVE DATA AT 159004

SWITCH-TR ON ERROR IN SET IC
ON LAST PASS

LOD RETURN TRANSFER
UNL TO 159004

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

SET ERROR SWITCH
LIP TO 159004

REPLACE DATA AT 159004.
RESET ERROR
SWITCH ON GOOD.

REPLACE DATA AT 159004.
RESET ERROR
SWITCH ON ERROR

ERROR ROUTINE

TO NEXT ROUTINE

2 008 32287
2 003 32290
2 001 32291

-&--IOOD
344
□

ROUTINE #345
DO LIP 0009 TO TEST SET
STATUS FROM WR.
STATUS IS K--D.

```

E05.....
I 32299 EEM 3 14 0000 06-0
I 32304 SPC , 3700
I 32309 SET B 0008
I 32314 LOD 8 32462 B462
I 32319 SET B 0032
I
I
I 32324 SPC , 0000
I 32329 RAD H 32470 B470
I 32334 RAD H 01 32470 B4X0
I 32339 CMP 4 01 32470 B4X0
I 32344 LIP , 15 0009 0669
I
I
I 32349 TRH K 32419 B419
I 32354 TRE L 32419 B419
I 32359 TRP M 32369 B369
I 32364 TR 1 32419 B419
I 32369 TRP M 01 32379 B3X9
I 32374 TR 1 32419 B419
I 32379 TRZ N 32389 B389
I 32384 TR 1 32419 B419
I 32389 TRZ N 01 32399 B3Z9
I 32394 TR 1 32419 B419
I 32399 LDA # 32404 B404
I 32404 NOP A 000Z
I 32409 CMP 4 32468 B468
I 32414 TRE L 32449 B449
I
I
I 32419 TRA I 01 32449 B4U9
I 32424 SEL 2 0500
I 32429 WR R 32471 B471
I 32434 TRA I 03 32444 B4D4
I 32439 TR 1 32449 B449
I 32444 HLT J 0345
I 32449 TRA I 02 32299 B2R9
I 32454 TR 1 32479 B479

```

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

ACC MINUS ON, ACC DZT OFF
ASU MINUS ON, ASU DZT OFF
HI ON, LO OFF
DO LIP AND REVERSE STATUS

TEST THAT HI IS OFF
AND LO IS ON
TEST ACC PLUS
ERROR
TEST ASU PLUS
ERROR
TEST ACC ZERO
ERROR
TEST ASU ZERO.
ERROR
TEST 7080 MODE OFF
USING LDA

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 32458      K--D STATUS BITS
3      32462      IC
2 008 32470      X00009-J
2 003 32473      345
2 001 32474      □

```

ROUTINE #346
DO LIP 0009 TO TEST SET
STATUS FROM WR.
STATUS IS JG-L.

```

F06..... 32479 EEM 3 14 0000 0G-0
I 32484 SPC , 3700
I 32489 SET B 0008
I 32494 LOD 8 32627 B627
I 32499 SET B 0032
I
I
I 32504 SPC , 0000
I 32509 RAD H 32629 B629
I 32514 RAD H 01 32629 B6S9
I 32519 CMP 4 01 32630 B6T0
I 32524 LIP , 15 0009 0G&9
I 32529 NOP A 0000
I
I
I 32534 TRE L 32584 B584
I 32539 TRH K 32549 B549
I 32544 TR 1 32584 B584
I 32549 TRP M 32584 B584
I 32554 TRP M 01 32584 B5Y4
I 32559 TRZ N 32584 B584
I 32564 TRZ N 01 32584 B5Y4
I 32569 CNO , 11 0000 0-G0
I 32574 TRS 0 10 32584 BNQ4
I 32579 TR 1 32614 B614
I
I
I 32584 TRA I 01 32614 B6/4
I 32589 SEL 2 0500
I 32594 WR R 32631 B631
I 32599 TRA I 03 32609 B6&9
I 32604 TR 1 32614 B614
I 32609 HLT J 0346
I 32614 TRA I 02 32479 B4P9
I 32619 TR 1 32639 B639
I
I

```

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

ACC PLUS AND ZERO
ASU PLUS AND ZERO
HI OFF AND LO ON.
LIP TO REVERSE STATUS, 7080
MODE IS NOT REVERSED.

TEST THAT
HI IS ON AND LO IS OFF

TEST ACC MINUS
TEST ASU MINUS
TEST ACC DZT OFF
TEST ASU DZT OFF
TEST 7080 MODE ON

ERROR ROUTINE

-----G08 TO NEXT ROUTINE

2	004	32623		JG-L	STATUS FOR LIP
3		32627	32529 B529		IC FOR LIP
2	003	32630		*&9	
2	003	32633		346	
2	001	32634		□	

ROUTINE #347
TEST LIP 0009 FOR NO
STORING OF IC AND STATUS.

```

G07..... 32639 EEM 3 14 0000 06-0
I 32644 SPC , 3700
I 32649 SET B 0008
I 32654 LOD 8 32742 B742
I 32659 SET B 0032
I
I
I 32664 SPC , 0000
I 32669 SET B 0000
I 32674 SET B 0008
I 32679 LIP , 15 0009 0689
I 32684 SPC , 0000
I 32689 SET B 0008
I 32694 TRZ N 32729 B729
I
I
I 32699 TRA I 01 32729 B7S9
I 32704 SEL 2 0500
I 32709 WR R 32743 B743
I 32714 TRA I 03 32724 B7B4
I 32719 TR I 32729 B729
I 32724 HLT J 0347
I 32729 TRA I 02 32639 B6L9
I 32734 TR I 32754 B754
I

```

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

CLEAR WORD 000
IN BANK 0 TO ZEROS.
DO LIP

TEST BANK 0 WORD 000
FOR ZERO

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 32738          -6-- STATUS FOR LIP
3      32742          IC FOR LIP
2 003 32745          347
2 001 32746          □

```

ROUTINE #348
TEST STORE IC AND STATUS.
USE LIP 0000 TO TEST STORE
IC VALUE 9999.

```

H08..... 32754 EEM 3 14 0000 06-0
I 32759 SPC , 0000
I 32764 SET B 0010
I 32769 LOD 8 32809 B809
I 32774 UNL 7 9999
I 32779 SPC , 3700
I 32784 SET B 0008
I 32789 LOD 8 32877 B877
I 32794 SET B 0032
I 32799 TR 1 9994
I
I
I 32804 LIP , 15 0000 0660
I 32809 TR 1 32834 B834
I
I
I 32814 SPC , 0000
I 32819 SET B 0004
I 32824 CMP 4 32881 B881
I 32829 TRE L 32864 B864
I
I
I 32834 TRA I 01 32864 B8W4
I 32839 SEL 2 0500
I 32844 WR R 32882 B882
I 32849 TRA I 03 32859 B8E9
I 32854 TR 1 32864 B864
I 32859 HLT J 0348
+ 32864 TRA I 02 32754 B7N4
  32869 TR 1 32894 B894
I

```

PUT LIP 0000 AND TRANSFER
INSTRUCTIONS AT 9999

LOD IC AND STATUS IN CASU 15
REST OF CASU 15 IS ZERO

THESE TWO INSTRUCTIONS
ARE PLACED AT 9999

AFTER LIP,
COMPARE IC VALUE STORED
VERSUS CORRECT VALUE 9999.

ERROR ROUTINE

-----J10 TO NEXT ROUTINE

2	004	32873		J6--	STATUS FOR LIP
3		32877	32814 B814		IC FOR LIP
2	004	32881		9999	CORRECT IC VALUE STORED
2	003	32884		348	
2	001	32885			

ROUTINE #349
TEST STORE IC AND STATUS.
USE LIP 0000 TO TEST STORE
IC VALUE 6664

```

J09..... 32894 EEM 3 14 0000 06-0
I 32899 SPC , 0000
I 32904 SET B 0010
I 32909 LOD 8 32949 B949
I 32914 UNL 7 6664
I 32919 SPC , 3700
I 32924 SET B 0008
I 32929 LOD 8 33017 C017
I 32934 SET B 0032
I 32939 TR 1 6659
I
I
I 32944 LIP , 15 0000 0660
I 32949 TR 1 32954 B954
I
I
I 32954 SPC , 0000
I 32959 SET B 0004
I 32964 CMP 4 33021 C021
I 32969 TRE L 33004 C004
I
I
I 32974 TRA I 01 33004 C04
I 32979 SEL 2 0500
I 32984 WR R 33022 C022
I 32989 TRA I 03 32999 B919
I 32994 TR 1 33004 C004
I 32999 HLT J 0349
+---33004 TRA I 02 32894 B8R4
  33009 TR 1 33034 C034-----K11
I

```

PUT LIP 0000 AND TRANSFER
INSTRUCTIONS AT 6664

LOD CASU 15 WITH IC AND STATUS
REST OF CASU 15 IS ZERO.

THESE TWO INSTRUCTIONS
ARE PLACED AT 6664

AFTER LIP,
COMPARE IC VALUE STORED
VERSUS CORRECT VALUE 6664

ERROR ROUTINE

TO NEXT ROUTINE

2	004	33013		-6--	STATUS FOR LIP
3		33017	32954 B954		IC FOR LIP
2	004	33021		6664	CORRECT IC VALUE STORED
2	003	33024		349	
2	001	33025			

ROUTINE #350
TEST STORE IC AND STATUS.
USE LIP 0000 TO TEST STORE
IC VALUE 150009.

```

K10.....  33034 EEM 3 14 0000 06-0  0
I  33039 SPC , 0000  0
I  33044 SET B 01 0010 00/0  0
I  33049 LOD 8 01 150009 &0 1  0
I  33054 SET B 0010  0
I  33059 LOD 8 33099 C099  0
I  33064 UNL 7 150009 &001  0
I  33069 SPC , 3700  0
I  33074 SET B 0008  0
I  33079 LOD 8 33182 C182  0
I  33084 SET B 0032  0
I  33089 TR 1 150004 &00D  0
I  33094 LIP , 15 0000 06&0  0
I  33099 TR 1 33104 C104-  0
I  33104 SPC , 0000.....  0
I  33109 UNL 7 01 150009 &0 1  0
I  33114 SET B 0004  0
I  33119 CMP 4 33186 C186  0
I  33124 TRE L 33159 C159-  0
I  33129 TRA I 01 33159 C1V9-  0
I  33134 SEL 2 0500  0
I  33139 WR R 33187 C187  0
I  33144 TRA I 03 33154 C1E4-  0
I  33149 TR 1 33159 C159-  0
I  33154 HLT J 0350.....  0
I  33159 TRA I 02 33034 COL4.....  0
  33164 RCV U 0306  0
  33169 TR 1 01 0204 02 4  0
  33174 TR 1 33199 C199-  0
  33178  0
  33182  0
  33186  0
  33189  0
  33190  0

```

SAVE DATA AT 150009

PUT LIP 0000 AND TRANSFER
INSTRUCTIONS AT 150009

LOD CASU 15 WITH IC AND STATUS
REST OF CASU 15 IS ZERO

THESE TWO INSTRUCTIONS
ARE PLACED AT 150009

AFTER LIP,
REPLACE DATA AT 150009
COMPARE IC VALUE STORED
VERSUS CORRECT VALUE &001

ERROR ROUTINE

-----L12 TO NEXT ROUTINE

- 2 004 33178 -&-- STATUS FOR LIP
- 3 33182 33104 C104 IC FOR LIP
- 2 004 33186 &001 CORRECT IC VALUE STORED
- 2 003 33189 350
- 2 001 33190 0

ROUTINE #351
TEST STORE IC AND STATUS
USE LIP 3700 TO TEST STORE
A STATUS OF -6--.

```

L11.....
I 33199 EEM 3 14 0000 06-0
I 33204 SPC , 3700
I 33209 SET B 0000
I 33214 SET B 0032
I 33219 SPC , 0000
I 33224 RAD H 33317 C317
I 33229 RAD H 01 33317 C3/7
I 33234 CMP 4 01 33315 C3/5
I 33239 LIP , 15 3700 3G&0
I 33244 SPC , 3704
I 33249 SET B 0004
I 33254 CMP 4 33321 C321
I 33259 SPC , 0000
I 33264 TRE L 33299 C299
I
I
I
I 33269 TRA I 01 33299 C2Z9
I 33274 SEL 2 0500
I 33279 WR R 33322 C322
I 33284 TRA I 03 33294 C214
I 33289 TR 1 33299 C299
I 33294 HLT J 0351
+ 33299 TRA I 02 33199 C1R9
  33304 RCV U 0306
  33309 TR 1 01 0204 02 4
  33314 TR 1 33334 C334

```

CLEAR CASU 15 TO ZEROS

ACC PLUS AND DZT OFF
ASU PLUS AND DZT OFF
HI AND LO OFF
DO LIP TO STORE STATUS

CMP STATUS STORED

ERROR ROUTINE

-----M13 TO NEXT ROUTINE

2 003 33317
2 004 33321
2 003 33324
2 001 33325

1 A
-6-- CORRECT STATUS STORED
351
□

ROUTINE #352
TEST STORE IC AND STATUS
USE LIP 3700 TO TEST STORE
STATUS WITH NO BIT PICKUP FROM
SBR THRU ALU TO STOR SW.

```

M12..... 33334 EEM 3 14 0000 06-0 0
I 33339 SPC + 3700 0
I 33344 SET B 0000 0
I 33349 SET B 0032 0
I 33354 SPC + 0004 0
I 33359 RAD H 33468 C468 0
I 33364 RAD H 01 33468 C4W8 0
I 33369 CMP 4 01 33466 C4W6 0
I 33374 LFC + 02 33479 C4P9 0
I 33379 SPC + 0000 0
I 33384 LFC + 02 33484 C4Q4 0
I
I
I
I 33389 LIP + 15 3700 3G60 0
I 33394 SPC + 3704 0
I 33399 SET B 0004 0
I 33404 CMP 4 33472 C472 0
I 33409 SPC + 0000 0
I 33414 TRE L 33449 C449 0
I
I
I
I 33419 TRA I 01 33449 C4U9 0
I 33424 SEL 2 0500 0
I 33429 WR R 33473 C473 0
I 33434 TRA I 03 33444 C4D4 0
I 33439 TR 1 33449 C449 0
I 33444 HLT J 0352 .....
I 33449 TRA I 02 33334 C3L4 0
I 33454 RCV U 0306 0
I 33459 TR 1 01 0204 02 4 0
I 33464 TR 1 33489 C489 0
I

```

CLEAR CASU 15 TO ZEROS
AGC PLUS AND DZT OFF
ASU PLUS AND DZT OFF
HI AND LO OFF
GROUP MARKS INTO CHAR. 4,5,6,7
GROUP MARKS INTO SBR 4-7.

DO LIP TO STORE STATUS
COMPARE STATUS STORED.

ERROR ROUTINE

-----N14 TO NEXT ROUTINE

- 2 004 33468
- 2 004 33472
- 2 003 33475
- 2 001 33476
- 2 001 33477
- 2 001 33478
- 2 001 33479
- 2 005 33484

```

1 A
-6- CORRECT STATUS STORED
352
0
0
0
0
00000

```


ROUTINE #353
TEST STORE IC AND STATUS
USE LIP 3700 TO TEST STORE
A STATUS OF J6-L

```

N13.....
I 33489 EEM 3 14 0000 06-0
I 33494 SPC , 3700
I 33499 SET B 0000
I 33504 SET B 0032
I 33509 SPC , 0000
I 33514 RAD H 33611 C611
I 33519 RAD H 01 33611 C6/1
I 33524 CMP 4 01 33611 C6/1
I
I
I 33529 LIP , 15 3700 3660
I 33534 TRS 0 11 33564 CNF4-
I 33539 SPC , 3704
I 33544 SET B 0004
I 33549 CMP 4 33615 C615
I 33554 SPC , 0000
I 33559 TRE L 33594 C594-
I
I
I 33564 TRA I 01 33594 C5Z4-
I 33569 SEL 2 0500
I 33574 WR R 33615 C615
I 33579 TRA I 03 33589 C5H9-
I 33584 TR 1 33594 C594-
I 33589 HLT J 0353.....
+ 33594 TRA I 02 33489 C4Q9-
  33599 RCV U 0306
  33604 TR 1 01 0204 02 4
  33609 TR 1 33624 C624-
I

```

CLEAR CASU 15 TO ZEROS

ACC MINUS AND DZT OFF
ASU MINUS AND DZT OFF
HI ON, LO OFF

DO LIP TO STORE STATUS
TEST 901

COMPARE STATUS STORED.

ERROR ROUTINE

-----P15 TO NEXT ROUTINE

2 002 33611	XJ
2 004 33615	J6-L CORRECT STATUS
2 003 33618	353
2 001 33619	□

ROUTINE #354
TEST STORE IC AND STATUS.
USE LIP 3700 TO TEST STORE
A STATUS OF K&-D

```

P14..... 33624 EEM 3 14 0000 06-0 0
I 33629 SPC , 3700 0
I 33634 SET B 0000 0
I 33639 SET B 0032 0
I 33644 SPC , 0000 0
I 33649 RAD H 33747 C747 0
I 33654 RAD H 01 33747 C7U7 0
I 33659 CMP 4 01 33745 C7U5 0
I #####I#####
I
I #####
I 33664 LIP , 15 3700 3G60 0
I 33669 TRS 0 11 33699 C019-#-#
I 33674 SPC , 3704 0 I
I 33679 SET B 0004 0 I
I 33684 CMP 4 33751 C751 0 I
I 33689 SPC , 0000 0 I
I 33694 TRE L 33729 C729-#-#
I #####I##### II
I
I ##### II
I 33699 TRA I 01 33729 C7S9-#-#
I 33704 SEL 2 0500 0 I
I 33709 WR R 33752 C752 0 I
I 33714 TRA I 03 33724 C7B4-#-#
I 33719 TR 1 33729 C729-#-#
I 33724 HLT J 0354.....#..I
+---33729 TRA I 02 33624 C6K4.#..I
  33734 RCV U 0306 0
  33739 TR 1 01 0204 02 4 0
  33744 TR 1 33764 C764-#-----Q16 TO NEXT ROUTINE
#####

```

CLEAR CASU 15 TO ZEROS

ACC PLUS AND DZT ON
ASU PLUS AND DZT ON
HI OFF, LO ON

DO LIP TO STORE STATUS
TEST 901

COMPARE STATUS STORED

ERROR ROUTINE

2 003 33747
2 004 33751
2 003 33754
2 001 33755

1 6
K&-D CORRECT STATUS STORED
354
0

ROUTINE #355
TEST C BIT GEN ON CHAR.
4 AND 7. USE LIP 3700 TO STORE
STATUS FOUR TIMES.
TEST 901 EACH TIME

```

Q15.....I 33764 EEM 3 14 0000 06-0 I
I 33769 SPC , 3700 I
I 33774 SET B 0008 I
I 33779 LOD 8 33952 C952 I
I 33784 SET B 0032 I
I 33789 LIP , 15 0009 0669 I
I 33794 LIP , 15 3700 3G60 I
I 33799 TRS 0 11 33899 CQI9--X
I 33804 SPC , 3700 I
I 33809 SET B 0008 I
I 33814 LOD 8 33960 C960 I
I 33819 LIP , 15 0009 0669 I
I 33824 LIP , 15 3700 3G60 I
I 33829 TRS 0 11 33899 CQI9--X
I 33834 SPC , 3700 I
I 33839 SET B 0008 I
I 33844 LOD 8 33968 C968 I
I 33849 LIP , 15 0009 0669 I
I 33854 LIP , 15 3700 3G60 I
I 33859 TRS 0 11 33899 CQI9--X
I 33864 SPC , 3700 I
I 33869 SET B 0008 I
I 33874 LOD 8 33976 C976 I
I 33879 LIP , 15 0009 0669 I
I 33884 LIP , 15 3700 3G60 I
I 33889 TRS 0 11 33899 CQI9--X
I 33894 TR 1 33929 C929--X
I 33899 TRA I 01 33929 C9S9--X
I 33904 SEL 2 0500 I
I 33909 WR R 33977 C977 I
I 33914 TRA I 03 33924 C9B4--I
I 33919 TR 1 33929 C929--X
I 33924 HLT J 0355.....I
+---33929 TRA I 02 33764 C704....I
I 33934 RCV U 0306 I
I 33939 TR 1 01 0204 02 4 I
I 33944 TR 1 33989 C989-----R17

```

LOD IC AND STATUS -6-0
LIP TO SET STATUS
LIP TO STORE STATUS
TEST 901

LOD IC AND STATUS -6-A
LIP TO SET STATUS
LIP TO STORE STATUS
TEST 901

LOD IC AND STATUS -6-J
LIP TO SET STATUS
LIP TO STORE STATUS
TEST 901

LOD IC AND STATUS L6-6
LIP TO SET STATUS
LIP TO STORE STATUS
TEST 901

ERROR ROUTINE

-----R17 TO NEXT ROUTINE

2 004	33948		-6-0	STATUS FOR FIRST LIP
3	33952	33794 C794		IC VALUE
2 004	33956		-6-A	STATUS FOR THIRD LIP
3	33960	33824 C824		IC VALUE
2 004	33964		-6-J	STATUS FOR FIFTH LIP
3	33968	33854 C854		IC VALUE
2 004	33972		L6-6	STATUS FOR SEVENTH LIP
3	33976	33884 C884		IC VALUE
2 003	33979		355	
2 001	33980		I	

ROUTINE #356
EXECUTE TIP AND TEST 900.
TEST STORE IC AND STATUS
DURING TIP.

```

R16..... 33989 EEM 3 14 0000 06-0
I 33994 SPC , 3700
I 33999 SET B 0000
I 34004 SET B 0032
I 34009 SPC , 0000
I 34014 RAD H 34122 D122
I 34019 RAD H 01 34122 D1S2
I 34024 CMP 4 01 34120 D1S0
I
I
I 34029 TIP , 14 34039 D6L9
I 34034 TR 1 34064 D064
I 34039 TRS 0 10 34064 D-04
I 34044 SPC , 3700
I 34049 SET B 0008
I 34054 CMP 4 34130 D130
I 34059 TRE L 34074 D074
I
I
I 34064 LIP , 15 3700 3G60
I 34069 TR 1 34084 D084
I 34074 LIP , 15 3700 3G60
I 34079 TR 1 34114 D114
I
I
I 34084 TRA I 01 34114 D1/4
I 34089 SEL 2 0500
I 34094 WR R 34131 D131
I 34099 TRA I 03 34109 D169
I 34104 TR 1 34114 D114
I 34109 HLT J 0356
I 34114 TRA I 02 33989 C909
I 34119 TR 1 34139 D139
I

```

CLEAR CASU 15 TO ZEROS

TURN OFF
STATUS
TRIGGERS

DO TIP
ERROR
TEST 900

CMP IC AND STATUS STORED
DURING TIP.

TF INT PROG.
ON ERROR
TF INT PROG.
ON GOOD

ERROR ROUTINE

-----S18 TO NEXT ROUTINE

```

2 003 34122
2 004 34126
3 34130
2 003 34133
2 001 34134

```

```

1 A
-C- CORRECT STATUS STORED
34034 D034 CORRECT IC STORED
356

```

```

S17.....
I 34139 EEM 3 14 0000 0&-0
I 34144 SPC , 3000
I 34149 SET B 0002
I 34154 LOD 8 34226 D226
I 34159 SPC , 0000
I 34164 TIP , 14 34169 DA09-
I 34169 SET B 01 0002 00 2.
I 34174 CMP 4 01 34226 D2S6
I 34179 LIP , 3700
I 34184 TRE L 34219 D219-
I
I
I 34189 TRA I 01 34219 D2/9-
I 34194 SEL 2 0500
I 34199 WR R 34227 D227
I 34204 TRA I 03 34214 D2A4-
I 34209 TR 1 34219 D219-
I 34214 HLT J 0357.....
+ 34219 TRA I 02 34139 D1L9.
I 34224 TR 1 34239 D239-

```

```

ROUTINE #357
TEST TIP FOR SET SPC 512
LOD XX IN CASU 01

```

TF INT. PROG. TRIGGER

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 34229
2 001 34230

```

```

XX357

```

ROUTINE #358
TEST STORE SPC ON TIP.
SPC STORED IS 7737. PRESET
SBR, SR AND MAC II TO TEST
FOR BIT PICKUP.

```

T18.....
I 34239 EEM 3 14 0000 06-0
I 34244 SPC * 3700
I 34249 SET B 0032
I 34254 LOD 8 34404 D404
I 34259 RCV U 8888
I 34264 SEL 2 8888
I 34269 SPC * 0014
I 34274 LFC * 02 34409 D4-9
I 34279 SPC * 0010
I 34284 LFC * 02 34409 D4-9
I
I
I 34289 SPC * 7737
I 34294 TIP * 14 34299 DBR9
I 34299 LIP * 15 3700 3G60
I 34304 SPC * 3710
I 34309 SET B 0008
I 34314 CMP 4 34417 D417
I 34319 SPC * 0000
I 34324 TRE L 34359 D359
I
I
I 34329 TRA I 01 34359 D3V9
I 34334 SEL 2 0500
I 34339 WR R 34418 D418
I 34344 TRA I 03 34354 D3E4
I 34349 TR I 34359 D359
I 34354 HLT J 0358
I 34359 TRA I 02 34239 D2L9
I 34364 TR I 34429 D429
I

```

RESET CASU 15 TO BLANKS
PRESET MAC-2
PRESET SR

PRESET SBR
WITH EIGHT
PLUS ZEROS

TIP TO STORE SPC
TF IP TRIGGER

CMP SPC STORED EQUAL 7737

ERROR ROUTINE

U20 TO NEXT ROUTINE

- 2 040 34404
- 2 005 34409
- 2 008 34417
- 2 003 34420
- 2 001 34421

BLANKS
 &&&&&
 00007737.
 358
 □

ROUTINE #359
TEST STORE SPC ON TIP.
SPC STORED IS 0000. PRESET
SBR TO TEST FOR BIT PICKUP.

```

U19..... 34429 EEM 3 14 0000 06-0
I 34434 SPC 3700
I 34439 SET B 0032
I 34444 LOD 8 34589 D589
I 34449 RCV U 0000
I 34454 SEL 2 0000
I 34459 SPC 0004
I 34464 LFC 02 34594 D5R4
I 34469 SPC 0000
I 34474 LFC 02 34594 D5R4
I
I
I 34479 TIP 14 34484 DDQ4
I 34484 LIP 15 3700 3GG0
I 34489 SPC 3710
I 34494 SET B 0008
I 34499 CMP 4 34602 D602
I 34504 SPC 0000
I 34509 TRE L 34544 D544
I
I
I 34514 TRA I 01 34544 D5U4
I 34519 SEL 2 0500
I 34524 WR R 34603 D603
I 34529 TRA I 03 34539 D5C9
I 34534 TR 1 34544 D544
I 34539 HLT J 0359
I 34544 TRA I 02 34429 D4K9
I 34549 TR 1 34614 D614-----V21

```

RESET CASU 15 TO BLANKS
RESET MAC-2
RESET SR

PRESET SBR
WITH 7777777

TIP TO STORE SPC
TF IP TRIGGER

CMP SPC STORED EQUAL 0000

ERROR ROUTINE

TO NEXT ROUTINE

2	040	34589	BLANKS
2	005	34594	77777
2	008	34602	00000000
2	003	34605	359
2	001	34606	□

ROUTINE #360
TEST STORE MAC-2 ON TIP
MAC-2 STORED IS 6666

```

V20.....
I 34614 EEM 3 14 0000 06-0
I 34619 SPC 3700
I 34624 SET B 0000
I 34629 SET B 0028
I 34634 SPC 0000
I 34639 RCV U 6666
I 34644 TIP 14 34649 DFM9
I 34649 LIP 15 3700 3G&0
I 34654 SPC 3720
I 34659 SET B 0004
I 34664 CMP 4 34718 D718
I 34669 SPC 0000
I 34674 TRE L 34709 D709
I
I
I 34679 TRA I 01 34709 D7 9
I 34684 SEL 2 0500
I 34689 WR R 34719 D719
I 34694 TRA I 03 34704 D764
I 34699 TR 1 34709 D709
I 34704 HLT J 0360
+ 34709 TRA I 02 34614 D6J4
I 34714 TR 1 34729 D729
I
I

```

CLEAR CASU 15 TO ZEROS

SET MAC-2
TIP TO STORE MAC-2
LIP TO TF IP TRIGGER

CMP MAC-2 STORED IS 6666

ERROR ROUTINE

```

2 004 34718 6666
2 003 34721 360
2 001 34722

```

ROUTINE #361
TEST STORE MAC-2 ON TIP
MAC-2 STORED IS 159999
RESET CASU 15

SET MAC-2
TIP TO STORE MAC-2
LIP TO TF IP TRIGGER

CMP MAC-2 STORED IS 1991

```

I 34729 EEM 3 14 0000 06-0
I 34734 SPC 3700
I 34739 SET B 0000
I 34744 SET B 0032
I 34749 SPC 0000
I 34754 RCV U 159999 1991
I 34759 TIP 14 34764 DGO4
I 34764 LIP 15 3700 3G&0
I 34769 SPC 3720
I 34774 SET B 0004
I 34779 CMP 4 34833 D833
I 34784 SPC 0000
I 34789 TRE L 34824 D824
I
I
I 34794 TRA I 01 34824 D8S4
I 34799 SEL 2 0500
I 34804 WR R 34834 D834
I 34809 TRA I 03 34819 D8A9
I 34814 TR 1 34824 D824
I 34819 HLT J 0361
+ 34824 TRA I 02 34729 D7K9
I 34829 TR 1 34844 D844
I
I

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 34833 1991
2 003 34836 361
2 001 34837

```


ROUTINE #362
TEST STORE SR ON TIP.
SR STORED IS 6666

```

W21.....I 34844 EEM 3 14 0000 06-0 I
I 34849 SPC , 3700 I
I 34854 SET B 0000 I
I 34859 SET B 0032 I
I 34864 SPC , 0000 I
I 34869 SEL 2 6666 I
I 34874 TIP , 14 34879 DHP9- I
I 34879 LIP , 15 3700 3G&0. I
I 34884 SPC , 3730 I
I 34889 SET B 0004 I
I 34894 CMP 4 34948 D948 I
I 34899 SPC , 0000 I
I 34904 TRE L 34939 D939- I
I ..... I
I I
I ..... I
I 34909 TRA I 01 34939 D9T9- I
I 34914 SEL 2 0500 I
I 34919 WR R 34949 D949 I
I 34924 TRA I 03 34934 D9C4- I
I 34929 TR 1 34939 D939- I
I 34934 HLT J 0362..... I
I 34939 TRA I 02 34844 D8M4. I
I 34944 TR 1 34959 D959- I
I ..... I
I I
2 004 34948 6666
2 003 34951 362
2 001 34952 I

```

CLEAR CASU 15 TO ZERO
SET SR 6666
TIP TO STORE SR
LIP TO TF IP TRIGGER
CMP SR STORED IS 6666

ERROR ROUTINE

