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TITLE	SOFTWARE PERFORMANCE SPECIFICATION Paper Tape System and BIC Test		
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SECTION I TEST PROGRAM OVERVIEW

1.1 INTRODUCTION

The 620 Paper Tape System and BIC Test determines whether or not the high speed paper tape system and BIC are functioning correctly. The paper tape punch and paper tape reader can be tested with the same controller or with separate controllers. Punch, step-read, and continuous-read modes are checked. The BIC is thoroughly tested in a special BIC subtest but can also be employed in the punch and continuous - read areas.

The special case of the abnormal device stop occurring prior to the first data transfer is not tested.

The 620 Paper Tape System and BIC Test operates with the 620 Test Executive and thus uses standard teletype I/O routines and is equipped with both a Console Mode and a Teletype Mode (see Manual No. 98A9952-06R).

1.2 PROGRAM DESIGN OVERVIEW

The program first allows the user to indicate whether he wishes to test the BIC or the paper tape system. If he wishes to test the paper tape system (punch and/or reader), he may test the punch process in sense, PIM, or BIC mode; the step-read process in sense or PIM mode; or the continuous-read process in sense; PIM, or BIC mode. If he wishes to test the BIC, he may test it with or without a BIC - through interrupt. All device addresses, trap locations, and interrupt masks are input from the user. Data patterns are set by the user in the paper tape section of the test.

The BIC section of the test checks all critical address ranges for the initial and final BIC registers. The provided test tape (92V0107-023) must be used for this test.

1.3 HARDWARE SUMMARY

The following hardware items are required or are optional to use this program:

1. A 73/620 series computer with at least 4K of memory.
2. A High Speed Paper Tape Reader.
3. A High Speed Paper Punch*.
4. (Optional) PIM.

*The test may be employed if only the High Speed Paper Tape Punch or only the High Speed Paper Tape Reader is available.



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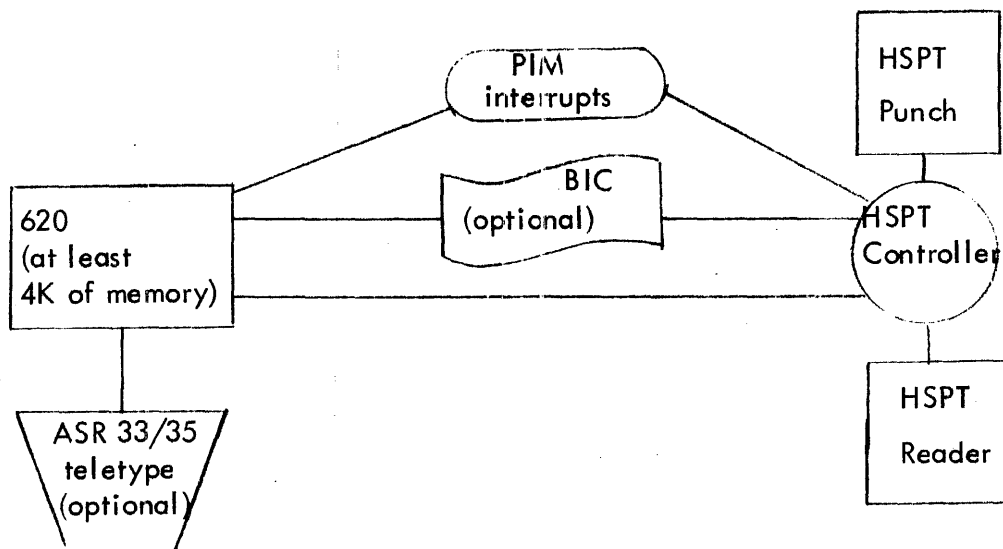
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5. (Optional) BIC (necessary for BIC section of test).

A hardware diagram is given below:



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SECTION 2 EXTERNAL SPECIFICATIONS

2.1 GENERAL

The external specification provides all the operating procedures and information pertinent to user interface.

2.2 LOADING PROCEDURE

The 620 Paper Tape and BIC Test is available as an object tape.

2.2.1

The user must secure a copy of the 620 Test Executive object tape (part number 92U0107-001). The device used to load the tapes can be the ASR33 or ASR35 teletype paper tape reader or the high speed paper tape reader. The 620 Test Executive is loaded first and executed to set the Console/Teletype Mode flag (see 2.3) according to the user's entry point. The 620 Paper Tape and BIC Test is then loaded either by typing an "L." from the 620 Test Executive (if a teletype is being used), or by loading it from the console.

2.2.2

The user must then load the programs by manually starting the appropriate Executive loader (see manual number 98A9952-06R).

2.3 OPERATING PROCEDURE

After loading the 620 Test Executive, and the 620 Paper Tape and BIC Test, and setting the Console/Teletype Mode flag by entry point to the 620 Test Executive, the user sets the program counter to 0500 and resets SS3. The two procedures for Console and for Teletype Mode are given next.

2.3.1 Sense Switch Settings

<u>Switch</u>	<u>'Set'</u>	<u>'Reset'</u>
1	Suppress error printouts	Print Error messages



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SS2 Halt on error (continue after error halt) Do not halt on error

SS3 Terminate current operation Continue test
 return to beginning of test

2.3.2 Teletype Mode

After starting the program at 0500, the teletype prints:

620 PAPER TAPE AND BIC TEST
PT PUNCH DA =

The user then inputs the octal device address of the high speed paper tape punch followed by a period or comma.

The teletype then prints:

PT READER DA =

The user then inputs the octal device address of the high speed paper tape reader followed by a period or comma.

The teletype then prints:

BIC TEST REQUESTED?

The user then responds with a 'Y' or an 'N' for 'yes' or 'no', respectively (no period or comma is input). if 'Y' is input see 2.3.2.2.

2.3.2.1

If 'N' is input, the test types:

BIC USED?

The user then responds with a 'Y' or an 'N' (no period or comma is input).

If the answer was 'Y', the test types:

BIC DA =

The user then inputs the octal device address of the BIC followed by period or comma.



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The test then continues at 2.3.2.1.2.

If the answer was 'N' to BIC USED?, the test types:

PIM USED?

The user then responds with a 'Y' or an 'N' (no period or comma is input).

If the answer was 'N', the test then continues at 2.3.2.1.2.

2.3.2.1.1

If the answer was 'Y', the test types:

PIM DA =

The user then inputs the octal device address of the PIM followed by a period or comma.

The test then types:

TRAP LOCATION =

The user then inputs the octal address of the trap branch for the interrupt line being used followed by a period or comma.

The test then types:

INTERRUPT MASK =

The user then inputs the interrupt mask which masks-out all interrupts but the one being used followed by a period or comma. See table in 2.3.4.

2.3.2.1.2

After the I/O mode information is set, the test types:

INPUT TEST TYPE

The user then inputs 'P', 'R', or 'H' for 'punch', 'step-read', or 'continuous-read', respectively. If he wishes to use the data set last used (or on the first pass, the assembler default), he then inputs '.'. Otherwise he inputs ',' and the test types:

INPUT LOWER LIMIT, UPPER DATA LIMIT, AND DATA BLOCK SIZE



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The user then inputs 3 octal values* in succession corresponding, respectively, to these terms and separated by commas or periods and ending with a period or comma.

The test then types:

CYCLES =

The user then inputs the number of cycles in octal or 0 for continuous, followed by a period or comma.

If the 'R' parameter was input for the test type, the test types:

TIME DELAY =

The user then inputs a positive number which produces a time delay of 13 times that number times the CPU cycle time. This delay is executed prior to executing the step-read command after the buffer ready is sensed. If the user inputs a negative number, a random number generator is invoked to give successive random wait periods to be executed instead. The value input must be followed by a period or comma.

After all this information is input the test is performed according to the given parameters. An error condition produces a descriptive message as given in 2.4. When the test is done the following is printed:

BIC TEST REQUESTED?

The process is then restarted, with the difference that device addresses, trap locations, and interrupt masks are input only once, unless SS3 is hit or the test restarted at 0500.

2.3.2.2

If 'Y' is input to 'BIC TEST REQUESTED?', the user must place the provided test tape (92V0107-023) in the reader positioned anywhere on the initial blank leader. The test types the following:

BIC DA =

The user then inputs the BIC device address in octal, followed by a period or comma. The test then types:

PIM USED?

The user responds by inputting 'Y' or 'N' (no period or comma is input). If 'N'

* When using the BIC to output or input data a maximum of 0400 is allowed for the data block size parameter, due to the provided buffer length.



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is input the interrupt parameters are skipped.

If 'Y' is input, the test types:

PIM DA =

The user then inputs the octal value of the PIM device address followed by a period or comma.

The test then types:

TRAP LOCATION =

The user then inputs the address for the trap branch for the interrupt line to be used. This is followed by a period or comma.

The test then types:

INTERRUPT MASK =

The user then inputs the interrupt mask which masks-out the interrupt lines not used, followed by a period or comma. See table in 2.3.4.

The test then types:

CYCLES =

The user then inputs the number of cycles in octal or 0 for continuous followed by a period or comma.

The BIC test is then performed. The BIC test tape is read into the memory at the critical location^s. If an error occurs, a descriptive message is typed (as given in 2.4).

When the test is through, the test types:

BIC TEST REQUESTED?

The process is then restarted, with the difference that device addresses, trap locations, and interrupt masks are input only once, unless SS3 is hit or the test restarted at 0500.

2.3.3 Console Mode

After starting the program at 0500, the program halts with 020 in the instruction



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register. The user sets the A-register to the high speed paper tape punch device address and the B-register to the high speed paper tape reader address. He then hits 'RUN' and the program halts with 021 in the instruction register. The user then sets the A-register to '1' or '0' for BIC test or no BIC test, respectively. The user then hits 'RUN'. If the BIC test was specified see 2.3.3.2.

2.3.3.1

If the BIC test is not indicated, the test halts with 022 in the instruction register. The user sets the A-register to '-1', '0', or '1' for BIC mode, sense mode, and PIM mode, respectively. If the BIC mode is specified, the user must put the BIC device address in the B-register. 'RUN' is then hit. If sense or BIC mode was specified, the test goes to 2.3.3.1.2.

2.3.3.1.1

If PIM mode was specified, the test halts with 023 in the instruction register. The user then places the PIM device address in the A-register, the trap location in the B-register, and the interrupt mask in the X-register (see table 2.3.4). The user then hits 'RUN'. (see 2.3.3.1.2)

2.3.3.1.2

The test halts with 024 in the instruction register. The user then sets the A-register to 0, 1, or 2 for the punch test, the step-read test, or the continuous-read test, respectively. He then hits 'RUN'.

In any case the test then halts with 026 in the instruction register. The user then places the lower data limit in the A-register, the upper data limit in the B-register, and the data block size* in the X-register. He then hits 'RUN'.

The test then halts with 027 in the instruction register. The user then sets the A-register to the cycle count (0 means continuous) and hits 'RUN'.

If the step-read option was specified, the test halts with 025 in the instruction register. The user sets the A-register to a positive number or a negative number. If the number is positive, a time delay of 13 times that number times the CPU cycle time is executed prior to executing the step-read command after the buffer ready is sensed. If the number is negative, a random number generation is invoked to give successive random wait periods to be executed instead.

After all this information is obtained, the test is performed according to the given

* When using the BIC to output or input data a maximum of 0400 is allowed for the data block size parameter, due to the provided buffer length.



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parameters. An error condition produces a halt as given in 2.6.

When the test is done, a halt occurs with 021 in the instruction register and the process repeats. The difference is that device addresses, trap locations, and interrupt masks are input only once, unless SS3 is hit or the test restarted at 0500.

2.3.3.2

If the user specified that he wishes to perform the BIC test, the test halts with 030 in the instruction register. The user must place the provided test tape (92V0107-023) in the reader positioned anywhere on the initial blank leader. The user then sets the A-register to the BIC device address, and the B-register to '1' for PIM used or '0' for no PIM used. The user then hits 'RUN.' If no PIM is specified, the PIM parameters are skipped.

If PIM is specified, the test halts with 031 in the instruction register. The user then sets the PIM device address in the A-register, the trap location in the B-register, and the interrupt mask in the X-register (see 2.3.4). The user then hits 'RUN'.

The test next halts with 032 in the instruction register. The user then sets the A-register to the number of cycles that the test is to be performed (a 0 means continuous). The user then hits 'RUN'.

The test is now performed according to the given parameters. An error condition produces a halt according to 2.6.

When the test is done, a halt occurs with 021 in the instruction register and the process repeats. The difference is that device addresses, trap locations, and interrupt masks are input only once, unless SS3 is hit or the test restarted at 0500.

2.3.4 Interrupt Table

<u>Interrupt Line</u>	<u>Most Common Trap Location</u>	<u>Interrupt Mask</u>
0	0100	0376
1	0102	0375
2	0104	0373
3	0106	0367
4	0110	0357
5	0112	0337
6	0114	0277
7	0116	0177



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2.4 OUTPUT STATEMENTS

620 PAPER TAPE AND BIC TEST

PT PUNCH DA =

PT READER DA =

BIC USED?

PIM USED?

PIM DA =

TRAP LOCATION =

BIC DA =

INPUT TEST TYPE

BUFFER READY TIME-OUT

BIC BUSY TIME-OUT

BIC ABNORMAL STOP

ERROR(s)

INPUT LOWER DATA LIMIT, UPPER DATA LIMIT, AND DATA BLOCK SIZE

CYCLES =

INTERRUPT MASK =

BIC TEST REQUESTED?

SECTION	ACTUAL	
X	YYYYYY }	error data

CHIP	EXPECTED	ACTUAL	
XXXXXX	YYYYYY	ZZZZZ }	error data

BIC-THROUGH INTERRUPT WHEN BIC BUSY

NO BIC-THROUGH INTERRUPT

TIME DELAY =



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2.5 INPUT STATEMENTS

The following statements require the subsequent input of an octal value, followed by a period or comma.

PT PUNCH DA =

PT READER DA =

PIM DA =

TRAP LOCATION =

BIC DA =

CYCLES =

INTERRUPT MASK =

TIME DELAY =

The following statement requires the subsequent input of a sequence of 3 octal values separated and terminated by periods or commas or a mixture of both.

INPUT LOWER DATA LIMIT, UPPER DATA LIMIT, AND DATA BLOCK SIZE

The following statements require the input of 'Y' or 'N'.

BIC USED?

PIM USED?

BIC TEST REQUESTED?

The following statement requires the input of 'P', 'R', or 'H' followed by a comma or period.

INPUT TEST TYPE

2.6 HALT TABLE

Instruction Register

Significance

020

Set: A=HSPT punch device address, B=HSPT reader device address.



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<u>Instruction Register</u>	<u>Significance</u>
021	Set: A = '1' for BIC test, '0' for no BIC test.
022	Set: A = '-1' for BIC used, '1' for PIM used, '0' for sense mode, B = BIC device address(if appropriate)
023	Set: A = PIM device address, B = trap location, X = interrupt mask. (buffer-ready interrupts)
024	Set: A = '0' for punch test, '1' for step-read test, '2' for continuous-read test.
025	Set: A = time delay for step-read test.
026	Set: A = lower data limit, B = upper data limit, X = data block size.
027	Set: A = cycle count, '0' for continuous.
030	Set: A = BIC device address, B = '1' for PIM used, '0' for no PIM used.
031	Set: A = PIM device address, B = trap location, X = interrupt mask. (BIC-through interrupts-BIC test)
032	Set: A = cycle count, '0' for continuous.
01	Buffer ready time-out.
02	BIC-busy time-out.
03	BIC abnormal stop.
04	Data error(s) read, number of errors in A-register.
05	(Halt on error mode) A = error data, B = expected data.
06	Data error(s) read (BIC test), number of errors in A-register.
07	Halt on error mode (BIC test), A contains error data, B contains expected data, and X contains the chip number.
010	BIC -through interrupt when BIC busy.
011	No BIC -through interrupt.



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2.7 MEMORY MAP

<u>Location</u>	<u>Contents</u>
0-0200	Test Executive Area
0200-0212	Indirect Pointers
0220-0377	BIC Test Buffer
0400-0477	Test Executive Area
	Jump to Mainline
	User Interface Routine
0502-01101	I/O Buffer
01102-01133	Data and Flag Area
01134-01644	Mainline User
	Interface Routine
02000-02010	BIC Test Buffer
02011-02274	Punch Test Routine
02275-02400	PIM Enable, Sense
	Buffer Ready Routine
02401-02555	Punch (or Read) BIC Mode)
02556-03110	Step Reader Test Routine
03111-03137	Error Save Area
03140-03307	High Speed Reader
	Test Routine
03310-03543	Read (Sense or PIM Mode)
03544-03602	Pseudo-Random
	Number Generator
03603-03707	Parameter Setting Subroutine
04000-04010	BIC Test Buffer
04011-05203	BIC Test Routine
05204-05230	Device Address Setter
05231-05617	Message Buffers
05620-07777	Test Executive
0220-0377	BIC Test Buffers
0502-0512	(If Memory Equipped with such addresses)
01000-01010	
02000-02010	
04000-04010	
010220-010377	
020220-020377	
040220-040377	



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2.8 UNDERSTANDING THE BIC TEST PRINTOUT.

<u>Section</u>	<u>Memory Address To Be Trapped Into</u>	<u>Data To Be Input</u>	<u>Address Logic On BIC Activated</u>
1	220 - 377	220 - 377	7 - 0
2	502 - 512	102 - 112	8 Plus 7 - 0
3	1000 - 1010	0 - 10	9 Plus 7 - 0
4	2000 - 2010	0 - 10	10 Plus 7 - 0
5	4000 - 4010	0 - 10	11 Plus 7 - 0
6	10220 - 10377*	220 - 377	12 Plus 7 - 0
7	20220 - 20377*	220 - 377	13 Plus 7 - 0
8	40220 - 40377*	220 - 377	14 Plus 7 - 0

*If these memory locations do not exist, no error printout will occur.



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SECTION 3 INTERNAL SPECIFICATIONS

3.1 GENERAL DESCRIPTION

The 620 Paper Tape System and BIC test consists of 5 major subsections each consisting of a set of routines. Some of the subroutines used in the major sections are common to more than one section.

The major sections are 1) Mainline User Interface Routine, 2) Punch Test Routine, 3) Step Speed Reader Test Routine, 4) High Speed Reader Test Routine, 5) BIC Test Routine.

3.2 COMPONENT SPECIFICATIONS

Title: Mainline User Interface Routine

Symbolic Name: EP01

Purpose: To allow the user to communicate the test specifications to the program and to comply with those directives by setting various values and by branching to the appropriate test routine.

Description: HSPT ready and punch device address, I/O mode, and the test to be performed are communicated to the program via a teletype (Teletype Mode), or via the 620 console (Console Mode). The appropriate test is then invoked.

Entry Points: Location 0500, EP01, EP10, EP10+5. The first two entry points cause test to type test I.D. The third entry point causes the parameters like device addresses and trap locations to be input the fourth entry point ships these inputs.

Calling Sequence: EP01 is not a closed routine and is entered either by a JMP instruction, or by setting the entry address in the P-register, clearing the Instruction-register, and hitting run.

Entrance Parameters: None

Exit Point: None

Exit Parameters: Not applicable



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Table or Files Modified or Read: \$PCH, \$RRD, \$PIM, \$BIC, MODE, MASK PMLO, PRFL, PMFL, and BCFL are altered.

Tables or Files Created: Not applicable

Called By: Not applicable

Called From: OUTD, OUTC, INPG, INPD, OUTG.

Exception Conditions: In teletype mode, when an overtly invalid parameter is input by the user, 'INVALID' is typed and the parameter must be re-input.

Timing: Not applicable
(Test is HSPT - bound, timewise)

Size: See Memory Map

Comments: Start test at 0500 and a jump to EP01 is automatically executed. Always run the test only when the Maintain II Test Executive also resides in memory and make sure the Teletype/Console Mode Flag in the Test Executive is first set.

Special Notation: Not applicable

Hardware Details: 620 computer

Flowcharts: See 3.3.

Title: Punch Test Routine

Symbolic Name: PTST

Purpose: To test the high speed paper tape punch according to user given parameters.

Description: Data parameters are obtained from the user through subroutine PARS, unless the user wishes to use the default parameters (i.e. - the last data parameters input; or on the first time, the assembled parameters). Subroutines are then invoked to punch the specified data. Errors are reported to the user.



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Entry Points: PTST

Calling Sequence: The Punch Test Routine is not a closed subroutine and is entered by a jump to PTST, or a console start from PTST.

Entrance Parameters: HSPT device addresses and I/O mode information must be set at entry time. The Teletype/Console Mode Flag must also be set.

Exit Point: PTST normally returns to EP01 at either EP10 or EP10+5.

Exit Parameters: Not applicable

Table or File Modified or Read: \$PCH, \$PIM, \$BIC, MODE, TSTF, TOFL, LOLM, UPLM, BLSZ, CYCL, CRCY, CRCD, CRCT, MASK, PMLO

Tables or Files Created: Not applicable

Called By: Entered from EP01

Called From: INPG, OUTC, PARS, DVAD, PPUN, PPNB

Exception Conditions: Errors are reported to the user. In general, hit 'SYSTEM RESET' and 'RUN' to continue.

Timing: HSPT - bound

Size: See Memory Map

Comments: None

Special Notation: None

Hardware Details: 620 computer, HSPT controller with HSPT punch. PIM, BIC optional

Flowcharts: See 3.3



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Title: Step Speed Reader Test Routine

Symbolic Name RTST

Purpose: To test the high speed paper tape reader in step speed according to user given parameters.

Description: Data parameters are obtained from the user through subroutine PARS, unless the user wishes to use the default parameters (i.e. - the last data parameters input or on the first time the assembled parameters). A delay parameter is also obtained from the user. Subroutines are then invoked to read the tape in step, speed and compare with the specified data. Errors are reported to the user.

Entry Points: RTST and special HTST entry points RT05 and RT01+2.

Calling Sequence: The Step Speed Test Routine is not a closed subroutine and is entered by a jump to RTST, or a console start from RTST.

Entrance Parameters: HSPT device addresses and I/O mode information must be set at entry time. The Teletype/Console Mode Flag must also be set.

Exit Point: RTST normally returns to EP01 at either EP10 or EP10+5.

Exit Parameters : Not applicable

Table or Files Modified or Read: \$RRD, \$PIM, \$BIC, MODE, TSTF, IOFL, LOLM, UPLM, BLSZ, CYCL, CRCY, CRCD, CRCT, MASK, PMLO, DELY

Tables or Files Created: Input Buffer - BUFF is used.

Called By: Entered from EP01 and HTST.

Called From: INPG, PARS, OUTC, OUTD, DVAD, CLER, PRDR, QUTE,

Exception Conditions: Errors are reported to the user. In general (except for data errors) hit 'SYSTEM RESET' and 'RUN' to continue.

Timing: HSPT - bound

Size: See Memory Map



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Comments: None
Special Notation: None
Hardware Details: 620 computer, HSPT controller with HSPT reader, PIM optional.
Flowcharts: See 3.3

Title: High Speed Reader Test Routine
Symbolic Name: HTST
Purpose: To test the high speed paper tape reader in continuous mode according to user given parameters.
Description: Data parameters are obtained from the user through subroutine PARS, unless the user wishes to use the default parameters (i.e. - the last data parameters input, or, on the first time, the assembled parameters). Subroutines are then invoked to read the tape in continuous mode and compare with the specified data. Errors are reported to the user.
Entry Points: HTST
Calling Sequence: The High Speed Test Routine is not a closed subroutine and is entered by a jump to HTST, or a console start from HTST.
Entrance Parameter: HSPT device addresses and I/O mode information must be set at entry time. The Teletype/Console Mode Flag must also be set.
Exit Point: HTST normally returns to EP01 at either EP10 or EP10+5.
Exit Parameters: Not applicable
Tables or Files Modified or Read: \$RRD, \$PIM, \$BIC, MODE, TSTF, IOFL, LOLM, UPLM, BLSZ, CYCL, CRCY, CRCD, CRCT, MASK, PMLO
Tables or Files Created: Input Buffer - BUFF is used.
Called By: Entered from EP01
Called From: Enters RTST, calls INPG, OUTC, PARS, DVAD, CLER, PPNB.



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Exception Conditions: Errors are reported to the user. In general (except for data errors) , hit 'SYSTEM RESET' and 'RUN' to continue.

Timing: HSPT - bound

Size: See Memory Map

Comments: None

Special Notation: None

Hardware Details: 620 computer, HSPT controller with HSPT reader. PIM and BIC optional.

Flowcharts: See 3.3

Title: BIC Test Routine

Symbolic Name: BTST

Purpose: To thoroughly test the BIC using the high speed paper tape reader.

Description: Data parameters are obtained from the user to give the program I/O Mode information and cycle count. Subroutine are then invoke to BIC in from the given BIC Test Tape. The results are compared with the specified data. Mechanical or data errors are reproted to the user.

Entry Points: BTST

Calling Sequence: The BIC Test Routine is not a closed subroutine and is entered by a jump to BTST, or a console start from BTST.

Entrance Parameters: HSPT device addresses must be set at entry time. The Teletype/ Console Mode Flag must also be set.

Exit Point: BTST normally returns to EP01 at EP10 or EP10+5.

Exit Parameters: Not applicable

Table or Files Modified or Read: \$RRD, \$PIM, \$PM2, \$BIC, MODE, TSTF, BTMD, IOFL, CRCY, CYCL, MSK2, PML2, PMF2, BCFL

Tables or Files Created: A set of input areas are used.



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Called By: Entered from EP01

Called From: DVAD, OUTD, INPG, OUTC, INPD, OUTG, CLER, PRDR, BCIN, CMPR, QUTE

Exception Conditions: Errors are reported to the user. In general (except for data errors), hit 'SYSTEM RESET' and 'RUN' to continue.

Timing: HSPT - found

Size: See Memory Map

Comments: None

Special Notation: None

Hardware Details: 620 computer, HSPT controller with HSPT reader, BIC. PIM options .

Flowcharts: See 3.3



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3.3

FLOWCHARTS



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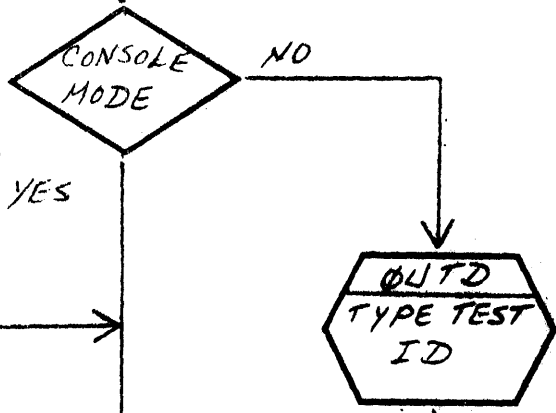
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ENTRY

0500
EP01



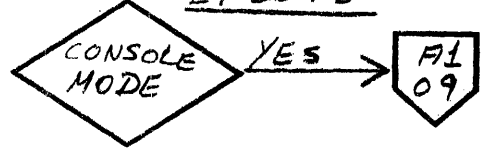
01
E1

EP10

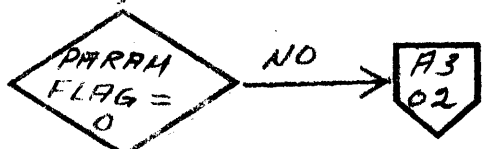
RESET
PERIPH AND
DEV. ADDR.
FLAGS

COMPUTE
COMPLEMENT
MEMORY
SIZE

01
E1



EP10+5



B3

QUTC
TYPE
CARR. &
RETURN
LF

QUTD
REQ. PUNCH
DEVICE
ADDR.

SS3 OR INVALID
INPUT
RETURN

INPG
GET
PUNCH
DA

COMMA OR
PERIOD
RETURN

STORE
PUNCH
DEVICE
ADDR.

A1
02



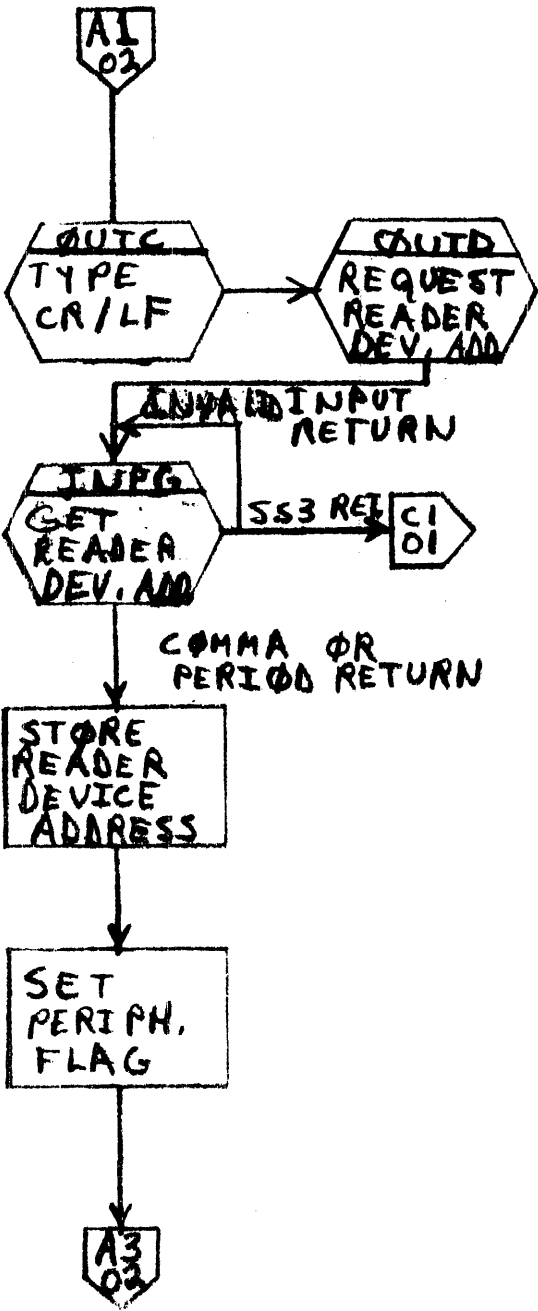
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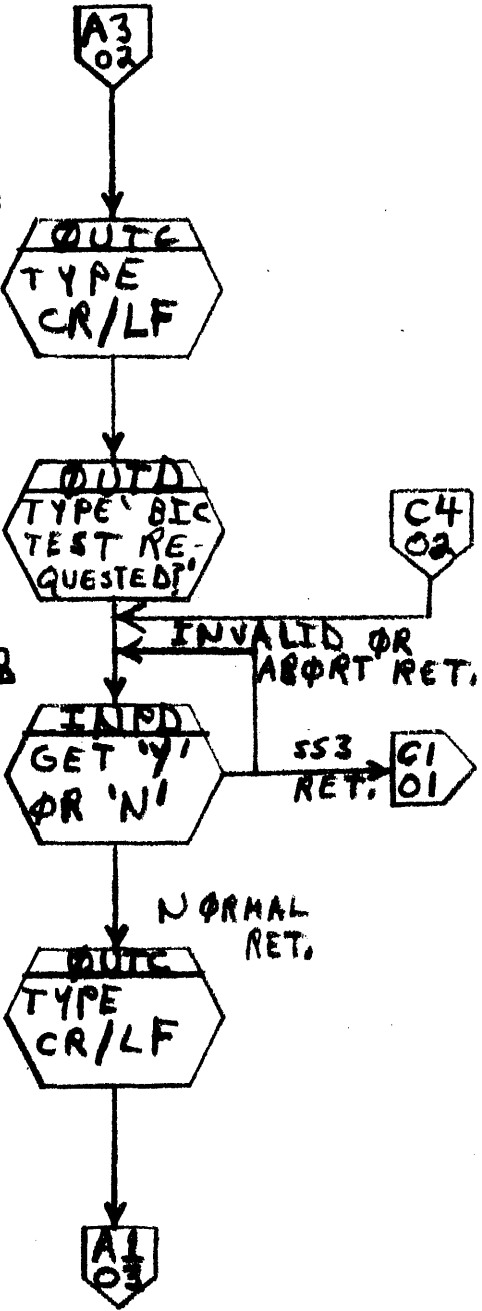
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EPII



