

X-542-64-248

TM X-55096

N64-33622

FACILITY FORM 602

(ACCESSION NUMBER)

110

(PAGES)

(THRU)

1

(CODE)

20

(CATEGORY)

NASA TM X 55096

(NASA CR OR TMX OR AD NUMBER)

CAMEO

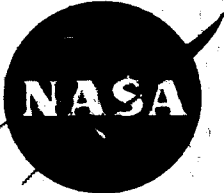
COMPUTER-INDEPENDENT ABSTRACT
MACHINE-LANGUAGE ENCODER AND OPERATING-SYSTEM

UNIVAC 1107 USAGE

OTS PRICE

XEROX \$ 4.00
MICROFILM \$ 1.25

AUGUST 31, 1964



GODDARD SPACE FLIGHT CENTER

GREENBELT, MD.

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CAMEO

Computer-independent Abstract
Machine-language Encoder and Operating-system

Univac 1107 Usage

S. A. Richmond

J. L. Maury

P. H. McClain

INTRODUCTION

The Cameo System as available on the Univac 1107 Thin-film Computer will be described in this report. Neither the philosophy of the system nor its basic structure have been changed. It is still an encoder for the Mystic abstract machine with the only difference occurring in the machine language generation for the underlying computer. A complete listing of the Sleuth II program which does the encoding and a flow diagram of that program are attached to provide answers to any questions that may arise about error recovery, I/O operations and floating point adjustments. It is not necessary to be familiar with the Univac 1107 to use this system, but the listing and diagram are provided for those who are interested in the details of the encoding system.

This paper will be confined to the documentation of information necessary for the compiling and operation of Cameo programs on the Univac 1107.

COMPILER INFORMATION

Notation

- Cameo Tape—Encoder tape
- Mystic Program—Input program
- Machine Language Program—Resulting program
- Error Halts—Programmed Cameo stops resulting from erroneous codes, etc.
- Bootstrap—Self loading program initiated by Bootstrap button on console.
- Jump Switch—One of 15 switches on console which may control programmed transfers.

| <u>Tape Set-up</u> | <u>Channel</u> | <u>Unit</u> |
|--------------------------------------|----------------|-------------|
| Cameo Tape | 2 | 0 |
| Mystic Program | 2 | 1 |
| Blank (for machine language program) | 2 | 2 |

| | <u>Channel</u> | <u>Unit</u> |
|--------------------|----------------|-------------|
| <u>Card Set-up</u> | 12 | 0 |
| | (Card Reader) | |

Console Set-up

| <u>Jump Switch</u> | <u>Disposition</u> | <u>Interpretation</u> |
|--------------------|--------------------|--|
| 15 | off | Mystic Program on tape. |
| 15 | on | Mystic Program on cards. |
| 14 | off | Encode and execute Mystic program. |
| 14 | on | Encode Mystic program and write machine language on Uniservo 2-2. |
| 13 | off | Leave 2-1 in position after reading. |
| 13 | on | Rewind 2-1 after reading. |
| 12 | off | Halt if coding error detected. Type out error on console. |
| 12 | on | Type out error on console. Continue encoding. |
| 11 | off | Clear core memory before encoding begins. |
| 11 | on | Do not clear core memory before encoding. |
| 10 | off | Execute the generated machine language program immediately after encoding. |
| 10 | on | Halt for type in after encoding is complete. |

Console Disposition

Clear Computer
 Master Clear
 Clear I/O channels 2 thru 15
 Bootstrap from 2-0

Halts for Jump Switch 12 (Detailed explanation follows)

1. Servo Error
2. Address Too Large
3. Illegal Operation
4. Too Many Q's
5. Core Memory Exhausted
6. EOF on Mystic Tape
7. Interlock CC

The error stops listed above are printed on the console typewriter at the time of the error. Each type out includes the line number of the Mystic command found to be erroneous.

1. Servo Error

Line xxxxxx₁₀

(a) Mystic tape is bad.

NOTE: This stop may also occur during execution of the compiled program, in which case it means the data tape being handled is bad.

(b) Uniservo trouble.

Switch units and try again. If no success, call C.E.

2. Address Too Large

Line xxxxxx₁₀

One of the addresses in the Mystic command being compiled is larger than the available core storage references. Usually occurs due to failure of programmer to use a Q command.

3. Illegal Command

Line xxxxxx₁₀

A command not in the CAMEO repertoire has been used.

4. Too Many Q's

Line xxxxxx₁₀

More than 125 entries have been made in one Q table.

5. Core Memory Exhausted

Line xxxxxx₁₀

The amount of machine language generated exceeds 32,000 instructions.

6. EOF on Mystic Tape

Line xxxxxx₁₀

The transfer card or dot card is missing from the end of the Mystic Program tape.

7. Interlock CC

An interlock has occurred on channel CC. If channel is a uniservo, the operator must correct the situation manually and the program should be started from the beginning. If the channel is the card reader, the operator should reset the card reader and type in = RES and the program will restart itself.

NOTE: This Stop is not contingent upon jump switch 12.

PROGRAM SET UP AND OPERATING INSTRUCTIONS

Program Set Up

| | |
|---|---------------|
| (a) Machine language program tape (for production run or check run on debugged program) | 2 - 0 |
| (b) Cameo tape | 2 - 0 |
| Mystic program tape (if any) | 2 - 1 |
| Mystic program deck (if any) | 12 - 0 |
| | (Card Reader) |

Data Set Up

| <u>Mystic Reference</u> | <u>1107 Channel and Unit</u> |
|-------------------------|------------------------------|
| TA | 3 - 0 |
| TB | 4 - 0 |
| TC | 3 - 1 |
| TD | 4 - 1 |
| TE | 3 - 2 |
| TF | 3 - 3 |
| TG | 3 - 4 |
| TH | 3 - 5 |
| TI | 2 - 4 |
| PA | Printer 13 - 0 |
| CA (Punch) | 4 - 3 |
| CA (Read) | Card Reader 12 - 0 |

Console Operation

Master clear

Computer clear

Clear I/O channels 2 thru 15

Set up to bootstrap from channel 2 unit 0

Push bootstrap button to begin operation

Use typewriter for any interrupts or transfers at halts. (See
Typewriter Operating Instructions)

TYPEWRITER OPERATING INSTRUCTIONS

The typewriter is available for program interrupt during execution and for obtaining dumps after normal stops or error halts.

Jump switch 10 is used to halt a program during execution if a message is to be sent. Failure to send a message after interrupting the program forces a timeout of IDLE, and the computer is forced onto a loop. The program may be resumed at any time by sending the RES message. Jump switch 10 must be off when this is done.

AVAILABLE TYPEWRITER MESSAGES

(1) = RES

Resume operation of program at instruction waiting to be executed when interrupt occurred.

(2) = EOFbCUU

Write an EOF on unit UU of Channel C.

(3) = TRAbxxxxxx₈

Each typed message must be followed by turning off jump switch 10 and hitting the return key. Otherwise the computer sits in a loop.

The TRA should be used to obtain Memory Dumps after a normal completion or an error halt.

AVAILABLE TYPEOUTS

(1) ENDxxxxxx PATHFINDER READS xxxxxx

Any stop, normal or error, causes the above typeout. This typed message should be returned, along with any other typeouts and the results of the run, to the programmer.

1107 - 7094 REFERENCES

For ease in transfer of run set-up from the 7094 to the 1107, the following references are provided:

(1) Tapes

| <u>Mystic Reference</u> | <u>7094</u> | <u>1107</u> |
|-------------------------|-------------|-------------|
| TA | B1 | 3 - 0 |
| TB | C1 | 4 - 0 |
| TC | B2 | 3 - 1 |
| TD | C2 | 4 - 1 |
| TE | B3 | 3 - 2 |

Mystic Reference

7094

1107

TF
TG
TH
TI

B4
B5
B6
A5

3 - 3
3 - 4
3 - 5
2 - 4

A1
A2
A3

2 - 0
2 - 1
2 - 2

(2) Switch Settings

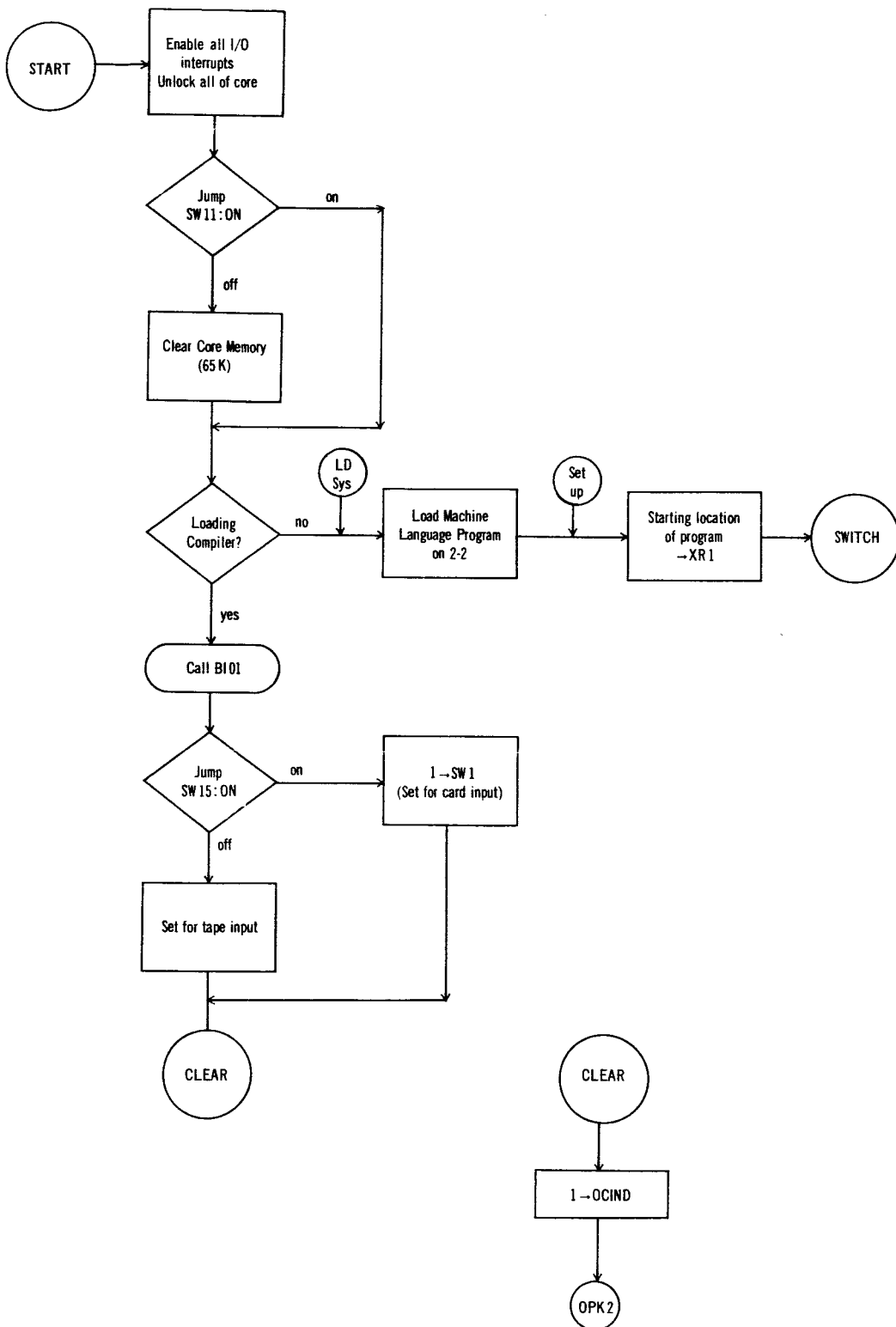
7094

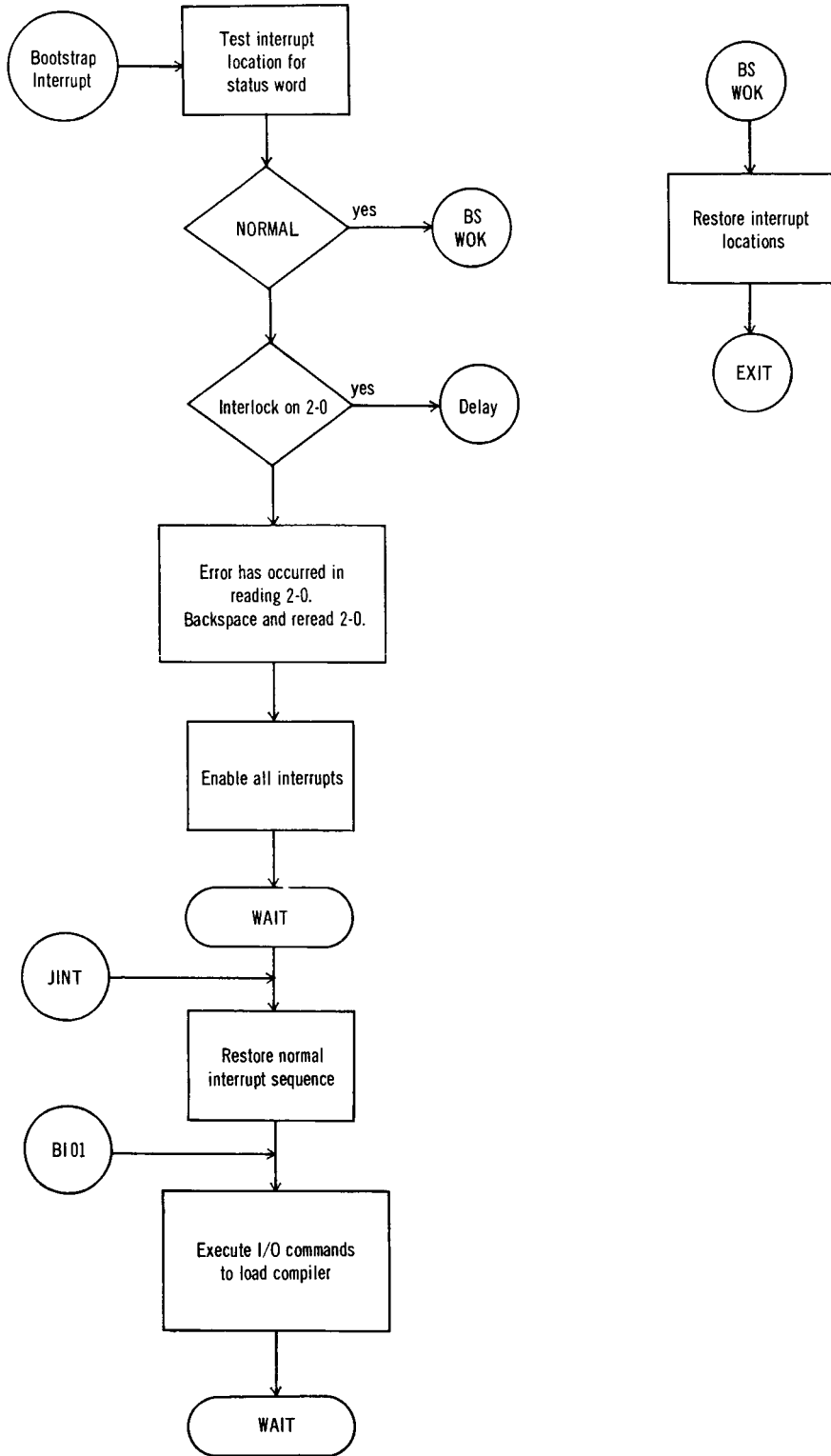
1107

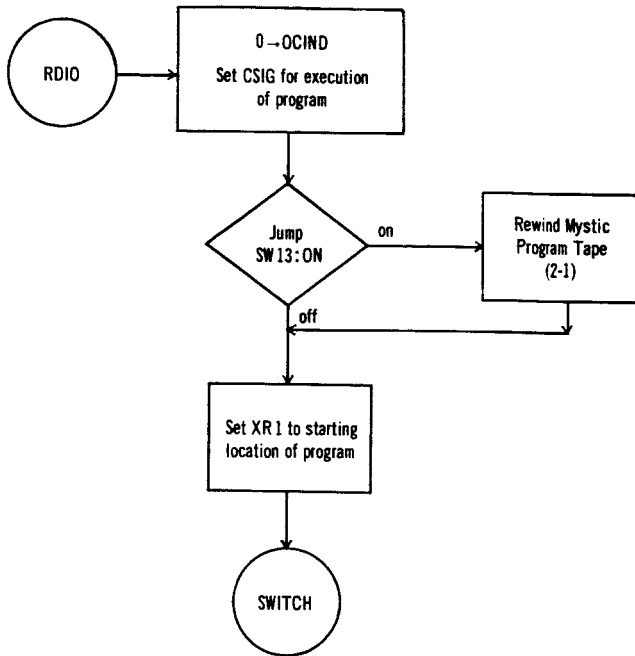
40
30
20
10
04

15
14
13
12
11

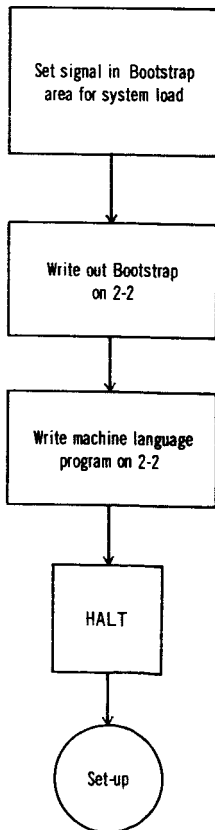
Appendix I
Flow Diagrams



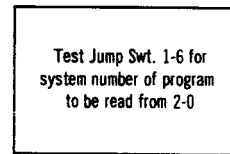




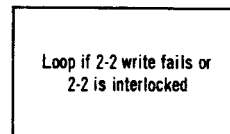
WRTA3

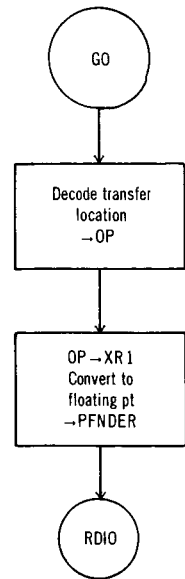
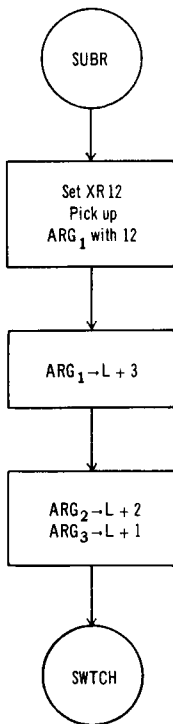
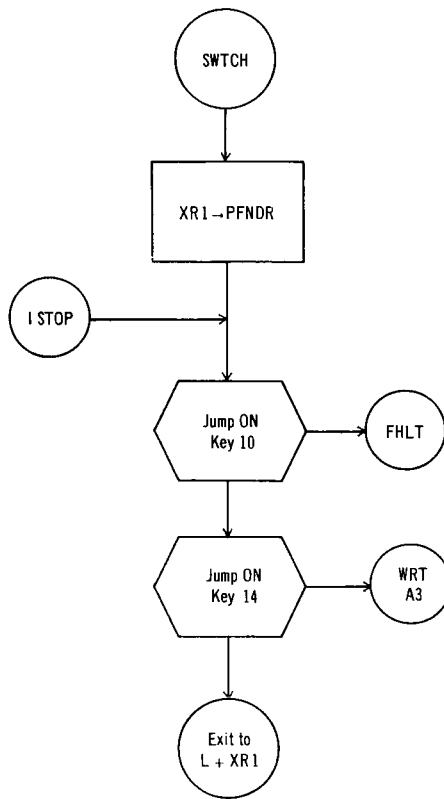


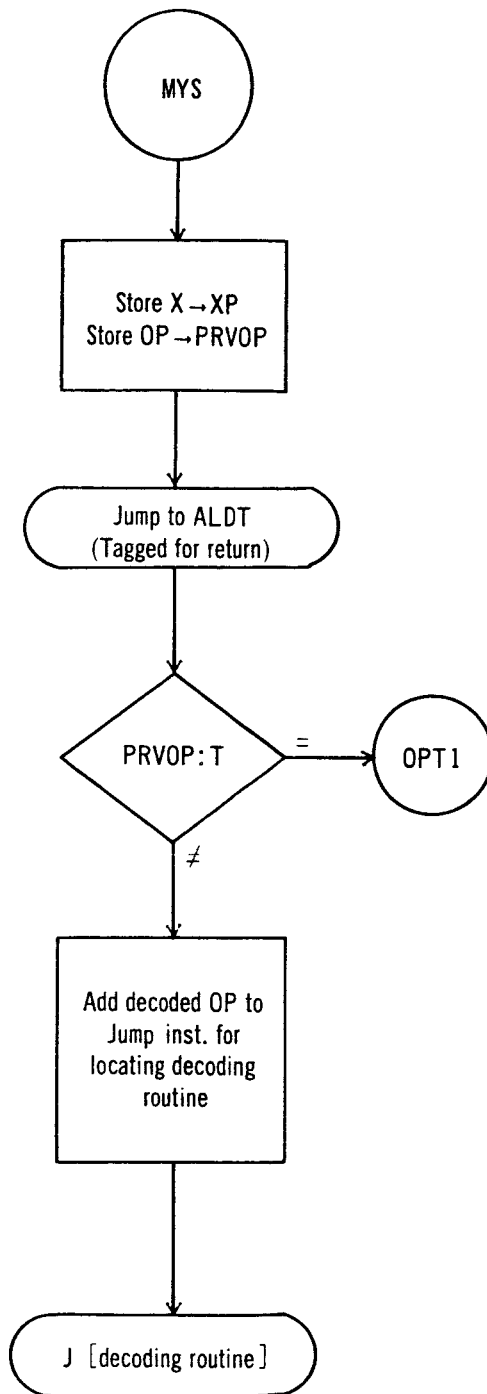
Sysno



Delay

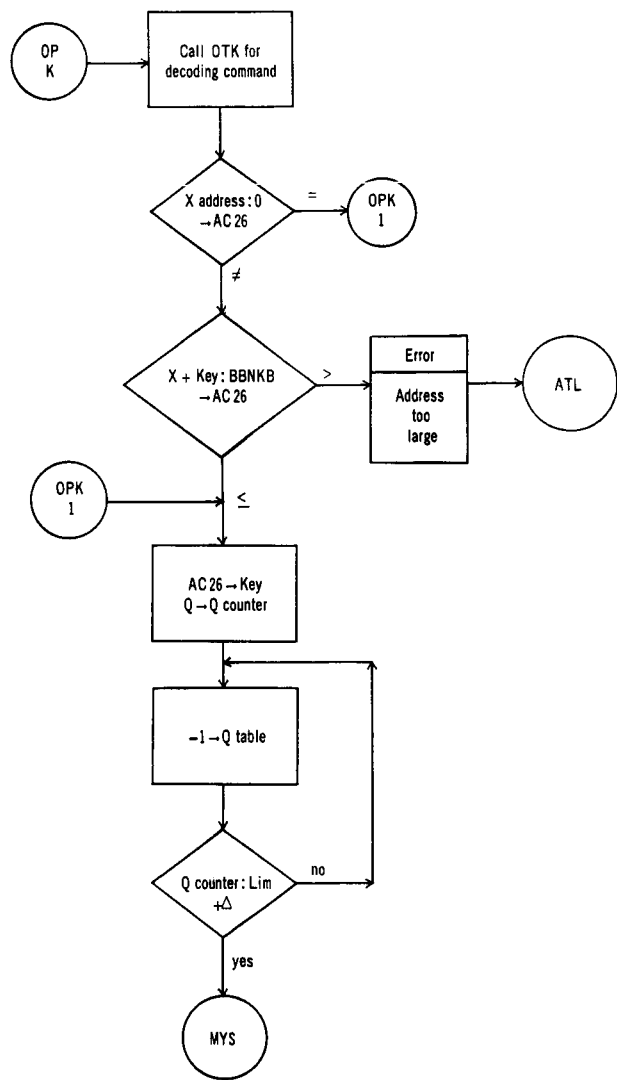
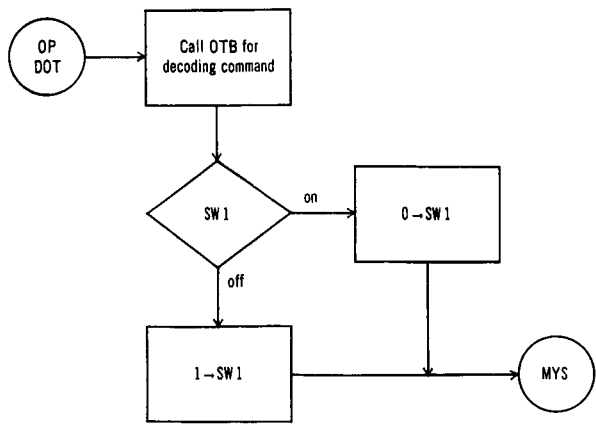




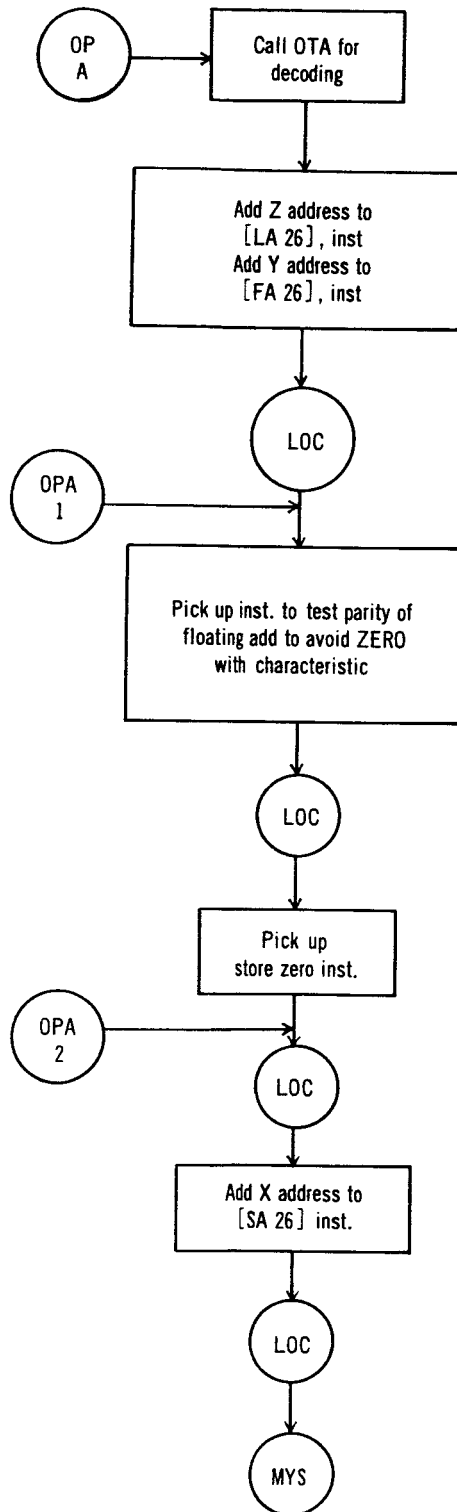


NOTE: There is one decoding routine for each Mystic OP.

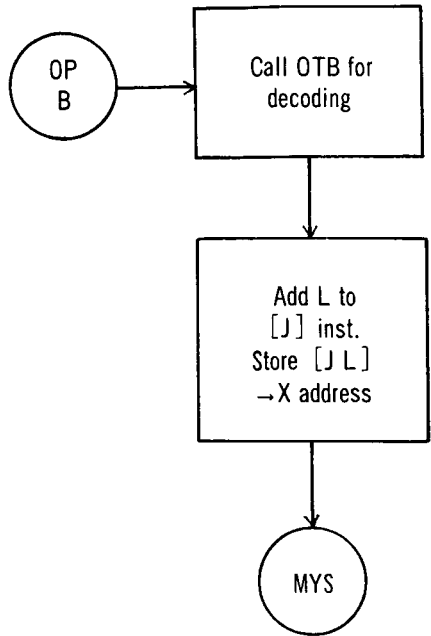
OPA, OPB, OPC, . . . , OPZ, OP3



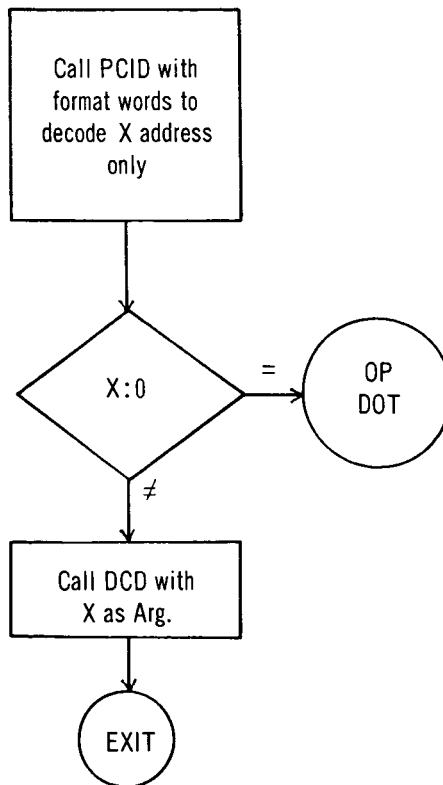
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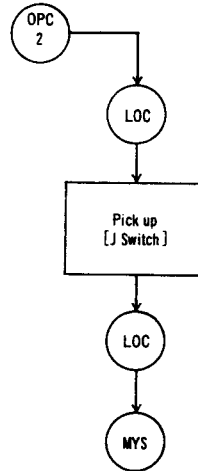
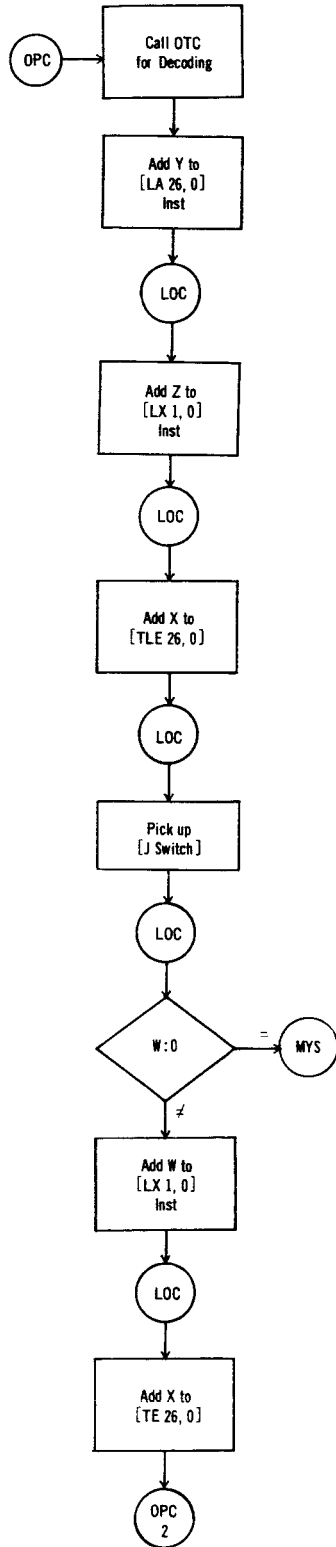
NOTE: Same flow for OPS with [FS 26] in place of [FA 26].