```

.....I 34959 EEM 3 14 0000 06-0. I
I 34964 SPC , 3700 I
I 34969 SET B 0000 I
I 34974 SET B 0032 I
I 34979 SPC , 0000 I
I 34984 SEL 2 9999 I
I 34989 TIP , 14 34994 DIR4- I
I 34994 LIP , 15 3700 3G&0. I
I 34999 SPC , 3730 I
I 35004 SET B 0004 I
I 35009 CMP 4 35063 E063 I
I 35014 SPC , 0000 I
I 35019 TRE L 35054 E054- I
I ..... I
I I
I ..... I
I 35024 TRA I 01 35054 E0V4- I
I 35029 SEL 2 0500 I
I 35034 WR R 35064 E064 I
I 35039 TRA I 03 35049 E0D9- I
I 35044 TR 1 35054 E054- I
I 35049 HLT J 0363..... I
I 35054 TRA I 02 34959 D9N9. I
I 35059 TR 1 35074 E074- X23
I ..... I

```

ROUTINE #363
TEST STORE SR ON TIP.
SR STORED IS 9999.
RESET CASU 15
SET SR
TIP TO STORE SR
LIP TO TF IP TRIGGER

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 35063 9999
2 003 35066 363
2 001 35067 I

```

ROUTINE #364
TEST GEN ZEROS IN WORDS 1,2,3
OF CASU 15 ON TIP.

```

X22.....I 35074 EEM 3 14 0000 06-0 0
I 35079 SPC 3700 0
I 35084 SET B 0032 0
I 35089 LOD 8 35269 E269 0
I
I
I 35094 SPC 1111 0
I 35099 RCV U 2222 0
I 35104 SEL 2 0000 0
I 35109 TIP 14 35114 EAJ4-0-0
I 35114 LIP 15 3700 3G60-0-0
I 35119 SPC 3714 0
I 35124 UFC 03 35284 E2H4 0
I 35129 SPC 3724 0
I 35134 UFC 03 35279 E2G9 0
I 35139 SPC 3734 0
I 35144 UFC 03 35274 E2G4 0
I
I
I 35149 SB % 12 35289 EB89 0
I 35154 SB % 12 35288 EB88 0
I 35159 SB % 12 35287 EB87 0
I 35164 SB % 12 35286 EB86 0
I 35169 SPC 0000 0
I 35174 SET B 0014 0
I 35179 LOD 8 35299 E299 0
I 35184 CMP 4 35284 E284 0
I 35189 TRE L 35224 E224-0-0
I
I
I 35194 TRA I 01 35224 E2S4-0-0
I 35199 SEL 2 0500 0
I 35204 WR R 35300 E300 0
I 35209 TRA I 03 35219 E2A9-0-0
I 35214 TR 1 35224 E224-0-0
I 35219 HLT J 0364.....0-0
I 35224 TRA I 02 35074 E0P4-0-0
I 35229 TR 1 35309 E309-0-0
I

```

RESET CASU 15 TO BLANKS

```

SET SPC
SET MAC=2
SET SR
TIP TO GEN ZEROS
LIP TO TF IP TRIGGER

UFC ZEROS WD 1
UFC ZEROS WD 2
UFC STOR MARKS WD 3

```

```

SB TO
MAKE FOUR
DILROYS
FOR COMPARE

```

```

LOD CORRECT FIELD AND
COMPARE VS RESULT

```

ERROR ROUTINE

TO NEXT ROUTINE

```

2 040 35269
2 015 35284
2 015 35299
2 003 35302
2 001 35303

```

```

BLANKS-----
0000 0000 0000 UFC ZEROS FIELD
FFFF 0000 0000 CORRECT RESULT
364
0

```

ROUTINE #365
TEST GEN ZEROS IN WORDS 1,2,3
OF CASU 15 ON TIP.

```

Y23.....
I 35309 EEM 3 14 0000 06-0
I 35314 SPC 3700
I 35319 SET B 0032
I 35324 LOD 8 35504 E504
I
I 35329 SPC 4444
I 35334 RCV U 0000
I 35339 SEL 2 8888
I 35344 TIP 14 35349 ECM9
I 35349 LIP 15 3700 3G&0
I 35354 SPC 3714
I 35359 UFC 03 35519 E5A9
I 35364 SPC 3724
I 35369 UFC 03 35514 E5A4
I 35374 SPC 3734
I 35379 UFC 03 35509 E5G9
I
I 35384 SB % 12 35524 EE24
I 35389 SB % 12 35523 EE23
I 35394 SB % 12 35522 EE22
I 35399 SB % 12 35521 EE21
I 35404 SPC 0000
I 35409 SET B 0014
I 35414 LOD 8 35534 E534
I 35419 CMP 4 35519 E519
I 35424 TRE L 35459 E459
I
I 35429 TRA I 01 35459 E4V9
I 35434 SEL 2 0500
I 35439 WR R 35535 E535
I 35444 TRA I 03 35454 E4E4
I 35449 TR 1 35459 E459
I 35454 HLT J 0365
+---35459 TRA I 02 35309 E3-9
  35464 TR 1 35544 E544-----Z25

```

RESET CASU 15 TO BLANKS

SET SPC
SET MAC-2
SET SR
TIP TO GENERATE ZEROS
LIP TO TF IP TRIGGER

UFC ZEROS WORD 1

UFC ZEROS WORD 2

UFC STOR MARKS WORD 3

SB TO
MAKE FOUR
DILROYS
FOR COMPARE

LOD CORRECT FIELD AND
COMPARE VERSUS RESULT

ERROR ROUTINE

TO NEXT ROUTINE

2	040	35504	BLANKS	
2	015	35519	0000 0000 0000	UFC ZEROS RESULT
2	015	35534	FFFF 0000 0000	CORRECT RESULT
2	003	35537	365	
2	001	35538		

ROUTINE #366
DO LIP TO TEST SET LINES.
SET SPC TO WR 0000, SET MAC-2
TO 0000, SET SR TO 0000.

```

Z24.....I 35544 EEM 3 14 0000 0G-0 0
I 35549 SPC , 3700 0
I 35554 SET B 0000 0
I 35559 SET B 0028 0
I 35564 SPC , 3333 0
I 35569 RCV U 6666 0
I 35574 SEL 2 9999 0
I 35579 LIP , 15 3700 3G&0 0
I 35584 TIP , 14 35589 EEQ9- 0
I 35589 LIP , 15 3700 3G&0. 0
I 35594 SPC , 3710 0
I 35599 CMP 4 35670 E670 0
I 35604 SPC , 0000 0
I 35609 TRE L 35644 E644- 0
I 35614 TRA I 01 35644 E6U4- 0
I 35619 SEL 2 0500 0
I 35624 WR R 35671 E671 0
I 35629 TRA I 03 35639 E6C9- 0
I 35634 TR 1 35644 E644- 0
I 35639 HLT J 0366..... 0
I 35644 TRA I 02 35544 E5M4. 0
I 35649 TR 1 35679 E679- 0

```

SET CASU 15 ALL ZEROS

```

PRESET SPC
PRESET MAC-2
PRESET SR
LIP TO SET SPC, MAC-2, SR
TIP TO STORE RESULT
LIP TO TF IP. TRIGGER

CMP SPC, MAC-2, SR RESULT
IN CASU 15 VERSUS ZEROS

```

ERROR ROUTINE

-----AA26 TO NEXT ROUTINE

```

2 021 35670
2 003 35673
2 001 35674

```

```

X00000000000000000000
366

```

ROUTINE #367
TEST SET SPC TO WR 3313
USING LIP INSTRUCTION

```

AA25..... 35679 EEM 3 14 0000 06-0
I 35684 SPC , 3710
I 35689 SET B 0020
I 35694 LOD 8 35799 E799
I 35699 SPC , 4424
I 35704 LIP , 15 3700 3G&0
I 35709 TIP , 14 35714 EGJ4-
I 35714 LIP , 15 3700 3G&0
I 35719 SPC , 3710
I 35724 SET B 0004
I 35729 CMP 4 35799 E799
I 35734 SPC , 0000
I 35739 TRE L 35774 E774-
I .....
I .....
I .....
I 35744 TRA I 01 35774 E7X4-
I 35749 SEL 2 0500
I 35754 WR R 35800 E800
I 35759 TRA I 03 35769 E7F9-
I 35764 TR 1 35774 E774-
I 35769 HLT J 0367.....
+---35774 TRA I 02 35679 E6P9.....
  35779 TR 1 35809 E809-
I .....
I .....
2 020 35799 00000000000000003313
2 003 35802 367
2 001 35803

```

LOD CASU 15 WITH SPC 3313
PRESET SPC TO 4424
LIP TO SET SPC TO 3313
TIP TO STORE RESULT
LIP TO TF IP. TRIGGER

CMP SPC RESULT

ERROR ROUTINE

ROUTINE #368
TEST SET SPC TO WR
4424 ON LIP.
LOD CASU 15 WITH SPC 4424
PRESET SPC TO 3313.
LIP TO SET SPC
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

CMP SPC RESULT

ERROR ROUTINE

-----AB27 TO NEXT ROUTINE

```

2 020 35929 00000000000000004424
2 003 35932 368
2 001 35933

```

ROUTINE #369
TEST SET MAC-2 TO WR 1991
USING LIP.

```

AB26.....
I 35939 EEM 3 14 0000 0G-0
I 35944 SPC , 3710
I 35949 SET B 0020
I 35954 LOD 8 36059 F059
I 35959 RCV U 6666
I 35964 LIP , 15 3700 3G&0
I 35969 TIP , 14 35974 EIP4-
I 35974 LIP , 15 3700 3G&0
I 35979 SPC , 3720
I 35984 SET B 0004
I 35989 CMP 4 36051 F051
I 35994 SPC , 0000
I 35999 TRE L 36034 F034-
I
I
I 36004 TRA I 01 36034 F0T4-
I 36009 SEL 2 0500
I 36014 WR R 36060 F060
I 36019 TRA I 03 36029 F0B9-
I 36024 TR 1 36034 F034-
I 36029 HLT J 0369
+---36034 TRA I 02 35939 E9L9
  36039 TR 1 36069 F069-
I
I

```

LOD CASU 15 WITH MAC-2 1991
PRESET MAC-2 TO 6666
LIP TO SET MAC-2
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

ERROR ROUTINE

```

2 020 36059 00000000I99100000000
2 003 36062 369
2 001 36063

```

```

I
I
I 36069 EEM 3 14 0000 0G-0
I 36074 SPC , 3710
I 36079 SET B 0020
I 36084 LOD 8 36189 F189
I 36089 RCV U 159999 1991
I 36094 LIP , 15 3700 3G&0
I 36099 TIP , 14 36104 FA-4-
I 36104 LIP , 15 3700 3G&0
I 36109 SPC , 3720
I 36114 SET B 0004
I 36119 CMP 4 36181 F181
I 36124 SPC , 0000
I 36129 TRE L 36164 F164-
I
I
I 36134 TRA I 01 36164 F1W4-
I 36139 SEL 2 0500
I 36144 WR R 36190 F190
I 36149 TRA I 03 36159 F1E9-
I 36154 TR 1 36164 F164-
I 36159 HLT J 0370
+---36164 TRA I 02 36069 F009
  36169 TR 1 36199 F199-
I
I

```

ROUTINE #370
TEST SET MAC-2 TO WR
6666 ON LIP.
LOD CASU 15 WITH MAC-2 6666
PRESET MAC-2 TO 159999
LIP TO SET MAC-2 TO 6666
TIP TO STORE RESULT
LIP TO TFIP TRIGGER

ERROR ROUTINE

```

2 020 36189 00000000666600000000
2 003 36192 370
2 001 36193

```

-----AC28 TO NEXT ROUTINE

ROUTINE #371
TEST SET SR TO WR 9999
ON LIP

```

AC27..... 36199 EEM 3 14 0000 06-0
I 36204 SPC , 3710
I 36209 SET B 0020
I 36214 LOD 8 36319 F319
I 36219 SEL 2 6666
I 36224 LIP , 15 3700 3G&0
I 36229 TIP , 14 36234 FBL4-
I 36234 LIP , 15 3700 3G&0
I 36239 SPC , 3730
I 36244 SET B 0004
I 36249 CMP 4 36303 F303
I 36254 SPC , 0000
I 36259 TRE L 36294 F294-
I
I
I
I 36264 TRA I 01 36294 F2Z4-
I 36269 SEL 2 0500
I 36274 WR R 36320 F320
I 36279 TRA I 03 36289 F2H9-
I 36284 TR 1 36294 F294-
I 36289 HLT J 0371
+ 36294 TRA I 02 36199 F1R9-
 36299 TR 1 36329 F329-
I
I
I
2 020 36319 99990000000000000000
2 003 36322 371
2 001 36323

```

LOD CASU 15 WITH SR 9999
PRESET SR TO 6666
LIP TO SET SR.
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

CMP SR RESULT

ERROR ROUTINE

```

..... 36329 EEM 3 14 0000 06-0
I 36334 SPC , 3710
I 36339 SET B 0020
I 36344 LOD 8 36449 F449
I 36349 SEL 2 9999
I 36354 LIP , 15 3700 3G&0
I 36359 TIP , 14 36364 FC04-
I 36364 LIP , 15 3700 3G&0
I 36369 SPC , 3730
I 36374 SET B 0004
I 36379 CMP 4 36433 F433
I 36384 SPC , 0000
I 36389 TRE L 36424 F424-
I
I
I
I 36394 TRA I 01 36424 F4S4-
I 36399 SEL 2 0500
I 36404 WR R 36450 F450
I 36409 TRA I 03 36419 F4A9-
I 36414 TR 1 36424 F424-
I 36419 HLT J 0372
+ 36424 TRA I 02 36329 F3K9-
 36429 TR 1 36459 F459-
I
I
I

```

ROUTINE #372
TEST SET SR TO WR 6666
ON LIP.
LOD CASU 15 WITH SR 6666
PRESET SR TO 9999
LIP TO SET SR TO 6666
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

ERROR ROUTINE

-----AD29 TO NEXT ROUTINE

```

2 020 36449 66660000000000000000
2 003 36452 372
2 001 36453

```

ROUTINE #373
TEST FOR MAC-2 80K OFF
ON LIP TO 705-3 MODE.

```

AD28.....
.....36459 EEM 3 14 0000 0G-0
I 36464 SPC , 3700
I 36469 SET B 0028
I 36474 LOD 8 36587 F587
I 36479 LIP , 15 0009 0G&9
I 36484 EEM 3 14 0000 0G-0
I 36489 TIP , 14 36494 FDR4-
I 36494 LIP , 15 3700 3G&0.
I 36499 SPC , 3720
I 36504 SET B 0004
I 36509 CMP 4 36563 F563
I 36514 SPC , 0000
I 36519 TRE L 36554 F554-
I
I
I
I 36524 TRA I 01 36554 F5V4-
I 36529 SEL 2 0500
I 36534 WR R 36588 F588
I 36539 TRA I 03 36549 F5D9-
I 36544 TR 1 36554 F554-
I 36549 HLT J 0373.
+---36554 TRA I 02 36459 F4N9.
  36559 TR 1 36599 F599-
I
I
I

```

LOD IC AND STATUS AND MACII
LIP TO SET 705-3 MODE AND TRY
TO SET MAC-2 80K ON-
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

CMP MAC-2 RESULT OF 40K

ERROR ROUTINE

```

2 024 36583 000-00000000G00000000----
3 36587 36484 F484
2 003 36590 373
2 001 36591

```

ROUTINE #374
TEST BL SET FROM WR LINES
TO SPC,MAC-2,SR DURING LIP

```

.....36599 EEM 3 14 0000 0G-0.
I 36604 SPC , 3710
I 36609 SET B 0020
I 36614 LOD 8 36714 F714
I 36619 LIP , 15 3700 3G&0
I 36624 TIP , 14 36629 FFK9-
I 36629 LIP , 15 3700 3G&0.
I 36634 SPC , 3710
I 36639 SET B 0020
I 36644 CMP 4 36734 F734
I 36649 SPC , 0000
I 36654 TRE L 36689 F689-
I
I
I
I 36659 TRA I 01 36689 F6Y9-
I 36664 SEL 2 0500
I 36669 WR R 36735 F735
I 36674 TRA I 03 36684 F6H4-
I 36679 TR 1 36689 F689-
I 36684 HLT J 0374.
+---36689 TRA I 02 36599 F5R9.
  36694 TR 1 36744 F744-
I
I
I

```

LOD CASU 15 WITH 8 BITS
IN SPC,MAC-2 AND SR WORDS
LIP TO SET SPC,MAC-2,SR
TIP TO STORE RESULT
LIP TO IF IP TRIGGER

CMP SPC,MAC-2,SR RESULT

ERROR ROUTINE

```

2 020 36714 88880000888800009999 TEST FIELD
2 020 36734 88880000888800001111 CORRECT RESULT
2 003 36737 374
2 001 36738

```

-----AE30 TO NEXT ROUTINE

ROUTINE #375
TEST BL SET FROM WR LINES
TO SPC,MAC-2, SR DURING LIP.

```

AE29..... 36744 EEM 3 14 0000 06-0
I 36749 SPC , 3710
I 36754 SET B 0020
I 36759 LOD 8 36859 F859
I 36764 LIP , 15 3700 3G&0
I 36769 TIP , 14 36774 FGP4-
I 36774 LIP , 15 3700 3G&0.
I 36779 SPC , 3710
I 36784 SET B 0020
I 36789 CMP 4 36859 F859
I 36794 SPC , 0000
I 36799 TRE L 36834 F834-
I
I
I 36804 TRA I 01 36834 F8T4-
I 36809 SEL 2 0500
I 36814 WR R 36860 F860
I 36819 TRA I 03 36829 F8B9-
I 36824 TR 1 36834 F834-
I 36829 HLT J 0375.
+ 36834 TRA I 02 36744 F7M4.
  36839 TR 1 36869 F869-
I
I
I
2 020 36859 22220000222200002222
2 003 36862 375
2 001 36863

```

LOD CASU 15 WITH 2 BITS
IN SPC, MAC-2 AND SR WORDS
LIP TO SET SPC,MAC-2,SR
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

CMP SPC,MAC-2,SR RESULT

ERROR ROUTINE

ROUTINE #376
TEST BL SET FROM WR LINES
TO SPC,MAC-2, SR DURING LIP.

```

. 36869 EEM 3 14 0000 06-0.
I 36874 SPC , 3710
I 36879 SET B 0020
I 36884 LOD 8 36984 F984
I 36889 LIP , 15 3700 3G&0
I 36894 TIP , 14 36899 FHR9-
I 36899 LIP , 15 3700 3G&0.
I 36904 SPC , 3710
I 36909 SET B 0020
I 36914 CMP 4 37004 G004
I 36919 SPC , 0000
I 36924 TRE L 36959 F959-
I
I
I 36929 TRA I 01 36959 F9V9-
I 36934 SEL 2 0500
I 36939 WR R 37005 G005
I 36944 TRA I 03 36954 F9E4-
I 36949 TR 1 36959 F959-
I 36954 HLT J 0376.
+ 36959 TRA I 02 36869 F809.
  36964 TR 1 37014 G014- AF31
I
I
I
2 020 36984 ####0000####0000####
2 020 37004 11110000111100001111
2 003 37007 376
2 001 37008

```

SET UP 8-2-1 BITS IN
SPC,MAC-2 AND SR WORDS
LIP TO SET ALL OFF
TIP TO STORE RESULT
LIP TO TF IP TRIGGER

CMP RESULT

ERROR ROUTINE

ROUTINE #377
TEST SET TO WR ROUTINGS FOR
BIT PICK UP FROM MAC-1 ON LIP
LIP ADDRESS SETS UP MAC-1.

SETUP CASU 15 WITH
MAC-2 EQUAL 6667
LIP TO SET MAC-2 WITH MAC-1
SITTING ON 199H. THEN TIP TO
STORE RESULT AND LIP AGAIN
TO TF IP TRIGGER

CMP MAC-2 RESULT

ERROR ROUTINE

AG32 TO NEXT ROUTINE

```

AF30.....37014 EEM 3 14 0000 0G-0
I 37019 SPC 3700
I 37024 SET B 0028
I 37029 LOD 8 37137 G137
I 37034 LIP 15 159998 111H
I 37039 TIP 14 37044 G&M4
I 37044 LIP 15 3700 3G&0
I 37049 SPC 3720
I 37054 SET B 0004
I 37059 CMP 4 37121 G121
I 37064 SPC 0000
I 37069 TRE L 37104 G104
I
I
I
I 37074 TRA I 01 37104 G1 4
I 37079 SEL 2 0500
I 37084 WR R 37138 G138
I 37089 TRA I 03 37099 G019
I 37094 TR 1 37104 G104
I 37099 HLT J 0377
I 37104 TRA I 02 37014 G0J4
I 37109 TR 1 37149 G149

```

```

2 024 37133 00000000666700000000-6--
3 37137 37039 G039
2 003 37140 377
2 001 37141

```

ROUTINE #378
TEST SET TO WR ROUTINGS FOR
BIT PICKUP FROM MAC-1 ON LIP.
LIP ADDRESS SETS UP MAC-1.

```

AG31..... 37149 EEM 3 14 0000 06-0 0
I 37154 SPC , 3700 0
I 37159 SET B 0028 0
I 37164 LOD 8 37282 G282 0
I 37169 LIP , 15 6667 6FF7 0
I 37174 TIP , 14 37179 GAP9- 0
I 37179 LIP , 15 3700 3G60. 0
I 37184 SPC , 3720 0
I 37189 SET B 0004 0
I 37194 CMP 4 37266 G266 0
I 37199 SPC , 0000 0
I 37204 TRE L 37239 G239- 0
I ..... I
I ..... I
I 37209 TRA 1 01 37239 G2T9- 0
I 37214 SEL 2 0500 0
I 37219 WR R 37283 G283 0
I 37224 TRA 1 03 37234 G2C4- 0
I 37229 TR 1 37239 G239- 0
I 37234 HLT J 0378. 0
I 37239 TRA 1 02 37149 G1M9. 0
I 37244 RCV U 0306 0
I 37249 TR 1 01 0204 02 4 0
I 37254 TR 1 37294 G294- AH33 TO NEXT ROUTINE
I ..... I

```

SET UP CASU 15 WITH
MAC-2 EQUAL 199H
LIP TO SET MAC-2 WITH MAC-1
SITTING ON 6667. THEN TIP TO
STORE RESULT AND LIP AGAIN
TO TF IP TRIGGER.

CMP MAC-2 RESULT

ERROR ROUTINE

AH33 TO NEXT ROUTINE

```

2 024 37278 00000000199H00000000-6
3 37282 37174 G174 378
2 003 37285 0
2 001 37286 0

```

ROUTINE #390
FORCE EARLY END OP ON
OP CHECK TO TURN ON 900 GHK.

BYPASS ALL FORCED ERROR
ROUTINES IF 915 SWITCH ON

PRESET STORAGE
WORD TO ZEROS

FORCE OP CHK

TEST FOR FALSE TRANSFER

TEST 900

TEST THAT LFC WAS
NOT COMPLETED

ERROR ROUTINE

AJ34 TO NEXT ROUTINE

AH01
AH32.....

```

#####
I  37294 TRA  I 05 52609 SW#R  0000
I  37299 NOP  A          0000
#####
I  37304 EEM  3 14  0000 06-0
I  37309 SPC  ,          0000
I  37314 SET  B          0000
I  37319 SET  B          0008
#####
I  37324 LEM  3 15  0000 06&0
I  37329 LFC  , 02 37399 G3R9
#####
I  37334 NOP  A 10 37374 GLP4
#####
I  37339 SEL  2          0900
I  37344 TRS  0          37354 G354
I  37349 TR   1          37374 G374
#####
I  37354 SET  B          0004
I  37359 CMP  4          37432 G432
I  37364 TRE  L          37374 G374
I  37369 TR   1          37409 G409
#####
I  37374 TRA  I 01 37409 G4 9
I  37379 SEL  2          0500
I  37384 WR   R          37433 G433
I  37389 TRA  I 03 37404 G464
I  37394 TR   1          37409 G409
I  37399 HLT  J          0390
I  37404 HLT  J          0390
I  37409 TRA  I 02 37304 G3-4
I  37414 RCV  U          0306
I  37419 TR   1 01  0204 02 4
I  37424 TR   1          37444 G444
#####

```

2 008 37432	00000500
2 005 37437	390 C
2 001 37438	□

ROUTINE #391
FORCE DR VRC IN CHAR. TWO
AND THREE TO GIVE 900 CHECK.
TEST SEL 0900 PLUS TRS 00
TEST TRS 10.

```

AJ33.....37444 SET B      0002      □
I □ 37449 LOD 8        37591 G591  □
I □ 37454 SB  % 08    37473 GM73  □
I □ 37459 SB  % 08    37472 GM72  □
I □ 37464 SB  % 08    37503 GN03  □
I □ 37469 SB  % 08    37502 GN02  □
I □ 37474 NOP A        0330      □
I □ 37479 SEL 2        0900      □
I □ 37484 TRS 0        37494 G494  ←
I □ 37489 TR  1        37534 G534  ←
I □ 37494 TRS 0        37534 G534  ←
I □ 37499 UNL 7        37473 G473  □
I □ 37504 NOP A        0330      □
I □ 37509 UNL 7        37503 G503  □
I □ 37514 TRS 0 10     37524 GNK4  ←
I □ 37519 TR  1        37534 G534  ←
I □ 37524 TRS 0 10     37534 GNL4  ←
I □ 37529 TR  1        37574 G574  ←
I □ 37534 UNL 7        37473 G473  □
I □ 37539 UNL 7        37503 G503  □
I □ 37544 TRA I 01     37574 G5X4  ←
I □ 37549 SEL 2        0500      □
I □ 37554 WR  R        37592 G592  □
I □ 37559 TRA I 03     37569 G5F9  ←
I □ 37564 TR  1        37574 G574  ←
I □ 37569 HLT  J        0391.....
I □ 37574 TRA I 02     37444 G4M4  ←
  □ 37579 RCV U        0306      □
  □ 37584 TR  1 01     0204 02 4  □
  □ 37589 TR  1        37604 G604  ←

```

33

MAKE INSTRUCTIONS REDUNDANT

FORCE 900 CHK

TF 0900

CHECK FOR 900 OFF

FORCE 900 CHK

TF 900

CHECK FOR 900 OFF

CORRECT REDUNDANCIES

ERROR ROUTINE

AK35 TO NEXT ROUTINE

2 002 37591
2 005 37596
2 001 37597

33
391 C
□

ROUTINE #392
FORCE 4/9 CHECK WITH INDIRECT
ADDRESS TO GIVE 900 CHECK,
IN 7080 AND 705-3 MODES.

```

AK34..... 37604 EEM 3 14 0000 00-0
I 37609 EIA 10 0000 0--0
I 37614 NOP A 37623 G623
I 37619 NOP A 0000
I 37624 NOP A 0000
I 37629 TRS 0 10 37639 GOL9-
I 37634 TR 1 37669 G669-
I
I
I
I 37639 LEM 3 15 0000 0000-
I 37644 SB % 13 37649 GFU9
I 37649 NOP A 37658 G658
I 37654 NOP A 0000
I 37659 NOP A 0000
I 37664 TRS 0 10 37699 GOR9-
I
I
I
I 37669 TRA 1 01 37699 G6Z9-
I 37674 SEL 2 0500
I 37679 WR R 37715 G715
I 37684 TRA 1 03 37694 G6I4-
I 37689 TR 1 37699 G699-
I 37694 HLT J 0392-
I 37699 TRA 1 02 37604 G6-4-
I 37704 RCV U 0306
I 37709 TR 1 01 0204 02 4
I 37714 TR 1 37729 G729-

```

7080 MODE
FORCE 4/9 CHK

705-3 MODE
MAKE THE NOP ADDRESS INDIRECT
FORCE 4/9 CHK

ERROR ROUTINE

AL36 TO NEXT ROUTINE

2 005 37719
2 001 37720

392 C
□

ROUTINE #393
FORCE 4/9 CHECK TO GIVE
900 CHECK ON THE TRANSFERS,
TR, TRS, TRA, TRE

```

AL35..... 37729 TR 1 37733 G733 0
I 37734 NOP A 0000
I 37739 TRS 0 10 37749 GPM9-
I 37744 TR 1 37809 G809-
I
I
I 37749 SEL 2 0000.....
I 37754 TRS 0 37758 G758
I 37759 NOP A 0000
I 37764 TRS 0 10 37774 GPP4-
I 37769 TR 1 37809 G809-
I
I
I 37774 TRA I 37778 G778.....
I 37779 NOP A 0000
I 37784 TRS 0 10 37794 GPR4-
I 37789 TR 1 37809 G809-
I
I
I 37794 TRE L 37798 G798.....
I 37799 NOP A 0000
I 37804 TRS 0 10 37839 GQL9-
I
I
I 37809 TRA I 01 37839 G8T9-
I 37814 SEL 2 0500
I 37819 WR R 37855 G855
I 37824 TRA I 03 37834 G8C4-
I 37829 TR 1 37839 G839-
I 37834 HLT J 0393.....
I 37839 TRA I 02 37729 G7K9.....
I 37844 REV U 0306
I 37849 TR 1 01 0204 02 4
I 37854 TR 1 37869 G869-----AM37
I

```

4/9 CHK ON TR

4/9 CHK ON TRS

4/9 CHK ON TRA

4/9 CHK ON TRE

ERROR ROUTINE

TO NEXT ROUTINE

2 005 37859
2 001 37860

393 C
□

ROUTINE #394
FORCE 4/9 CHECK TO GIVE
900 CHECK ON THE TRANSFERS.
TRH, TRZ, TRP, TZB

```

AM36..... 37869 TRH K   37873 G873  0
I 37874 NOP A     0000
I 37879 TRS 0 10 37889 GQ09-
I 37884 TR  1     37949 G949-
I
I
I
I 37889 TRZ N     37893 G893.
I 37894 NOP A     0000
I 37899 TRS 0 10 37909 GR-9-
I 37904 TR  1     37949 G949-
I
I
I
I 37909 TRP M     37913 G913.
I 37914 NOP A     0000
I 37919 TRS 0 10 37929 GRK9-
I 37924 TR  1     37949 G949-
I
I
I
I 37929 RCV U     0060.....
I 37934 TZB  05 37938 GZT8
I 37939 NOP A     0000
I 37944 TRS 0 10 37979 GRP9-
I
I
I
I 37949 TRA 1 01 37979 G9X9-
I 37954 SEL 2     0500
I 37959 WR  R     37995 G995
I 37964 TRA 1 03 37974 G9G4-
I 37969 TR  1     37979 G979-
I 37974 HLT J     0394.....
I 37979 TRA 1 02 37869 G809.
I 37984 RCV U     0306
I 37989 TR  1 01 0204 02 4
I 37994 TR  1     38009 H009-
I