EPO2



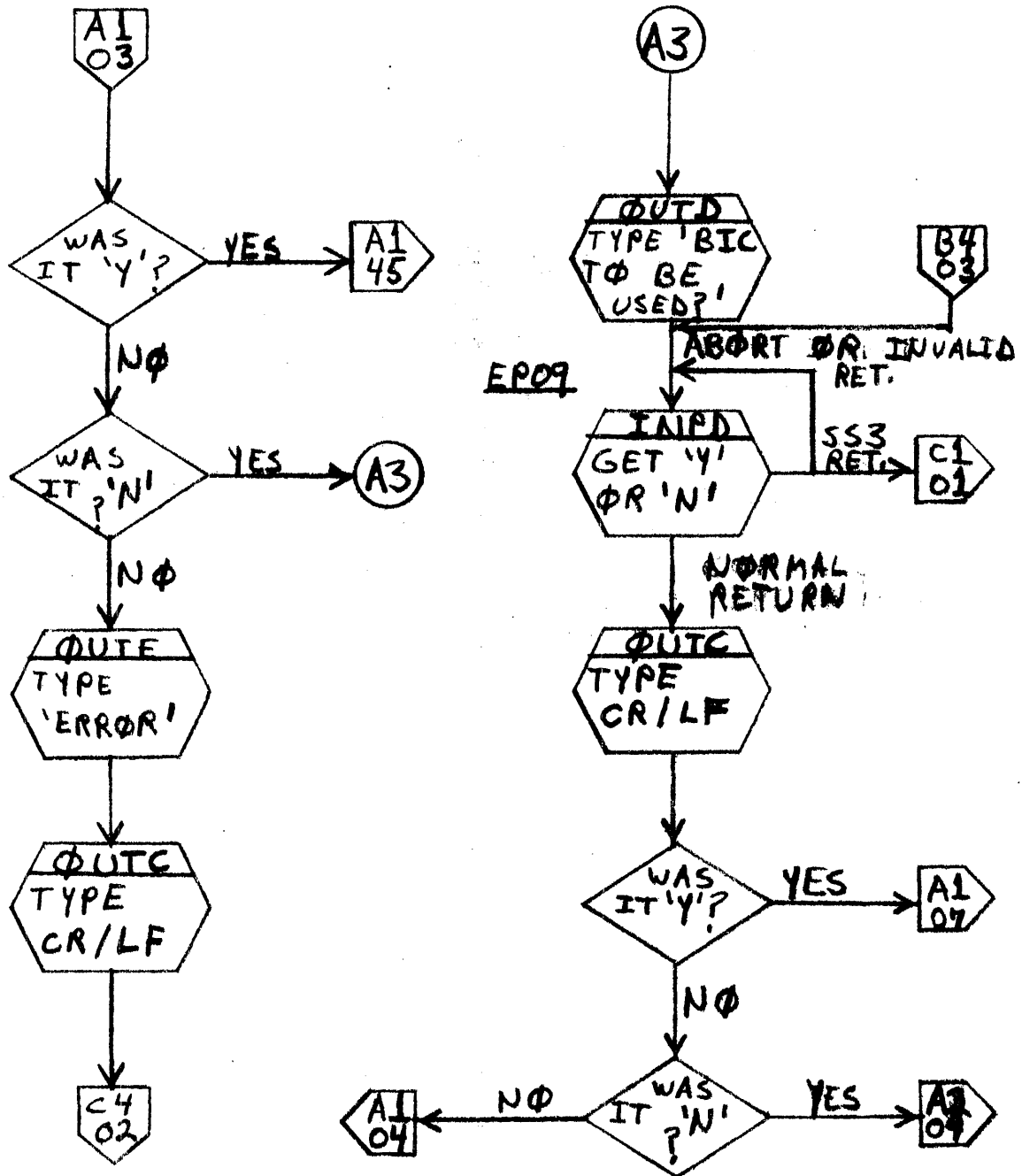
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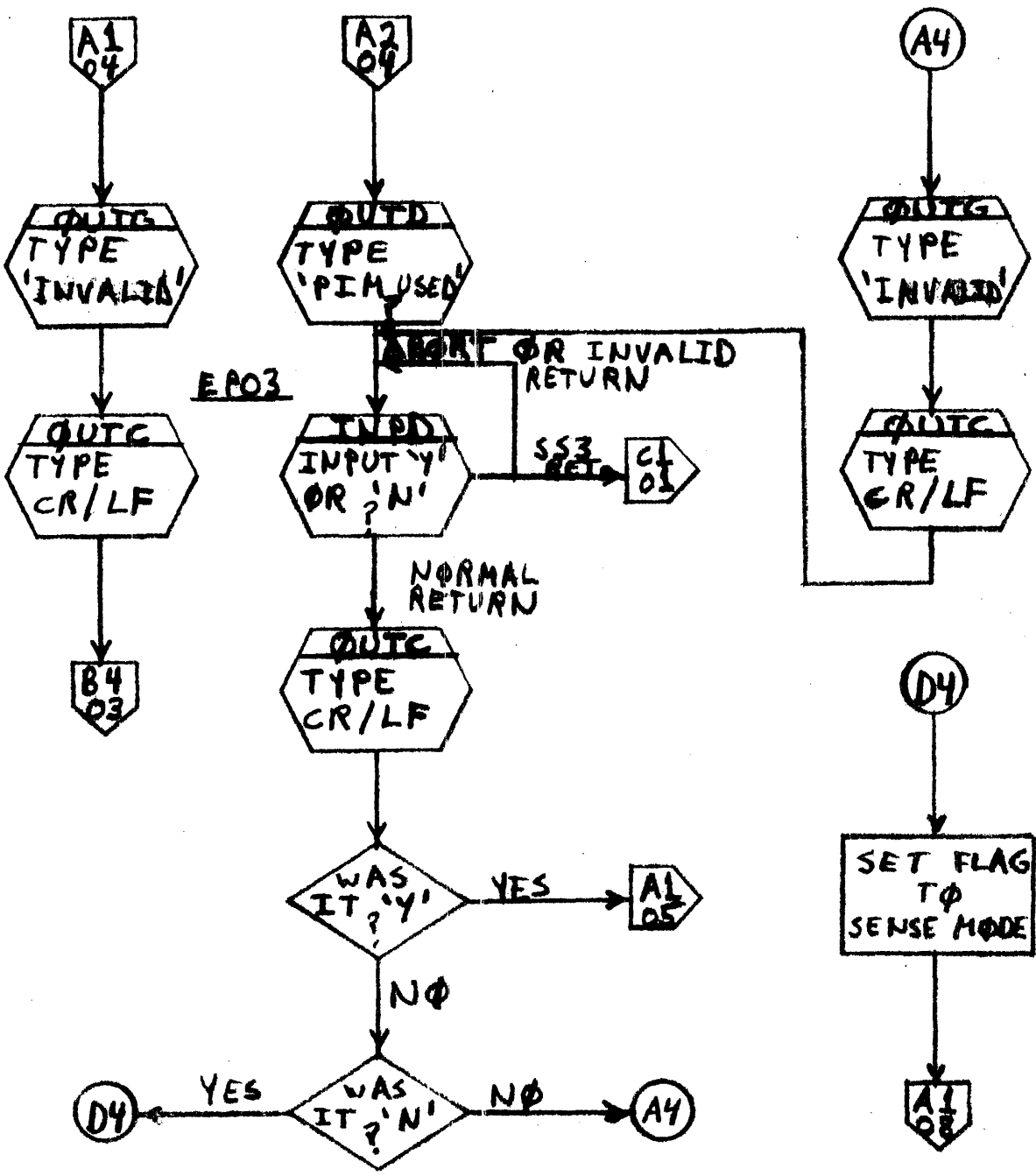
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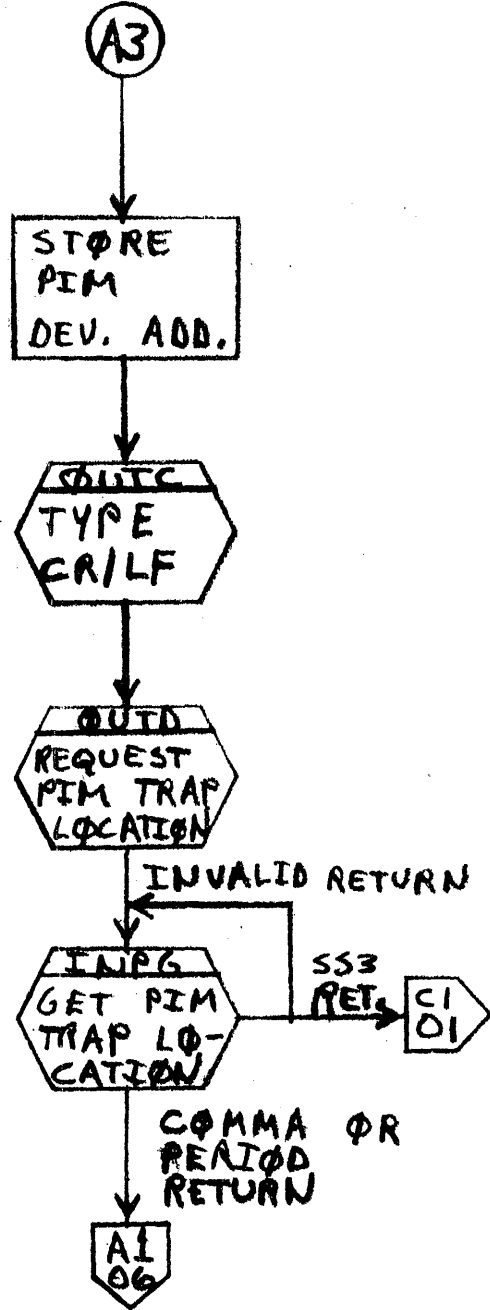
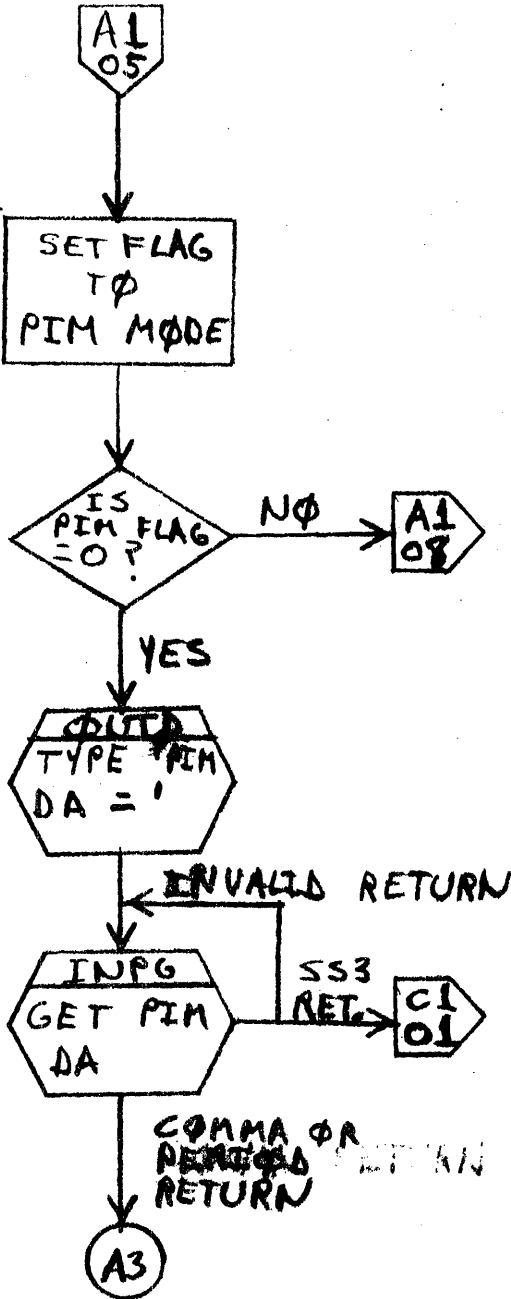
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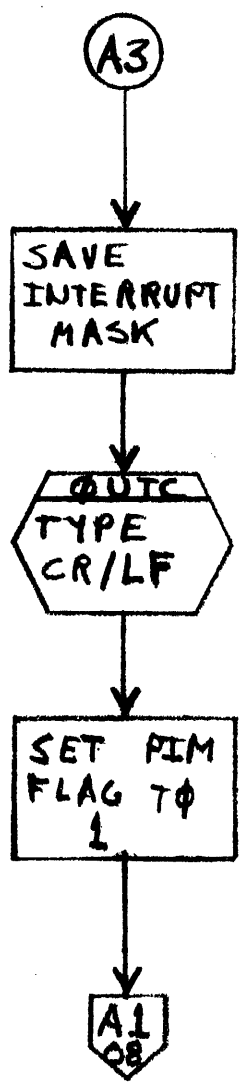
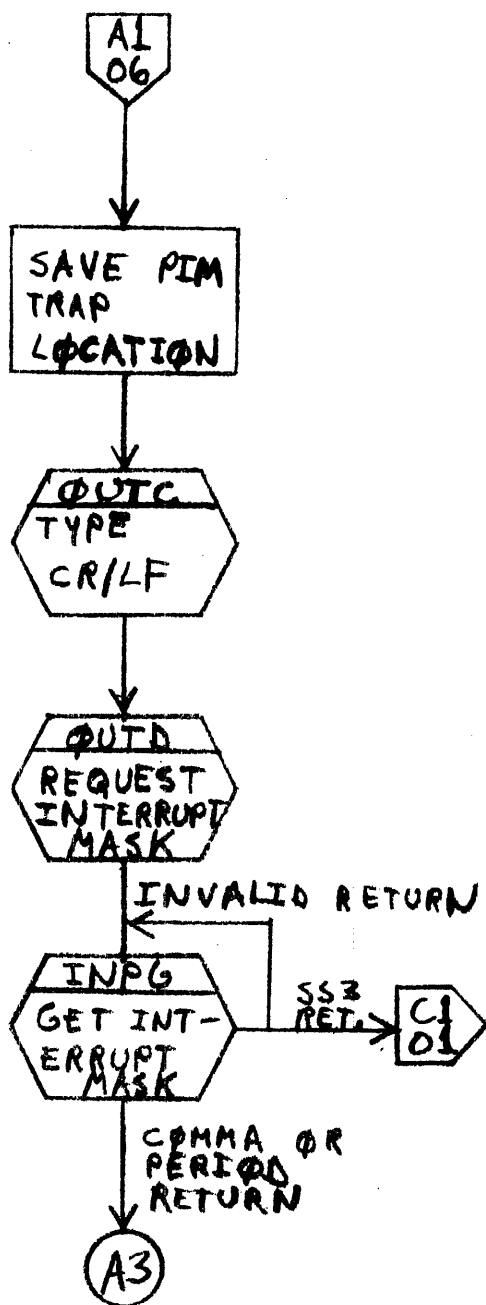
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REV



EP04





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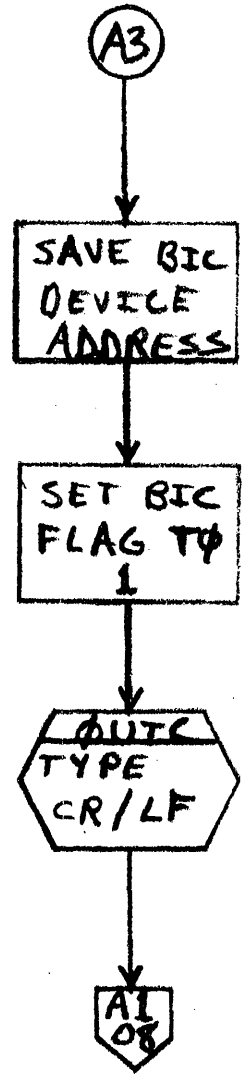
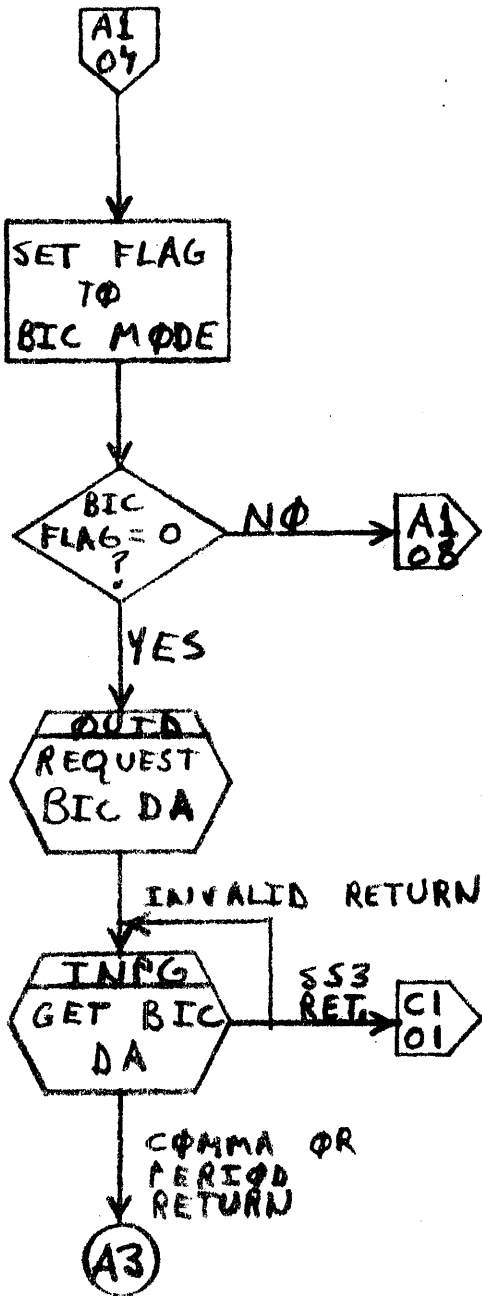
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EPO5



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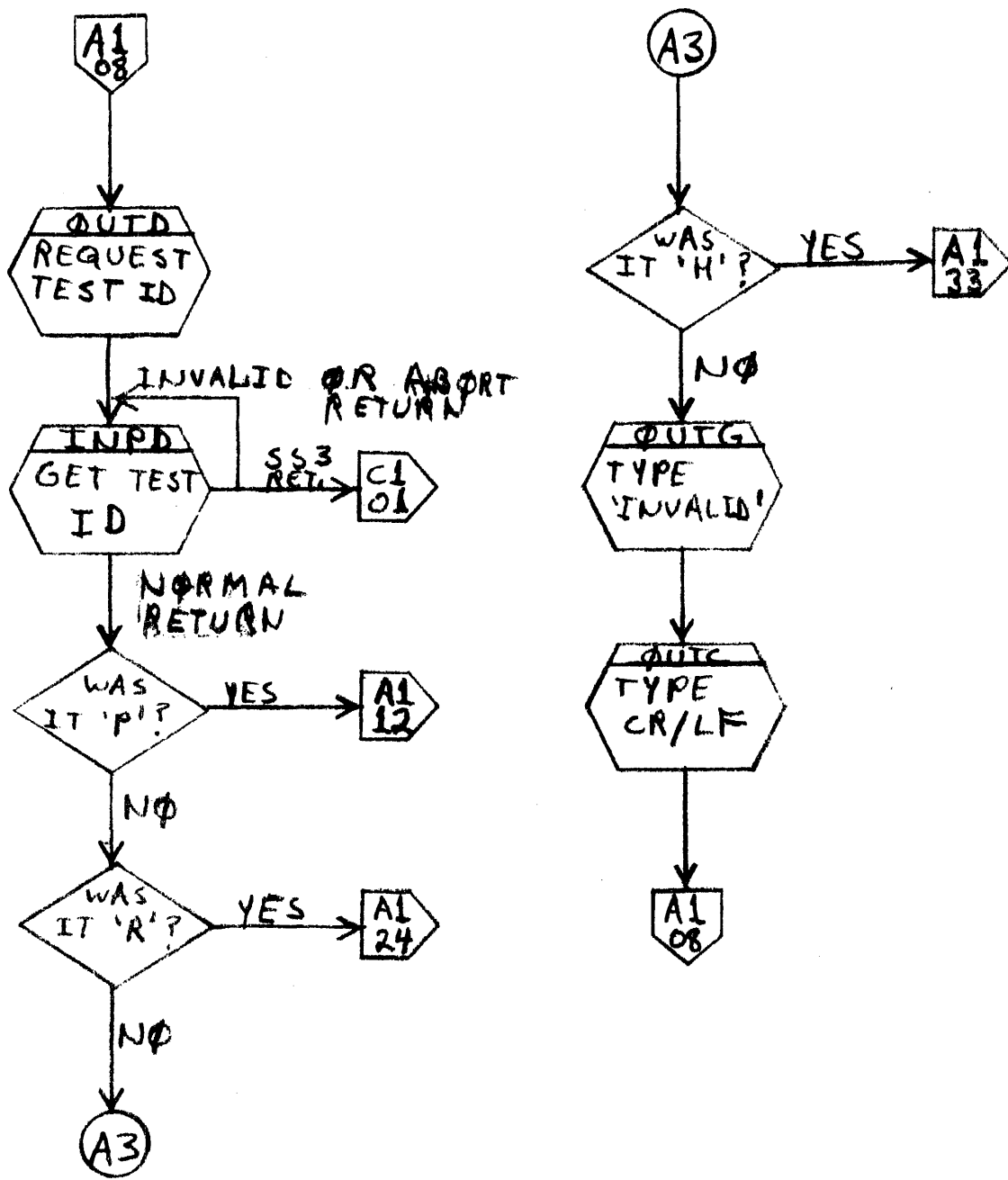
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EPO6



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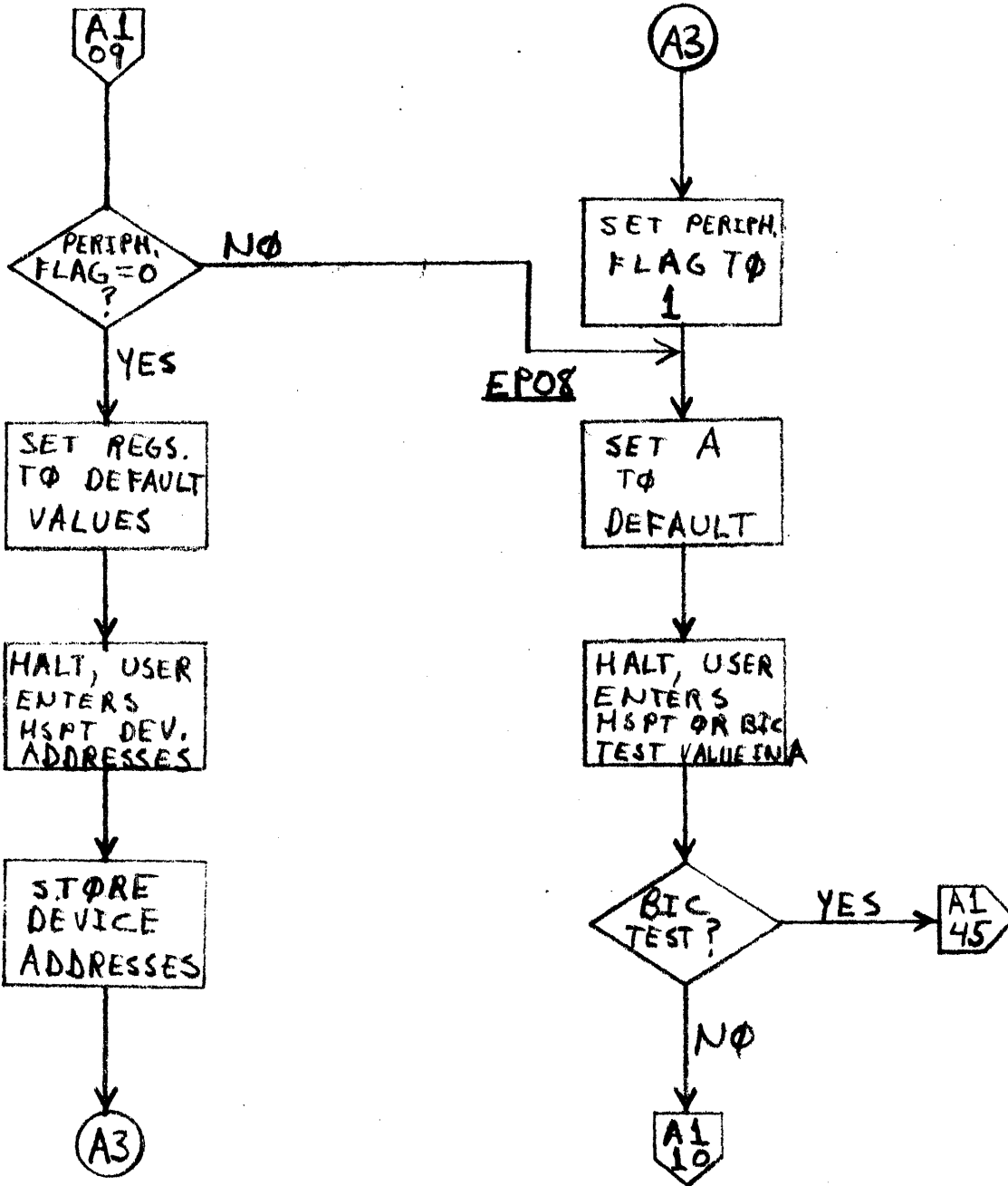
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EPO7



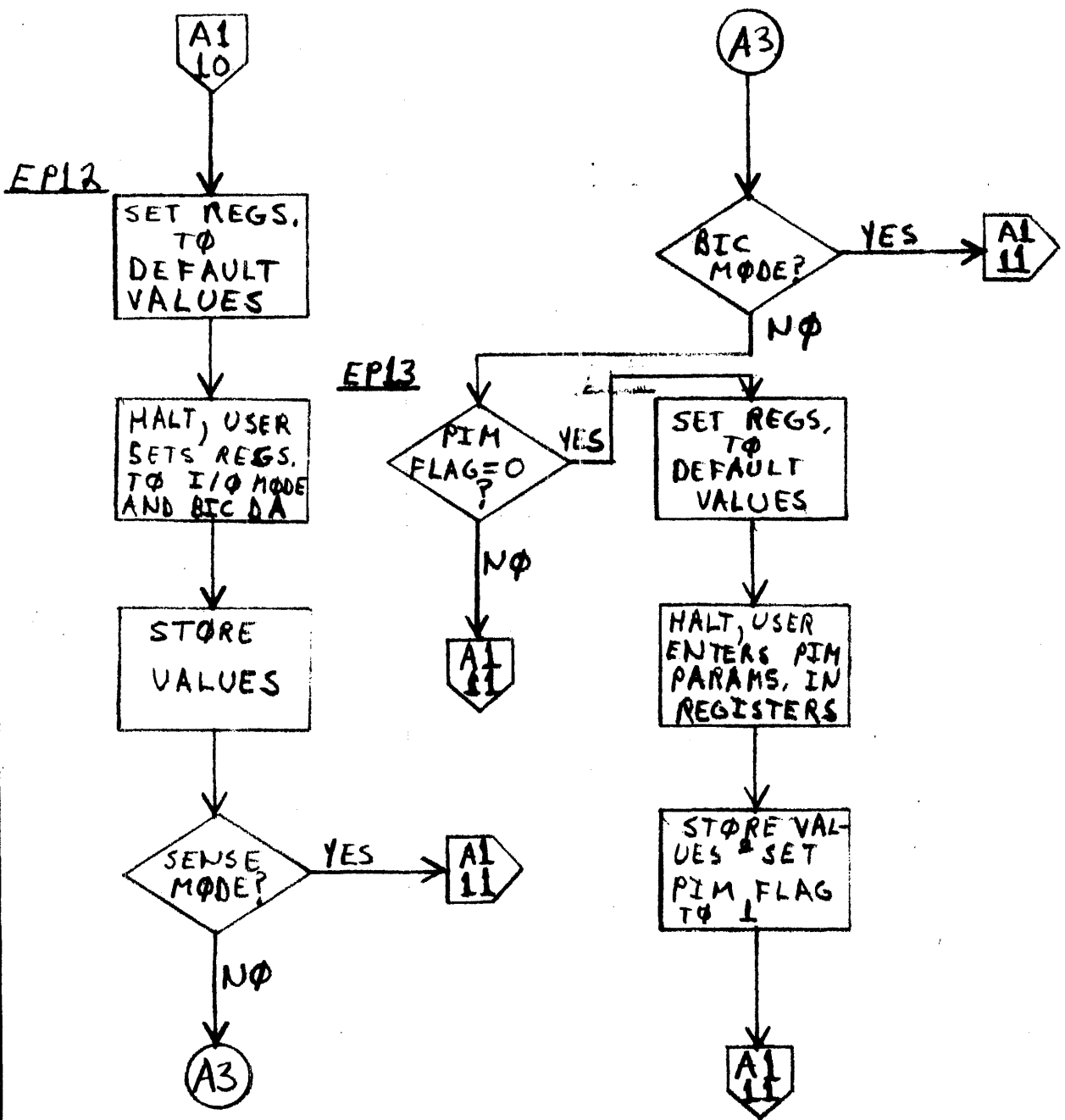
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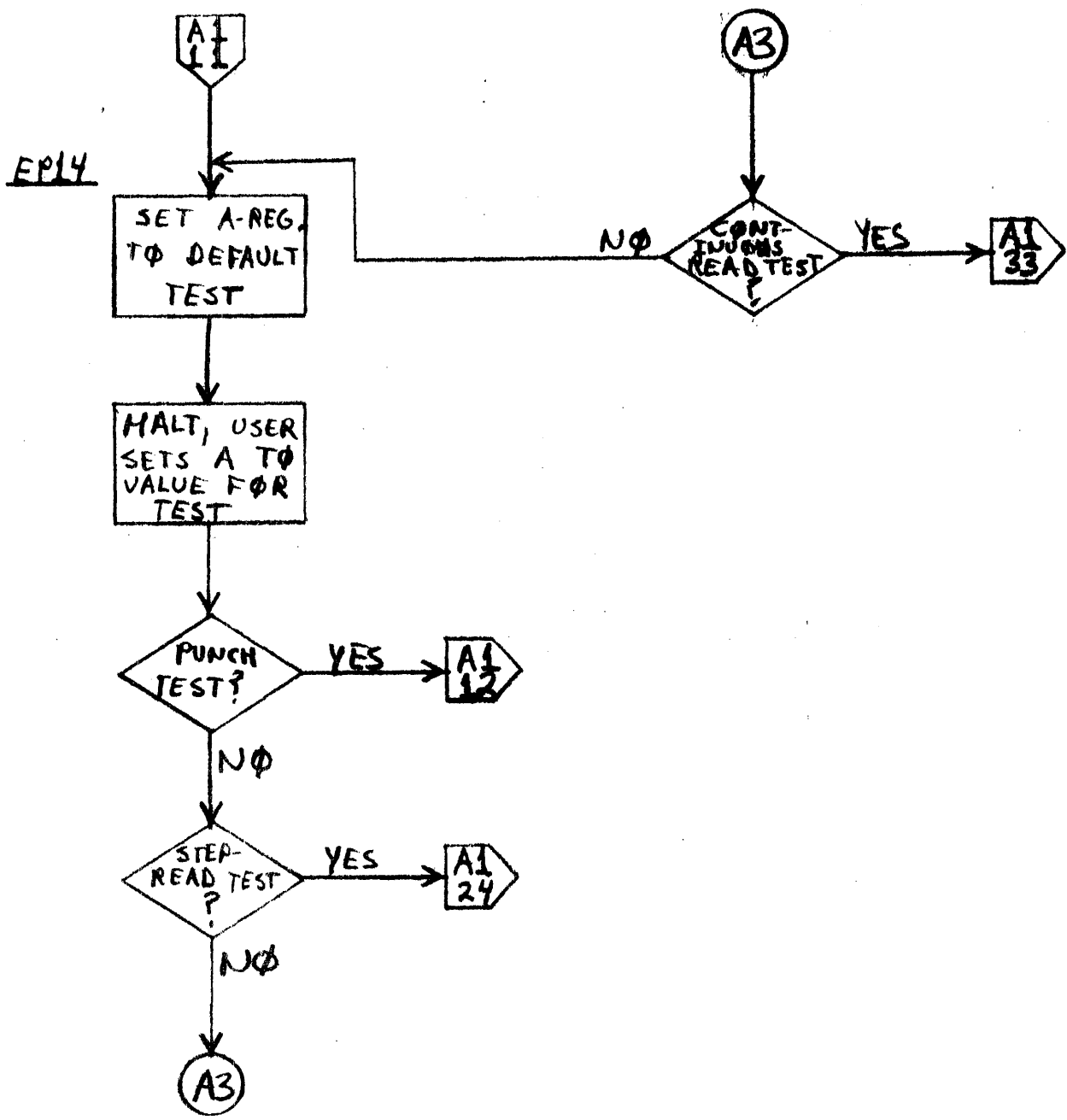
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21101

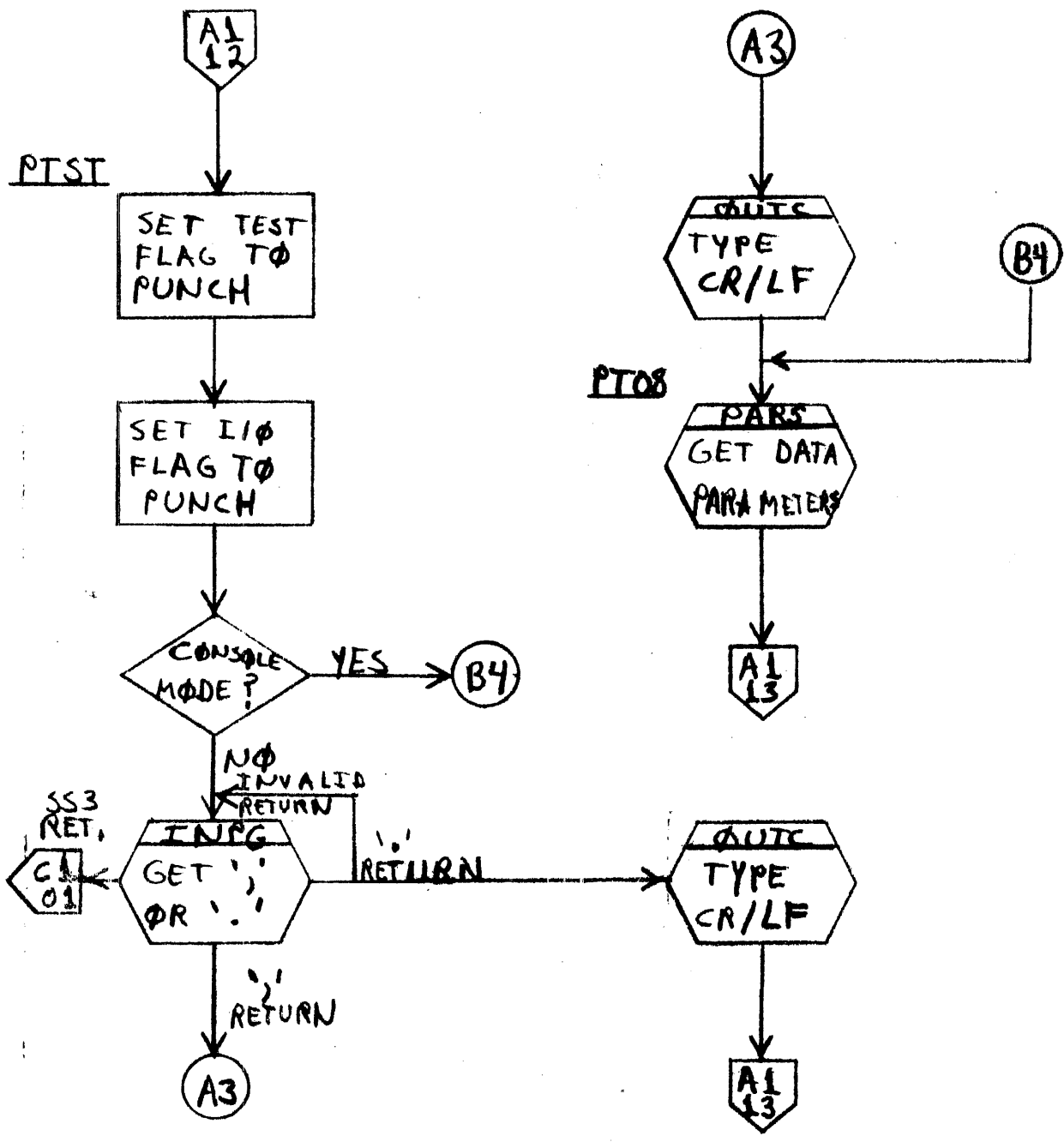
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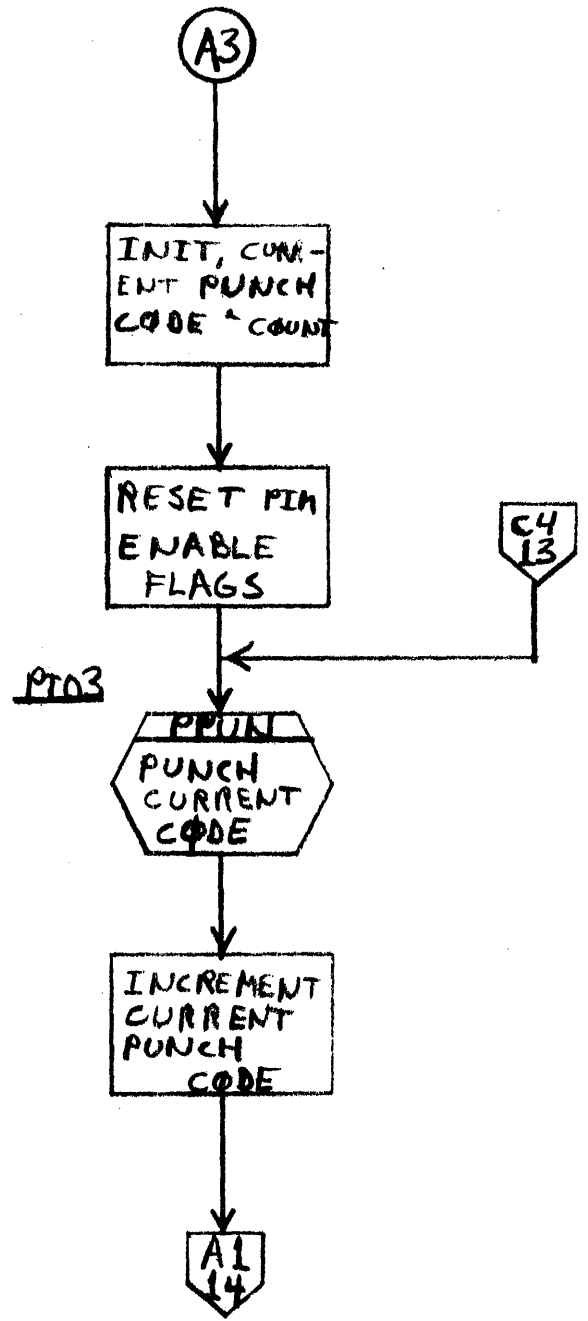
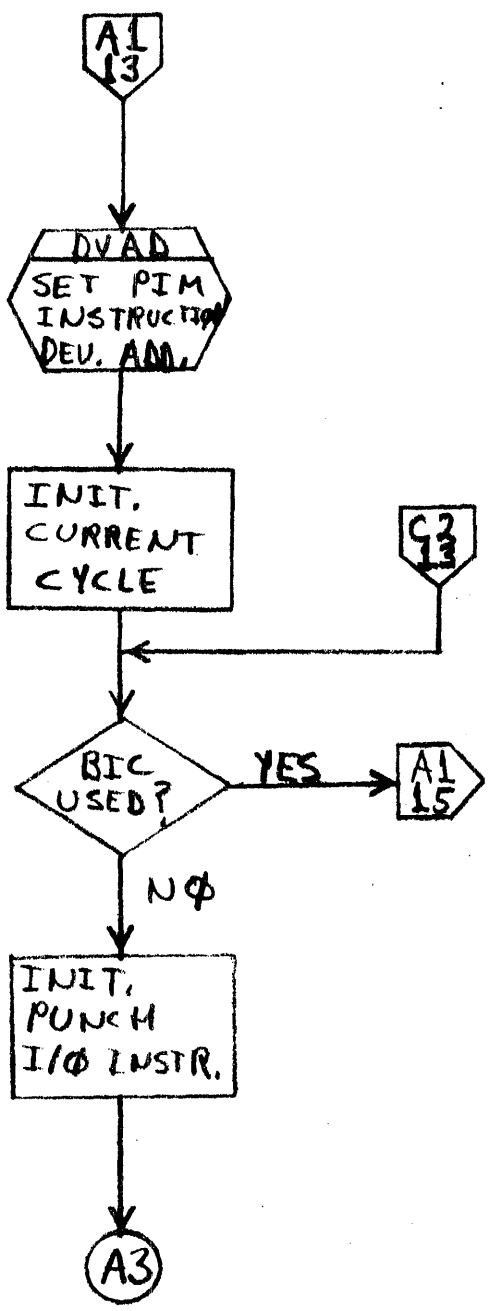
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PTO2