OTB

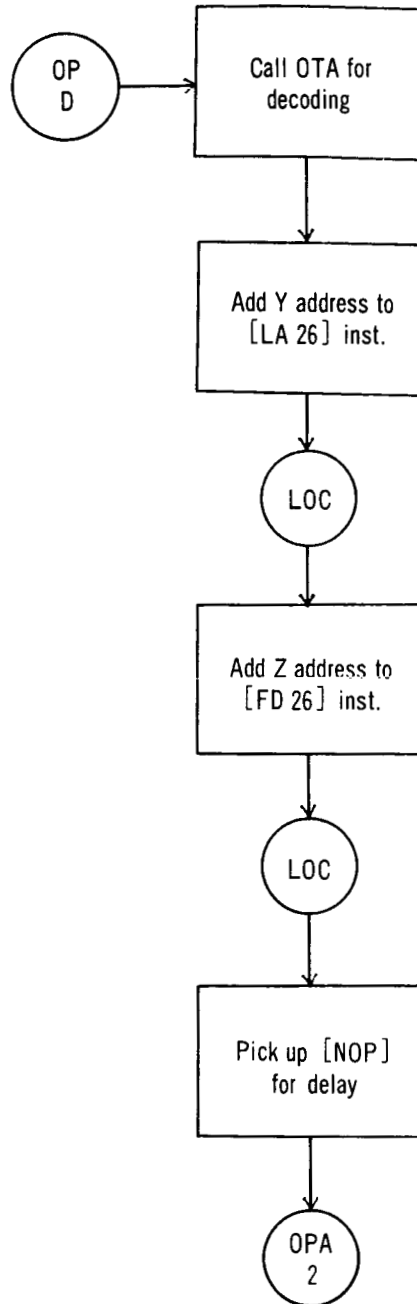


OP C



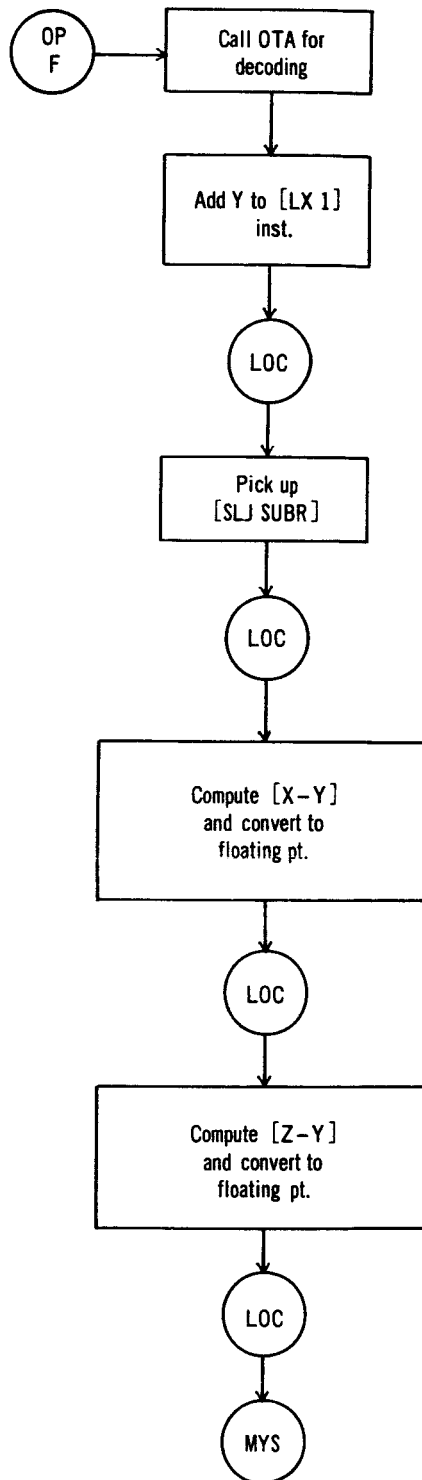
OP D

FD = Floating Divide

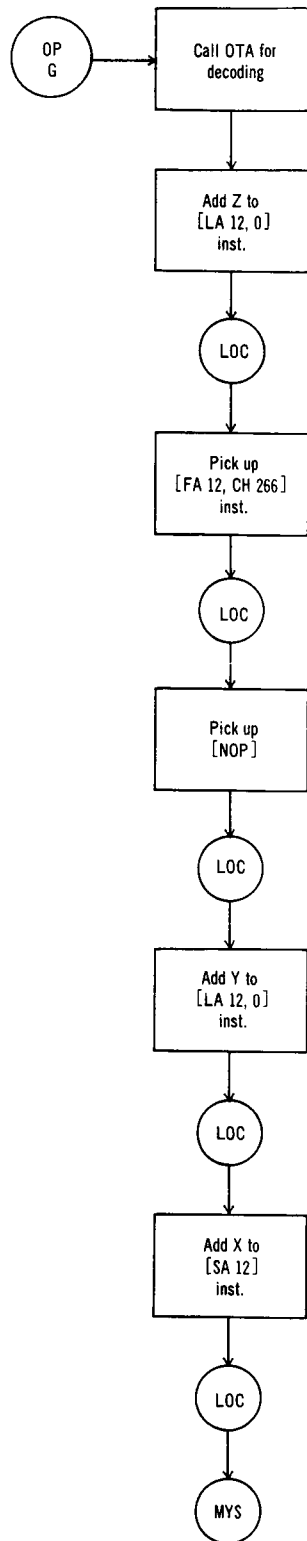


NOTE: Same flow for OPM with [FM 26] in place of [FD 26].

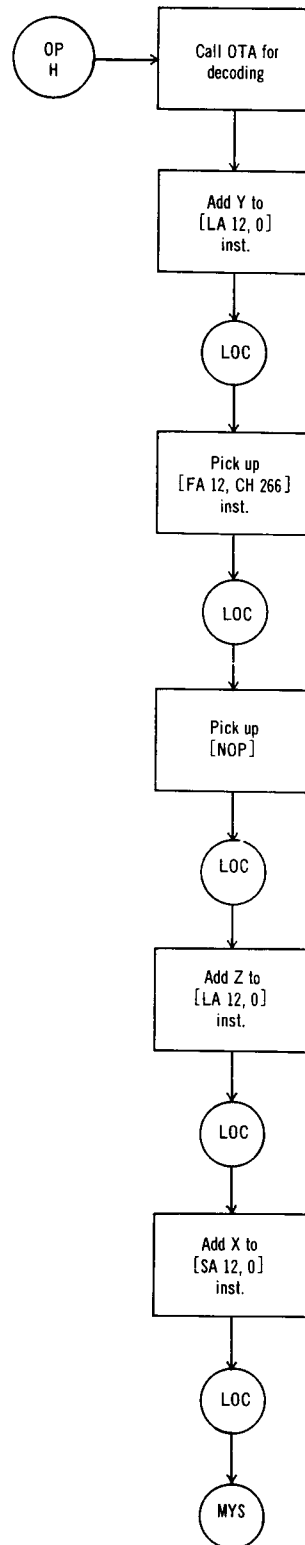
OP F

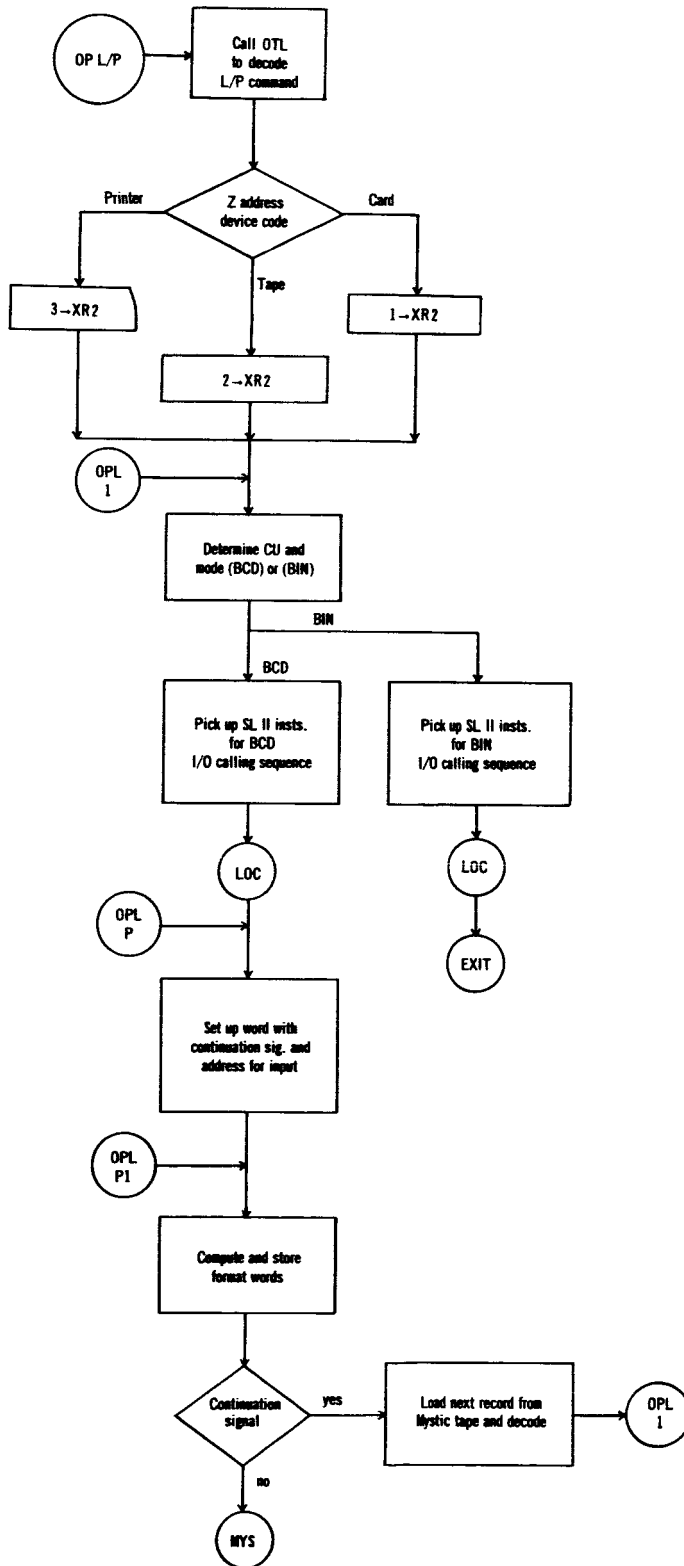


OP G

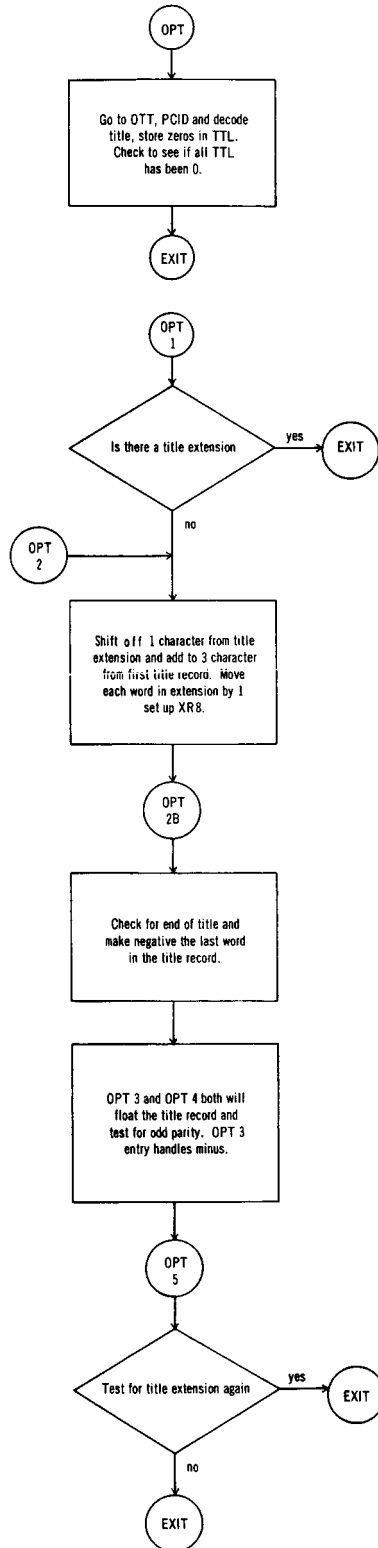


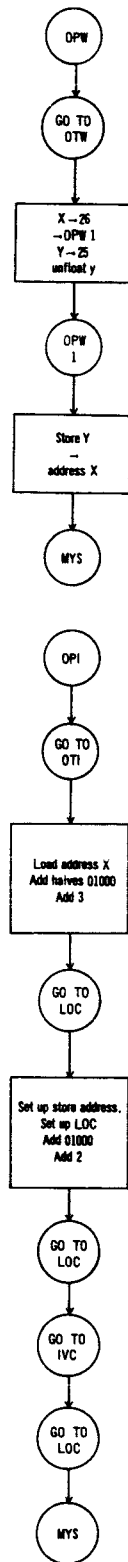
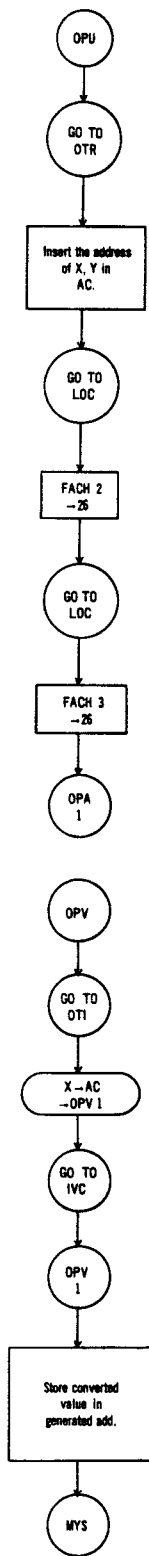
OP H





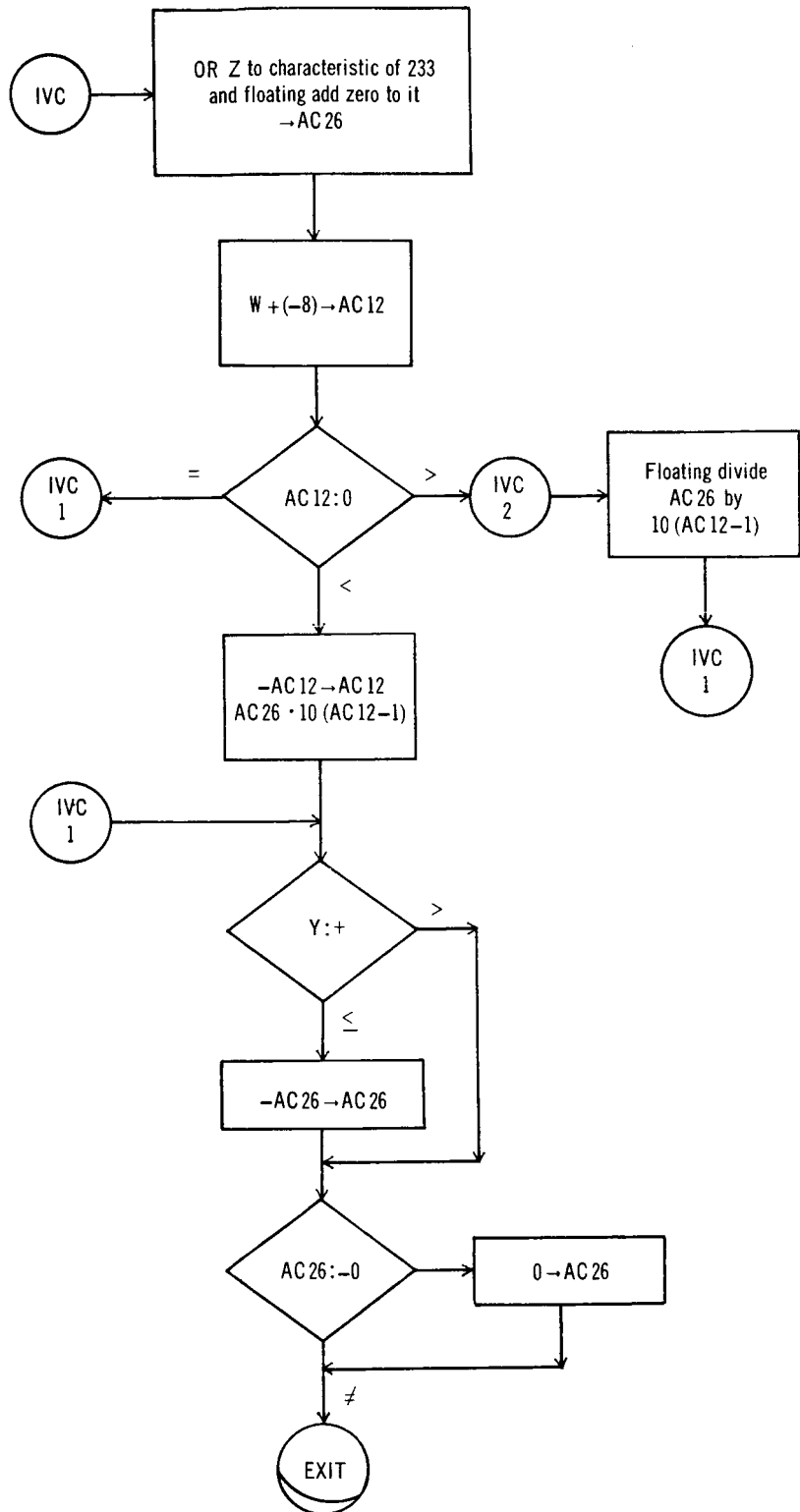
OPT

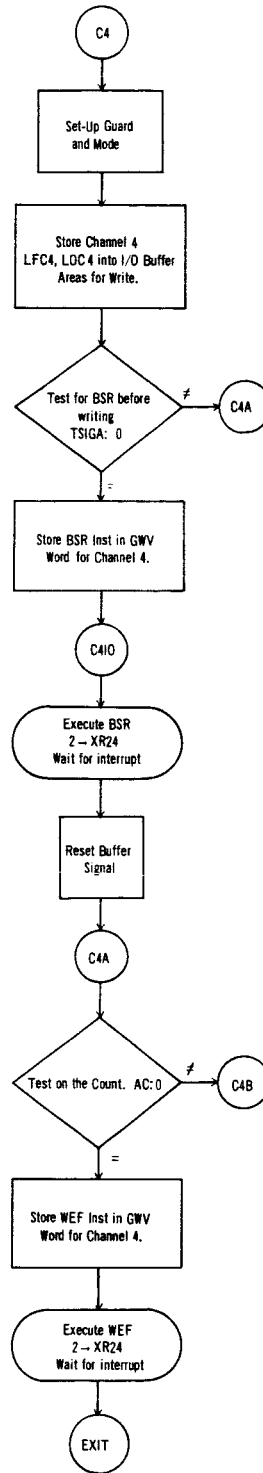
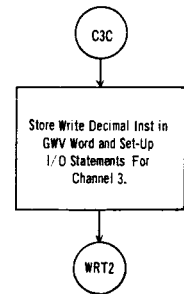
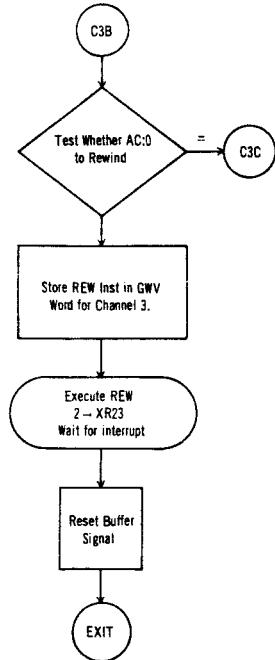
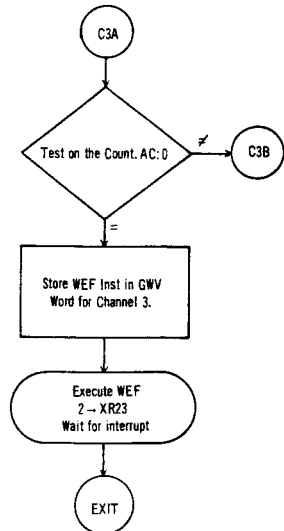


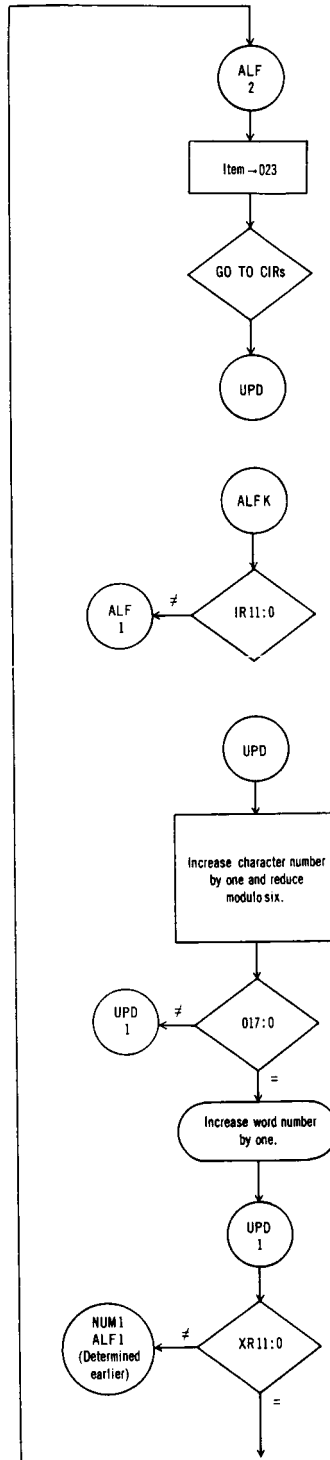
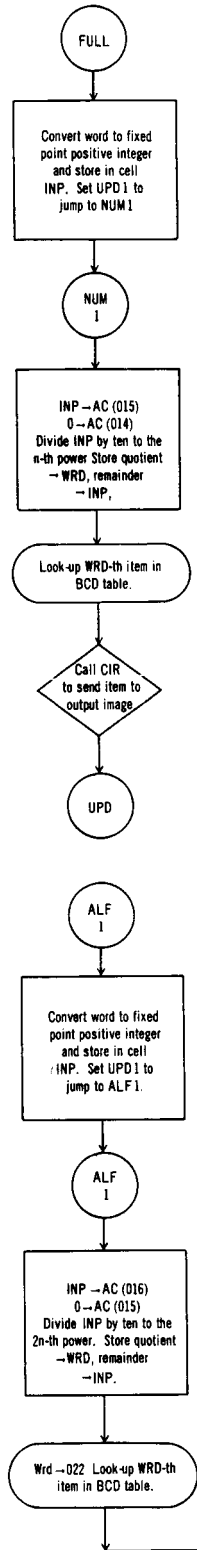