```

4/9 CHK ON TRH

4/9 CHK ON TRZ

4/9 CHK ON TRP

4/9 CHK ON TZB

ERROR ROUTINE

AN38 TO NEXT ROUTINE

2 005 37999
2 001 38000

394 C
H

ROUTINE #395
FORCE 4/9 CHECK TO GIVE
900 CHECK ON NTR AND TIP.

```

AN37..... 38009 EEM 3 14 0000 06-0
I 38014 SPC , 0000
I 38019 SET B 0000
I 38024 NTR X 38028 H028
I 38029 NOP A 0000
I 38034 TRS 0 10 38044 H-M4-
I 38039 TR 1 38114 H114-
I
I
I 38044 TIP , 14 38048 H&M8.
I 38049 NOP A 0000
I 38054 TRS 0 10 38064 H-04-
I 38059 TR 1 38089 H089-
I
I
I 38064 SPC , 3700.....
I 38069 SET B 0008
I 38074 LOD 8 38174 H174
I 38079 SET B 0032
I 38084 LIP , 15 0009 06&9
I
I
I 38089 SPC , 3700.....
I 38094 SET B 0008
I 38099 LOD 8 38184 H184
I 38104 SET B 0032
I 38109 LIP , 15 0009 06&9
I
I
I 38114 TRA 1 01 38144 H1U4-
I 38119 SEL 2 0500
I 38124 WR R 38160 H160
I 38129 TRA I 03 38139 H1C9-
I 38134 TR 1 38144 H144-
I 38139 HLT J 0395.....
+---38144 TRA I 02 38009 H0-9.
  38149 RCV U 0306
  38154 TR 1 01 0204 02 4
  38159 TR 1 38189 H189-

```

4/9 CHK ON NTR

4/9 CHK ON TIP

RESET CASU 15 ON GOOD

TO 912 SWITCH

RESET CASU 15 ON ERROR

TO 911 SWITCH

ERROR ROUTINE

-----AP39 TO NEXT ROUTINE

2	005	38164		395	C
2	001	38165			
2	005	38170		0-6--	
3		38174	38144	H144	
2	006	38180		00-6--	
3		38184	38114	H114	

LOCATION FOR LIP -GOOD
LOCATION FOR LIP -ERROR

ROUTINE #396
FORCE 4/9 CHECK TO GIVE
900 CHK ON TMT 00 & SND * ALSO
FORCE 9 CHK TO GIVE 900 CHK
ON TCT OPERATION

```

AP38.....
I 38189 RCV U      38319 H319 0
I 38194 TMT 9      38313 H313 0
I 38199 TRS 0 10 38209 HK-9-
I 38204 TR 1       38264 H264-
I
I
I 38209 SET B      0000.....
I 38214 RCV U      38319 H319 0
I 38219 SND /      38313 H313 0
I 38224 TRS 0 10 38234 HKL4-
I 38229 TR 1       38264 H264-
I
I
I 38234 SET B      0004.....
I 38239 LOD 8      38314 H314 0
I 38244 UNL 7      79959 I95R 0
I 38249 RCV U      79989 I98R 0
I 38254 TCT * 08 79958 IR50 0
I 38259 TRS 0 10 38294 HKR4-
I
I
I 38264 TRA I 01 38294 H2Z4-
I 38269 SEL 2      0500      0
I 38274 WR R       38325 H325 0
I 38279 TRA I 03 38289 H2H9-
I 38284 TR 1       38294 H294-
I 38289 HLT J      0396.....
+ 38294 TRA I 02 38189 H1Q9.....
  38299 RCV U      0306      0
  38304 TR 1 01 0204 02 4 0
  38309 TR 1       38339 H339-
I

```

FORCE 4/9 CHK ON TMT 00

FORCE 4/9 CHK ON SND

FORCE 9 CHK ON TCT

ERROR ROUTINE

TO NEXT ROUTINE

```

2 001 38310      #
2 001 38311      #
2 001 38312      #
2 001 38313      #
2 001 38314      #
2 010 38324      #
2 005 38329      396 C
2 001 38330      0

```

AQ40

ROUTINE #397
FORCE 4/9 CHECK TO GIVE
900 CHECK ON THE OPERATIONS
LDA, ULA, AND AAM.

```

AQ39..... 38339 LDA # 38428 H428 0
I 38344 TRS 0 10 38354 HLN4-0-0
I 38349 TR 1 38379 H379-0-0
I 38354 ULA * 38433 H433.0.0
I 38359 TRS 0 10 38369 HEO9-0-0
I 38364 TR 1 38379 H379-0-0
I 38369 AAM @ 38433 H433.0.0
I 38374 TRS 0 10 38409 HM-9-0-0
I 38379 TRA I 01 38409 H4 9-0-0
I 38384 SEL 2 0500 0
I 38389 WR R 38435 H435 0 I
I 38394 TRA I 03 38404 H4G4-0-0 I
I 38399 TR 1 38409 H409-0-0 X
I 38404 HLT J 0397.....0.0 I
+ 38409 TRA I 02 38339 H3L9.0....0
  38414 RCV U 0306 0
  38419 TR 1 01 0204 02 4 0
  38424 TR 1 38449 H449-0-0-----AR41

```

4/9 CHK ON LDA

4/9 CHK ON ULA

4/9 CHK ON AAM

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 38429 00000
2 005 38434 00000
2 005 38439 397 C
2 001 38440 0

```

ROUTINE #398
FORCE 4/9 CHECK TO GIVE
900 CHECK IN I/A TIME ON THE
SECOND ADDRESS.
TEST DR CHAR. ZERO VRC
BLOCKED IN I/A TIME.

```

AR40.....
I 38449 LEM 3 15 0000 0660
I 38454 SB % 13 38459 HDV9
I 38459 TR 1 38464 H464
I 38464 NOP A 38468 H468
I 38469 NOP A 0000
I 38474 TRS 0 10 38484 HMQ4
I 38479 TR 1 38529 H529
I
I
I
I 38484 SET B 0001
I 38489 LOD 8 38575 H575
I 38494 SB % 13 38509 HE 9
I 38499 NOP A 0000
I 38504 SB % 08 38495 HM95
I 38509 NOP A 38499 H499
I 38514 UNL 7 38495 H495
I 38519 TRS 0 10 38529 HNK9
I 38524 TR 1 38559 H559
I
I
I
I 38529 TRA I 01 38559 H5V9
I 38534 SEL 2 0500
I 38539 WR R 38576 H576
I 38544 TRA I 03 38554 H5E4
I 38549 TR 1 38559 H559
I 38554 HLT J 0398
I 38559 TRA I 02 38449 H4M9
I 38564 RCV U 0306
I 38569 TR 1 01 0204 02 4
I 38574 TR 1 38589 H589

```

MAKE THE NOP ADDRESS INDIRECT
4/9 CHK IN I/A TIME

MAKE THE NOP ADDRESS INDIRECT
NO 4/9 CHECK IN I/A TIME

ERROR ROUTINE

-----AS42 TO NEXT ROUTINE

2	001	38575	A
2	005	38580	398 C
2	001	38581	

ROUTINE #399
FORCE OP CHECK TO GIVE 900
CHECK ON AMPERSAND, ZERO,
LOZENGE AND GROUP MARK.

```

AS41.....  38589 & 6 0000  38594 TRS 0 10 38604 HO-4-
I  38599 TR 1 38649 H649-
I  38604 0 0 0000.....
I  38609 TRS 0 10 38619 HOJ9-
I  38614 TR 1 38649 H649-
I  38619  0 0000.....
I  38624 TRS 0 10 38634 HOL4-
I  38629 TR 1 38649 H649-
I  38634 SB % 12 38635 HF35.
I  38639 ADD G 0000
I  38644 TRS 0 10 38679 HOP9-
I  38649 TRA I 01 38679 H6X9-
I  38654 SEL 2 0500
I  38659 WR R 38695 H695
I  38664 TRA I 03 38674 H6G4-
I  38669 TR 1 38679 H679-
I  38674 HLT J 0399.....
I  38679 TRA I 02 38589 H5Q9.
I  38684 RCV U 0306
I  38689 TR 1 01 0204 02 4
I  38694 TR 1 38709 H709-----AT43

```

OP CHK ON &

OP CHK ON ZERO

OP CHK ON (G.M)

MAKE G A GM
OP CHK ON GROUP MARK

ERROR ROUTINE

TO NEXT ROUTINE

2 005 38699
2 001 38700

399 C

ROUTINE #400
TEST CHAR 4 OF DR VRC
USING 900 CHECK. BITS ARE,
-1- , -CBA42- ,
-CA821- AND -B84-

```

AT42..... 38709 EEM 3 14 0000 06-0
I 38714 SET B 0001
I 38719 LOD 8 38880 H880
I 38724 SB % 08 38729 HP29
I 38729 NOP A 0001
I 38734 UNL 7 38729 H729
I 38739 TRS 0 10 38749 HPM9
I 38744 TR 1 38834 H834
I
I
I 38749 LOD 8 38881 H881
I 38754 SB % 08 38759 HP59
I 38759 NOP A 000F
I 38764 UNL 7 38759 H759
I 38769 TRS 0 10 38779 HPP9
I 38774 TR 1 38834 H834
I
I
I 38779 LOD 8 38882 H882
I 38784 SB % 08 38789 HP89
I 38789 NOP A 000
I 38794 UNL 7 38789 H789
I 38799 TRS 0 10 38809 HQ-9
I 38804 TR 1 38834 H834
I
I
I 38809 LOD 8 38883 H883
I 38814 SB % 08 38819 HQ19
I 38819 NOP A 000*
I 38824 UNL 7 38819 H819
I 38829 TRS 0 10 38864 HQ04
I
I
I 38834 TRA I 01 38864 H8W4
I 38839 SEL 2 0500
I 38844 WR R 38884 H884
I 38849 TRA I 03 38859 H8E9
I 38854 TR 1 38864 H864
I 38859 HLT J 0400
+---38864 TRA I 02 38709 H7-9
  38869 RCV U 0306
  38874 TR 1 01 0204 02 4
  38879 TR 1 38894 H894-----AU44
I

```

DR VRC ON -1- BIT

DR VRC ON -CBA42- BITS

DR VRC ON -CA821- BITS

DR VRC ON -B84-BITS

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 38883      1F.*
2 005 38888      400 C
2 001 38889      □

```

ROUTINE #401
TEST CHAR 3 OF DR VRC
USING 900 CHECK. BITS ARE,
-1- , -CBA42- ,
-CA821- AND -B84-

```

AU43..... 38894 EEM 3 14 0000 06-0 0
I 38899 SET B 0001 0
I 38904 LOD 8 39065 I065 0
I 38909 SB % 08 38913 HR13 0
I 38914 NOP A 0010 0
I 38919 UNL 7 38913 H913 0
I 38924 TRS 0 10 38934 HRL4- 0
I 38929 TR 1 39019 I019- 0
I ..... I I
I ..... I I
I 38934 LOD 8 39066 I066. 0
I 38939 SB % 08 38943 HR43 0
I 38944 NOP A 00F0 0
I 38949 UNL 7 38943 H943 0
I 38954 TRS 0 10 38964 HR04- 0
I 38959 TR 1 39019 I019- 0
I ..... I I
I ..... I I
I 38964 LOD 8 39067 I067. 0
I 38969 SB % 08 38973 HR73 0
I 38974 NOP A 00,0 0
I 38979 UNL 7 38973 H973 0
I 38984 TRS 0 10 38994 HRR4- 0
I 38989 TR 1 39019 I019- 0
I ..... I I
I ..... I I
I 38994 LOD 8 39068 I068. 0
I 38999 SB % 08 39003 I-03 0
I 39004 NOP A 00*0 0
I 39009 UNL 7 39003 I003 0
I 39014 TRS 0 10 39049 I-M9- 0
I ..... I I
I ..... I I
I 39019 TRA I 01 39049 IOU9- 0
I 39024 SEL 2 0500 0
I 39029 WR R 39069 I069 0
I 39034 TRA I 03 39044 I0D4- 0
I 39039 TR 1 39049 I049- 0
I 39044 HLT J 0401..... 0
+---39049 TRA I 02 38894 H8R4. 0
 39054 RCV U 0306 0
 39059 TR 1 01 0204 02 4 0
 39064 TR 1 39079 I079- 0
.....

```

DR VRC ON -1- BIT

DR VRC ON -CBA42- BITS

DR VRC ON -CA821- BITS

DR VRC ON -B84- BITS

ERROR ROUTINE

-----AV45 TO NEXT ROUTINE

```

2 004 39068          1F,*
2 005 39073          401 C
2 001 39074          0

```

ROUTINE #402
TEST CHAR 2 OF DR VRC
USING 900 CHECK. BITS ARE:
-1- , -CBA42- ,
-CA821- AND -B84-

```

AV44.....
I 39079 EEM 3 14 0000 06-0
I 39084 SET B 0001
I 39089 LOD 8 39250 I250
I 39094 SB % 08 39097 I-97
I 39099 NOP A 0100
I 39104 UNL 7 39097 I097
I 39109 TRS 0 10 39119 IJJ9
I 39114 TR 1 39204 I204
I
I
I 39119 LOD 8 39251 I251
I 39124 SB % 08 39127 IJ27
I 39129 NOP A 0F00
I 39134 UNL 7 39127 I127
I 39139 TRS 0 10 39149 IJM9
I 39144 TR 1 39204 I204
I
I
I 39149 LOD 8 39252 I252
I 39154 SB % 08 39157 IJ57
I 39159 NOP A 0.00
I 39164 UNL 7 39157 I157
I 39169 TRS 0 10 39179 IJP9
I 39174 TR 1 39204 I204
I
I
I 39179 LOD 8 39253 I253
I 39184 SB % 08 39187 IJ87
I 39189 NOP A 0*00
I 39194 UNL 7 39187 I187
I 39199 TRS 0 10 39234 IKL4
I
I
I 39204 TRA I 01 39234 I2T4
I 39209 SEL 2 0500
I 39214 WR R 39254 I254
I 39219 TRA I 03 39229 I2B9
I 39224 TR 1 39234 I234
I 39229 HLT J 0402
I 39234 TRA I 02 39079 I0P9
I 39239 RCV U 0306
I 39244 TR 1 01 0204 02 4
I 39249 TR 1 39264 I264
I

```

DR VRC ON -1- BIT

DR VRC ON -CBA42- BITS

DR VRC ON -CA821- BITS

DR VRC ON -B84- BITS

ERROR ROUTINE

-----AW46 TO NEXT ROUTINE

2 004	39253	1F.*
2 005	39258	402 C
2 001	39259	□

ROUTINE #403
TEST CHAR 1 OF DR VRC
USING 900 CHECK. BITS ARE,
-1- , -CBA42- ,
-CA821- AND -B84-

```

AW45..... 39264 EEM 3 14 0000 06-0 0
I 39269 SET B 0001 0
I 39274 LOD 8 39435 I435 0
I 39279 SB % 08 39281 IK81 0
I 39284 NOP A 1000 0
I 39289 UNL 7 39281 I281 0
I 39294 TRS 0 10 39304 IL-4- 0
I 39299 TR 1 39389 I389- 0
I 39304 LOD 8 39436 I436. 0
I 39309 SB % 08 39311 IL11 0
I 39314 NOP A 30000 0000 0
I 39319 UNL 7 39311 I311 0
I 39324 TRS 0 10 39334 ILL4- 0
I 39329 TR 1 39389 I389- 0
I 39334 LOD 8 39437 I437. 0
I 39339 SB % 08 39341 IL41 0
I 39344 NOP A 3#000 ,000 0
I 39349 UNL 7 39341 I341 0
I 39354 TRS 0 10 39364 IL04- 0
I 39359 TR 1 39389 I389- 0
I 39364 LOD 8 39438 I438. 0
I 39369 SB % 08 39371 IL71 0
I 39374 NOP A 3@000 *000 0
I 39379 UNL 7 39371 I371 0
I 39384 TRS 0 10 39419 IMJ9- 0
I 39389 TRA I 01 39419 I4/9- 0
I 39394 SEL 2 0500 0
I 39399 WR R 39439 I439 0
I 39404 TRA I 03 39414 I4A4- 0
I 39409 TR 1 39419 I419- 0
I 39414 HLT J 0403. 0
I 39419 TRA I 02 39264 I204. 0
I 39424 RCV U 0306 0
I 39429 TR 1 01 0204 02 4 0
I 39434 TR 1 39449 I449- 0

```

DR VRC ON -1- BIT

DR VRC ON -CBA42- BITS

DR VRC ON -CA821- BITS

DR VRC ON -B84- BITS

ERROR ROUTINE

-----AX47 TO NEXT ROUTINE

2 004 39438
2 005 39443
2 001 39444

1F,*
403 C
0

ROUTINE #404
TEST CHAR 0 OF DR VRC
USING 900 CHECK. BITS ARE,
-1- , CBA42- ,
-CAB21- AND -B84-

```

AX46.....
I 39449 EEM 3 14 0000 0G-0
I 39454 SET B 0001
I 39459 LOD 8 39631 1631
I 39464 SB % 08 39465 1M65
I 39469 TR 1 39474 1474
I 39474 UNL 7 39465 1465
I 39479 TRS 0 10 39489 1MQ9
I 39484 TR 1 39579 1579
I
I
I 39489 LOD 8 39632 1632
I 39494 SB % 08 39495 1M95
I 39499 ST F 39643 1643
I 39504 UNL 7 39495 1495
I 39509 TRS 0 10 39519 1NJ9
I 39514 TR 1 39579 1579
I
I
I 39519 LOD 8 39633 1633
I 39524 SB % 08 39525 1N25
I 39529 CNO , 11 0000 0-0
I 39534 UNL 7 39525 1525
I 39539 TRS 0 10 39549 1NM9
I 39544 TR 1 39579 1579
I
I
I 39549 RAD H 01 39640 16U0
I 39554 LOD 8 39634 1634
I 39559 SB % 08 39560 1N60
I 39564 ULA * 01 39649 16U9
I 39569 UNL 7 39560 1560
I 39574 TRS 0 10 39609 1O-9
I
I
I 39579 TRA I 01 39609 16 9
I 39584 SEL 2 0500
I 39589 WR R 39625 1625
I 39594 TRA I 03 39604 16G4
I 39599 TR 1 39609 1609
I 39604 HLT J 0404
+ 39609 TRA I 02 39449 14M9
  39614 RCV U 0306
  39619 TR 1 01 0204 02 4
  39624 TR 1 39654 1654
I

```

DR VRC ON -1- BIT

DR VRC ON -CBA42- BITS

DR VRC ON -CAB21- BITS

DR VRC ON -B84- BITS

ERROR ROUTINE

AY48 TO NEXT ROUTINE

- | | | | | |
|---|-----|-------|-----|-----------|
| 2 | 005 | 39629 | 404 | C |
| 2 | 001 | 39630 | | |
| 2 | 004 | 39634 | | 1F,* |
| 2 | 006 | 39640 | | X0000G |
| 2 | 009 | 39649 | | X00X00000 |

ROUTINE #405

- A. ROUTE SBR TO STOR WITH 900 TRIGGER ON AND TEST STOR CHAR 5 FOR BIT PICK UP.
- B. ROUTE TRS, NOT SSR 0000 AND TEST FOR FALSE TF OF 900 TGR.

```

AY47..... 39654 EEM 3 14 0000 06-0 0
I 39659 SPC 0005
I 39664 SET B 0000
I 39669 SET B 0001
I 39674 TR 1 39678 1678
I 39679 LOD 8 39755 1755
I 39684 TRS 0 11 39689 10H9-
I 39689 TRS 0 10 39699 10R9-
I 39694 TR 1 39709 1709-
I
I
I 39699 CMP 4 39755 1755-
I 39704 TRE L 39739 1739-
I
I
I 39709 TRA 1 01 39739 17T9-
I 39714 SEL 2 0500
I 39719 WR R 39756 1756
I 39724 TRA 1 03 39734 17C4-
I 39729 TR 1 39739 1739-
I 39734 HLT J 0405-
+---39739 TRA 1 02 39654 16N4-
  39744 RCV U 0306
  39749 TR 1 01 0204 02 4
  39754 TR 1 39769 1769-
  
```

900 TGR ON
0

TEST 900 TGR ON

VS 0

ERROR ROUTINE

-----AZ49 TO NEXT ROUTINE

2 001 39755	0
2 005 39760	405 C
2 001 39761	0

ROUTINE #406
FORCE 901 CHECK USING SB 08.
TEST FOR FALSE TURN OFF OF 901
AND FOR CORRECT TRS 11 TO TURN
OFF 901

```

AZ48.....
I 39769 SB % 08 39819 IQ19
I 39774 SB % 08 39819 IQ19
I
I
I 39779 TRS 0 10 39809 IQ-9-
I 39784 SEL 2 0901
I 39789 TRS 0 39799 I799-
I 39794 TR 1 39809 I809-
I 39799 TRS 0 39809 I809-
I 39804 TR 1 39854 I854-
I
I
I 39809 SB % 09 39819 IQ/9-
I 39814 TRS 0 11 39819 IQA9-
I 39819 NOP A 7777.....
I
I
I 39824 TRA I 01 39854 I8V4-
I 39829 SEL 2 0500
I 39834 WR R 39870 I870
I 39839 TRA I 03 39849 I8D9-
I 39844 TR 1 39854 I854-
I 39849 HLT J 0406.....
+ 39854 TRA I 02 39769 I709-
I 39859 RCV U 0306
I 39864 TR 1 01 0204 02 4
I 39869 TR 1 39884 I884-

```

MAKE REDUNDANCY
CORRECT RED. AND FORCE 901

TEST 901

TEST 901 OFF

SAFETY RESET IF ERROR

ERROR ROUTINE

BA50 TO NEXT ROUTINE

2 005 39874
2 001 39875

406 C
□

ROUTINE #407
FORCE 901 CHECK VIA ADD
TRIGGER USING SB 09. TEST
FOR FALSE AND PROPER TURN
OFF OF 901

```

BA49..... 39884 SB % 08 39975 IR75 0
I 39889 SB % 09 39975 IRX5 0
I
I
I 39894 NOP A 11 39929 IRB9 0
I 39899 SEL 2 0000 0
I 39904 TRS 0 39929 1929
I
I
I 39909 TRS 0 11 39919 IRA9
I 39914 TR 1 39929 1929
I 39919 TRS 0 11 39929 IRB9
I 39924 TR 1 39959 1959
I
I
I 39929 TRA I 01 39959 19V9
I 39934 SEL 2 0500 0
I 39939 WR R 39976 1976 0
I 39944 TRA I 03 39954 19E4
I 39949 TR 1 39959 1959
I 39954 HLT J 0407
+ 39959 TRA I 02 39884 18Q4
  39964 RCV U 0306 0
  39969 TR 1 01 0204 02 4 0
  39974 TR 1 005M 0
  
```

MAKE REDUNDANCY
CORRECT RED. AND FORCE 901

TEST FOR
FALSE TRANSFERS
OR TURN OFF

TEST 901

TEST 901 OFF

ERROR ROUTINE

TO NEXT ROUTINE

2 001 39975
2 005 39980
2 001 39981

7
407 C
0

ans/g0013638.png

ROUTINE #408
TEST MBR CODE CHECK USING TZE
A. WITH 1 BIT
B. WITH CBA 42 BITS
C. WITH C A8 21 BITS

```

#####
I . 40054 SET B      0003
I 40059 LOD B      40209 020R
I #####
I
I #####
I 40064 SB % 08    40202 0K0K
I 40069 RCV U      40202 020K
I 40074 TZB . 01   40079 00XR
I 40079 TRS 0 11   40089 0-HR
I 40084 TR 1       40134 013M
I #####
I
I #####
I 40089 SB % 08    40203 0K0L
I 40094 RCV U      40203 020L
I 40099 TZB . 01   40104 01 M
I 40104 TRS 0 11   40114 0JAM
I 40109 TR 1       40134 013M
I #####
I
I #####
I 40114 SB % 08    40204 0K0M
I 40119 RCV U      40204 020M
I 40124 TZB . 01   40129 01SR
I 40129 TRS 0 11   40144 0JDM
I #####
I
I #####
I 40134 UNL 7      40204 020M
I 40139 TR 1       40154 015M
I #####
I
I #####
I 40144 UNL 7      40204 020M
I 40149 TR 1       40184 018M
I #####
I
I #####
I 40154 TRA I 01   40184 01YM
I 40159 SEL 2      0500
I 40164 WR R       40210 021-
I 40169 TRA I 03   40179 01GR
I 40174 TR 1       40184 018M
I 40179 HLT J      0408
+ 40184 TRA I 02   40054 00NM
  40189 RCV U      0306
  40194 TR 1 01    00204 02 4
  40199 TR 1       40224 022M-----A02
#####

```

PICK UP RESET

901 CHK ON 1 BIT

901 CHK ON CBA 42 BITS

901 CHK ON C A8 21 BITS

ERROR RESET

RESET

ERROR ROUTINE

-----A02 TO NEXT ROUTINE

```

2 005 40204
2 005 40209
2 005 40214
2 001 40215

```

```

--1F, FOR SB 08
--1F, FOR RESET
408 C
  0

```

ROUTINE #409
TEST MBR CODE CHECK USING TZB
A. WITH B 84 BITS
B. WITH STORAGE MARK

```

A01.....  40224 SET B      0002  0
I  40229 LOD 8      40348 034Q  0
I  40234 SB  % 08  40346 0L40  0
I  40239 REV U      40346 0340  0
I  40244 TZB . 01  40249 02UR  0
I  40249 TRS 0 11  40259 0KER  0
I  40254 TR  1      40279 027R  0
I  40259 SB  % 01  40345 03UN  0
I  40264 RCV U      40345 034N  0
I  40269 TZB . 01  40274 02XM  0
I  40274 TRS 0 11  40289 0KHR  0
I  40279 UNL 7      40346 0340  0
I  40284 TR  1      40299 029R  0
I  40289 UNL 7      40346 0340  0
I  40294 TR  1      40329 032R  0
I  40299 TRA 1 01  40329 03SR  0
I  40304 SEL 2      0500  0
I  40309 WR  R      40349 034R  0
I  40314 TRA 1 03  40324 03BM  0
I  40319 TR  1      40329 032R  0
I  40324 HLT J      0409  0
I  40329 TRA 1 02  40224 02KM  0
I  40334 RCV U      0306  0
I  40339 TR  1 01  00204 02 4  0
I  40344 TR  1      40359 035R  0

```

ERROR RESET

RESET

ERROR ROUTINE

-----B03 TO NEXT ROUTINE

2 002 40346	1*	FOR SB 08 AND SB 01
2 002 40348	1*	RESET
2 005 40353	409 C	
2 001 40354	0	

ROUTINE #410
FORCE 901 CHECK THROUGH SBR
VRC USING SET INSTRUCTION.
THREE REDUNDANT CHARACTERS
IN STORAGE.

```

B02.....
I 40359 EEM 3 14 00000 06-0 0
I 40364 SB % 08 40488 0M8Q 0
I 40369 SB % 08 40486 0M8O 0
I 40374 SB % 08 40485 0M8N 0
I
I
I 40379 SPC , 0000 0
I 40384 SET B 0004 0
I 40389 LOD 8 40488 048Q 0
I 40394 TRS 0 11 40399 0LIR-
I
I
I 40399 SET B 0004 .
I 40404 TRS 0 11 40424 0MBM-
I
I
I 40409 LOD 8 40492 049K 0
I 40414 UNL 7 40488 048Q 0
I 40419 TR 1 40439 043R-
I
I
I 40424 LOD 8 40492 049K.
I 40429 UNL 7 40488 048Q 0
I 40434 TR 1 40469 046R-
I
I
I 40439 TRA I 01 40469 04WR-
I 40444 SEL 2 0500 0
I 40449 WR R 40493 049L 0
I 40454 TRA I 03 40464 04FM-
I 40459 TR 1 40469 046R-
I 40464 HLT J 0410 .
I 40469 TRA I 02 40359 03NR.
I 40474 RCV U 0306 0
I 40479 TR 1 01 00204 02 4 0
I 40484 TR 1 40504 050M-
I
I

```

MAKE THREE
REDUNDANT
CHARACTERS

TEST 901

ERROR RESET

RESET

ERROR ROUTINE

TO NEXT ROUTINE

3	40488	40394	039M
3	40492	40394	039M
2	005 40497		410 C
2	001 40498		0

- ROUTINE #411
- A. TEST FOR FALSE 901 WHEN WR IS REDUNDANT
- B. TEST FOR BIT PICKUP IN STORAGE CHAR 5 WHEN 901 CHECK IS ON.

```

C03.....
I 40504 EEM 3 14 00000 06-0
I 40509 SB % 08 40626 0020
I 40514 SPC , 0005
I 40519 SET B 0001
I 40524 LOD 8 40626 0620
I 40529 TRS 0 11 40534 ONCM-
I 40534 NOP A 0000
I 40539 TRS 0 11 40569 ONFR-
I
I
I 40544 SB % 09 40626 00SO
I 40549 LOD 8 40628 062Q
I 40554 TRS 0 11 40559 ONER-
I 40559 CMP 4 40628 062Q
I 40564 TRE L 40609 060R-
I
I
I 40569 SB % 09 40626 00SO
I 40574 TRS 0 11 40579 ONGR-
I
I
I 40579 TRA I 01 40609 06 R-
I 40584 SEL 2 0500
I 40589 WR R 40629 062R
I 40594 TRA I 03 40604 066M-
I 40599 TR 1 40609 060R-
I 40604 HLT J 0411
+ 40609 TRA I 02 40504 05-M-
  40614 RCV U 0306
  40619 TR 1 01 00204 02-4
  40624 TR 1 40639 063R-----D05
I

```

STOR CHAR 5

TF 901

TEST FOR FALSE 901

CORRECT REDUNDANCY

TF 901

TEST FOR BIT PICKUP IN CHAR 5

ERROR RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 002 40626      -1
2 002 40628      -1
2 005 40633      411 C
2 001 40634      □

```

ROUTINE #412
 TEST SBR VRC USING SET L.
 A. WITH 1 BIT
 B. WITH CBA 42 BITS
 C. WITH C A8 21 BITS
 D. WITH B 84 BITS

```

D04.....
I 40639 SET B 0001
I 40644 SB % 08 40841 OQ4J
I 40649 LOD 8 40841 084J
I 40654 SB % 09 40841 OQUJ
I 40659 TRS 0 11 40664 00FM
I 40664 SET B 0001
I 40669 TRS 0 11 40679 00GR
I 40674 TR 1 40784 078M
I
I
I 40679 SB % 08 40842 OQ4K
I 40684 LOD 8 40842 084K
I 40689 SB % 09 40842 OQUK
I 40694 TRS 0 11 40699 00IR
I 40699 SET B 0001
I 40704 TRS 0 11 40714 0PAM
I 40709 TR 1 40784 078M
I
I
I 40714 SB % 08 40843 OQ4L
I 40719 LOD 8 40843 084L
I 40724 SB % 09 40843 OQUL
I 40729 TRS 0 11 40734 0PCM
I 40734 SET B 0001
I 40739 TRS 0 11 40749 0PDR
I 40744 TR 1 40784 078M
I
I
I 40749 SB % 08 40844 OQ4M
I 40754 LOD 8 40844 084M
I 40759 SB % 09 40844 OQUM
I 40764 TRS 0 11 40769 0PFR
I 40769 SET B 0001
I 40774 LOD 8 40840 084
I 40779 TRS 0 11 40824 0QBM
I
I
I 40784 LOD 8 40840 084
I 40789 TRS 0 11 40794 0PIM
I
I
I 40794 TRA I 01 40824 08SM
I 40799 SEL 2 0500
I 40804 WR R 40845 084N
I 40809 TRA I 03 40819 08AR
I 40814 TR 1 40824 082M
I 40819 HLT J 0412
+---40824 TRA I 02 40639 06LR
I 40829 RCV U 0306
I 40834 TR 1 01 00204 02 4
I 40839 TR 1 40859 085R
I
I

```

A
 TF 901
 TEST 901
 B
 TF 901
 TEST 901
 C
 TF 901
 TEST 901
 D
 TF 901
 TEST 901
 ERROR RESET
 ERROR ROUTINE
 TO NEXT ROUTINE

```

2 005 40844 -1F.*
2 005 40849 412 C
2 001 40850

```

ROUTINE #413
FORCE 901 CHECK THROUGH
RR VRC USING STORE.
FOUR REDUNDANT CHAR.

