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File: dmtmain.asm

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; DMTMain.asm
; Copyright Xerox Corporation 1979
; Last modified December 5, 1980  7:57 PM by Boggs
; Last modified at CMU September 28, 1981  12:13 AM by Everhart

        .TXTM B

.DUSR   SWAT = 77400

; OUTGOING

.BEXTZ  RANDOM, LOADRAM, ERROR, OsFinish
.BEXT   INITINT, DESTROYINT, FINDFREECHAN
.BEXTZ  EOM, ALTO2, VINT, pACT, pWW, pSAD, pDISPLAY
.BEXTZ  PEAC0, PEAC1, PEAC2, PEAC3, PECY, PEPC, pIRET
.BEXTZ  pSBCTAB, pEBCTAB

; INCOMING

.BEXT   INITETHER, EtherBoot
.BEXT   RAMTEST, PRINTRAMTEST, INITRAMTEST
.BEXT   A1PBC, A1INIT, A1TMF, A1TMS, A1PEINT
.BEXT   A2PBC, A2INIT, A2TMF, A2TMS, A2PEINT
.BEXT   RESTORE, UNRESTORE
.BEXTZ  PMSG, PMSG1, POCT, PDEC, CHANGEBANK
.BEXT   SwatTrap, SwatInterrupt, RamImage
.BEXTZ  SOM, XMFLAG, RAMFLAG

        .SREL

TIMERINT:       .TIMERINT
INITINT:        .INITINT
PEINT:          .PEINT
OsFinish:       .OsFinish
NOPARTRAP:      .NOPARTRAP

        .ZREL

VERSION:        0               ; -> VERSION TEXT
ERROR:          .ERROR
RANDOM:         .RANDOM
LOADRAM:        .LOADRAM
ALTO2:          0               ; NONZERO IF THIS IS AN ALTO2
DOSUMMARY:      0               ; TRUE IF IT IS TIME TO REPORT IN
DOSLOWTESTS:    0               ; TRUE IF IT IS TIME TO DO SLOW TESTS
VINT:           0               ; INCREMENTED BY VERT. INTERVAL INTERRUPT
EOM:            176777          ; END OF MEMORY

pBLANKDCB:      BLANKDCB        ; -> DCB TO KEEP SCREEN BLACK
pSHOWDCB:       SHOWDCB         ; -> DCB TO SHOW THE INNER WORKINGS

pACT:           453             ; -> INTERRUPTS ACTIVE
pWW:            452             ; -> INTERRUPTS WAITING
pSAD:           621             ; -> SAD IN PARITY DUMP AREA
pDISPLAY:       420             ; -> DISPLAY LIST HEAD

pSBCTAB:        SBCTAB          ; -> START OF BAD CHIP TABLE
pEBCTAB:        EBCTAB          ; -> END OF BAD CHIP TABLE

C17:            17
```

```
        .NREL

        0                       ; sacrificial word for BLDR to eat

;-------------------------------------------------------------------------------
DMT:                            ; INITIALIZATION
;-------------------------------------------------------------------------------
; by Craig Everhart, 28 September 1981
        JSR     xDMTx
        .TXT "DMT of Diagnostic Memory Test*NAlto "
xDMTx:  STA 3 VERSION
        JSR CURSOR
         0
        1000                    ; cursor bitmap begins here
        1200
        1200
        1200
        1200
        3200
        6200
        14200
        31200
        1300
        1140
        1074
        3000
        2200
        6300
        34170

CURSOR: MOV 3 0                 ; SRC-1
        LDA 1 pCURMAPEND        ; END DEST
        LDA 3 M16D              ; COUNT
        BLT

        LDA 0 @ppSwatTrap       ; FILL TRAPVEC WITH CALLS TO DEBUGGER
        LDA 1 pTRAPVECEND
        LDA 3 M32D
        BLKS

        LDA 0 @ppNOPARTRAP
        STA 0 @P532

        LDA 0 TRAP              ; SET TRAPS IN LOW CORE
        LDA 1 C17
        LDA 3 M16D
        BLKS

        MKZERO 0 0              ; ZERO TEST AREA
        LDA 1 EOM
        MOV 1 3
        LDA 2 SOM
        SUB 2 3                 ; LENGTH OF TEST AREA-1
        COM 3 3                 ; -LENGTH OF TEST AREA
        BLKS