PTO3

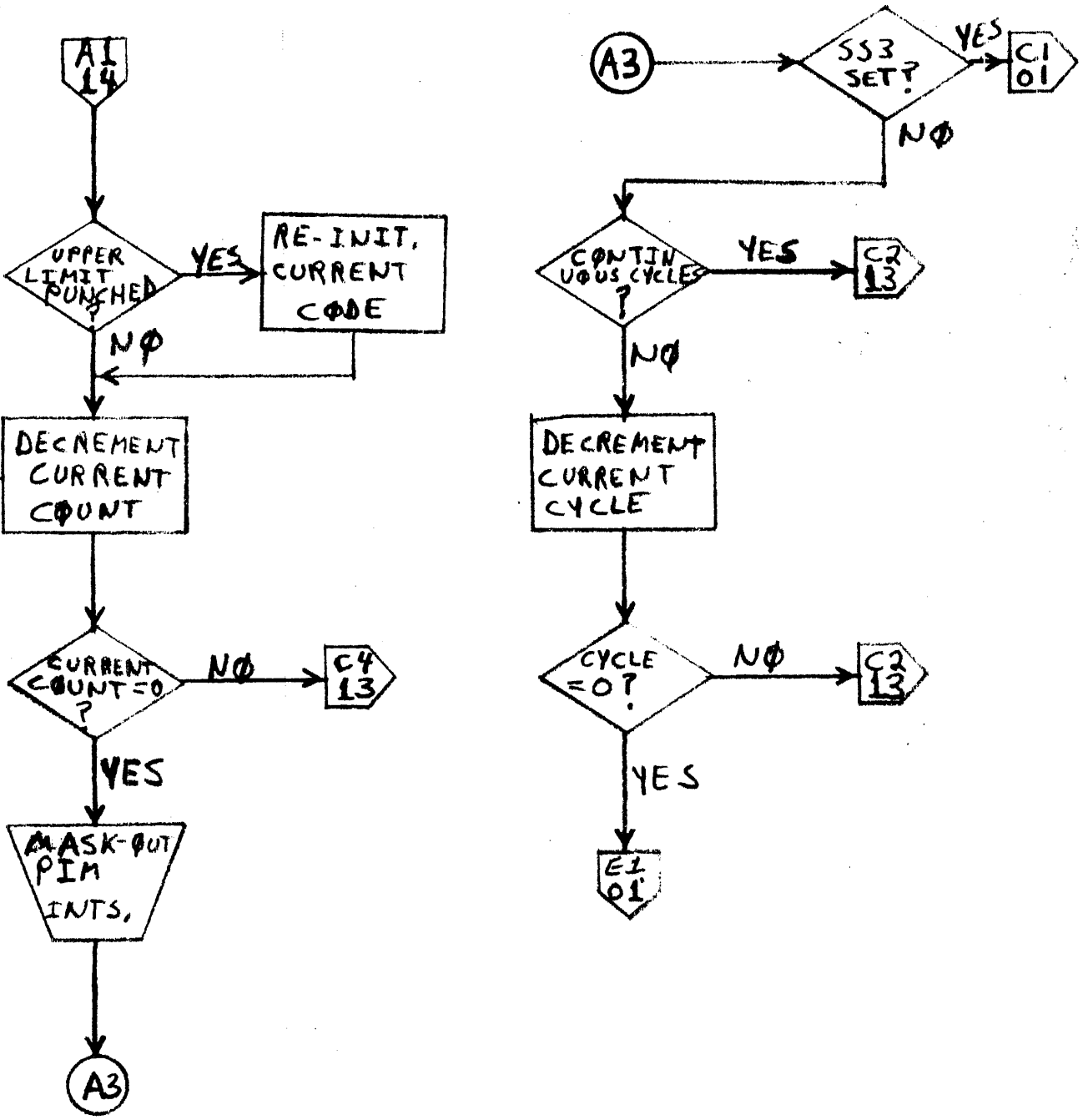


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PT07

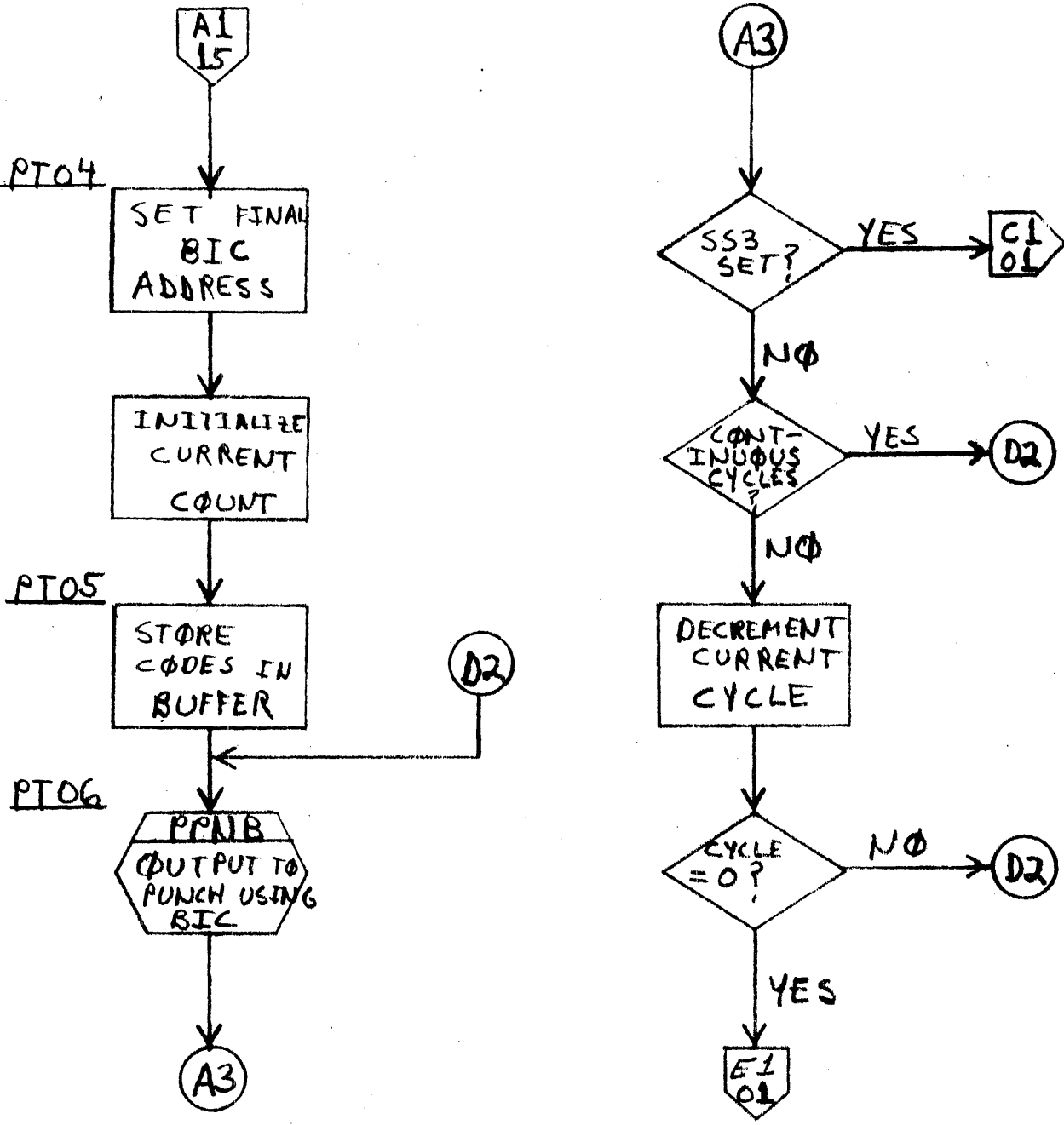


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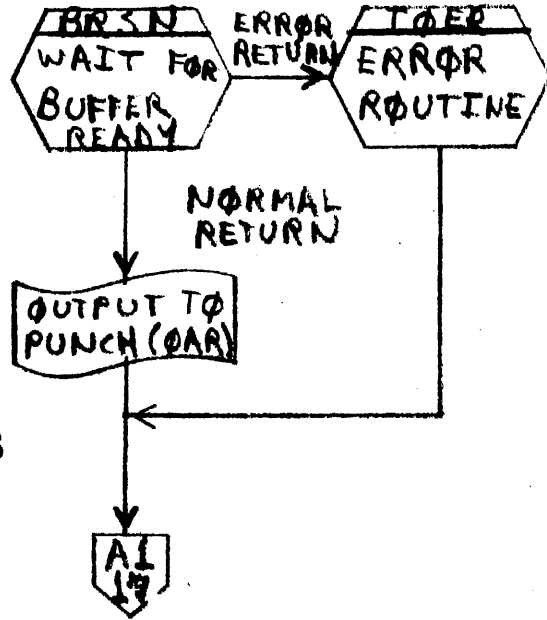
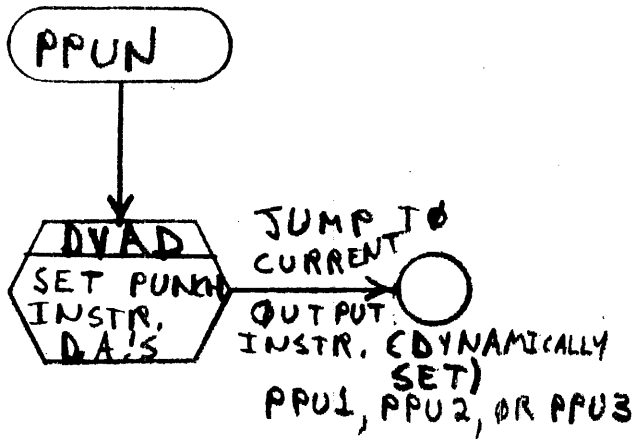
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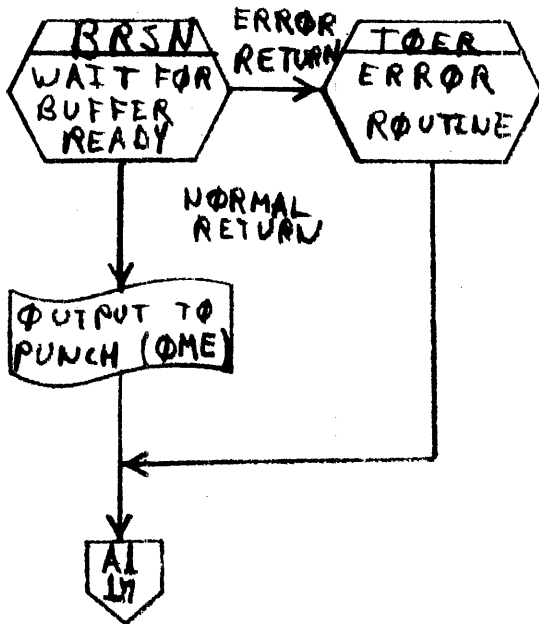


PUNCH (SENSE OR PIM MODE)

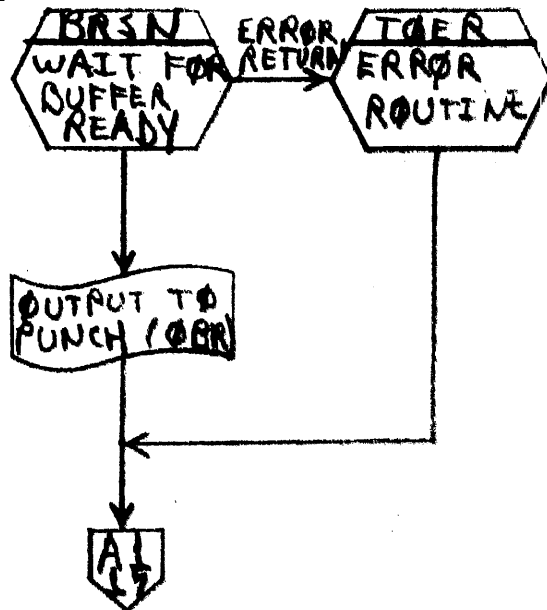
PPU2



PPU1



PPU3



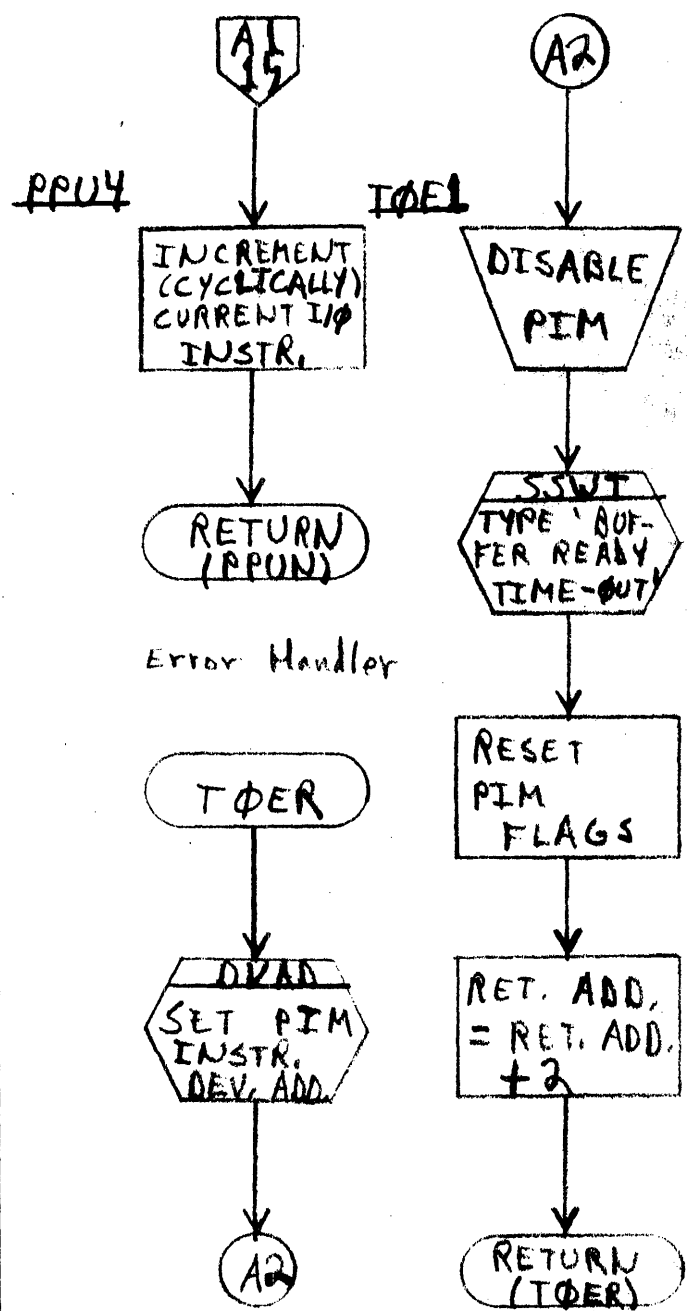
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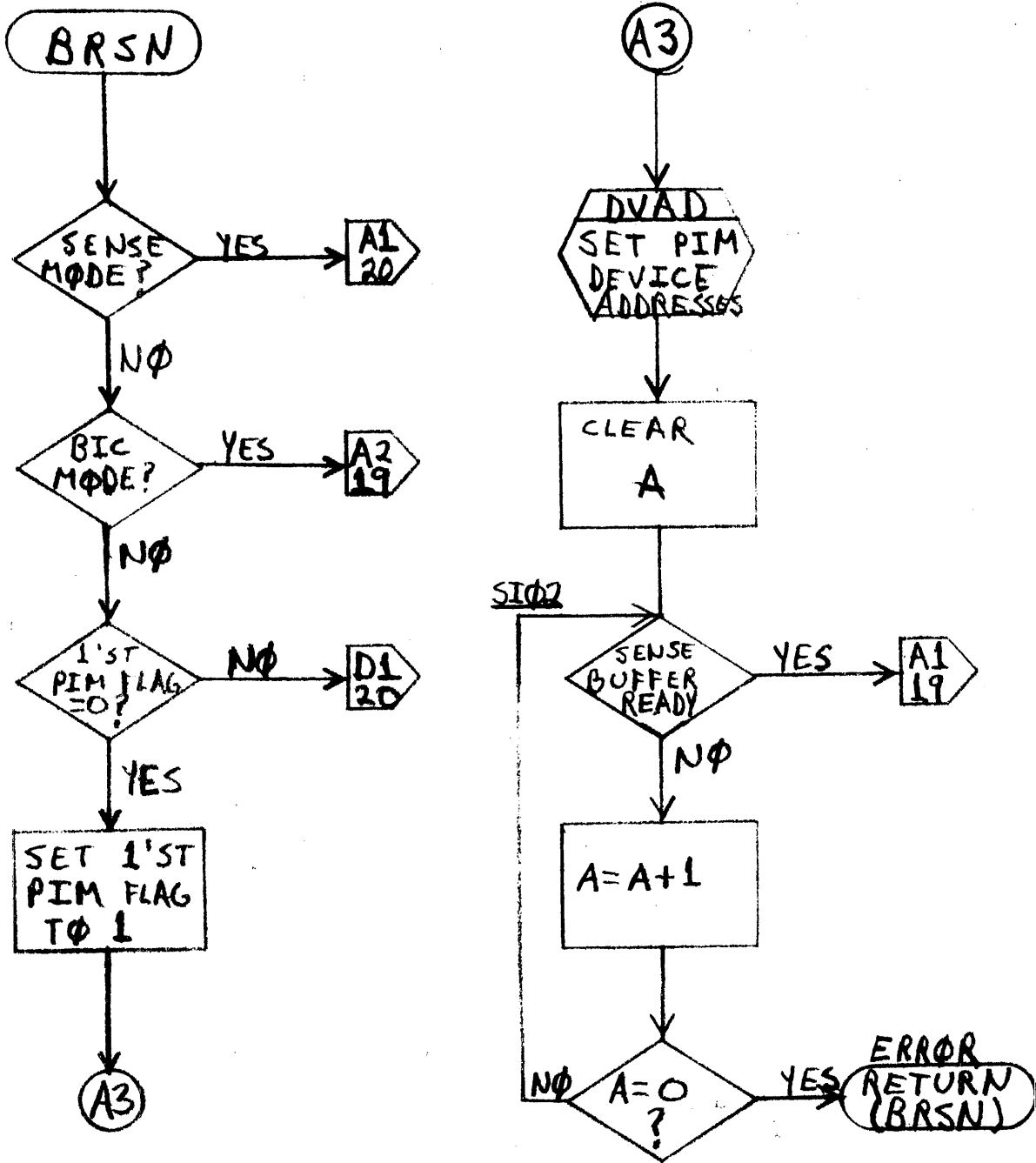
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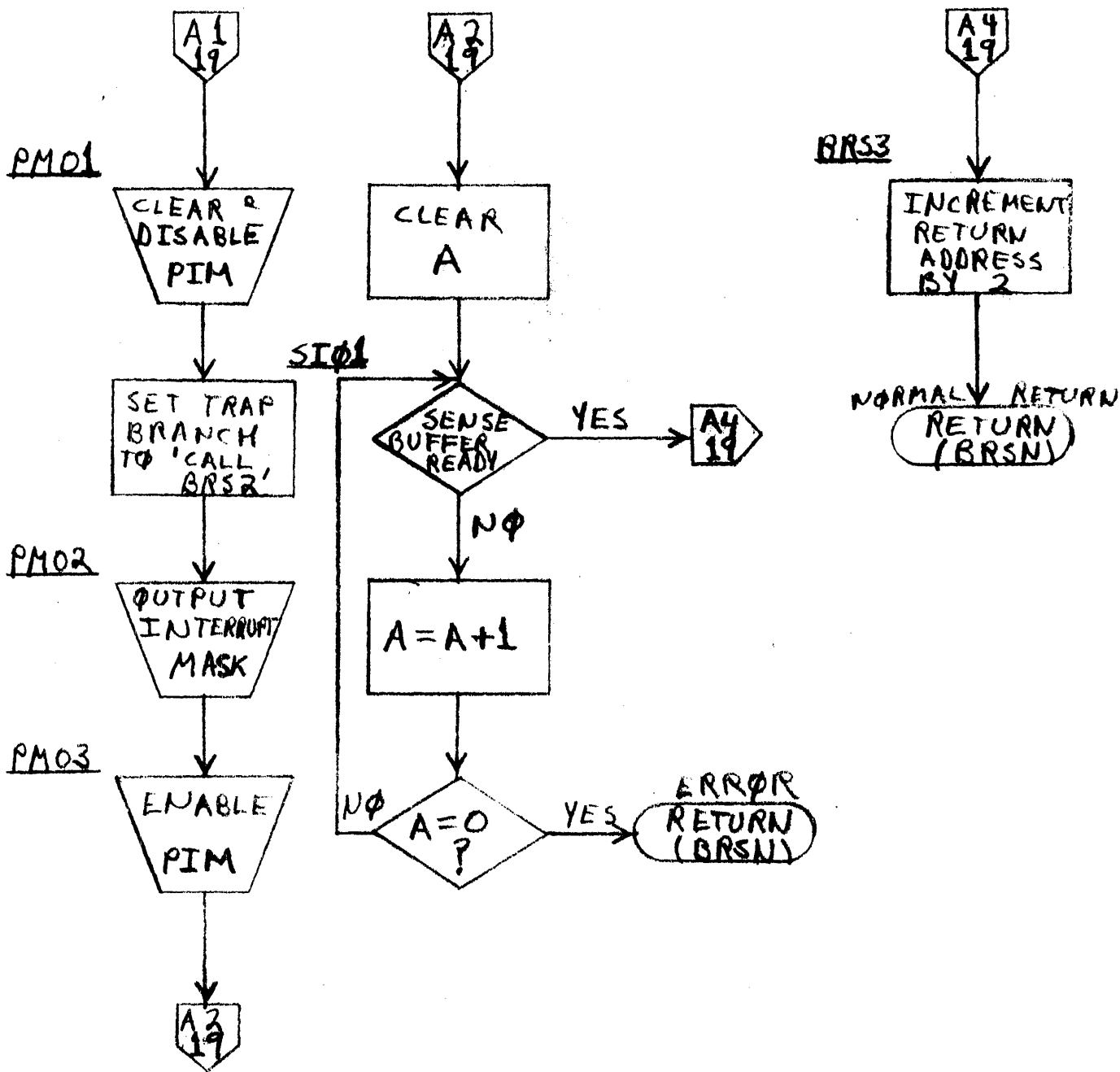
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PIM ENABLE/SENSE BUFFER READY ROUTINE





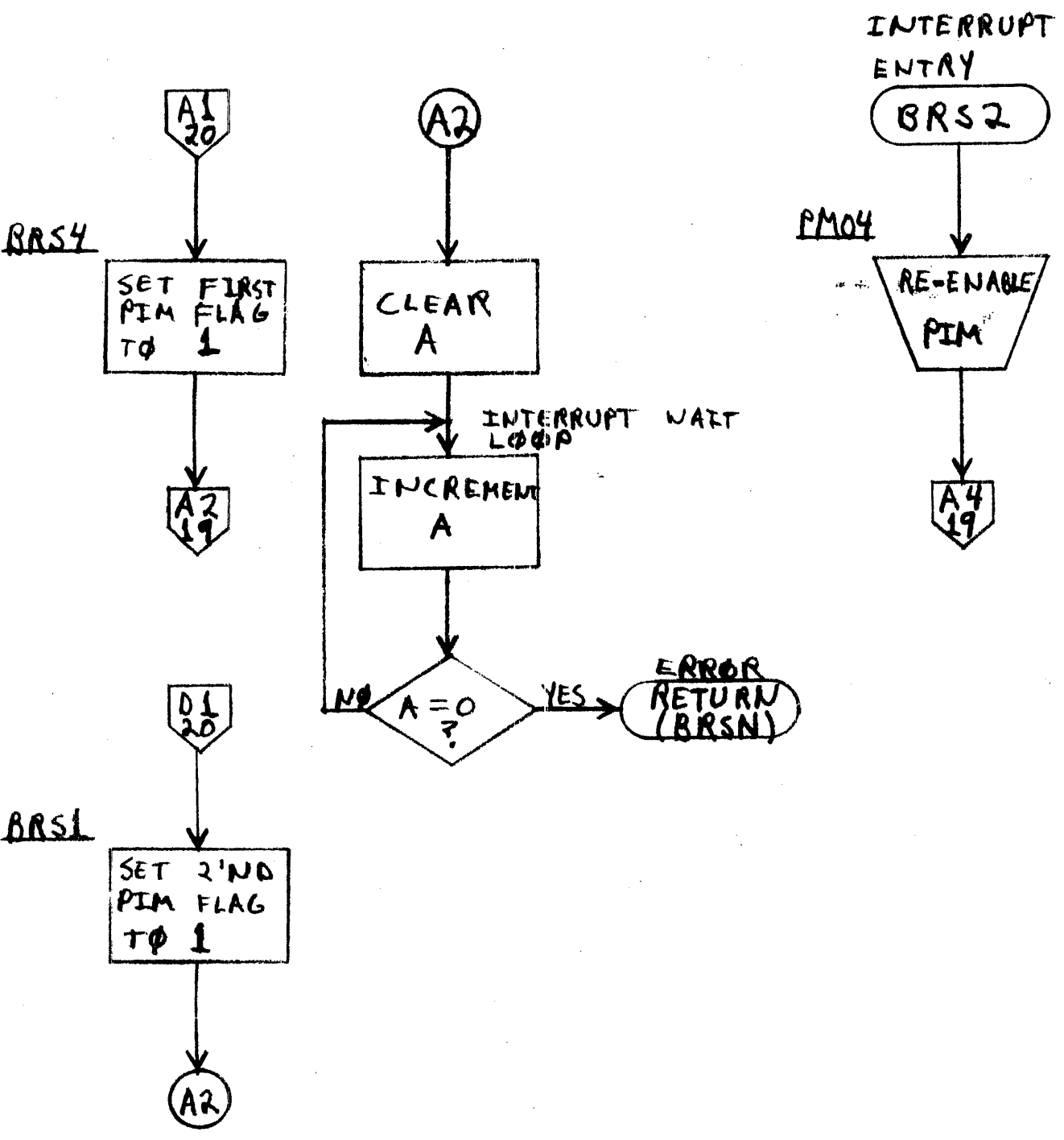
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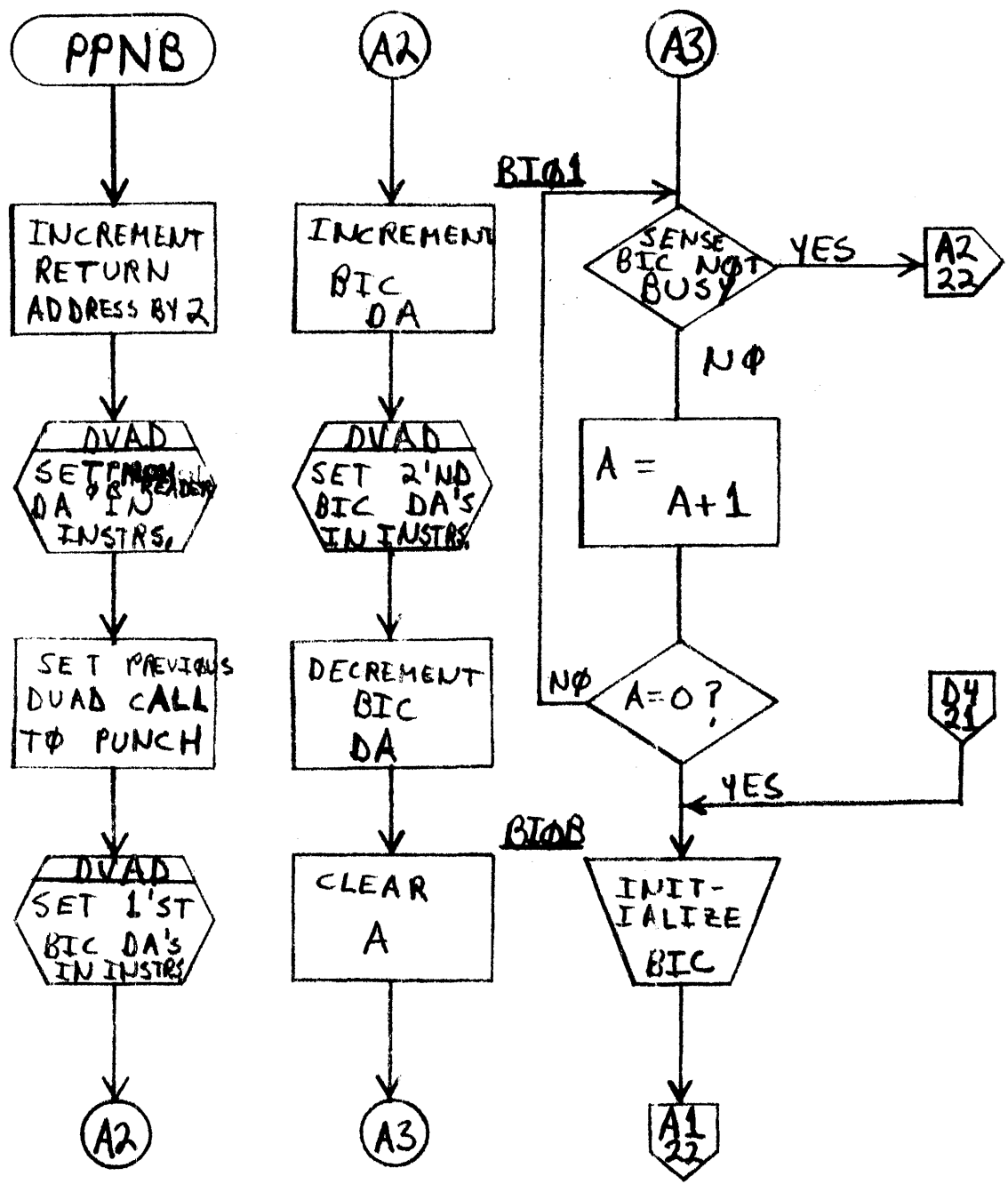
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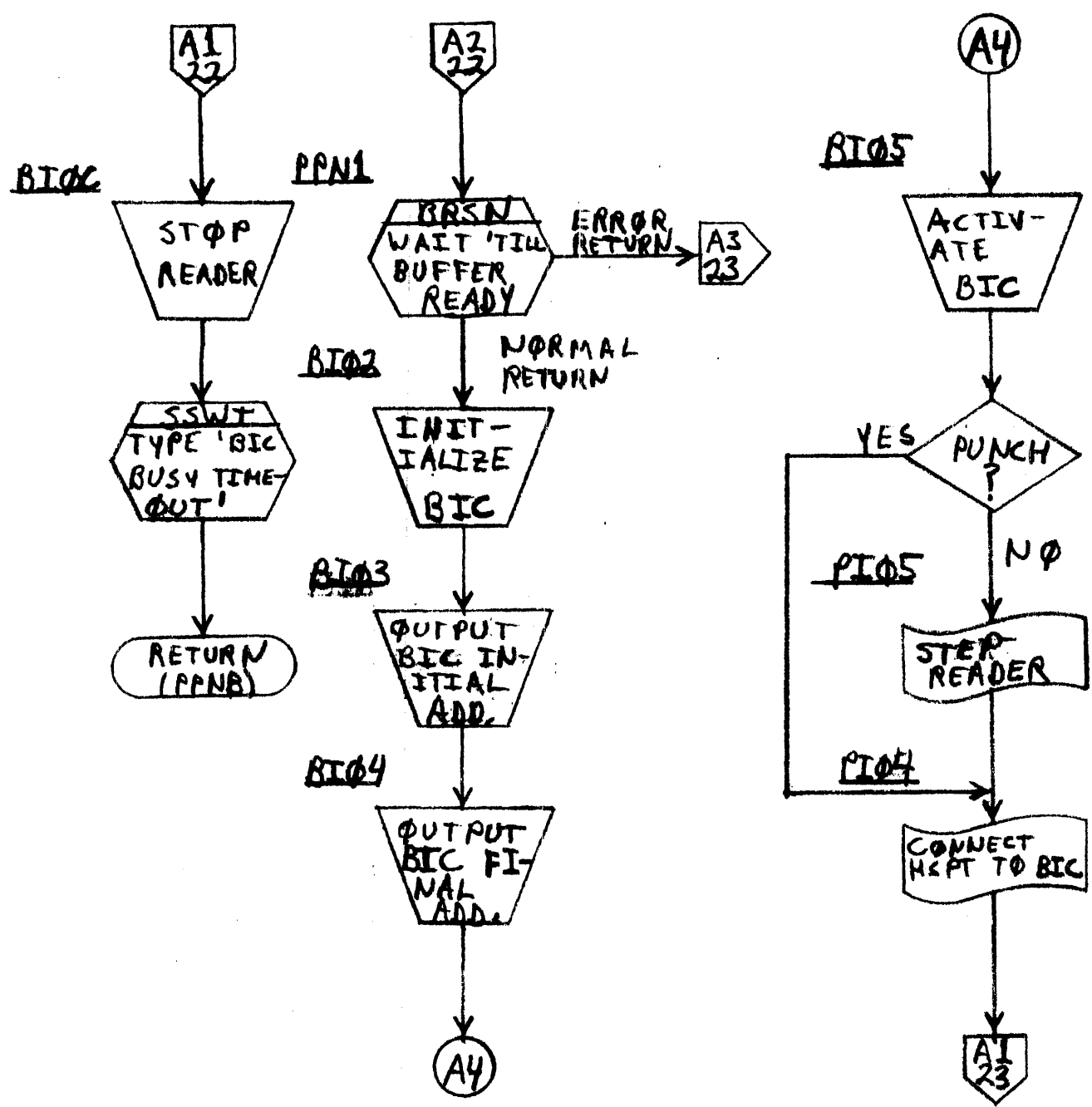
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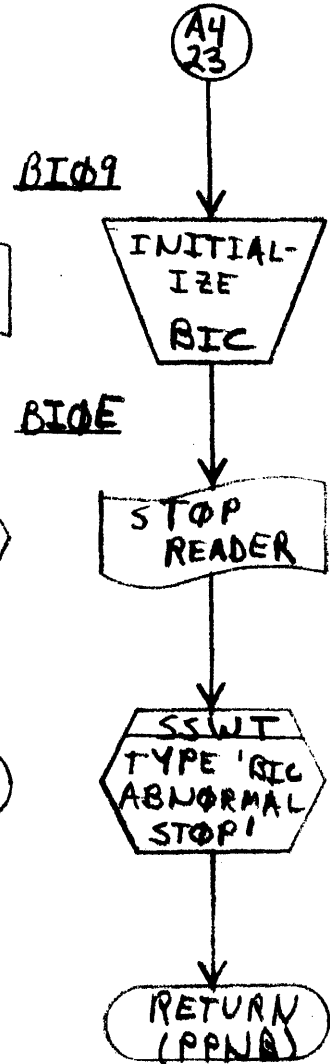
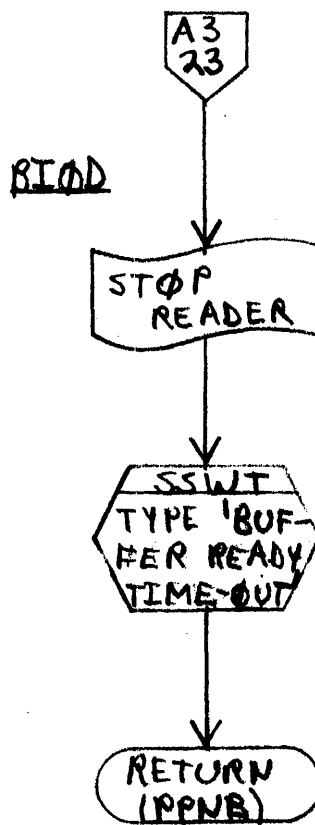
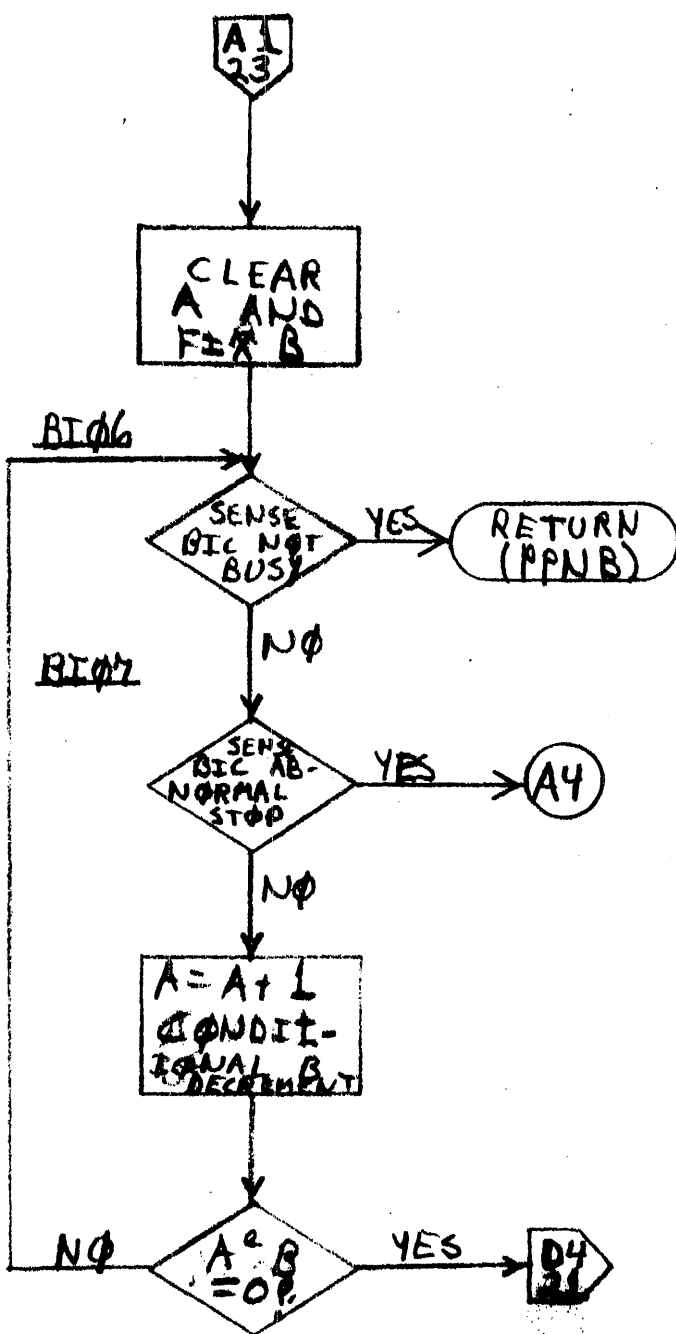
REV