```

E05.....
I 40859 SET B      0004      0
I 40864 LOD 8     40938 093Q  0
I 40869 ST F      40934 093M  0
I 40874 UNL 7     40934 093M  0
I 40879 TRS 0 11 40914 0RAM  0
I
I
I
I 40884 TRA I 01 40914 09/M  0
I 40889 SEL 2     0500      0
I 40894 WR R      40939 093R  0
I 40899 TRA I 03 40909 096R  0
I 40904 TR 1     40914 091M  0
I 40909 HLT J     0413      0
I 40914 TRA I 02 40859 0BNR  0
I 40919 RCV U     0306      0
I 40924 TR 1 01 08204 82 A  0
I 40929 TR 1     40949 094R  0
I

```

FORCE RR VRC

ERROR ROUTINE

F07 TO NEXT ROUTINE

```

2005 40934
2004 40938
2005 40943
2001 40944

```

```

Z01
413 C

```

```

ROUTINE #414
TEST RR VRC USING STORE
A. C 8 1 BITS
B. C 42 BITS
C. 8 21 BITS
D. C 84 BITS

```

```

F06.....
I 40949 SET B 0002
I 40954 LOD 8 41099 109R
I 40959 ST F 41097 109P
I 40964 UNL 7 41096 1090
I 40969 TRS 0 11 40979 0RGR
I 40974 TR 1 41049 104R
I
I
I 40979 LOD 8 41101 110J
I 40984 ST F 41097 109P
I 40989 UNL 7 41096 1090
I 40994 TRS 0 11 41004 1GM
I 40999 TR 1 41049 104R
I
I
I 41004 LOD 8 41103 110L
I 41009 ST F 41097 109P
I 41014 UNL 7 41096 1090
I 41019 TRS 0 11 41029 1BR
I 41024 TR 1 41049 104R
I
I
I 41029 LOD 8 41105 110N
I 41034 ST F 41097 109P
I 41039 UNL 7 41096 1090
I 41044 TRS 0 11 41079 1GR
I
I
I 41049 TRA I 01 41079 10XR
I 41054 SEL 2 0500
I 41059 WR R 41106 1100
I 41064 TRA I 03 41074 10GM
I 41069 TR 1 41079 107R
I 41074 HLT J 0414
I 41079 TRA I 02 40949 09MR
I 41084 RCV U 0306
I 41089 TR 1 01 00204 02 4
I 41094 TR 1 41119 111R

```

A
901 ON C-8-1 BITS

B
901 ON C-4-2 BITS

C
901 ON 8-2-1 BITS

D
901 ON C-8-4 BITS

ERROR ROUTINE

-----G08 TO NEXT ROUTINE

```

2 003 41097
2 008 41105
2 005 41110
2 001 41111

```

Z101.1*1
414 C

- ROUTINE #415
- A. TEST DR VRC TO 901 CHECK DURING SND OPERATION
- B. TEST PR VRC TO 901 CHECK DURING TMT 00 OPERATION.

```

G07.....
I 41119 SB % 08 41267 1K6P
I 41124 SB % 08 41266 1K60
I 41129 SET B 0001
I 41134 RCV U 41274 127M
I 41139 SND / 41269 126R
I 41144 TRS 0 11 41154 1JEM
I 41149 TR 1 41169 116R
I
I
I
I 41154 RCV U 41274 127M
I 41159 TMT 9 41269 126R
I 41164 TRS 0 11 41194 1JIM
I
I
I 41169 SET B 0005
I 41174 LOD 8 41279 127R
I 41179 UNL 7 41269 126R
I 41184 UNL 7 41274 127M
I 41189 TR 1 41219 121R
I
I
I 41194 SET B 0005
I 41199 LOD 8 41279 127R
I 41204 UNL 7 41269 126R
I 41209 UNL 7 41274 127M
I 41214 TR 1 41249 124R
I
I
I 41219 TRA I 01 41249 12UR
I 41224 SEL 2 0500
I 41229 WR R 41280 128-
I 41234 TRA I 03 41244 12DM
I 41239 TR 1 41249 124R
I 41244 HLT J 0415
I 41249 TRA I 02 41119 11JR
I 41254 RCV U 0306
I 41259 TR 1 01 00204 02 4
I 41264 TR 1 41294 129M

```

DR CHK ON SND

DR CHK ON TMT

ERROR RESET

RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 41268
2 001 41269
2 005 41274
2 004 41278
2 001 41279
2 005 41284
2 001 41285

```

```

-24- SND/TMT FIELD
#
----- RCV FIELD
-24- RESET
#
415 C

```

ROUTINE #416
TEST DR VRC TO 901 CHECK
DURING TCT OPERATION.

```

H08.....41294 EEM 3 14 00000 06-0
I 41299 SET B 0010
I 41304 LOD 8 41424 142M
I 41309 UNL 7 79959 195R
I 41314 SB % 08 79951 IR5J
I
I
I 41319 RCV U 79959 195R
I 41324 TCT 08 79959 IR5R
I 41329 UNL 7 79959 195R
I 41334 TRS 0 11 41344 1LDM
I 41339 TR 1 41369 136R
I
I
I 41344 SB % 08 79956 IR50
I 41349 RCV U 79959 195R
I 41354 TCT 08 79959 IR5R
I 41359 UNL 7 79959 195R
I 41364 TRS 0 11 41399 1LIR
I
I
I 41369 TRA I 01 41399 13ZR
I 41374 SEL 2 0500
I 41379 WR R 41425 142N
I 41384 TRA I 03 41394 13IM
I 41389 TR 1 41399 139R
I 41394 HLT J 0416
I 41399 TRA I 02 41294 12RM
I 41404 RCV U 0306
I 41409 TR 1 01 00204 02 4
I 41414 TR 1 41439 143R

```

SET UP 10 CHARACTER
TCT FIELD AT 79959.
CHAR. 1 OF TCT FIELD REDUNDANT

FORCE 901 CHK
CORRECT REDUNDANCY

CHAR. 6 OF TCT FIELD REDUNDANT

FORCE 901 CHECK
CORRECT REDUNDANCY

ERROR ROUTINE

-----J10 TO NEXT ROUTINE

```

2 009 41423
2 001 41424
2 005 41429
2 001 41430

```

```

000000000
#
416 C

```

- A. ROUTINE #417
STEP MAC I THROUGH A
MEMORY QUADRANT AND
TEST DR VRC ON RWW-SND
OPERATION
- B. TEST DR VRC ON TMT 00
PRECEDED BY RWW

```

J09..... 41439 SET B      0010      □
I □ 41444 LOD 8      41574 157M □
I □ 41449 UNL 7      19999 Z999 □
I □ 41454 SB  X 08 19993 ZR93 □
I □ 41459 SB  X 08 19992 ZR92 □
I □ 41464 SET B 01 00000 00 0 □
I □ 41469 RWW S      0004      □
I □ 41474 SND /      0004      □
I □ 41479 TRS 0 11 41489 1MHR----
I □ 41484 TR  1      41514 151M----
I □-----
I □-----
I □-----
I □ 41489 RWW S      19994 Z994.□
I □ 41494 TMT 9      19994 Z994 □
I □ 41499 SND /      19999 Z999 □
I □ 41504 UNL 7      19999 Z999 □
I □ 41509 TRS 0 11 41549 1NDR----
I □-----
I □-----
I □-----
I □ 41514 UNL 7      19999 Z999.□
I □ 41519 TRA I 01 41549 15UR----
I □ 41524 SEL 2      0500      □
I □ 41529 WR  R      41575 157N □
I □ 41534 TRA I 03 41544 15DM----
I □ 41539 TR  1      41549 154R----
I □ 41544 HLT J      0417      □
I □ 41549 TRA I 02 41439 14LR.□
I □ 41554 RCV U      0306      □
I □ 41559 TR  1 01 00204 02 4 □
I □ 41564 TR  1      41589 158R------K11
I □-----

```

PLACE STOR. MARK IN SBR
STEP MAC I THROUGH 20K TO GIV
DR CHK ON SND-CHK MEM.

DR CHK ON TMT
RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 41568
2 001 41569
2 005 41574
2 005 41579
2 001 41580

```

```

1234
#
-----
417 C
□

```

ROUTINE #418
TEST DR VRC ALL CHARACTERS
ON NO BIT CHARACTER--SM
USE SND OPERATION

```

K10.....
I 41589 SET B 0001
I 41594 LOD 8 41795 179N
I 41599 SB % 01 41794 17ZM
I 41604 RCV U 41794 179M
I 41609 SND / 41794 179M
I 41614 UNL 7 41794 179M
I 41619 TRS 0 11 41629 10BR
I 41624 TR 1 41744 174M
I 41629 SB % 01 41793 17ZL
I 41634 RCV U 41794 179M
I 41639 SND / 41794 179M
I 41644 UNL 7 41793 179L
I 41649 TRS 0 11 41659 10ER
I 41654 TR 1 41744 174M
I 41659 SB % 01 41792 17ZK
I 41664 RCV U 41794 179M
I 41669 SND / 41794 179M
I 41674 UNL 7 41792 179K
I 41679 TRS 0 11 41689 10HR
I 41684 TR 1 41744 174M
I 41689 SB % 01 41791 17ZJ
I 41694 RCV U 41794 179M
I 41699 SND / 41794 179M
I 41704 UNL 7 41791 179J
I 41709 TRS 0 11 41719 1PAR
I 41714 TR 1 41744 174M
I 41719 SB % 01 41790 17Z
I 41724 RCV U 41794 179M
I 41729 SND / 41794 179M
I 41734 UNL 7 41790 179
I 41739 TRS 0 11 41774 1PGM
I 41744 TRA I 01 41774 17XM
I 41749 SEL 2 0500
I 41754 WR R 41796 1790
I 41759 TRA I 03 41769 17FR
I 41764 TR 1 41774 177M
I 41769 HLT J 0418
I 41774 TRA I 02 41589 15QR
I 41779 RCV U 0306
I 41784 TR 1 01 00204 02 4
I 41789 TR 1 41809 18OR
L12 TO NEXT ROUTINE

```

```

2 005 41794 11111
2 001 41795 1
2 005 41800 418 C
2 001 41801

```


ROUTINE #419
FORCE 901 CHECK ON LIP WITH
WORD 3 OF CASU 15 REDUNDANT.
TEST FOR FALSE 901 ONCE WR
IS REDUNDANT

```

L11.....41809 NOP A      45539 553R-----AD29  SW- BYPASS ON CHAN OPERATION
      41814 EEM 3 14 00000 06-0
I 41819 SPC ,      3700
I 41824 SET B      0008
I 41829 LOD 8      41994 199M
I 41834 SET B      0032
I 41839 SB % 08 41986 1R80
I 41844 SB % 08 41985 1R8N
I 41849 SPC ,      3736
I 41854 LOD 8      41986 1980
I 41859 SB % 11 41986 1RHO
I 41864 SB % 10 41985 1RQN
I 41869 TRS 0 11 41874 1QGM-----
I 41874 LIP , 15 00009 0669.....
I 41879 TRS 0 11 41909 1R&R-----
I 41884 SPC ,      3700
I 41889 SET B      0000
I 41894 SET B      0032
I 41899 SPC ,      0000
I 41904 TR  1      41939 193R-----
I 41909 SPC ,      3700
I 41914 SET B      0000
I 41919 SET B      0032
I 41924 SPC ,      0000
I 41929 TRS 0 11 41939 1RCR-----
I 41934 TR  1      41969 196R-----
I 41939 TRA I 01 41969 19WR-----
I 41944 SEL 2      0500
I 41949 WR  R      41995 199N
I 41954 TRA I 03 41964 19FM-----
I 41959 TR  1      41969 196R-----
I 41964 HLT J      0419
+-----41969 TRA I 02 41814 18JM.....
I 41974 RCV U      0306
I 41979 TR  1 01 00204 02 4
I 41984 TR  1      42009 200R-----M13

```

SET UP CASU 15
WITH
REDUNDANT
WORD 3
AND
TF 901

DO LIP
AND TEST 901

ERROR RESET

CLEAR CASU 15
AND TEST FOR
FALSE 901

ERROR ROUTINE

TO NEXT ROUTINE

- 2 006 41990
- 3 41994
- 2 005 41999
- 2 001 42000
- 41879 187R
- 419 C
-

ROUTINE #420
 TEST WR VRC CHAR 0 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

M12.....
I 42009 EEM 3 14 00000 0G-0
I 42014 SPC , 0000
I 42019 SET B 0020
I 42024 LOD 8 42245 224N
I 42029 SB % 08 42241 2K4J
I 42034 SB % 08 42236 2K30
I 42039 SB % 08 42231 2K3J
I 42044 SB % 08 42226 2K20
I 42049 SPC , 3700
I 42054 SET B 0032
I 42059 LOD 8 42277 227P
I
I
I 42064 SPC , 3730
I 42069 LFC , 02 42226 22K0
I 42074 TRS 0 11 42079 2-GR-
I 42079 LIP , 15 03700 3G&0
I 42084 TRS 0 11 42094 2-IM-
I 42089 TR 1 42159 215R-
I
I 42094 LFC , 02 42231 22LJ
I 42099 TRS 0 11 42104 2J&M-
I 42104 LIP , 15 03700 3G&0
I 42109 TRS 0 11 42119 2JAR-
I 42114 TR 1 42159 215R-
I
I 42119 LFC , 02 42236 22LO
I 42124 TRS 0 11 42129 2JBR-
I 42129 LIP , 15 03700 3G&0
I 42134 TRS 0 11 42144 2JDM-
I 42139 TR 1 42159 215R-
I
I 42144 LFC , 02 42241 22MJ
I 42149 TRS 0 11 42154 2JEM-
I 42154 LIP , 15 03700 3G&0
I
I
I 42159 SET B 0000
I 42164 SPC , 0000
I 42169 UNL 7 42245 224N
I 42174 TRS 0 11 42209 2KGR-
I
I
I 42179 TRA I 01 42209 22 R-
I 42184 SEL 2 0500
I 42189 WR R 42278 227Q
I 42194 TRA I 03 42204 22GM-
I 42199 TR 1 42209 220R-
I 42204 HLT J 0420
+---42209 TRA I 02 42009 20-R-
  42214 RCV U 0306
  42219 TR 1 01 00204 02 4
  42224 TR 1 42289 228R-----N14
  
```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 0

B CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 0

C. CAB21 BITS.
 TF 901
 FORCE WR VRC CHAR. 0

D. B84 BITS
 TF 901
 FORCE WR VRC CHAR. 0

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

TO NEXT ROUTINE

2 021 42245 -1-----F-----*----- TEST CHARACTERS
 2 032 42277 3730 CASU 15 RESE
 2 005 42282
 2 001 42283 420 C
 □

ROUTINE #421
 TEST WR VRC CHAR 1 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

N13..... 00000000000000000000000000000000
I 0 42289 EEM 3 14 00000 00-0 0
I 0 42294 SPC , 0000 0
I 0 42299 SET B 0020 0
I 0 42304 LOD 8 42525 252N 0
I 0 42309 SB % 08 42521 2N2J 0
I 0 42314 SB % 08 42516 2N10 0
I 0 42319 SB % 08 42511 2N1J 0
I 0 42324 SB % 08 42506 2N00 0
I 0 42329 SPC , 3700 0
I 0 42334 SET B 0032 0
I 0 42339 LOD 8 42557 255P 0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 0 42344 SPC , 3731 0
I 0 42349 LFC , 02 42506 25-0 0
I 0 42354 TRS 0 11 42359 2LER- 0
I 0 42359 LIP , 15 03700 3G&0. 0
I 0 42364 TRS 0 11 42374 2LGM- 0
I 0 42369 TR 1 42439 243R- 0
I 0
I 0 42374 LFC , 02 42511 25JJ. 0
I 0 42379 TRS 0 11 42384 2LHM- 0
I 0 42384 LIP , 15 03700 3G&0. 0
I 0 42389 TRS 0 11 42399 2LIR- 0
I 0 42394 TR 1 42439 243R- 0
I 0
I 0 42399 LFC , 02 42516 25JO. 0
I 0 42404 TRS 0 11 42409 2M&R- 0
I 0 42409 LIP , 15 03700 3G&0. 0
I 0 42414 TRS 0 11 42424 2MBM- 0
I 0 42419 TR 1 42439 243R- 0
I 0
I 0 42424 LFC , 02 42521 25KJ. 0
I 0 42429 TRS 0 11 42434 2MCM- 0
I 0 42434 LIP , 15 03700 3G&0. 0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 0 42439 SET B 0000 0
I 0 42444 SPC , 0000 0
I 0 42449 UNL 7 42525 252N 0
I 0 42454 TRS 0 11 42489 2MHR- 0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 0 42459 TRA I 01 42489 24YR- 0
I 0 42464 SEL 2 0500 0
I 0 42469 WR R 42558 255Q 0
I 0 42474 TRA I 03 42484 24HM- 0
I 0 42479 TR 1 42489 248R- 0
I 0 42484 HLT J 0421 0
I 0 42489 TRA I 02 42289 22QR. 0
I 0 42494 RCV U 0306 0
I 0 42499 TR 1 01 00204 02 4 0
I 0 42504 TR 1 42569 256R- 0
I 00000000000000000000000000000000
  
```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F . *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 1

B CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 1

C. CBA21 BITS.
 TF 901
 FORCE WR VRC CHAR. 1

D. B846 BITS
 TF 901
 FORCE WR VRC CHAR. 1

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

TO NEXT ROUTINE

2 021 42525
 2 032 42557
 2 005 42562
 2 001 42563

TEST CHARACTERS
 3731 CASU 15 RESET
 421 C
 0

ROUTINE #422
 TEST WR VRC CHAR 2 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

P14.....
I 42569 EEM 3 14 00000 06-0
I 42574 SPC , 0000
I 42579 SET B 0020
I 42584 LOD 8 42805 280N
I 42589 SB % 08 42801 2Q0J
I 42594 SB % 08 42796 2P90
I 42599 SB % 08 42791 2P9J
I 42604 SB % 08 42786 2P80
I 42609 SPC , 3700
I 42614 SET B 0032
I 42619 LOD 8 42837 283P
I
I
I
I 42624 SPC , 3732
I 42629 LFC , 02 42786 27Q0
I 42634 TRS 0 11 42639 2OCR
I 42639 LIP , 15 03700 3G&0
I 42644 TRS 0 11 42654 2OEM
I 42649 TR 1 42719 271R
I
I 42654 LFC , 02 42791 27RJ
I 42659 TRS 0 11 42664 2OFM
I 42664 LIP , 15 03700 3G&0
I 42669 TRS 0 11 42679 2OGR
I 42674 TR 1 42719 271R
I
I 42679 LFC , 02 42796 27R0
I 42684 TRS 0 11 42689 2OHR
I 42689 LIP , 15 03700 3G&0
I 42694 TRS 0 11 42704 2P&M
I 42699 TR 1 42719 271R
I
I 42704 LFC , 02 42801 28-J
I 42709 TRS 0 11 42714 2PAM
I 42714 LIP , 15 03700 3G&0
I
I
I 42719 SET B 0000
I 42724 SPC , 0000
I 42729 UNL 7 42805 280N
I 42734 TRS 0 11 42769 2PFR
I
I
I 42739 TRA I 01 42769 27WR
I 42744 SEL 2 0500
I 42749 WR R 42838 283Q
I 42754 TRA I 03 42764 27FM
I 42759 TR 1 42769 276R
I 42764 HLT J 0422
I 42769 TRA I 02 42569 250R
I 42774 RCV U 0306
I 42779 TR 1 01 00204 02 4
I 42784 TR 1 42849 284R
I

```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 2

B. CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 2

C. CBA21 BITS
 TF 901
 FORCE WR VRC CHAR. 2

D. B84 BITS
 TF 901
 FORCE WR VRC CHAR. 2

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

-----Q16 TO NEXT ROUTINE

2 021 42805
 2 032 42837
 2 005 42842
 2 001 42843

-1-----F-----,*----- TEST CHARACTERS
 3732 CASU 15 RESET
 422 C
 □

ROUTINE #423
 TEST WR VRC CHAR 3 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

Q15..... 42849 EEM 3 14 00000 0G-0 0
I 42854 SPC , 0000 0
I 42859 SET B 0020 0
I 42864 LOD 8 43085 308N 0
I 42869 SB % 08 43081 3-8J 0
I 42874 SB % 08 43076 3-70 0
I 42879 SB % 08 43071 3-7J 0
I 42884 SB % 08 43066 3-60 0
I 42889 SPC , 3700 0
I 42894 SET B 0032 0
I 42899 LOD 8 43117 311P 0
I 42904 SPC , 3733 0
I 42909 LFC , 02 43066 3000 0
I 42914 TRS 0 11 42919 2RAR- 0
I 42919 LIP , 15 03700 3G&0. 0
I 42924 TRS 0 11 42934 2RCM- 0
I 42929 TR 1 42999 299R- 0
I 42934 LFC , 02 43071 30PJ. 0
I 42939 TRS 0 11 42944 2RDM- 0
I 42944 LIP , 15 03700 3G&0. 0
I 42949 TRS 0 11 42959 2RER- 0
I 42954 TR 1 42999 299R- 0
I 42959 LFC , 02 43076 30PO. 0
I 42964 TRS 0 11 42969 2RFR- 0
I 42969 LIP , 15 03700 3G&0. 0
I 42974 TRS 0 11 42984 2RHM- 0
I 42979 TR 1 42999 299R- 0
I 42984 LFC , 02 43081 30QJ. 0
I 42989 TRS 0 11 42994 2RIM- 0
I 42994 LIP , 15 03700 3G&0. 0
I 42999 SET B 0000 0
I 43004 SPC , 0000 0
I 43009 UNL 7 43085 308N 0
I 43014 TRS 0 11 43049 3-DR- 0
I 43019 TRA I 01 43049 30UR- 0
I 43024 SEL 2 0500 0
I 43029 WR R 43118 311Q 0
I 43034 TRA I 03 43044 30DM- 0
I 43039 TR 1 43049 304R- 0
I 43044 HLT J 0423 0
I 43049 TRA I 02 42849 28MR. 0
I 43054 RCV U 0306 0
I 43059 TR 1 01 00204 02 4 0
I 43064 TR 1 43129 312R- 0
  
```

LOD RESET FIELD

MAKE 4 REDUNDANT
TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT

TF 901
FORCE WR VRC CHAR. 3

B CBA42 BITS
TF 901
FORCE WR VRC CHAR. 3

C. CA821 BIT.
TF 901
FORGE WR VRC CHAR. 3

D. B84 BITS
TF 901
FORCE WR VRC CHAR. 3

RESET
REDUNDANT
TEST CHARACTERS

ERROR ROUTINE

-----R17 TO NEXT ROUTINE

2 021 43085
 2 032 43117
 2 005 43122
 2 001 43123

-1---F---,---*--- TEST CHARACTERS
 3733 CASU 15 RESE
 423 C
 0

ROUTINE #424
 TEST WR VRC CHAR 4 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

R16..... 43129 EEM 3 14 00000 0&-0
I 43134 SPC , 0000
I 43139 SET B 0020
I 43144 LOD 8 43365 336N
I 43149 SB % 08 43361 3L6J
I 43154 SB % 08 43356 3L50
I 43159 SB % 08 43351 3L5J
I 43164 SB % 08 43346 3L40
I 43169 SPC , 3700
I 43174 SET B 0032
I 43179 LOD 8 43397 339P
I
I
I 43184 SPC , 3734
I 43189 LFC , 02 43346 33MO
I 43194 TRS 0 11 43199 3JIR-
I 43199 LIP , 15 03700 3G&0.
I 43204 TRS 0 11 43214 3KAM-
I 43209 TR 1 43279 327R-
I
I 43214 LFC , 02 43351 33NJ.
I 43219 TRS 0 11 43224 3KBM-
I 43224 LIP , 15 03700 3G&0.
I 43229 TRS 0 11 43239 3KCR-
I 43234 TR 1 43279 327R-
I
I 43239 LFC , 02 43356 33NO.
I 43244 TRS 0 11 43249 3KDR-
I 43249 LIP , 15 03700 3G&0.
I 43254 TRS 0 11 43264 3KFM-
I 43259 TR 1 43279 327R-
I
I 43264 LFC , 02 43361 330J.
I 43269 TRS 0 11 43274 3KGM-
I 43274 LIP , 15 03700 3G&0.
I
I
I 43279 SET B 0000
I 43284 SPC , 0000
I 43289 UNL 7 43365 336N
I 43294 TRS 0 11 43329 3LBR-
I
I
I 43299 TRA I 01 43329 33SR-
I 43304 SEL 2 0500
I 43309 WR R 43398 339Q
I 43314 TRA I 03 43324 33BM-
I 43319 TR 1 43329 332R-
I 43324 HLT J 0424
+---43329 TRA I 02 43129 31KR.
I 43334 RCV U 0306
I 43339 TR 1 01 00204 02 4
I 43344 TR 1 43409 340R-
I
I

```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 4

B CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 4

C. CA821 BITS.
 TF 901
 FORCE WR VRC CHAR. 4

D. B84 BITS
 TF 901
 FORCE WR VRC CHAR. 4

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

TO NEXT ROUTINE

2 021 43365
 2 032 43397
 2 005 43402
 2 001 43403

-1---F---*--- TEST CHARACTERS
 3734 CASU 15 RESET
 424 C
 □

ROUTINE #425
 TEST WR VRC CHAR 5 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

S17..... 00000000000000000000000000000000
I 43409 EEM 3 14 00000 0G-0
I 43414 SPC , 0000
I 43419 SET B 0020
I 43424 LOD 8 43645 364N
I 43429 SB % 08 43641 304J
I 43434 SB % 08 43636 3030
I 43439 SB % 08 43631 303J
I 43444 SB % 08 43626 3020
I 43449 SPC , 3700
I 43454 SET B 0032
I 43459 LOD 8 43677 367P
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 43464 SPC , 3735
I 43469 LFC , 02 43626 36K0
I 43474 TRS 0 11 43479 3MGR
I 43479 LIP , 15 03700 3G&0
I 43484 TRS 0 11 43494 3MIM
I 43489 TR 1 43559 355R
I
I 43494 LFC , 02 43631 36LJ
I 43499 TRS 0 11 43504 3N&M
I 43504 LIP , 15 03700 3G&0
I 43509 TRS 0 11 43519 3NAR
I 43514 TR 1 43559 355R
I
I 43519 LFC , 02 43636 36LO
I 43524 TRS 0 11 43529 3NBR
I 43529 LIP , 15 03700 3G&0
I 43534 TRS 0 11 43544 3NDM
I 43539 TR 1 43559 355R
I
I 43544 LFC , 02 43641 36MJ
I 43549 TRS 0 11 43554 3NEM
I 43554 LIP , 15 03700 3G&0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 43559 SET B 0000
I 43564 SPC , 0000
I 43569 UNL 7 43645 364N
I 43574 TRS 0 11 43609 30GR
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 43579 TRA I 01 43609 36 R
I 43584 SEL 2 0500
I 43589 WR R 43678 367Q
I 43594 TRA I 03 43604 36&M
I 43599 TR I 43609 360R
I 43604 HLT J 0425
+ 43609 TRA I 02 43409 34-R
  43614 RCV U 0306
  43619 TR I 01 00204 02 4
  43624 TR I 1 43689 368R
00000000000000000000000000000000

```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 5

B. CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 5

C. CAB21 BITS.
 TF 901
 FORCE WR VRC CHAR. 5

D. B84 BITS
 TF 901
 FORCE WR VRC CHAR. 5

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

T19 TO NEXT ROUTINE

2 021 43645
 2 002 43677
 2 005 43682
 2 001 43683

-1---F---,---*--- TEST CHARACTERS
 3735 CASU 15 RESET
 425 C
 □

ROUTINE #426
 TEST WR VRC CHAR 6 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

T18..... 43689 EEM 3 14 00000 0G-0
I 43694 SPC , 0000
I 43699 SET B 0020
I 43704 LOD 8 43925 392N
I 43709 SB % 08 43921 3R2J
I 43714 SB % 08 43916 3R10
I 43719 SB % 08 43911 3R1J
I 43724 SB % 08 43906 3R00
I 43729 SPC , 3700
I 43734 SET B 0032
I 43739 LOD 8 43957 395P
I
I
I
I 43744 SPC , 3736
I 43749 LFC , 02 43906 39-0
I 43754 TRS 0 11 43759 3PER-
I 43759 LIP , 15 03700 3GG0.
I 43764 TRS 0 11 43774 3PGM-
I 43769 TR 1 43839 383R-
I
I 43774 LFC , 02 43911 39JJ.
I 43779 TRS 0 11 43784 3PHM-
I 43784 LIP , 15 03700 3GG0.
I 43789 TRS 0 11 43799 3PIR-
I 43794 TR 1 43839 383R-
I
I 43799 LFC , 02 43916 39JO.
I 43804 TRS 0 11 43809 3Q&R-
I 43809 LIP , 15 03700 3GG0.
I 43814 TRS 0 11 43824 3QBM-
I 43819 TR 1 43839 383R-
I
I 43824 LFC , 02 43921 39KJ.
I 43829 TRS 0 11 43834 3QCM-
I 43834 LIP , 15 03700 3GG0.
I
I
I 43839 SET B 0000
I 43844 SPC , -0000
I 43849 UNL 7 43925 392N
I 43854 TRS 0 11 43889 3QHR-
I
I
I 43859 TRA I 01 43889 38YR-
I 43864 SEL 2 0500
I 43869 WR R 43958 395Q
I 43874 TRA I 03 43884 38HM-
I 43879 TR 1 43889 388R-
I 43884 HLT J 0426
I 43889 TRA I 02 43689 36QR.
I 43894 RCV U 0306
I 43899 TR 1 01 00204 02 4
I 43904 TR 1 43969 396R-
I
I