        LDA 1 pEBCTAB           ; ZERO THE BAD CHIP TABLE
        LDA 3 MLBCTAB
        BLKS

;       JSR @LOADRAM

        VERS                    ; AC0[0-3] IS ENGINEERING NUMBER
        CYCLE 4
        LDA 1 C17
        AND 1 0
        JSR ENG
        0                       ; ALTO 1 MICROCODE VERSION 23 OR OLDER
        0                       ; ALTO 1 MICROCODE VERSION 24 OR NEWER
        -1                      ; ALTO 2 WITHOUT XM
        -1                      ; ALTO 2 WITH XM
        0                       ; DO EMULATING AN ALTO 1
        -1                      ; DORADO EMULATING AN ALTO 2 XM
ENG:    ADD 0 3
        LDA 0 0,3
```

```
        STA 0 ALTO2

        MKZERO 0 0
        STA 0 @pACT             ; MASK OFF ALL INTERRUPT CHANNELS
        EIR
        STA 0 @pWW              ; IGNORE INTERRUPTS CAUSED UP TO NOW

        LDA 3 pBLANKDCB         ; BLANKDCB KEEPS THE SCREEN BLACK
        SKEVEN 3 3              ; FORCE DCB TO BE ON AN EVEN ADDRESS
         INC 3 3
        STA 3 pBLANKDCB
        MKZERO 0 0
        STA 0 0 3               ; LINK
        STA 0 2 3               ; BIT MAP ADDR
        INC 0 0
        STA 0 3 3               ; SCAN LINE COUNT
        LDA 0 C40000
        STA 0 1 3               ; BLACK BACKGROUND, 0 WDS/SCAN LINE
        STA 3 @pDISPLAY

        LDA 3 pSHOWDCB          ; SHOWDCB SHOWS THE INNER WORKINGS OF DMT
        SKEVEN 3 3              ; FORCE DCB TO BE ON AN EVEN ADDRESS
         INC 3 3
        STA 3 pSHOWDCB
        MKZERO 0 0
        STA 0 0 3               ; LINK
        LDA 0 D38               ; 38 WORD/SL,
        STA 0 1 3               ; HIGH RESOLUTION, WHITE BACKGROUND
        LDA 0 SOM
        SKEVEN 0 0
         INC 0 0
        STA 0 2 3               ; BIT MAP ADDR
        LDA 0 D404
        STA 0 3 3               ; SCAN LINE COUNT

        LDA 0 ALTO2             ; INITIALIZE TEST MODULES
        SNZ 0 0
         JSRII ppA1INIT
        JSRII ppA2INIT
         NOP

        LDA 0 @ppPEINT          ; SET UP PARITY ERROR INTERRUPT ROUTINE
        JSRII ppINITINT         ; MUST BE FIRST CALL ON INITINT
        MOVR 0 0 SZR            ; DID WE GET CHANNEL 15?
         SWAT                   ; NO. PROGRAM BUG

        LDA 0 @ppTIMERINT       ; SET UP TIMER INTERRUPT
        JSRII ppINITINT
        STA 0 @pDSTART1

        LDA 0 @ppSwatInterrupt  ; SET UP SWAT INTERRUPT
        JSRII ppINITINT
        LDA 1 @pDSTART1
        ADD 1 0
        STA 0 @pDSTART1

        JSRII ppINITETHER       ; START THE ETHERNET
        JSRII ppINITRAMTEST     ; INITIALIZE THE RAM TEST

        JMP LOOP                ; BEGIN MAIN LOOP

pTRAPVECEND:    567             ; END OF TRAP VECTOR
pCURMAPEND:     450             ; END OF CURSOR BITMAP
pDSTART1:       421             ; DISPLAY INTERRUPT MASK LOC

ppPEINT:        PEINT
ppINITINT:      INITINT
ppTIMERINT:     TIMERINT
ppA2INIT:       A2INIT
ppA1INIT:       A1INIT
ppINITRAMTEST:  INITRAMTEST
ppINITETHER:    INITETHER
ppCHANGEBANK:   CHANGEBANK
ppSwatTrap:     SwatTrap
ppSwatInterrupt: SwatInterrupt
ppNOPARTRAP:    NOPARTRAP
```

```
P532:           532             ; PARAMETERLESS OPCODES TRAP VIA HERE
TRAP:           SWAT
C24400:         24400
C40000:         40000
MLBCTAB:        -LBCTAB         ; -LENGTH OF BAD CHIP TABLE
D38:            38.
D404:           404.
M32D:           -32.
M16D:           -16.