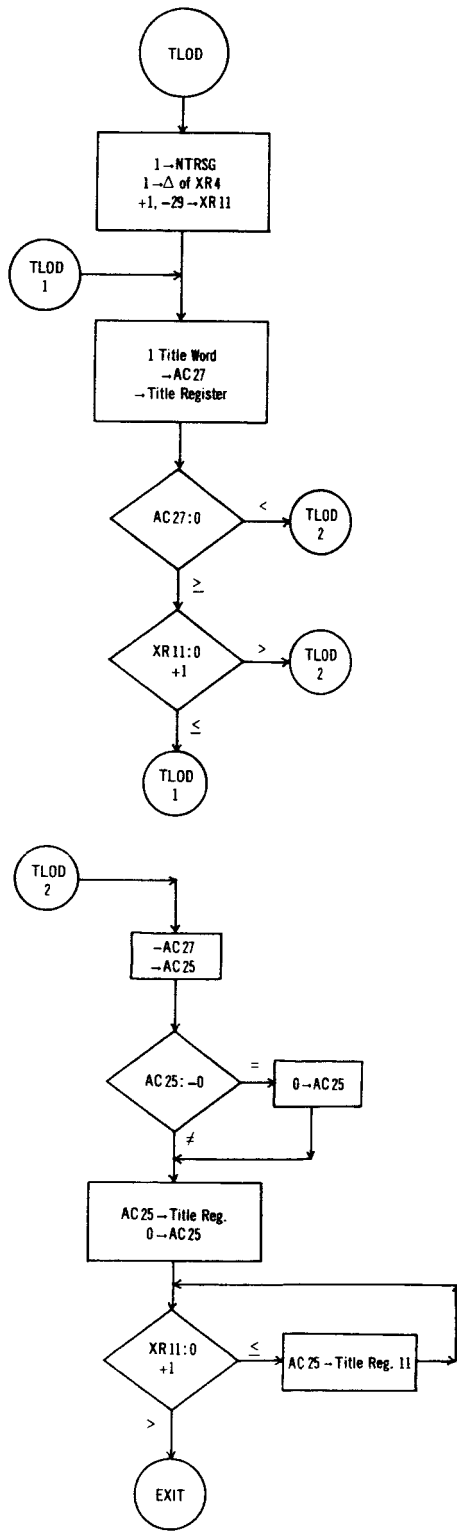
IVC

Initialize-Value
Floating point
Conversion routine

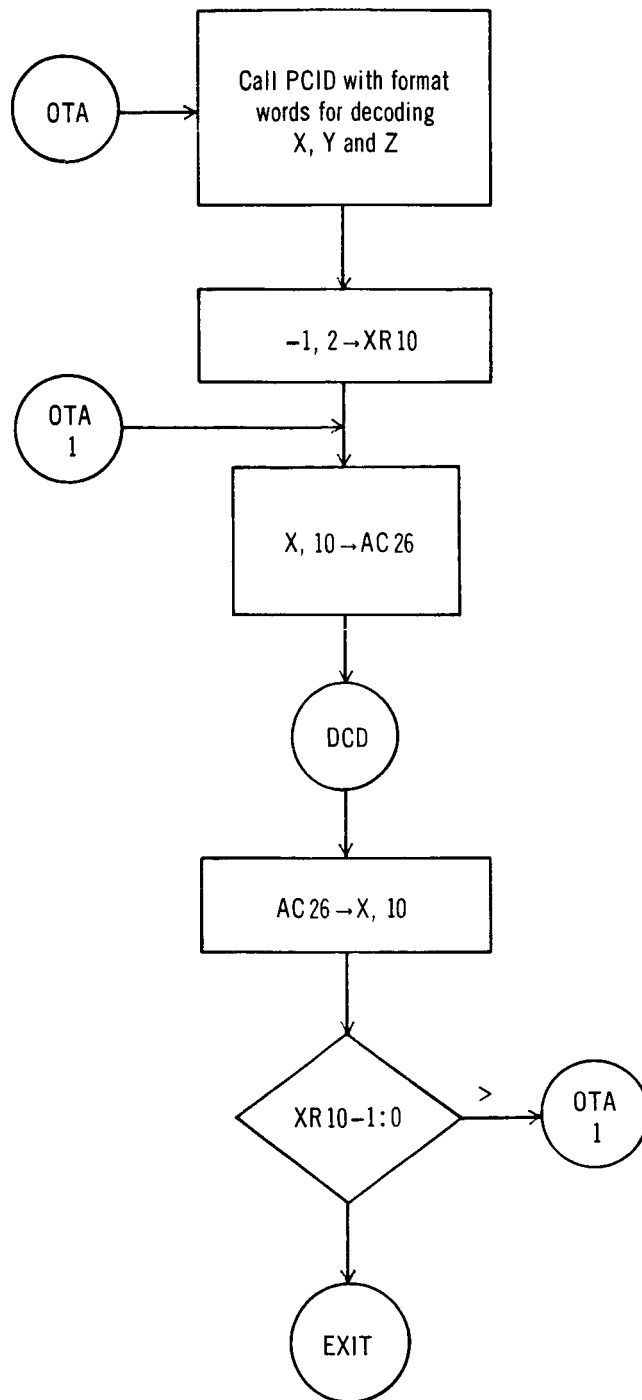




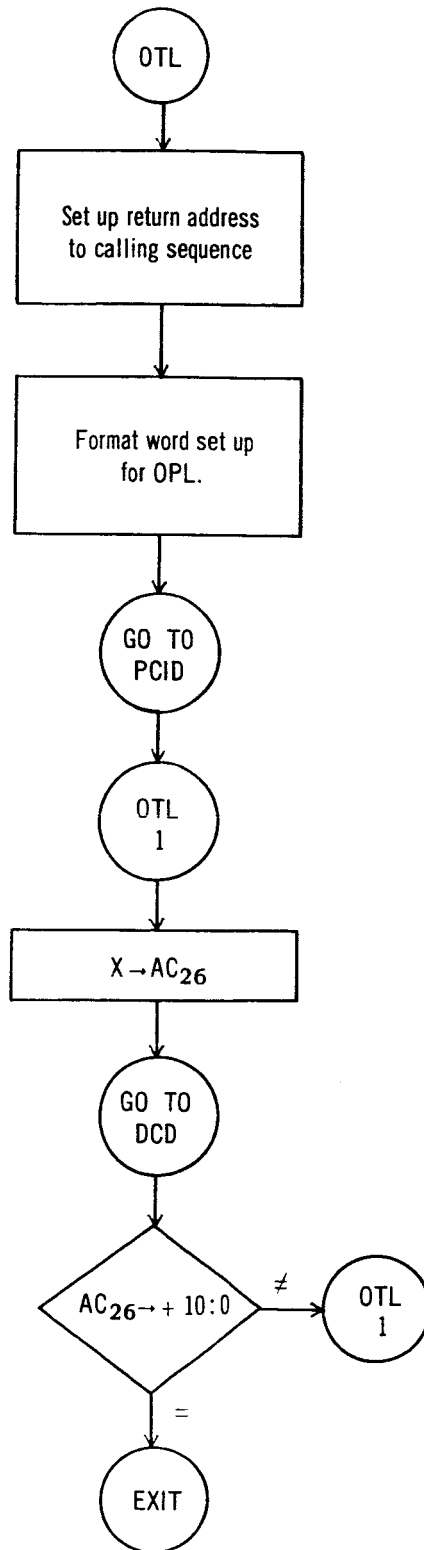




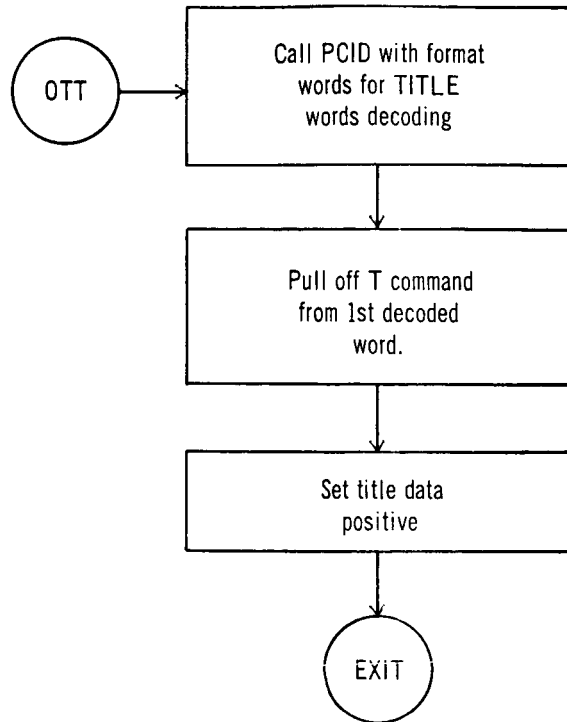
OTA



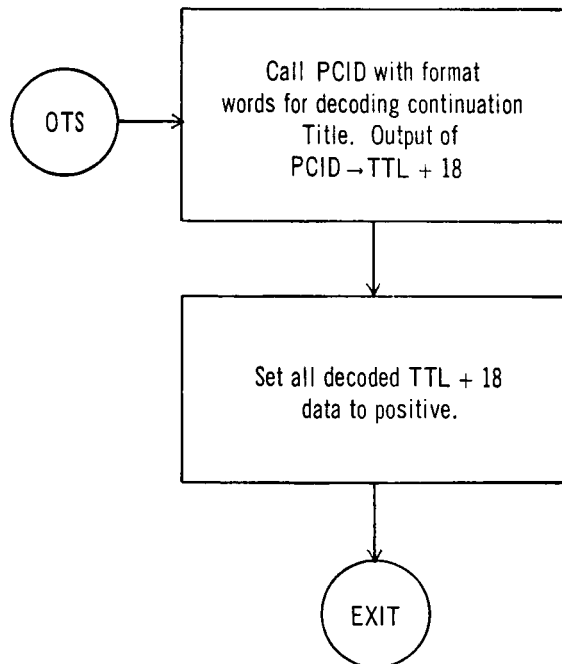
OTL

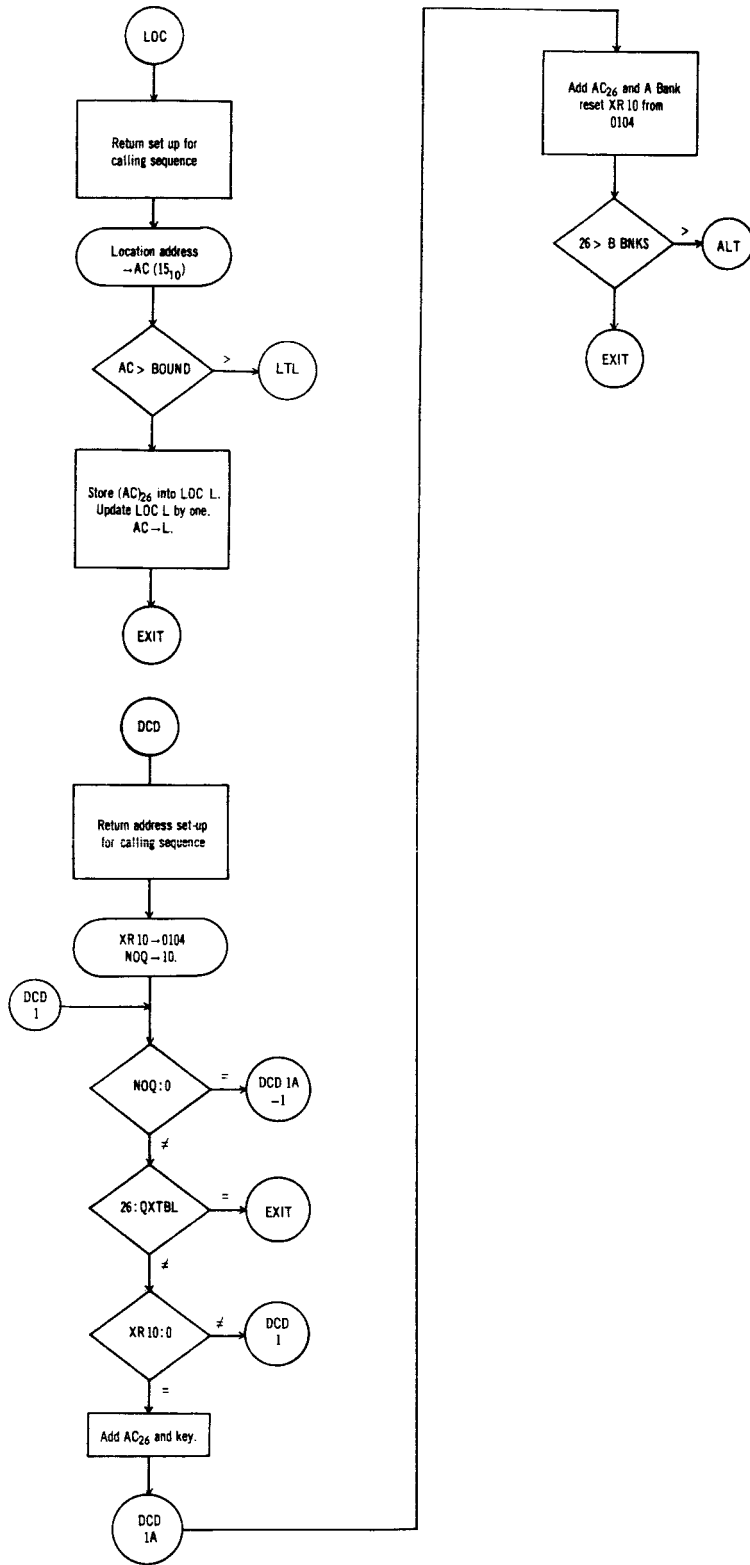


OTT

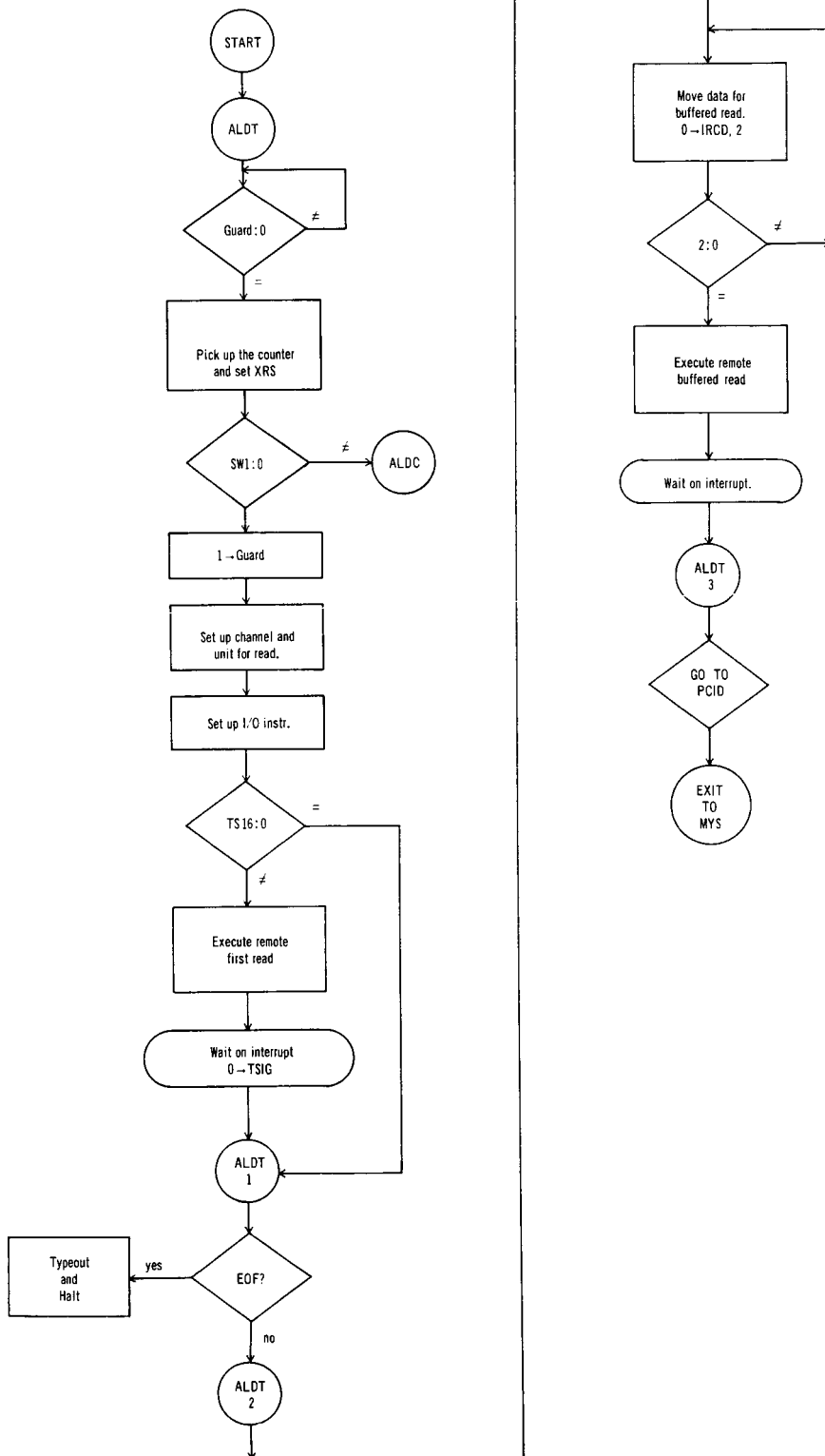


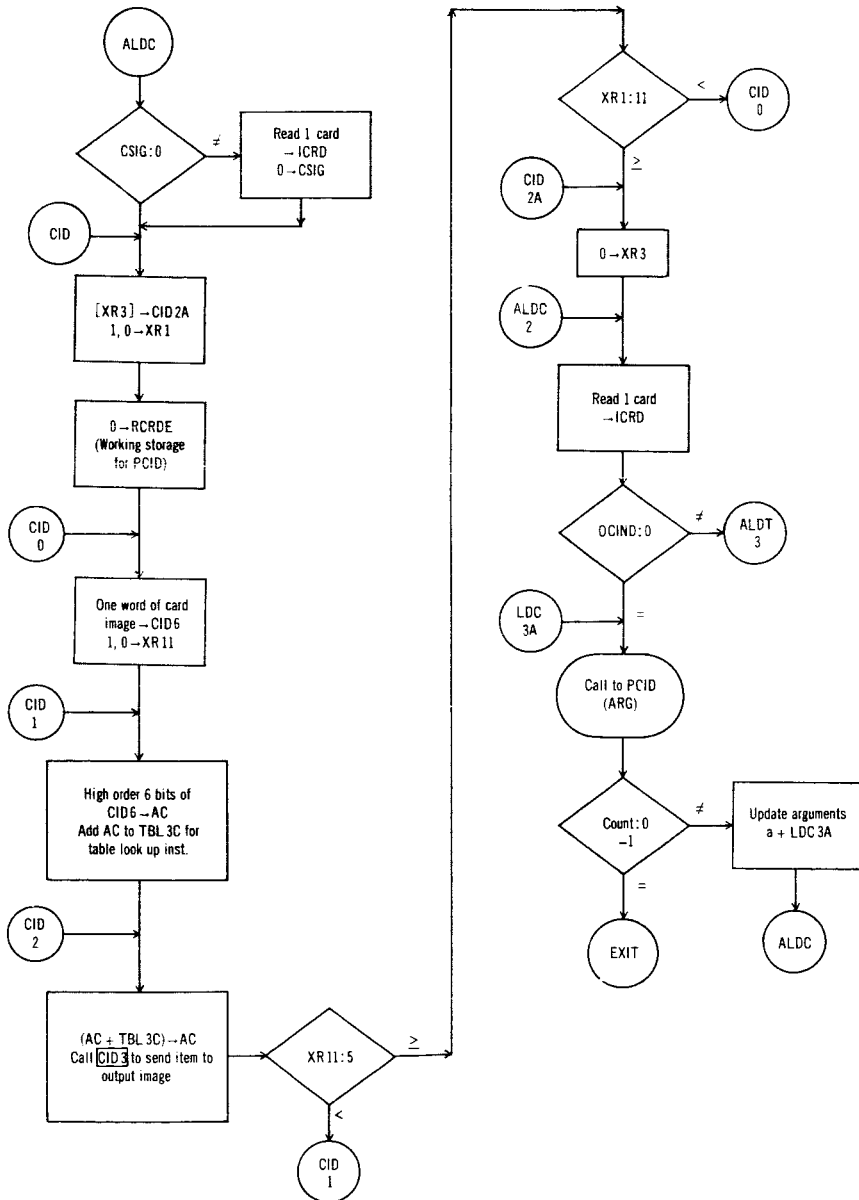
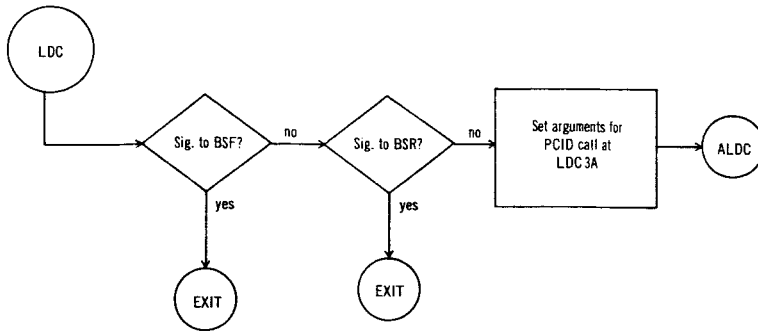
OT Amp

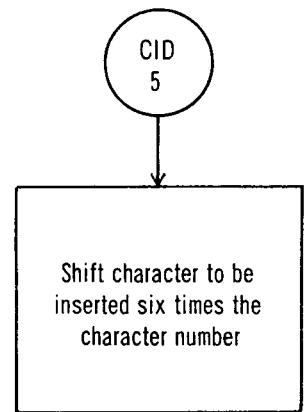
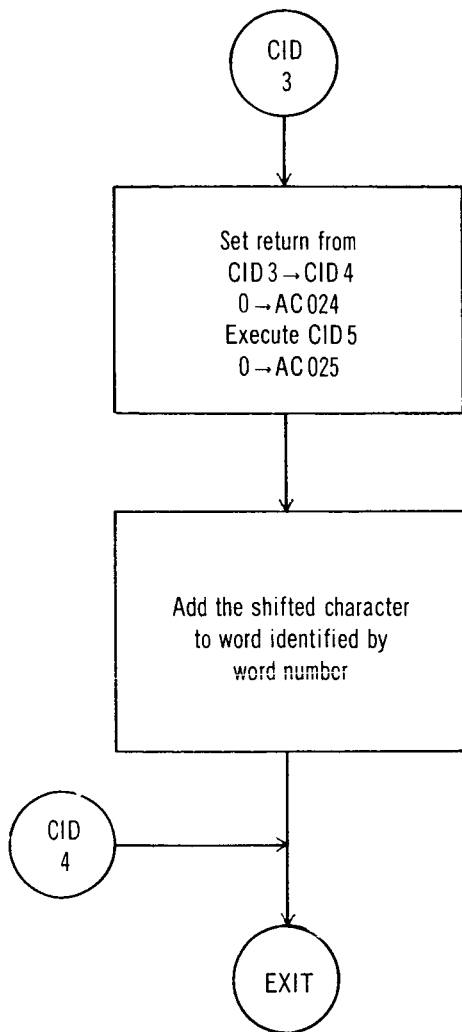




ALDT

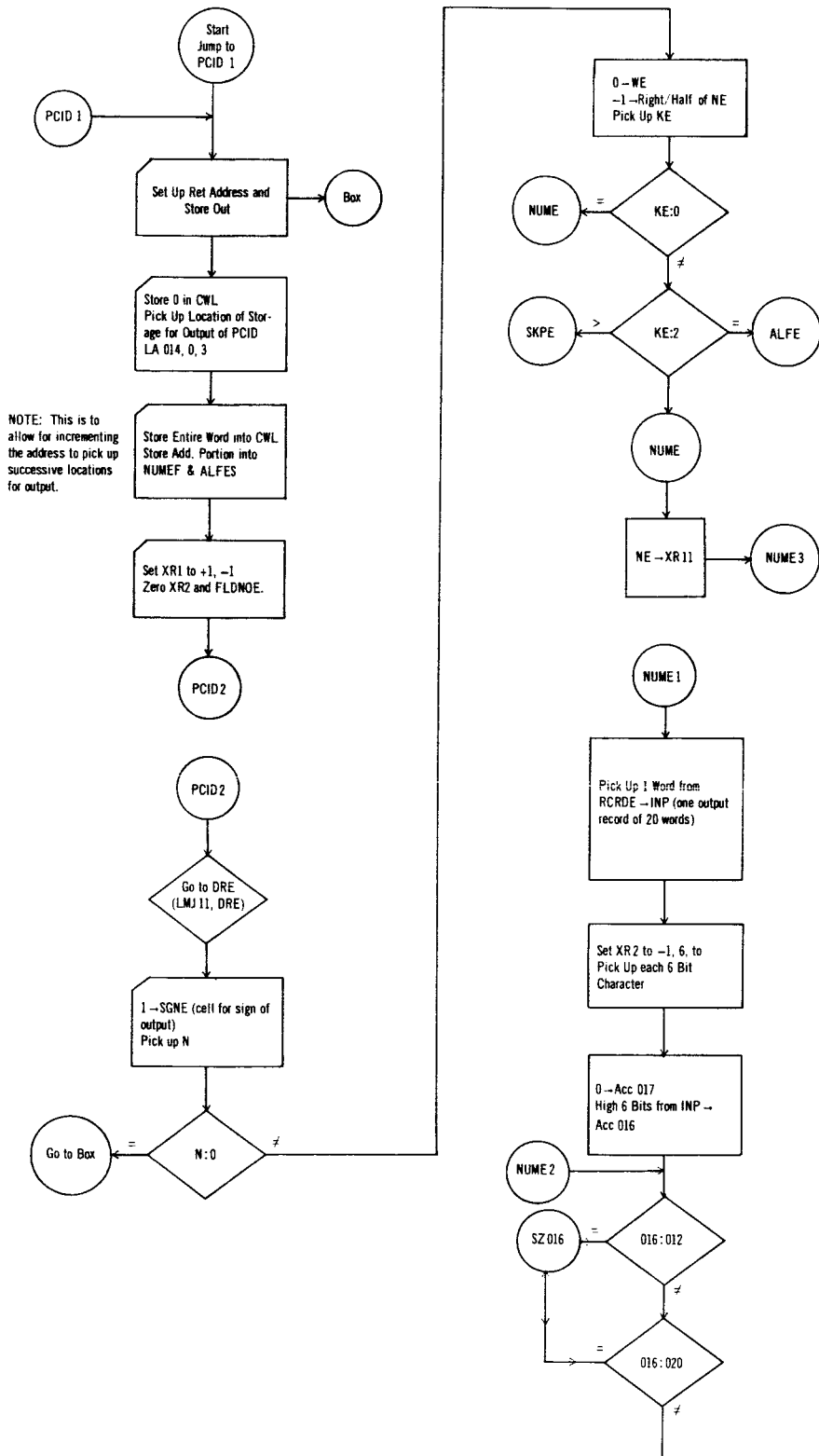


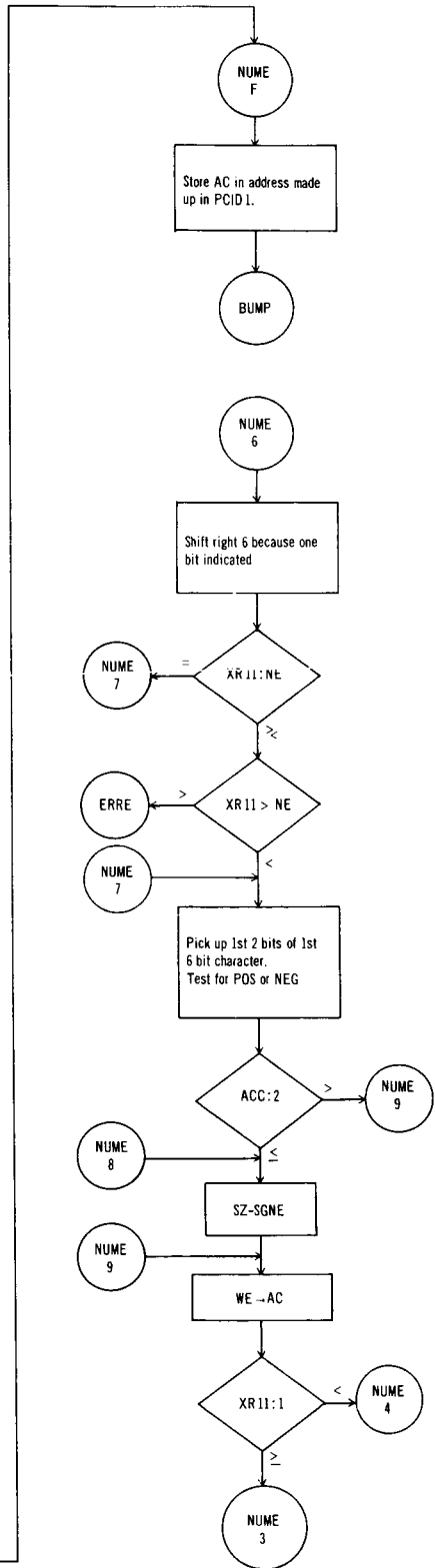
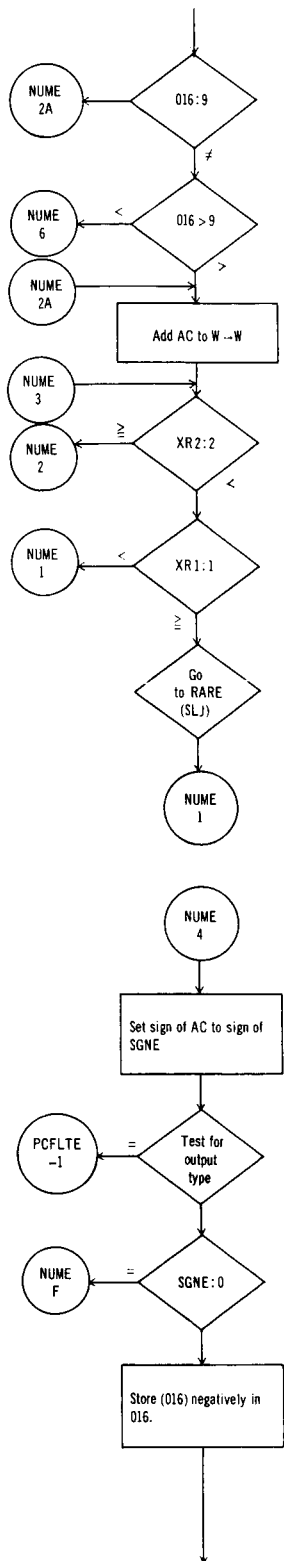


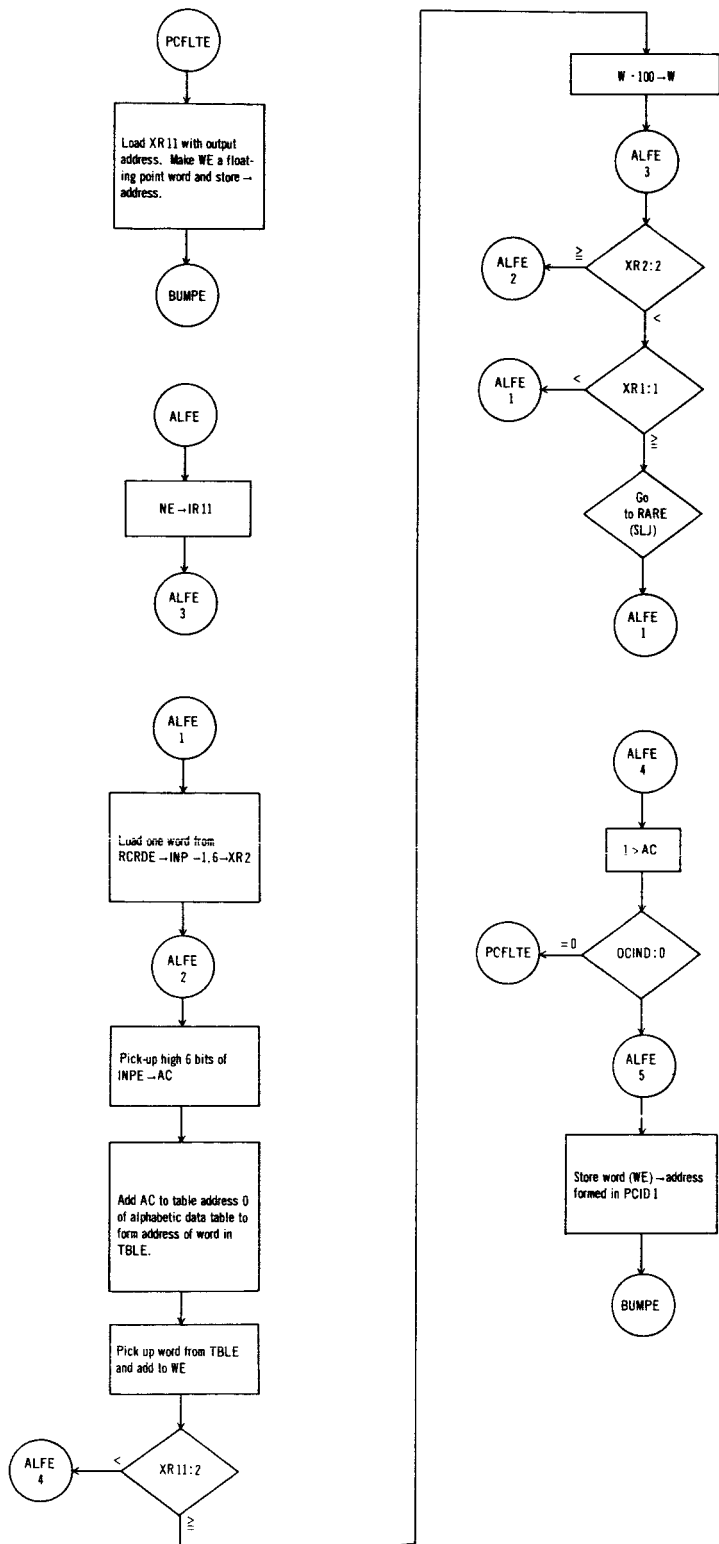


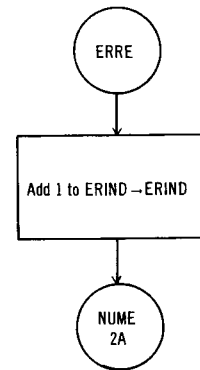
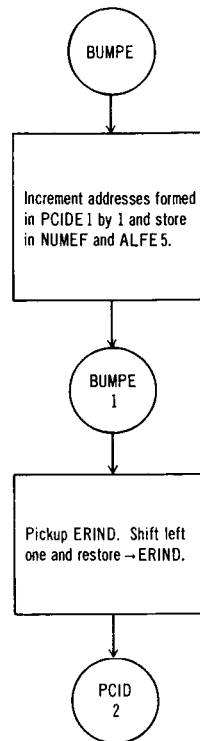
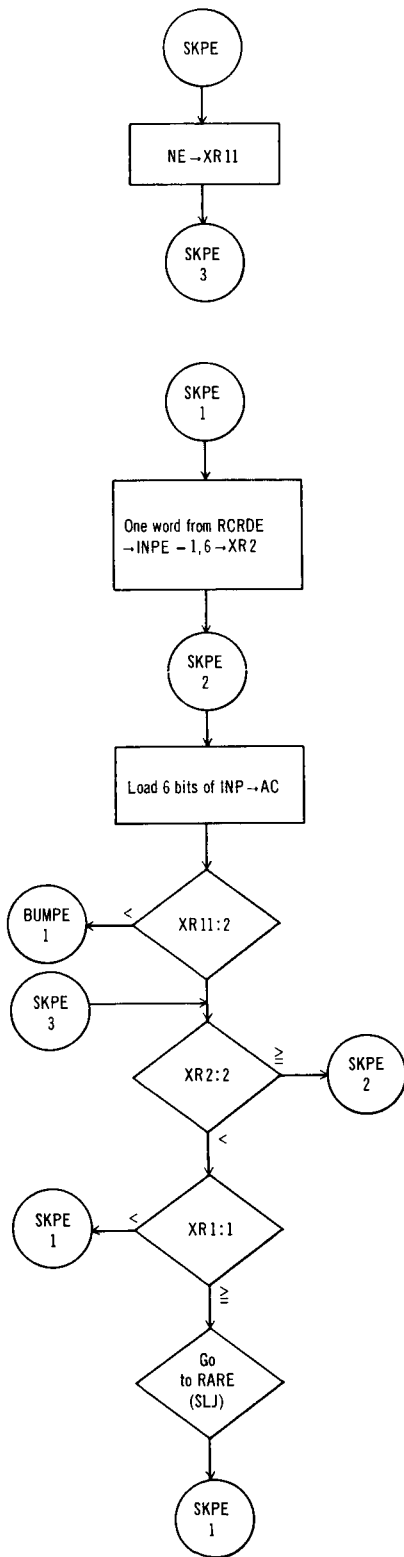
NOTE: OCIND = 1, during compilation
= 0, during execution

PCID - PERIPHERAL CARD IMAGE DECODER.