```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 6

B CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 6

C. CA821 BITS.
 TF 901
 FORCE WR VRC CHAR. 6

D. B84 BITS
 TF 901
 FORCE WR VRC CHAR. 6

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

TO NEXT ROUTINE

2 021 43925
 2 032 43957
 2 005 43962
 2 001 43963

-1----F-----*----- TEST CHARACTERS
 3736 CASU 15 RESET
 426 C
 □

ROUTINE #427
 TEST WR VRC CHAR 7 USING
 LIP INSTRUCTION TO FORCE 901
 A. 1 BIT
 B. CBA 42 BITS
 C. C A8 21 BITS
 D. B 84 BITS

```

U19..... 43969 EEM 3 14 00000 06-0 0
I 43974 SPC , 0000 0
I 43979 SET B 0020 0
I 43984 LOD 8 44205 420N 0
I 43989 SB % 08 44201 4KOJ 0
I 43994 SB % 08 44196 4J90 0
I 43999 SB % 08 44191 4J9J 0
I 44004 SB % 08 44186 4J80 0
I 44009 SPC , 3700 0
I 44014 SET B 0032 0
I 44019 LOD 8 44237 423P 0
I
I
I 44024 SPC , 3737 0
I 44029 LFC , 02 44186 41QO 0
I 44034 TRS 0 11 44039 4-CR- 0
I 44039 LIP , 15 03700 3GG0. 0
I 44044 TRS 0 11 44054 4-EM- 0
I 44049 TR 1 44119 411R- 0
I
I 44054 LFC , 02 44191 41RJ. 0
I 44059 TRS 0 11 44064 4-FM- 0
I 44064 LIP , 15 03700 3GG0. 0
I 44069 TRS 0 11 44079 4-GR- 0
I 44074 TR 1 44119 411R- 0
I
I 44079 LFC , 02 44196 41RO. 0
I 44084 TRS 0 11 44089 4-HR- 0
I 44089 LIP , 15 03700 3GG0. 0
I 44094 TRS 0 11 44104 4J&M- 0
I 44099 TR 1 44119 411R- 0
I
I 44104 LFC , 02 44201 42-J. 0
I 44109 TRS 0 11 44114 4JAM- 0
I 44114 LIP , 15 03700 3GG0. 0
I
I
I 44119 SET B 0000 .....
I 44124 SPC , 0000 0
I 44129 UNL 7 44205 420N 0
I 44134 TRS 0 11 44169 4JFR- 0
I
I
I 44139 TRA I 01 44169 41WR- 0
I 44144 SEL 2 0500 0
I 44149 WR R 44238 423Q 0
I 44154 TRA I 03 44164 41FM- 0
I 44159 TR 1 44169 416R- 0
I 44164 HLT J 0427 .0.01
+---44169 TRA I 02 43969 39OR.0.01
  44174 RCV U 0306 0
  44179 TR 1 01 00204 02 4 0
  44184 TR 1 44249 424R- -----V21
  
```

LOD RESET FIELD
 MAKE 4 REDUNDANT
 TEST CHARACTERS 1 F , *

RESET CASU 15

A. 1 BIT
 TF 901
 FORCE WR VRC CHAR. 7

B CBA42 BITS
 TF 901
 FORCE WR VRC CHAR. 7

C. CBA21 BITS.
 TF 901
 FORCE WR VRC CHAR. 7

D. B84 BITS
 TF 901
 FORCE WR VRC CHAR. 7

RESET
 REDUNDANT
 TEST CHARACTERS

ERROR ROUTINE

TO NEXT ROUTINE

2 021 44205
 2 032 44237
 2 005 44242
 2 001 44243

-1---F---,----*----- TEST CHARACTERS
 3737 CASU 15 RESE1
 427 C
 0

- ROUTINE #428
- A. DO LIP TO FORCE 900, 901 CHECKS AND TEST BOTH ON
- B. DO LIP TO RESET 900, 901 CHECKS AND TEST BOTH OFF

SET UP CASU 15
WITH 900 AND 901
STATUS BITS

FORCE 900 AND 901 ON
AND TEST

SET UP CASU 15 WITHOUT
900 AND 901 STATUS BITS

TURN 900 AND 901 ON

RESET 900 AND 901 OFF
AND TEST

ERROR ROUTINE

-----W22 TO NEXT ROUTINE

```

V20..... 00000000000000000000000000000000
I 44249 EEM 3 14 00000 06-0 0
I 44254 SPC , 3700 0
I 44259 SET B 0008 0
I 44264 LOD 8 44409 440R 0
I 44269 SET B 0032 0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 44274 LIP , 15 00009 0669 0
I 44279 TRS 0 10 44289 4KQR-
I 44284 TR 1 44354 435M-
I 44289 TRS 0 11 44299 4KIR-
I 44294 TR 1 44354 435M-
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 44299 SPC , 3700 .
I 44304 SET B 0008 0
I 44309 LOD 8 44419 441R 0
I 44314 SET B 0032 0
I 44319 SB % 08 44321 4L2J 0
I 44324 SB % 08 44321 4L2J 0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 44329 LIP , 15 00009 0669 0
I 44334 TRS 0 10 44354 4LNM-
I 44339 TRS 0 11 44354 4LEM-
I 44344 TR 1 44384 438M-
I 44349 TRS 0 11 44354 4LEM-
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 44354 TRA I 01 44384 43YM-
I 44359 SEL 2 0500 0
I 44364 WR R 44420 442- 0
I 44369 TRA I 03 44379 43GR-
I 44374 TR 1 44384 438M-
I 44379 HLT J 0428 .
+ 44384 TRA I 02 44249 42MR-
  44389 RCV U 0306 0
  44394 TR 1 01 00204 02 4 0
  44399 TR 1 44434 443M-
00000000000000000000000000000000

```

2	006	44405		00-GL-
3		44409	44279	427R
2	006	44415		00-C--
3		44419	44334	433M
2	005	44424		428 C
2	001	44425		0

ROUTINE #429
DO TIP WITH 900 AND 901 ON.
TEST STORING OF STATUS BITS

```

W21.....
I □ 44434 EEM 3 14 00000 0&-0 □
I □ 44439 SPC , 3700 □
I □ 44444 SET B 0000 □
I □ 44449 SET B 0032 □
I □ 44454 SB % 08 44458 4M5Q □
I □ 44459 SB % 08 44458 4M5Q □
I □ 44464 TIP , 14 44469 4DOR-□-□
I □ 44469 TRS 0 11 44474 4MGM-□-□-□
I □ 44474 SPC , 3705 □
I □ 44479 SET B 0001 □
I □ 44484 CMP 4 44610 461- □
I □ 44489 TRE L 44524 452M-□-□
I □ 44494 SPC , 3700 □
I □ 44499 SET B 0008 □
I □ 44504 LOD 8 44609 460R □
I □ 44509 SET B 0028 □
I □ 44514 LIP , 15 00009 0&&9 □
I □ 44519 TR 1 44554 455M-□-□-□
I □ 44524 SPC , 3700 □
I □ 44529 SET B 0008 □
I □ 44534 LOD 8 44619 461R □
I □ 44539 SET B 0028 □
I □ 44544 LIP , 15 00009 0&&9 □
I □ 44549 TR 1 44584 458M-□-□-□
I □ 44554 TRA I 01 44584 45YM-□-□-□-□
I □ 44559 SEL 2 0500 □
I □ 44564 WR R 44620 462- □
I □ 44569 TRA I 03 44579 45GR-□-□-□
I □ 44574 TR 1 44584 458M-□-□-□-□
I □ 44579 HLT J 0429 □
I □ 44584 TRA I 02 44434 44LM-□-□-□-□
I □ 44589 RCV U 0306 □
I □ 44594 TR 1 01 00204 02 4 □
I □ 44599 TR 1 44634 463M-□-□-□-□

```

CLEAR CASU 15

TN 900 AND 901 CHECKS

DO TIP AND
TEST STATUS
BITS STORED

ERROR RESET

GOOD RESET

ERROR ROUTINE

-----X23 TO NEXT ROUTINE

2 006 44605	00-&--	STATUS AND IC FOR LIP-ERROR
3 44609	44519 451R	
2 006 44615	L--&--	STATUS AND IC FOR LIP-GOOD
3 44619	44549 454R	
2 005 44624	429 C	
2 001 44625	□	

ROUTINE #430
FORCE 902 CHECK AND TEST
SEL 0902-TRS. ALSO TEST FOR
FALSE TRANSFERS.

```

X22..... 44634 EEM 3 14 00000 06-0 0
I 44639 SPC , 3700 0
I 44644 SET B 0008 0
I 44649 LOD B 44764 476M 0
I 44654 SET B 0032 0
I 44659 LIP , 15 00009 0669 0
I
I
I 44664 NOP A 12 44699 4F9R 0
I 44669 SEL 2 0902 0
I 44674 TRS 0 13 44699 4FZR-
I
I
I 44679 TRS 0 44689 468R-
I 44684 TR 1 44699 469R-
I 44689 TRS 0 44699 469R-
I 44694 TR 1 44734 473M-
I
I
I 44699 TRS 0 12 44704 4G0M-
I 44704 TRA 1 01 44734 47TM-
I 44709 SEL 2 0500 0
I 44714 WR R 44750 475- 0
I 44719 TRA 1 03 44729 47BR-
I 44724 TR 1 44734 473M-
I 44729 HLT J 0430 .
-44734 TRA 1 02 44634 46LM-
 44739 RCV U 0306 0
 44744 TR 1 01 00204 02 4 0
 44749 TR 1 44769 476R-

```

SET UP CASU 15 WITH
902 STATUS BIT
AND DO LIP

TEST FOR
FALSE
TRANSFERS

DO TRS
TWICE TO
CHECK 902 TURNED OFF

ERROR ROUTINE

-----Y24 TO NEXT ROUTINE

```

2 005 44754 430 C
2 001 44755 0
2 005 44760 0-6M-
3 44764 44664 466M

```

IC AND STATUS FOR LIP

ROUTINE #431
FORCE 902 CHECK AND TEST
TRS 12. ALSO TEST FOR FALSE
TRANSFER

```

Y23.....
I 44769 EEM 3 14 0000 06-0
I 44774 SPC , 3700
I 44779 SET B 0008
I 44784 LOD 8 44899 489R
I 44789 SET B 0032
I 44794 LIP , 15 00009 06&9
I
I
I 44799 SEL 2 0000
I 44804 TRS 0 44829 482R-
I
I 44809 TRS 0 12 44819 4H1R-
I 44814 TR 1 44829 482R-
I 44819 TRS 0 12 44829 4H2R-
I 44824 TR 1 44869 486R-
I
I
I 44829 SEL 2 0902
I 44834 TRS 0 44839 483R-
I
I 44839 TRA I 01 44869 48WR-
I 44844 SEL 2 0500
I 44849 WR R 44885 488N
I 44854 TRA I 03 44864 48FM-
I 44859 TR 1 44869 486R-
I 44864 HLT J 0431
I 44869 TRA I 02 44769 47OR-
I 44874 RCV U 0306
I 44879 TR 1 01 00204 02 4
I 44884 TR 1 44904 490M-
I

```

SET UP CASU 15 WITH
902 STATUS BIT
AND DO LIP

TEST FALSE
TRANSFER

DO TRS 12
TWICE TO CHECK
THAT 902 TURNED OFF

ERROR RESET 902

ERROR ROUTINE

-----Z25 TO NEXT ROUTINE

```

2 005 44889          431 C
2 001 44890          □
2 005 44895          0-&M-
3      44899          44799 479R

```

IC AND STATUS FOR LIP

ROUTINE #432
FORCE 903 CHECK AND TEST
SEL 0903-TRS. ALSO TEST
FOR FALSE TRANSFERS.

```

Z24..... 44904 EEM 3 14 00000 06-0 0
I 44909 SPC , 3700 0
I 44914 SET B 0008 0
I 44919 LOD 8 45034 503M 0
I 44924 SET B 0032 0
I 44929 LIP , 15 00009 06&9 0
I #####
I
I #####
I 44934 NOP A 13 44969 4IWR 0
I 44939 SEL 2 0903 0
I 44944 TRS 0 12 44969 416R-
I #####
I
I #####
I 44949 TRS 0 44959 495R-
I 44954 TR 1 44969 496R-
I 44959 TRS 0 44969 496R-
I 44964 TR 1 45004 500M-
I #####
I
I #####
I 44969 TRS 0 13 44974 41XM-
I 44974 TRA I 01 45004 50 M-
I 44979 SEL 2 0500 0
I 44984 WR R 45020 502- 0
I 44989 TRA I 03 44999 49TR-
I 44994 TR 1 45004 500M-
I 44999 HLT J 0432 0
+---45004 TRA I 02 44904 49-M-
  45009 RCV U 0306 0
  45014 TR 1 01 00204 02 A 0
  45019 TR 1 45039 503R-
#####

```

SET UP CASU 15 WITH
903 STATUS BIT
AND DO LIP

TEST FOR
FALSE
TRANSFERS

TO TRS TWICE
TO CHECK THAT
903 TURNED OFF

ERROR ROUTINE

AA26 TO NEXT ROUTINE

```

2 005 45024 432 C
2 001 45025 0
2 005 45030 0-66-
3 45034 44934 493M

```

IC AND STATUS FOR LIP

ROUTINE #433
FORCE 903 CHECK AND TEST
TRS 13. ALSO TEST FOR FALSE
TRANSFER.

```

AA25..... 00000000000000000000000000000000
I 45039 EEM 3 14 00000 06-0 0
I 45044 SPC 3700 0
I 45049 SET B 0008 0
I 45054 LOD B 45169 516R 0
I 45059 SET B 0032 0
I 45064 LIP 15 00009 06&9 0
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 45069 SEL 2 0000 0
I 45074 TRS 0 45099 509R-#--#
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 45079 TRS 0 13 45089 56YR-#--#
I 45084 TR 1 45099 509R-#--#
I 45089 TRS 0 13 45099 56ZR-#--#
I 45094 TR 1 45139 513R-#--#
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 45099 SEL 2 0903 .#...I
I 45104 TRS 0 45109 510R-#--#
I 00000000000000000000000000000000
I
I 00000000000000000000000000000000
I 45109 TRA I 01 45139 51TR-#--#
I 45114 SEL 2 0500 0
I 45119 WR R 45155 515N 0
I 45124 TRA I 03 45134 51CM-#--#
I 45129 TR 1 45139 513R-#--#
I 45134 HLT J 0433 .#...I
I 45139 TRA I 02 45039 50LR-#...I
I 45144 RCV U 0306 0
I 45149 TR 1 01 00204 02 4 0
I 45154 TR 1 45174 517M-#-----AB27
00000000000000000000000000000000

```

SET UP CASU 15 WITH
903 STATUS BIT
AND DO LIP

TEST FALSE
TRANSFER

DO TRS 13 TWICE
TO CHECK THAT
903 TURNED OFF

ERROR RESET 903

ERROR ROUTINE

-----AB27 TO NEXT ROUTINE

```

2 005 45159 433 C
2 001 45160 0
2 005 45165 0-66-
3 45169 45069 506R

```

IC AND STATUS FOR LIP

ROUTINE #434
DO LIP TO RESET 902 AND 903
TRIGGERS OFF.

SET UP CASU 15 WITH
STATUS BITS TO TURN ON
902 AND 903 TRIGGERS

CLEAR 902 AND 903
STATUS BITS AND
LIP

TEST 902
AND 903

ERROR ROUTINE

AC28 TO NEXT ROUTINE

CONSTANTS
STATUS TO TN 902 AND 903
STATUS TO RESET 902 AND 903

```

AB26.....
I 45174 EEM 3 14 00000 06-0
I 45179 SPC 3700
I 45184 SET B 0008
I 45189 LOD 8 45304 530M
I 45194 SET B 0032
I 45199 LIP 15 00009 06&9
I
I
I 45204 SPC 3700
I 45209 LFC 02 45314 53JM
I 45214 SPC 3704
I 45219 LFC 02 45309 53-R
I 45224 LIP 15 00009 06&9
I
I
I 45229 TRS 0 12 45244 5B4M
I 45234 TRS 0 13 45244 5BUM
I 45239 TR 1 45279 527R
I
I
I 45244 TRS 0 13 45249 5BUR
I 45249 TRA 1 01 45279 52XR
I 45254 SEL 2 0500
I 45259 WR R 45315 531N
I 45264 TRA I 03 45274 52GM
I 45269 TR 1 45279 527R
I 45274 HLT J 0434
I 45279 TRA I 02 45174 51PM
I 45284 RCV U 0306
I 45289 TR 1 01 00204 02 4
I 45294 TR 1 45329 532R
I

```

2	006	45300		00-6D-
3		45304	45204	520M
2	006	45310		0-6--0
3		45314	45229	522R
2	005	45319		434 C
2	001	45320		

ROUTINE #435
DO TIP TO PICK UP 902 AND 903
STATUS BITS TEST FOR CORRECT
STATUS AND ALSO TEST FOR FALSE
BIT PICK UP IN STORAGE.

```

AC27.....I 45329 EEM 3 14 00000 0G-0 0
I 45334 SPC , 3700 0
I 45339 SET B 0008 0
I 45344 LOD 8 45519 551R 0
I 45349 SET B 0032 0
I 45354 LIP , 15 00009 0G&9 0
I
I
I
I 45359 SPC , 0005 0
I 45364 SET B 0001 0
I 45369 LOD 8 45520 552- 0
I
I
I 45374 SPC , 3704 0
I 45379 LFC , 02 45524 55KM 0
I 45384 SPC , 0000 0
I 45389 TIP , 14 45394 5CRM- 0
I 45394 TRS 0 12 45399 5C9R- 0
I 45399 TRS 0 13 45404 5D M- 0
I 45404 SPC , 3704 . 0
I 45409 SET B 0002 0
I 45414 CMP 4 45527 552P 0
I 45419 TRE L 45429 542R- 0
I 45424 TR 1 45459 545R- 0
I
I
I 45429 SPC , 0005 . 0
I 45434 CMP 4 45525 552N 0
I 45439 TRE L 45449 544R- 0
I 45444 TR 1 45459 545R- 0
I
I
I 45449 LIP , 15 03700 3G&0 . 0
I 45454 TR 1 45494 549M- 0
I 45459 LIP , 15 03700 3G&0 . 0
I
I
I 45464 TRA 1 01 45494 54ZM- 0
I 45469 SEL 2 0500 0
I 45474 WR R 45528 552Q 0
I 45479 TRA I 03 45489 54HR- 0
I 45484 TR 1 45494 549M- 0
I 45489 HLT J 0435 . 0
+ 45494 TRA I 02 45329 53KR . 0
  45499 RCV U 0306 0
  45504 TR 1 01 00204 02 4 0
  45509 TR 1 45539 553R-----AD29
I

```

SETUP CASU 15 WITH
STATUS BITS TO TURN ON
902 AND 903

DO LOD

CLEAR STATUS IN CASU 15

TURN OFF
902 AND 903
AND TEST
STATUS
BITS

TEST RESULT OF
LOD

LIP-GOOD

ERROR ROUTINE

-----AD29 TO NEXT ROUTINE

```

2 006 45515
3 45519 45359 00-&D-
2 005 45524 535R
2 003 45527 1-&--
2 005 45532 1D-
2 001 45533 435 C
  0

```

STATUS TO TN 902 AND 903
STATUS TO TF 902 AND 903

ROUTINE #436
DO ADD AND FORCE 904 CHECK
TEST FOR FALSE TRANSFER, AND
TEST SEL 0904-TRS 00.

AD12

AD28.....

```

#####
I 45539 RAD H      45579 557R 0
I 45544 ADD G      45579 557R 0
I 45549 NOP A 14 45584 5EQM 0
#####
I
I #####
I 45554 SEL 2      0904      0
I 45559 TRS 0      45569 556R-0
I 45564 TR 1       45584 558M-0
I 45569 TRS 0      45584 558M-0
I 45574 TR 1       45614 561M-0
I 45579 NOP A      0111      0
#####
I
I #####
I 45584 TRA I 01 45614 56/M-0
I 45589 SEL 2      0500      0
I 45594 WR R       45630 563-0
I 45599 TRA I 03 45609 566R-0
I 45604 TR 1       45614 561M-0
I 45609 HLT J      0436      0
I 45614 TRA I 02 45539 55LR-0
I 45619 RCV U      0306      0
I 45624 TR 1 01 00204 02 4 0
I 45629 TR -1      45644 564M-0
#####

```

FORCE 904

DO TRS TWICE
TO CHECK THAT
904 TURNED OFF

ERROR ROUTINE

AE30 TO NEXT ROUTINE

2 005 45634
2 001 45635

436 C
0

ROUTINE #437
DO SUB AND FORCE 904 CHECK.
TEST FOR FALSE TRANSFERS
AND TEST TRS 14.

AE29.....
45644 RSU Q 45746 5740
45649 SUB P 45746 5740
I

FORCE 904

I
I
I 45654 SEL 2 0904
I 45659 TRS 0 15 45694 5FIM
I 45664 SEL 2 0000
I 45669 TRS 0 45694 569M

TEST FOR
FALSE
TRANSFERS

I
I
I 45674 TRS 0 14 45684 5FQM
I 45679 TR 1 45694 569M
I 45684 TRS 0 14 45694 5FRM
I 45689 TR 1 45729 572R

TEST TRS 14

I
I
I 45694 TRS 0 14 45699 5FRR
I 45699 TRA 1 01 45729 57SR
I 45704 SEL 2 0500
I 45709 WR R 45747 574P
I 45714 TRA I 03 45724 57BM
I 45719 TR 1 45729 572R

ERROR ROUTINE

I
I
I 45724 HLT J 0437
I 45729 TRA I 02 45644 56MM
I 45734 RCV U -0306
I 45739 TR I 01 00204 02 4
I 45744 TR 1 45759 575R

AF31 TO NEXT ROUTINE

2 002 45746
2 005 45751
2 001 45752

I I
437 C
I

ROUTINE #438
FORCE 904 ON ROUND INTO
STORAGE MARK AND TEST 904.
ALSO CHECK FOR BIT PICK UP
IN STORAGE CHAR. 6.

```

AF30.....I 45759 EEM 3 14 00000 00-0 I
I 45764 SPC . 0000 I
I 45769 SET B 0000 I
I 45774 RND E 0001 I
I 45779 SPC . 0006 I
I 45784 SET B 0001 I
I 45789 LOD 8 45867 586P I
I
I
I 45794 TRS 0 14 45804 5H-M-I
I 45799 TR 1 45814 581M-I
I 45804 CMP 4 45866 5860-I
I 45809 TRE L 45844 584M-I
I
I
I 45814 TRA I 01 45844 58UM-I
I 45819 SEL 2 0500 I
I 45824 WR R 45860 586-I
I 45829 TRA I 03 45839 58CR-I
I 45834 TR 1 45844 584M-I
I 45839 HLT J 0438 I
+ 45844 TRA I 02 45759 57NR-I
I 45849 RCV U 0306 I
I 45854 TR 1 01 00204 02-4 I
I 45859 TR 1 45874 587M-I

```

FORCE 904

LOD CHAR. 6 WITH 904 ON

TEST 904

TEST STORAGE CHAR 6

ERROR ROUTINE

AG32 TO NEXT ROUTINE

2 005 45864
2 001 45865
2 002 45867

438 C
I
66

ROUTINE #442
FORCE 905 CHECK AND TEST
TRS 15. ALSO TEST FOR BIT
PICKUP IN STORAGE CHAR.6

AK34.....

```

#####
I 46284 EEM 3 14 00000 06-0
I 46289 RAD H 46382 638K
I 46294 SPC , 0006
I 46299 SET B 0001
I 46304 LOD 8 46384 638M
#####
I
I
I #####
I 46309 TRS 0 15 46319 6CAR-
I 46314 TR 1 46329 632R-
I 46319 CMP 4 46385 638N.
I 46324 TRE L 46359 635R-
#####
I
I
I #####
I 46329 TRA I 01 46359 63VR-
I 46334 SEL 2 0500
I 46339 WR R 46375 637N
I 46344 TRA I 03 46354 63EM-
I 46349 TR 1 46359 635R-
I 46354 HLT J 0442
+---46359 TRA I 02 46284 62QM.
 46364 RCV U 0306
 46369 TR 1 01 00204 02 4
 46374 TR 1 46394 639M-
#####
I
I
I

```

FORCE 905

DO LOD WITH 905 ON

TEST STORAGE CHAR 6.

ERROR ROUTINE

```

2 005 46379 442 C
2 001 46380
2 005 46385 X5 &&

```

ROUTINE #443
FORCE AND TEST 905 CHECK
FROM UNSIGNED MPY AND DIV.

```

#####
I 46394 RAD H 46483 648L.
I 46399 MPY V 46485 648N
I 46404 TRS 0 15 46414 6DAM-
I 46409 TR 1 46429 642R-
#####
I
I
I #####
I 46414 RAD H 46483 648L.
I 46419 DIV W 46485 648N
I 46424 TRS 0 15 46459 6DER-
#####
I
I
I #####
I 46429 TRA I 01 46459 64VR-
I 46434 SEL 2 0500
I 46439 WR R 46475 647N
I 46444 TRA I 03 46454 64EM-
I 46449 TR 1 46459 645R-
I 46454 HLT J 0443
+---46459 TRA I 02 46394 63RM.
 46464 RCV U 0306
 46469 TR 1 01 00204 02 4
 46474 TR 1 46494 649M-
#####

```

FORCE 905 ON MPY
AND TEST

FORCE 905 ON DIV
AND TEST

ERROR ROUTINE

```

2 005 46479 443 C
2 001 46480
2 005 46485 X4I 7

```

-----AL36 TO NEXT ROUTINE

ROUTINE #444
TURN ON THE ANY TRIGGER AND
TEST TRA. ALSO TEST FOR
FALSE TRANSFERS.

```

AL35.....
I 46494 SB % 08 46499 6M9R
I 46499 SB % 08 46499 6M9R
I 46504 TRS 0 10 46509 6N-R-
I 46509 TRS 0 11 46514 6NAM-
I
I
I 46514 NOP A 46544 654M-
I 46519 TRA I 08 46544 6N4M-
I
I
I 46524 TRA I 46534 653M-
I 46529 TR 1 46544 654M-
I 46534 TRA I 46544 654M-
I 46539 TR 1 46574 657M-
I
I
I 46544 TRA I 01 46574 65XM-
I 46549 SEL 2 0500
I 46554 WR R 46590 659-
I 46559 TRA I 03 46569 65FR-
I 46564 TR 1 46574 657M-
I 46569 HLT J 0444
I 46574 TRA I 02 46494 64RM-
I 46579 RCV U 0306
I 46584 TR 1 01 00204 02 4
I 46589 TR 1 46604 660M-AM37
I

```

FORCE 900, 901, AND ANY
TF900
TF901

TEST FOR
FALSE TRANSFERS

DO TRA TWICE
TO CHECK THAT
ANY TURNS OFF

ERROR ROUTINE

2 005 46594
2 001 46595

444 C
□

ROUTINE #445
FORCE ANY TRIGGER ON FROM
900, 901, 904, AND 905
CHECKS AND TEST INDIVIDUALLY.

```

AM36.....I 46604 LEM 3 15 00000 0&0 0
I 46609 SPC ; 0000
I 46614 TRS 0 10 46619 60JR-
I 46619 TRA I 46629 662R-
I 46624 TR 1 46694 669M-
I
I
I
I 46629 SB % 08 46748 6P4Q.
I 46634 SB % 09 46748 6PUQ
I 46639 TRS 0 11 46644 60DM-
I 46644 TRA I 46654 665M-
I 46649 TR 1 46694 669M-
I
I
I
I 46654 RAD H 46747 674P.
I 46659 RND E 0001
I 46664 TRS 0 14 46669 6FOR-
I 46669 TRA I 46679 667R-
I 46674 TR 1 46694 669M-
I
I
I
I 46679 RAD H 46748 674Q.
I 46684 TRS 0 15 46689 6FHR-
I 46689 TRA I 46724 672M-
I
I
I
I 46694 TRA I 01 46724 67SM-
I 46699 SEL 2 0500
I 46704 WR R 46740 674-
I 46709 TRA I 03 46719 67AR-
I 46714 TR 1 46724 672M-
I 46719 HLT J 0445
I 46724 TRA I 02 46604 66-M-
I 46729 RCV U 0306
I 46734 TR 1 01 00204 02 4
I 46739 TR 1 46754 675M-AN38
I

```

900 CHK
TEST ANY

901 CHK
TEST ANY

904 CHK
TEST ANY

905 CHK
TEST ANY

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 46744 445 C
2 001 46745
2 003 46748 X19

```

ROUTINE #446
DO TIP AND TEST STORING OF
STATUS BITS FOR 904,905,
AND THE ANY TRIGGERS.

AN37.....
.....46754 NOP A 47429 742R-----AT43 SW- BYPASS ON CHAN OPERATION

.....46759 EEM 3 14 00000 0&-0
I 46764 SPC , 3700
I 46769 SET B 0000
I 46774 SET B 0032
I 46779 SPC , 0000

CLEAR
CASU 15

.....46784 RAD H 46907 690P
I 46789 ADD G 46908 690Q
I 46794 TIP , 14 46799 6GRR-

TN 904, 905, ANY

.....46799 TRS 0 14 46804 6H-M
I 46804 TRS 0 15 46809 6H&R
I 46809 TRA I 46814 681M
I 46814 SPC , 3706
I 46819 SET B 0001
I 46824 CMP 4 46910 691-
I 46829 TRE L 46839 683R-
I 46834 TR I 46849 684R-
I 46839 LIP , 15 03700 3G&0.
I 46844 TR I 46884 688M-

TURN OFF CHECKS
AND TEST STATUS

LIP-GOOD

.....46849 LIP , 15 03700 3G&0.
I 46854 TRA I 01 46884 68YM-
I 46859 SEL 2 0500
I 46864 WR R 46900 690-
I 46869 TRA I 03 46879 68GR-
I 46874 TR I 46884 688M-
I 46879 HLT J 0446
+-----46884 TRA I 02 46759 67NR-
I 46889 RCV U 0306
I 46894 TR I 01 00204 02 4
I 46899 TR I 46919 691R-----AP39

ERROR ROUTINE

TO NEXT ROUTINE

2 005 46904 446 C
2 001 46905
2 005 46910 XI9 G

ROUTINE #447
DO LIP AND TEST SETTING
OF 904, 905 AND ANY
TRIGGERS FROM STATUS BITS.

SET UP CASU 15 WITH
STATUS BITS FOR 904,
905 AND ANY.

TEST 904

TEST 905

TEST ANY

ERROR ROUTINE

TO NEXT ROUTINE

```

AP38.....
I 46919 EEM 3 14 00000 0&-0
I 46924 SPC , 3700
I 46929 SET B 0008
I 46934 LOD B 47032 703K
I 46939 SET B 0032
I 46944 LIP , 15 00009 0&&9
I
I
I 46949 TRS 0 14 46964 6IOM-
I 46954 TRS 0 15 46959 6IER-
I 46959 TR 1 46979 697R-
I 46964 TRS 0 15 46974 6IGM-
I 46969 TR 1 46979 697R-
I 46974 TRA I 47009 700R-
I
I
I 46979 TRA I 01 47009 70 R-
I 46984 SEL 2 0500
I 46989 WR R 47033 703L
I 46994 TRA I 03 47004 70&M-
I 46999 TR 1 47009 700R-
I 47004 HLT J 0447
I 47009 TRA I 02 46919 69JR-
I 47014 RCV U 0306
I 47019 TR 1 01 00204 02 4
I 47024 TR 1 47044 704M-

```

```

2 004 47028
3 47032
2 005 47037
2 001 47038
46949 -G-
694R
447 C

```

ROUTINE #448
DO LIP AND TEST RESET OF
904, 905 AND ANY TRIGGERS.