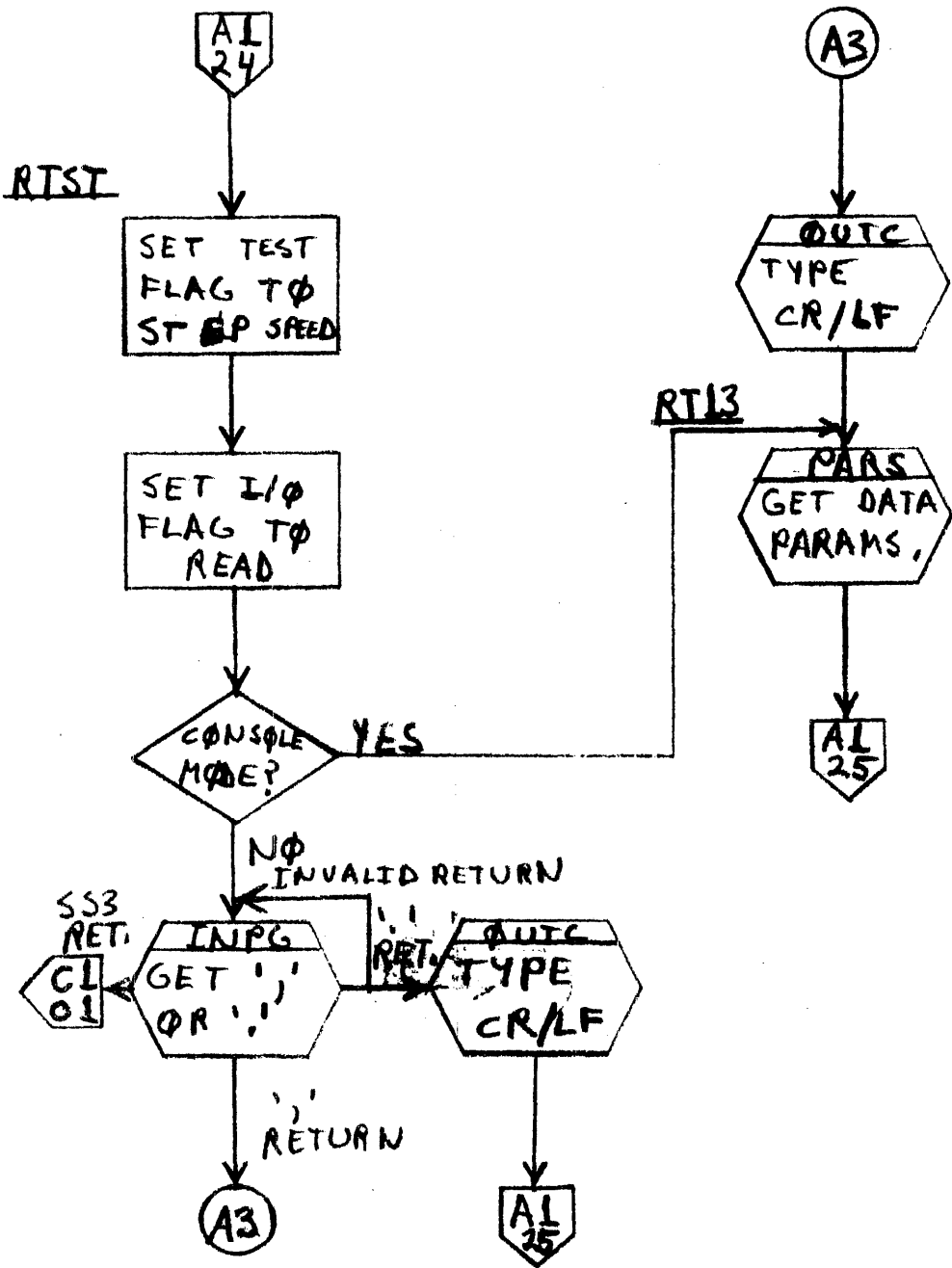


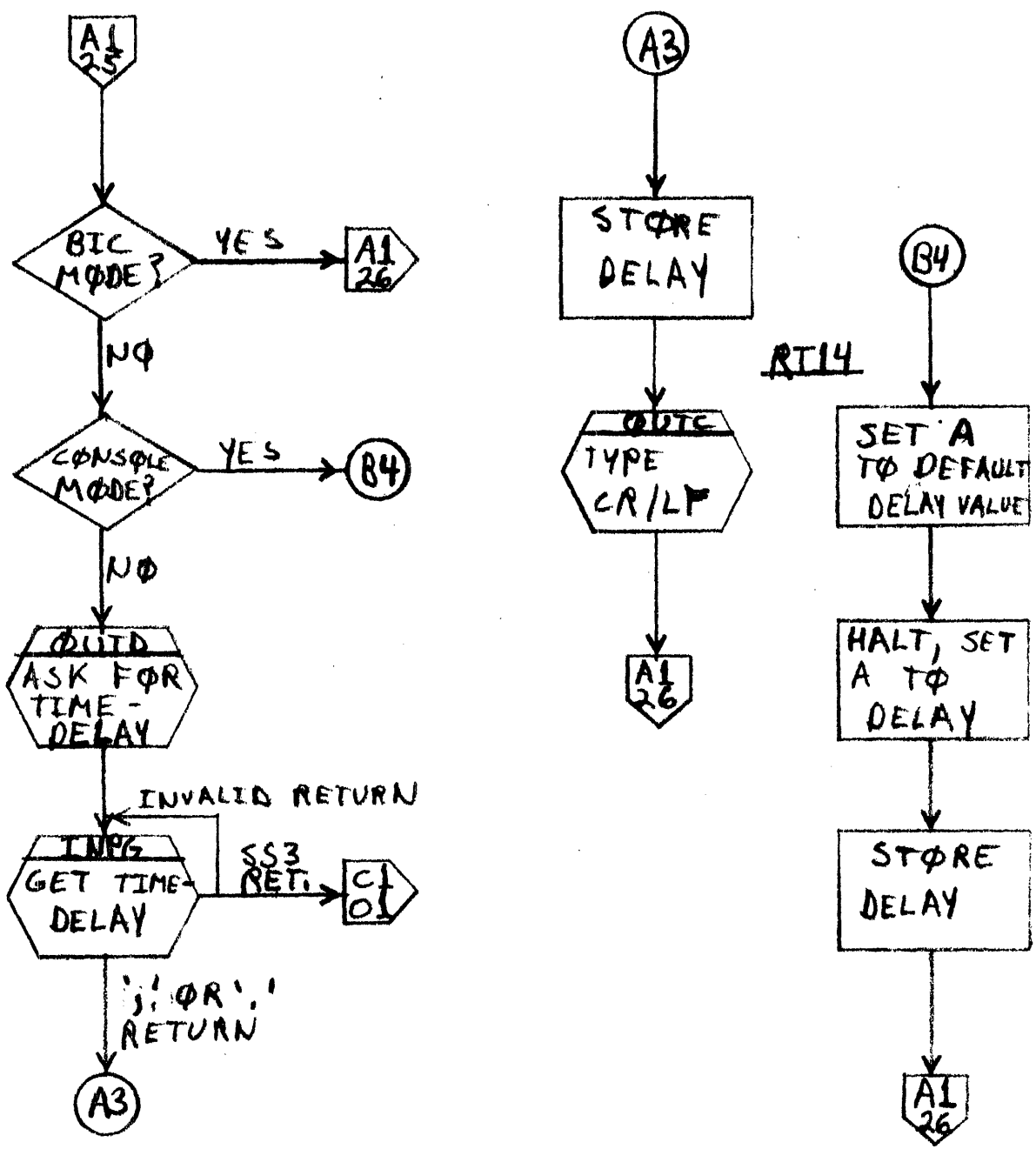
PUNCH (OR READ) (BIC MODE)

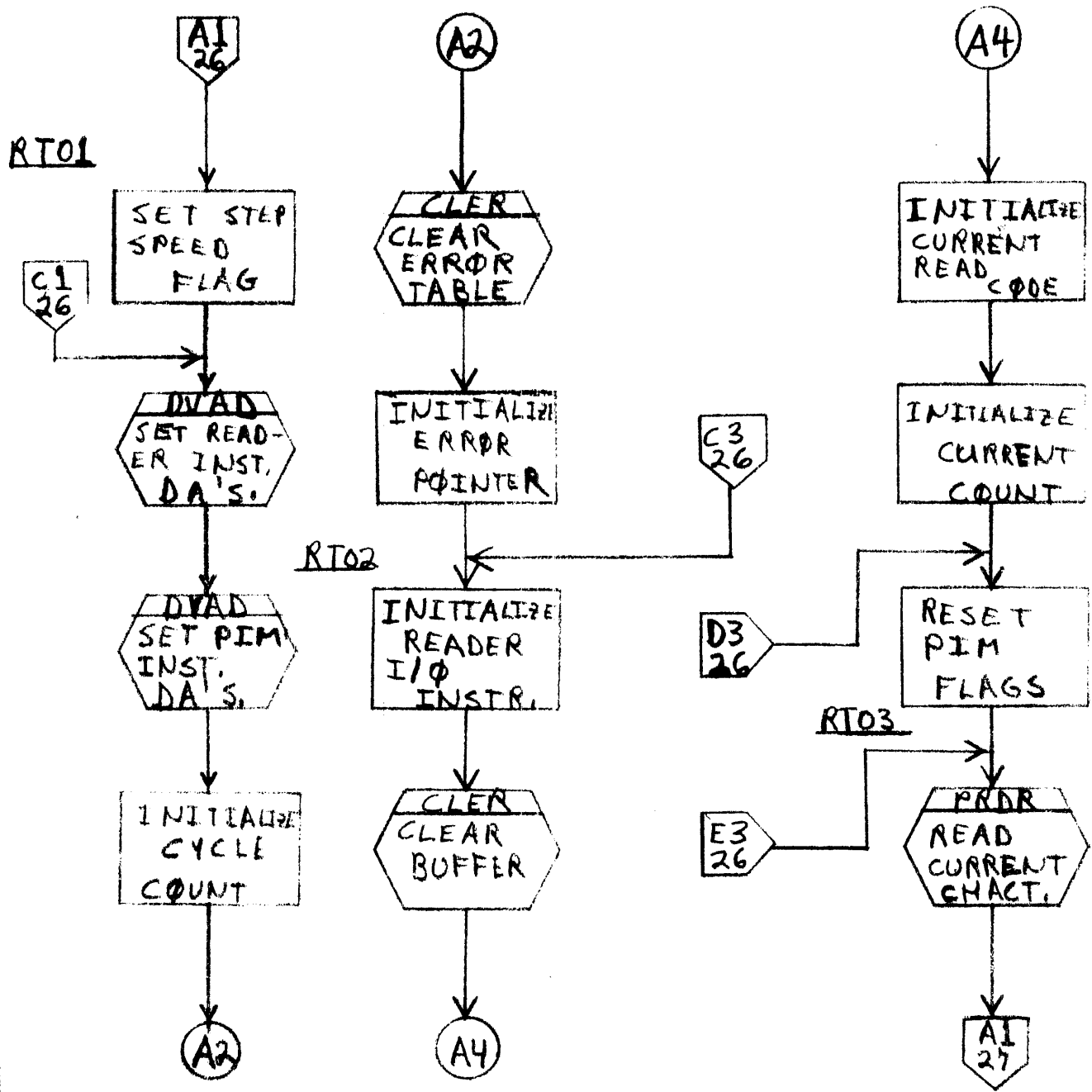


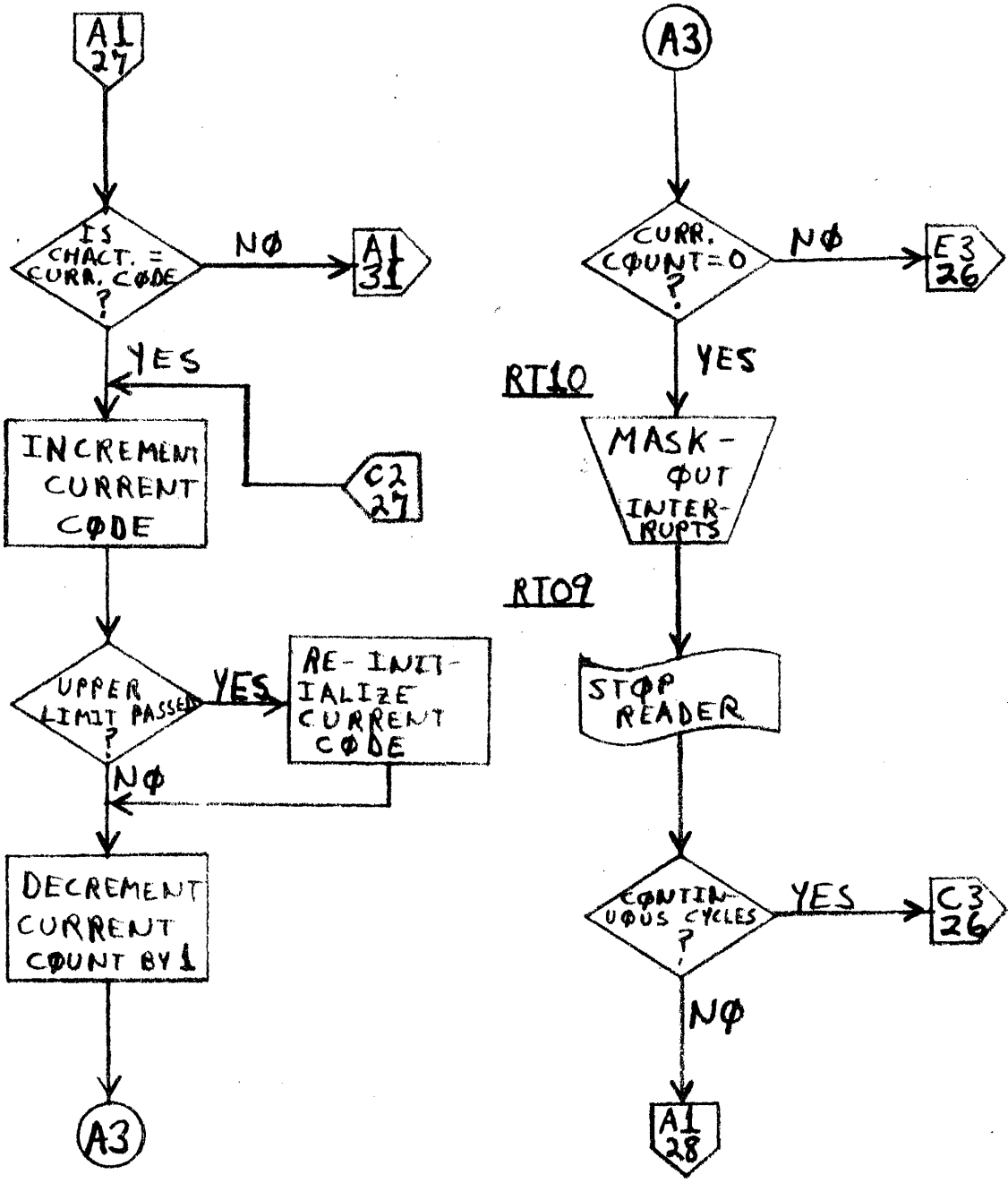












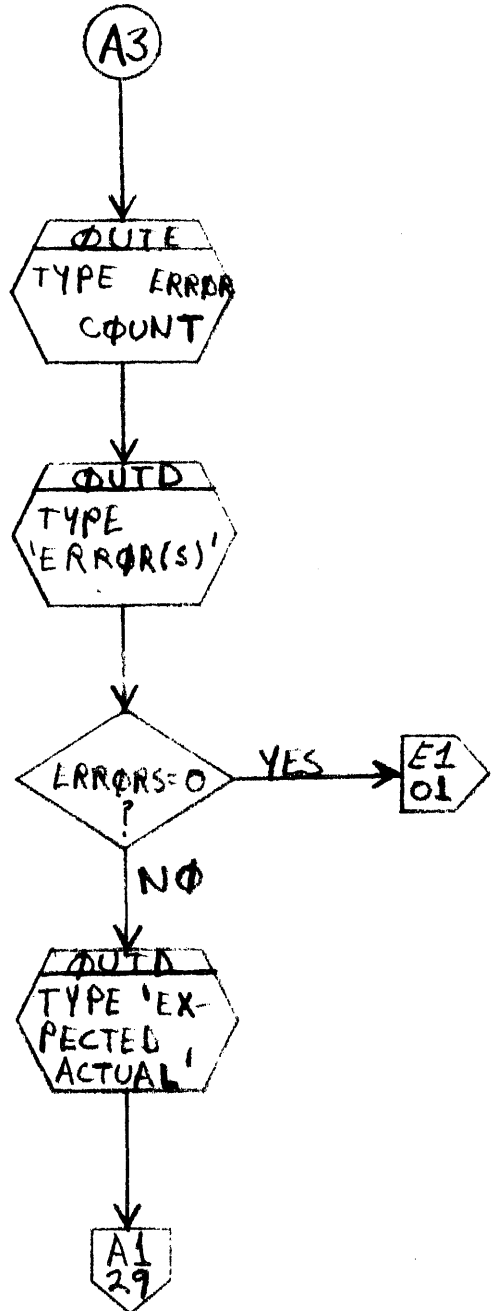
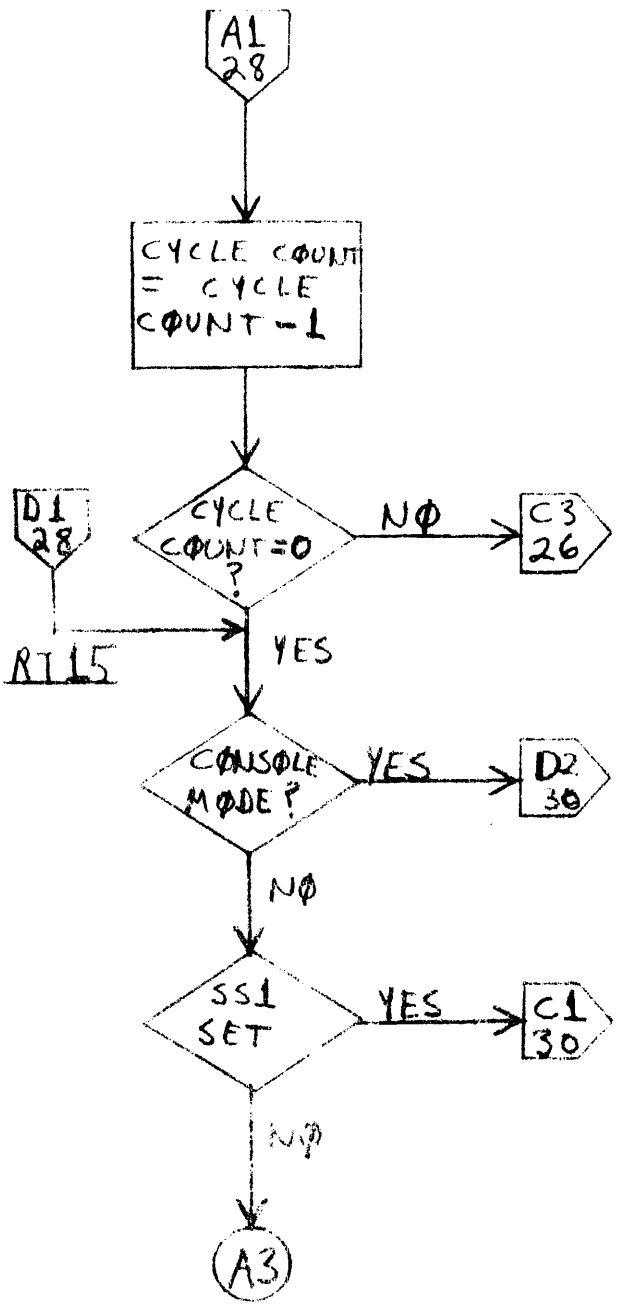
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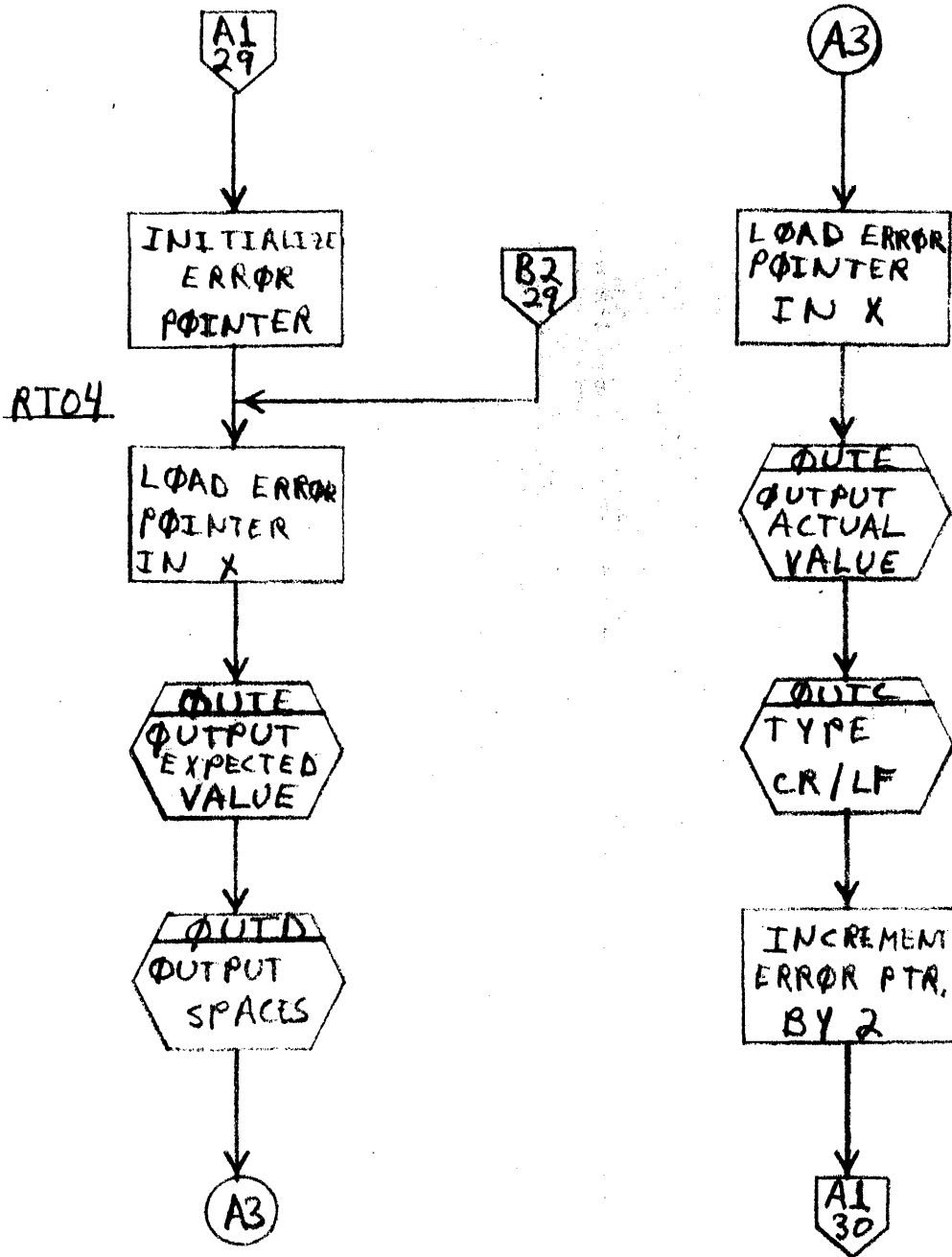
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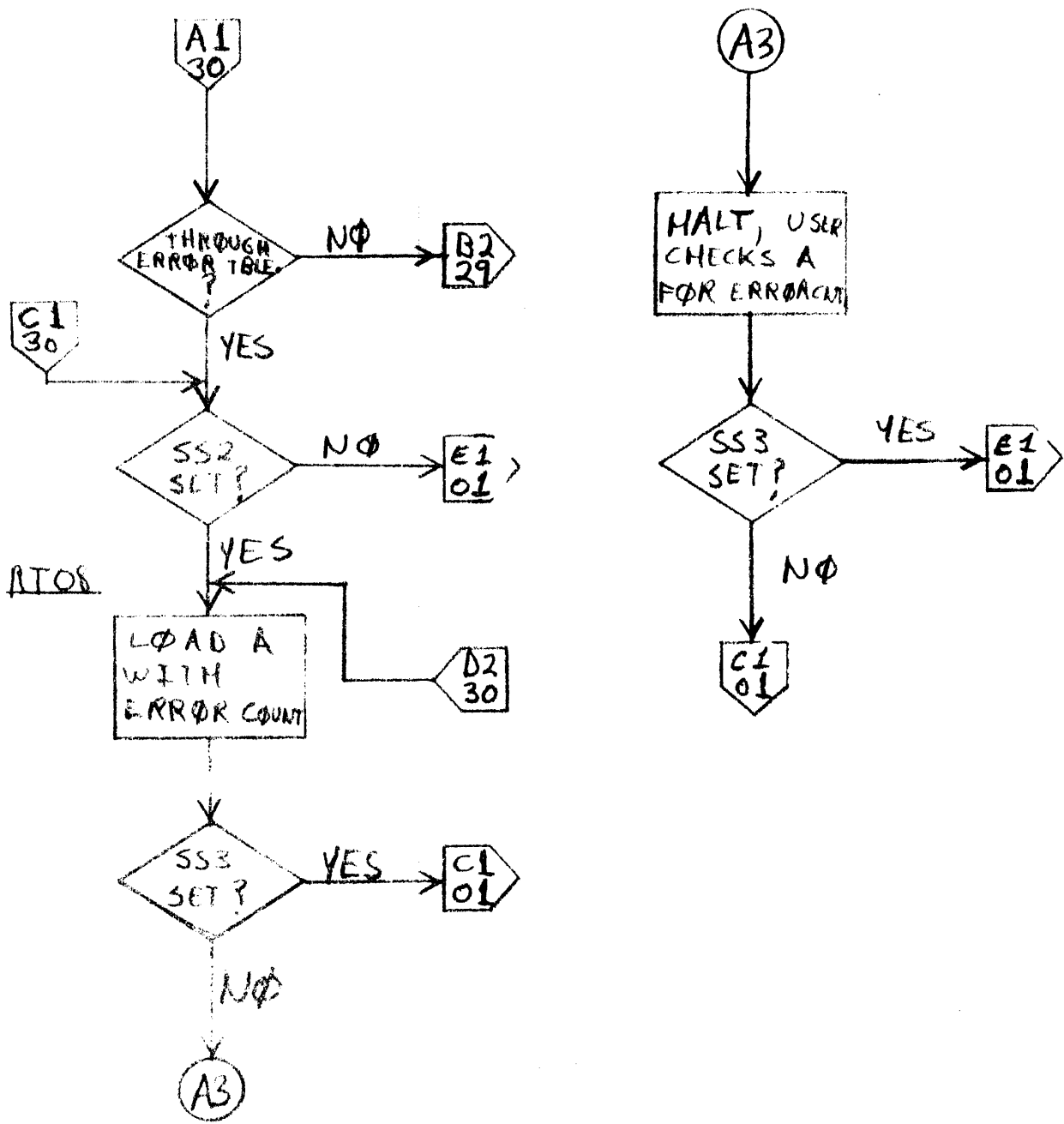
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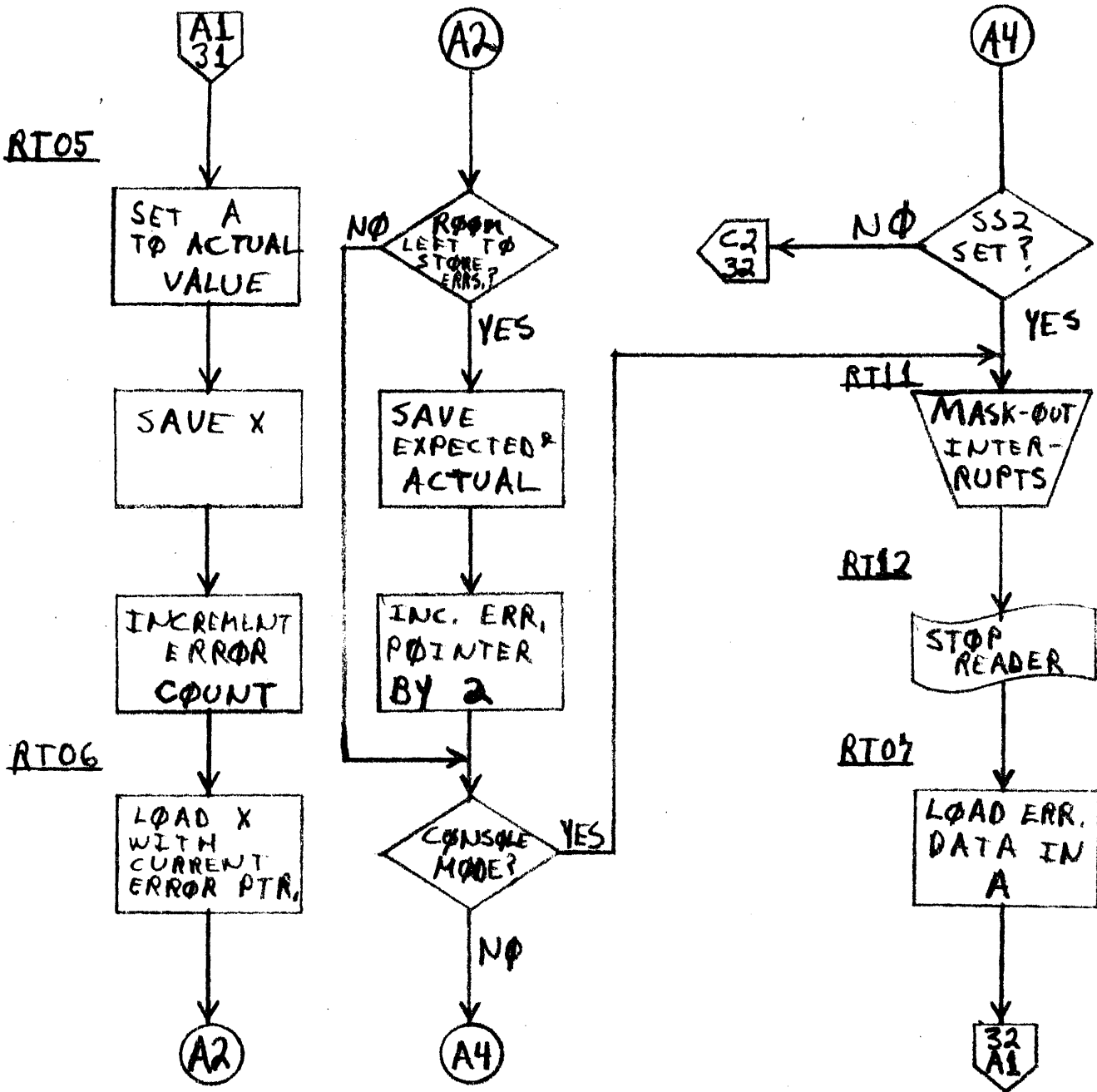
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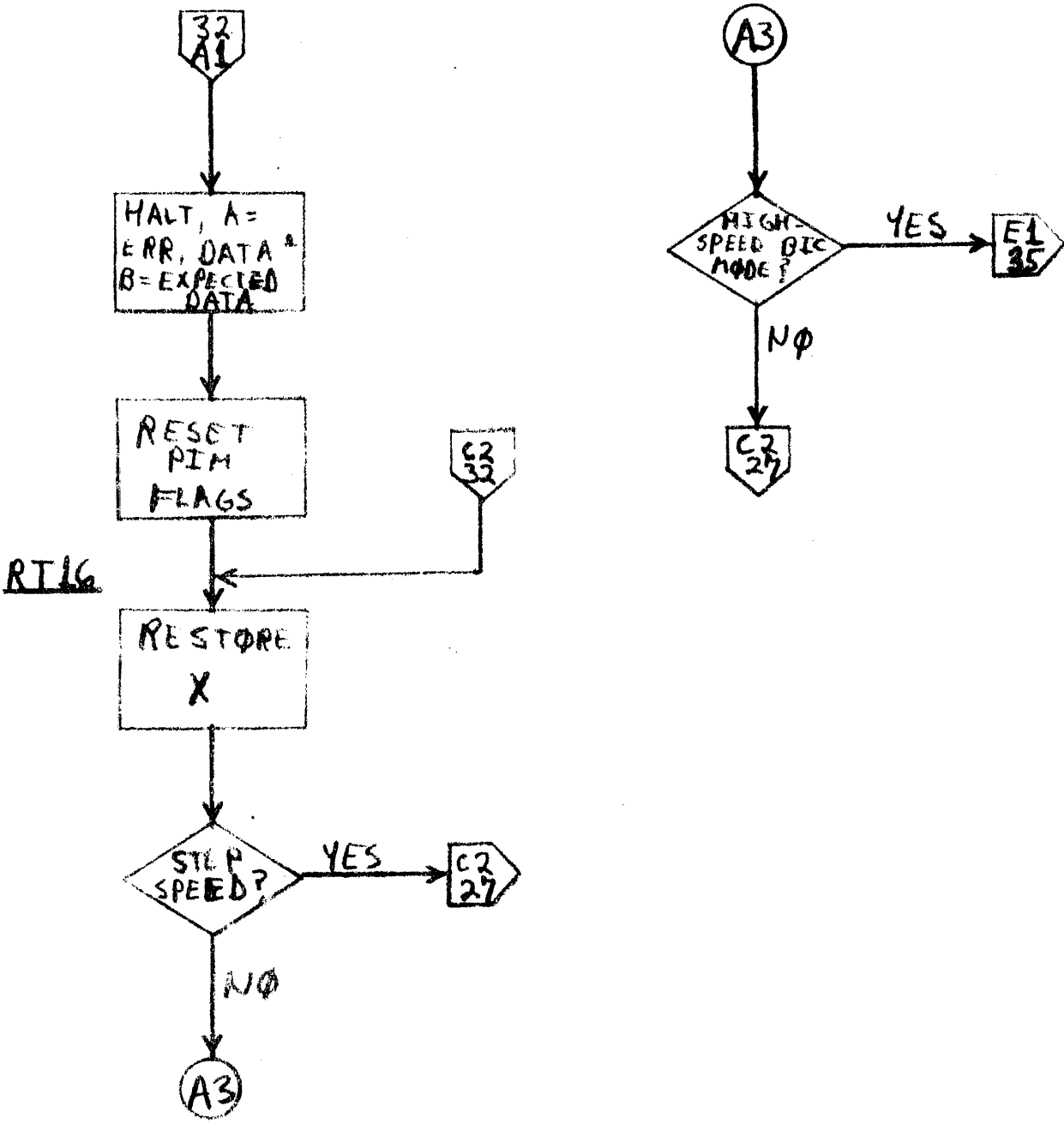
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RT16