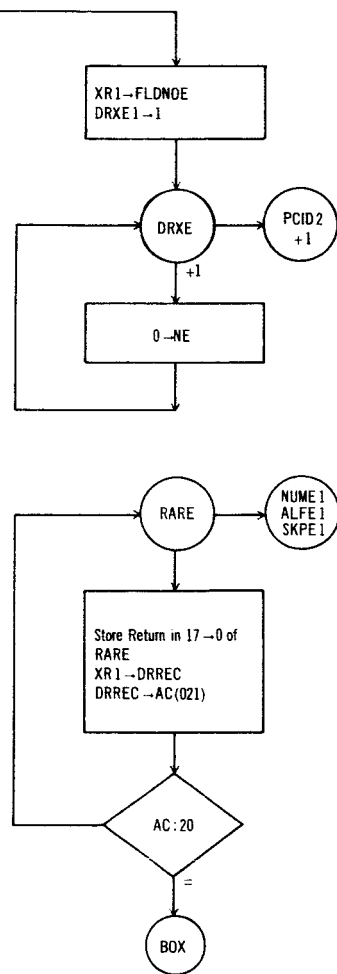
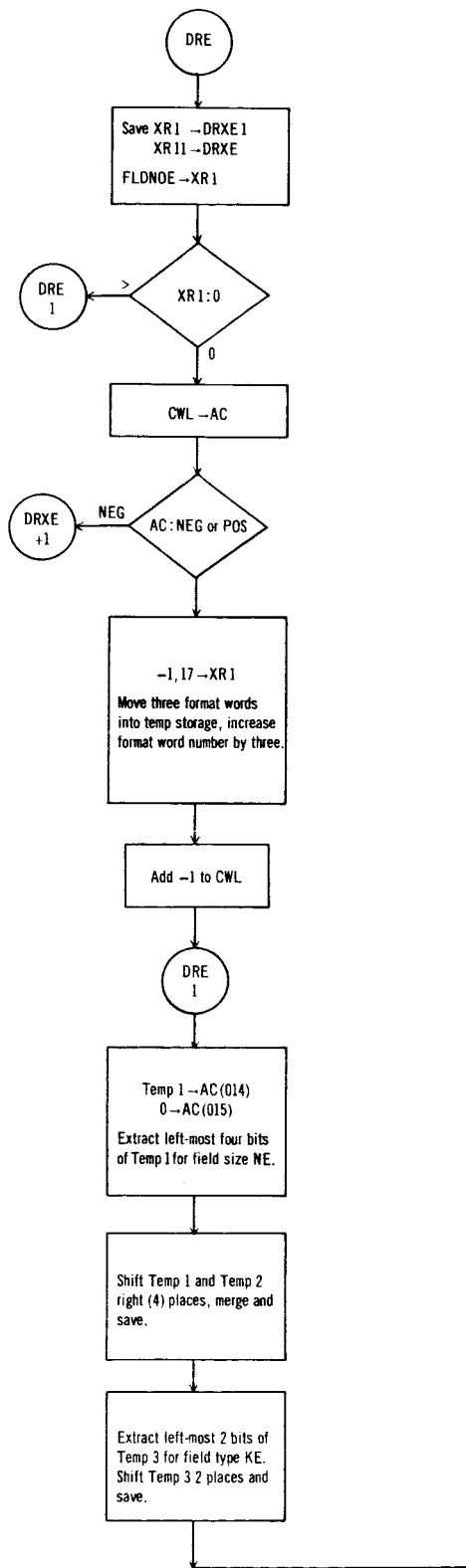


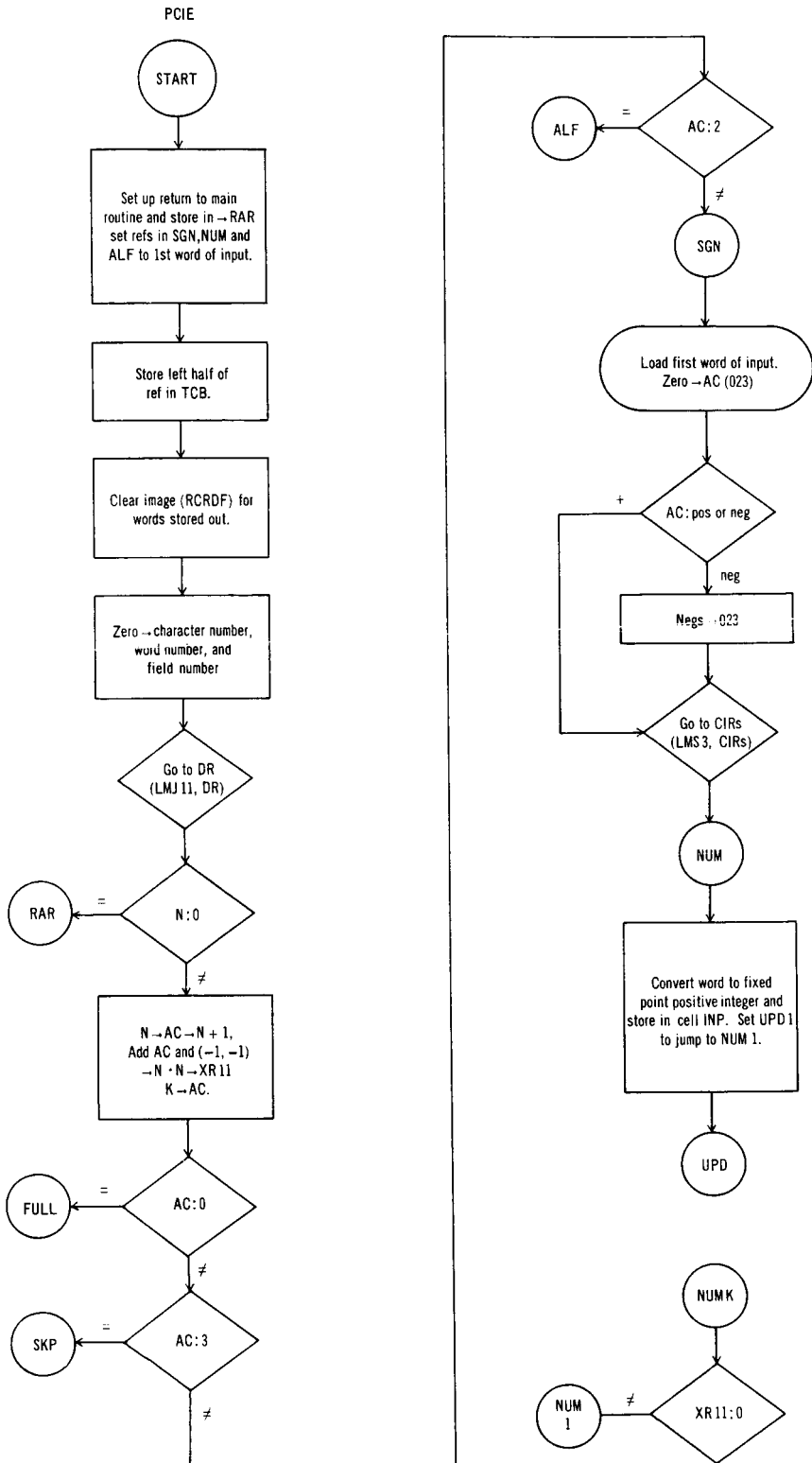
TABLE referred to here is a table of values which are the Mystic Alphabetic codes.

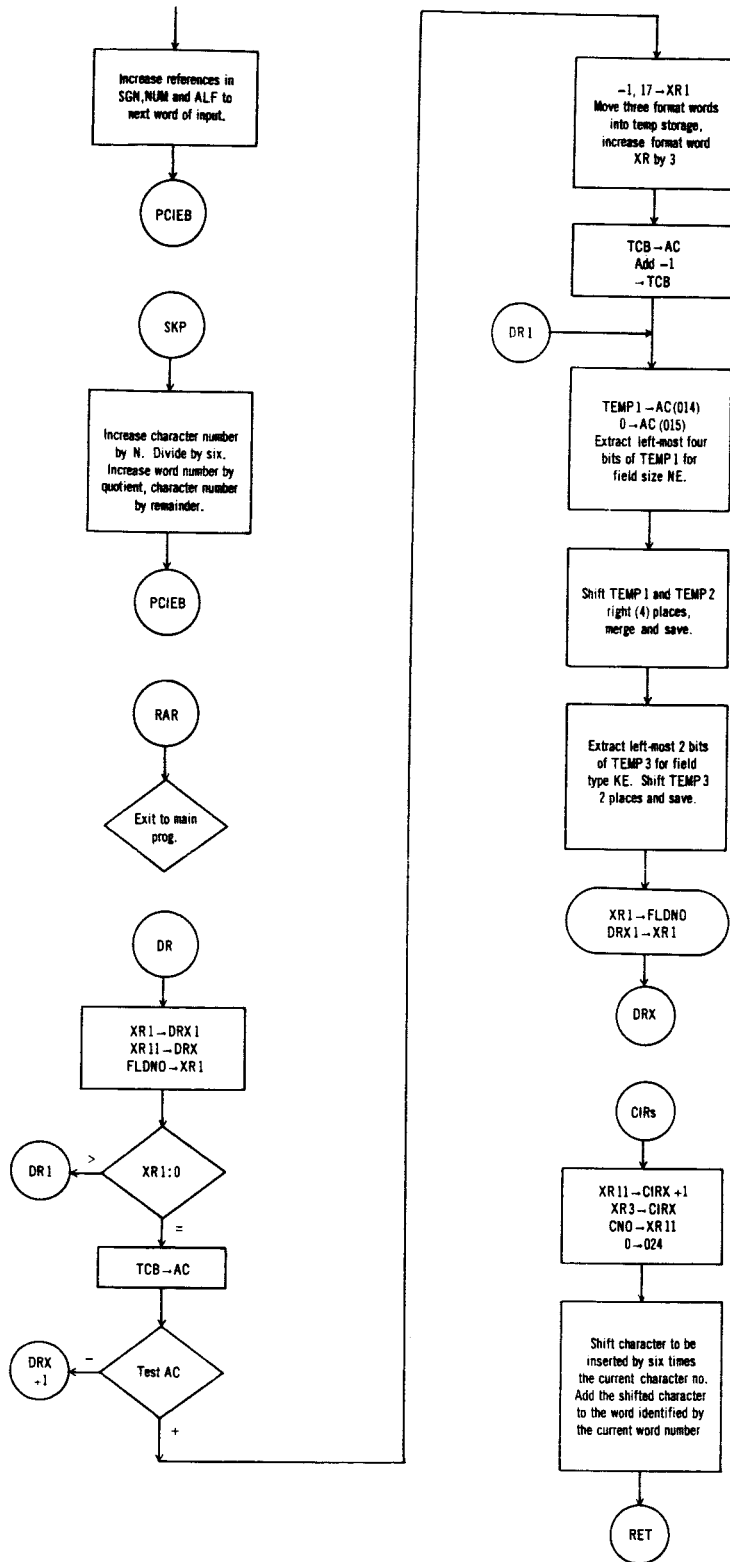
NE = number of columns to process

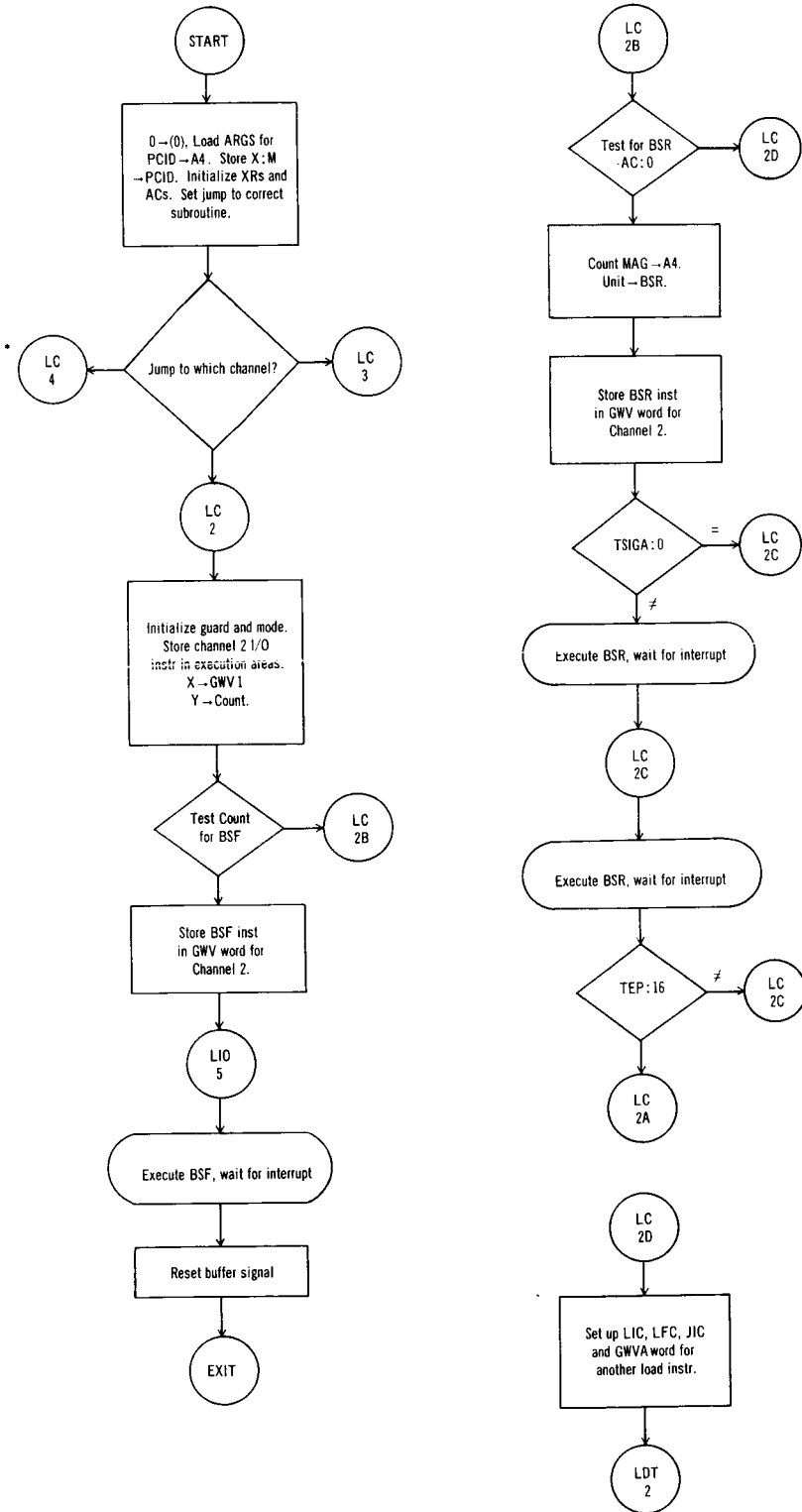
KE = kind of data (A, F, N, S)

WE = accumulator for output data word.

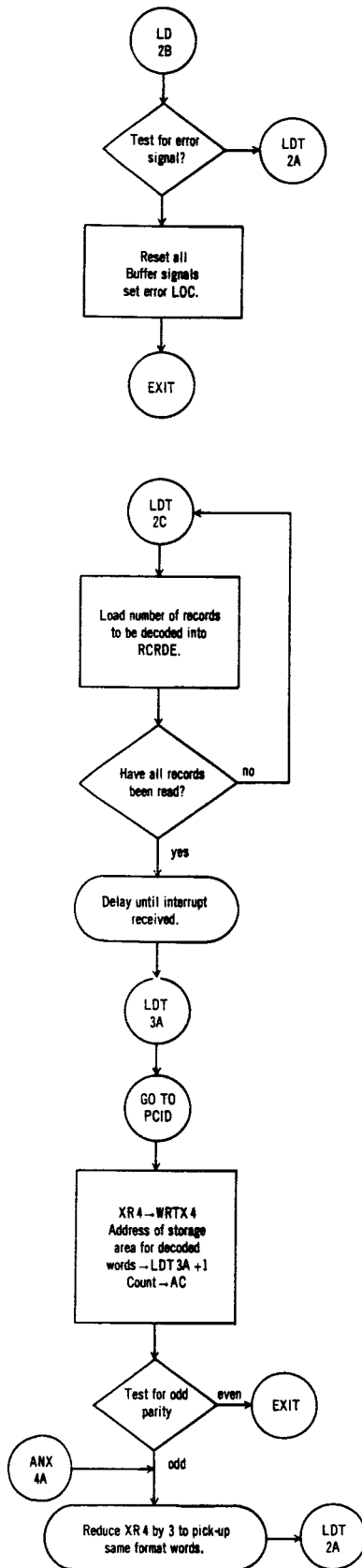
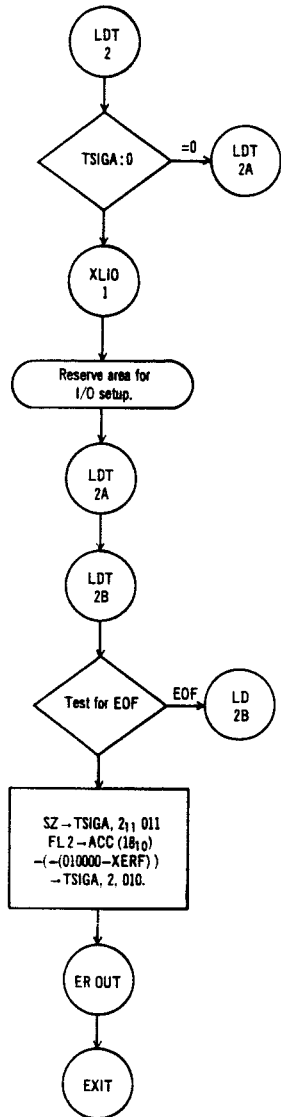
RCRDE is a 20-word table stored by the calling sequence to this routine.

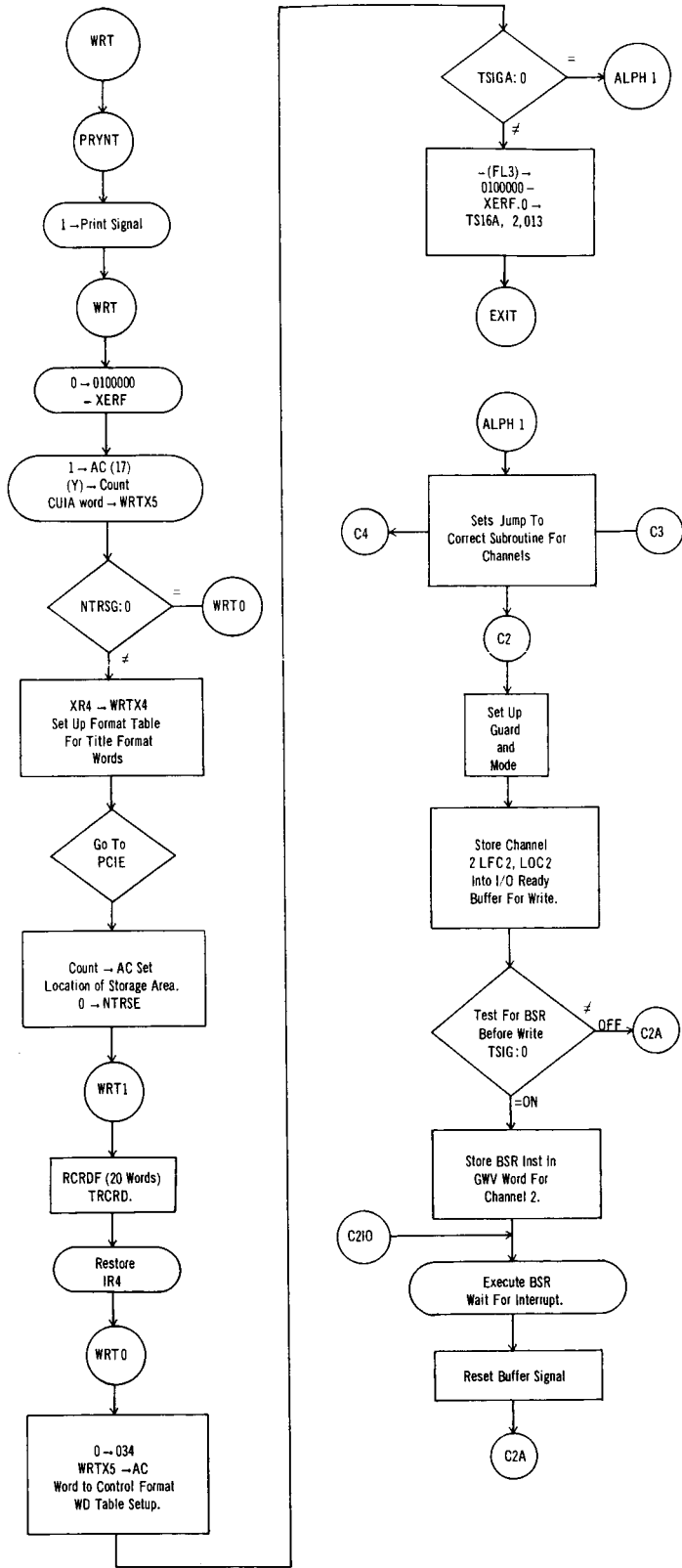


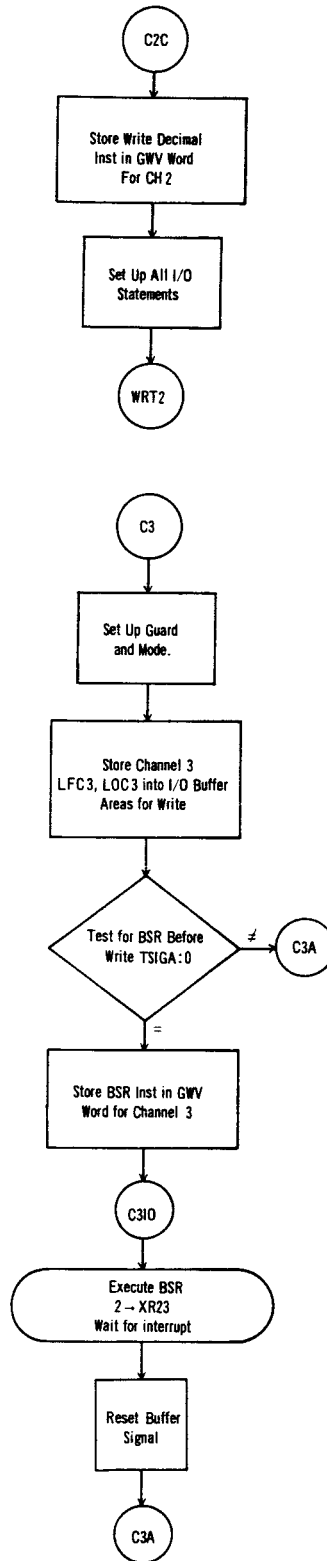
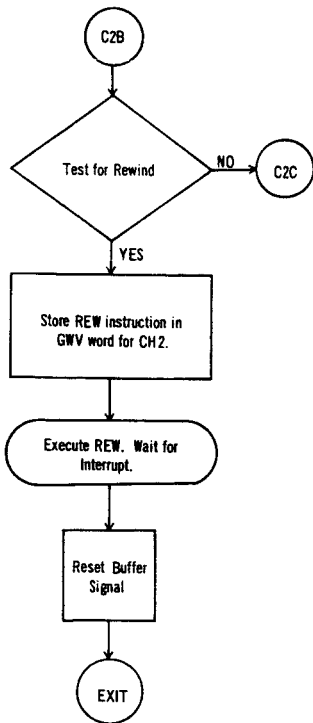
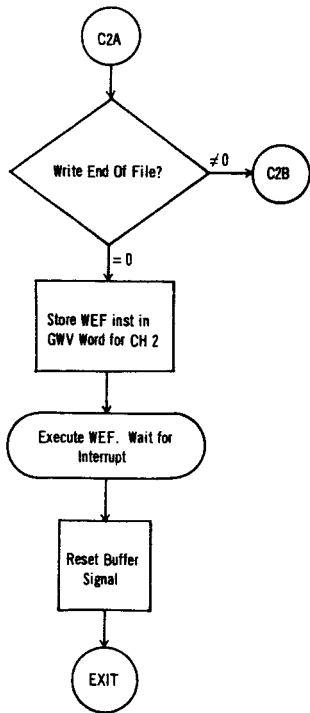


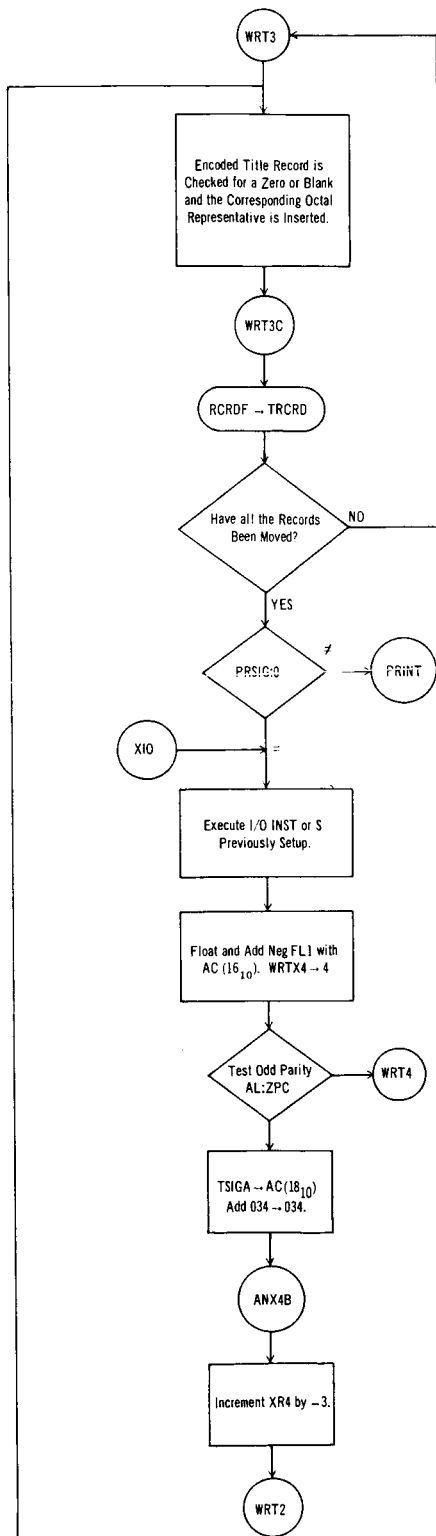
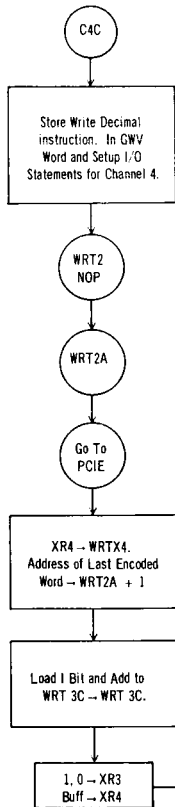
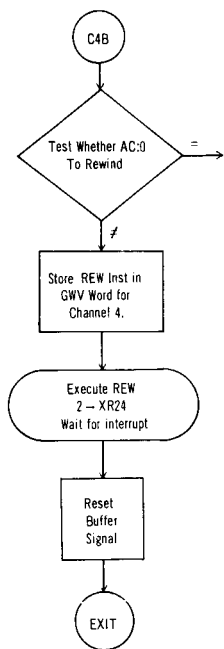


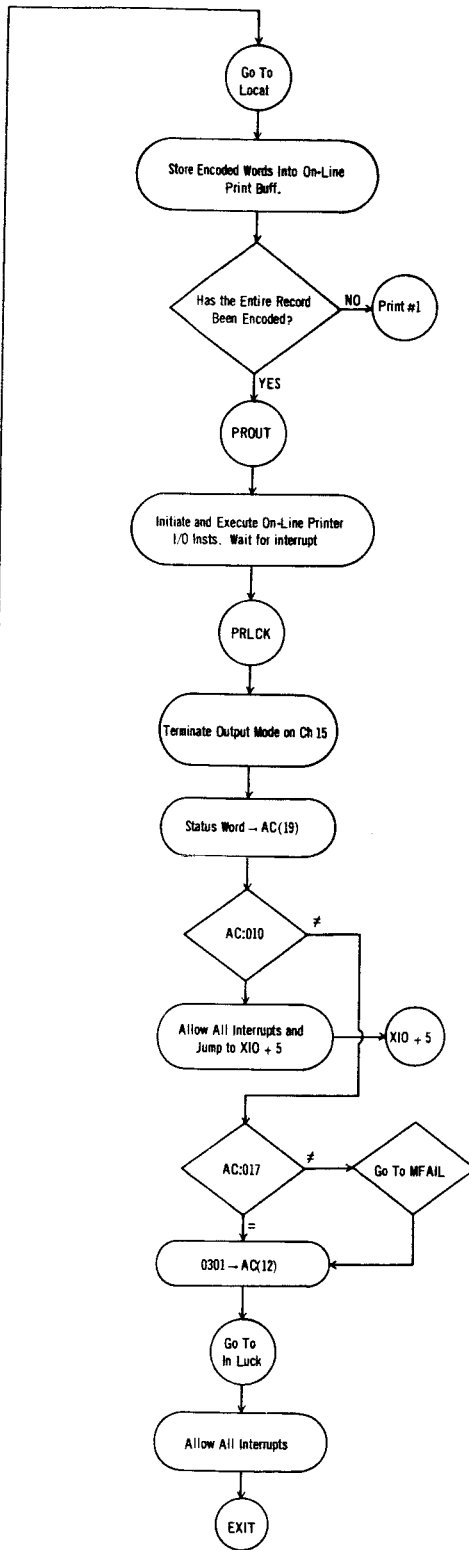
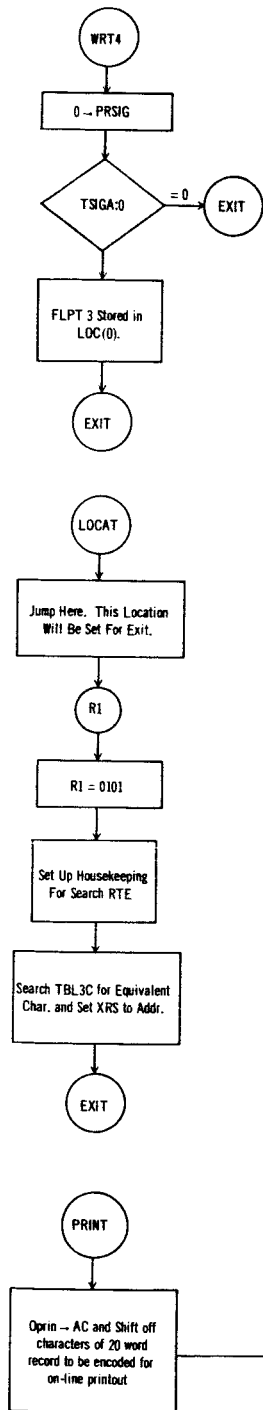
*LC 4 and LC 3 will follow the same line of flow. The difference is in the Channel Selected.