```

AQ39.....I 47044 EEM 3 14 00000 0&-0 0
I 47049 SPC , 3700 0
I 47054 SET B 0008 0
I 47059 LOD 8 47157 715P 0
I 47064 SET B 0032 0
I #####I#####
I
I #####V#####
I 47069 RAD H 01 47159 71VR 0
I 47074 ADD G 01 47160 71W- 0
I 47079 LIP , 15 00009 0&&9 0
I #####I#####
I
I #####V#####
I 47084 TRS 0 14 47104 7A-M-0
I 47089 TRS 0 15 47104 7A&M-0
I 47094 TRA I 47104 710M-0
I 47099 TR 1 47134 713M-0
I #####II
I
I #####II
I 47104 TRA I 01 47134 71TM-0
I 47109 SEL 2 0500 0 I
I 47114 WR R 47161 716J 0 I
I 47119 TRA I 03 47129 71BR-0 I
I 47124 TR 1 47134 713M-0
I 47129 HLT J 0448 .0011
+---47134 TRA I 02 47044 70MM.0001
  47139 RCV U 0306 0
  47144 TR 1 01 00204 02 4 0
  47149 TR 1 47174 717M-0-----AR41
#####

```

SET UP CASU 15
WITHOUT 904,
905 AND ANY STATUS BITS

TN 904, 905, ANY

TEST 904,
905,
AND ANY OFF

ERROR ROUTINE

TO NEXT ROUTINE

2	004	47153		-6--
3		47157	47084	708M
2	003	47160		X19
2	005	47165		448 C
2	001	47166		0

ROUTINE #449
TEST BL AD TRIGGER ON TIP.
DO TIP WITH SBR CHAR 0 RED.
AND TEST 901.

```

AR40.....
I 47174 EEM 3 14 00000 06-0
I 47179 SPC 3700
I 47184 SB % 08 47291 7K9J
I 47189 SET B 0001
I 47194 LOD 8 47291 729J
I 47199 SPC 0000
I 47204 SB % 09 47291 7KZJ
I 47209 TRS 0 11 47214 7KAM
I
I
I
I 47214 TIP 14 47219 7BJR
I 47219 TRS 0 11 47234 7KCM
I 47224 LIP 15 03700 3G60
I 47229 TR 1 47269 726R
I
I
I
I 47234 LIP 15 03700 3G60
I 47239 TRA I 01 47269 72WR
I 47244 SEL 2 0500
I 47249 WR R 47285 728N
I 47254 TRA I 03 47264 72FM
I 47259 TR I 47269 726R
I 47264 HLT J 0449
I 47269 TRA I 02 47174 71PM
I 47274 RCV U 0306
I 47279 TR I 01 00204 02 4
I 47284 TR I 47299 729R
I

```

RED. TO CHAR 0 WD 0 CASU 15

TEST 901

ERROR ROUTINE

AS42 TO NEXT ROUTINE

```

2 005 47289 449 C
2 001 47290
2 001 47291 7

```

ROUTINE #450
TEST BL AD TRIGGER AND FOR
FALSE WR CHECK ON LIP.
SET SBR CHAR. 0 AND WR CHAR. 0
REDUNDANT, DO LIP 3700
AND TEST FOR NO 901 CHECK.

```

AS41..... 47299 EEM 3 14 00000 06-0 0
I 47304 SPC , 0000 0
I 47309 TIP , 14 47314 7CJM-0
I 47314 SET B 0001 .0.0
I 47319 SB % 08 47421 7M2J 0
I 47324 LOD 8 47421 742J 0
I 47329 LOD 8 47421 742J 0
I 47334 SB % 09 47421 7MSJ 0
I 47339 TRS 0 11 47344 7LDM-0
I 00000000000000000000000000000000 I
I
I 00000000000000000000000000000000 I
I 47344 LIP , 15 03700 3G&0.0.0
I 47349 TRS 0 11 47364 7LFM-0
I 47354 SET B 0000 0
I 47359 TR 1 47399 739R-0
I 00000000000000000000000000000000 I
I
I 00000000000000000000000000000000 I
I 47364 SET B 0000 .0.0
I 47369 TRA I 01 47399 73ZR-0
I 47374 SEL 2 0500 0
I 47379 WR R 47415 741N 0
I 47384 TRA I 03 47394 73IM-0
I 47389 TR 1 47399 739R-0
I 47394 HLT J 0450 .0.0
+ 47399 TRA I 02 47299 72RR.0.0
  47404 RCV U 0306 0
  47409 TR 1 01 00204 02 4 0
  47414 TR 1 47429 742R-0-----AT43
00000000000000000000000000000000

```

RED. TO STORAGE AND SBR
RED. TO WR

DO LIP
TEST 901

ERROR ROUTINE

RO NEXT ROUTINE

2 005 47419
2 001 47420
2 001 47421

450 S
0
7

ROUTINE #451
TEST TZB FOR CHECK
SUPPRESSION. NO 901 ON
FORCED 900 CHK AND SBR RED.

AT38
AT42.....

```

#####
I  47429 SB % 08 47454 7M5M
I  47434 SET B 01 00001 00 1
I  47439 LOD 8 01 47454 74VM
I  47444 TRS 0 11 47449 7MDR
I  47449 RCV U      0004
I  47454 TZB . 08 47459 7M5R
I  47459 TRS 0 10 47464 7MOM
I  47464 TRS 0 11 47484 7MHM
I  47469 LOD 8 01 47549 75UR
I  47474 UNL 7 01 47454 74VM
I  47479 TR  1      47524 752M
#####
I  47484 LOD 8 01 47549 75UR
I  47489 UNL 7 01 47454 74VM
#####
I  47494 TRA I 01 47524 75SM
I  47499 SEL 2      0500
I  47504 WR  R      47540 754
I  47509 TRA I 03 47519 75AR
I  47514 TR  1      47524 752M
I  47519 HLT J      0451
+ 47524 TRA I 02 47429 74KR
  47529 RCV U      0306
  47534 TR  1 01 00204 02 4
  47539 TR  1      47554 755M
#####

```

TZB INST. REDUNDANT

SBR CHAR. 0 RED

TEST 901

ERROR RESET

ERROR ROUTINE

-----AU44 TO NEXT ROUTINE

```

2 005 47544          451 S
2 001 47545          47549
3 47549          47459 745R

```


ROUTINE #452
TEST SB 08 FOR FALSE 900
OR 901 CHECKS.

```

AU43.....
I 47554 SB % 08 47681 708J
I 47559 TRS 0 10 47614 70JM
I 47564 TRS 0 11 47614 70AM
I
I
I 47569 SET B 01 00001 00 1
I 47574 LOD 8 01 47681 76YJ
I 47579 TRS 0 11 47584 7NHM
I 47584 SB % 09 47683 70YL
I 47589 TRS 0 11 47614 70AM
I
I
I 47594 SET B 01 00000 00 0
I 47599 SB % 09 47681 70YJ
I 47604 TRS 0 11 47609 706R
I 47609 TR 1 47659 765R
I
I
I 47614 SET B 01 00000 00 0
I 47619 SB % 09 47681 70YJ
I 47624 TRS 0 11 47629 70BR
I
I
I 47629 TRA I 01 47659 76VR
I 47634 SEL 2 0500
I 47639 WR R 47675 767N
I 47644 TRA I 03 47654 76EM
I 47649 TR 1 47659 765R
I 47654 HLT J 0452
I 47659 TRA I 02 47554 75NM
I 47664 RCV U 0306
I 47669 TR 1 01 00204 02 4
I 47674 TR 1 47689 768R
I

```

SBR CHAR 0 RED.
DO SB WITH SBR RED.
AND TEST 901

RESET GOOD

RESET ERROR

ERROR ROUTINE

TO NEXT ROUTINE

2 005 47679
2 001 47680
2 003 47683

452 S
X 7

ROUTINE #454
TEST BL AD TRIGGER AND
SUP SBR CHECK DURING
SGN INSTRUCTION.

```

AW45.....
I 47829 SET B      0001
I 47834 LOD 8      47939 793R
I 47839 SB % 08    47859 7Q5R
I 47844 SET B 01   00001 00 1
I 47849 LOD 8 01   47859 78VR
I 47854 TRS 0 11  47859 7QER
I
I
I 47859 SGN T 01   47944 79UM
I 47864 TRS 0 10  47869 7QOR
I 47869 UNL 7      47859 785R
I 47874 TRS 0 11  47884 7QHM
I 47879 TR 1       47914 791M
I
I
I 47884 TRA I 01   47914 79/M
I 47889 SEL 2      0500
I 47894 WR R       47930 793-
I 47899 TRA I 03   47909 796R
I 47904 TR 1       47914 791M
I 47909 HLT J      0454
I 47914 TRA I 02   47829 78KR
I 47919 RCV U      0306
I 47924 TR 1 01   00204 02 4
I 47929 TR 1       47949 794R
I

```

MAKE RED. SGN OPERATION
STORAGE AND SBR CHAR. 0 RED

FORCE 900 CHECK

TEST 901

ERROR ROUTINE

AX47 TO NEXT ROUTINE

```

2 005 47934      454 S
2 001 47935      □
3 47939      47944 794M
2 005 47944      XXXX1

```

ROUTINE #455
TEST TSL INSTRUCTION FOR
SUB MBR CHECK AND SUP
SBR CHECK.

```

AX46.....
I 47949 SET B      0001  □
I 47954 LOD 8     48066 8060 □
I 47959 SB % 08  47981 7R8J □
I 47964 SET B 01 00001 00 1 □
I 47969 LOD 8 01 47981 79YJ □
I 47974 TRS 0 11 47979 7RGR-□
I 47979 RCV U     48071 807J.□
I 47984 TR 1 01 47989 79YR-□
I 47989 TRS 0 10 47994 7RRM-□
I 47994 SET B 01 00000 00 0.□
I 47999 UNL 7     47981 798J □
I 48004 TRS 0 11 48014 8-AM-□
I 48009 TR 1     48044 804M-□
I 48014 TRA I 01 48044 80UM-□
I 48019 SEL 2     0500  □ I
I 48024 WR R     48060 806- □ I
I 48029 TRA I 03 48039 80CR-□ I
I 48034 TR 1     48044 804M-□ I
I 48039 HLT J     0455  □ I
I 48044 TRA I 02 47949 79MR.□ I
I 48049 RCV U     0306  □
I 48054 TR 1 01 00204 02 4 □
I 48059 TR 1     48079 807R-□

```

MAKE RED. TSL OPERATION
MAKE SBR CHAR. 0 RED.

FORCE 900 CHECK

TEST 901

ERROR ROUTINE

AY48 TO NEXT ROUTINE

```

2 005 48064      455 S
2 001 48065      □
3 000 48069      47989 798R
2 005 48074

```


ROUTINE #459
TEST SUP MBR CODE CHECK
ON TMT LO SPEED

```

BB50.....
I 48609 SB % 08 48726 8P20
I 48614 SB % 08 48729 8P2R
I 48619 SB % 08 48732 8P3K
I
I
I 48624 SET B 01 00002 00 2
I 48629 RCV U 48732 873K
I 48634 TMT 9 01 48727 87SP
I 48639 TRS 0 11 48664 80FM
I
I
I 48644 SB % 09 48726 8PS0
I 48649 SB % 09 48729 8PSR
I 48654 TRS 0 11 48659 8OER
I 48659 TR 1 48709 87OR
I
I
I 48664 SB % 09 48726 8PS0
I 48669 SB % 09 48729 8PSR
I 48674 TRS 0 11 48679 8OGR
I
I
I 48679 TRA I 01 48709 87 R
I 48684 SEL 2 0500
I 48689 WR R 48735 873N
I 48694 TRA I 03 48704 87GM
I 48699 TR 1 48709 87OR
I 48704 HLT J 0459
+ 48709 TRA I 02 48609 86-R
  48714 RCV U 0306
  48719 TR 1 01 00204 02 4
  48724 TR 1 48749 874R
I

```

RED. TO LEFT END TMT FIELD
RED. TO RIGHT END TMT FIELD
RED. TO RCV FIELD

RESET-GOOD

RESET-ERROR

ERROR ROUTINE

BC52 TO NEXT ROUTINE

```

2 005 48729      0X23X  TMT FIELD
2 005 48734      00230  RCV FIELD
2 005 48739      459 S
2 001 48740      □

```


ROUTINE #460
TEST HIGH SPEED TMT FOR
CHECK SUPPRESSION

```

BC51..... 00000000000000000000000000000000
I 48749 SET B 0001
I 48754 LOD 8 48904 890M
I 48759 SB % 08 48769 8P6R
I 48764 RCV U 48894 889M
I 48769 TMT 9 48884 888M
I 48774 TRS 0 10 48779 8PPR
I 48779 UNL 7 48769 876R
I 48784 TRS 0 11 48834 8QCM
I 00000000000000000000000000000000 I
I 48789 LOD 8 48884 888M
I 48794 SB % 08 48889 8Q8R
I 48799 SB % 08 48894 8Q9M
I 48804 RCV U 48894 889M
I 48809 TMT 9 48884 888M
I 48814 UNL 7 48889 888R
I 48819 UNL 7 48894 889M
I 48824 TRS 0 11 48834 8QCM
I 48829 TR 1 48864 886M
I 00000000000000000000000000000000 I
I 48834 TRA I 01 48864 88WM
I 48839 SEL 2 0500
I 48844 WR R 48895 889N
I 48849 TRA I 03 48859 88ER
I 48854 TR 1 48864 886M
I 48859 HLT J 0460
+ 48864 TRA I 02 48749 87MR
  48869 RCV U 0306
  48874 TR 1 01 00204 02 4
  48879 TR 1 48909 890R-----BD53
00000000000000000000000000000000

```

RED. TO CHAR 4 OF TMT INST.
FORCE 900 CHECK

RED. TO RIGHT OF TMT FIELD
RED. TO RCV FIELD

RESET
RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 004 48883          0123 TMT FIELD
2 001 48884          #
2 004 48888          ----
2 001 48889          #
2 004 48893          0123 RCV FIELD
2 001 48894          #
2 005 48899          460 S
2 001 48900          #
3 48904          48884 888M

```

ROUTINE #461
TEST TCT WITH REDUNDANT
CHARACTER 4 IN ADDRESS
FOR CHECK SUPPRESSION

PUT RECORD MARKS IN LAST
4 CHARACTERS OF TCT FIELD

MAKE TCT ADDRESS REDUNDANT

FORCE 900 CHECK
CORRECT REDUNDANCY

ERROR ROUTINE

TO NEXT ROUTINE

```

BD52.....
I 48909 SET B 0010
I 48914 LOD 8 49051 905J
I 48919 UNL 7 79959 195R
I 48924 EEM 3 14 00000 06-0
I 48929 SPC 0000
I 48934 SET B 0001
I 48939 LOD 8 49041 904J
I 48944 SB % 08 48954 8R5M
I 48949 RCV U 79989 198R
I 48954 TCT 08 79959 1R5R
I 48959 UNL 7 48954 895M
I 48964 TRS 0 10 48974 8RPM
I 48969 TR 1 48984 898M
I 48974 TRS 0 11 48989 8RHR
I 48979 TR 1 49019 901R
I 48984 TRS 0 11 48989 8RHR
I
I
I
I 48989 TRA I 01 49019 90/R
I 48994 SEL 2 0500
I 48999 WR R 49035 903N
I 49004 TRA I 03 49014 90AM
I 49009 TR 1 49019 901R
I 49014 HLT J 0461
I 49019 TRA I 02 48909 89-R
I 49024 RCV U 0306
I 49029 TR 1 01 00204 02-4
I 49034 TR 1 49059 905R

```

```

2 005 49039 461 S
2 001 49040 R
2 001 49041 R
2 006 49047 111111
2 001 49048 #
2 001 49049 #
2 001 49050 #
2 001 49051 #

```

ROUTINE #462
TEST SUP SBR CHECK AND
BL AD TRIGGER IN SET LEFT
OPERATION.

```

BE53.....
I 49059 EEM 3 14 0000 0G-0
I 49064 SPC , 0000
I 49069 SB % 08 49198 9J9Q
I 49074 SB % 08 49196 9J90
I 49079 SB % 08 49195 9J9N
I 49084 SET B 0009
I 49089 LOD 8 49203 920L
I 49094 SB % 09 49198 9JZQ
I 49099 SB % 09 49196 9JZO
I 49104 SB % 09 49195 9JZN
I 49109 TRS 0 11 49114 9JAM
I
I
I 49114 SET B 0005
I 49119 TRS 0 11 49139 9JCR
I
I
I 49124 SET B 0009
I 49129 TRS 0 11 49139 9JCR
I 49134 TR 1 49179 917R
I
I
I 49139 SET B 0009
I 49144 TRS 0 11 49149 9JDR
I
I
I 49149 TRA I 01 49179 91XR
I 49154 SEL 2 0500
I 49159 WR R 49204 920M
I 49164 TRA I 03 49174 91GM
I 49169 TR 1 49179 917R
I 49174 HLT J 0462
+ 49179 TRA I 02 49059 90NR
  49184 RCV U 0306
  49189 TR 1 01 00204 02 4
  49194 TR 1 49214 921M-----BF55
I

```

RED. TO CHAR 5,7 IN STORAGE
AND LEAVE SBR CHAR 0 RED.
RESET
RESET
RESET

TEST BL AD AND SUP SBR
CHECK WHEN TSN ON.

TEST SUP SBR CHECK
WHEN SMT ON.

ERROR RESET

ERROR ROUTINE

-----BF55 TO NEXT ROUTINE

2 009 49203
2 005 49208
2 001 49209

XXOX00000
462 S
□

ROUTINE #463
TEST SUP MBR CHECK AND
FOR FALSE DR CHECK ON
SET OPERATION.

```

BF54.....
I 49214 SB % 08 49219 9K1R
I 49219 SET B 08 00005 0-05
I 49224 TRS 0 10 49229 9KKR
I 49229 TRS 0 11 49249 9KDR
I
I
I 49234 SB % 09 49219 9K/R
I 49239 TRS 0 11 49244 9KDM
I 49244 TR 1 49289 928R
I
I
I 49249 SB % 09 49219 9K/R
I 49254 TRS 0 11 49259 9KER
I
I
I 49259 TRA I 01 49289 92YR
I 49264 SEL 2 0500
I 49269 WR R 49305 930N
I 49274 TRA I 03 49284 92HM
I 49279 TR 1 49289 928R
I 49284 HLT J 0463
I 49289 TRA I 02 49214 92JM
I 49294 RCV U 0306
I 49299 TR 1 01 00204 02 4
I 49304 TR 1 49319 931R

```

FORCE 900

TEST 901

RESET GOOD

ERROR ROUTINE

TO NEXT ROUTINE

2 005 49309
2 001 49310

463 S

ROUTINE #464
TEST SUP MBR CHECK IN
TC 2/3 ON ROUND OPERATION

```

BG55..... 49319 SET B 01 00000 00 0 0
I 49324 SET B 01 00001 00 1 0
I 49329 EEM 3 14 00000 00-0 0
I 49334 SPC , 0000 0
I 49339 SET B 0000 0
I 49344 SET B 0005 0
I
I
I
I 49349 SB % 08 49353 9L5L 0
I 49354 RND E 0002 0
I 49359 TRS 0 10 49364 9L0M-0-0
I 49364 UNL 7 01 49353 93VL-0-0
I 49369 TRS 0 11 49379 9LGR-0-0
I 49374 TR 1 49409 940R-0-0
I
I
I
I 49379 TRA I 01 49409 94 R-0-0
I 49384 SEL 2 0500 0 I
I 49389 WR R 49425 942N 0 I
I 49394 TRA I 03 49404 94GM-0-0
I 49399 TR 1 49409 940R-0-0
I 49404 HLT J 0464 0-0-0
I 49409 TRA I 02 49319 93JR-0-0
I 49414 RCV U 0306 0
I 49419 TR 1 01 00204 02 4 0
I 49424 TR 1 49439 943R-0-0

```

CHAR 3 REDUNDANT
FORCE 900

TEST 901

ERROR ROUTINE

-----BH57 TO NEXT ROUTINE

2 005 49429
2 001 49430

464 S
0

ROUTINE #465
TEST BL AD TRIGGER IN
TC 1/3 OF ROUND OPERATION

```

BH56.....
I 49439 EEM 3 14 00000 06-0
I 49444 SPC , 0000
I 49449 SET B 0000
I 49454 SET B 0005
I 49459 SPC , 0010
I 49464 SET B 0003
I 49469 SB % 08 49584 9N8M
I 49474 SB % 08 49582 9N8K
I 49479 LOD 8 49584 958M
I 49484 TRS 0 11 49489 9MHR-
I
I
I 49489 SPC , 0000
I 49494 RND E 0002
I 49499 TRS 0 11 49519 9NAR-
I
I
I 49504 UNL 7 49584 958M
I 49509 SET B 0010
I 49514 TR 1 49559 955R-
I
I
I 49519 UNL 7 49584 958M
I 49524 SET B 0010
I
I
I 49529 TRA I 01 49559 95VR-
I 49534 SEL 2 0500
I 49539 WR R 49575 957N
I 49544 TRA I 03 49554 95EM-
I 49549 TR 1 49559 955R-
I 49554 HLT J 0465
I 49559 TRA I 02 49439 94LR-
I 49564 RCV U 0306
I 49569 TR 1 01 00204 02 4
I 49574 TR 1 49589 958R-
I

```

SET UP FOR
ROUND

MAKE SBR CHARACTERS
0 AND 2 REDUNDANT

RESET-GOOD

RESET-ERROR

ERROR ROUTINE

-----BJ58 TO NEXT ROUTINE

```

2 005 49579          465 S
2 001 49580          □
2 004 49584          0000

```

ROUTINE #466
TEST SUP MBR CHECK, BL AD
TRIGGER, AND SUP SBR CHECK
ON LNG OPERATION

```

BJ57.....
I 49589 EEM 3 14 00000 0G-0
I 49594 SET B 01 00001 00 1
I 49599 LOD 8 01 49606 96 0
I 49604 SB % 08 49606 9000
I 49609 LNG D 0003
I 49614 TRS 0 10 49619 90JR
I 49619 UNL 7 01 49606 96 0
I 49624 TRS 0 11 49699 90IR
I
I
I 49629 SPC , 0000
I 49634 SET B 0007
I 49639 SB % 08 49755 9P5N
I 49644 SB % 08 49752 9P5K
I 49649 LOD 8 49757 975P
I 49654 SB % 09 49755 9PVN
I 49659 SB % 09 49752 9PVK
I 49664 TRS 0 11 49669 90FR
I
I
I 49669 SPC , 0006
I 49674 LNG D 0002
I 49679 NOP A 0000
I 49684 LNG D 0003
I 49689 TRS 0 11 49699 90IR
I 49694 TR 1 49729 972R
I
I
I 49699 TRA I 01 49729 97SR
I 49704 SEL 2 0500
I 49709 WR R 49745 974N
I 49714 TRA I 03 49724 97BM
I 49719 TR 1 49729 972R
I 49724 HLT J 0466
I 49729 TRA I 02 49589 95QR
I 49734 RCV U 0306
I 49739 TR 1 01 00204 02 4
I 49744 TR 1 49764 976M-----BK59
I

```

CHAR 1 MBR RED

TEST 901

STORAGE CHAR 2 AND 5 RED.

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 49749          466 S
2 001 49750          □
2 007 49757          0X00X00

```

ROUTINE #467
TEST SUP MBR CHECK IN
NTR OPERATION TC 1/2

BK58.....

```

#####
I 49764 SET B      0001  □
I 49769 LOD 8      49904 990M □
I 49774 SET B 01 00000 00 0 □
I 49779 SET B 01 00001 00 1 □
I 49784 SB % 08 49789 9P8R □
I 49789 NTR X 01 49794 97ZM-□
I 49794 TRS 0 10 49799 9PRR-□
I 49799 UNL 7      49789 978R-□
I 49804 TRS 0 11 49849 9QDR-□
#####
I
I #####
I 49809 LOD 8      49908 990Q □
I 49814 SET B 01 00002 00 2 □
I 49819 SB % 08 49824 9Q2M □
I 49824 NTR X 01 49829 98SR-□
I 49829 TRS 0 10 49834 9QLM-□
I 49834 UNL 7      49824 982M-□
I 49839 TRS 0 11 49849 9QDR-□
I 49844 TR 1       49879 987R-□
#####
I
I #####
I 49849 TRA 1 01 49879 98XR-□
I 49854 SEL 2      0500  □
I 49859 WR R      49895 989N □
I 49864 TRA 1 03 49874 98GM-□
I 49869 TR 1      49879 987R-□
I 49874 HLT J      0467  □
+ 49879 TRA 1 02 49764 970M-□
  49884 RCV U      0306  □
  49889 TR 1 01 00204 02 4 □
  49894 TR 1      49914 99IM-□
#####

```

DO TC 1 ONLY

TEST 901

DO TC 1 AND 2

ERROR ROUTINE

BL60 TO NEXT ROUTINE

```

2 005 49899          467 S
2 001 49900          □
3     49904          49794 979M
3     49908          49829 982R

```


ROUTINE #468
 A. TEST BL AD TGR IN CYCLE 1
 OF MEM READ MODE.
 B. TEST SUP MBR CHK ON LOD.
 C. TEST SUP MBR CHK ON CMP.

```

BL59.....
I 49914 SET B 01 00001 00 1
I 49919 LOD 8 01 50059 0VR
I 49924 SB % 08 49934 9R3M
I 49929 SET B 0001
I 49934 LOD 8 50063 06L
I 49939 UNL 7 01 49934 99TM
I 49944 TRS 0 10 49949 9RMR
I 49949 TRS 0 11 49994 9RIM
I 49954 SB % 08 50062 -6K
I 49959 LOD 8 50063 06L
I 49964 TRS 0 11 49994 9RIM
I 49969 CMP 4 50063 06L
I 49974 TRS 0 11 49994 9RIM
I 49979 SB % 09 50062 -WK
I 49984 TRS 0 11 49989 9RHR
I 49989 TR 1 50034 03M
I 49994 SB % 09 50063 -WL
I 49999 TRS 0 11 50004 -GM
I 50004 TRA I 01 50034 0TM
I 50009 SEL 2 0500
I 50014 WR R 50050 05
I 50019 TRA I 03 50029 0BR
I 50024 TR 1 50034 03M
I 50029 HLT J 0468
I 50034 TRA I 02 49914 99JM
I 50039 RCV U 0306
I 50044 TR 1 01 00204 02 4
I 50049 TR 1 50069 06R-----BM61
  
```

A TEST BL AD

FORCE 900 CHECK

TEST 901

B TEST SUP MBR ON LOD

C TEST SUP MBR ON CMP

ERROR RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 50054          468 S
2 001 50055          □
3 50059          50063 06L
2 005 50064          01234
  
```

ROUTINE #469
TEST SUP SBR CHECK ON LOD
TEST SUP SBR CHECK ON LDA

```

BM60.....50069 SB % 08 50195 J9N □
I □ 50074 SET B 01 00001 00 1 □
I □ 50079 LOD 8 01 50195 1ZN □
I □ 50084 TRS 0 11 50089 -HR-□
I □ 50089 LOD 8 01 50194 1ZM.□
I □ 50094 TRS 0 11 50134 JCM-□
I □ 50099 LOD 8 01 50195 1ZN □
I □ 50104 TRS 0 11 50109 J&R-□
I □ 50109 LDA # 01 50194 1ZM.□
I □ 50114 TRS 0 11 50134 JCM-□
I □ 50119 SET B 01 00001 00 1 □
I □ 50124 UNL 7 01 50195 1ZN □
I □ 50129 TR 1 50169 16R-□
I □ 50134 UNL 7 01 50195 1ZN.□
I □ 50139 TRA 1 01 50169 1WR-□
I □ 50144 SEL 2 0500 □
I □ 50149 WR R 50185 18N □
I □ 50154 TRA 1 03 50164 1FM-□
I □ 50159 TR 1 50169 16R-□
I □ 50164 HLT J 0469 .□
I □ 50169 TRA 1 02 50069 00R.□
I □ 50174 RCV U 0306 □
I □ 50179 TR 1 01 00204 02 4 □
I □ 50184 TR 1 50204 20M-□

```

REDUNDANCY INTO
SBR CHAR.0

LOD GOOD CHARACTER
AND TEST 901

REDUNDANCY BACK INTO
SBR CHAR 0.

TEST 901

RESET

ERROR RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 50189
2 001 50190
2 004 50194
2 001 50195

```

```

469 S
□
1234
4

```

ROUTINE #470
FORCE 901 CHECK IN CMP
INSTRUCTION AND TEST FOR
EARLY TURN ON OF AUT-TSN.

```

BN61.....
I 50204 SB % 08 50354 L5M
I 50209 SET B 01 00004 00 4
I 50214 LOD 8 01 50349 3UR
I 50219 CMP 4 01 50354 3VM
I 50224 TRS 0 11 50234 KCM
I 50229 TR 1 50284 28M
I 50234 TRE L 50244 24M
I 50239 TR 1 50284 28M
I 50244 LOD 8 01 50354 3VM
I 50249 TRS 0 11 50254 KEM
I 50254 CMP 4 01 50349 3UR
I 50259 TRS 0 11 50269 KFR
I 50264 TR 1 50284 28M
I 50269 LOD 8 01 50349 3UR
I 50274 UNL 7 01 50354 3VM
I 50279 TRE L 50329 32R
I 50284 LOD 8 01 50349 3UR
I 50289 UNL 7 01 50354 3VM
I 50294 TRS 0 11 50299 KIR
I 50299 TRA I 01 50329 3SR
I 50304 SEL 2 0500
I 50309 WR R 50355 35N
I 50314 TRA I 03 50324 3BM
I 50319 TR 1 50329 32R
I 50324 HLT J 0470
+ 50329 TRA I 02 50204 2-M
  50334 RCV U 0306
  50339 TR 1 01 00204 02 4
  50344 TR 1 50369 36R

```

REDUNDANCY IN MBR CHAR 4

FORCE 901 ON MBR VRC
TEST 901

TEST EQUAL

REDUNDANCY IN SBR CHAR 0

FORCE 901 ON SBR VRC

RESET
RED.

ERROR RESET

ERROR ROUTINE

BP63 TO NEXT ROUTINE

2 005 50349	-ABCD	GOOD FIELD
2 005 50354	-ABCD	RED. FIELD
2 005 50359	470 S	
2 001 50360	□	

ROUTINE #471
TEST BL AD IN CYCLE 1 OF
MEM R-W MODE. USE UNL
WITH SBR CHAR 7 REDUNDANT
TEST SUP MBR CODE CHECK
ON UNL.