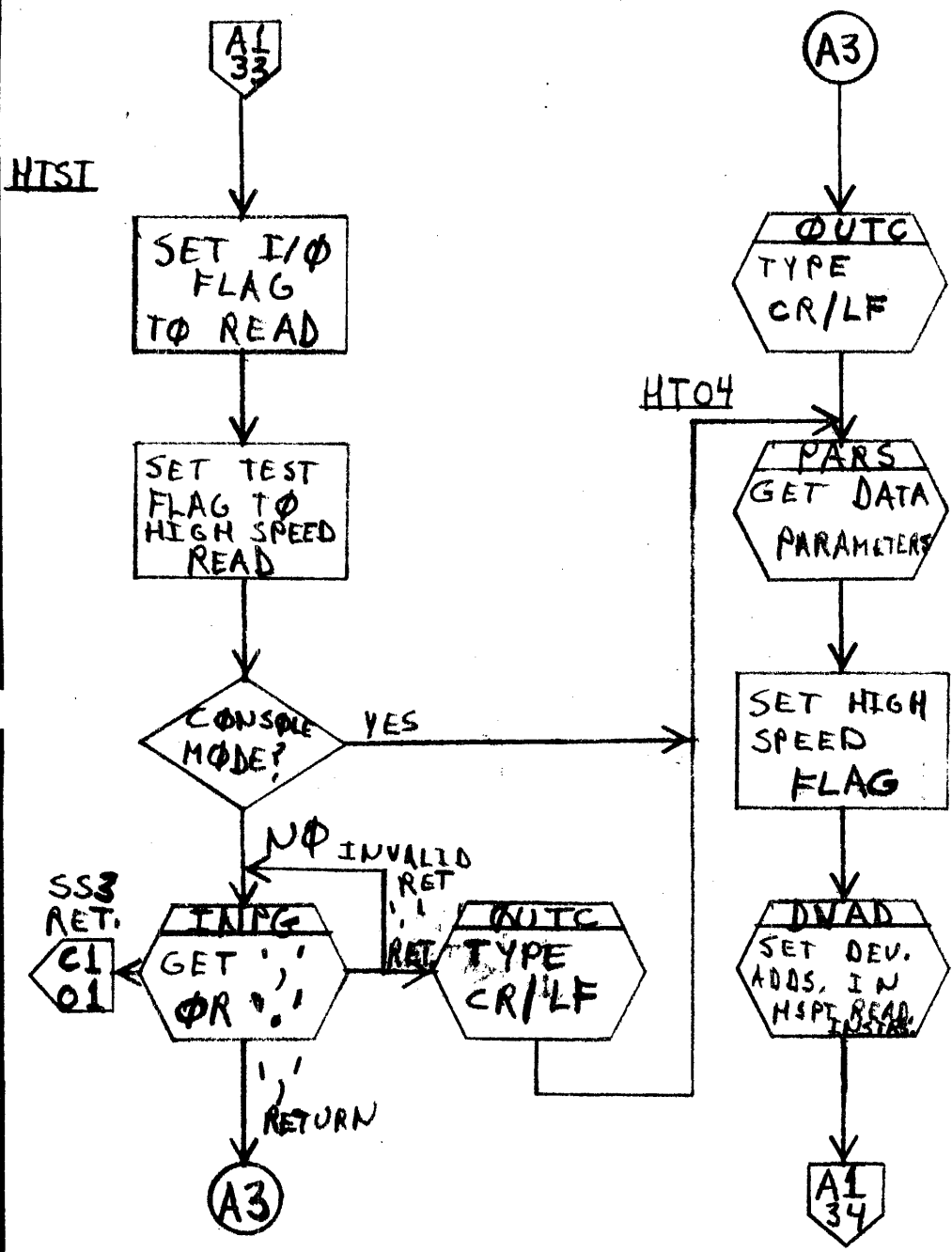
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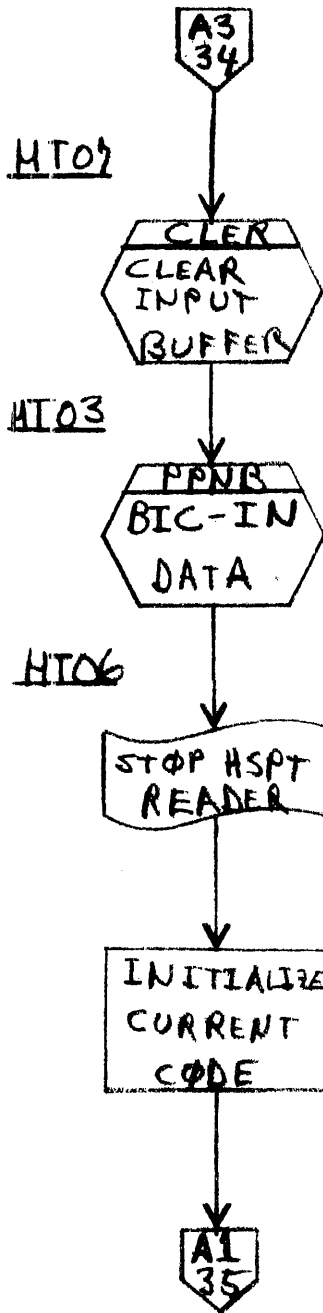
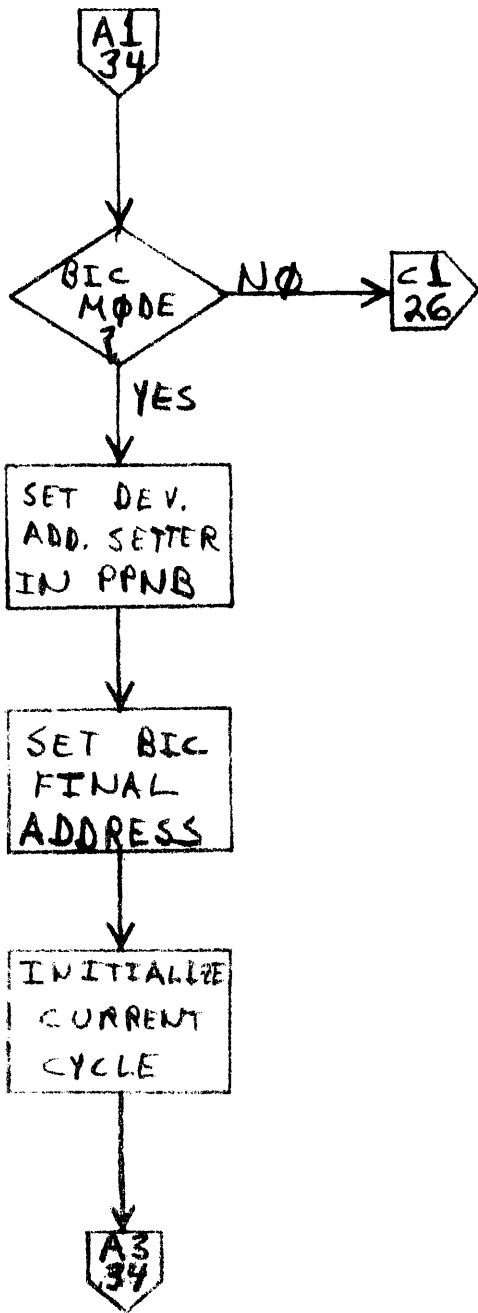
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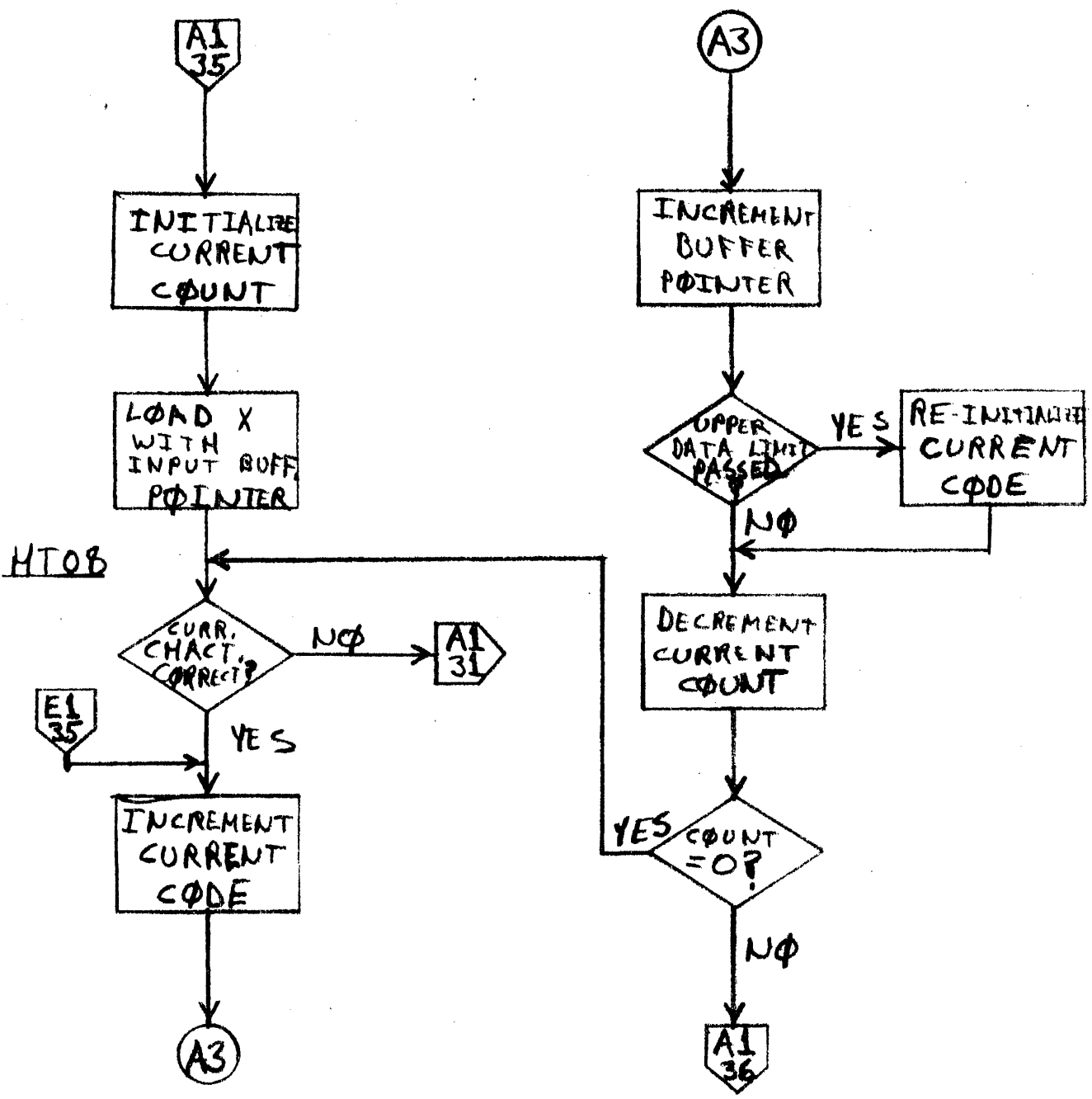
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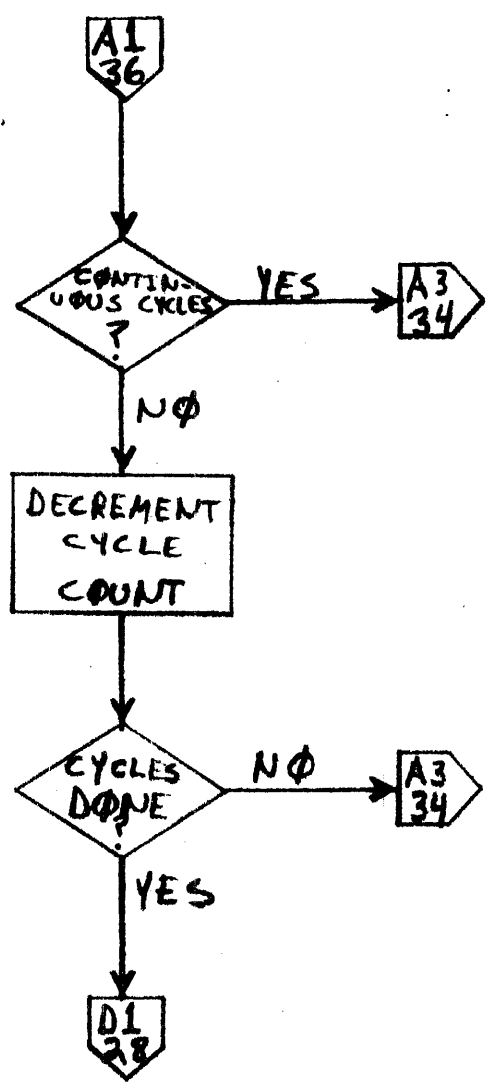
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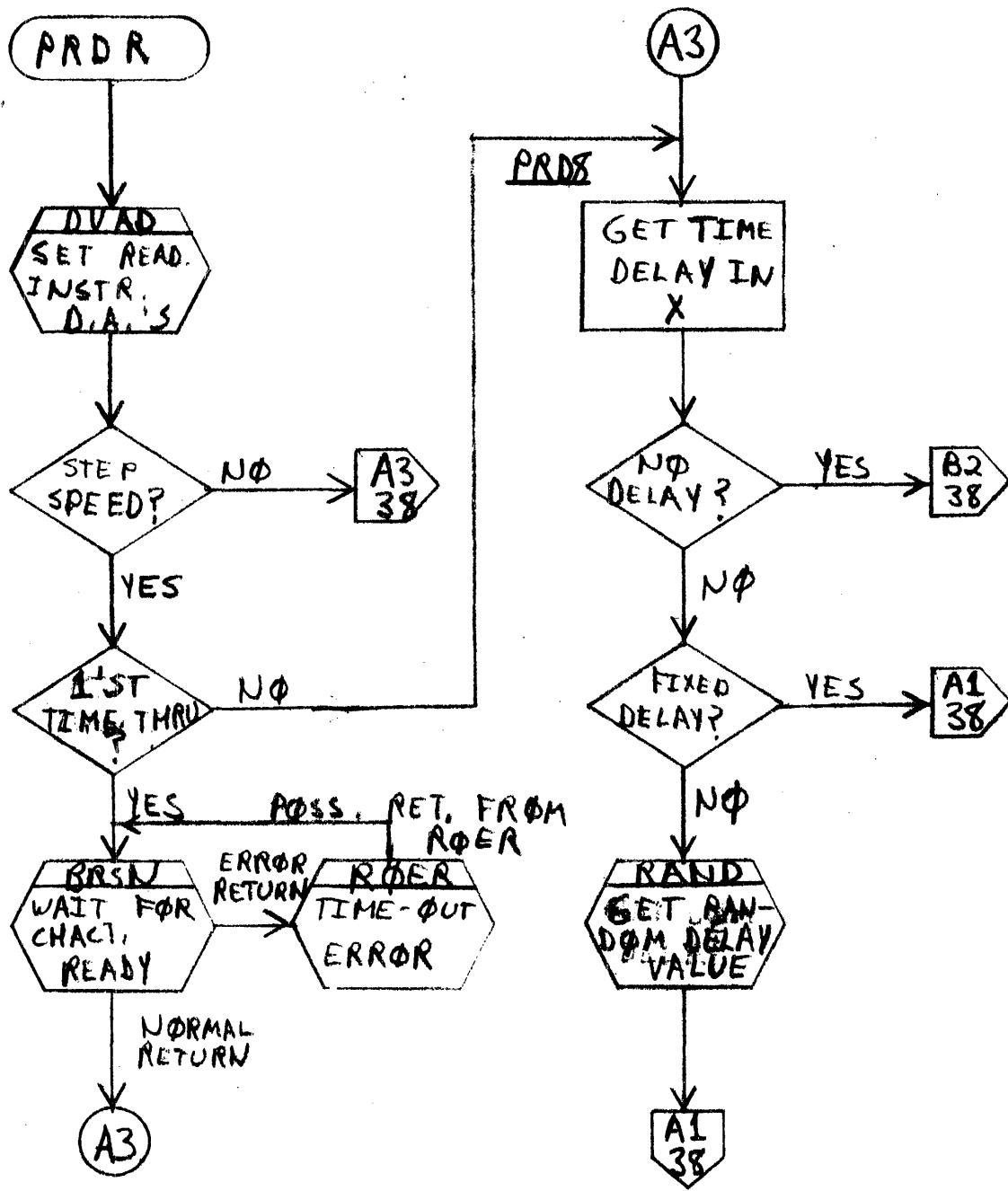
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READ (SENSE OR PIM MODE)

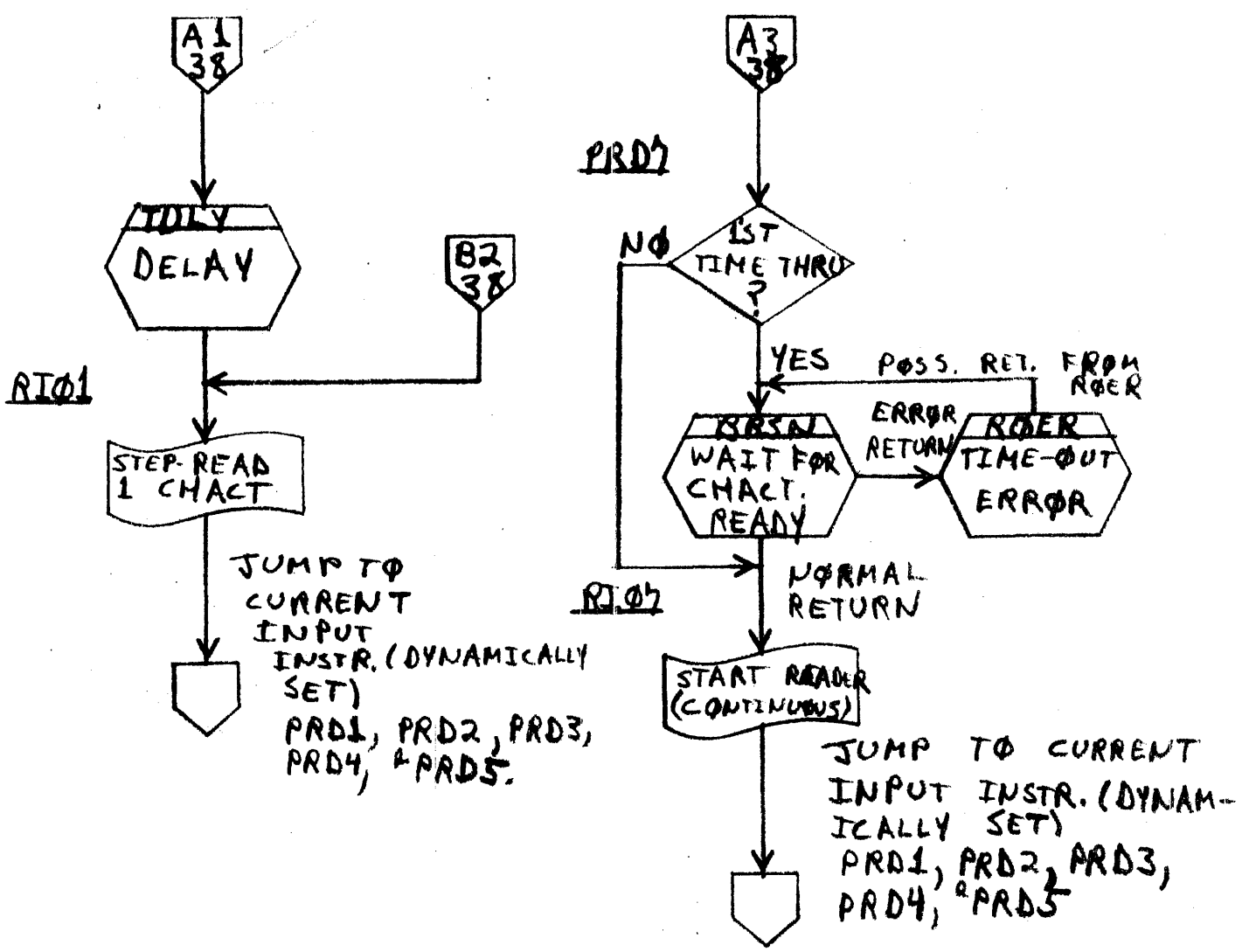


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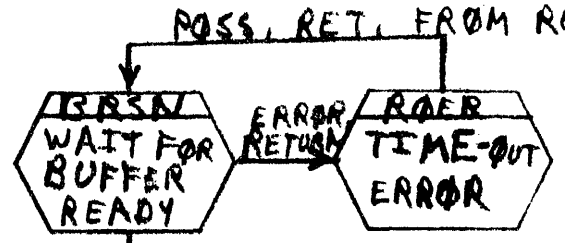
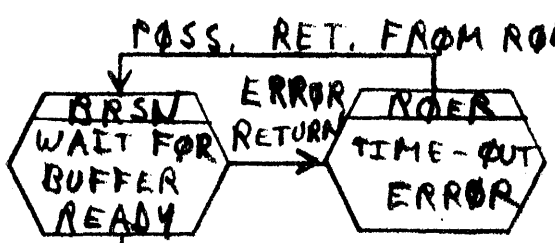
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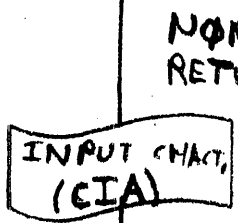


PRD3

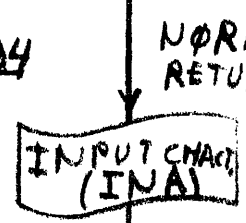
PRD1



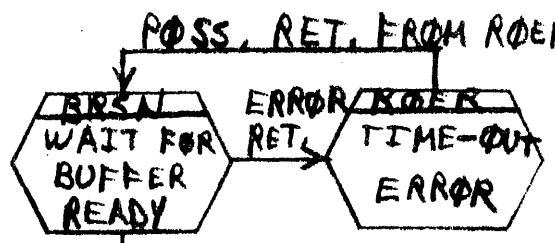
RIQ3



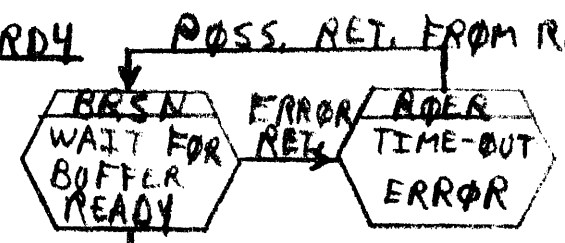
RIQ4



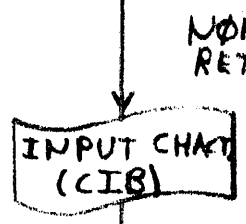
PRD2



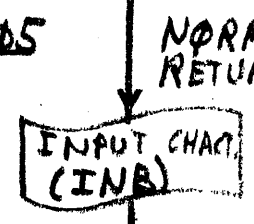
PRD4



RIQ3



RIQ5

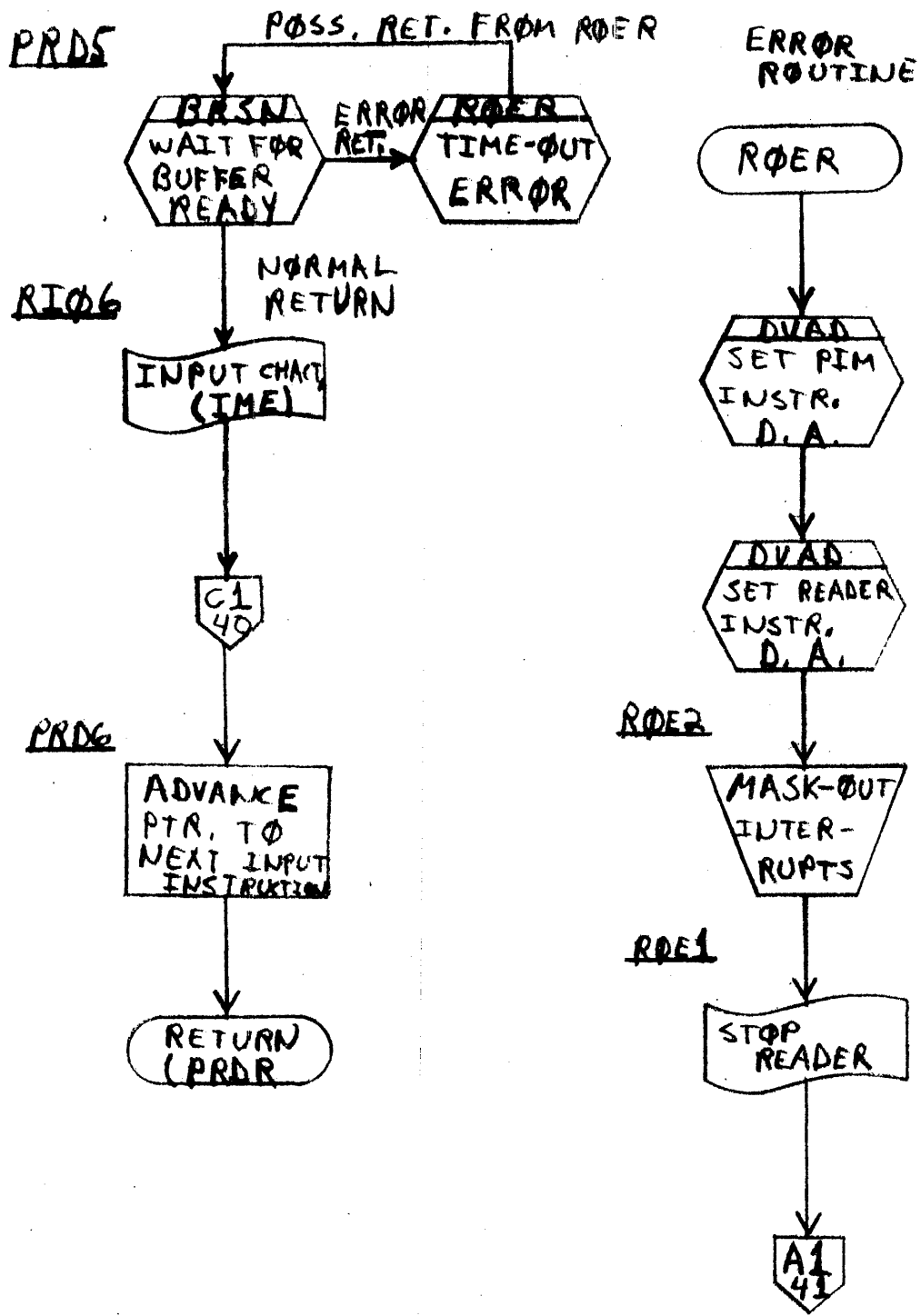


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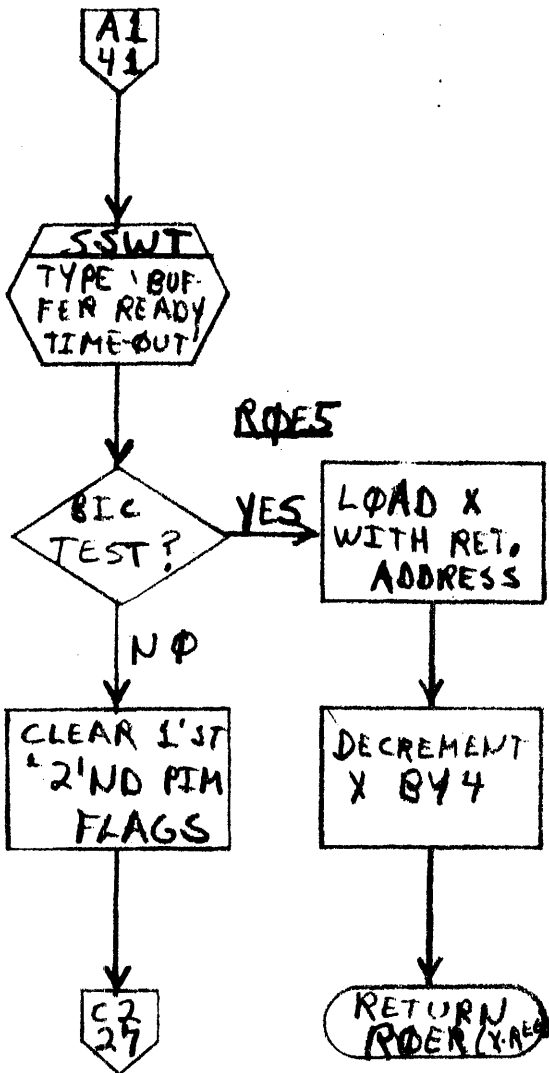
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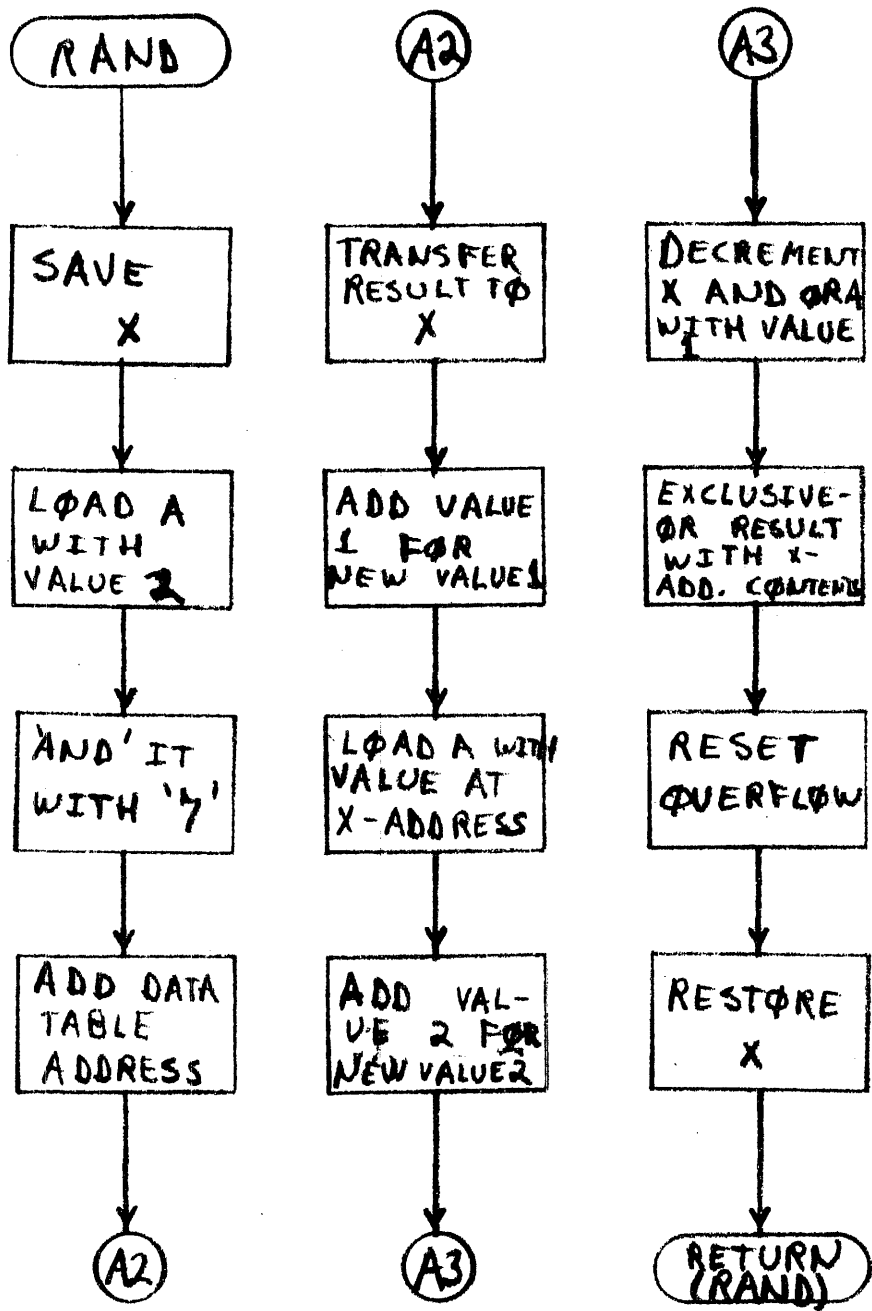
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21101