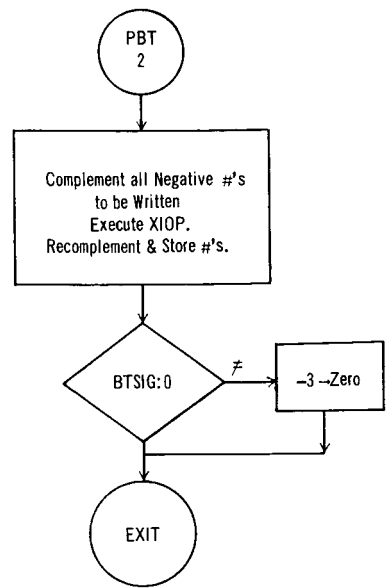
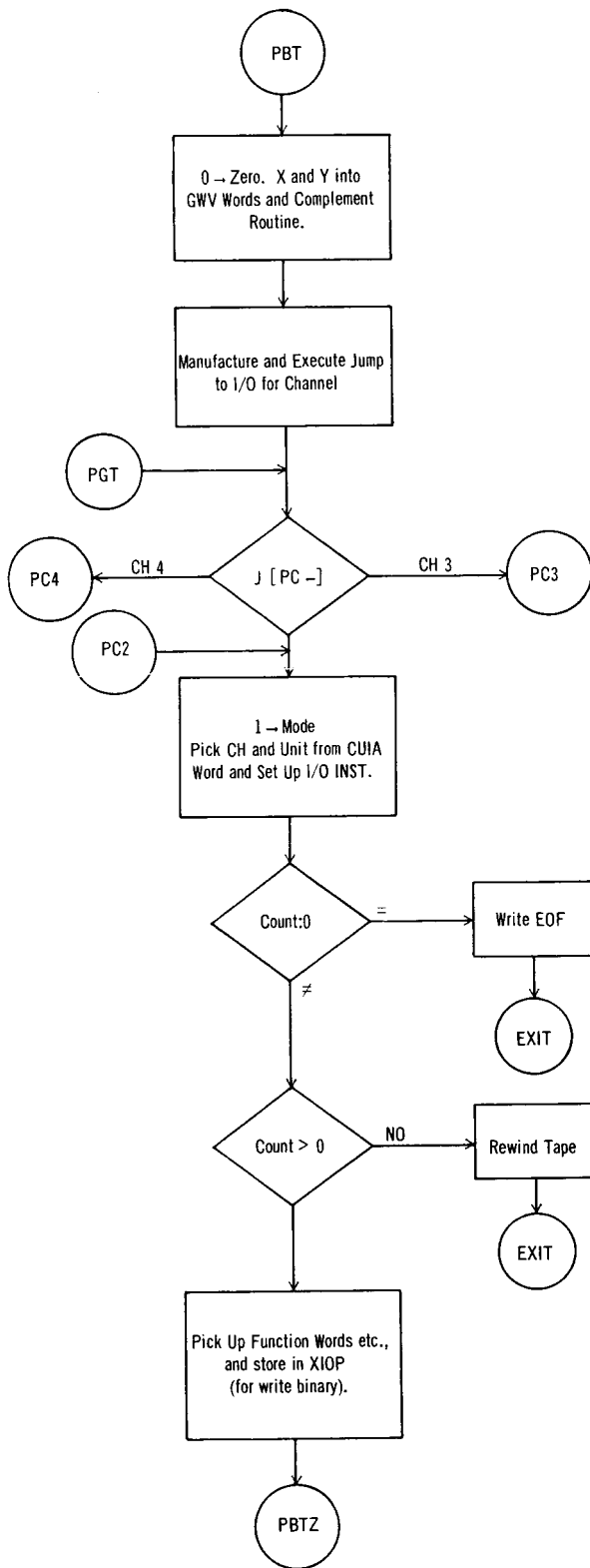






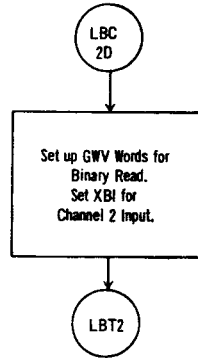
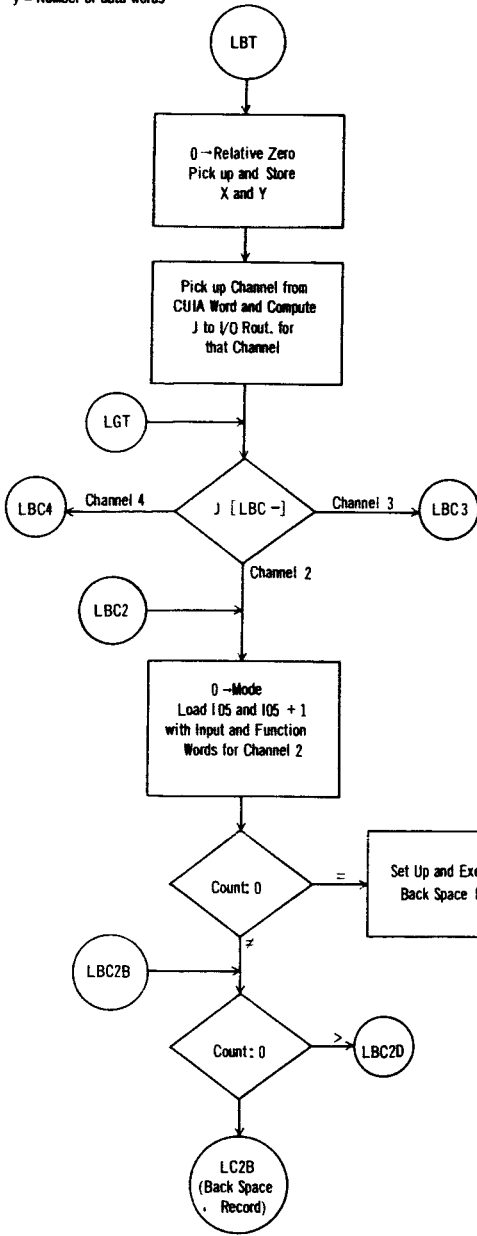




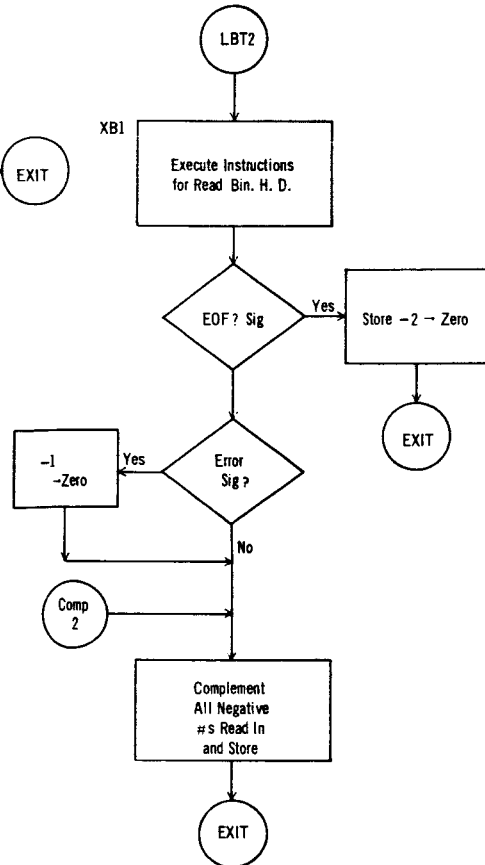


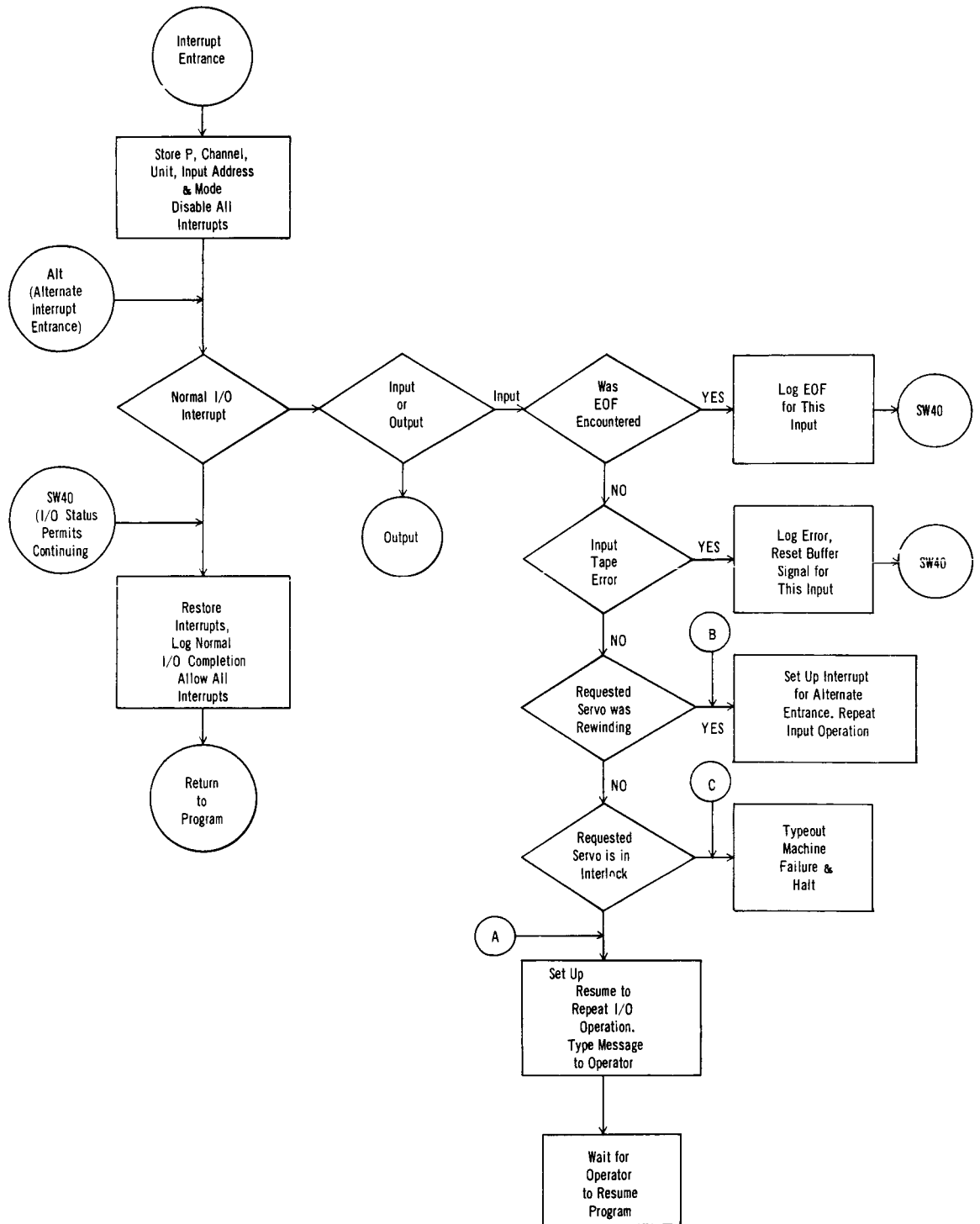
NOTE: PC4 & PC3 are identical to PC2 except for necessary differences in Channel references.

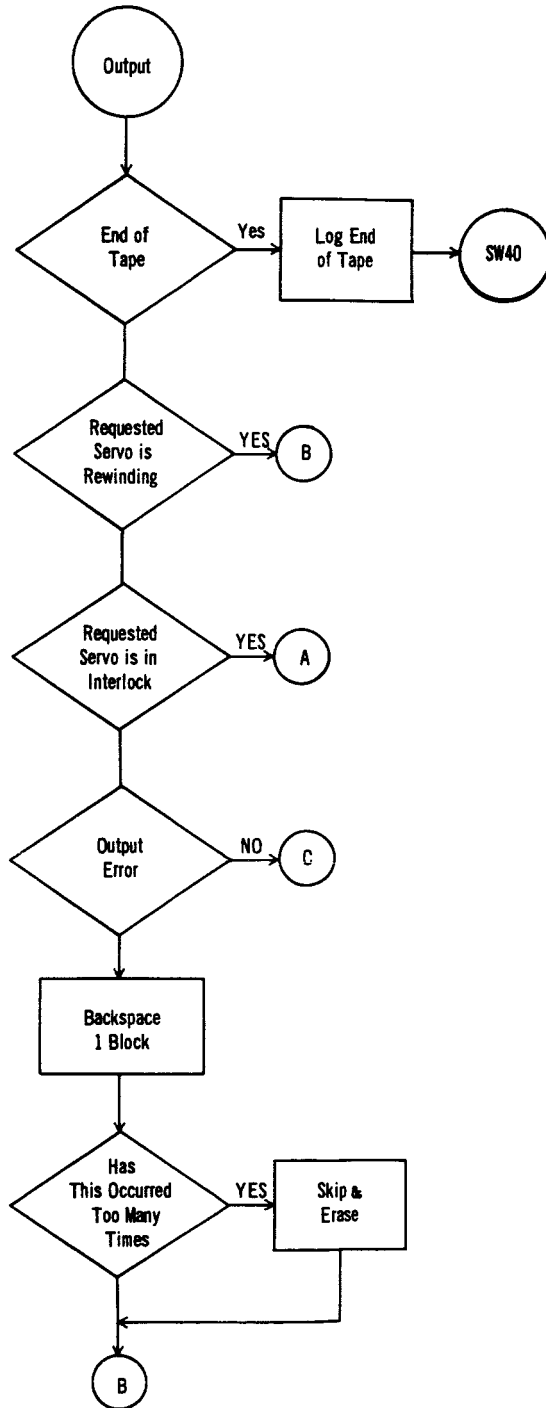
x = Location of data words
 y = Number of data words



NOTE: LB3 and LB4 are identical to LB2 except where channel references are necessary.







CAMEO FOR UNIVAC 1107

SLEUTH II LISTING

CAMEO FOR UNIVAC 1107

SLEUTH II LISTING

```

$(1),MYSTIC HJ      $+1
BOOT      AACI
          AAIJ      STALL
E         EQU       0
BOOTB    LL        0170360
          AACI
          LX        1,BBCCM-E
          JK        11,$+4
          NDP
          SZ        SYSCD+1-E,1
          JMGI     1,$-2
          LA        19,SYSCD-E
          JP        19,LDSYS-E
          LA        12,GWCM$,,016
          LA        13,GWVL$,,016
          LMJ      2,BIO1
          LA        19,CRD6
          LA        20,01$,,017
          JK        15,$+3-E
          LA        19,CRD2
          LA        20,0$,,017
          SA        19,CRDT
          SA        20,SW1
          LA        19,INTWA
          SA        19,I2-E
          J         CLEAR
RDIO     LA        19,INTWD
          SA        19,I2-E
          LA        19,1$,,016
          SA        19,CSIG
          SZ        OCIND
          JK        13,$+3
          LX        1,OP
          J         SWTCH
          LFC      2,GA2RW-E
          LX        1,OP
          J         SWTCH
LDSYS    LMJ      2,SYNO
          LA        12,GWSYS$,,016
          LA        13,GWVL$,,016
          LMJ      2,BIO1
          TE        19,SYSCD-E
          J         LDSYS+1-E
SETUP    LA        19,INTWD
          SA        19,I2-E
          LX        1,XSW
          J         SWTCH
WRTA3    SLJ      PAUSE
          LA        19,ONE
          SX        1,XSW
          SA        19,IOOR
          LA        19,JB11
          SA        19,130
          SZ        SYSCD-E
          LA        12,A3GW$,,016
          LA        13,GWSBT$,,016
          LMJ      2,BIO3
    
```

LOADING SYSTEM OR COMPILER

CARD OR TAPE INPUT

| | | |
|-------|------|---------------|
| | LMJ | 2,SYSNO |
| | LA | 12,A3GW,,016 |
| | LA | 13,GWSYS,,016 |
| | LMJ | 2,BIO3 |
| | HJ | SETUP-E |
| SYSNO | SZ | 19 |
| | LA | 20,040,,017 |
| | JK | 6,\$+2-E |
| | AA | 19,20 |
| | SSL | 20,1 |
| | JK | 5,\$+2-E |
| | AA | 19,20 |
| | SSL | 20,1 |
| | JK | 4,\$+2-E |
| | AA | 19,20 |
| | SSL | 20,1 |
| | JK | 3,\$+2-E |
| | AA | 19,20 |
| | SSL | 20,1 |
| | JK | 2,\$+2-E |
| | AA | 19,20 |
| | SSL | 20,1 |
| | JK | 1,\$+2-E |
| | AA | 19,20 |
| | SA | 19,SYSCJ-E |
| | J | 0,2 |
| BOOTI | DIC | 2 |
| | DDC | 2 |
| | LA | 21,201,,015 |
| | SSL | 21,2 |
| | TNE | 21,010,,016 |
| | J | BSWOK |
| | TNE | 21,017,,016 |
| | J | DELAY |
| | LA | 21,1,,016 |
| | TZ | IOOR |
| | LA | 21,4,,016 |
| | SA | 21,8SPB+,01 |
| | LA | 21,BJINT |
| | SA | 21,0202 |
| | AAIJ | \$+1 |
| | LFC | 2,GWVBS |
| | W | |
| INT | LA | 21,JBT1 |
| | SA | 21,0202 |
| | AAIJ | \$+1 |
| | TZ | IOOR |
| | J | BIO3 |
| I01 | LIC | 2,0,12 |
| | LFC | 2,0,13 |
| | W | |
| I03 | LFC | 2,0,12 |
| | NUP | |
| | LOC | 2,0,13 |
| | W | |
| ELAY | DIC | 2 |
| | DOC | 2 |
| | JK | 9,\$+2 |
| | J | DELAY |
| | AAIJ | WRTA3+1 |
| SWOK | LA | 21,JBT1 |
| | SA | 21,0202 |
| | AAIJ | 0,2 |
| | RES | BOOT+129-\$-E |

| | | |
|-------|------|----------------------|
| 2 | LMJ | 5,BOOTI-E |
| | LMJ | 5,NTCH3 |
| | LMJ | 5,NTCH4 |
| | RES | 7 |
| | LMJ | 5,CRDNT |
| | J | PRLCK |
| | +0 | |
| | LMJ | 7,MFAIL |
| | RES | 2 |
| | AAIJ | BOOTB |
| | RES | 46 |
| | LMJ | 7,OPERR |
| | RES | 3 |
| | SZ | 26 |
| | LMJ | 7,OVER |
| | LMJ | 7,DVCK |
| | RES | BOOT+201-\$-E |
| BCCM | | -1,65311 |
| BCTF | | -1,127 |
| BKEY | | +3,0 |
| WCMP | | +0007777170000 |
| WPC2 | | +65535-CLEAR,CLEAR+1 |
| WSYS | | +65535,0 |
| WSBT | | +224,) |
| WVLD | | +1,LDTBH-E |
| DTBH | | +052000000001 |
| 3GWV | | +1,WRTBH-E |
| WRTBH | | +012000000004 |
| GWVBS | | +1,BSPBH-E |
| BSPBH | | +030003000000 |
| GA2RW | | 1,A2RWD-E |
| A2RWD | | +0200010000002 |
| BJINT | J | JINT-E |
| JBT1 | LMJ | 5,BOOTI-E |
| JC | J | C |
| IDOR | | +0 |
| XSW | + | 0 |
| | RES | BOOT+222-\$-E |
| SYSCD | | -1 |
| \$(0) | RES | 0170000 |
| XERF | EQU | 02460 |
| FREX | EQU | 0 |
| PFNDR | | +0 |
| | | +1 |
| UDJ | | +0742000 |
| BSPK | | +0 |
| SCUIA | RES | 3 |
| MODEI | | +0 |
| IBIT | | +0,0400000 |
| INTWD | LMJ | 5,NTCH2 |
| | LMJ | 5,NTCH3 |
| | LMJ | 5,NTCH4 |
| ACI | ACI | 2 |
| | ACI | 3 |
| | ACI | 4 |
| SZG | SZ | GUARD,,010 |
| | SZ | GUARD,,011 |
| | SZ | GUARD,,012 |
| LFC | LFC | 2,GWBSP |
| | LFC | 3,GWBSP |
| | LFC | 4,GWBSP |
| | LFC | 2,GWBSP |
| | LFC | 3,GWBSP |
| | LFC | 4,GWBSP |

BSP +0300030000000
 BSPF +J
 SKPIT +0100037777777
 SKPF +0
 GWBSP +01,BSPF
 GWSKP +01,SKPF
 JALT J ALTIJ
 JA J A
 JB J B

CR22 +0
 CUIAT FORM 6,12,18
 CUIA CUIAT 3,1,IRCA
 CUIAT 4,1,IRCB
 CUIAT 3,2,IRCC
 CUIAT 4,2,IRCD
 CUIAT 3,4,IRCE
 CUIAT 3,010,IRCDF
 CUIAT 3,020,IRCDG
 CUIAT 3,040,IRCDH
 CUIAT 2,020,IRCDI
 CUIAT 2,040,IRCD
 CUIAT 4,4,OPRIN
 CUIAT 4,010,DCARD
 +0

B1 = 3,0
 C1 = 4,0
 B2 = 3,1
 C2 = 4,1
 B3 = 3,2

IRCD RES 20
 IRCA RES 20
 IRCB RES 20
 IRCC RES 20
 IRCD RES 20
 IRCE RES 20
 IRCDF RES 20
 IRCDG RES 20
 IRCDH RES 20
 IRCDI RES 20
 ICRD RES 20
 OPRIN RES 20

+0050505050505
 +0050505050505

DCARD RES 20
 TCARD RES 20
 TRCD RES 20
 CSIG +01

TSIG +0,0,0,0,0,1
 TSIGA +0,0,0,0,0,1
 TSIGB +0,0,0,0,0,1
 TSIGC +0,0,0,0,0,1
 TSIGD +0,0,0,0,0,1
 TSIGE +0,0,0,0,0,1
 TSIGF +0,0,0,0,0,1
 TSIGG +0,0,0,0,0,1
 TSIGH +0,0,0,0,0,1
 TSIGI +0,0,0,0,0,1
 TSIGJ +0,0,0,0,0,1
 TSIGK +0,0,0,0,0,1
 TSIGL +0,0,0,0,0,1

COUNT +0
 NTRSG +1
 FL1 +1.0
 FL2 +2.0
 FL3 +3.0

LICC LIC 2,GWV4
 LIC2 LIC 2,GWV1
 LIC3 LIC 3,GWV2
 LIC4 LIC 4,GWV3

. BCD CHANNEL 2
 . BCD CHANNEL 3
 . BCD CHANNEL 4

| | | | |
|-------|------|---------------|-----------------|
| LDC2 | LDC | 2,GWV1 | . BCD CHANNEL 2 |
| LDC3 | LDC | 3,GWV2 | . BCD CHANNEL 3 |
| LDC4 | LDC | 4,GWV3 | . BCD CHANNEL 4 |
| LFC2 | LFC | 2,GWVA | . BCD CHANNEL 2 |
| LFC3 | LFC | 3,GWVB | . BCD CHANNEL 3 |
| LFC4 | LFC | 4,GWVC | . BCD CHANNEL 4 |
| JIC2 | W | | |
| JIC3 | W | | |
| JIC4 | W | | |
| JDC2 | W | | |
| JDC3 | W | | |
| JDC4 | W | | |
| GWV1 | | +20,0 | |
| GWV2 | | +20,0 | |
| GWV3 | | +20,0 | |
| GWVA | | +0 | |
| GWVB | | +0 | |
| GWVC | | +0 | |
| GWV | FORM | +2,16,18 | |
| GWV11 | GWV | +0,1,RD | |
| GWV12 | GWV | +0,1,RD1 | |
| GWV13 | GWV | +0,1,RD2 | |
| GWV14 | GWV | +0,1,WD | |
| GWV15 | GWV | +0,1,WD1 | |
| GWV16 | GWV | +0,1,WD2 | |
| GWV4 | GWV | +0,+20,IRCD | |
| GWVD | GWV | +0,+1,C2DT | |
| BSR | | +030003000000 | |
| RD | | +052002000000 | |
| RB | | +052000000000 | |
| BSF | | +031003000000 | |
| BSR1 | | +030003000000 | |
| RD1 | | +052002000000 | |
| RB1 | | +052000000000 | |
| BSF1 | | +031003000000 | |
| BSR2 | | +030003000000 | |
| RD2 | | +052002000000 | |
| RB2 | | +052000000000 | |
| BSF2 | | +031003000000 | |
| WEF | | +012003000000 | |
| WD | | +012002000000 | |
| WB | | +012000000000 | |
| REW | | +030001000000 | |
| WEF1 | | +012003000000 | |
| WD1 | | +012002000000 | |
| WB1 | | +012000000000 | |
| REW1 | | +030001000000 | |
| WEF2 | | +012003000000 | |
| WD2 | | +012002000000 | |
| WB2 | | +012000000000 | |
| REW2 | | +030001000000 | |
| IO5 | RES | 6 | |
| WRTX4 | | +0 | |
| TW04 | | +16 | |
| TW02 | | +4 | |
| LA3 | LA | 15,CUIA, 2 | |
| LX2 | LX | 2,0,,015 | |
| LA16 | LA | 16,0 | |
| L100 | | +100 | |
| LTRA | | +61 | |
| LTRF | | +66 | |
| LTRJ | | +71 | |
| LTRK | | +72 | |

| | |
|-------|----------------|
| LTRL | +73 |
| LTRN | +75 |
| LTRP | +77 |
| LTRS | +82 |
| LTRT | +83 |
| FCC | +0 |
| FN | +0 |
| M1P11 | -1,11 |
| M1P4 | -1,4 |
| MSK | +0777777177777 |
| ZERO | +0 |
| EBT | -1,62543 |
| P1M4 | +1,-4 |
| BUFF | -1,+19 |
| TDELQ | +0,TFWD |
| CHAR | +020000000000 |
| QDELQ | +65534-QXTBL |
| TWO | +02 |
| P1M5 | +1,-5 |
| P1M2 | +1,-2 |
| P1Z | +1,0 |
| M1 | -1 |
| QCONS | -2,65534-QXTBL |
| BOUND | +077777-XERF |
| ABANK | +0100000-XERF |
| BBANK | +0170000+FREX |
| BBNKB | +0170001+FREX |
| M117 | -1,17 |
| LTRTB | +8300000000 |
| M11 | -1,1 |
| M12 | -1,2 |
| DQX | -1,200 |
| M2 | -2 |
| ZPC | +0400400000000 |
| NOP | NOP |
| ZRO | + 0 |
| DNE | +1 |
| XRC2 | SX 2,XR22 |
| XRC3 | SX 2,XR23 |
| XRC4 | SX 2,XR24 |
| ARGX | +0 |
| XR22 | +0 |
| XR23 | +0 |
| XR24 | +0 |
| MODE | RES 3 |
| TFWD | +0210421042104 |
| | +0210421042104 |
| | +0525252525252 |
| | +0210421042104 |
| | +0210400000000 |
| | +0525252520000 |
| IOX | EX I05+1 |
| | EX I05+3 |
| | EX I05+5 |
| IDX1 | EX I05 |
| | EX I05+2 |
| | EX I05+4 |
| GUARD | +0,0,0,0,0,0 |
| GINST | LA 18,JG-2 |
| JG | J C2 |
| | J C3 |
| | J C4 |
| LGIN | LA 18,LJ-2 |

| | | |
|-------|-----|----------------------|
| LJ | J | LC2 |
| | J | LC3 |
| | J | LC4 |
| BGIN | LA | 18,LBJ-2 |
| LBJ | J | LBC2 |
| | J | LBC3 |
| | J | LBC4 |
| PGIN | LA | 18,PJ-2 |
| PJ | J | PC2 |
| | J | PC3 |
| | J | PC4 |
| CH266 | | +0266000000000 |
| TTLP | | -1,31 |
| L | | +01000 |
| NDQ | | -2,0 |
| ERIND | | +0 |
| P1P18 | + | 1,18 |
| INTCE | + | 0233000000000 |
| CRD2 | + | 0520020000002 |
| CRD4 | + | 0520020000010 |
| CRD6 | + | 0520020000040 |
| CRDT | + | 0 |
| TREY | + | 3 |
| EIGHT | + | 8 |
| LMJI | LMJ | 5,NTCH2 |
| | LMJ | 7,OPERR |
| | NOP | |
| | LMJ | 7,OVER |
| | LMJ | 7,DVCK |
| OVER | SLJ | PAUSE |
| | LA | 19,0100000-XERF,,02 |
| | TNE | 19,U0J |
| | J | 0100010-XERF |
| | LX | 5,ZER0 |
| | J | IERIT |
| DVCK | SLJ | PAUSE |
| | LX | 5,4,,017 |
| | J | IERIT |
| MFAIL | SLJ | PAUSE |
| | LX | 5,6,,017 |
| | J | IERIT |
| TFAIL | SLJ | PAUSE |
| | LX | 5,8,,017 |
| | J | IERIT |
| BADF | SLJ | PAUSE |
| | LX | 5,10,,017 |
| | J | IERIT |
| OPERR | SLJ | PAUSE |
| | LA | 19,7 |
| | AND | 19,0177777,,016 |
| | TG | 20,0170000,,016 |
| | J | \$+3 |
| | TG | 20,0100000-XERF,,016 |
| | ANA | 20,0100000-XERF,,016 |
| | ANA | 20,1,,016 |
| | SLJ | ALTER |
| | ANA | 20,ONE |
| | LA | 19,WORD |
| | SA | 19,REPRT+12 |
| | LX | 5,12,,017 |
| IERIT | SLJ | CRGE |
| | LA | 20,REPRT+1,5 |
| | LA | 19,REPRT,5 |
| | SLJ | IOTYP |

| | | |
|-------|------|---------------------|
| | LA | 19,5,,017 |
| | LA | 20,11,,017 |
| | TW | 19,5 |
| | J | \$+4 |
| | SX | 7,PFNDR |
| | LX | 5,3,,017 |
| | J | \$+2 |
| | SZ | 5 |
| | LA | 20,PATH+2,5 |
| | LA | 19,PATH+1,5 |
| | SLJ | IOTYP |
| | LA | 19,PFNDR |
| | AND | 19,077777,,016 |
| | SLJ | ALTER |
| | LA | 20,05,,017 |
| | SSC | 20,6 |
| | LA | 19,WORD |
| | SSL | 19,6 |
| | DSC | 19,66 |
| | LA | 20,PATH,5 |
| | SLJ | IOTYP |
| | AACI | |
| | AAIJ | \$+1 |
| DEBUG | LA | 19,0100000-XERF,,02 |
| | TNE | 19,UOJ |
| | J | STALL |
| | J | PRHLT |
| FHLT | LX | 7,FSTOP+1,,016 |
| | J | YESM |
| PRHLT | SZ | NORES |
| | LA | 14,PRHLT-1 |
| | SA | 14,PRHLT |
| | SX | 7,127 |
| | LX | 7,PRHLT,,016 |
| STALL | SLJ | CRGE |
| | LIC | 15,OPTR |
| | JIC | 15,\$ |
| | LOC | 15,OPTR |
| | JOC | 15,\$ |
| SUPER | LA | 12,EQUAL,,010 |
| | TE | 12,0,,016 |
| | J | STALL |
| | LA | 12,P1Z |
| | SZ | CKT |
| | SZ | TYPIN,12 |
| TYPCA | LIC | 15,OPTR |
| | JIC | 15,\$ |
| | LOC | 15,OPTR |
| | JOC | 15,\$ |
| | LA | 13,EQUAL,,010 |
| | TNE | 13,076,,016 |
| | J | STALL |
| | TNE | 13,04,,016 |
| | J | DCODE |
| | LA | 14,TYPIN,12 |
| | SSC | 14,30 |
| | SA | 14,TYPIN,12 |
| | SA | 13,TYPIN,12,010 |
| | LA | 13,ONE |
| | AA | 13,CKT |
| | SA | 13,CKT |
| | TG | 13,6,,016 |
| | J | \$+2 |
| | J | TYPCA |

| | | |
|-------|------|-----------------|
| | TLEM | 12,3,,016 |
| | J | TYPCA-2 |
| | J | TYPCA-3 |
| DCODE | LA | 13,TYPIN,,01 |
| | TNE | 13,TYPE1A |
| | J | RESUM |
| | LA | 13,TYPIN,,02 |
| | TNE | 13,TYPE2 |
| | J | EOFIT |
| | TE | 13,TYPE3 |
| | J | STALL |
| | SX | 7,RAR7B |
| | LA | 13,NDRES |
| | SA | 13,RAR7A |
| | LA | 13,JRAR7 |
| | SA | 13,STALL |
| | LA | 13,TYPIN,,05 |
| | SA | 13,TYPIN+1,,07 |
| | LA | 13,TYPIN+1 |
| | LX | 8,M1P5 |
| | DSL | 13,3 |
| | SSL | 13,3 |
| | JMGI | 8,\$-2 |
| | SSL | 14,18 |
| | AA | 14,ABANK |
| | TG | 14,0170000,,016 |
| | J | STALL |
| | J | 0,14 |
| RAR7 | LX | 7,RAR7B |
| | LA | 13,THJOE |
| | SA | 13,STALL |
| | LA | 13,RAR7A |
| | SA | 13,NDRES |
| | J | STALL |
| RAR7A | +0 | |
| RAR7B | +0 | |
| JRAR7 | J | RAR7 |
| THJOE | SLJ | CRGE |
| EOFIT | LA | 13,TYPIN+1,,010 |
| | ANU | 13,060,,016 |
| | LA | 13,TYPIN,,010 |
| | ANA | 13,060,,016 |
| | TZ | 13 |
| | AA | 14,10,,016 |
| | TG | 14,12,,016 |
| | J | STALL |
| | ANA | 14,36,,016 |
| | SN | 14,\$+2,,010 |
| | LA | 14,1,,016 |
| | SSC | 14,0 |
| | SA | 14,GWVEF+1,,01 |
| | SA | 14,CUIA+12,,02 |
| | LA | 13,TYPIN,,011 |
| | DSL | 13,3 |
| | SSL | 14,33 |
| | TLE | 14,2,,016 |
| | J | STALL |
| | TG | 14,5,,016 |
| | J | STALL |
| | SA | 14,CUIA+12,,015 |
| | LA | 13,12,,016 |
| | SA | 13,XR22-2,14 |
| | LA | 13,1,,016 |
| | SA | 13,MODE-2,14 |

| | | |
|--------|----------------|---------------|
| | LA | 12,14 |
| | SSC | 12,14 |
| | ANA | 14,2,,016 |
| | SSC | 14,35 |
| | OR | 12,LFCEF |
| | SA | 13,I05,14 |
| | LA | 13,NOP |
| | SA | 13,I05+1,14 |
| | EX | I05,14 |
| | W | |
| | J | STALL |
| RESUM | TZ | NORES |
| | J | 0,7 |
| | J | STALL |
| TNTRK | SLJ | CRGE |
| | AA | 12,06060,,016 |
| | SSC | 12,30 |
| | AA | 12,05,,016 |
| | SA | 12,TELL,,02 |
| | LA | 20,TELL+1 |
| | LA | 19,TELL |
| | SLJ | IOTYP |
| | J | STALL |
| YESM | SLJ | CRGE |
| | LA | 20,YESS+1 |
| | LA | 19,YESS |
| | SLJ | IOTYP |
| | J | STALL |
| EQUAL | +0 | |
| OPTR | +1,EQUAL | |
| JTYPA | J | TYPCA |
| TYPIN | RES | 4 |
| TYPE1A | +0271230 | |
| TYPE2 | +0122413 | |
| TYPE3 | +0312706 | |
| CKT | +0 | |
| NORES | +1 | |
| MIP5 | -1,5 | |
| LFCEF | LFC | 0,GWVEF |
| GWVEF | +1,\$+1 | |
| | +0120030000000 | |
| TELL | - | KCO- |
| | - | LRETN- |
| YESS | - | - |
| | - | ELDI- |
| CRGV1 | +14,ICRD | |
| CRGV2 | +1,CRGV3 | |
| CRGV3 | +0520000000000 | |
| ALTER | J | 0 |
| | LX | 6,MIP4 |
| | SZ | WORD |
| | SZ | 19 |
| | DI | 19,10,,017 |
| | AA | 20,060,,017 |
| | AA | 20,WORD |
| | SSC | 20,30 |
| | SA | 20,WORD |
| | DSL | 19,36 |
| | JMGI | 6,\$-6 |
| | J | ALTER |
| IDTYP | J | 0 |
| | LX | 6,MIP11 |
| | SA | 20,WORD |
| | LOC | 15,GWTP |