```

BP62..... 50369 SB % 08 50474 M7M 0
I 50374 SET B 01 00008 00 8 0
I 50379 LOD 8 01 50481 4YJ 0
I 50384 SET B 01 00003 00 3 0
I 50389 TRS 0 11 50394 LIM-
I
I
I 50394 UNL 7 50474 47M.
I 50399 TRS 0 11 50414 MAM-
I 50404 SET B 01 00008 00 8 0
I 50409 TR 1 50449 44R-
I
I
I 50414 SET B 01 00008 00 8.
I 50419 TRA 1 01 50449 4UR-
I 50424 SEL 2 0500
I 50429 WR R 50465 46N
I 50434 TRA 1 03 50444 4DM-
I 50439 TR 1 50449 44R-
I 50444 HLT J 0471
I 50449 TRA 1 02 50369 30R.
I 50454 RCV U 0306
I 50459 TR 1 01 00204 02 4
I 50464 TR 1 50489 48R-

```

MAKE MEMORY CHAR 4
REDUNDANT AND LOD
INTO STORAGE CHAR 7

DO UNL AND
TEST 901

ERROR ROUTINE

-----BQ64 TO NEXT ROUTINE

2 005 50469
2 001 50470
2 011 50481

471 S
12340000234

ROUTINE #472
TEST SUP MBR CHECK ON STORE
TEST FOR NO RR CODE CHECK
ON NON-NUMERIC CHARACTER
TO LEFT OF STORE FIELD.

```

BQ63..... 50489 RAD H      50599  59R  □
I  50494 SB  % 08 50599  N9R  □
I  50499 ST  F      50599  59R  □
I  50504 TRS O 11 50539  NCR-  □
I  50509 SB  % 08 50596  N90  □
I  50514 ST  F      50599  59R  □
I  50519 TRS O 11 50539  NCR-  □
I  50524 SB  % 09 50596  NZ0  □
I  50529 TRS O 11 50534  NCM-  □
I  50534 TR   1     50579  57R-  □
I  50539 SB  % 09 50596  NZ0-  □
I  50544 TRS O 11 50549  NDR-  □
I  50549 TRA I 01 50579  5XR-  □
I  50554 SEL 2      0500      □
I  50559 WR  R      50600  60-  □
I  50564 TRA I 03 50574  5GM-  □
I  50569 TR   1     50579  57R-  □
I  50574 HLT J      0472      □
+ 50579 TRA I 02 50489  4QR-  □
  50584 RCV U      0306      □
  50589 TR   1 01 00204 02 4  □
  50594 TR   1     50614  61M-  □

```

RED. TO MEMORY CHAR 4
DO STORE AND
TEST 901

RED. TO MEMORY CHAR 1
DO STORE AND
TEST 901

RESET GOOD

ERROR RESET

ERROR ROUTINE

TO NEXT ROUTINE

```

2 005 50599      -X23D
2 005 50604      472 S
2 001 50605      □

```

ROUTINE #473
TEST SUP MBR CHECK
ON ULA INSTRUCTION

```

BR64..... 50614 EEM 3 14 00000 00-0
I 50619 RAD H 50735 73N
I 50624 SB % 08 50725 P2N
I 50629 ULA * 50729 72R
I 50634 UNL 7 50729 72R
I 50639 TRS 0 11 50679 OGR-
I
I
I 50644 SB % 08 50729 P2R
I 50649 ULA * 50729 72R
I 50654 TRS 0 11 50679 OGR-
I
I
I 50659 SB % 08 50726 P20
I 50664 ULA * 50729 72R
I 50669 TRS 0 11 50679 OGR-
I 50674 TR 1 50709 70R-
I
I
I 50679 TRA I 01 50709 7 R-
I 50684 SEL 2 0500
I 50689 WR R 50736 730
I 50694 TRA I 03 50704 7&M-
I 50699 TR 1 50709 70R-
I 50704 HLT J 0473
I 50709 TRA I 02 50614 6JM-
I 50714 RCV U 0306
I 50719 TR 1 01 00204 02 4-
I 50724 TR 1 50749 74R-

```

CHAR 0 RED.
RESET CHAR 0
AND TEST 901

CHAR 4 RED.

CHAR 1 RED

ERROR ROUTINE

BS66 TO NEXT ROUTINE

2	005	50729	00000
2	006	50735	X00000
2	005	50740	473 S
2	001	50741	

ROUTINE #474
TEST CHECK SUPPRESSION ON
SPR OPERATION

```

BS65.....
I 50749 SB % 08 50895 Q9N
I 50754 SET B 01 00008 00 8
I 50759 LOD 8 01 50902 9 K
I 50764 SET B 01 00001 00 1
I 50769 SB % 09 50895 QZN
I 50774 TRS 0 11 50779 PGR
I
I
I 50779 SB % 08 50904 R0M
I 50784 SPR 5 01 50904 9 M
I 50789 TRS 0 11 50839 QCR
I
I
I 50794 SET B 01 00007 00 7
I 50799 SET B 01 00004 00 4
I 50804 SB % 08 50908 R0Q
I 50809 SB % 08 50914 R1M
I 50814 SPR 5 01 50913 9/L
I 50819 TRS 0 11 50839 QCR
I
I
I 50824 SET B 01 00007 00 7
I 50829 UNL 7 01 50914 9/M
I 50834 TR 1 50879 87R
I
I
I 50839 SET B 01 00007 00 7
I 50844 UNL 7 01 50914 9/M
I
I
I 50849 TRA I 01 50879 8XR
I 50854 SEL 2 0500
I 50859 WR R 50915 91N
I 50864 TRA I 03 50874 8GM
I 50869 TR 1 50879 87R
I 50874 HLT J 0474
+ 50879 TRA I 02 50749 7MR
  50884 RCV U 0306
  50889 TR 1 01 00204 02 4
  50894 TR 1 50929 92R-----BT67 TO NEXT ROUTINE

```

RED. TO CHAR 7

RED. TO CHAR 4 MEMORY
AND SPR INTO CHAR 4

CLEAR STORAGE RED.
SET UP 4 CHAR. SPR FIELD
PLACE REDUNDANT CHAR. TO
RIGHT AND LEFT OF MEMORY FIELD

TEST 901

RESET GOOD

RESET ERROR

ERROR ROUTINE

```

2 008 50902
2 002 50904
2 010 50914
2 005 50919
2 001 50920

```

```

R0000000
0&
XXX0000000
474 S

```

```

FIELD FOR STORAGE
FIRST SPR AREA
SECOND SPR AREA

```

ROUTINE #475
TEST CHECK SUPPRESSION
IN TC-2 OF ADD INSTRUCTION

BT66.....

```

#####
I 50929 SB % 08 51079 /-7R
I 50934 SB % 08 51084 /-8M
I 50939 SET B 01 00000 00 0
I 50944 SET B 01 00002 00 2
I 50949 ADD G 01 51083 /OYL
I 50954 TRS 0 11 51009 /-GR
#####
I
I
I 50959 SET B 01 00008 00 8
I 50964 LOD 8 01 51091 /OZJ
I 50969 SB % 09 51079 /-XR
I 50974 SB % 09 51084 /-YM
I 50979 TRS 0 11 50984 RHM
#####
I
I
I 50984 SET B 01 00006 00 6
I 50989 ADD G 01 51083 /OYL
I 50994 SET B 01 00007 00 7
I 50999 TRS 0 11 51029 /-BR
I 51004 TR 1 51059 /O5R
#####
I
I
I 51009 SET B 01 00001 00 1
I 51014 LOD 8 01 51092 /OZK
I 51019 UNL 7 01 51084 /OYM
I 51024 UNL 7 01 51079 /OXR
#####
I
I
I 51029 TRA I 01 51059 /OVR
I 51034 SEL 2 0500
I 51039 WR R 51093 /O9L
I 51044 TRA I 03 51054 /OEM
I 51049 TR 1 51059 /O5R
I 51054 HLT J 0475
I 51059 TRA I 02 50929 9KR
I 51064 REV U 0306
I 51069 TR 1 01 00204 02 4
I 51074 TR 1 51104 /10M
#####

```

RED. TO LEFT AND RIGHT
OF ADD FIELD

PLUS 00 IN STORAGE
MINUS 000 IN MEMORY

RED. INTO STORAGE CHAR. 7
RESET REDUNDANTS
IN MEMORY

PLUS 00000 IN STORAGE
MINUS 000000 IN MEMORY

ERROR RESET

ERROR ROUTINE

-----BU68 TO NEXT ROUTINE

```

2 010 51084 -----RX00-R
2 007 51091 0000000
2 001 51092 R
2 005 51097 475 S
2 001 51098

```


ROUTINE #476
TEST CHECK SUPPRESSION
ON SIGNED ADM

```

BU67.....
I 51104 SET B      0003      □
I 51109 LOD 8      51280 /28- □
I 51114 UNL 7      51259 /25R □
I
I
I 51119 SB % 08 51262 /K6K □
I 51124 SB % 08 51261 /K6J □
I 51129 SB % 08 51260 /K6- □
I 51134 SET 8 01 00006 00 6 □
I 51139 LOD 8 01 51265 /2WN □
I 51144 SB % 08 51255 /K5N □
I 51149 TRS 0 11 51154 /JEM-
I
I 51154 ADM 6 01 51259 /2VR.
I 51159 TRS 0 11 51189 /JHR-
I
I 51164 SB % 09 51255 /KVN □
I 51169 LOD 8 01 51271 /2XJ □
I 51174 UNL 7 01 51265 /2WN □
I 51179 TRS 0 11 51184 /JHM-
I 51184 TR 1 51239 /23R-
I
I 51189 SB % 09 51255 /KVN.
I 51194 LOD 8 01 51271 /2XJ □
I 51199 UNL 7 01 51265 /2WN □
I 51204 TRS 0 11 51209 /K&R-
I
I 51209 TRA I 01 51239 /2TR-
I 51214 SEL 2 0500 □
I 51219 WR R 51272 /27K □
I 51224 TRA I 03 51234 /2CM-
I 51229 TR 1 51239 /23R-
I 51234 HLT J 0476 .
+ 51239 TRA I 02 51104 /1-M.
  51244 RCV U 0306 □
  51249 TR 1 01 00204 02 4 □
  51254 TR 1 51289 /28R-
I

```

RESET MEMORY FIELD

LOD STORAGE FIELD WITH
RED. IN CHARS. 3,4,5.
RED. IN CHAR 1 MEMORY

STORAGE PLUS 888 AND
MEMORY MINUS 000

RESET=GOOD

RESET=ERROR

ERROR ROUTINE

-----BV69 TO NEXT ROUTINE

```

2 005 51259          RX00-
2 006 51265          RRR888
2 006 51271          RRR888
2 005 51276          476 S
2 001 51277          □
2 003 51280          00-

```

ROUTINE #477
TEST SUP MBR CHECK AND
BL AD TGR IN TC-3 OF
UNSIGNED ADM.

```

BV68..... 51289 SET B 0002
I 51294 LOD 8 51436 /430
I 51299 UNL 7 51439 /43R
I
I
I 51304 SB % 08 51440 /M4-
I 51309 SET B 01 00003 00 3
I 51314 LOD 8 01 51442 /4UK
I 51319 SET B 01 00001 00 1
I 51324 TRS 0 11 51329 /LBR-
I
I
I 51329 SB % 08 51438 /M3Q.
I 51334 ADM 6 01 51439 /4TR-
I 51339 TRS 0 11 51369 /LFR-
I
I
I 51344 SET B 01 00002 00 2
I 51349 SB % 09 51438 /MTQ
I 51354 SB % 09 51440 /MU-
I 51359 TRS 0 11 51364 /LFM-
I 51364 TR 1 51419 /41R-
I
I
I 51369 SET B 01 00002 00 2
I 51374 SB % 09 51438 /MTQ
I 51379 SB % 09 51437 /MTP
I 51384 TRS 0 11 51389 /LHR-
I
I
I 51389 TRA I 01 51419 /4/R-
I 51394 SEL 2 0500
I 51399 WR R 51443 /44L
I 51404 TRA I 03 51414 /4AM-
I 51409 TR 1 51419 /41R-
I 51414 HLT J 0477
I 51419 TRA I 02 51289 /2QR.
I 51424 RCV U 0306
I 51429 TR 1 01 00204 02 4
I 51434 TR 1 51454 /45M-
I
I

```

RESET MEMORY FIELD

PICK UP STORAGE FIELD WITH
CHAR 2 TO LEFT OF STOR. MARK
REDUNDANT

RED. TO LEFT END OF MEMORY
FIELD. DO ADM AND
TEST 901

RESET-GOOD

RESET-ERROR

ERROR ROUTINE

-----BW70 TO NEXT ROUTINE

2	005	51439	R2	R2
2	003	51442	R08	
2	005	51447	477	S
2	001	51448		

ROUTINE #478
TEST SUP MBR CHECK IN TC-1
OF MPY.
TEST SUP CHECK TO LEFT OF
MEMORY FIELD.

```

BW69..... 00000000000000000000000000000000
I 51454 EEM 3 14 00000 06-0 0
I 51459 SPC 0 0000 0
I 51464 SET B 01 00001 00 1 0
I 51469 LOD 8 01 51588 /5YQ 0
I 51474 SB % 08 51484 /M8M 0
I 51479 RAD H 51584 /58M 0
I 51484 MPY V 51584 /58M 0
I 51489 UNL 7 01 51484 /4YM 0
I 51494 TRS 0 10 51499 /MRR-0
I 51499 TRS 0 11 51534 /NCM-0
I 00000000000000000000000000000000 I
I I I
I 00000000000000000000000000000000 I
I 51504 LOD 8 01 51580 /5Y- 0 I
I 51509 SB % 08 51581 /N8J 0 I
I 51514 MPY V 51584 /58M 0 I
I 51519 UNL 7 01 51581 /5YJ 0 I
I 51524 TRS 0 11 51534 /NCM-0 I
I 51529 TR 1 51564 /56M-0 I
I 00000000000000000000000000000000 II
I II
I 00000000000000000000000000000000 II
I 51534 TRA 1 01 51564 /5WM-0 I
I 51539 SEL 2 0500 0 I
I 51544 WR R 51589 /58R 0 I
I 51549 TRA 1 03 51559 /5ER-0 I
I 51554 TR 1 51564 /56M-0 I
I 51559 HLT J 0478 0 I
I 51564 TRA 1 02 51454 /4NM-0 I
I 51569 RCV U 0306 0
I 51574 TR 1 01 00204 02 4 0
I 51579 TR 1 51599 /59R-0 BX71 TO NEXT ROUTINE
00000000000000000000000000000000

```

RESET SPC

CHAR. 4 OF INSTRUCTION RED.

FORCE 900

TEST 901

RED TO LEFT OF MEM. FIELD

TEST 901

ERROR ROUTINE

```

2 005 51584
3 51588
2 005 51593
2 001 51594
51584 XR1A
478 S
0

```

ROUTINE #479
TEST SUP SBR CHECK IN
TC 2 OF MPY.

```

BX70.....
I 51599 EEM 3 14 0000 06-0
I 51604 SPC , 0402
I 51609 SB % 08 51721 /P2J
I 51614 SB % 08 51720 /P2-
I 51619 SET B 0002
I 51624 LOD 8 51721 /72J
I 51629 SPC , 0000
I 51634 SB % 09 51721 /PSJ
I 51639 SB % 09 51720 /PS-
I 51644 TRS 0 11 51649 /ODR
I
I
I 51649 RAD H 51725 /72N
I 51654 MPY V 51725 /72N
I 51659 TRS 0 11 51674 /OGM
I
I
I 51664 CMP 4 51729 /72R
I 51669 TRE L 51704 /70M
I
I
I 51674 TRA I 01 51704 /7 M
I 51679 SEL 2 0500
I 51684 WR R 51730 /73-
I 51689 TRA I 03 51699 /61R
I 51694 TR 1 51704 /70M
I 51699 HLT J 0479
I 51704 TRA I 02 51599 /5RR
I 51709 RCV U 0306
I 51714 TR 1 01 00204 02 4
I 51719 TR 1 51744 /74M
I

```

RED. INTO PARTIAL PRODUCT
AREA

CORRECT REDUNDANTS

DO MPY AND
TEST 901

CHECK CORRECT
PRODUCT OF 1936

ERROR ROUTINE

BY72 TO NEXT ROUTINE

2	006	51725	XX-X4D
2	004	51729	1936
2	005	51734	479 S
2	001	51735	

ROUTINE #480
TEST BL AD TGR IN TC 3 AND
TC 4 OF MPY.

```

BY71.....
I 51744 EEM 3 14 0000 06-0
I 51749 SPC , 0414
I 51754 SET B 0001
I 51759 SB % 08 51908 /ROQ
I 51764 LOD 8 51908 /90Q
I 51769 SPC , 0004
I 51774 SB % 09 51908 /R Q
I 51779 TRS 0 11 51784 /PHM
I
I
I 51784 RAD H 51913 /91L
I 51789 MPY V 51914 /91M
I 51794 TRS 0 11 51839 /QCR
I
I
I 51799 SET B 0007
I 51804 SB % 08 51908 /ROQ
I 51809 RAD H 51914 /91M
I 51814 MPY V 51913 /91L
I 51819 TRS 0 11 51839 /QCR
I
I
I 51824 SB % 09 51908 /R Q
I 51829 TRS 0 11 51834 /QCM
I 51834 TR 1 51884 /88M
I
I
I 51839 SET B 0007
I 51844 SB % 09 51908 /R Q
I 51849 TRS 0 11 51854 /QEM
I
I
I 51854 TRA I 01 51884 /8YM
I 51859 SEL 2 0500
I 51864 WR R 51900 /90-
I 51869 TRA I 03 51879 /8GR
I 51874 TR 1 51884 /88M
I 51879 HLT J 0480
I 51884 TRA I 02 51744 /7MM
I 51889 RCV U 0306
I 51894 TR 1 01 00204 02 4
I 51899 TR 1 51919 /91R

```

SET UP RED. IN STOR CHAR 4
TO LEFT OF PARTIAL PRODUCT

TEST BL AD IN TC 3

CLEAR STORAGE AND SET UP
RED. IN CHAR 3 TO LEFT
OF MULTIPLICAND

TEST BL AD IN TC 4

RESET-GOOD

RESET-ERROR

ERROR ROUTINE

-----BZ73 TO NEXT ROUTINE

2 005 51904
2 001 51905
2 009 51914

480 S
□
--RX000AG

ROUTINE #481
TEST BL AD IN TC 1 OF DIV
TEST CHECK SUPPRESSION
IN STORAGE

```

BZ72.....
I 51919 EEM 3 14 00000 06-0
I 51924 SPC , 0407
I 51929 SB % 08 52055 S-5N
I 51934 SET B 0001
I 51939 LOD 8 52055 S05N
I 51944 SPC , 0001
I 51949 RAD H 52067 S06P
I 51954 SPC , 0011
I 51959 SET B 0001
I 51964 LOD 8 52055 S05N
I 51969 SPC , 0001
I 51974 SB % 09 52055 S-VN
I 51979 TRS 0 11 51984 /RHM-
I
I
I
I 51984 DIV W 52059 S05R.
I 51989 SPC , 0011
I 51994 SET B 0000
I 51999 TRS 0 11 52009 S-6R-
I 52004 TR 1 52039 S03R-
I
I
I
I 52009 TRA I 01 52039 S0TR-
I 52014 SEL 2 0500
I 52019 WR R 52068 S06Q
I 52024 TRA I 03 52034 S0CM-
I 52029 TR 1 52039 S03R-
I 52034 HLT J 0481
I 52039 TRA I 02 51919 /9JR.
I 52044 RCV U 0306
I 52049 TR 1 01 00204 02 4
I 52054 TR 1 52079 S07R-

```

RED TO QUOTIENT AREA
PICK UP DIVIDEND
RED TO LEFT OF DIVIDEND
AND LEAVE SBR CHAR 1 RED.

DO DIV, RESET STORAGE
RED. AND
TEST
901

ERROR ROUTINE

CA74 TO NEXT ROUTINE

2 005 52059	R-X1G
2 008 52067	X000100G
2 005 52072	481 S
2 001 52073	□

ROUTINE #482
TEST SUP MBR CHECK IN TC 2
OF DIV.
TEST CHECK SUPPRESSION ON
RED. TO LEFT OF DIVISOR.

```

CA73..... 52079 EEM 3 14 0000 06-0 0
I 52084 SPC , 0000 0
I 52089 SB % 08 52109 SJOR 0
I 52094 SET B 01 00001 00 1 0
I 52099 LOD 8 01 52218 S2/Q 0
I
I
I 52104 RAD H 52222 S22K 0
I 52109 DIV W 52224 S22M 0
I 52114 UNL 7 01 52109 S1 R 0
I 52119 TRS 0 10 52124 SJKM-+--+
I 52124 TRS 0 11 52169 SJFR-+--+
I
I
I 52129 SET B 01 00002 00 2 0
I 52134 LOD 8 01 52246 S2UO 0
I 52139 NOP A 0000 0
I
I
I 52144 RAD H 52238 S23Q 0
I 52149 DIV W 52233 S23L 0
I 52154 UNL 7 01 52229 S2SR 0
I 52159 TRS 0 11 52169 SJFR-+--+
I 52164 TR 1 52199 S19R-+--+
I
I
I 52169 TRA 1 01 52199 S1ZR-+--+
I 52174 SEL 2 0500 0
I 52179 WR R 52239 S23R 0
I 52184 TRA 1 03 52194 S1IM-+--+
I 52189 TR 1 52199 S19R-+--+
I 52194 HLT J 0482 .#.#.I
+---52199 TRA 1 02 52079 S0PR.#....I
 52204 RCV U 0306 0
 52209 TR 1 01 00204 02 4 0
 52214 TR 1 52254 S25M-+-----CB75
I

```

RESET SPC
CHAR. 4 OF DIV INSTR. RED.

FORCE 900
TURN OFF 900
TEST 901

DO DIV
TEST 901

ERROR ROUTINE

TO NEXT ROUTINE

3	52218	52224	S22M
2	006	52224	-X0BXA
2	009	52233	---RX1006
2	005	52238	00106
2	005	52243	482 S
2	001	52244	0
2	002	52246	RR

ROUTINE #483
TEST CHECK SUPPRESSION
DURING DIVIDE TC 5 AND 2.
DO DIV WITH REDUNDANT TO
RIGHT OF QUOTIENT.

```

CB74..... 52254 EEM 3 14 00000 06-0
I 52259 SET B 01 00002 00 2
I 52264 LOD 8 01 52396 S3Z0
I 52269 SB % 08 52396 SL90
I 52274 SB % 08 52395 SL9N
I 52279 SPC , 0400
I 52284 SET B 0002
I 52289 LOD 8 52396 S390
I 52294 TRS 0 11 52299 SKIR-----
I
I
I 52299 SPC , 0001
I 52304 RAD H 52399 S39R
I 52309 DIV W 52400 S40-
I 52314 TRS 0 14 52319 SCJR-----
I 52319 TRS 0 11 52339 SLCR-----
I
I
I 52324 LNG D 0002
I 52329 UNL 7 01 52396 S3Z0
I 52334 TR 1 52379 S37R-----
I 52339 LNG D 0002
I 52344 UNL 7 01 52396 S3Z0
I
I
I 52349 TRA I 01 52379 S3XR-----
I 52354 SEL 2 0500
I 52359 WR R 52401 S40J
I 52364 TRA I 03 52374 S3GM-----
I 52369 TR I 52379 S37R-----
I 52374 HLT J 0483
I 52379 TRA I 02 52254 S2NM.....
I 52384 RCV U 0306
I 52389 TR 1 01 00204 02 4
I 52394 TR 1 52414 S41M-----
I

```

LOD XX RESET
MAKE 2 REDUNDANT
CHARACTERS

PLACE REDUNDANT XX
IN SPC LOCATIONS 400 AND 401
TF 901

SPC TO DIVIDEND LOCATION

DIV 10 BY 1; QUOT. OF ZERO AT
SPC LOCATION 402. TF FORCED
904 AND TEST FOR NO 901 CHK.

RESET REDUNDANTS ON GOOD

RESET REDUNDANTS ON ERROR

ERROR ROUTINE

-----CC76 TO NEXT ROUTINE

2	002	52396	XX
2	004	52400	-1GA
2	005	52405	483 S
2	001	52406	□

ROUTINE #484
DO DIVIDE TC 1,2,3 ONLY
WITH DIVISOR REDUNDANT TO
TEST NO SPC STEP WHEN
AUTO-TSN COMES ON.

```

CC75.....
I 52414 EEM 3 14 00000 06-0
I 52419 SB % 08 52583 SN8L
I 52424 SPC , 0001
I 52429 RAD H 52585 S58N
I 52434 TRS O 11 52439 SMCR-
I 52439 DIV W 52590 S59-
I 52444 TRS O 11 52454 SMEM-
I 52449 TR 1 52509 S50R-
I
I
I
I 52454 CMP 4 52595 S59N-
I 52459 TRE L 52469 S46R-
I 52464 TR 1 52509 S50R-
I 52469 CMP 4 52601 S60J-
I 52474 TRE L 52509 S50R-
I
I
I
I 52479 TRS O 11 52484 SMHM-
I 52484 SPC , 0003
I 52489 SET B 0000
I 52494 SET B 0001
I 52499 UNL 7 52583 S58L
I 52504 TR 1 52564 S56M-
I
I
I
I 52509 TRS O 11 52514 SNAM-
I 52514 SPC , 0003
I 52519 SET B 0000
I 52524 SET B 0001
I 52529 UNL 7 52583 S58L
I
I
I
I 52534 TRA I 01 52564 S5WM-
I 52539 SEL 2 0500
I 52544 WR R 52596 S590
I 52549 TRA I 03 52559 S5ER-
I 52554 TR 1 52564 S56M-
I 52559 HLT J 0484
+ 52564 TRA I 02 52414 S4JM-
  52569 RCV U 0306
  52574 TR 1 01 00204 02 4
  52579 TR 1 52609 S60R-
I

```

MAKE DIVIDEND REDUNDANT

RAD 11011
TF 901
DIV BY 00000, SPC ON 001
TEST 901

CMP VS 11011
SHOULD BE EQUAL
CMP VS GROUP MARK
SHOULD NOT BE EQUAL

RESET 901 ON GOOD

CLEAR
REDUNDANCIES

RESET 901 ON ERROR

CLEAR
REDUNDANCIES

ERROR ROUTINE

CD77 TO NEXT ROUTINE

2	006	52585	-1101A	DIVIDEND
2	005	52590	00006	
2	005	52595	11011	
2	005	52600	484 S	
2	001	52601	□	

ROUTINE #485
TEST TIP FOR TN IP TRIGGER.
USE A LONG SET LEFT FOR A
DELAY AND CHECK STEPPING OF
MAC-1 MINUS 1. THIS ROUTINE
DEPENDS ON CHANNEL OPERATION.

```

CD76.....52609 EEM 3 14 00000 06-0
I 52614 TIP 14 52619 SFJR-
I 52619 SPC 3700
I 52624 SET B 0028
I 52629 LOD 8 52782 S78K
I
I
I 52634 SPC 0000
I 52639 SET B 19999 Z999
I 52644 SPC 0037
I 52649 CMP 4 52786 S780
I 52654 TRE L 52664 S66M-
I 52659 TR 1 52679 S67R-
I
I
I 52664 SPC 3700
I 52669 CMP 4 52782 S78K
I 52674 TRE L 52694 S69M-
I
I
I 52679 LIP 15 03700 3G&0.
I 52684 SPC 0000
I 52689 TR 1 52709 S70R-
I 52694 LIP 15 03700 3G&0.
I 52704 TR 1 52739 S73R-
I
I
I 52709 TRA I 01 52739 S7TR-
I 52714 SEL 2 0500
I 52719 WR R 52783 S78L
I 52724 TRA I 03 52734 S7CM-
I 52729 TR 1 52739 S73R-
I 52734 HLT J 0485
I 52739 TRA I 02 52609 S6-R.
I 52744 RCV U 0306
I 52749 TR 1 01 00204 02 4
I 52754 TR 1 52794 S79M-
I

```

TIP TO TN IP TRIGGER

LOD CASU 15 WITH A FIELD

DO 20 MS. DELAY IN BANK 0.
CHECK MAC 1 STEP VS SAC STEP
BY LOCATING STORAGE MARK.

TEST FOR NO CHANGE
IN CASU 15 FIELD

TF IP TRIGGER ON ERROR

TF IP TRIGGER ON GOOD

ERROR ROUTINE

-----CE78 TO NEXT ROUTINE

2 028 52782
2 003 52785
2 001 52786

0000111122223333444455556666
485
□

ROUTINE #486
DO SPR TO CONTINUOUSLY
ROUTE READ MEM AND MBR
TO MEM IN TC 2 AND 3.
THIS ROUTINE IS ORIENTED
TOWARDS CHANNEL OPERATION.

```

CE77..... 52794 RCV U      79744 I74M  0
I  52799 BLM $      0052      0
I  #####I#####
I
I          I
I  #####V#####
I  52804 SET B 01 00000 00 0 0
I  52809 SET B 01 00010 00/0 0
I  #####I#####
I
I          I
I  #####V#####
I  52814 SET B      0000      0
I  52819 SET B      0255      0
I  52824 UNL 7      53178 T17Q 0
I  #####I#####
I
I          I
I  #####V#####
I.. 52829 SET B      0000      0
II  52834 SET B      0255      0
II  52839 SPR 5      53179 T17R 0
II  52844 LOD 8      79999 I99R 0
II  52849 CMP 4      53178 T17Q 0
II  52854 TRE L      52864 S86M-
II  52859 TR 1      52874 S87M-
I+ 52864 NTR X 01 52829 S8SR.
I  52869 TR 1      52904 S90M-
I  #####I
I
I          I
I  #####V#####
I  52874 TRA I 01 52904 S9 M-
I  52879 SEL 2      0500      0
I  52884 WR R      53180 T18- 0
I  52889 TRA I 03 52899 S8IR-
I  52894 TR 1      52904 S90M-
I  52899 HLT J      0486      .
+ 52904 TRA I 02 52794 S7RM.
  52909 RCV U      0306      0
  52914 TR 1 01 00204 02 4 0
  52919 TR 1      53189 T18R-
#####

```

SET UP 260 BLANKS AT
79999

SET UP NTR LOOP IN ASU 01

RESET SPR FIELD

255 ZEROS IN STORAGE
DO SPR-IN TC 2 AND 3
REPLACE ALL ZEROS WITH BLANKS

ERROR
REPEAT 9 MORE TIMES

ERROR ROUTINE

TO NEXT ROUTINE

```

5 260 53179
2 003 53182
2 001 53183

```

```

      SPR FIELD
      486
      0

```

ROUTINE #487
TCT EXERCISE. DO TCT
ON 18200 CHARACTERS
FROM 00009 TO 80009. CHECK
ALL 18200 CHARACTERS EQUAL
THIS ROUTINE IS ORIENTED
TOWARDS CHANNEL OPERATION.