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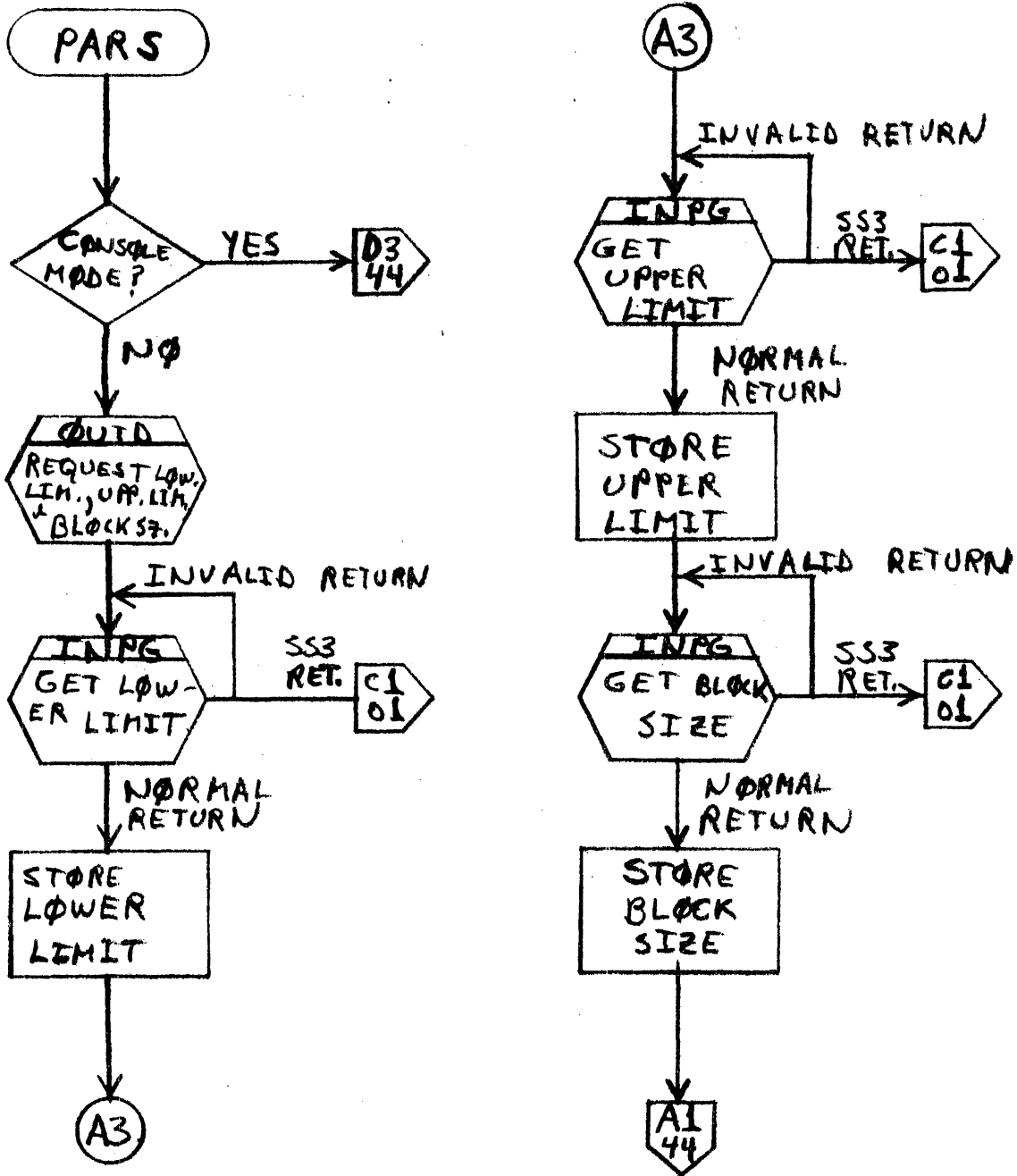
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PSUEDO-RANDOM NUMBER GENERATOR

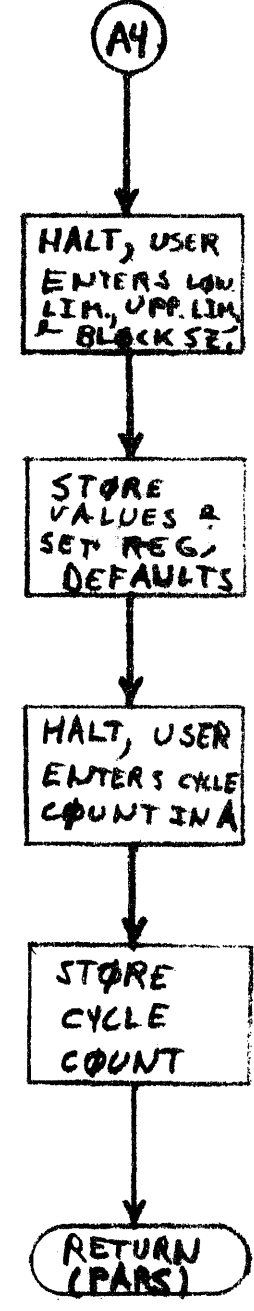
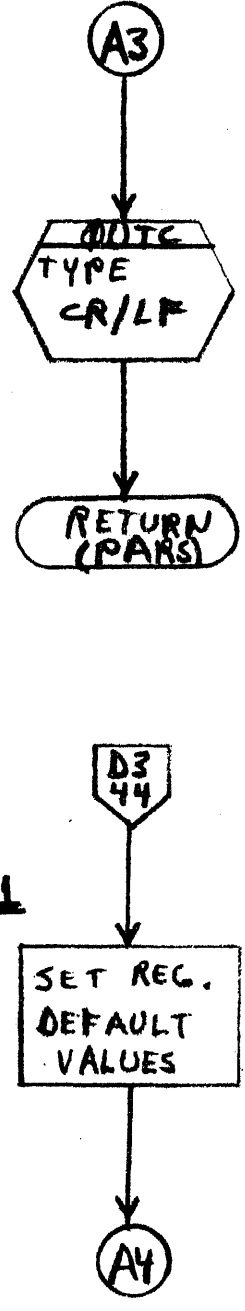
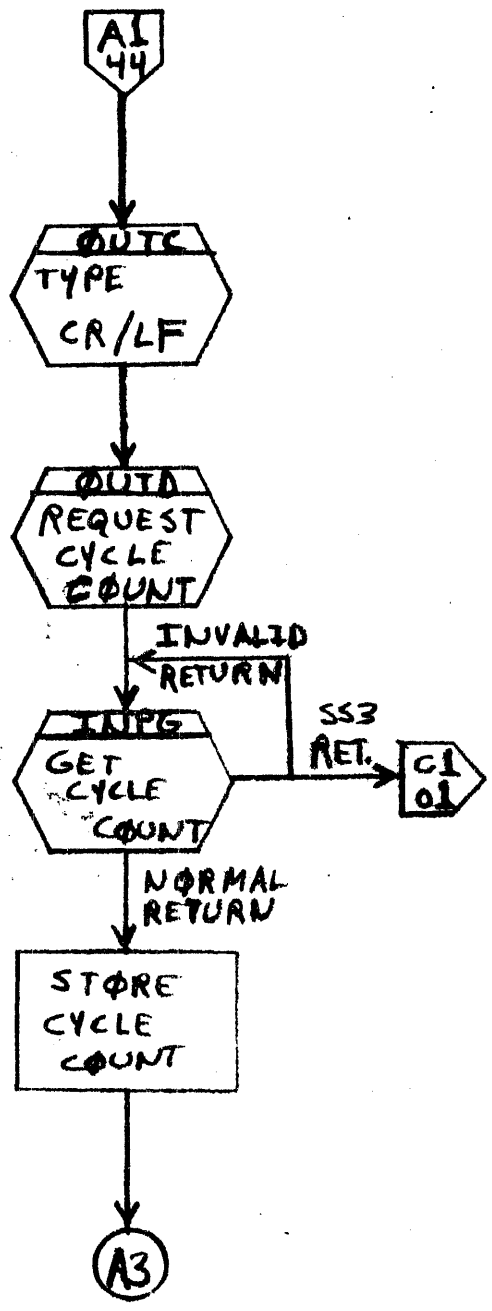


PARAMETER SETTING SUBROUTINE FOR PTST, RTST, & HTST



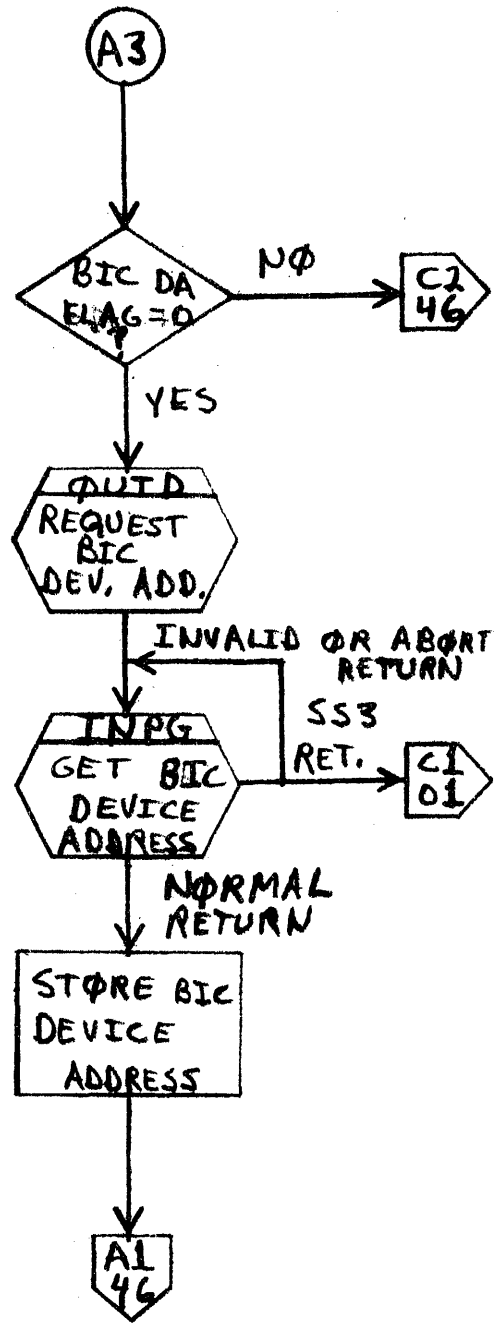
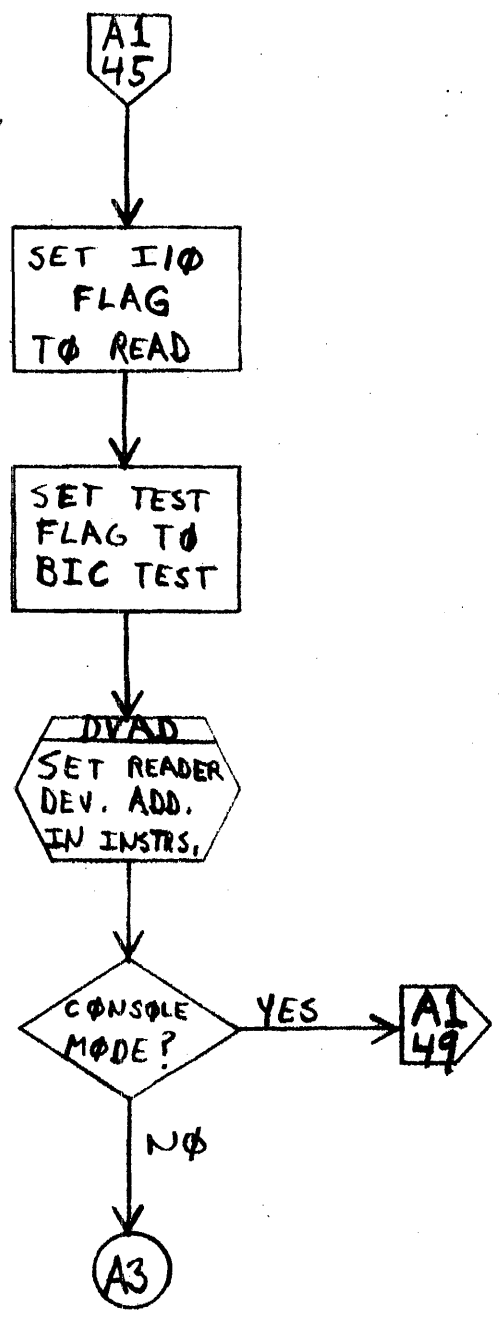
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PAR1

BTST



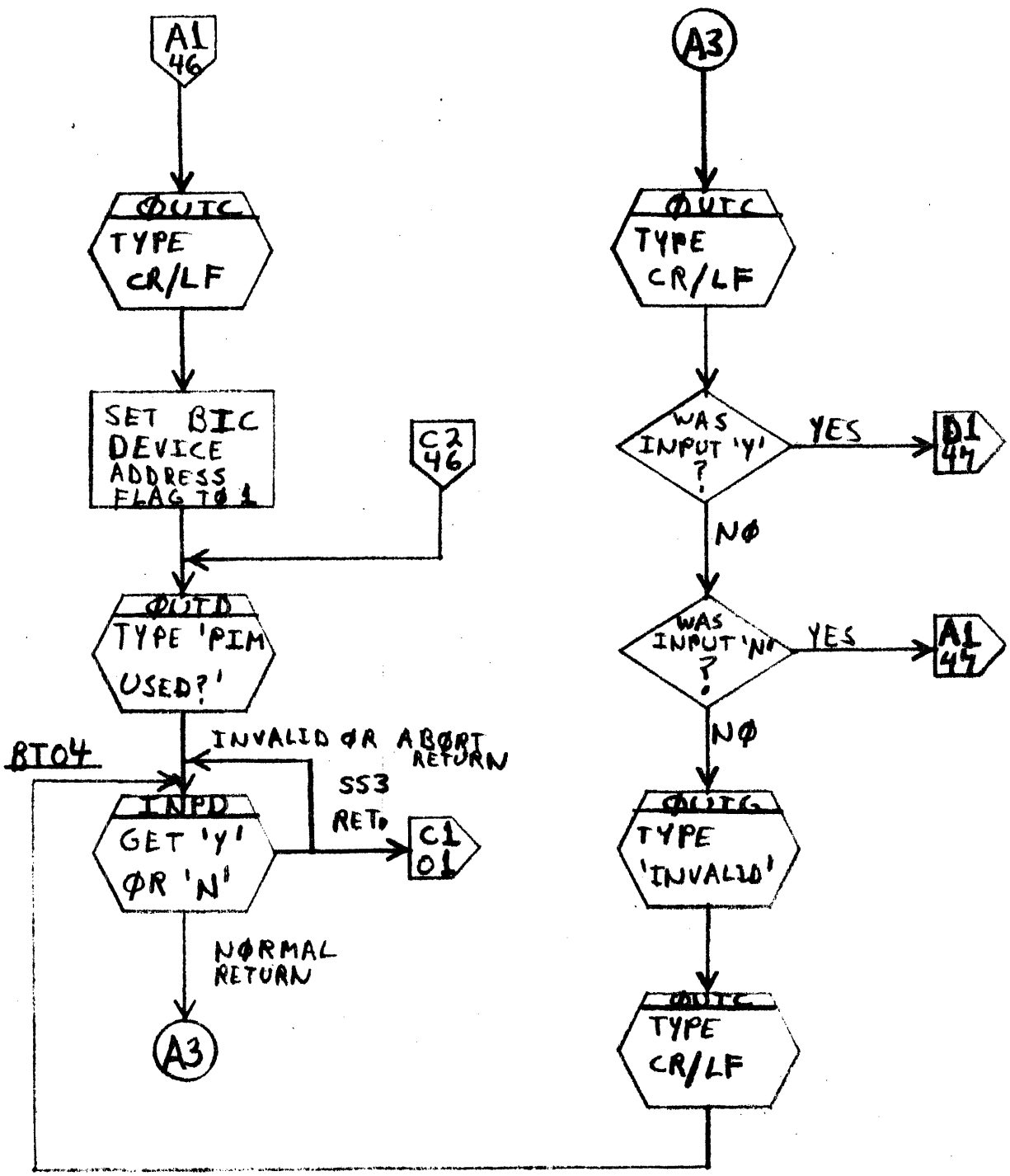
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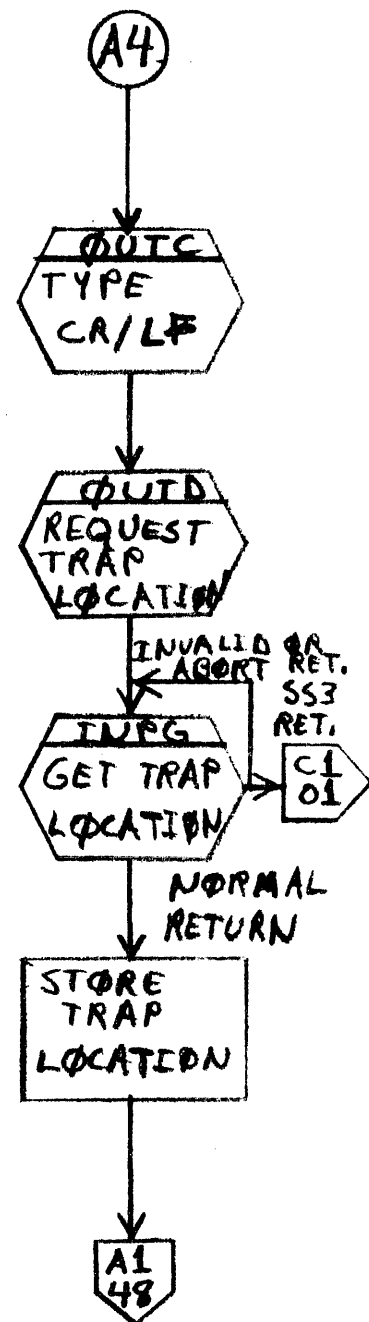
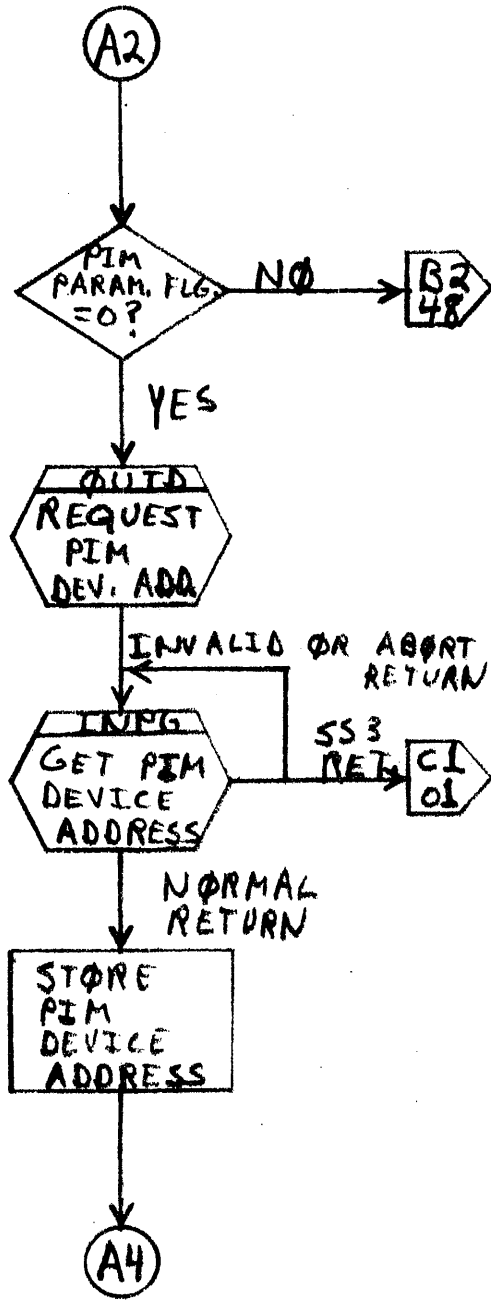
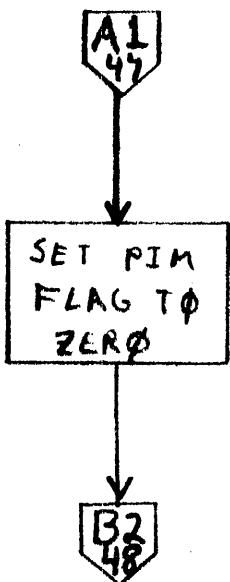
D
REV



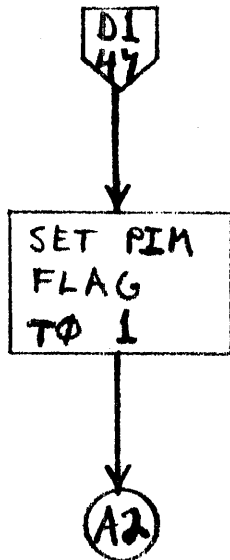
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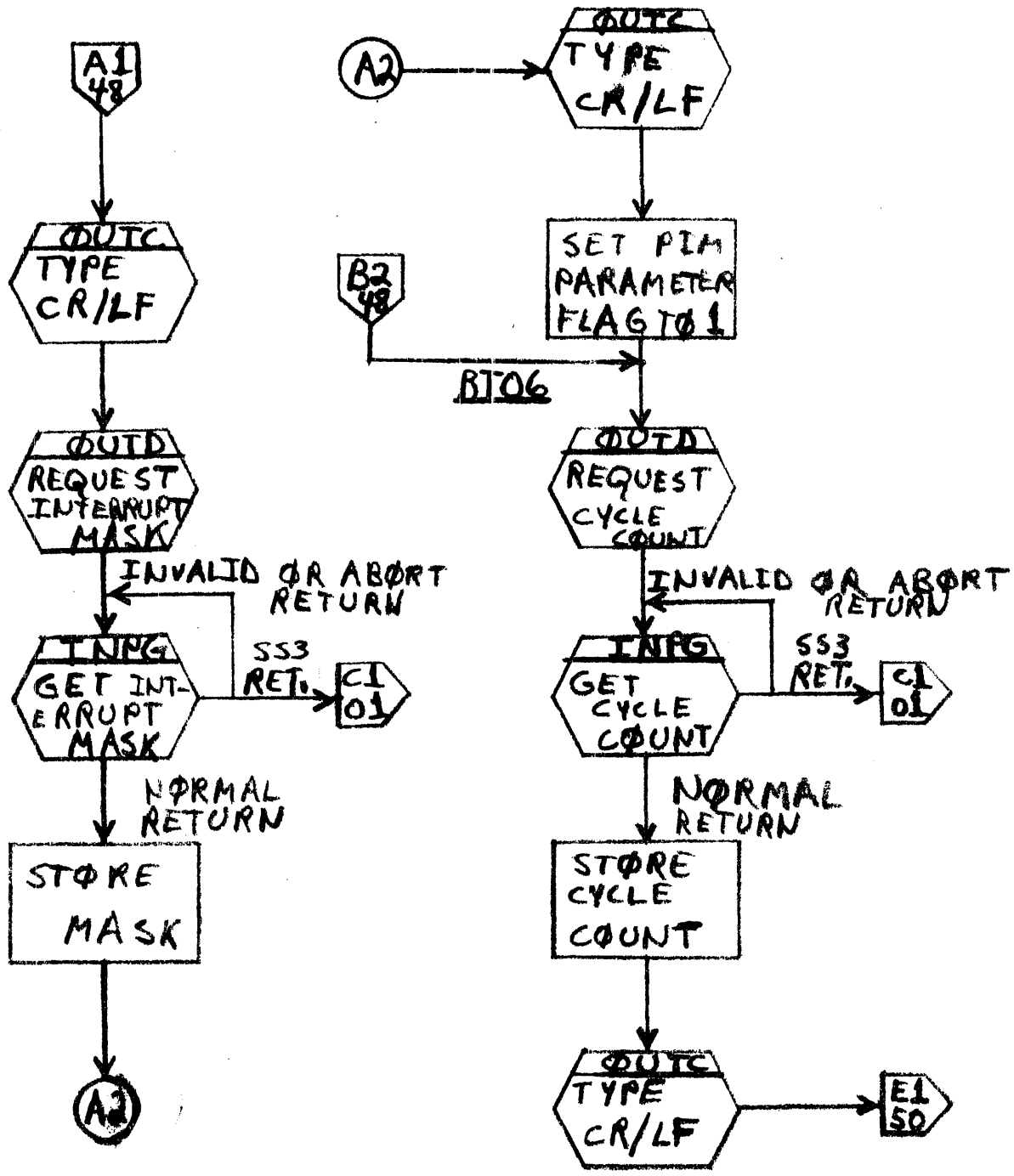
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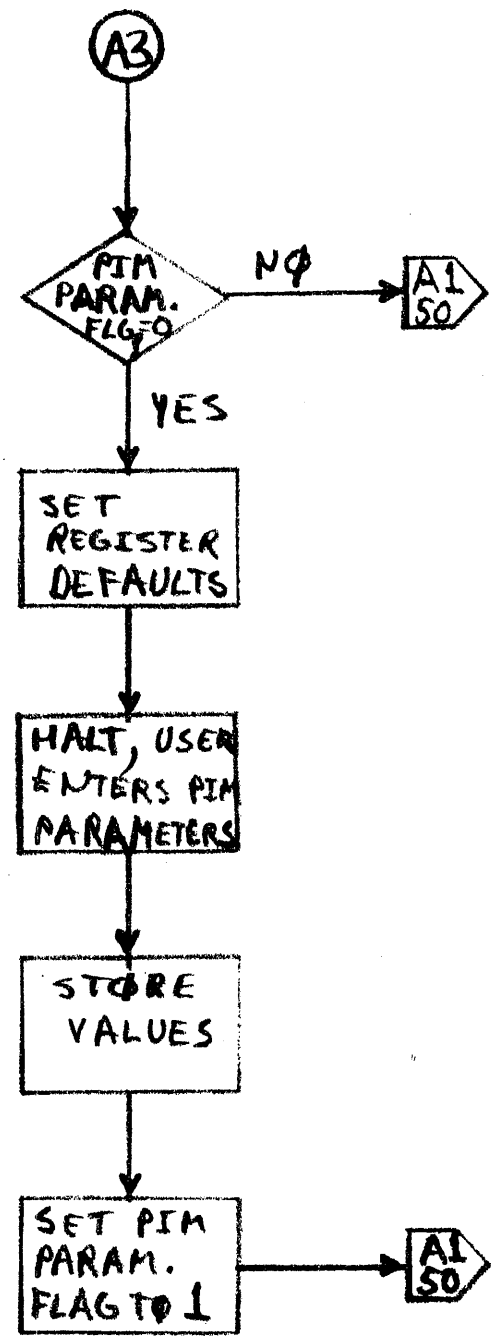
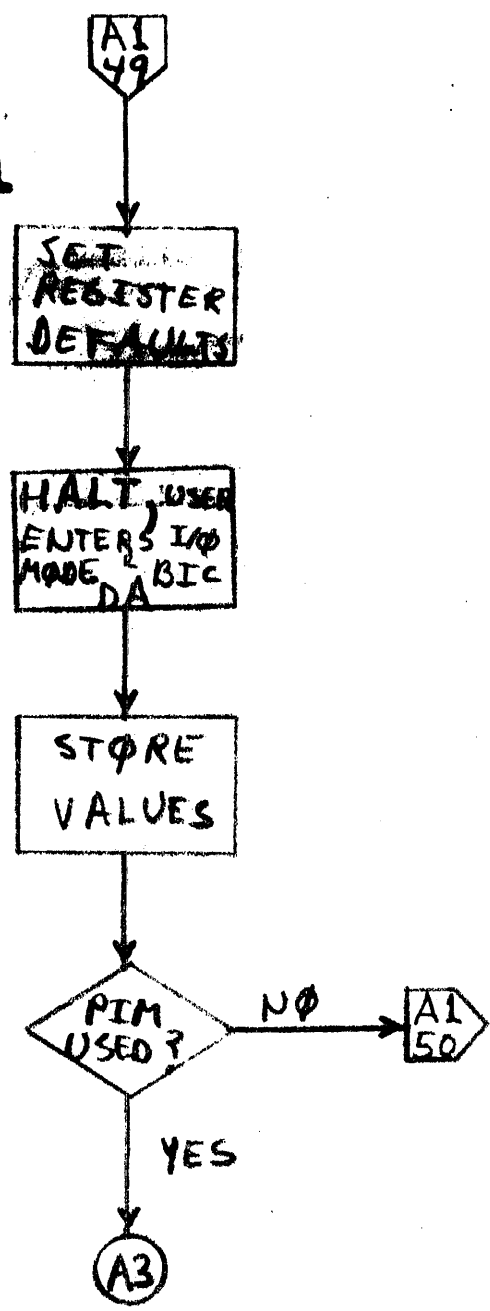