| | | |
|-------|---------|--------------|
| | DSL | 19,6 |
| | JOC | 15,\$ |
| | JMGI | 6,\$-4 |
| | J | IOTYP |
| CRGE | J | 0 |
| | LA | 19,CC |
| | SA | 19,WORD |
| | LOC | 15,GWTYP |
| | SSL | 19,6 |
| | SA | 19,WORD |
| | JOC | 15,\$ |
| | LOC | 15,GWTYP |
| | JOC | 15,\$ |
| | J | CRGE |
| CC | + - | - |
| WORD | +0 | |
| GWTYP | +1,WORD | |
| REPRT | - | WD- |
| | - | LFREVO- |
| | - | WOL- |
| | - | FREDNU- |
| | - | KCEHC - |
| | - | EDIVID- |
| | - | RORRE- |
| | - | OVRES- |
| | - | ERULIA- |
| | - | F EPAT- |
| | - | O/I L- |
| | - | AGELLI- |
| | - | - |
| | - | DNE- |
| PATH | - | SDAER - |
| | - | REDNIF- |
| | - | HTAP - |
| | - | NOITAC- |
| | - | OL MAR- |
| | - | GORP - |
| CLEAR | LA | 25,1,,017 |
| | SA | 25,OCIND |
| | J | OPK2 |
| ATL | SZ | 5 |
| | JK | 12,MYS |
| | J | TYPE1 |
| LTL | LX | 5,3,,017 |
| | JK | 12,MYS |
| | J | TYPE1 |
| EROP | LX | 5,6,,017 |
| | JK | 12,MYS |
| | J | TYPE1 |
| TMQ | LX | 5,9,,017 |
| | JK | 12,MYS |
| | J | TYPE1 |
| AZEOF | LX | 1,1,,017 |
| | LX | 5,12,,017 |
| TYPE1 | SLJ | CRGE |
| | LA | 20,NOTES+2,5 |
| | LA | 19,NOTES+1,5 |
| | SLJ | IOTYP |
| | LA | 20,NOTES,5 |
| | LA | 19,LINE |
| | SLJ | IOTYP |
| | LA | 20,RECND |
| | SLJ | ALTER |
| | LA | 20,WORD |

| | | |
|-------|----------------|--------------|
| | SZ | 19 |
| | SLJ | IOTYP |
| | JK | 12,MYS |
| | HJ | \$-1 |
| CRDN1 | -RORRE | - |
| | -YFIREV | - |
| CRDN2 | -EDOC | L- |
| | -AGELLI | - |
| NOTES | - EGRAL | - |
| | - OOT | S- |
| | -SERDDA | - |
| | - DETS | - |
| | -UAHXE | - |
| | -YROMEM | - |
| | - DNA | - |
| | -MMOC | L- |
| | -AGELLI | - |
| | - EGRAL | - |
| | - OOT | E- |
| | -LBAT | Q- |
| | -EPAT | C- |
| | -ITSYM | - |
| | -NO | FOE- |
| LINE | - ENIL | - |
| CARD | - DRAC | - |
| NZ | +0400400000000 | |
| INTA | LX | 6,CR22 |
| | LX | 6,CR22 |
| | SX | 6,SCUIA+1 |
| | SX | 5,SCUIA+2 |
| ALTJ | SZ | 19 |
| | LA | 19,201,,015 |
| | TE | 19,040,,016 |
| | J | TESTM |
| SWOK | LA | 19,INTWA |
| | SA | 19,130 |
| | LA | 19,01,,017 |
| | AA | 19,RECND |
| | SA | 19,RECND |
| | SZ | GUARD,,010 |
| | LX | 5,SCUIA+2 |
| | SZ | BSPK |
| | AACI | |
| | AAIJ | 0,5 |
| TESTM | SZ | 19 |
| | LA | 19,201,,015 |
| | SSL | 19,2 |
| | TNE | 19,016,,016 |
| | JK | 8,SWOK |
| | TNE | 19,013,,016 |
| | J | A2EOF |
| | TE | 19,017,,016 |
| | J | ERRLG |
| | LA | 12,0200,,016 |
| | LMJ | 7,TNTRK |
| | AACI | |
| | TZ | TSIG,,010 |
| | AAIJ | EXA21 |
| | AAIJ | EXA22 |
| ERRLG | LA | 19,1,,016 |
| | AA | 19,BSPK |
| | TNE | 19,11,,016 |
| | J | TFAIL |
| | SA | 19,BSPK |

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LA      19,JC
SA      19,130
AACI
AAIJ    $+1
LFC     2,A2BSP
W
C       LA      19,201,,015
        SSL     19,2
        TE      19,010,,016
        J       TFAIL
        LA      19,ALTJP
        SA      19,130
        AACI
        TZ      TSIG,010
        AAIJ    EXA21
        AAIJ    EXA22
A2BSP   +1,$+1
        +0300030000010
RECNO   +0
CRDNO   +0
ALTJP   J       ALTJ
INTWA   LMJ     5,INTA
A3R     +1,A3RWD
A3RWD   +0300010000004
        PCID
        PERIPHERAL CARD IMAGE
        DECODER
PCID    J       PCID1
RCRDE   RES     20
PCID1   SX     3,PCID1+1,,1
        NOP
        LA 014,PCID1+1,,1
        AA 014,+1,,016
        SA 014,BOX,,1
        SZ   CWL
LA      014,0,3
SA      014,CWL,,01
DSL     014,18
SA      014,NUMEF,,1
SA      014,ALFE5,,01
LX      1,P1M1
        LX 2,+0,,016
        SZ   FLDNOE
PCID2   LMJ     11,DRE
        LA 015,+1,,016
        SA 015,SGNE
        TNZ  NE
        J    BOX
        SZ   WE
LA      015,MDNE
SA      015,NE,,2
        TNZ  KE
        J    NUME
LA      015,KE
        TNE 015,TWD
        J    ALFE
        TG 015,TWO
        J    SKPE
NUME    LX     11,NE
        J    NUME3
NUME1   LA     016,RCRDE,1
        SA     016,INPE
        LX     2,M1P6

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| | | |
|--------|------|--------------|
| NUME2 | SZ | 017 |
| | LA | 016,INPE |
| | DSL | 016,036 |
| | SA | 017,INPE |
| | TNE | 016,012,,016 |
| | SZ | 016 |
| | TNE | 016,020,,016 |
| | SZ | 016 |
| | TNE | 016,NINE |
| | J | NUME2A |
| | TG | 016,NINE |
| | J | NUME6 |
| NUME2A | AA | 016,WE |
| | SA | 016,WE |
| NUME2B | TLEM | 11,2,,016 |
| | J | NUME4 |
| | MSI | 016,P10 |
| | SA | 016,WE |
| NUME3 | TLEM | 2,2,,016 |
| | J | \$+2 |
| | J | NUME2 |
| | TLEM | 1,1,,015 |
| | J | NUME1 |
| | SLJ | RARE |
| | J | NUME1 |
| NUME4 | LA | 017,SGNE |
| NUME5 | TNZ | OCIND |
| | J | PCFLTE-1 |
| | TNZ | SGNE |
| | SN | 016,016 |
| NUMEF | SA | 016,FILL |
| | J | BUMPE |
| NUME6 | DSL | 016,6 |
| | LA | 016,11 |
| | TNE | 016,NE |
| | J | NUME7 |
| | TG | 016,NE |
| | J | \$+1 |
| | J | ERRE |
| NUME7 | DSL | 017,042 |
| | TNE | 017,TWO |
| | J | NUME8 |
| | TG | 017,TWO |
| | J | \$+1 |
| | J | NUME9 |
| NUME8 | SZ | SGNE |
| NUME9 | LA | 015,WE |
| | TLEM | 11,1,,016 |
| | J | NUME4 |
| | J | NUME3 |
| | LA | 015,016 |
| PCFLTE | LX | 11,NUMEF,,1 |
| | OR | 015,CH233 |
| | FA | 016,ZERJ |
| | TNZ | SGNE |
| | SN | 016,016 |
| | TOP | 016,ZPC |
| | SZ | 016 |
| | SA | 016,0,11 |
| | J | BUMPE |
| ALFE | LX | 11,NE |
| | J | ALFE3 |

| | | |
|--------|------|---------------|
| ALFE1 | LA | 015,RCRDE,1 |
| | SA | 015,INPE |
| | LX | 2,M1P6 |
| ALFE2 | LA | 015,INPE |
| | DSL | 015,036 |
| | SA | 016,INPE |
| | AA | 015,TBLE,,016 |
| | SA | 015,\$+1,,1 |
| | LA | 015,FILL |
| | AA | 015,WE |
| | SA | 015,WE |
| | TLEM | 11,2,,016 |
| | J | ALFE4 |
| | MSI | 015,PHUN |
| | SA | 015,WE |
| ALFE3 | TLEM | 2,2,,015 |
| | J | \$+2 |
| | J | ALFE2 |
| | TLEM | 1,1,,015 |
| | J | ALFE1 |
| | SLJ | RARE |
| | J | ALFE1 |
| ALFE4 | LA | 017,1,,017 |
| | TNZ | DCIND |
| | J | PCFLTE |
| ALFE5 | SA | 015,FILL |
| | J | BUMPE |
| SKPE | LX | 11,NE |
| | J | SKPE3 |
| SKPE1 | LA | 015,RCRDE,1 |
| | SA | 015,INPE |
| | LX | 2,M1P6 |
| SKPE2 | LA | 015,INPE |
| | SZ | 016 |
| | DSL | 015,036 |
| | SA | 016,INPE |
| | TLEM | 11,2,,016 |
| | J | BUMPE1 |
| SKPE3 | TLEM | 2,2,,015 |
| | J | \$+2 |
| | J | SKPE2 |
| | TLEM | 1,1,,015 |
| | J | SKPE1 |
| | SLJ | RARE |
| | J | SKPE1 |
| BUMPE | LA | 015,NUMEF |
| | AA | 015,ONE |
| | SA | 015,NUMEF,,1 |
| | SA | 015,ALFE5,,1 |
| BUMPE1 | LA | 015,ERIND |
| | DSL | 015,043 |
| | SA | 016,ERIND |
| | J | PCID2 |
| ERRE | LA | 015,ERIND |
| | OR | 015,ONE |
| | SA | 016,ERIND |
| | J | NUME2A |
| DRE | SX | 1,DRXE1 |
| | LX | 1,FLDNOE |
| | SX | 11,DRXE,,01 |
| | JMGI | 1,DRE1 |
| | LA | 014,CWL |
| | JN | 014,DRXE+1 |
| | LX | 1,M1P17 |

| | | |
|--------|--------|--------------|
| | LA | 015,0,4 |
| | SA | 015,TEMPE1 |
| | LA | 015,1,4 |
| | SA | 015,TEMPE2 |
| | LA | 015,2,4 |
| | SA | 015,TEMPE3 |
| | AX | 4,TREY |
| | LA | 014,CWL |
| | ANA | 014,ONE |
| | SA | 014,CWL |
| DRE1 | LA | 014,TEMPE1 |
| | SZ | 015 |
| | DSL | 014,040 |
| | SA | 014,NE |
| | LA | 016,TEMPE2 |
| | SZ | 017 |
| | DSL | 016,040 |
| | SA | 017,TEMPE2 |
| | LR | 66,MASK |
| | MLU | 016,015 |
| | SA | 017,TEMPE1 |
| | LA | 014,TEMPE3 |
| | SZ | 015 |
| | DSL | 014,042 |
| | SA | 014,KE |
| | SA | 015,TEMPE3 |
| | SX | 1,FLDNOE |
| | LX | 1,DRXE1 |
| DRXE | J | |
| | SZ | NE |
| | J | DRXE |
| RARE | J | 0 |
| | SX | 1,DRREC |
| | LA | 021,DRREC |
| | TE | 021,20,,016 |
| | J | RARE |
| BOX | J | |
| MASK | + | 077777777760 |
| MIP29 | -1,+29 | |
| MIP18 | + | -1,18 |
| PHUN | + | 100 |
| P10 | + | 10 |
| MIP6 | + | -1,6 |
| NINE | + | 9 |
| TEN | + | 10 |
| WE | + | 0 |
| NE | + | 0 |
| KE | + | 0 |
| INPE | + | 0 |
| SGNE | + | 0 |
| AMP | +20 | |
| MZR | + | 052 |
| CWL | + | 0 |
| FLDNOE | + | 0 |
| DRXE1 | + | 0 |
| PLM1 | + | 1.-1 |
| DRREC | +0 | |
| TBLE | + | 0 |
| | | + 91 |
| | | + 92 |
| | | + 93 |
| | | + 94 |
| | | + 95 |
| | | + 96 |

+ 97
 + 98
 + 99
 + 90
 + 48
 + 49
 + 0
 + 0
 + 0
 + 0
 + 31
 + 82
 + 83
 + 84
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 + 86
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 + 38
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 + 0
 + 0
 + 0
 + 30
 + 71
 + 72
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 + 74
 + 75
 + 76
 + 77
 + 78
 + 79
 + 0
 + 28
 + 29
 + 0
 + 0
 + 0
 + 20
 + 61
 + 62
 + 63
 + 64
 + 65
 + 66
 + 67
 + 68
 + 69
 + 0
 + 18
 + 19
 + 0
 + 0
 + 0

| | | |
|--------|-----|--------------|
| MDNE | + | 000000077776 |
| MINUS1 | + | -1 |
| FILL | EQU | 32767 |
| TEMPE1 | + | 0 |
| TEMPE2 | + | 0 |
| TEMPE3 | + | 0 |

| | | | |
|-------|---|-----|-------------|
| TBL3C | + | 00 | |
| | + | 00 | |
| | + | 00 | |
| | + | 00 | |
| | + | 020 | .BLANK |
| | + | 061 | .A |
| | + | 062 | .B |
| | + | 063 | .C |
| | + | 064 | .D |
| | + | 065 | .E |
| | + | 066 | .F |
| | + | 067 | .G |
| | + | 070 | .H |
| | + | 071 | .I |
| | + | 041 | .J |
| | + | 042 | .K |
| | + | 043 | .L |
| | + | 044 | .M |
| | + | 045 | .N |
| | + | 046 | .O |
| | + | 047 | .P |
| | + | 050 | .Q |
| | + | 051 | .R |
| | + | 022 | .S |
| | + | 023 | .T |
| | + | 024 | .U |
| | + | 025 | .V |
| | + | 026 | .W |
| | + | 027 | .X |
| | + | 030 | .Y |
| | + | 031 | .Z |
| | + | 074 | .) |
| | + | 040 | .MINUS SIGN |
| | + | 060 | .+ |
| | + | 00 | .L |
| | + | 013 | .= |
| | + | 00 | . |
| | + | 00 | . |
| | + | 053 | .\$ |
| | + | 054 | .* |
| | + | 034 | .(|
| | + | 00 | . |
| | + | 00 | . |
| | + | 00 | . |
| | + | 033 | ., |
| | + | 00 | . |
| | + | 012 | .0 |
| | + | 01 | .1 |
| | + | 02 | .2 |
| | + | 03 | .3 |
| | + | 04 | .4 |
| | + | 05 | .5 |
| | + | 06 | .6 |
| | + | 07 | .7 |
| | + | 010 | .12 |
| | + | 011 | .11 |
| | + | 014 | APOSTROPHE |
| | + | 00 | . |
| | + | 021 | / |
| | + | 073 | .. |
| | + | 00 | . |
| | + | 00 | .= |

```

PAUSE J 0
      J $-1
TLOD LA 25,ONE
      SA 25,NTRSG
      SX 4,TLODY,,1
      LX 4,TLODY
      LX 11,TLODX
TLOD1 LA 27,0,*4
      SA 27,TITLE+29,11
      JN 27,TLOD2
      JMGI 11,TLOD2
      J TLOD1
TLOD2 LN 25,27
      TOP 25,ZPC
      SZ 25
      SA 25,TITLE+29,11
      SZ 25
      JMGI 11,0,4
      NOP
      SA 25,TITLE+29,11
      J $-3
SUBR +1,0
      LX 12,SUBR
      NOP
      LA 25,0,*12
      SA 25,0100003-XERF,1
      LA 25,0,*12
      SA 25,0100002-XERF,1
      XOR 12,FAND
      SA 13,0100001-XERF,1
SWTCH SX 1,PFNDR
FSTOP JK 10,FHLT
      JK 14,WRTA3
      J 0100000-XERF,1
FAND +0742001,0
SWCTR +0
TLODX +1,-29
TLODY +1,0
TITLE RES 30
INT3A J $
GD LX 4,G02,,016
      LMJ 3,PCID
      +OP,0
      LA 25,OP
      LX 1,OP
      AA 25,CH233
      SA 25,PFNDR
G0A J RDIO
G02 +015200000000
      +0
      +0640000,0
DCIND +0
CH233 +023300000000
SW1 + 0
MYS LA 014,X
      SA 014,XP
      LA 014,OP
      SA 014,PRVJP
      LMJ 3,ALDT
      +OP,0
      + 0040000000000
      +0000000000000
      +0400000000000
      LA 014,PRVJP

```


| | | |
|-------|-----|------|
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | J | OPA |
| | J | OPB |
| | J | OPC |
| | J | OPD |
| | J | OPE |
| | J | OPF |
| | J | OPG |
| | J | OPH |
| | J | OPI |
| | J | EROP |
| | J | OPJ |
| | J | OPK |
| | J | OPL |
| | J | OPM |
| | J | OPN |
| | J | OPO |
| | J | OPP |
| | J | OPQ |
| | J | OPR |
| | J | EROP |
| | J | EROP |
| | J | OPS |
| | J | OPT |
| | J | OPU |
| | J | OPV |
| | J | OPW |
| | J | OPX |
| | J | OPY |
| | J | OPZ |
| | J | OP0 |
| | J | OP1 |
| | J | OP2 |
| | J | OP3 |
| | J | OP4 |
| | J | OP5 |
| | J | OP6 |
| | J | OP7 |
| | J | OP8 |
| | J | OP9 |
| OPLOZ | J | EROP |
| OPDOL | J | EROP |
| OPMIN | J | EROP |
| OPSLS | J | EROP |
| OPPER | J | EROP |
| OPNUM | J | EROP |
| OPAT | J | EROP |
| OPY | J | EROP |
| OP0 | J | EROP |
| OP1 | J | EROP |
| OP2 | J | EROP |
| OP4 | J | EROP |
| OP5 | J | EROP |
| OP6 | J | EROP |
| OP7 | J | EROP |
| OP8 | J | EROP |
| OP9 | J | EROP |
| OPDOT | SLJ | OTB |
| | TZ | SW1 |
| | J | TNOW |

| | | |
|-------|-----|-----------|
| | LA | 20,1,,016 |
| | SA | 20,SW1 |
| | LA | 20,CRD6 |
| | SA | 20,CRDT |
| | J | MYS |
| TNOW | SZ | SW1 |
| | LA | 20,CRD2 |
| | SA | 20,CRDT |
| | J | MYS |
| OPAMP | SLJ | OTAMP |
| | J | OPT2 |
| OPST | J | MYS |
| OPCOM | J | EROP |
| OP3 | J | GO |
| OPA | SLJ | OTA |
| | LA | 26,LA |
| | AH | 26,Z |
| | SLJ | LOC |
| | LA | 26,FA |
| | AH | 26,Y |
| OPA1 | SLJ | LOC |
| | LA | 26,TOP |
| | SLJ | LOC |
| | LA | 26,SZ |
| OPA2 | SLJ | LOC |
| | LA | 26,SA |
| | AH | 26,X |
| | SLJ | LOC |
| | J | MYS |
| OPB | SLJ | OTB |
| | LA | 26,J |
| | LA | 12,X |
| | AH | 26,L |
| | SA | 26,0,12 |
| | J | MYS |
| OPC | SLJ | OTC |
| | LA | 26,LA |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,LX1 |
| | AH | 26,Z |
| | ANH | 26,ABANK |
| | SLJ | LOC |
| | LA | 26,TLE |
| | AH | 26,X |
| | SLJ | LOC |
| | LA | 26,JSW |
| | SLJ | LOC |
| | LA | 26,W |
| | JZ | 26,MYS |
| | AH | 26,LX1 |
| | ANH | 26,ABANK |
| | SLJ | LOC |
| | LA | 26,TE |
| | AH | 26,X |
| OPC2 | SLJ | LOC |
| | LA | 26,JSW |
| | SLJ | LOC |
| | J | MYS |
| OPD | SLJ | OTA |
| | LA | 26,LA |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,FD |

| | | | |
|------|------|-------------|----------------|
| | SLJ | LOC | |
| | J | MYS | |
| OP I | SLJ | OTI | |
| | LA | 26,LA | |
| | AH | 26,L | |
| | AH | 26,TREY | |
| | SLJ | LOC | |
| | LA | 26,SA | |
| | AH | 26,X | |
| | SLJ | LOC | |
| | LA | 26,J | |
| | AH | 26,L | |
| | AH | 26,TWO | |
| | SLJ | LOC | |
| | SLJ | IVC | |
| | SLJ | LOC | |
| | J | MYS | |
| OP J | LMJ | 7,EROP | |
| | SZ | 26 | |
| | SLJ | LOC | |
| | J | MYS | |
| OPK | SLJ | OTK | |
| | LA | 26,X | |
| | JZ | 26,OPK1 | |
| | AA | 26,KEY | |
| | TG | 26,BBNK3 | |
| | J | ATL | |
| OPK1 | SA | 26,KEY | |
| | SZ | NOQ,,01 | |
| OPK2 | LX | 10,QCONS | |
| | LA | 26,M1 | |
| | SA | 26,QXTBL,10 | |
| | JMGI | 10,\$-2 | |
| | J | MYS | |
| OPL | SLJ | OTL | |
| | LA | 26,Z | |
| | TE | 26,LTRP | . PRINTER |
| | J | \$+3 | |
| | LX | 2,2,,015 | |
| | J | OPL1 | |
| | TE | 26,LTRT | . TAPE |
| | J | \$+3 | |
| | LX | 2,3,,015 | |
| | J | OPL1 | |
| | LX | 2,1,,015 | . CARD |
| DPL1 | SZ | 26 | |
| | LA | 27,W | |
| | DI | 26,L100 | |
| | TLEM | 2,2,,015 | |
| | LA | 26,70,,016 | |
| | SA | 26,W | |
| | JNZ | 27,OPLA | |
| | LA | 26,W | |
| | JZ | 26,\$+2 | |
| | ANA | 26,LTRA | |
| | NOP | | |
| | AA | 26,LX2 | . LX 2,CU,,016 |
| | SLJ | LOC | |
| | LA | 26,LA16 | |
| | AA | 26,Y | |
| | SLJ | LOC | |
| | LA | 26,LA3 | . LA 15,CUIA,2 |
| | SLJ | LOC | |
| | LA | 26,OPLD,2 | . LMJ LDT,4 |

| | | |
|-----|-----|----------|
| | AH | 26,Z |
| | SLJ | LOC |
| | LA | 26,NOP |
| | J | OPA2 |
| OPE | SLJ | OTB |
| | LA | 26,X,,01 |
| | ANA | 26,ABANK |
| | AH | 26,LX1 |
| | J | OPC2 |
| OPF | SLJ | OTA |
| | LA | 26,LX1 |
| | AH | 26,Y |
| | ANH | 26,ABANK |
| | SLJ | LOC |
| | LA | 26,LMJS4 |
| | SLJ | LOC |
| | LNA | 25,Y |
| | AA | 25,X |
| | OR | 25,CH233 |
| | JP | 25,\$+2 |
| | XOR | 25,CH233 |
| | FA | 26,ZERO |
| | TOP | 26,ZPC |
| | SZ | 26 |
| | SLJ | LOC |
| | LNA | 25,Y |
| | AA | 25,Z |
| | OR | 25,CH233 |
| | JP | 25,\$+2 |
| | XOR | 25,CH233 |
| | FA | 26,ZERO |
| | TOP | 26,ZPC |
| | SZ | 26 |
| | SLJ | LOC |
| | J | MYS |
| OPG | SLJ | OTA |
| | LA | 26,LA12 |
| | AH | 26,Z |
| | SLJ | LOC |
| | LA | 26,FA12 |
| | SLJ | LOC |
| | LA | 26,NOP |
| | SLJ | LOC |
| | LA | 26,LA12X |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,SA12 |
| | AH | 26,X |
| | SLJ | LOC |
| | J | MYS |
| OPH | SLJ | OTA |
| | LA | 26,LA12 |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,FA12 |
| | SLJ | LOC |
| | LA | 26,NOP |
| | SLJ | LOC |
| | LA | 26,LA12 |
| | AH | 26,Z |
| | SLJ | LOC |
| | LA | 26,SA12X |
| | AH | 26,X |

| | | |
|-------|------|---------------|
| | SLJ | LOC |
| | J | OPLP |
| OPLA | LA | 26,W |
| | JZ | 26,\$+2 |
| | ANA | 26,LTRA |
| | AA | 26,LX2 |
| | SLJ | LOC |
| | LA | 26,NOP |
| | SLJ | LOC |
| | LA | 26,LA3 |
| | SLJ | LOC |
| | LA | 26,OPLD1,2 |
| | SLJ | LOC |
| | LA | 26,X,,1 |
| | SSC | 26,18 |
| | AH | 26,Y |
| | SLJ | LOC |
| | J | MYS |
| OPLD | LMJ | 4,LDT |
| | LMJ | 4,LDC |
| | LMJ | 4,LDT |
| | LMJ | 4,LDT |
| OPLD1 | LMJ | 4,LBT |
| | LMJ | 4,LBT |
| | LMJ | 4,LBT |
| | LMJ | 4,LBT |
| OPLP | LA | 26,W1 |
| | SA | 26,FCC |
| | SSC | 26,18 |
| | AH | 26,X |
| | SLJ | LOC |
| OPLP1 | LX | 2,P1M1 |
| | LX | 3,P1Z |
| | SZ | FN |
| | LA | 24,W2+1,,017 |
| | SA | 24,OPLPA,,01 |
| OPLPA | LA | 27,W2+2,2 |
| | SZ | 26 |
| | DI | 26,10000,,017 |
| | AA | 26,FN |
| | MSI | 26,TW04 |
| | SA | 26,FN |
| | SZ | 26 |
| | DI | 26,100,,017 |
| | AA | 26,FN |
| | MSI | 26,TW04 |
| | AA | 26,27 |
| | JMGI | 2,\$+4 |
| | MSI | 26,TW04 |
| | SA | 26,FN |
| | J | OPLPA |
| | SLJ | LOC |
| | SZ | FN |
| | JMGI | 3,OPLPJ |
| | LA | 26,W2+4,,017 |
| | SA | 26,OPLPA,,1 |
| | LX | 2,P1M1 |
| | J | OPLPA |
| OPLPJ | LX | 2,P1M4 |
| OPLPK | SZ | 26 |
| | LA | 27,W2+10,2 |
| | DI | 26,10000,,017 |
| | SLJ | CLT |
| | AA | 26,FN |