BLANKDCB:       .BLK 5
SHOWDCB:        .BLK 5
```

```
;-------------------------------------------------------------------------
LOOP:                           ; TOP OF THE MAIN LOOP
;-------------------------------------------------------------------------
        LDA 2 CURSORFLAG
        SNZ 2 2                 ; STEP IT OR FLING IT?
         JMP FLING

        JSR @RANDOM
        MOVL 0 0 SNC            ; SHALL WE STEP X?
         JMP DOY                ; NO
        LDA 1 @pCURSORX
        LDA 2 M16D
        MOVL 0 0 SNC            ; WHICH DIRECTION?
         NEG 2 2                ; THE OTHER DIRECTION
        ADD 2 1
        SP 1 1                  ; IS IT TOO SMALL?
         LDA 1 CURSORXMAX       ; YES.  SET TO BIGGEST VALUE
        LDA 0 CURSORXMAX
        SLE 1 0                 ; IS IT TOO BIG?
         MKZERO 1 1             ; YES.  SET TO SMALLEST VALUE
        STA 1 @pCURSORX

DOY:    JSR @RANDOM
        MOVL 0 0 SNC            ; SHALL WE STEP Y?
         JMP KBD                ; NO
        LDA 1 @pCURSORY
        LDA 2 M16D
        MOVL 0 0 SNC            ; WHICH DIRECTION?
         NEG 2 2                ; THE OTHER DIRECTION
        ADD 2 1
        SP 1 1                  ; IS IT TOO SMALL?
         LDA 1 CURSORYMAX       ; YES.  SET TO BIGGEST VALUE
        LDA 0 CURSORYMAX
        SLE 1 0                 ; IS IT TOO BIG?
         MKZERO 1 1             ; YES.  SET TO SMALLEST VALUE
        STA 1 @pCURSORY
        JMP KBD

FLING:  JSR @RANDOM             ; NEW X COORDINATE
        MOV 0 1
        MKZERO 0 0
        LDA 2 CURSORXMAX        ; SCALE IT
        DIV
         NOP
        STA 0 @pCURSORX

        JSR @RANDOM             ; NEW Y COORDINATE
        MOV 0 1
        MKZERO 0 0
        LDA 2 CURSORYMAX        ; SCALE IT
        DIV
         NOP
        STA 0 @pCURSORY

KBD:    LDA 0 pBLANKDCB
        LDA 1 @pKBDAD1
        LDA 2 BLANKTOPKEY
        AND# 2 1 SNR            ; SHOW THE INNER WORKINGS?
         LDA 0 pSHOWDCB         ; YES
        STA 0 @pDISPLAY

        LDA 0 @pKBDAD1          ; CHECK KEYBOARD
        LDA 1 SKEY
        AND# 0 1 SNR            ; "S" KEY?
         JSR PRINTSUM           ; PRINT ERROR SUMMARY
        LDA 0 @pKBDAD1
        LDA 1 BLANKMIDKEY
        AND# 0 1 SZR            ; "BLANK MIDDLE" KEY?
         JMP L1                 ; NO
        LDA 1 CURSORFLAG
        COM 1 1
        STA 1 CURSORFLAG

L1:     LDA 0 ALTO2             ; TEST MEMORY FAST
        SNZ 0 0
```

```
         JSRII ppA1TMF
        JSRII ppA2TMF
         NOP
        ISZ BLOCKS
         NOP

        LDA 0 DOSUMMARY
        SZ 0 0                  ; TIME TO REPORT TEST RESULTS?
         JSR PRINTSUM           ; YES
        MKZERO 0 0
        STA 0 DOSUMMARY

        LDA 0 DOSLOWTESTS
        SNZ 0 0
         JMP LOOP
        MKZERO 0 0
        STA 0 DOSLOWTESTS
        LDA 0 ALTO2             ; TEST MEMORY SLOW
        SNZ 0 0
         JSRII ppA1TMS
        JSRII ppA2TMS
         NOP
        JSRII ppRAMTEST         ; RAM TEST IS SLOW
        JMP LOOP