BIOS





BT01



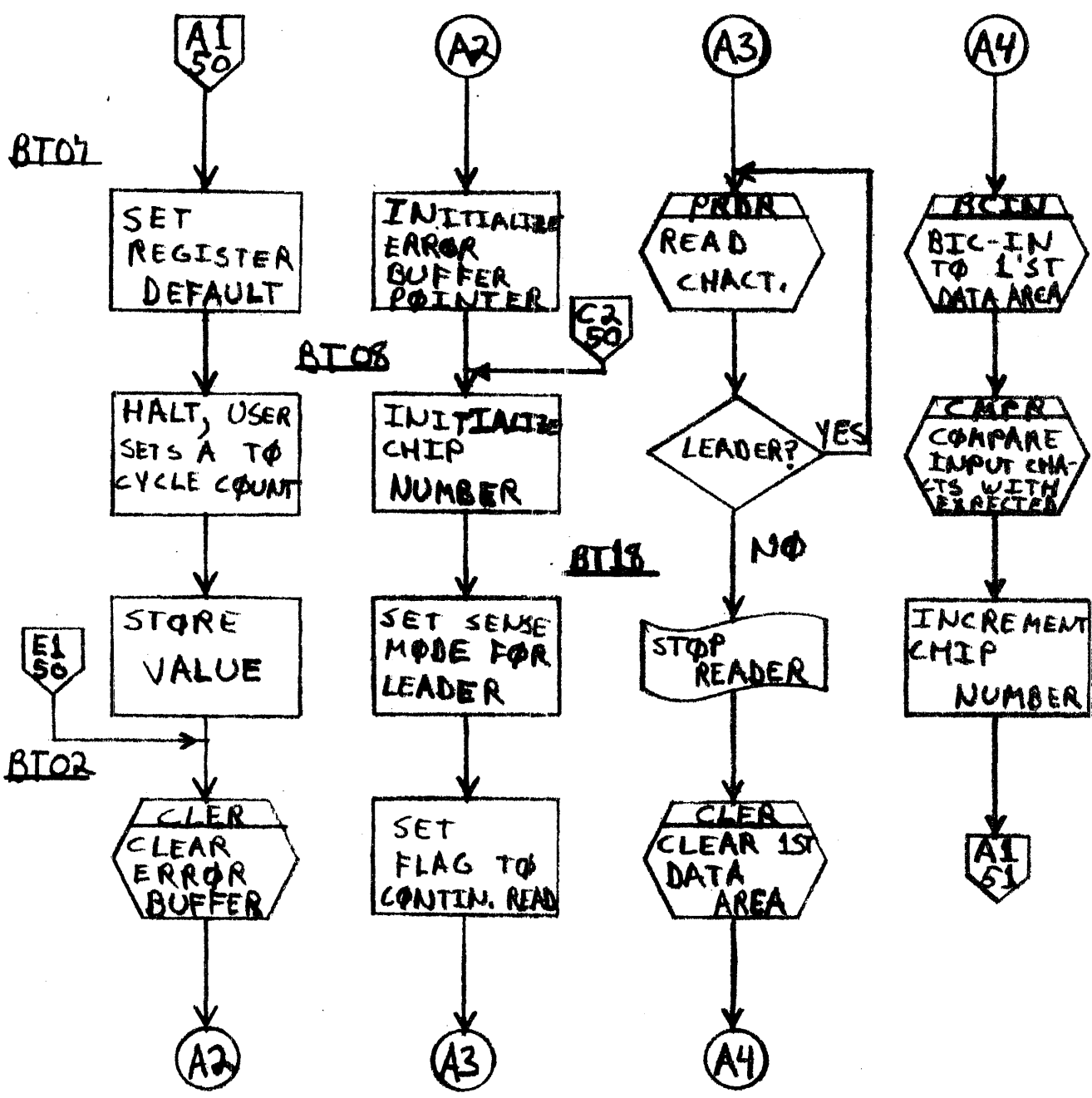
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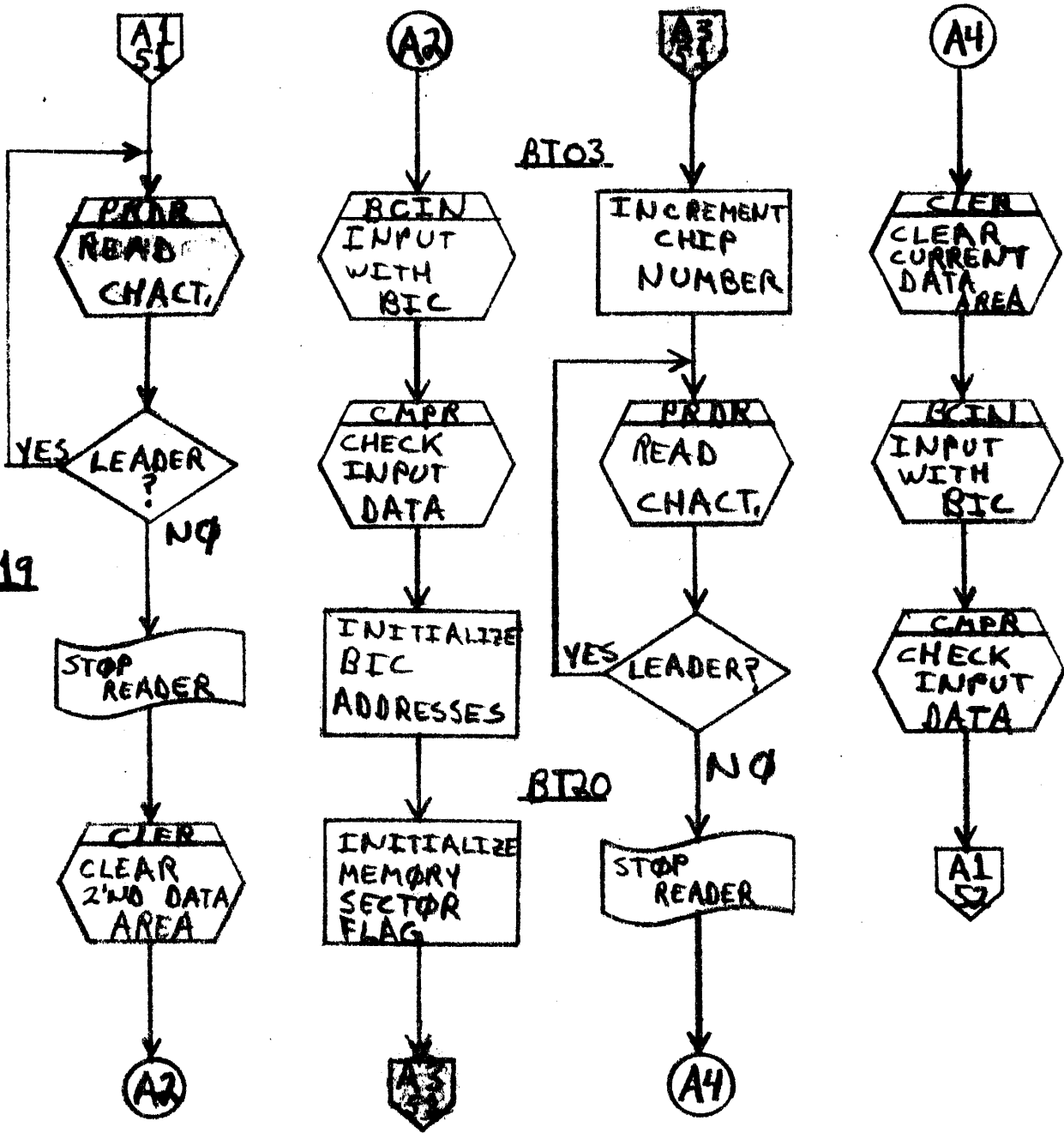
CODE IDENT NO.
21101

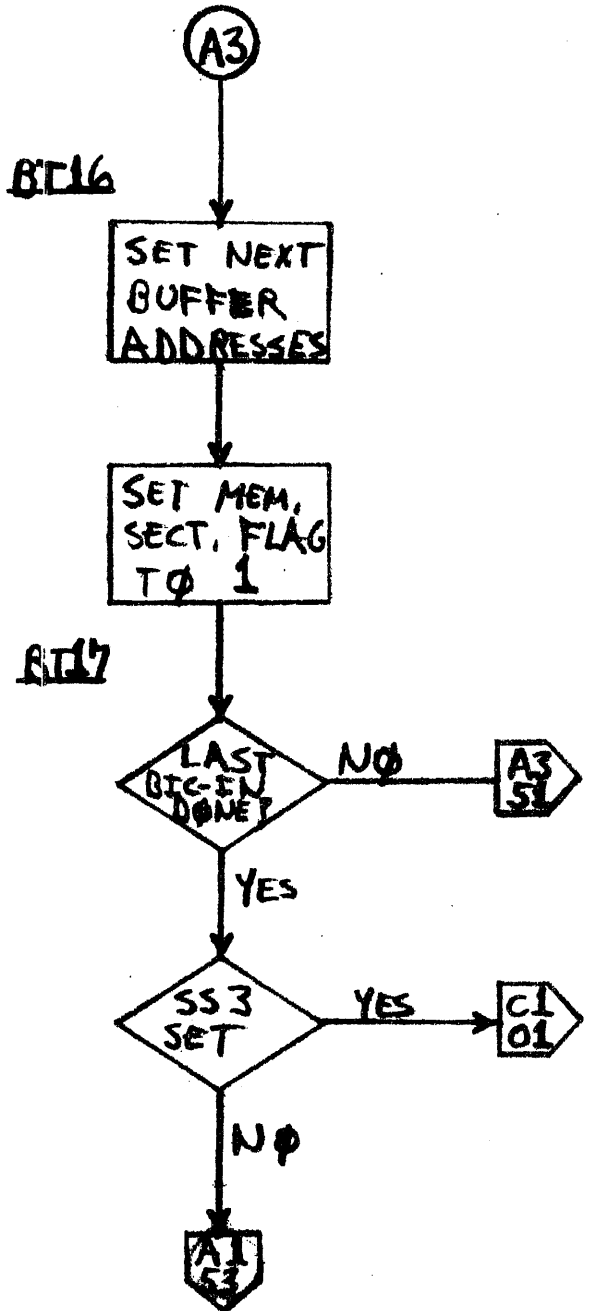
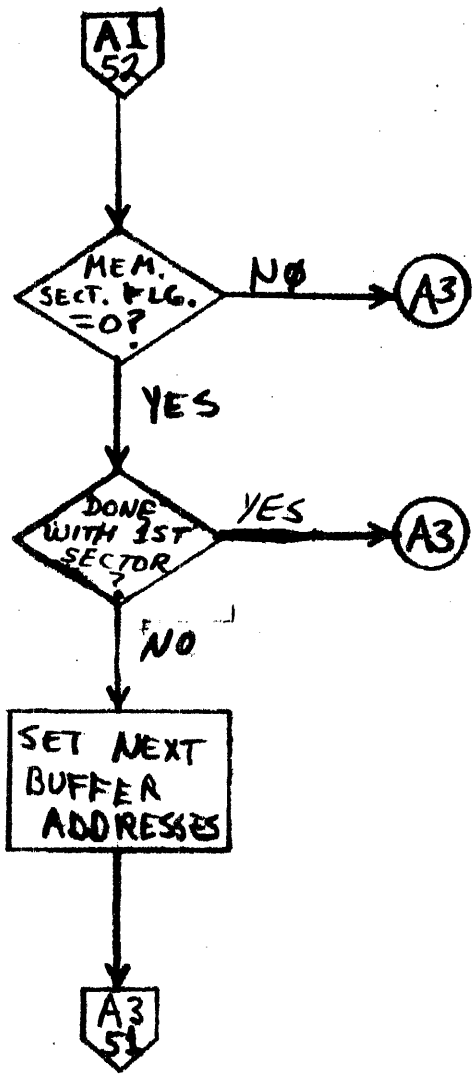
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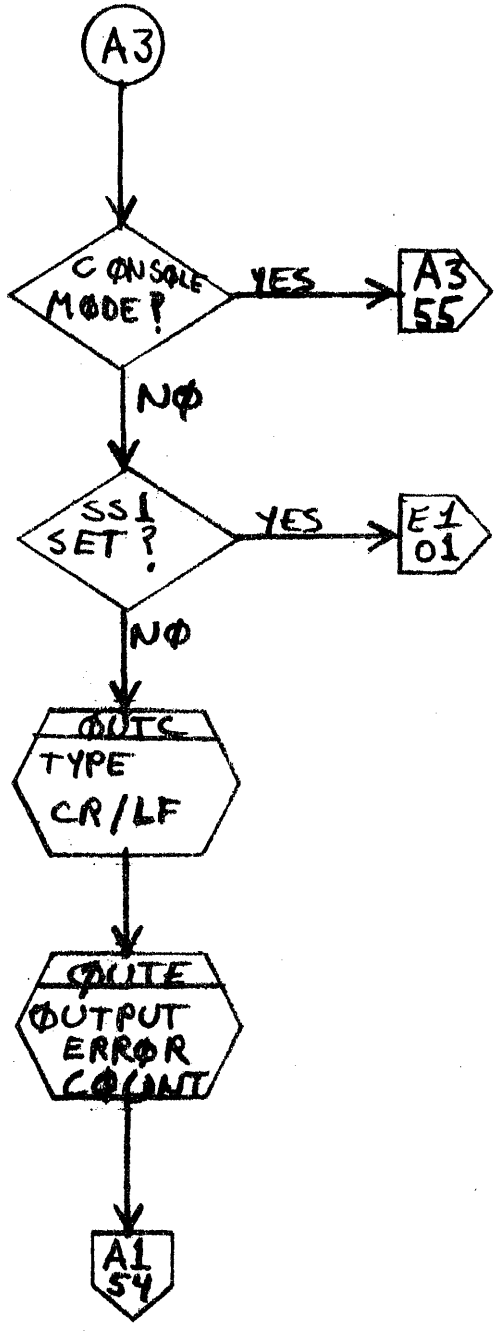
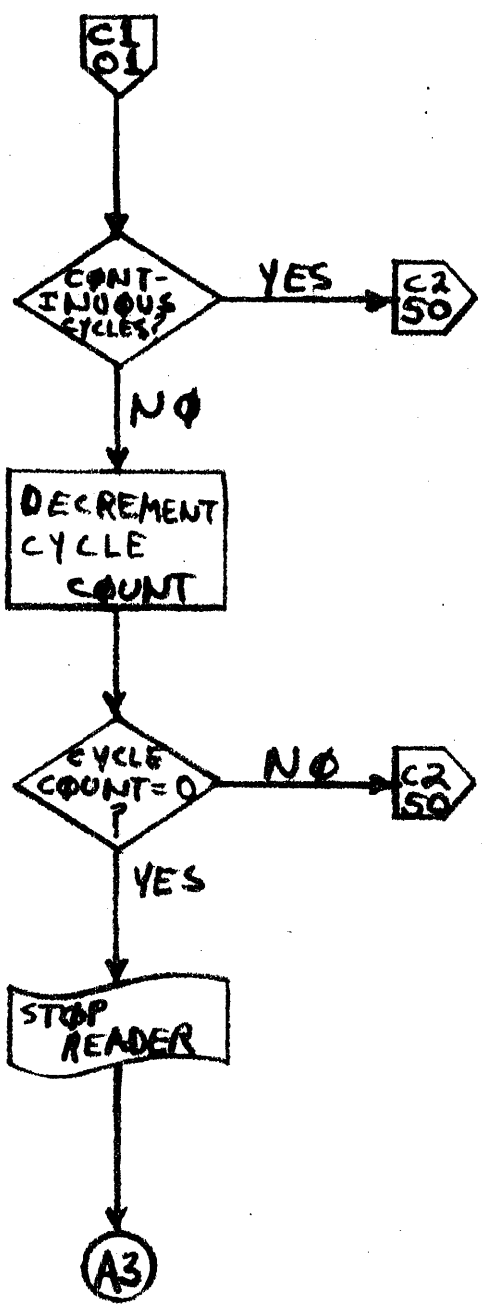
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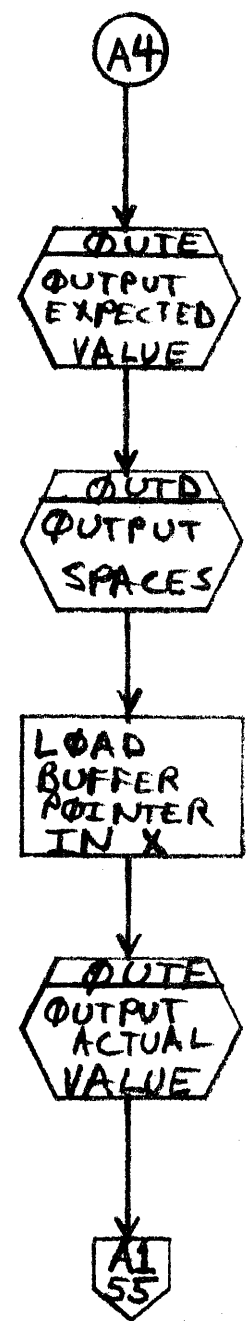
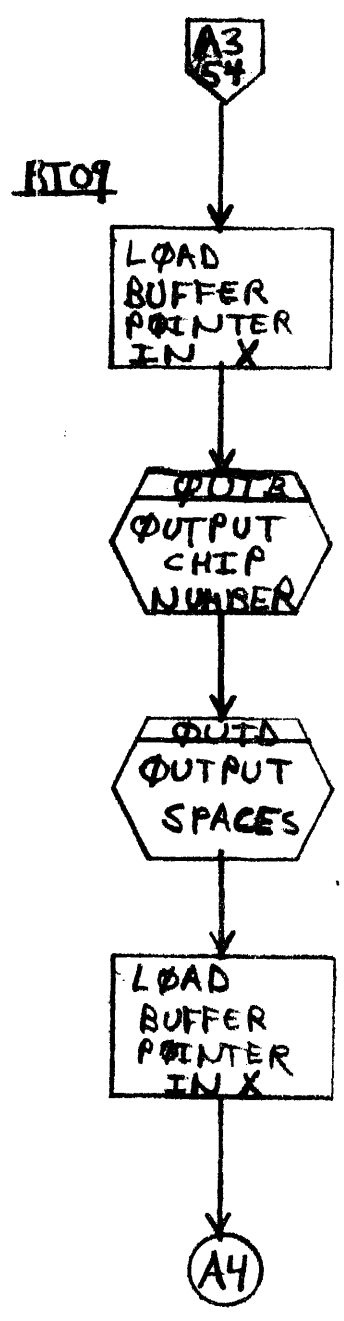
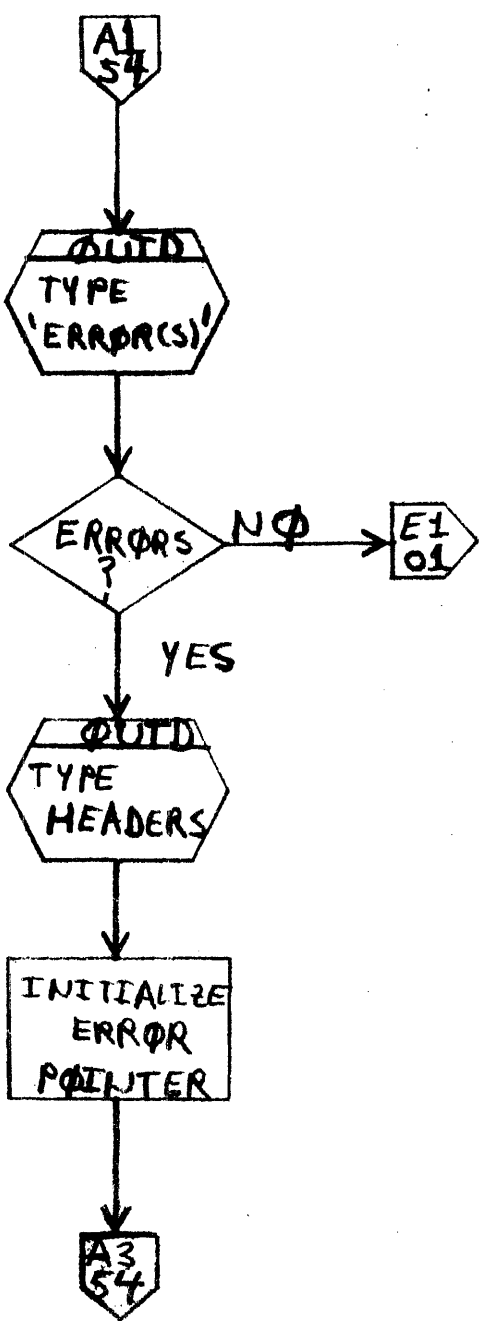


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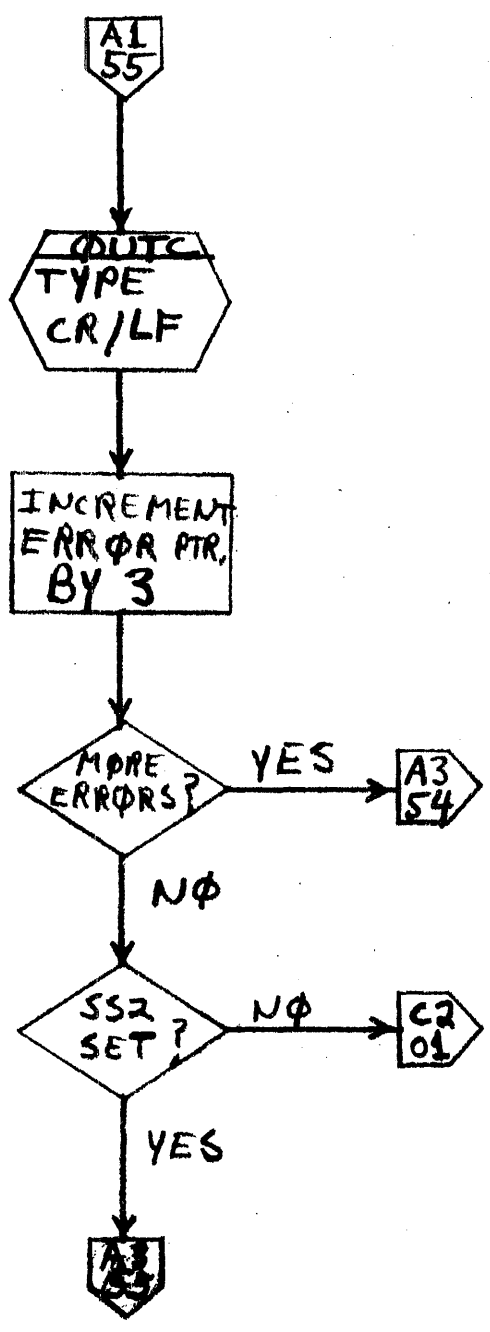
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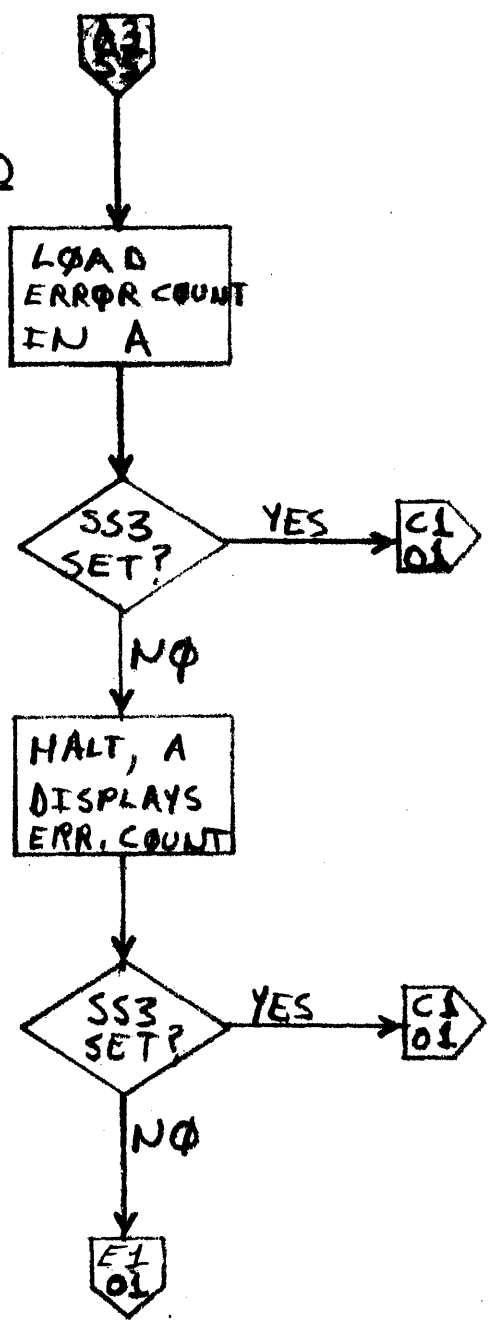
REV.



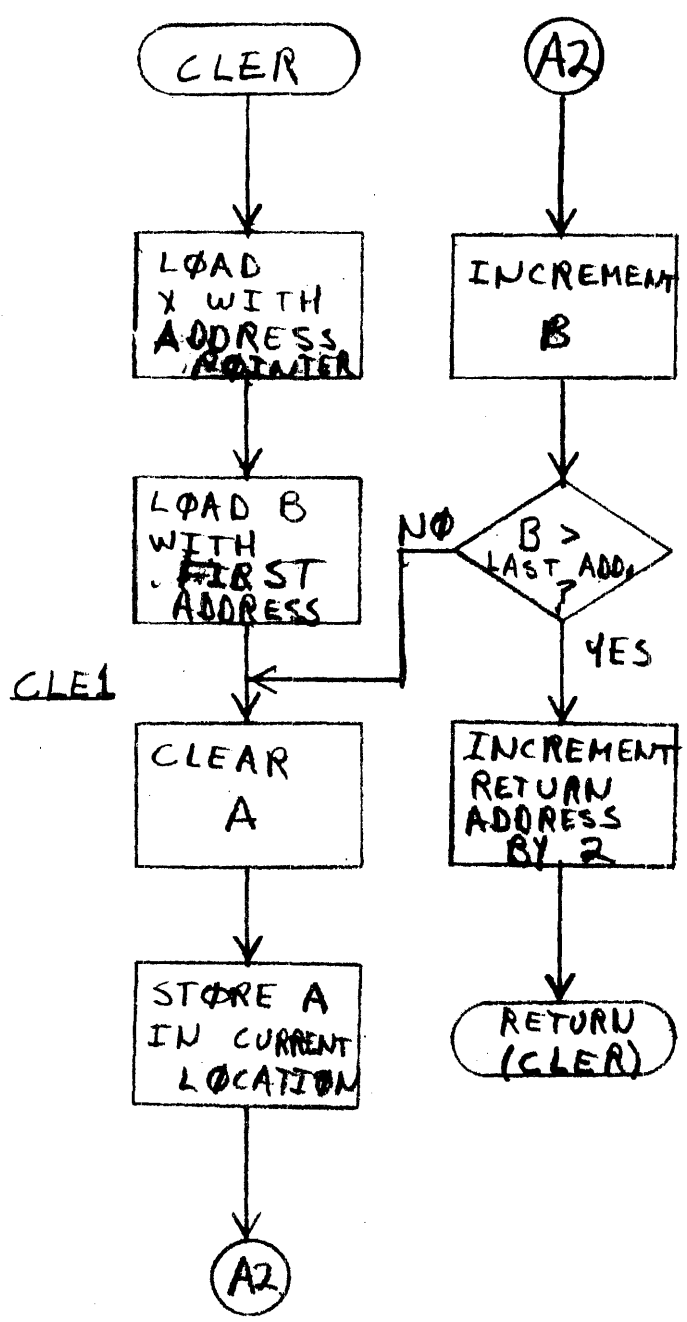
KT07



BT10



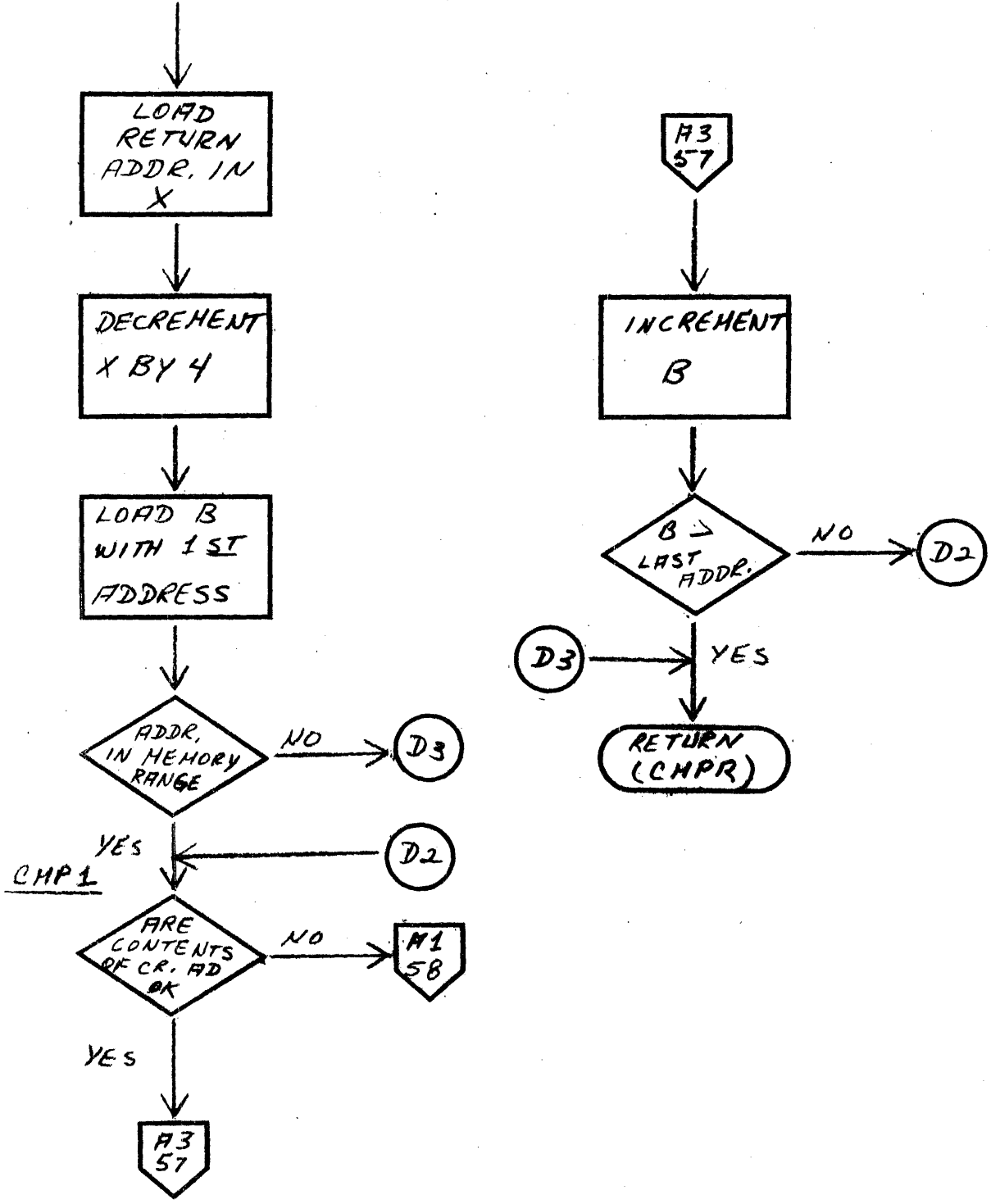
BUFFER CLEARING SUBROUTINE



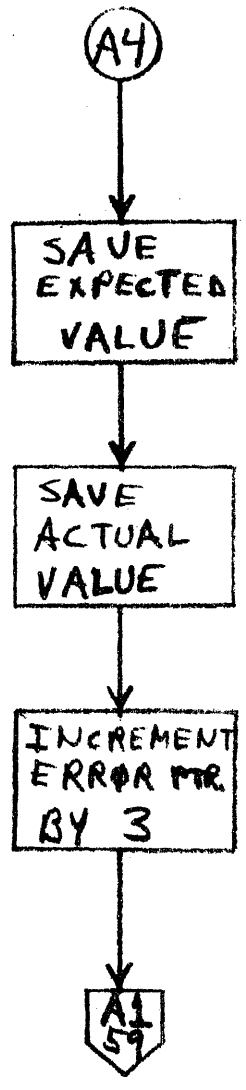
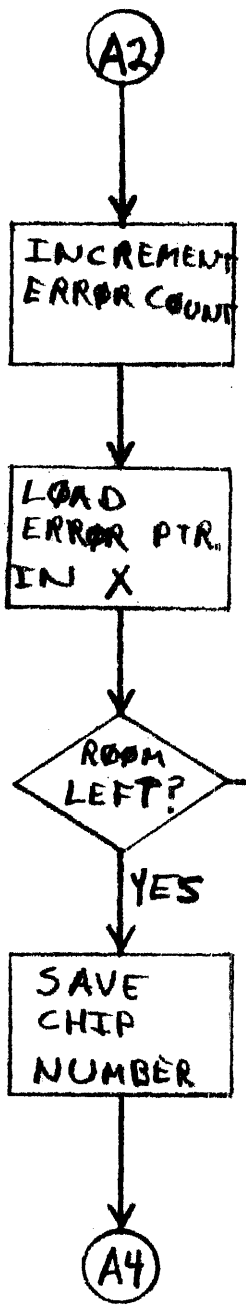
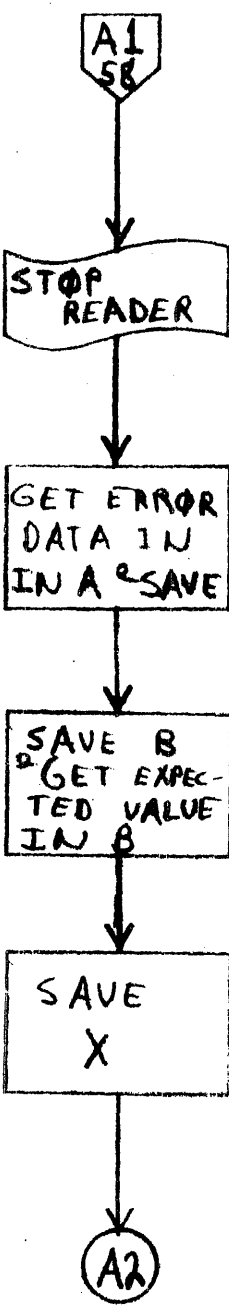
CLE1