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|-------|------|---------------|
| | MSI | 26,TWO2 |
| | SA | 26, FN |
| | SZ | 26 |
| | DI | 26,100,,017 |
| | SLJ | CLT |
| | AA | 26, FN |
| | MSI | 26,TWO2 |
| | SA | 26, FN |
| | LA | 26,27 |
| | SLJ | CLT |
| | AA | 26, FN |
| | JMGI | 2,\$+4 |
| | MSI | 26,TWO2 |
| | SA | 26, FN |
| | J | OPLPK |
| | SLJ | LOC |
| OPLPP | LA | 26,FCC |
| | JZ | 26,MYS |
| | ANA | 26,1,,017 |
| | SA | 26,FCC |
| OPLPO | LMJ | 3,ALDT |
| | + | W2,ERIND |
| | + | 0742631463143 |
| | + | 0146314500000 |
| | + | 0752526525000 |
| | J | OPLP1 |
| CLT | J | \$ |
| | TE | 26,LTRF |
| | J | \$\$+3 |
| | SZ | 26 |
| | J | CLT |
| | TE | 26,LTRN |
| | J | \$\$+3 |
| | LA | 26,1,,017 |
| | J | CLT |
| | TE | 26,LTRA |
| | J | \$\$+3 |
| | LA | 26,2,,017 |
| | J | CLT |
| | TE | 26,LTRS |
| | J | \$\$+3 |
| | LA | 26,3,,017 |
| | J | CLT |
| | SZ | 26 |
| | J | CLT |
| OPM | SLJ | OTA |
| | LA | 26,LA |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,FM |
| | AH | 26,Z |
| | SLJ | LOC |
| | LA | 26,NOP |
| | J | OPA2 |
| OPN | SLJ | OTB |
| | LA | 26,LA |
| | AH | 26,L |
| | AH | 26,TWO |
| | SLJ | LOC |
| | LA | 26,SA |
| | AH | 26,X |
| | SLJ | LOC |
| | LA | 26,J |
| | AH | 26,L |

| | | |
|-------|------|------------|
| | AH | 26,ONE |
| | SLJ | LOC |
| | J | MYS |
| OPD | J | MYS |
| OPP | SLJ | OTL |
| | LA | 26,Z |
| | TE | 26,LTRP |
| | J | +\$3 |
| | LX | 2,2,,017 |
| | J | OPP1 |
| | TE | 26,LTRT |
| | J | +\$3 |
| | LX | 2,3,,017 |
| | J | OPP1 |
| OPP1 | LX | 2,1,,017 |
| | SZ | 26 |
| | LA | 27,W |
| | DI | 26,L100 |
| | TLEM | 2,3,,017 |
| | J | +\$2 |
| | J | OPP2 |
| | TLEM | 2,2,,017 |
| | J | +\$3 |
| | LA | 26,LTRJ |
| | J | OPP2 |
| OPP2 | LA | 26,LTRK |
| | SA | 26,W |
| | JZ | 27,DPPA |
| | LA | 26,W |
| | JZ | 26,\$+2 |
| | ANA | 26,LTRA |
| | AA | 26,LX2 |
| | SLJ | LOC |
| | LA | 26,NOP |
| | SLJ | LOC |
| | LA | 26,LA3 |
| | SLJ | LOC |
| | LA | 26,OPPD1,2 |
| | SLJ | LOC |
| | LA | 26,X,,1 |
| | SSC | 26,18 |
| | AH | 26,Y |
| | SLJ | LOC |
| | J | MYS |
| OPPA | LA | 26,W |
| | JZ | 26,\$+2 |
| | ANA | 26,LTRA |
| | AA | 26,LX2 |
| | SLJ | LOC |
| | LA | 26,LA16 |
| | AA | 26,Y |
| | SLJ | LOC |
| | LA | 26,LA3 |
| | SLJ | LOC |
| | LA | 26,OPPD,2 |
| | SLJ | LOC |
| | J | OPLP |
| OPPD | LMJ | 4,WRT |
| | LMJ | 4,WRT |
| | LMJ | 4,PRYNT |
| | LMJ | 4,WRT |
| OPPD1 | LMJ | 4,PBT |
| | LMJ | 4,PBT |

| | | |
|-------|------|---------------|
| | LMJ | 4,PBT |
| | LMJ | 4,PBT |
| OPQ | SLJ | OTQ |
| | LA | 15,TWO |
| | AH | 15,NOQ |
| | TG | 15,QDELQ |
| | J | TMQ |
| | LA | 26,X |
| | SA | 26,QXTBL-2,15 |
| | LA | 26,Y |
| | SA | 26,QXTBL-1,15 |
| | SA | 15,NOQ,,01 |
| | J | MYS |
| OPR | SLJ | OTR |
| | LA | 26,LA |
| | AH | 26,Y |
| | J | OPA2 |
| OPS | SLJ | OTA |
| | LA | 26,LA |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,FAN |
| | AH | 26,Z |
| | J | OPA1 |
| OPT | SLJ | OTT |
| | LA | 26,LMJ4T |
| | LX | 8,P1P18 |
| | SLJ | LOC |
| | SZ | TTL,8 |
| | TLEM | 8,29,,016 |
| | J | \$-2 |
| | J | MYS |
| OPT1 | LA | 25,OP |
| | ANA | 25,AMP |
| | JZ | 25,OPAMP |
| OPT2 | LX | 7,P1Z |
| | LA | 25,TTL+17 |
| | MSI | 25,100,,016 |
| | AU | 25,TTL+18 |
| | SA | 26,TTL+17 |
| | LA | 25,TTL+19,7 |
| | SA | 25,TTL+18,7 |
| | TLEM | 7,11,,016 |
| | J | \$-3 |
| | LX | 8,M1P29 |
| OPT2B | LX | 7,P1Z |
| | LA | 25,TTL,8 |
| | JNZ | 25,\$+3 |
| | JMGI | 8,OPT2B |
| | SZ | 8 |
| | SN | 25,26 |
| | SA | 26,TTL,8 |
| OPT3 | LA | 25,TTL,7 |
| | JP | 25,OPT4 |
| | XOR | 25,INTCE |
| | FA | 26,ZRO |
| | TOP | 26,NZ |
| | SN | 26,26 |
| | SA | 26,TTL,7 |
| | SLJ | LOC |
| | J | OPT5 |
| OPT4 | OR | 25,INTCE |
| | FA | 26,ZRO |
| | TOP | 26,NZ |

| | | |
|-------|------|-------------|
| | SZ | 26 |
| | SLJ | LOC |
| | TLEM | 7,29,,016 |
| | J | OPT3 |
| OPT5 | LA | 014,OP |
| | ANA | 014,AMP |
| | JZ | 014,MYS |
| | J | MYS2 |
| LMJ4T | LMJ | 4,TLOD |
| TTL | RES | 32 |
| OPU | SLJ | OTR |
| | LA | 26,LA |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,FACH2 |
| | SLJ | LOC |
| | LA | 26,FACH3 |
| | J | OPA1 |
| OPV | SLJ | OTI |
| | LA | 26,X |
| | SA | 26,OPV1,,01 |
| | SLJ | IVC |
| OPV1 | SA | 26,0 |
| | J | MYS |
| OPW | SLJ | OTW |
| | LA | 26,X |
| | SA | 26,OPW1,,01 |
| | LA | 25,Y |
| | OR | 25,CH233 |
| | FA | 26,ZERO |
| OPW1 | SA | 26,0 |
| | J | MYS |
| OPX | LMJ | 7,EROP |
| | SZ | 26 |
| | SLJ | LOC |
| | J | MYS |
| OPZ | SLJ | OTR |
| | LA | 26,LA |
| | AH | 26,Y |
| | SLJ | LOC |
| | LA | 26,AA |
| | AH | 26,X |
| | J | OPA2 |
| LA | LA | 26,0 |
| FA | FA | 26,0 |
| TOP | TOP | 26,NZ |
| SZ | SZ | 26 |
| FIVER | +5 | |
| TLE | TLE | 26,0 |
| TE | TE | 26,0 |
| TNZ | TNZ | 0 |
| TZ | TZ | 0 |
| SA | SA | 26,0 |
| J | J | 0 |
| LN | LN | 26,0 |
| AA | AA | 26,0 |
| JZ | JZ | 26,0 |
| LX1 | LX | 1,0,,015 |
| JP | JP | 26,0 |
| JSW | J | SWTCH |
| JPSWT | JP | 26,SWTC1 |
| JN | JN | 26,0 |
| FD | FD | 26,0 |
| LX11 | LX | 11,0,,016 |

| | | |
|-------|-----|----------------|
| LMJS4 | SLJ | SUBR |
| LA12 | LA | 12,0 |
| FA12 | FA | 12,CH265 |
| LA12X | LA | 12,0,13 |
| SA12 | SA | 12,0 |
| SA12X | SA | 12,0,13 |
| FM | FM | 26,0 |
| FAN | FAN | 26,0 |
| FACH | FA | 26,CH265 |
| FACH2 | FA | 26,CH233 |
| FACH3 | FA | 26,ZERO |
| IVC | J | \$ |
| | LA | 25,Z |
| | OR | 25,CH233 |
| | FA | 26,ZERO |
| | LA | 12,8,,017 |
| | ANA | 12,W |
| | JZ | 12,IVC1 |
| | JP | 12,IVC2 |
| | SN | 12,12 |
| | NOF | |
| | FM | 26,IVTBL,12 |
| IVC1 | LA | 25,024,,017 |
| | TLE | 25,Y |
| | SN | 26,26 |
| | TOP | 26,ZPC |
| | SZ | 26 |
| | J | IVC |
| IVC2 | FD | 26,IVTBL,12 |
| | J | IVC1 |
| IVTBL | | +0201400000000 |
| | | +0204500000000 |
| | | +0207620000000 |
| | | +0212764000000 |
| | | +0216470400000 |
| | | +0221606500000 |
| | | +0224750220000 |
| | | +0230461132000 |
| | | +0233575360400 |
| | | +0236734654500 |
| | | +0242452013710 |
| | | +0245564416672 |
| | | +0250721522451 |
| | | +0254443023471 |
| | | +0257553630410 |
| | | +0262706576512 |
| | | +0266434157116 |
| | | +0271543212741 |
| | | +0274674055532 |
| | | +0300425434430 |
| | | +0303532743536 |
| | | +0306661534466 |
| | | +0312417031702 |
| | | +0315522640262 |
| | | +0320647410336 |
| | | +0324410545213 |
| | | +0327512676456 |
| | | +0332635456171 |
| | | +0336402374714 |
| | | +0341503074077 |
| | | +0344623713116 |
| | | +0347770675742 |
| | | +0353473426555 |
| | | +0356612334311 |

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+0361755023373
+0365464114135
+0370601137164
+0373741367021
+0377454732313
OTAMP  J      0
      LMJ      4,$+4
      +0042421042104
      +0210421000000
      +0725252525000
      LMJ      3,PCID
      +TTL+18,ERIND
      LX      10,TTLP
      NOP
      LMA      26,TTL,10
      SA      26,TTL,10
      JMGI     10,$-3
      J      OTAMP
OTA     J      0
      LMJ      4,$+4
      +0052524000000
      +0
      +0652400000000
      LX      10,M12
      LMJ      3,PCID
      +X,ERIND
OTA1    NOP
      LA      26,X,10
      SLJ     DCD
      SA      26,X,10
      JMGI     10,OTA1
      J      OTA
OTB     J      0
      LMJ      4,$+4
      +0052000000000
      +0
      +0640000000000
      LMJ      3,PCID
      +X,ERIND
      TNZ     X
      J      OTB
      LA      26,X
      SLJ     DCD
      SA      26,X
      J      OTB
OTC     J      0
      LMJ      4,$+4
      +0052525200000
      +0
      +0652400000000
      LX      10,M12
      LMJ      3,PCID
      +X,ERIND
OTC1    NOP
      LA      26,X,10
      SLJ     DCD
      SA      26,X,10
      JMGI     10,OTC1
      LA      26,W
      JZ      26,OTC
      SLJ     DCD
      SA      26,W
      J      OTC

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EXIT IF OPDOT

OTI J 0
 LMJ 4,\$+4
 +0052140600000
 +0
 +0662400000000
 LMJ 3,PCID
 +X,ERIND
 LA 26,X
 SLJ DCD
 SA 26,X
 J OTI

OTK J 0
 LMJ 4,\$+4
 +0052000000000
 +0
 +0640000000000
 LMJ 3,PCID
 +X,ERIND
 J OTK

OTL J OTL
 LMJ 4,\$+4
 +0052504423146
 +0314614631463
 +0655125255252
 LX 10,M11
 LMJ 3,PCID
 +X,0

OTL1 NOP
 LA 26,X,10
 SLJ DCD
 SA 26,X,10
 JMGI 10,OTL1
 J OTL

OTQ J 0
 LMJ 4,\$+4
 +0052500000000
 +0
 +0650000000000
 LMJ 3,PCID
 +X,ERIND
 J OTQ

OTR J 0
 LMJ 4,\$+4
 +0052500000000
 +0
 +0650000000000
 LX 10,M11
 LMJ 3,PCID
 +X,ERIND

OTR1 NOP
 LA 26,X,10
 SLJ DCD
 SA 26,X,10
 JMGI 10,OTR1
 J OTR

OTT J 0
 LMJ 4,\$+4
 +0250421042104
 +0210421042103
 +0525252525252
 LMJ 3,PCID
 +TTL,0
 LA 26,TTL
 ANA 26,LTRTB

| | | |
|-------|------|----------------|
| | LX | 10,M117 |
| | SA | 26,TTL |
| OTT1 | NOP | |
| | LA | 26,TTL,10 |
| | SM | 26,TTL,10 |
| | JMGI | 10,OTT1 |
| | J | OTT |
| OTW | J | 0 |
| | LMJ | 4,\$+4 |
| | | +0052400000000 |
| | | +0 |
| | | +0660000000000 |
| | LMJ | 3,PCID |
| | | +X,ERIND |
| | LA | 26,X |
| | SLJ | DCD |
| | SA | 26,X |
| | J | OTW |
| DCD | J | 0 |
| | SX | 10,0104 |
| | LX | 10,NOQ |
| DCD1 | TNZ | NOQ,,01 |
| | J | DCD1A-1 |
| | TNE | 26,QXTBL,10 |
| | J | DCD2 |
| | JMGI | 10,DCD1 |
| | AA | 26,KEY |
| DCD1A | AA | 26,ABANK |
| | LX | 10,0104 |
| | TG | 26,BBNK3 |
| | J | ATL |
| | J | DCD |
| DCD2 | LA | 26,QXTBL+1,10 |
| | J | DCD1A |
| DCDK | + | 0 |
| LOC | J | 0 |
| | LA | 15,L |
| | TG | 15,BOUND,,01 |
| | J | LTL |
| | SA | 26,0,15 |
| | AA | 15,1,,016 |
| | SA | 15,L |
| | J | LOC |
| OP | | +0 |
| X | | +0 |
| Y | | +0 |
| Z | | +0 |
| W | | +0 |
| W1 | | +0 |
| W2 | | +0 |
| W3 | | +0 |
| W4 | | +0 |
| W5 | | +0 |
| W6 | | +0 |
| W7 | | +0 |
| W8 | | +0 |
| W9 | | +0 |
| W10 | | +0 |
| W11 | | +0 |
| W12 | | +0 |
| W13 | | +0 |
| W14 | | +0 |
| KEY | | +0 |
| U | | +0 |

| | | |
|-------|-----------|---------------|
| PRVOP | +0 | |
| XP | +0 | |
| ALDT | TZ | GUARD,,010 |
| | J | \$-1 |
| | LX | 2,BUFF |
| | LA | 17,0,3 |
| | AX | 3,1,,015 |
| | SA | 17,ALDT3+1 |
| | SX | 3,4 |
| | LA | 17,1,,017 |
| | TZ | SW1 |
| | J | ALDC |
| | SA | 17,GUARD,,010 |
| | LA | 18,CRDT |
| | SA | 18,CR22 |
| | LA | 18,LICC |
| | SA | 18,IO5 |
| | LA | 18,LFCC |
| | SA | 18,IO5+1 |
| | TNZ | TSIG,,010 |
| | J | ALDT1 |
| EXA21 | EX | IO5 |
| | EX | IO5+1 |
| | W | |
| | SZ | TSIG,,010 |
| ALDT1 | TNZ | TSIG,,011 |
| | J | ALDT2 |
| | LX | 1,1,,017 |
| | J | RDIO |
| ALDT2 | NOP | |
| | LA | 18,IRCD,2 |
| | SA | 18,RCRDE,2 |
| | SZ | IRCD,2 |
| | JMGI | 2,ALDT2 |
| EXA22 | EX | IO5 |
| | EX | IO5+1 |
| | W | |
| ALDT3 | LMJ | 3,PCID |
| | +OP,ERIND | |
| | J | 0,4 |
| CRDNT | LA | 19,201,,015 |
| | SX | 5,CDRAR,,01 |
| | SSL | 19,2 |
| | TNE | 19,010,,016 |
| | J | SW10 |
| | SA | 19,CSIG |
| | TNE | 19,016,,016 |
| | J | SW16 |
| | TNE | 19,017,,016 |
| | J | SW17 |
| | TE | 19,013,,016 |
| | J | BADF |
| | SLJ | CRGE |
| | LA | 20,CRDN1+1 |
| | LA | 19,CRDN1 |
| BADCO | SLJ | IOTYP |
| | LA | 20,CRDN3 |
| | SLJ | ALTER |
| | LA | 19,WORD |
| | LA | 20,CARD |
| | SLJ | IOTYP |
| | LMJ | 7,STALL |
| | AAIJ | ALDC |

| | | |
|-------|------|----------------|
| SW16 | SLJ | CRGE |
| | LA | 20,CRDN2+1 |
| | LA | 19,CRDN2 |
| | J | BADCD |
| SW17 | LA | 12,0201,,016 |
| | LMJ | 7,TNTRK |
| | AAIJ | ALDC |
| SW10 | LA | 19,CRDN3 |
| | AA | 19,1,,016 |
| | SA | 19,CRDN3 |
| CDRAR | LX | 5,0,,015 |
| | DIC | 12 |
| | AAIJ | 0,5 |
| LDC | TOP | 16,ZPC |
| | J | 4,4 |
| | JP | 16,\$+2 |
| | J | 4,4 |
| | SA | 16,COUNT |
| | LA | 17,0,4 |
| | AX | 4,1,,015 |
| | SA | 17,LDC3A+1,,02 |
| | SSL | 17,18 |
| | SA | 17,LDC3A+1,,01 |
| | AA | 17,1,,016 |
| | MSI | 17,TREY |
| | SA | 17,ANX4C,,01 |
| ALDC | TNZ | CSIG,,010 |
| | J | CID |
| | AX | 3,1,,015 |
| | LIC | 12,CRGV1 |
| | LFC | 12,CRGV2 |
| | W | |
| | SZ | CSIG |
| CID | SX | 3,CID2A,,1 |
| | LX | 1,P1Z |
| | LX | 3,M1P19 |
| | NOP | |
| | SZ | RCRDE,3 |
| | JMGI | 3,\$-2 |
| CID0 | LA | 014,ICR3,1 |
| | SA | 014,CID5 |
| | LX | 11,P1Z |
| CID1 | LA | 014,CID5 |
| | DSL | 014,Q36 |
| | SA | 015,CID5 |
| | AA | 014,TBL3C,,016 |
| | SA | 014,CID2,,1 |
| | NOP | |
| CID2 | LA | 023,0 |
| | LMJ | 3,CID3 |
| | TLEM | 11,5,,016 |
| | J | CID1 |
| | TLEM | 1,11,,016 |
| | J | CID0 |
| CID2A | LX | 3,0,,015 |
| ALDC2 | LIC | 12,CRGV1 |
| | LFC | 12,CRGV2 |
| | W | |
| | TZ | OCIND |
| | J | ALDT3 |
| LDC3A | LMJ | 3,PCID |
| | +J | |
| | LA | 16,COUNT |
| | FAN | 16,FL1 |

| | | | |
|-------|------|----------------|------------------------|
| | TOP | 16,ZPC | |
| | J | 0,4 | |
| | SA | 16,COUNT | |
| | LA | 18,NUMEF | |
| | SA | 18,LDC3A+1,,02 | |
| ANX4C | ANX | 4,3,,015 | |
| | J | ALDC | |
| CID3 | SX | 3,CID4,,01 | |
| | SZ | 024 | |
| | EX | CID5,11 | |
| | SZ | 025 | |
| | OR | 024,RCRDE,1 | |
| | SA | 025,RCRDE,1 | |
| CID4 | J | | |
| CID5 | DSL | 023,6 | |
| | DSL | 023,12 | |
| | DSL | 023,18 | |
| | DSL | 023,24 | |
| | DSL | 023,30 | |
| | DSL | 023,36 | |
| CID6 | + | 0 | |
| NTCH2 | PACI | | |
| | LA | 19,MODE | |
| | LX | 6,XR22 | |
| | J | ALT | |
| NTCH3 | PACI | | |
| | LA | 19,MODE+1 | |
| | LX | 6,XR23 | |
| | J | ALT | |
| NTCH4 | PACI | | |
| | LA | 19,MODE+2 | |
| | LX | 6,XR24 | |
| ALT | SA | 19,MODEI | |
| | LA | 19,CUIA,6 | |
| | SA | 19,SCUIA. | STORE CUIA |
| | SX | 6,SCUIA+1. | STORE XR2N |
| | SX | 5,SCUIA+2. | STORE PROGRAM LOCATION |
| | SZ | 6 | |
| ALTIJ | LX | 6,SCUIA,,015 | |
| | SX | 6,DIC,,010 | |
| | SX | 6,DOC,,010 | |
| | AX | 6,M2 | |
| | LA | 18,201,,015 | |
| | AND | 18,IMASK | |
| | SA | 19,SWSTR | |
| | SSL | 19,2 | |
| | TE | 19,010,,016 | |
| | J | TSTMD | |
| SW40 | LA | 19,INTWD,6 | |
| | SA | 19,130,5 | |
| | LA | 19,MODEI | |
| | JZ | 19,DIC | |
| DOC | DOC | 0 | |
| | J | \$+2 | |
| DIC | DIC | 0 | |
| | EX | SZG,6 | |
| | LX | 5,SCUIA+2 | |
| | AACI | | |
| | AAIJ | 0,5. | RETURN TO PROGRAM |
| TSTMD | TZ | MODEI | |
| | J | OUTPT | |
| | LA | 18,201,,015 | |
| | AND | 18,IMASK | |
| | TNE | 19,054,,016 | |

| | | | |
|-------|------|----------------|----------------------|
| | J | LGEOF | |
| | TNE | 19,044,,016 | |
| | J | LGERR | |
| | TNE | 19,050,,016 | |
| | J | LGERR | |
| | TNE | 19,074,,016 | |
| | J | NTRLK-3 | |
| | TNE | 19,070,,016 | |
| | J | SW40 | |
| | TNE | 19,034,,016 | |
| | J | BADF | |
| | TNE | 19,024,,016 | |
| | J | NTRLK | |
| LGEOF | LMJ | 7,MFAIL | |
| | LX | 5,SCUIA+1 | |
| | LA | 19,1,,017 | |
| | SA | 19,TSIGA,5,011 | |
| | J | SW40 | |
| LGERR | LX | 5,SCUIA+1 | |
| | LA | 19,1,,017 | |
| | SA | 19,TSIGA,5,012 | |
| | J | SW40 | |
| LGEOT | LX | 5,SCUIA+1 | |
| | LA | 19,01,,017 | |
| | SA | 19,TSIGA,5,013 | |
| | J | SW40 | |
| | LA | 12,SCUIA,,015 | |
| | SSC | 12,30 | |
| | J | SW40 | |
| NTRLK | LMJ | 7,TNTRK | |
| | LX | 5,6 | |
| | LA | 19,JALT | |
| | SA | 19,130,5 | |
| | EX | ACI,6 | |
| | AX | 5,5 | |
| | AAIJ | \$+1 | |
| | EX | I05,5. | EXECUTE I/O |
| | EX | I05+1,5 | |
| | W | | |
| OUTPT | LA | 18,201,,015 | |
| | AND | 18,IMASK | |
| | TNE | 19,044,,016 | |
| | J | WRTER | |
| | TNE | 19,050,,016 | |
| | J | WRTER | |
| | TNE | 19,070,,016 | |
| | J | WRTER | |
| | TNE | 19,074,,016 | |
| | J | NTFLT-3 | |
| | TNE | 19,060,,016 | |
| | J | LGEOT | |
| | TNE | 19,024,,016 | |
| | J | NTFLT | |
| | TNE | 19,034,,016 | |
| | J | BADF | |
| WRTER | LMJ | 7,MFAIL | |
| | LA | 19,BSPK. | ERROR REPEAT COUNTER |
| | AA | 19,1 | |
| | TNE | 19,06,016 | |
| | LMJ | 7,TFAIL | |
| | SA | 19,BSPK | |
| | LA | 19,JA | |
| | SA | 19,130,5 | |
| | LA | 19,SCUIA,,02 | |

| | | | |
|-------|------|----------------|--------------------|
| | AH | 19,BSP | |
| | SA | 19,BSPF | |
| | AND | 19,SKPIT | |
| | SA | 20,SKPF | |
| | EX | ACI,6 | |
| | AAIJ | \$+1 | |
| | EX | LFC,6. | BACKSPACE BLOCK |
| | W | | |
| A | LA | 18,201,,015 | |
| | AND | 18,IMASK | |
| | TNE | 19,040,,016 | |
| | J | SKIP | |
| | TE | 19,060,,016 | |
| | LMJ | 7,MFAIL | |
| SKIP | LA | 19,JB | |
| | SA | 19,130,5 | |
| | EX | ACI,6 | |
| | AAIJ | \$+1 | |
| | EX | LFC+3,6. | SKIP AND ERASE |
| | W | | |
| B | LA | 18,201,,015 | |
| | AND | 18,IMASK | |
| | TNE | 19,044,,016 | |
| | J | WRTER | |
| | SZ | BSPK | |
| | TNE | 19,040,,016 | |
| | J | NTFLT | |
| | TE | 19,060,,016 | |
| | LMJ | 7,MFAIL | |
| | LA | 19,1,,017 | |
| | SA | 19,TSIGA,,013 | |
| | LA | 12,SCUIA,,015 | |
| | SSC | 12,30 | |
| NTFLT | LMJ | 7,INTRK | |
| | LX | 6,SCUIA,,015 | |
| | ANX | 6,2,,015 | |
| | LA | 19,JALT | |
| | SA | 19,130,5 | |
| | EX | ACI,6 | |
| | LX | 5,6 | |
| | AX | 5,6 | |
| | AAIJ | \$+1 | |
| | EX | I05,5. | EXECUTE REMOTE I/O |
| | NDP | | |
| | EX | I05+1,5 | |
| | W | | |
| SWSTR | +0 | | |
| IMASK | +074 | | |
| LDT | SZ | 0100000-XERF | |
| | LA | 17,0,4 | |
| | AX | 4,1,,015 | |
| | SA | 17,LDT3A+1,,02 | |
| | SSL | 17,18 | |
| | SA | 17,LDT3A+1,,01 | |
| | AA | 17,1,,016 | |
| | MSI | 17,TREY | |
| | SA | 17,ANX4A,,01 | |
| | LA | 17,1,,017 | |
| | SX | 4,WRX4 | |
| | LX | 3,PIZ | |
| | LA | 18,15 | |
| | SSL | 18,036 | |
| | AA | 18,LGIN | |
| | SA | 18,\$+2 | |

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|------|-----|----------------|
| | NOP | |
| | NOP | |
| | SA | 18,LTG |
| | NOP | |
| LTG | NOP | |
| LC2 | SA | 17,GUARD,,010 |
| | SZ | MODE |
| | LA | 18,LIC2 |
| | SA | 18,I05 |
| | LA | 18,LFC2 |
| | SA | 18,I05+1 |
| | SA | 15,GWV1,,1 |
| | LA | 18,20,,016 |
| | SA | 18,GWV1,,02 |
| | SA | 15,LDT2C,,1 |
| | SA | 15,LDT2C+1,,1 |
| | SSL | 15,18 |
| | JNZ | 16,LC2B |
| | SA | 15,BSF,,5 |
| | LA | 18,GWV11 |
| | AA | 18,2,,017 |
| | SA | 18,GWVA |
| | LA | 18,NOP |
| | SA | 18,I05 |
| LI02 | EX | I05+1 |
| | SX | 2,XR22 |
| | W | |
| LC2A | SA | 16,TSIGA,2 |
| | SA | 17,TSIGA,2,010 |
| | J | 3,4 |
| LC2B | JP | 16,LC2D |
| | LMA | 18,020 |
| | SMA | 18,020 |
| | SA | 15,BSR,,5 |
| | LA | 18,GWV11 |
| | ANA | 18,1,,017 |
| | SA | 18,GWVA |
| | LA | 18,NOP |
| | SA | 18,I05 |
| | TZ | TSIGA,2,010 |
| | J | LC2C |
| | EX | I05+1 |
| | SX | 2,XR22 |
| | W | |
| LC2C | SA | 17,GUARD,,010 |
| | EX | I05+1 |
| | SX | 2,XR22 |
| | W | |
| | FAN | 16,FL1 |
| | TEP | 16,ZPC |
| | J | LC2C |
| | SZ | 020 |
| | J | LC2A |
| LC2D | LA | 18,GWV11 |
| | SA | 18,GWVA |
| | SA | 15,RD,,5 |
| | LA | 18,I0X1 |
| | SA | 18,XL10 |
| | SA | 18,XL101 |
| | LA | 18,L102 |
| | SA | 18,XL10+1 |
| | SA | 18,XL101+1 |
| | LA | 18,L102+1 |
| | SA | 18,XL10+2 |

. LA 19,LJ

| | | |
|------|-----|----------------|
| | SA | 18,XLIO1+2 |
| | LA | 18,JIC2 |
| | SA | 18,XLIO+3 |
| | SA | 18,XLIO1+3 |
| | J | LDT2 |
| LC3 | SA | 17,GUARD,,011 |
| | SZ | MODE+1 |
| | LA | 18,LIC3 |
| | SA | 18,I05+2 |
| | LA | 18,LFC3 |
| | SA | 18,I05+3 |
| | SA | 15,GWV2,,1 |
| | LA | 18,20,,016 |
| | SA | 18,GWV2,,02 |
| | SA | 15,LDT2C,,1 |
| | SA | 15,LDT2C+1,,1 |
| | SSL | 15,18 |
| | JNZ | 16,LC3B |
| LCB3 | SA | 15,BSF1,,5 |
| | LA | 18,GWV12 |
| | AA | 18,2,,017 |
| | SA | 18,GWVB |
| | LA | 18,NOP |
| | SA | 18,I05+2 |
| LI03 | EX | I05+3 |
| | SX | 2,XR23 |
| | W | |
| LC3A | SA | 16,TSIGA,2 |
| | SA | 17,TSIGA,2,010 |
| | J | 3,4 |
| LC3B | JP | 16,LC3D |
| | LMA | 18,020 |
| | SMA | 18,020 |
| | SA | 15,BSR1,,5 |
| | LA | 18,GWV12 |
| | ANA | 18,1,,017 |
| | SA | 18,GWVB |
| | LA | 18,NOP |
| | SA | 18,I05+2 |
| | TZ | TSIGA,2,010 |
| | J | LC3C |
| | EX | I05+3 |
| | SX | 2,XR23 |
| | W | |
| LC3C | SA | 17,GUARD,,011 |
| | EX | I05+3 |
| | SX | 2,XR23 |
| | W | |
| | FAN | 16,FL1 |
| | TEP | 16,ZPC |
| | J | LC3C |
| | SZ | 020 |
| | J | LC3A |
| LC3D | LA | 18,GWV12 |
| | SA | 18,GWVB |
| | SA | 15,RD1,,5 |
| | LA | 18,IOX1+1 |
| | SA | 18,XLIO |
| | SA | 18,XLIO1 |
| | LA | 18,IOX+1 |
| | SA | 18,XLIO+1 |
| | SA | 18,XLIO1+1 |
| | LA | 18,LIO3+1 |
| | SA | 18,XLIO+2 |

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|------|-----|----------------|
| | SA | 18,XLID1+2 |
| | LA | 18,JIC3 |
| | SA | 18,XLID+3 |
| | SA | 18,XLID1+3 |
| | J | LDT2 |
| LC4 | SA | 17,GUARD,,012 |
| | SZ | MODE+2 |
| | LA | 18,LIC4 |
| | SA | 18,I05+4 |
| | LA | 18,LFC4 |
| | SA | 18,I05+5 |
| | SA | 15,GWV3,,1 |
| | LA | 18,20,,016 |
| | SA | 18,GWV3,,02 |
| | SA | 15,LDT2C,,1 |
| | SA | 15,LDT2C+1,,1 |
| | SSL | 15,18 |
| | JNZ | 16,LC4B |
| LCB4 | SA | 15,BSF2,,5 |
| | LA | 18,GWV13 |
| | AA | 18,2,,017 |
| | SA | 18,GWVC |
| | LA | 18,NOP |
| | SA | 18,I05+4 |
| LID4 | EX | I05+5 |
| | SX | 2,XR24 |
| | W | |
| LC4A | SA | 16,TSIGA,2 |
| | SA | 17,TSIGA,2,010 |
| | J | 3,4 |
| LC4B | JP | 16,LC4D |
| | LMA | 18,020 |
| | SMA | 18,020 |
| | SA | 15,BSR2,,5 |
| | LA | 18,GWV13 |
| | ANA | 18,1,,017 |
| | SA | 18,GWVC |
| | LA | 18,NOP |
| | SA | 18,I05+4 |
| | TZ | TSIGA,2,010 |
| | J | LC4C |
| | EX | I05+5 |
| | SX | 2,XR24 |
| | W | |
| LC4C | SA | 17,GUARD,,012 |
| | EX | I05+5 |
| | SX | 2,XR24 |
| | W | |
| | FAN | 16,FL1 |
| | TEP | 16,ZPC |
| | J | LC4C |
| | SZ | 020 |
| | J | LC4A |
| LC4D | LA | 18,GWV13 |
| | SA | 18,GWVC |
| | SA | 15,RD2,,5 |
| | LA | 18,I0X1+2 |
| | SA | 18,XLIO |
| | SA | 18,XLIO1 |
| | LA | 18,I0X+2 |
| | SA | 18,XLIO+1 |
| | SA | 18,XLIO1+1 |
| | LA | 18,LIO4+1 |
| | SA | 18,XLIO+2 |