```

CF78.....
I 53189 EEM 3 14 00000 0&-0
I 53194 SET B 01 00001 00 1
I 53199 LOD 8 01 53365 T3WN
I 53204 UNL 7 01 18199 Y1Z9
I
I
I 53209 LDA # 01 53354 T3VM
I 53214 ULA * 01 53264 T2WM
I 53219 LDA # 01 53359 T3VR
I 53224 ULA * 01 53269 T2WR
I 53229 RAD H 01 53364 T3WM
I 53234 SET B 02 00000 00-0
I 53239 SET B 02 00091 00R1
I 53244 SET B 0200
I
I
I 53249 RCV U 000Z
I 53254 TCT , 08 00009 0-09
I 53259 TRS 0 11 53304 TL&M-
I
I
I 53264 LOD 8 0199
II 53269 CMP 4 019Z
II 53274 TRE L 53284 T28M-
II 53279 TR 1 53304 T30M-
II
II
II 53284 AAM @ 01 53264 T2WM
II 53289 AAM @ 01 53269 T2WR
I+ 53294 NTR X 02 53264 T20M
I 53299 TR 1 53334 T33M-
I
I
I 53304 TRA I 01 53334 T3TM-
I 53309 SEL 2 0500
I 53314 WR R 53366 T360
I 53319 TRA I 03 53329 T3BR-
I 53324 TR 1 53334 T33M-
I 53329 HLT J 0487
+ 53334 TRA I 02 53189 T1QR
  53339 RCV U 0306
  53344 TR 1 01 00204 02 4
  53349 TR 1 53374 T37M-
I

```

PLACE RM AT 18199

RESET LOD ADDRESS TO 00199

RESET CMP ADDRESS TO 80199
200 INTO ASU 01
SET UP NTR
LOOP IN ASU 02

RCV AT 80009
TCT FROM 00009
TEST 901 ERROR

LOD 200 CHAR. OF TCT FIELD
CMP VS 200 CHAR. OF RCV FIELD

ERROR

INCREASE LOD ADDRESS BY 200
INCREASE CMP ADDRESS BY 200
REPEAT 90 TIMES

ERROR ROUTINE

-----CG80 TO NEXT ROUTINE

- 2 005 53354 -0199 FIRST LOD ADDRESS
- 2 005 53359 -019Z FIRST CMP ADDRESS
- 2 005 53364 -020& ADDRESS INCREMENT
- 2 001 53365 #
- 2 003 53368 487
- 2 001 53369 □

END OF PROGRAM PASS
 TEST 914 AND 916 SWITCHES
 IF 914 OFF, LEAVE PROGRAM
 IF 914 ON, COUNT PASSES AND
 REPEAT PROGRAM.
 IF 916 OFF, RESET CHANNELS
 IF 916 ON, START CHANNELS

CJ81.....
 53804 EEM 3 14 00000 0&-0
 53809 SPC , 0000
 53814 RAD H 54048 U04Q
 53819 ADD G 54050 U05-
 53824 SET B 0002
 53829 TRZ N 53839 T83R-
 53834 TR 1 53849 T84R-
 53839 SEL 2 0500
 53844 WR R 54052 U05K
 53849 SET B 0003
 53854 ST F 54048 U04Q
 53859 TRA I 04 53884 TY8M-
 53864 LIM , 07 00000 0 &0
 53869 CHR 3 13 00000 0& 0
 53874 CHR 3 13 00000 0& 0
 53879 TR 1 18219 Y219

RAD PASS COUNT
 ADD 1 TO PASS COUNT

TYPEOUT Z

914 SWITCH
 IF 914 SWITCH IS OFF, RESET ALL
 CHANNELS AND ASSOCIATED
 INTERRUPTS, AND LEAVE
 PROGRAM

53884 SET B 0001
 53889 TRA I 06 53939 TZLR-
 53894 LIM , 07 00000 0 &0
 53899 CHR 3 13 00000 0& 0
 53904 CHR 3 13 00000 0& 0
 53909 LOD 8 54050 U05-
 53914 UNL 7 53935 T93N
 53919 UNL 7 31560 A560
 53924 UNL 7 41805 180N
 53929 UNL 7 46750 675-
 53934 TR 1 54044 U04M-

916 SWITCH
 IF 916 IS OFF
 RESET CHANNELS
 AND BYPASS SWITCHES

A
 SET SW TO NOP
 SET BYP SW IN ROUT. 340 TO NOP
 SET BYP SW IN ROUT. 419 TO NOP
 SET BYP SW IN ROUT. 446 TO NOP

53939 NOP A 54044 U04M-
 53944 LOD 8 54051 U05J
 53949 UNL 7 53935 T93N
 53954 UNL 7 31560 A560
 53959 UNL 7 41805 180N
 53964 UNL 7 46750 675-
 53969 UNL 7 54069 U06R
 53974 UNL 7 54119 U11R
 53979 UNL 7 54169 U16R
 53984 UNL 7 54219 U21R
 53989 SET B 0200
 53994 RCV U 60004 -00M
 53999 SND / 59804 Z80M
 54004 SND / 59804 Z80M
 54009 SET B 0001
 54014 LOD 8 59795 Z79N
 54019 UNL 7 62000 K00-

SW EQUALS NOP FIRST TIME
 1
 SET SW TO TR
 SET BYP SW IN ROUT. 340 TO TR
 SET BYP SW IN ROUT. 419 TO TR
 SET BYP SW IN ROUT. 446 TO TR
 SET TAPE ADDRESSES
 TO 01 ON
 ALL FOUR
 CHANNELS
 SET UP
 2000 CHARACTER
 WRITE FIELD FOR
 ALL CHANNELS

54024 TIP , 14 54059 U&NR-
 54029 TIP , 14 54109 UA-R-
 54034 TIP , 14 54159 UANR-
 54039 TIP , 14 54209 UB-R-
 54044 TR 1 0404

GO START CHANNEL 20 IF READY
 GO START CHANNEL 21 IF READY
 GO START CHANNEL 22 IF READY
 GO START CHANNEL 23 IF READY
 TRANSFER TO ROUTINE #001

2 008 54052
 2 001 54053

X00&XA1Z
 3

X007X014

CHANNEL PROGRAM
INITIAL TEST FOR READY
TEST EACH CHANNEL FOR
READY ON TAPE #1 TO #9.

```

CK82.....  54059 SET B 01 00002 00 2  0
           54064 LOD 8 01 54069 U0WR  0
           54069 SEL 2      -200-      0
I  54074 TRS 0 01 54264 U2WM-----CP84
I  54079 CMP 4 01 54256 U2V0  0
I  54084 TRE L      54104 U10M-----
I  54089 ADD G 01 54258 U2VQ  0 I
I  54094 UNL 7 01 54069 U0WR  0 I
I  54099 TR  1      54069 U06R  0 I
           54104 LIP , 15 00009 0&&9.  0
  
```

TEST CHAN 20 RDY
TAPE NO.
IF READY, GO START CHAN 20
VS 09
&1
DO LIP IF NO TAPE #01-09 READ

```

CL82.....  54109 SET B 01 00002 00 2  0
           54114 LOD 8 01 54119 U1/R  0
           54119 SEL 2      210-      0
I  54124 TRS 0 01 54924 U9SM-----CY87
I  54129 CMP 4 01 54256 U2V0  0
I  54134 TRE L      54154 U15M-----
I  54139 ADD G 01 54258 U2VQ  0 I
I  54144 UNL 7 01 54119 U1/R  0 I
I  54149 TR  1      54119 U11R  0 I
           54154 LIP , 15 00009 0&&9.  0
  
```

TEST CHAN 21 RDY
IF READY, GO START CHAN 21

```

CM82.....  54159 SET B 01 00002 00 2  0
           54164 LOD 8 01 54169 U1WR  0
           54169 SEL 2      220-      0
I  54174 TRS 0 01 55584 V5YM-----DH90
I  54179 CMP 4 01 54256 U2V0  0
I  54184 TRE L      54204 U20M-----
I  54189 ADD G 01 54258 U2VQ  0 I
I  54194 UNL 7 01 54169 U1WR  0 I
I  54199 TR  1      54169 U16R  0 I
           54204 LIP , 15 00009 0&&9.  0
  
```

TEST CHAN 22 RDY
IF READY, GO START CHAN 22

```

CN82.....  54209 SET B 01 00002 00 2  0
           54214 LOD 8 01 54219 U2/R  0
           54219 SEL 2      230-      0
I  54224 TRS 0 01 56244 W2UM-----DS93
I  54229 CMP 4 01 54256 U2V0  0
I  54234 TRE L      54254 U25M-----
I  54239 ADD G 01 54258 U2VQ  0 I
I  54244 UNL 7 01 54219 U2/R  0 I
I  54249 TR  1      54219 U21R  0 I
           54254 LIP , 15 00009 0&&9.  0
  
```

TEST CHAN 23 RDY
IF READY, GO START CHAN 23

INTERRUPT PROGRAM
FOR CHANNEL 20 PAGE 1
WR, BSP, RD ON CHANNEL 20.
CHECK FOR FALSE INTERRUPTS,
CHANNEL CHECKS, AND COMPARE
WRITE AND READ FIELDS.

```

CP83
CP85.....
  54264 UNL 7 01 54299 U2ZR
  54269 UNL 7 01 54324 U3SM
  54274 UNL 7 01 54354 U3VM
  54279 UNL 7 01 54389 U3YR
  54284 EIM ; 06 00000 0 -0
  54289 SKP 3 0009
  54294 LIP , 15 02000 2&&0
  54299 SEL 2 200-
  54304 TRS 0 54469 U46R-----CQ85
  54309 WR R 60000 -00-
  54314 LIP , 15 02000 2&&0
  54319 NOP A 54299 U29R
  54324 SEL 2 200-
  54329 TRS 0 01 54339 U3TR-----
  54334 TR 1 54534 U53M-----CR85
  54339 TRS 0 02 54549 U5MR-----CS85
  54344 BSP 3 0004
  54349 LIP , 15 02000 2&&0
  54354 SEL 2 200-
  54359 TRS 0 01 54369 U3WR-----
  54364 TR 1 54564 U56M-----CT85
  54369 RCV U 62009 K00R.
  54374 BLM $ 0402
  54379 RD Y 62005 K00N
  54384 LIP , 15 02000 2&&0
  54389 SEL 2 200-
  54394 TRS 0 01 54404 U4 M-----
  54399 TR 1 54579 U57R-----CU85
  54404 TRS 0 02 54594 U5RM-----CV85
  54409 SET B 02 00200 02-0
  54414 LOD 8 02 59999 Z9RR
  54419 LDA # 01 59759 Z7VR
  54424 ULA * 01 54429 U4SR
  54429 CMP 4 02 62204 K2-M
  54434 TRS 0 11 54609 U0GR-----CW85
  54439 TRE L 54449 U44R-----
  54444 TR 1 54609 U60R-----CW85
  54449 CMP 4 01 59755 Z7VN.
  54454 TRE L 54299 U29R
  54459 ADD G 01 59794 Z7ZM
  54464 TR 1 54424 U42M

```

SET UP
SELECT

INITIAL SKIP TO PUT TAPE
HEAD IN PROPER RECORD GAP.

TEST FOR END OF FILE
WRITE 2000 CHARACTERS

BACKSPACE

TEST READY AFTER INTERRUPT

TEST FOR WRITE CHK

READ 2000 CHARACTERS

TEST READY AFTER INTERRUPT

CLEAR READ FIELD

COMPARE WR AND RD FIELDS

TEST READY AFTER INTERRUPT

TEST FOR RD CHK

LOD 200 CHARACTERS

CMP 200 CHAR.

TEST 901

TEST EQUAL

CMP EQUAL AT END OF READ FIELD

ADD 200 TO
CMP ADDRESS

INTERRUPT PROGRAM
FOR CHANNEL 20 PAGE 2
REWIND AND ERROR TYPEOUTS

IF END OF FILE.
REWIND TAPE AND
FIND NEXT READY TAPE.

```

#####
CQ84..... 54469 IOF 3 0000 0
           54474 RWD 3 0002 0
           54479 SET B 01 00002 00 2 0
           54484 LOD 8 01 54299 U2ZR 0
           54489 CMP 4 01 54762 U7WK 0
I 54494 TRE L 54509 U50R- 0
I 54499 ADD G 01 54764 U7WM 0 I
I 54504 TR 1 54514 U51M- 0 I
I 54509 LOD 8 01 54760 U7W- 0 I
I 54514 UNL 7 01 54519 U5/R- 0 I
I 54519 SEL 2 200- 0
I 54524 TRS 0 01 54264 U2WM- 0 CP84
+ 54529 TR 1 54489 U48R 0
#####

```

```

#####
CR84..... 54534 SET B 01 00008 00 8 0
           54539 LOD 8 01 54627 U6SP 0
           54544 TR 1 54674 U67M- 0 CX86
CS84..... 54549 SET B 01 00008 00 8 0
           54554 LOD 8 01 54635 U6TN 0
           54559 TR 1 54674 U67M- 0 CX86
CT84..... 54564 SET B 01 00008 00 8 0
           54569 LOD 8 01 54643 U6UL 0
           54574 TR 1 54674 U67M- 0 CX86
CU84..... 54579 SET B 01 00008 00 8 0
           54584 LOD 8 01 54651 U6VJ 0
           54589 TR 1 54674 U67M- 0 CX86
CV84..... 54594 SET B 01 00008 00 8 0
           54599 LOD 8 01 54659 U6VR 0
           54604 TR 1 54674 U67M- 0 CX86
CW84..... 54609 SET B 01 00008 00 8 0
           54614 LOD 8 01 54667 U6WP 0
           54619 TR 1 54674 U67M- 0 CX86
#####

```

LOD TR ADDRESS AND
T/O ADDRESS ACCORDING
TO ERROR WHICH OCCURED

```

3 54623 54339 U33R
3 54627 54765 U76N
3 54631 54344 U34M
3 54635 54853 U85L
3 54639 54369 U36R
3 54643 54794 U79M
3 54647 54404 U40M
3 54651 54824 U82M
3 54655 54409 U40R
3 54659 54873 U87L
3 54663 54299 U29R
3 54667 54893 U89L

```

INTERRUPT PROGRAM
FOR CHANNEL 20 PAGE 3
ERROR TYPEOUTS CHAN 20

```

CX85..... 54674 UNL 7 01 54758 U7VQ  0
           54679 TRA 1 01 54754 U7VM  0
           54684 SET B 01 00004 00 4  0
           54689 UNL 7 01 54729 U7SR  0
           54694 SET B 01 00001 00 1  0
           54699 LOD 8 01 54299 U2ZR  0
           54704 UNL 7 01 54871 U8XJ  0
           54709 UNL 7 01 54891 U8ZJ  0
           54714 UNL 7 01 54915 U9/N  0
           54719 UNL 7 01 54749 U7UR  0
  
```

UNL TR ADDRESS

UNL T/O ADDRESS

TAPE NO.

```

           54724 SEL 2      0500      0
           54729 WR  R      0000      0
           54734 TRA 1 03 54744 U7DM  0
           54739 TR  1      54749 U74R  0
           54744 HLT J      2000      0
           54749 SEL 2      200-      0
           54754 TR  1      0000      0
  
```

DO TYPEOUT

RESELECT TAPE

CONSTANTS & TYPEOUTS

```

2 004 54758
2 006 54764
2 028 54792
2 001 54793
2 029 54822
2 001 54823
2 028 54851
2 001 54852
2 019 54871
2 001 54872
2 019 54891
2 001 54892
2 024 54916
2 001 54917
  
```

```

0109 A
INT 200 AFTER WR AND NOT RDY
INT 200 AFTER BSP AND NOT RDY
INT 200 AFTER RD AND NOT RDY
CHAN CHK ON WR 200X
CHAN CHK ON RD 200X
WR-RD DATA UNEQUAL 200X
  
```

INTERRUPT PROGRAM
FOR CHANNEL 21 PAGE 1
WR, BSP, RD ON CHANNEL 21.
CHECK FOR FALSE INTERRUPTS,
CHANNEL CHECKS, AND COMPARE
WRITE AND READ FIELDS.

```

CY83
CY88.....
    54924 UNL 7 01 54959 U9VR
    54929 UNL 7 01 54984 U9YM
    54934 UNL 7 01 55014 V0/M
    54939 UNL 7 01 55049 VOUR
    54944 EIM , 06 00000 0 -0
    54949 SKP 3 0009
    54954 LIP , 15 02100 2A&0
    54959 SEL 2 210-
    54964 TRS 0 55129 V12R-----CZ88
    54969 WR R 60000 -00-
    54974 LIP , 15 02100 2A&0
    54979 NOP A 54959 U95R
    54984 SEL 2 210-
    54989 TRS 0 01 54999 U9ZR-----
    54994 TR 1 55194 V19M-----DA88
    54999 TRS 0 02 55209 V2-R-----DB88
    55004 BSP 3 0004
    55009 LIP , 15 02100 2A&0
    55014 SEL 2 210-
    55019 TRS 0 01 55029 V0SR-----
    55024 TR 1 55224 V22M-----DC88
    55029 RCV U 64029 M02R.
    55034 BLM $ 0402
    55039 RD Y 64025 M02N
    55044 LIP , 15 02100 2A&0
    55049 SEL 2 210-
    55054 TRS 0 01 55064 V0WM-----
    55059 TR 1 55239 V23R-----DD88
    55064 TRS 0 02 55254 V2NM-----DE88
    55069 SET B 02 00200 02-0
    55074 LOD 8 02 59999 Z9RR
    55079 LDA # 01 59769 Z7WR
    55084 ULA * 01 55089 V0YR
    55089 CMP 4 02 64224 M2KM
    55094 TRS 0 11 55269 VKFR-----DF88
    55099 TRE L 55109 V10R-----
    55104 TR 1 55269 V26R-----DF88-
    55109 CMP 4 01 59765 Z7WN.
    55114 TRE L 54959 U95R
    55119 ADD G 01 59794 Z7ZM
    55124 TR 1 55084 V08M

```

SET UP
SELECT

INITIAL SKIP TO PUT TAPE
HEAD IN PROPER RECORD GAP.

TEST FOR END OF FILE
WRITE 2000 CHARACTERS

BACKSPACE

TEST READY AFTER INTERRUPT
TEST FOR WRITE CHK

READ 2000 CHARACTERS

TEST READY AFTER INTERRUPT

CLEAR RD FIELD

COMPARE WR AND RD FIELDS

TEST READY AFTER INTERRUPT

TEST FOR RD CHK

LOD 200 CHARACTERS

CMP 200 CHAR.

TEST 901
TEST EQUAL

CMP EQUAL AT END OF READ FIELD

ADD 200 TO
CMP ADDRESS

INTERRUPT PROGRAM
FOR CHANNEL 21 PAGE 2
REWIND AND ERROR TYPEOUTS

IF END OF FILE,
REWIND TAPE AND
FIND NEXT READY TAPE

```

#####
CZ87..... 55129 IOF 3      0000      □
           55134 RWD 3      0002      □
           55139 SET B 01 00002 00 2  □
           55144 LOD 8 01 54959 U9VR □
           55149 CMP 4 01 55422 V4SK □
I 55154 TRE L      55169 V16R-□-
I 55159 ADD G 01 55424 V4SM □ I
I 55164 TR 1      55174 V17M-□-
I 55169 LOD 8 01 55420 V4S-□.□□
I 55174 UNL 7 01 55179 V1XR-□.□□
I 55179 SEL 2      210-      □
I 55184 TRS 0 01 54924 U9SM-□-----CY87
I 55189 TR 1      55149 V14R □
#####

```

```

#####
DA87..... 55194 SET B 01 00008 00 8 □
           55199 LOD 8 01 55287 V2YP □
           55204 TR 1      55334 V33M-□-----DG89
DB87..... 55209 SET B 01 00008 00 8 □
           55214 LOD 8 01 55295 V2ZN □
           55219 TR 1      55334 V33M-□-----DG89
DC87..... 55224 SET B 01 00008 00 8 □
           55229 LOD 8 01 55303 V3 L □
           55234 TR 1      55334 V33M-□-----DG89
DD87..... 55239 SET B 01 00008 00 8 □
           55244 LOD 8 01 55311 V3/J □
           55249 TR 1      55334 V33M-□-----DG89
DE87..... 55254 SET B 01 00008 00 8 □
           55259 LOD 8 01 55319 V3/R □
           55264 TR 1      55334 V33M-□-----DG89
DF87..... 55269 SET B 01 00008 00 8 □
           55274 LOD 8 01 55327 V3SP □
           55279 TR 1      55334 V33M-□-----DG89
#####

```

LOD TR ADDRESS AND
T/O ADDRESS ACCORDING
TO ERROR WHICH OCCURED

3	55283	54999	U99R
3	55287	55425	V42N
3	55291	55004	V00M
3	55295	55513	V51L
3	55299	55029	V02R
3	55303	55454	V45M
3	55307	55064	V06M
3	55311	55484	V48M
3	55315	55069	V06R
3	55319	55533	V53L
3	55323	54959	U95R
3	55327	55553	V55L

INTERRUPT PROGRAM
FOR CHANNEL 21 PAGE 3
ERROR TYPEOUTS CHAN 21

```

#####
DG88..... 55334 UNL 7 01 55418 V4/Q 0
           55339 TRA I 01 55414 V4/M-----I
           55344 SET B 01 00004 00 4 0 I
           55349 UNL 7 01 55389 V3YR 0 I
           55354 SET B 01 00001 00 1 0 I
           55359 LOD 8 01 54959 U9VR 0 I
           55364 UNL 7 01 55531 V5TJ 0 I
           55369 UNL 7 01 55551 V5VJ 0 I
           55374 UNL 7 01 55575 V5XN 0 I
           55379 UNL 7 01 55409 V4 R 0 I
#####
I
#####
           55384 SEL 2 0500 0 I
           55389 WR R 0000 0 I
           55394 TRA I 03 55404 V4GM-----I
           55399 TR 1 55409 V4OR-----I
           55404 HLT J 2100 .#.III
           55409 SEL 2 210- .#.III
           55414 TR 1 0000 .#.III
#####

```

UNL TR ADDRESS

UNL T/O ADDRESS

TAPE NO.

DO TYPEOUT

RESELECT TAPE

CONSTANTS AND TYPEOUTS

2 004 55418
2 006 55424
2 028 55452
2 001 55453
2 029 55482
2 001 55483
2 028 55511
2 001 55512
2 019 55531
2 001 55532
2 019 55551
2 001 55552
2 024 55576
2 001 55577

0109 A
INT 210 AFTER WR AND NOT RDY
□
INT 210 AFTER BSP AND NOT RDY
□
INT 210 AFTER RD AND NOT RDY
□
CHAN CHK ON WR 210X
□
CHAN CHK ON RD 210X
□
WR-RD DATA UNEQUAL 210X
□

INTERRUPT PROGRAM
FOR CHANNEL 22 PAGE 1
WR, BSP, RD ON CHANNEL 22.
CHECK FOR FALSE INTERRUPTS,
CHANNEL CHECKS, AND COMPARE
WRITE AND READ FIELDS

```

DH83
DH91.....
  55584 UNL 7 01 55619 V6/R
  55589 UNL 7 01 55644 V6UM
  55594 UNL 7 01 55674 V6XM
  55599 UNL 7 01 55709 V7 R
  55604 EIM , 06 00000 0 -0
  55609 SKP 3      0009
  55614 LIP , 15 02200 2B&0
  55619 SEL 2      220-
  55624 TRS 0      55789 V78R-----DJ91
  55629 WR  R      60000 -00-
  55634 LIP , 15 02200 2B&0
  55639 NOP A      55619 V61R
  55644 SEL 2      220-
  55649 TRS 0 01 55659 V6VR-----
  55654 TR  1      55854 V85M-----DK91
  55659 TRS 0 02 55869 V8OR-----DL91
  55664 BSP 3      0004
  55669 LIP , 15 02200 2B&0
  55674 SEL 2      220-
  55679 TRS 0 01 55689 V6YR-----
  55684 TR  1      55884 V88M-----DM91
  55689 RCV U      66049 004R.
  55694 BLM $      0402
  55699 RD  Y      66045 004N
  55704 LIP , 15 02200 2B&0
  55709 SEL 2      220-
  55714 TRS 0 01 55724 V7SM-----
  55719 TR  1      55899 V89R-----DN91
  55724 TRS 0 02 55914 V9JM-----DP91
  55729 SET B 02 00200 02-0
  55734 LOD 8 02 59999 Z9RR
  55739 LDA # 01 59779 Z7XR
  55744 ULA * 01 55749 V7UR
  55749 CMP 4 02 66244 02MM
  55754 TRS 0 11 55929 VRBR-----DQ91
  55759 TRE L      55769 V76R-----
  55764 TR  1      55929 V92R-----DQ91
  55769 CMP 4 01 59775 Z7XN.
  55774 TRE L      55619 V61R
  55779 ADD G 01 59794 Z7ZM
  55784 TR  1      55744 V74M

```

SET UP
SELECT

INITIAL SKIP TO PUT TAPE
HEAD IN PROPER RECORD GAP.

TEST FOR END OF FILE
WRITE 2000 CHARACTERS

BACKSPACE

TEST READY AFTER INTERRUPT

TEST FOR WRITE CHK

READ 2000 CHARACTERS

TEST READY AFTER INTERRUPT

CLEAR RD FIELD

COMPARE WR AND RD FIELDS

TEST READY AFTER INTERRUPT

TEST FOR RD CHK

LOD 200 CHAR.

CMP 200 CHAR.

TEST 901

TEST EQUAL

CMP EQUAL AT END OF RD FIELD

ADD 200 TO
CMP ADDRESS

INTERRUPT PROGRAM
FOR CHANNEL 22 PAGE 2
REWIND AND ERROR TYPEOUTS

IF END OF FILE,
REWIND TAPE AND
FIND NEXT READY TAPE

```

DJ90..... 55789 IOF 3      0000      □
           55794 RWD 3      0002      □
           55799 SET B 01 00002 00 2  □
           55804 LOD 8 01 55619 V6/R  □
           55809 CMP 4 01 56082 W0YK  □
I 55814 TRE L      55829 V82R-  □
I 55819 ADD G 01 56084 W0YM  □ I
I 55824 TR 1      55834 V83M-  □
I 55829 LOD 8 01 56080 W0Y-  □
I 55834 UNL 7 01 55839 V8TR-  □
I 55839 SEL 2      220-      □
I 55844 TRS 0 01 55584 V5YM-  □-----DH90
+ 55849 TR 1      55809 V8OR  □

```

```

DK90..... 55854 SET B 01 00008 00 8  □
           55859 LOD 8 01 55947 V9UP  □
           55864 TR 1      55994 V99M-  □-----DR92
DL90..... 55869 SET B 01 00008 00 8  □
           55874 LOD 8 01 55955 V9VN  □
           55879 TR 1      55994 V99M-  □-----DR92
DM90..... 55884 SET B 01 00008 00 8  □
           55889 LOD 8 01 55963 V9WL  □
           55894 TR 1      55994 V99M-  □-----DR92
DN90..... 55899 SET B 01 00008 00 8  □
           55904 LOD 8 01 55971 V9XJ  □
           55909 TR 1      55994 V99M-  □-----DR92
DP90..... 55914 SET B 01 00008 00 8  □
           55919 LOD 8 01 55979 V9XR  □
           55924 TR 1      55994 V99M-  □-----DR92
DQ90..... 55929 SET B 01 00008 00 8  □
           55934 LOD 8 01 55987 V9YP  □
           55939 TR 1      55994 V99M-  □-----DR92

```

LOD TR ADDRESS AND
T/O ADDRESS ACCORDING
TO ERROR WHICH OCCURRED.

3	55943	55659	V65R
3	55947	56085	W08N
3	55951	55664	V66M
3	55955	56173	W17L
3	55959	55689	V68R
3	55963	56114	W11M
3	55967	55724	V72M
3	55971	56144	W14M
3	55975	55729	V72R
3	55979	56193	W19L
3	55983	55619	V61R
3	55987	56213	W21L

INTERRUPT PROGRAM
FOR CHANNEL 22 PAGE 3
ERROR TYPEOUTS CHAN 22

```

DR91..... 55994 UNL 7 01 56078 WOXQ  0
           55999 TRA 1 01 56074 WOXM  0
           56004 SET B 01 00004 00 4  0
           56009 UNL 7 01 56049 WOUR  0
           56014 SET B 01 00001 00 1  0
           56019 LOD 8 01 55619 V6/R  0
           56024 UNL 7 01 56191 WIZJ  0
           56029 UNL 7 01 56211 W2/J  0
           56034 UNL 7 01 56235 W2TN  0
           56039 UNL 7 01 56069 WWR  0
           56044 SEL 2 0500  0
           56049 WR R 0000  0
           56054 TRA 1 03 56064 WOFM  0
           56059 TR 1 56069 W06R  0
           56064 HLT J 220  0
           56069 SEL 2 220-  0
           56074 TR 1 0000  0

```

UNL TR ADDRESS

UNL T/O ADDRESS

TAPE NO.

DO TYPEOUT

RESELECT TAPE

CONSTANTS AND TYPEOUTS

```

2 004 56078
2 006 56084
2 028 56112
2 001 56113
2 029 56142
2 001 56143
2 028 56171
2 001 56172
2 019 56191
2 001 56192
2 019 56211
2 001 56212
2 024 56236
2 001 56237

```

```

0109 A
INT 220 AFTER WR AND NOT RDY
INT 220 AFTER BSP AND NOT RDY
INT 220 AFTER RD AND NOT RDY
CHAN CHK ON WR 220X
CHAN CHK ON RD 220X
WR-RD DATA UNEQUAL 220X

```


WRITE AND READ FIELDS FOR CHANNEL PROGRAM

2	006	59755	064004	
3		59759	62204 K20M	START OF CHAN 20 RD FIELD
3	006	59765	066024	
3		59769	64224 M22M	START OF CHAN 21 RD FIELD
3	006	59775	068044	
3		59779	66244 024M	START OF CHAN 22 RD FIELD
3	006	59785	070064	
3		59789	68264 025M	START OF CHAN 23 RD FIELD
2	005	59794	XX20G	
2	001	59795	00	
2	004	59799	5580	
2	040	59839	AAAAABBBBBCCCCDDDDDEEEEEFFFFFFGGGGGHHHHH	
2	040	59879	IIIIJJJJJJKKKKLLLLMMMMNNNNNOOOOOPPPP	
2	040	59919	QQQQRRRRSSSSSTTTTUUUUUVVVVWWWWWXXXXX	
2	040	59959	YYYYZZZZ00000111122223333444455555	
2	040	59999	6666777788889999@eee////////\$\$\$\$\$.....	
5	500	60499	WRITE	
5	500	60999	FIELD	
5	500	61499	FOR ALL	2000
5	500	61999	CHANNELS	
2	001	62000		
2	004	62004		
5	800	62804	62005 READ FIELD	2000
5	800	63604	FOR	
5	400	64004	CHANNEL 20	
2	020	64024	64025 READ FIELD	2000
5	800	64824	FOR	
5	800	65624	CHANNEL 21	
5	400	66024		
2	020	66044	66045 READ FIELD	2000
5	800	66844	FOR	
5	800	67644	CHANNEL 22	
5	400	68044		
2	020	68064	68065 READ FIELD	2000
5	800	68864	FOR	
5	800	69664	CHANNEL 23	
5	400	70064		
2	020	70084		