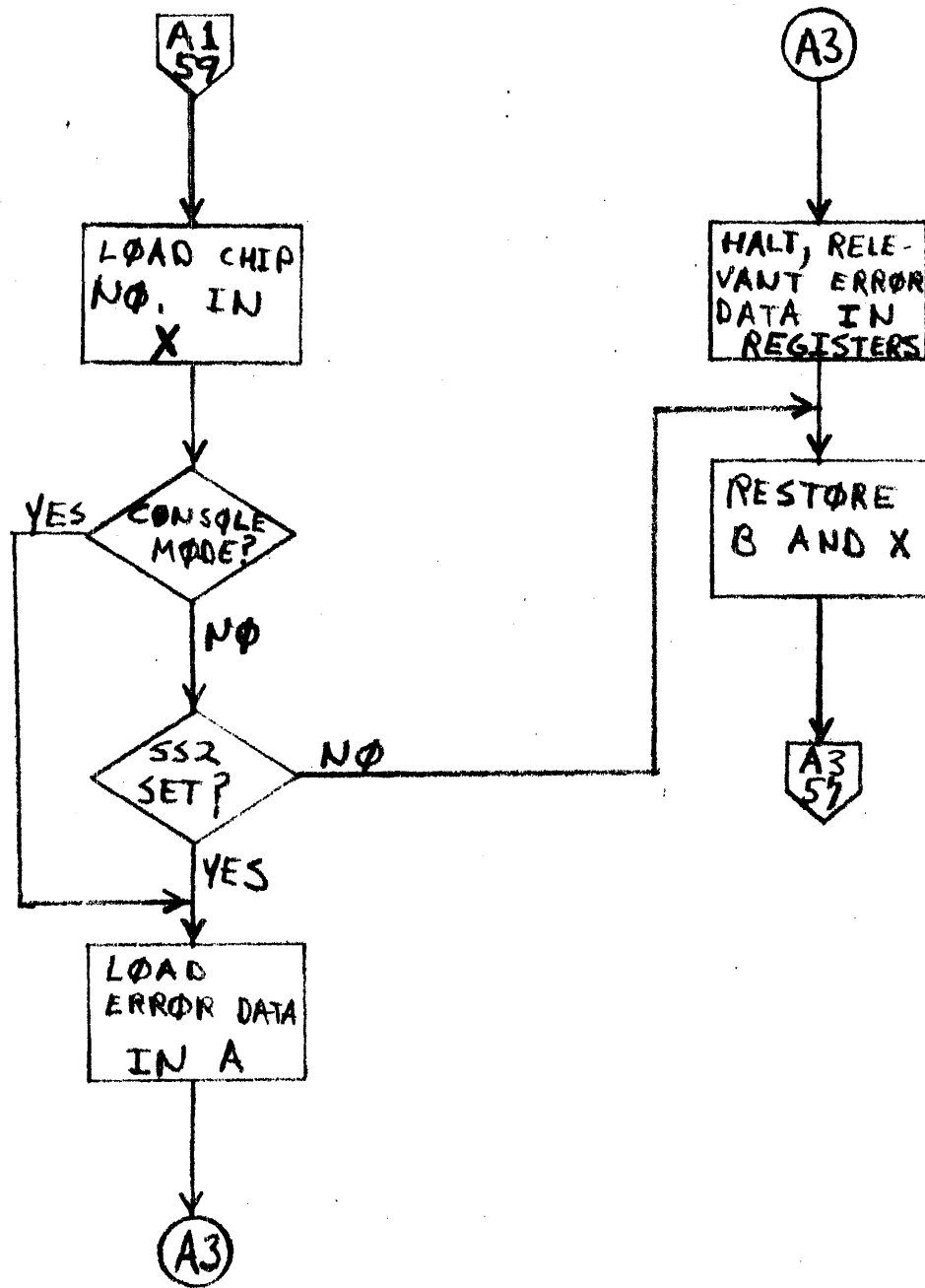
CMPR

COMPARE SUBROUTINE



CAPA





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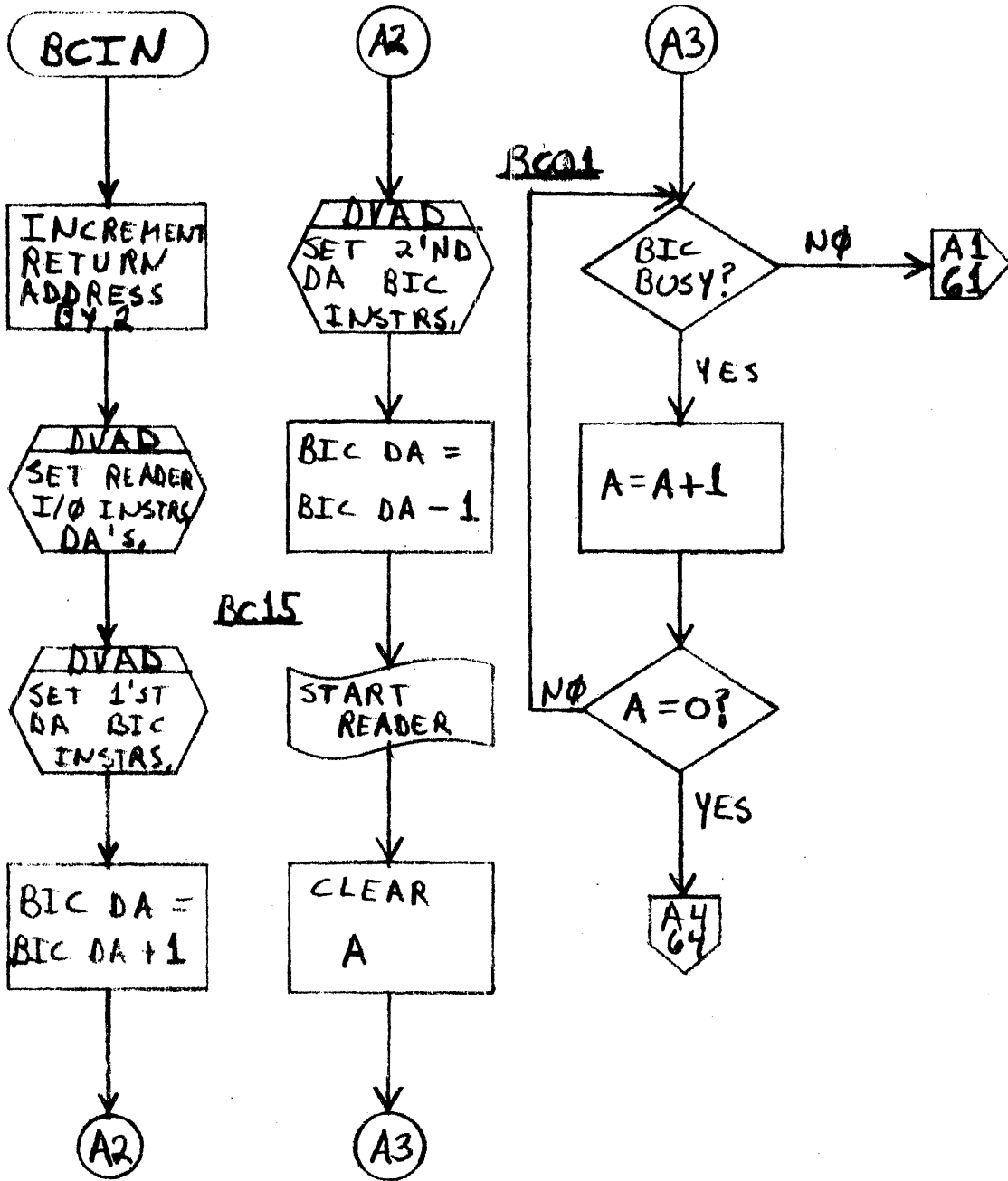
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REV **D**

READ (BIC MODE, OPTIONAL END INTERRUPT)



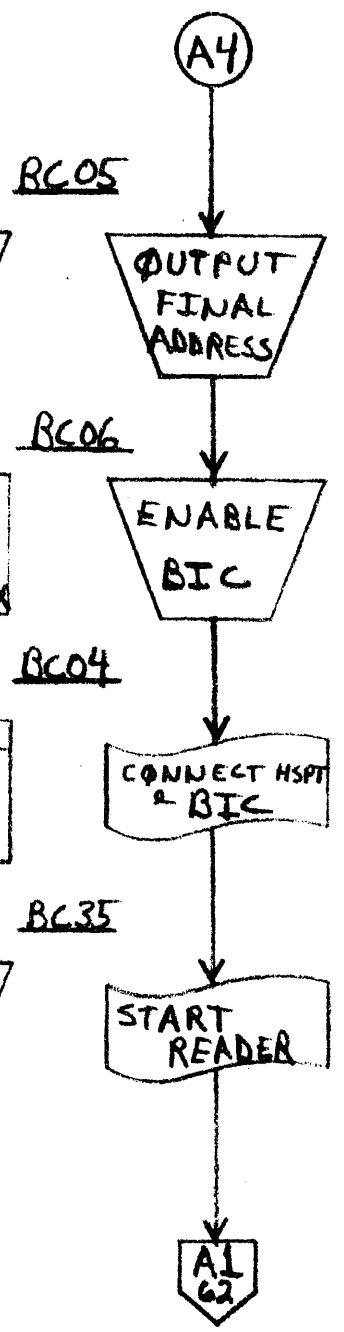
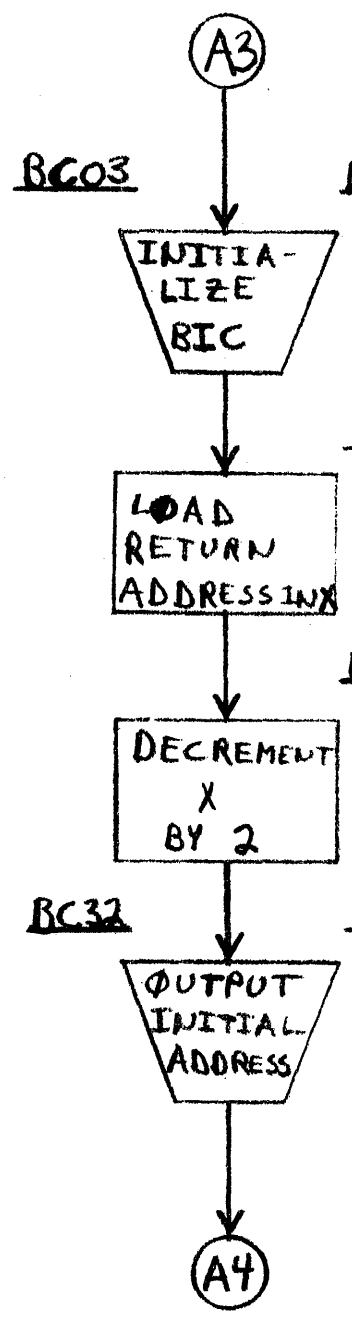
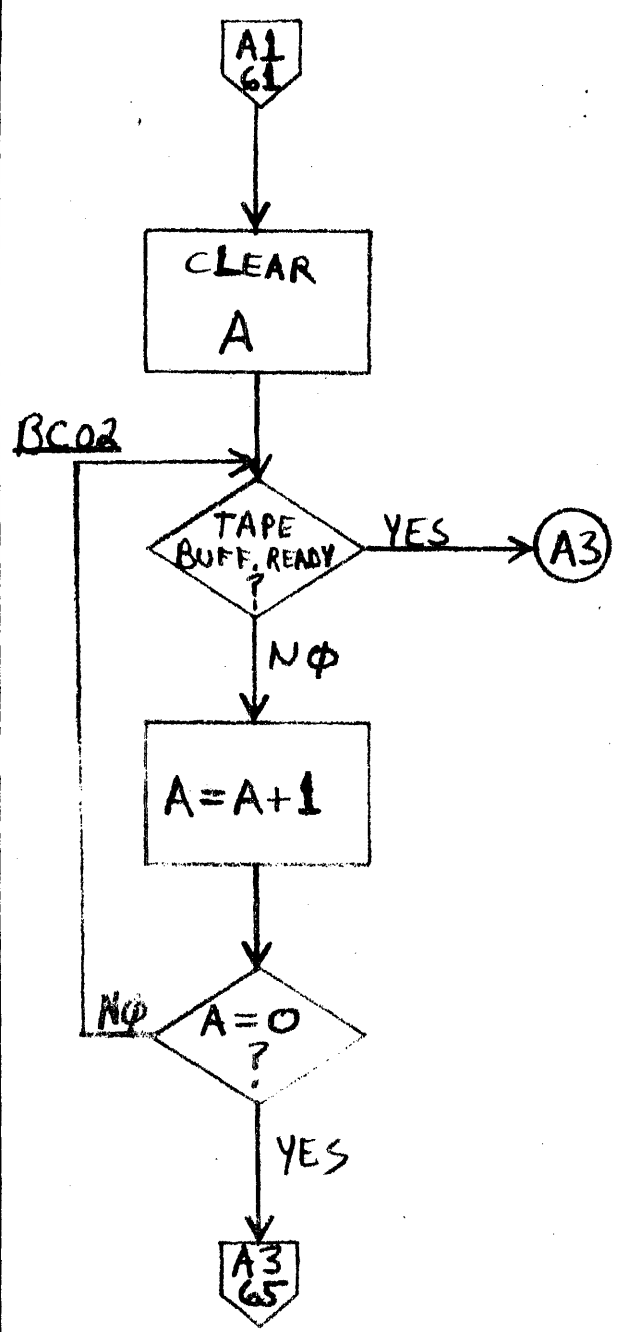
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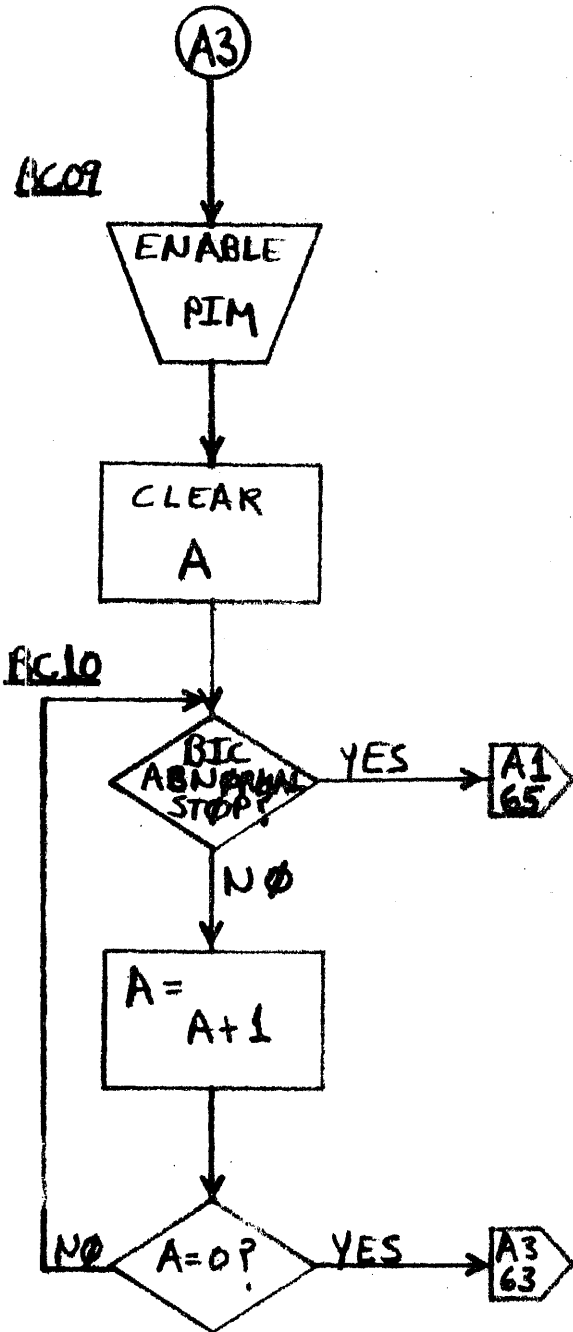
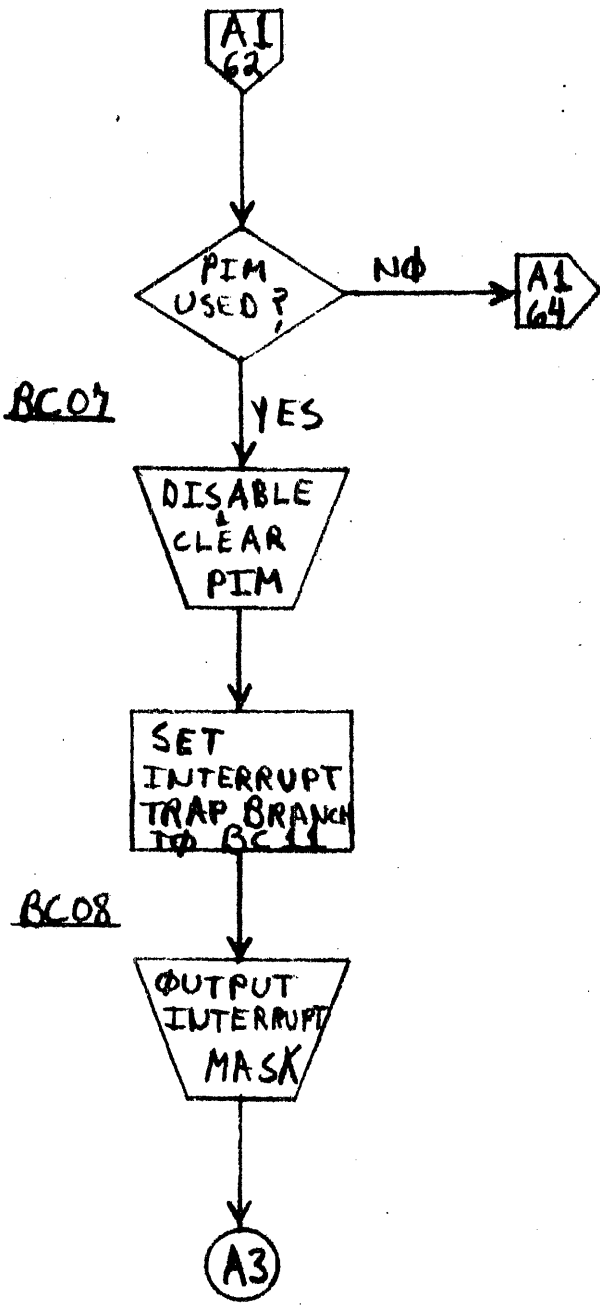
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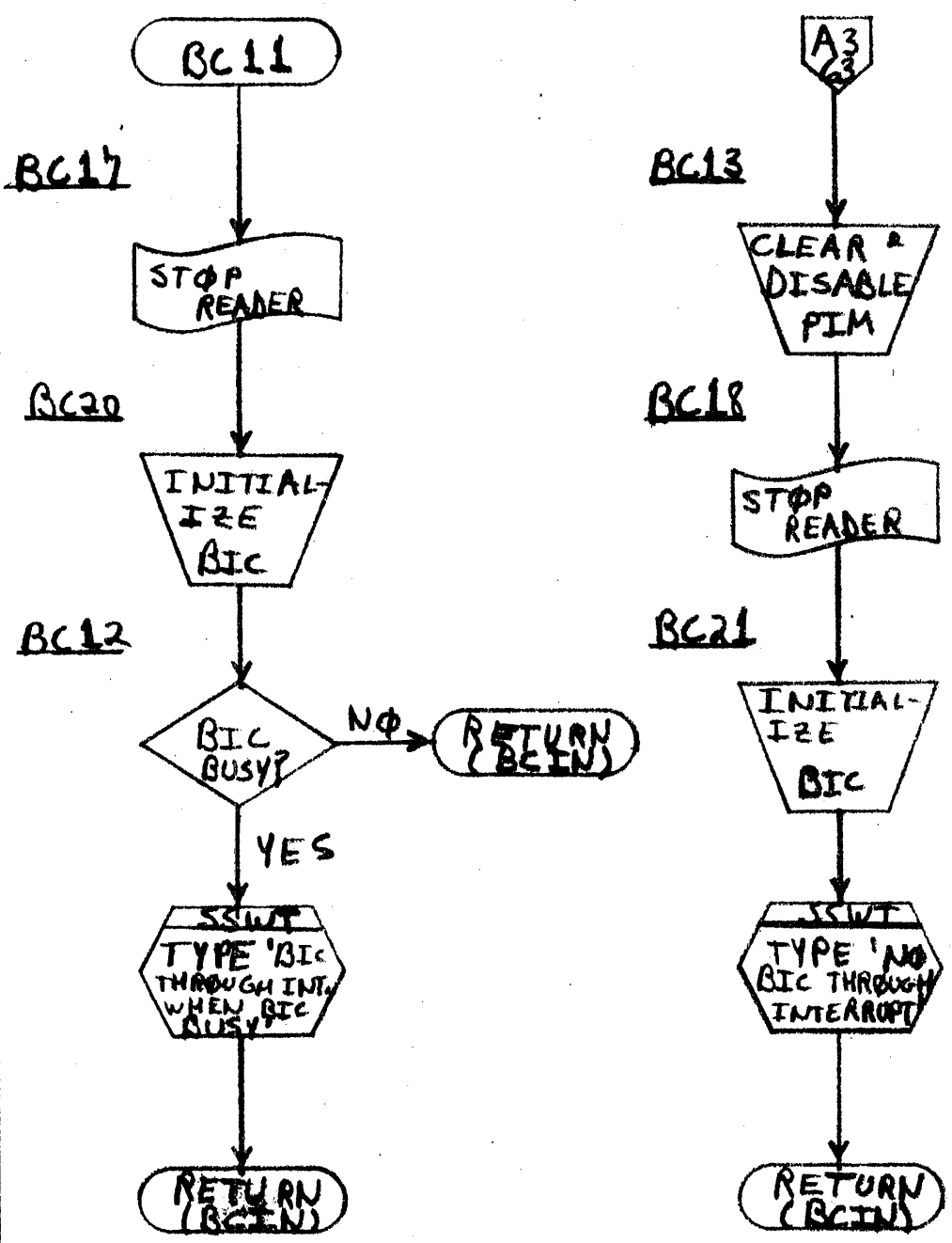
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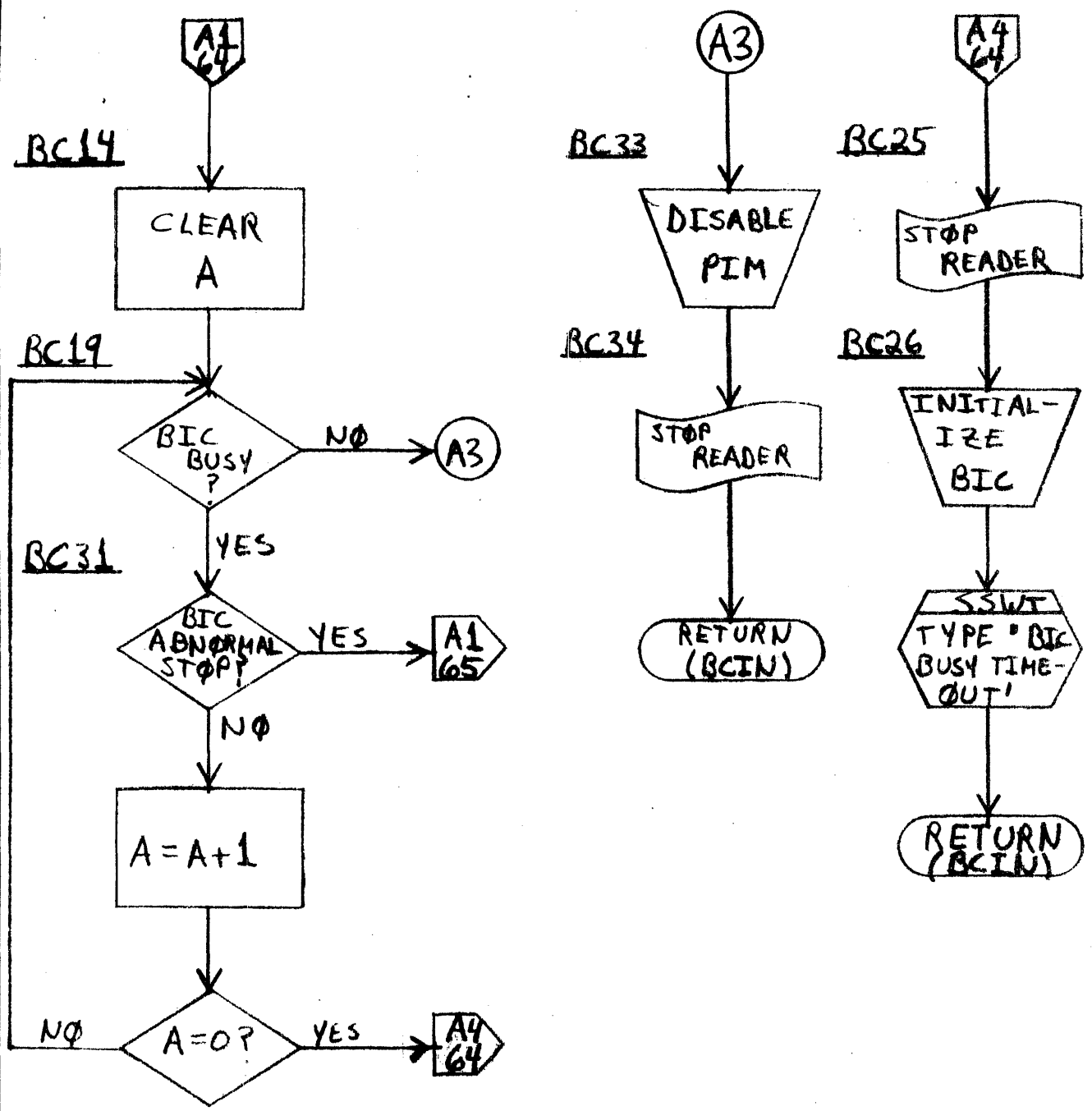
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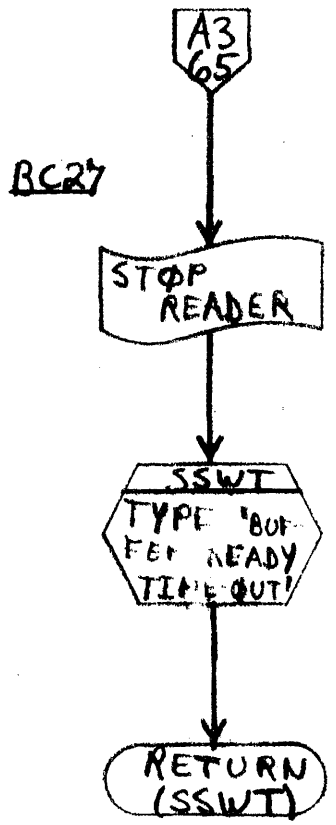
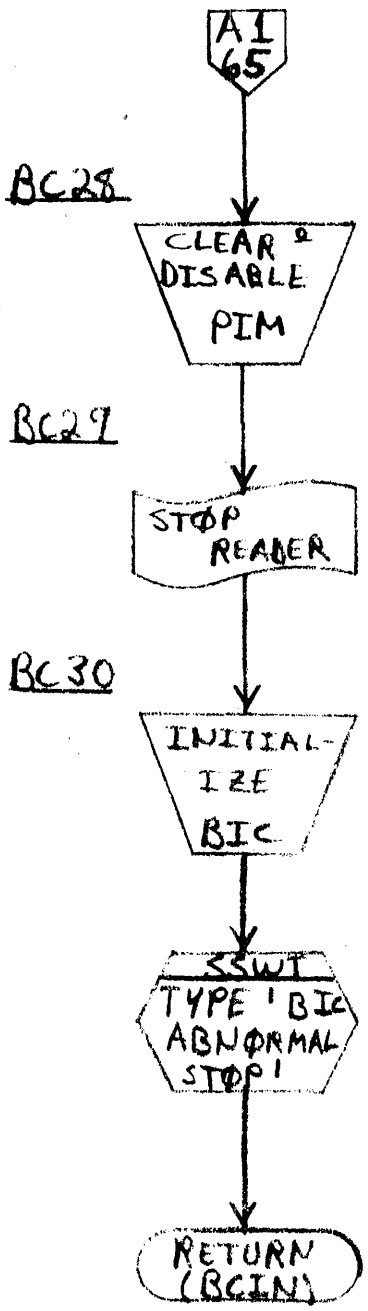


REV

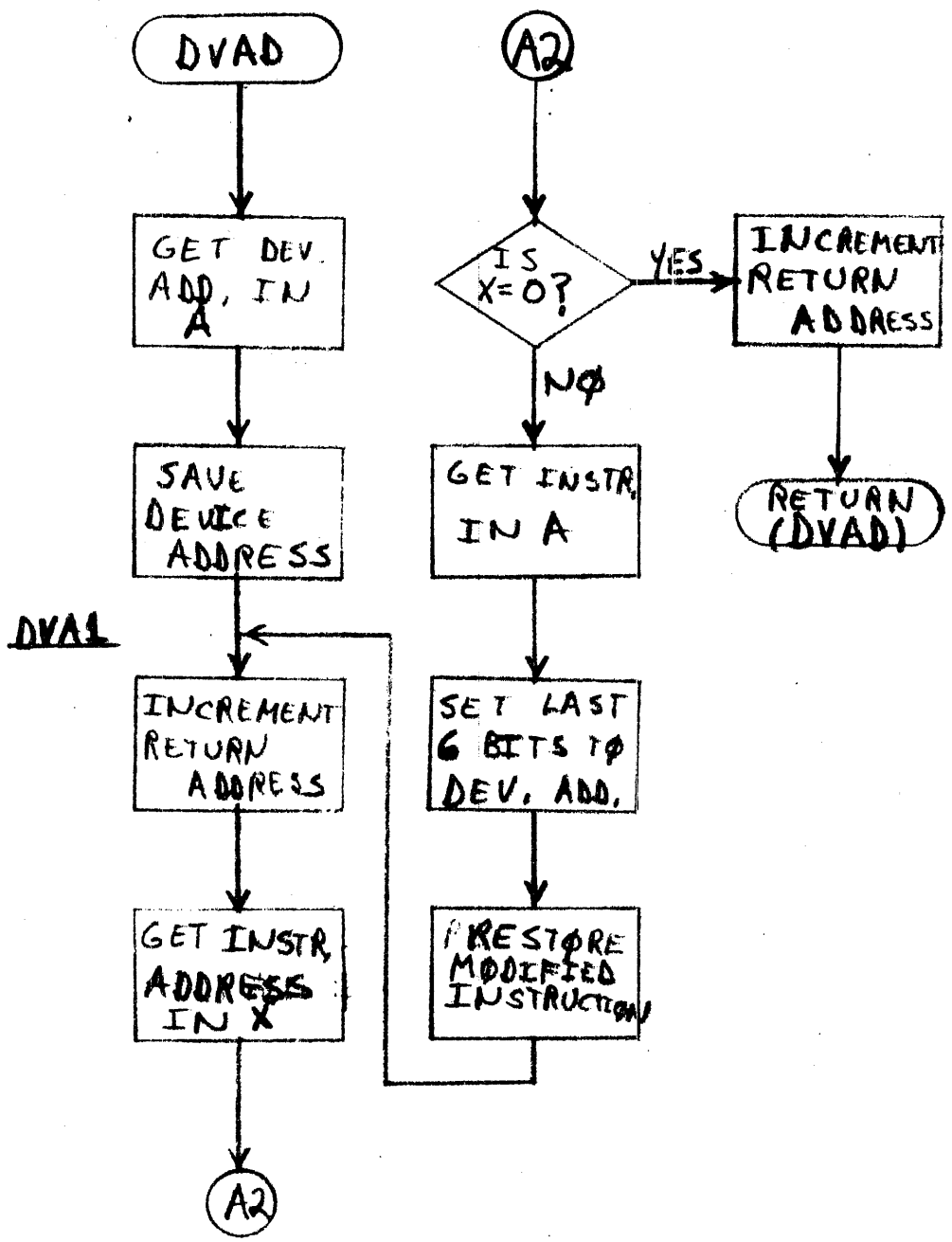
BIC-THROUGH INTERRUPT ENTRY







DEVICE ADDRESS SETTER



SECTION 4
TEST SPECIFICATIONS

4.1 OBJECTIVES

The purpose of this section is to describe to what extent the program has been validated in terms of variations in applicable hardware, configurations and other external input parameters. Using the teletype mode of operation, actual hardcopy of each test variance is presented. This will provide an aid in evaluating future claimed discrepancies observed in the program.

4.2 CONFIGURATIONS

This program has been exercised on the following hardware configurations:

- 1) 622/i - 16K memory
- 2) 620/f - 32K memory

4.3 DETAILED DESCRIPTIONS

4.3.1 The following hard copy printout is provided to validate the responses received for each respective input.



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THIS IS THE 620 TEST EXECUTIVE
MEMORY SIZE IS 16K

L.

620 PAPER TAPE AND BIC TEST

PT PUNCH DA = 37.
PT READER DA =37.
BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

N

INPUT TEST TYPE

P.

BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

Y

PIM DA =40.

TRAP LOCATION = 100.

INTERRUPT MASK =376.

INPUT TEST TYPE

P,

INPUT LOWER DATA LIMIT, UPPER DATA LIMIT, AND DATA BLOCK SIZE
0,20,34.

CYCLES =3.

BIC TEST REQUESTED?

N

BIC USED?

Y

BIC DA =22.

INPUT TEST TYPE

P.

BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

N

INPUT TEST TYPE

R.

TIME DELAY =400000.

000000 ERROR(S)



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REV

BIC TEST REQUESTED?
 N
 BIC USED?
 N
 PIM USED?
 Y
 INPUT TEST TYPE
 R.
 TIME DELAY =100000.
 000000 ERROR(S)

BIC TEST REQUESTED?
 N
 BIC USED?
 N
 PIM USED?
 N
 INPUT TEST TYPE
 N INVALID
 INPUT TEST TYPE
 H.
 000000 ERROR(S)

BIC TEST REQUESTED?
 N
 BIC USED?
 N
 PIM USED?
 Y
 INPUT TEST TYPE
 H.
 000000 ERROR(S)

BIC TEST REQUESTED?
 N
 BIC USED?
 Y
 INPUT TEST TYPE
 H.
 000000 ERROR(S)

BIC TEST REQUESTED?
 N
 BIC USED?
 N
 PIM USED?
 N
 INPUT TEST TYPE
 R.

TIME DELAY =0.
 000124 ERROR(S)

EXPECTED	ACTUAL
000000	000001
000001	000002
000002	000003
000003	000004
000004	000005
000005	000006
000006	000007
000007	000010
000010	000011
000011	000012



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BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

Y

INPUT TEST TYPE

H.

000123 ERROR(S)

EXPECTED	ACTUAL
000001	000000
000002	000001
000003	000002
000004	000003
000005	000004
000006	000005
000007	000006
000010	000007
000011	000010
000012	000011

BIC TEST REQUESTED?

N

BIC USED?

Y

INPUT TEST TYPE

H.

620 PAPER TAPE AND BIC TEST

PT PUNCH DA = 37.

PT READER DA =37.

BIC TEST REQUESTED?

N

BIC USED?

Y

BIC DA =

PT PUNCH DA = 37.

PT READER DA =37.

BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

Y

PIM DA =40.

TRAP LOCATION = 100.

INTERRUPT MASK =376.

INPUT TEST TYPE

R.

TIME DELAY =0.

000123 ERROR(S)

EXPECTED	ACTUAL
000001	000000
000002	000001
000003	000002
000004	000003
000005	000004
000006	000005
000007	000006
000010	000007
000011	000010
000012	000011



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BIC TEST REQUESTED?

Y

PIM USED?

N

CYCLES =1.

000005 ERROR(S)

SECTION	EXPECTED	ACTUAL
1	000220	000221
2	000102	000103
3	000000	000001
5	000000	000001
7	000220	000221

BIC TEST REQUESTED?

Y

PIM USED?

N

CYCLES =1.

000006 ERROR(S)

SECTION	EXPECTED	ACTUAL
1	000220	000221
2	000102	000103
3	000000	000001
5	000000	000001
7	000220	000221
7	000222	000223

BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

N

INPUT TEST TYPE

P,

INPUT LOWER DATA LIMIT, UPPER DATA LIMIT, AND DATA BLOCK SIZE
377,377,1.

CYCLES =1.

BIC TEST REQUESTED?

N

BIC USED?

N

PIM USED?

N

INPUT TEST TYPE

P,

INPUT LOWER DATA LIMIT, UPPER DATA LIMIT, AND DATA BLOCK SIZE
220,377,160.

CYCLES =1.

BIC TEST REQUESTED?



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