C77:            77
BLOCKS:         0               ; TOTAL TESTS MOD 2↑16

CURSORXMAX:     1100            ; MAX CURSOR X VALUE
CURSORYMAX:     1400            ; MAX CURSOR Y VALUE
pCURSORX:       426             ; CURSOR X LOC
pCURSORY:       427             ; CURSOR Y LOC
CURSORFLAG:     -1              ; TRUE => WALK, FALSE => FLING

ppA1TMF:        A1TMF
ppA2TMF:        A2TMF
ppA1TMS:        A1TMS
ppA2TMS:        A2TMS

ppRAMTEST:      RAMTEST
```

```
;-------------------------------------------------------------------------
PRINTSUM:
;-------------------------------------------------------------------------
        STA 3 PSRET

        JSRII ppRESTORE         ; SET UP DISPLAY
        LDA 0 VERSION
        STA 0 PS0
        JSR @PMSG
PS0:     0

        JSR @PMSG1
         .TXT "I"
        LDA 0 ALTO2
        SNZ 0 0
         JMP PS1
        JSR @PMSG1
         .TXT "I"
PS1:    LDA 1 @pEHLOC
        JSR @POCT

        LDA 0 XMFLAG
        SZ 0 0
         JMP PS2
        JSR @PMSG1
         .TXT ", 64K"
        JMP PS6
PS2:    MKONE 1 1
        SE 0 1
         JMP PS3
        JSR @PMSG1
         .TXT ", XM 64K"
        JMP PS6
PS3:    INC 1 1
        SE 0 1
         JMP PS4
        JSR @PMSG1
         .TXT ", XM 128K"
        JMP PS6
PS4:    INC 1 1
        SE 0 1
         JMP PS5
        JSR @PMSG1
         .TXT ", XM 192K"
        JMP PS6
PS5:    JSR @PMSG1
         .TXT ", XM 256K"

PS6:    LDA 0 RAMFLAG
        SZ 0 0
         JMP PS7
        JSR @PMSG1
         .TXT ", No Ram"
        JMP PS9

pKBDAD1:        177035          ; KEYBOARD WORD POINTER
SKEY:           1B4             ; THE BIT FOR THE KEY "S"
BLANKTOPKEY:    1               ; THE BIT FOR THE KEY "BLANK TOP"
BLANKMIDKEY:    2               ; THE BIT FOR THE KEY "BLANK MIDDLE"

PSRET:          0
pEHLOC:         610             ; ETHER HOST LOC
BMASK:          14
pBANKREG0:      177740

ppRESTORE:      RESTORE
ppUNRESTORE:    UNRESTORE
ppPRINTRAMTEST: PRINTRAMTEST
ppA1PBC:        A1PBC
ppA2PBC:        A2PBC
```

```
PS7:    MKONE 1 1
        SE 0 1
         JMP PS8
        JSR @PMSG1
         .TXT ", 1K Ram"
        JMP PS9
PS8:    JSR @PMSG1
         .TXT ", 3K Ram"

PS9:    JSR @PMSG1
         .TXT "*NPass "
        LDA 1 BLOCKS
        JSR @PDEC
        JSR @PMSG1
         .TXT ", testing "

        LDA 1 SOM
        JSR @POCT
        JSR @PMSG1
         .TXT " to "

        LDA 1 EOM
        JSR @POCT
        LDA 0 XMFLAG
        SNZ 0 0
         JMP PS10
        JSR @PMSG1
         .TXT " in bank "
        LDA 1 @pBANKREG0
        LDA 0 BMASK
        ANDZR 0 1
        MOVZR 1 1
        JSR @PDEC
PS10:   JSR @PMSG1
         .TXT "*N"

        LDA 1 SOFTPEC
        SNZ 1 1
         JMP PS11
        JSR @PDEC
        JSR @PMSG1
         .TXT " PEs apparently caused by software*N"

PS11:   LDA 0 ALTO2
        SNZ 0 0                 ; PRINT BAD CHIPS, IF ANY
         JSRII ppA1PBC
        JSRII ppA2PBC
         NOP
        JSRII ppPRINTRAMTEST