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|-------|----------|----------------|--------------|
| | SA | 18,XLIO1+2 | |
| | LA | 18,JIC4 | |
| | SA | 18,XLIO+3 | |
| | SA | 18,XLIO1+3 | |
| LDT2 | TNZ | TSIGA,2,010 | |
| | J | LDT2A | |
| XLIO1 | RES | 4 | |
| | SZ | TSIGA,2,010 | |
| LDT2A | NOP | | |
| LDT2B | TNZ | TSIGA,2,011 | . TEST EOF |
| | J | LD2B | |
| | SZ | TSIGA,2,011 | |
| | LA | 18,FL2 | |
| | SNA | 18,010000-XERF | |
| | SA | 17,TSIGA,2,010 | |
| EROUT | J | 3,4 | |
| LD2B | TNZ | TSIGA,2,012 | . ERROR TEST |
| | J | LDT2C | |
| | SZ | TSIGA,2,012 | |
| | LA | 18,FL1 | |
| | SNA | 18,010000-XERF | |
| | J | EROUT | |
| LDT2C | LA | 18,3,3 | |
| | SZ | 3,3 | |
| | SA | 18,RCRDE,3 | |
| | TLEM | 3,19,,016 | |
| | J | LDT2C | |
| XLIO | RES | 4 | |
| | SA | 16,COUNT | |
| LDT3A | LMJ | 3,PCID | |
| | +0 | | |
| | SX | 4,WRTX4 | |
| | LA | 18,NUMEF | |
| | SA | 18,LDT3A+1,,02 | |
| | LX | 3,PIZ | |
| | LA | 16,COUNT | |
| | FAN | 16,FL1 | |
| | TOP | 16,ZPC | |
| | J | 0,4 | |
| ANX4A | ANX | 4,3,,015 | |
| | J | LDT2A | |
| PRYNT | LA | 17,1,,016 | |
| | SA | 17,PRSIG | |
| WRT | SZ | 0100000-XERF | |
| | LA | 17,1,,016 | |
| | SA | 16,COUNT | |
| | SA | 15,WRTX5 | |
| | TNZ | NTRSG | |
| | J | WRTO | |
| | SX | 4,WRTX4 | |
| | LX | 4,TDELQ | |
| | LMJ | 3,PCIE | |
| | +1,TITLE | | |
| | LA | 16,COUNT | |
| | LX | 4,BUFF | |
| | SZ | NTRSG | |
| WRT1 | NOP | | |
| | LA | 18,RCRDF,4 | |
| | SA | 18,TRCRD,4 | |
| | JMGI | 4,WRT1 | |
| | LX | 4,WRTX4 | |
| WRTO | SZ | 034 | |
| | LA | 15,WRTX5 | |
| | LA | 18,0,4 | |

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|-------|-----|-----------------|-----------------------------|
| | AX | 4,1,,015 | |
| | SA | 18,WRT24+1 | |
| | SSL | 18,18 | |
| | AA | 18,1,,016 | |
| | MSI | 18,TREY | |
| | SA | 18,ANX43,,01 | |
| | TNZ | TSIGA,2,013 | |
| | J | ALPH1 | |
| | LNA | 18,FL3 | |
| | SA | 18,0100000-XERF | |
| | SZ | TSIGA,2,013 | |
| | J | 3,4 | |
| ALPH1 | LA | 18,15 | |
| | SSL | 18,036 | |
| | AA | 18,GINST | |
| | SA | 18,\$+2 | |
| | NOP | | |
| | NOP | | . LA 7,J |
| | SA | 18,JTG | |
| | NOP | | |
| JTG | NOP | | |
| C2 | SA | 17,GUARD,,010 | |
| | SA | 17,MODE | |
| | LA | 18,LFC2 | |
| | SA | 18,I05 | |
| | LA | 18,LOC2 | |
| | SA | 18,I05+1 | |
| | SA | 15,GWV1,,1 | |
| | SA | 15,WRT3C,,1 | |
| | SSL | 15,18 | |
| | TZ | TSIGA,2,010 | . TEST FOR BSR BEFORE WRITE |
| | J | C2A | |
| | SA | 15,BSR,,5 | |
| | LA | 18,GWV11 | |
| | ANA | 18,021 | |
| C2I0 | SA | 18,GWVA | |
| | EX | I05 | |
| | SX | 2,XR22 | |
| | W | | |
| C2A | SA | 17,TSIGA,2,010 | |
| | JNZ | 16,C2B | . COUNT |
| | SA | 15,WEF,,5 | |
| | LA | 18,GWV14 | |
| | ANA | 18,021 | |
| | SA | 18,GWVA | |
| | LA | 18,NOP | |
| | SA | 18,I05+1 | |
| | EX | I05 | |
| | SX | 2,XR22 | |
| | W | | |
| C2B | J | 3,4 | |
| | JP | 16,C2C | |
| | SA | 15,REW,,5 | |
| | LA | 18,GWV14 | |
| | AA | 18,2,,017 | |
| | SA | 18,GWVA | |
| | LA | 18,NOP | |
| | SA | 18,I05+1 | |
| | EX | I05 | |
| | SX | 2,XR22 | |
| | W | | |
| | SA | 17,TSIGA,2,010 | |
| | J | 3,4 | |

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|------|-----|----------------|---------|
| C2C | SA | 15,WD,,05 | |
| | LA | 18,GWV14 | |
| | SA | 18,GWVA | |
| | LA | 18,C2IO | |
| | SA | 18,XIO | |
| | LA | 18,IOX | |
| | SA | 18,XIO+3 | |
| | LA | 18,NOP | |
| | SA | 18,XIO+2 | |
| | LA | 18,JOC2 | |
| | SA | 18,XIO+4 | |
| | LA | 18,C2IO+1 | |
| | SA | 18,XIO+1 | |
| | J | WRT2 | |
| C3 | SA | 17,GUARD,,011 | |
| | SA | 17,MODE+2 | |
| | LA | 18,LFC3 | |
| | SA | 18,I05+2 | |
| | LA | 18,LOC3 | |
| | SA | 18,I05+3 | |
| | SA | 15,GWV2,,1 | |
| | SA | 15,WRT3C,,1 | |
| | SSL | 15,18 | |
| | TZ | TSIGA,2,010 | |
| | J | C3A | |
| | SA | 15,BSR1,,5 | |
| | LA | 18,GWV12 | |
| | ANA | 18,021 | |
| | SA | 18,GWVB | |
| C3IO | EX | I05+2 | |
| | SX | 2,XR23 | |
| | W | | |
| | SA | 17,TSIGA,2,010 | |
| C3A | JNZ | 16,C3B | . COUNT |
| | SA | 15,WEF1,,5 | |
| | LA | 18,GWV15 | |
| | ANA | 18,021 | |
| | SA | 18,GWVB | |
| | LA | 18,NOP | |
| | SA | 18,I05+3 | |
| | EX | I05+2 | |
| | SX | 2,XR23 | |
| | W | | |
| | J | 3,4 | |
| C3B | JP | 16,C3C | |
| | SA | 15,REW1,,5 | |
| | LA | 18,GWV15 | |
| | AA | 18,2,,017 | |
| | SA | 18,GWVB | |
| | LA | 18,NOP | |
| | SA | 18,I05+3 | |
| | EX | I05+2 | |
| | SX | 2,XR23 | |
| | W | | |
| | SA | 17,TSIGA,2,010 | |
| | J | 3,4 | |
| C3C | SA | 15,WD1,,5 | |
| | LA | 18,GWV15 | |
| | SA | 18,GWVB | |
| | LA | 18,C3IO | |
| | SA | 18,XIO | |
| | LA | 18,C3IO+1 | |
| | SA | 18,XIO+1 | |
| | LA | 18,NOP | |

| | | |
|-------|-----|----------------|
| | SA | 18,XI0+2 |
| | LA | 18,JOC3 |
| | SA | 18,XI0+4 |
| | LA | 18,IOX+1 |
| | SA | 18,XI0+3 |
| | J | WRT2 |
| C4 | SA | 17,GUARD,,012 |
| | SA | 17,MODE+2 |
| | LA | 18,LFC4 |
| | SA | 18,IO5+4 |
| | LA | 18,LOC4 |
| | SA | 18,IO5+5 |
| | SA | 15,GWV3,,1 |
| | SA | 15,WRT3C,,1 |
| | SSL | 15,18 |
| | TZ | TSIGA,2,010 |
| | J | C4A |
| | SA | 15,BSR2,,5 |
| | LA | 18,GWV13 |
| | ANA | 18,021 |
| | SA | 18,GWVC |
| C4IO | EX | IO5+4 |
| | SX | 2,XR24 |
| | W | |
| | SA | 17,TSIGA,2,010 |
| C4A | JNZ | 16,C4B |
| | SA | 15,WEF2,,5 |
| | LA | 18,GWV15 |
| | ANA | 18,021 |
| | SA | 18,GWVC |
| | LA | 18,NOP |
| | SA | 18,IO5+5 |
| | EX | IO5+4 |
| | SX | 2,XR24 |
| | W | |
| | J | 3,4 |
| C4B | JP | 16,C4C |
| | SA | 15,REW2,,5 |
| | LA | 18,GWV15 |
| | AA | 18,2,,017 |
| | SA | 18,GWVC |
| | LA | 18,NOP |
| | SA | 18,IO5+5 |
| | EX | IO5+4 |
| | SX | 2,XR24 |
| | W | |
| | SA | 17,TSIGA,2,010 |
| | J | 3,4 |
| C4C | SA | 15,WD2,,05 |
| | LA | 18,GWV15 |
| | SA | 18,GWVC |
| | LA | 18,C4IO |
| | SA | 18,XIO |
| | LA | 18,C4IO+1 |
| | SA | 18,XIO+1 |
| | LA | 18,NOP |
| | SA | 18,XIO+2 |
| | LA | 18,IOX+2 |
| | SA | 18,XIO+3 |
| | LA | 18,JOC4 |
| | SA | 18,XIO+4 |
| WRT2 | NOP | |
| WRT2A | LMJ | 3,PCIE |
| | +0 | |

| | | |
|-------|------|-----------------|
| | SX | 4,WRTX4 |
| | LA | 18,ALF,,1 |
| | SA | 18,WRT2A+1,,1 |
| | LA | 21,IBIT |
| | OR | 21,WRT3C |
| | SA | 22,WRT3C |
| | LX | 3,PIZ |
| | LX | 4,BUFF |
| WRT3 | LA | 21,TRCRD,3 |
| | OR | 21,RCRDF,3 |
| | SA | 22,RCRDF,3 |
| | LA | 21,020,,016 |
| | TNZ | RCRDF,3,015 |
| | SA | 21,RCRDF,3,015 |
| | TNZ | RCRDF,3,014 |
| | SA | 21,RCRDF,3,014 |
| | TNZ | RCRDF,3,013 |
| | SA | 21,RCRDF,3,013 |
| | TNZ | RCRDF,3,012 |
| | SA | 21,RCRDF,3,012 |
| | TNZ | RCRDF,3,011 |
| | SA | 21,RCRDF,3,011 |
| | TNZ | RCRDF,3,010 |
| | SA | 21,RCRDF,3,010 |
| | LA | 22,RCRDF,3 |
| WRT3C | SA | 22,*,*3 |
| | JMGI | 4,WRT3 |
| | TZ | PRSIG |
| | J | PRINT |
| XIO | RES | 5 |
| | FAN | 16,FL1 |
| | LX | 4,WRTX4 |
| | TOP | 16,ZPC |
| | J | WRT4 |
| | LA | 18,TSIGA,2,013 |
| | AA | 18,034 |
| | SA | 18,034 |
| ANX4B | ANX | 4,3,,015 |
| | J | WRT2 |
| WRT4 | SZ | PRSIG |
| | TNZ | TSIGA,2,013 |
| | J | 0,4 |
| | LA | 18,FL3 |
| | SNA | 18,0100000-XERF |
| | J | 0,4 |
| LOCAT | J | \$ |
| RI | EQU | 0101 |
| | LR | R1,0100,,016 |
| | LX | 12,M1P63 |
| | NOP | |
| | SE | 25,TBL3C,*12 |
| | LX | 12,4,,016 |
| | AX | 12,1,,016 |
| | J | LOCAT |
| PRINT | LX | 8,M1P19 |
| | NOP | |
| | LA | 25,OPRIN,8,015 |
| | SLJ | LOCAT |
| | SA | 12,OPRIN,8,015 |
| | LA | 25,OPRIN,8,014 |
| | SLJ | LOCAT |
| | SA | 12,OPRIN,8,014 |
| | LA | 25,OPRIN,8,013 |

. JUMP, COUNT IS ZERO

| | | | |
|-------|------|----------------|-----------------|
| | SLJ | LOCAT | |
| | SA | 12,OPRIN,8,013 | |
| | LA | 25,OPRIN,8,012 | |
| | SLJ | LOCAT | |
| | SA | 12,OPRIN,8,012 | |
| | LA | 25,OPRIN,8,011 | |
| | SLJ | LOCAT | |
| | SA | 12,OPRIN,8,011 | |
| | LA | 25,OPRIN,8,010 | |
| | SLJ | LOCAT | |
| | SA | 12,OPRIN,8,010 | |
| PROUT | JMGI | 8,PRINT+1 | |
| | LFC | 13,GWVPA | |
| | NOP | | |
| | LOC | 13,GWVP3 | |
| | W | | |
| PRLCK | DUC | 13 | |
| | LA | 19,201,,015 | |
| | SSL | 19,2 | |
| | TNE | 19,010,,016 | |
| | AAIJ | X10+5 | |
| | TE | 19,017,,016 | |
| | LMJ | 7,MFAIL | |
| | LA | 12,0301,,016 | |
| | LMJ | 7,TNTRK | |
| | AAIJ | PROUT | |
| MIP63 | | -1,63 | |
| GWVPA | | +1,\$+1 | |
| | | +J120001000001 | |
| GWVPB | | +22,OPRIN | |
| PRSIG | | +J | |
| LBT | SZ | 010000-XERF | |
| | LA | 16,0,4 | . STORE X AND Y |
| | SA | 16,MAG,,1 | |
| | SA | 16,FCM,,1 | |
| | SSL | 16,18 | |
| | SA | 16,LAX,,1 | |
| | SA | 16,ARGX,,1 | . X |
| | SA | 16,LNA,,1 | |
| | SA | 16,SAX,,1 | |
| FCM | LA | 17,CH265 | |
| | FA | 17,\$ | |
| | SA | 18,LXY,,1 | |
| | SA | 18,ARGX,,2 | |
| MAG | LA | 16,\$ | |
| | LA | 17,1,,017 | |
| | LA | 18,15 | |
| | SSL | 18,036 | |
| | AA | 18,BGIN | |
| | SA | 18,\$+2 | |
| | SSL | 15,18 | |
| | NOP | | |
| | SA | 18,LGT | |
| | NOP | | |
| LGT | J | \$ | |
| LBC2 | SA | 17,GUARD,,010 | |
| | SZ | MODE | |
| | LA | 18,LIC2 | |
| | SA | 18,I05 | |
| | LA | 18,LFC2 | |
| | SA | 18,I05+1 | |
| | LA | 18,ARGX | |
| | SA | 18,GWV1 | |
| | JNZ | 16,LBC23 | |

| | | | |
|-------|-----|----------------|----------------|
| | SA | 15,BSF,,5 | |
| | LA | 18,GWV11 | |
| | AA | 18,2,,016 | |
| | SA | 18,GWVA | |
| | LA | 18,NOP | |
| | SA | 18,IO5 | |
| LBI0 | EX | IO5+1 | |
| | SX | 2,XR22 | |
| | W | | |
| LBC2A | SA | 16,TSIGA,2 | |
| | SA | 17,TSIGA,2,010 | |
| | J | 1,4 | |
| LBC2B | JP | 16,LBC2D | |
| | J | LC2B+1 | . JUMP TO BSR. |
| LBC2D | LA | 18,GWV11 | |
| | AA | 18,17 | |
| | SA | 18,GWVA | |
| | SA | 15,RB,,5 | |
| | LA | 18,IOX1 | . EX IO5 |
| | SA | 18,XBI | |
| | LA | 18,XRC2 | |
| | SA | 18,XBI+1 | |
| | LA | 18,IOX | |
| | SA | 18,XBI+2 | |
| | LA | 18,JIC2 | |
| | SA | 18,XBI+3 | |
| | J | LBT2 | |
| LBC3 | SA | 17,GUARD,,011 | |
| | SZ | MODE+1 | |
| | LA | 18,LIC3 | |
| | SA | 18,IO5+2 | |
| | LA | 18,LFC3 | |
| | SA | 18,IO5+3 | |
| | LA | 18,ARGX | |
| | SA | 18,GWV2 | |
| | JNZ | 16,LBC3A | |
| | J | LCB3 | |
| LBC3A | JP | 16,LBC33 | |
| | J | LC3B+1 | |
| LBC3B | LA | 18,GWV12 | |
| | AA | 18,17 | |
| | SA | 18,GWVB | |
| | SA | 15,RB1,,5 | |
| | LA | 18,IOX1+1 | |
| | SA | 18,XBI | |
| | LA | 18,XRC3 | |
| | SA | 18,XBI+1 | |
| | LA | 18,IOX+1 | |
| | SA | 18,XBI+2 | |
| | LA | 18,JIC3 | |
| | SA | 18,XBI+3 | |
| | J | LBT2 | |
| LBC4 | SA | 17,GUARD,,012 | |
| | SZ | MODE+2 | |
| | LA | 18,LIC4 | |
| | SA | 18,IO5+4 | |
| | LA | 18,LFC4 | |
| | SA | 18,IO5+5 | |
| | LA | 18,ARGX | |
| | SA | 18,GWV3 | |
| | JNZ | 16,LBC4A | |
| | J | LCB4 | |
| LBC4A | JP | 16,LBC43 | |
| | J | LC4B+1 | |

| | | | |
|-------|------|-----------------|------------|
| LBC4B | LA | 18,GWV13 | |
| | AA | 18,17 | |
| | SA | 18,GWVC | |
| | SA | 15,RB2,,5 | |
| | LA | 18,IOX1+2 | |
| | SA | 18,XBI | |
| | LA | 18,XRC4 | |
| | SA | 18,XBI+1 | |
| | LA | 18,IOX+2 | |
| | SA | 18,XBI+2 | |
| | LA | 18,JIC4 | |
| | SA | 18,XBI+3 | |
| LBT2 | NOP | | |
| XBI | RES | 4 | |
| | TNZ | TSIGA,2,011 | . EOF TEST |
| | J | LBT2A | |
| | LA | 18,FL2 | |
| | SNA | 18,0100000-XERF | |
| | J | 1,4 | |
| LBT2A | TNZ | TSIGA,2,012 | . ERR TEST |
| | J | COMP2 | |
| | LA | 18,FL1 | |
| | SNA | 18,0100000-XERF | |
| COMP2 | LX | 3,LX6 | |
| | NOP | | |
| LAX | LA | 26,\$,3 | |
| | JP | 26,\$+3 | |
| LNA | LNA | 26,\$ | |
| | OR | 26,SIGN | |
| SAX | SA | 26,\$,3 | |
| | TLEM | 3,LXY | |
| | J | LAX | |
| | J | 1,4 | |
| PBT | SZ | 0100000-XERF | |
| | LA | 16,0,4 | |
| | SA | 16,AMAG,,01 | |
| | SA | 16,AFCM,,01 | |
| | SSL | 16,18 | |
| | SA | 16,ALAX,,01 | |
| | SA | 16,ARGX,,1 | X |
| | SA | 16,ASAX,,01 | |
| | SA | 16,BRARA,,01 | |
| | SA | 16,BRAR3,,01 | |
| | LA | 17,CH265 | |
| AFCM | FA | 17,\$ | |
| | SA | 18,LXY,,1 | |
| | SA | 18,ARGX,,2 | |
| | SA | 18,BRARC,,01 | |
| AMAG | LA | 16,\$ | |
| | LA | 17,+1,,017 | |
| | LA | 18,15 | |
| | SSL | 18,036 | |
| | AA | 18,PGIN | |
| | SA | 18,\$+2 | |
| | NOP | | |
| | NOP | | |
| | SA | 18,PTG | |
| | SSL | 15,18 | |
| PTG | J | \$ | |
| PC2 | SA | 17,GUARD,,010 | |
| | SA | 17,MODE | |
| | LA | 18,LOC2 | |
| | SA | 18,105+1 | |
| | LA | 18,LFC2 | |

| | | |
|------|-----|---------------|
| | SA | 18,I05 |
| | LA | 18,ARGX |
| | SA | 18,GWV1 |
| | JNZ | 16,PC2A |
| | SA | 15,WEF,,5 |
| | LA | 18,GWV14 |
| | ANA | 18,17 |
| | SA | 18,GWVA |
| PC2W | LA | 18,NOP |
| | SA | 18,I05+1 |
| | EX | I05 |
| | SX | 2,XR22 |
| | W | |
| | J | 1,4 |
| PC2A | JP | 16,PC2B |
| | SA | 15,REW,,5 |
| | LA | 18,GWV14 |
| | AA | 18,2,,016 |
| | SA | 18,GWVA |
| | J | PC2W |
| PC2B | SA | 15,WB,,5 |
| | LA | 18,GWV14 |
| | AA | 18,17 |
| | SA | 18,GWVA |
| | LA | 18,I0X1 |
| | SA | 18,XIOP |
| | LA | 18,XRC2 |
| | SA | 18,XIOP+1 |
| | LA | 18,I0X |
| | SA | 18,XIOP+2 |
| | LA | 18,JOC2 |
| | SA | 18,XIOP+3 |
| | J | PBT2 |
| PC3 | SA | 17,GUARD,,011 |
| | SA | 17,MODE+1 |
| | LA | 18,LFC3 |
| | SA | 18,I05+2 |
| | LA | 18,LOC3 |
| | SA | 18,I05+3 |
| | LA | 18,ARGX |
| | SA | 18,GWV2 |
| | JNZ | 16,PC3A |
| | SA | 15,WEF1,,5 |
| | LA | 18,GWV15 |
| | ANA | 18,17 |
| | SA | 18,GWVB |
| PC3W | LA | 18,NOP |
| | SA | 18,I05+3 |
| | EX | I05+2 |
| | SX | 2,XR23 |
| | W | |
| | J | 1,4 |
| PC3A | JP | 16,PC3B |
| | SA | 15,REW1,,5 |
| | LA | 18,GWV15 |
| | AA | 18,2,,016 |
| | SA | 18,GWVB |
| | J | PC3W |
| PC3B | SA | 15,WB1,,5 |
| | LA | 18,GWV15 |
| | AA | 18,17 |
| | SA | 18,GWVB |
| | LA | 18,I0X1+1 |
| | SA | 18,XIOP |

. Y = OF WORDS (W)

| | | |
|-------|------|-----------------|
| | LA | 18,XRC3 |
| | SA | 18,XIOP+1 |
| | LA | 18,IOX+1 |
| | SA | 18,XIOP+2 |
| | LA | 18,JOC3 |
| | SA | 18,XIOP+3 |
| | J | PBT2 |
| PC4 | SA | 17,GUARD,,012 |
| | SA | 17,MODE+2 |
| | LA | 18,LFC4 |
| | SA | 18,IO5+4 |
| | LA | 18,LOC4 |
| | SA | 18,IO5+5 |
| | LA | 18,ARGX |
| | SA | 18,GWV3 |
| | JNZ | 16,PC4A |
| | SA | 15,WEF2,,5 |
| | LA | 18,GWV15 |
| | ANA | 18,17 |
| | SA | 18,GWVC |
| PC4W | LA | 18,NOP |
| | SA | 19,IO5+5 |
| | EX | IO5+4 |
| | SX | 2,XR24 |
| | W | |
| | J | 1,4 |
| PC4A | JP | 16,PC4B |
| | SA | 15,REW2,,5 |
| | LA | 18,GWV15 |
| | AA | 18,2,,016 |
| | SA | 18,GWVC |
| | J | PC4W |
| PC4B | SA | 15,WB2,,5 |
| | LA | 18,GWV15 |
| | AA | 18,17 |
| | SA | 18,GWVC |
| | LA | 18,IOX1+2 |
| | SA | 18,XIOP |
| | LA | 18,XRC4 |
| | SA | 18,XIOP+1 |
| | LA | 18,IOX+2 |
| | SA | 18,XIOP+2 |
| | LA | 18,JOC4 |
| | SA | 18,XIOP+3 |
| PBT2 | J | \$+1 |
| COMPL | LX | 3,LX6 |
| | NOP | |
| ALAX | LA | 26,\$,3 |
| | JP | 26,\$+3 |
| | LNA | 25,26 |
| | OR | 25,SIGN |
| ASAX | SA | 26,\$,3 |
| | TLEM | 3,LXY |
| | J | ALAX |
| XIOP | RES | 4 |
| | TNZ | TSIGA,2,,013 |
| | J | BRARW |
| | LA | 18,FL3 |
| | SNA | 18,0100000-XERF |
| BRARW | LX | 3,BRARC |
| | NOP | |
| BRARA | LX | 18,0,3 |
| | JP | 18,BRAR3+1 |

| | | |
|-------|---------------|----------------|
| | SN | 18,17 |
| | OR | 17,SIGN |
| BRARB | SA | 18,0,3 |
| | JMGI | 3,BRARW+1 |
| | J | 1,4 |
| BRARC | -1,0 | |
| LXY | +0,0 | |
| LX6 | +1,0 | |
| SIGN | +040000000000 | |
| WRTX5 | +0 | |
| . | | PCIE |
| PCIE | J | PCIEA |
| RCRDF | RES | 20 |
| PCIEA | SX | 3,PCIEA+1,,1 |
| | NOP | |
| | LA | 014,PCIEA+1,,1 |
| | AA | 014,+1,,016 |
| | SA | 014,RAR,,1 |
| | LA | 014,0,3 |
| | LX | 3,MIP19 |
| | SA | 014,SGN,0,1 |
| | SA | 014,NUM,0,1 |
| | SA | 014,ALF,0,1 |
| | SA | 014,FULL,0,1 |
| | DSL | 014,18 |
| | SA | 014,TCB |
| | NOP | |
| | SZ | RCRDF,3 |
| | JMGI | 3,\$-2 |
| | SZ | CNO |
| | SZ | WNO |
| | SZ | FLDNO |
| PCIEB | LMJ | 11,DR |
| | TNZ | N |
| | J | RAR |
| | LA | 015,N |
| | SA | 015,N+1 |
| | LA | 015,MIM1 |
| | AH | 015,N |
| | SA | 015,N |
| | LX | 11,N |
| | LA | 015,K |
| | JZ | 015,FULL |
| | TNE | 015,TREY |
| | J | SKP |
| | TNE | 015,TWO |
| | J | ALF |
| SGN | LA | 014,FILL |
| | SZ | 023 |
| | TP | 014 |
| | LA | 023,NEGS |
| | LMJ | 3,CIR\$ |
| NUM | LM | 014,FILL |
| | FA | 014,CH256 |
| | AND | 015,MASK1 |
| | SA | 016,INP |
| | LA | 014,NUM< |
| | SA | 014,UPD1 |
| | J | UPD |
| NUMK | JMGI | 11,NUM1 |
| | J | NUM1 |
| FULL | LM | 014,FILL |
| | FA | 014,CH256 |
| | AND | 015,MASK1 |

| | | |
|------|------|---------------|
| | SA | 016,INP |
| | LA | 014,NUMK |
| | SA | 014,UPD1 |
| NUM1 | LA | 015,INP |
| | SZ | 014 |
| | DI | 014,TBL,11 |
| | SA | 014,WRD |
| | SA | 015,INP |
| | LA | 015,WRD |
| | LX | 1,015,,1 |
| | NOP | |
| | LA | 023,CTBL+90,1 |
| | LMJ | 3,CIR\$ |
| | J | UPD |
| ALF | LA | 014,FILL |
| | FA | 014,CH256 |
| | AND | 015,MASK1 |
| | SA | 016,INP |
| | LA | 014,ALFK |
| ALF1 | SA | 014,UPD1 |
| | LA | 016,INP |
| | SZ | 015 |
| | DI | 015,ATBL,11 |
| | SA | 015,WRD |
| | SA | 016,INP |
| | LA | 022,WRD |
| | AA | 022,CTBL,,016 |
| | SA | 022,ALF2,,01 |
| ALF2 | LA | 023,0 |
| | LMJ | 3,CIR\$ |
| | J | UPD |
| ALFK | JMGI | 11,ALF1 |
| UPD | LA | 017,CNO |
| | AA | 017,ONE |
| | TG | 017,SIX |
| | LA | 017,ZRO |
| | SA | 017,CNO |
| | TZ | 017 |
| | J | UPD1 |
| | LA | 017,WNO |
| | AA | 017,DNE |
| | SA | 017,WNO |
| UPD1 | HJ | FILL |
| | LA | 015,SGN |
| | AA | 015,DNE |
| | SA | 015,SGN,0,1 |
| | SA | 015,NUM,0,1 |
| | SA | 015,ALF,0,1 |
| | SA | 015,FULL,0,1 |
| | J | PCIEB |
| SKP | LA | 015,CNO |
| | SZ | 014 |
| | AA | 015,N+1 |
| | DI | 014,SIX |
| | AA | 014,WNO |
| | SA | 014,WNO |
| | SA | 015,CNO |
| | J | PCIEB |
| RAR | J | |
| DR | SX | 1,DRX1 |
| | SX | 11,DRX,,01 |
| | LX | 1,FLDNO |
| | NOP | |
| | JMGI | 1,DR1 |

SIX L CNO

| | | |
|-------|-----|--------------|
| | LA | 014,TCB |
| | JN | 014,DRX+1 |
| | LX | 1,M1P17 |
| | LA | 015,0,4 |
| | SA | 015,TEMP 1 |
| | LA | 015,1,4 |
| | SA | 015,TEMP 2 |
| | LA | 015,2,4 |
| | SA | 015,TEMP 3 |
| | AX | 4,TREY |
| | LA | 014,TCB |
| | ANA | 014,ONE |
| | SA | 014,TCB |
| DR1 | LA | 014,TEMP 1 |
| | SZ | 015 |
| | DSL | 014,32 |
| | SA | 014,N |
| | LA | 016,TEMP 2 |
| | SZ | 017 |
| | DSL | 016,32 |
| | SA | 017,TEMP 2 |
| | SZ | 017 |
| | DR | 016,015 |
| | SA | 017,TEMP 1 |
| | LA | 014,TEMP 3 |
| | SZ | 015 |
| | DSL | 014,34 |
| | SA | 014,K |
| | SA | 015,TEMP 3 |
| | SX | 1,FLDNO |
| | LX | 1,DRX1 |
| DRX | J | |
| | SZ | N |
| | J | DRX |
| TCB | +J | |
| DRX1 | +J | |
| CIR\$ | SX | 11,CIRX+1 |
| | SX | 3,CIRX,,01 |
| | LX | 11,CNO |
| | SZ | 024 |
| | EX | CIR1,11 |
| | LX | 11,WNO |
| | SZ | 025 |
| | DR | 024,RGRDF,11 |
| | SA | 025,RGRDF,11 |
| | LX | 11,CIRX+1 |
| CIRX | J | |
| | NOP | |
| CIR1 | DSL | 023,6 |
| | DSL | 023,12 |
| | DSL | 023,18 |
| | DSL | 023,24 |
| | DSL | 023,30 |
| | DSL | 023,36 |
| CTBL | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
| | + | 0 |
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| | + | 0 |

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|------|-----|
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| +073 | |
| +074 | |
| +060 | |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 053 |
| + | 054 |
| + | 040 |
| +021 | |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| +0 | |
| +033 | |
| +034 | |
| +0 | |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 013 |
| + | 014 |
| + | 0 |
| + | 0 |
| + | 0 |
| + | 0 |
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| + | 0 |
| +061 | |
| +062 | |
| +063 | |
| +064 | |
| +065 | |
| +066 | |
| +067 | |
| +070 | |
| +071 | |
| + | 0 |
| + | 041 |
| + | 042 |
| + | 043 |

```

+      044
+      045
+      046
+      047
+      050
+      051
+      0
+      0
+022
+023
+024
+025
+026
+027
+030
+031
+      10
+      1
+      2
+      3
+      4
+      5
+      6
+      7
+      8
+      9
.      CONSTANT S
SIX   +      6
NEGS  +      040
TBL   +1
      +10
      +100
+1000
      +10000
      +100000
      +1000000
      +10000000
      +100000000
ATBL  +1
      +100
      +10000
      +1000000
      +100000000
.      ERASABLE S
FLDNO +      0
TEMP1 +      0
TEMP2 +      0
TEMP3 +      0
K      +      0
N      RES    2
CVD   +      0
WNO   +      0
INP   +      0
WRD   +      0
SHIFT +      0
TEMP  RES    2
MIM1  -1,-1
MIPZ  -1,0
MASK1 +      000077777777
MIP19 +      -1,19
MIP17 -1,17
      RES    $/2*2+2-$
QXTBL +0
      END    MYSTIC

```