        LDA 1 SKEY
        LDA 0 @pKBDAD1
        AND 1 0 SNR             ; "S" KEY STILL DOWN?
         JMP .-2                ; YES. LOOP
        JSRII ppUNRESTORE       ; RELEASE DISPLAY SPACE
        JMP @PSRET
```

```
;-------------------------------------------------------------------------
.INITINT:                       ; INITIALIZE INTERRUPT CHANNEL
;-------------------------------------------------------------------------
; ACCEPTS IN AC0/ INTERRUPT HANDLER ADDRESS
; RETURNS IN AC0/ CHANNEL BIT

        STA 3 IIRET
        MOV 0 3

        MKONE 0 0
        LDA 2 pINTVEC
        LDA 1 @pACT
II1:    AND# 0 1 SNR            ; CHANNEL AVAILABLE?
         JMP II2                ; YES
        MOVL 0 0 SZC            ; CHANNEL BIT
         SWAT                   ; NO CHANNELS AVAILABLE
        INC 2 2                 ; INTVEC
        JMP II1

II2:    STA 3 0 2               ; INSTALL HANDLER IN INTVEC
        ADD 0 1
        STA 1 @pACT             ; TURN ON CHANNEL

        JMP @IIRET

IIRET:          0
pINTVEC:        501
```

```
;-------------------------------------------------------------------------
.PEINT:                         ; PARITY ERROR INTERRUPT ROUTINE
;-------------------------------------------------------------------------
        STA 0 PEAC0             ; SAVE MACHINE STATE
        STA 1 PEAC1
        STA 2 PEAC2
        STA 3 PEAC3
        MOVR 3 3
        STA 3 PECY
        LDA 1 @pPCLOC
        STA 1 PEPC

; DECIDE WHETHER IT WAS A REAL PE (I.E. HARDWARE GENERATED)
; OR WHETHER IT WAS CAUSED BY SOFTWARE (I.E. A BUG)
; IF IT WAS A REAL PARITY ERROR, LOCATIONS 614-621 WILL BE NONZERO

        LDA 2 pDCBR
        LDA 1 M6
PE2:    LDA 0 0 2               ; PARITY R-REGISTER
        SZ 0 0                  ; BEING ZERO IS SUSPICIOUS
         JMP PE1                ; NON-ZERO MEANS THE PE WAS REAL
        INC 2 2
        INC 1 1 SZR             ; HAVE WE LOOKED AT ALL OF THEM?
         JMP PE2                ; NO
        ISZ SOFTPEC             ; SOFTWARE BUG
         JMP IRET
        DSZ SOFTPEC             ; CANT SKIP
         JMP IRET

PE1:    LDA 0 @pACT             ; DISABLE PARITY INTERRUPTS
        MOVR 0 0
        MOVZL 0 0
        STA 0 @pACT
        EIR                     ; BUT ALLOW OTHER INTERRUPTS

        LDA 0 ALTO2
        SNZ 0 0                 ; CALL ERROR ANALYZER
         JSRII ppA1PEINT
        JSRII ppA2PEINT
         NOP

; COME HERE TO DISMISS THE PARITY INTERRUPT

IRET:   DIR
        LDA 0 @pWW              ; CLEAR PARITY WAKEUPS WAITING
        MOVR 0 0
        MOVZL 0 0
        STA 0 @pWW
        LDA 0 @pACT             ; ENABLE PARITY INTERRUPTS
        MOVR 0 0
        MOVOL 0 0
        STA 0 @pACT

; ZERO THE PARITY ERROR DUMP AREA.  IF IT IS STILL ZERO ON THE
; NEXT PE INTERRUPT, THEN IT WAS CAUSED BY A SOFTWARE BUG.

        MKZERO 0 0
        LDA 1 pSAD
        LDA 3 M6
        BLKS

        LDA 0 PEPC              ; RESTORE MACHINE STATE
        STA 0 @pPCLOC
        LDA 0 PECY
        MOVL 0 0
        LDA 3 PEAC3
        LDA 2 PEAC2
        LDA 1 PEAC1
        LDA 0 PEAC0
        BRI

pPCLOC:         500             ;-> INTERRUPT PC
pDCBR:          614             ;-> PARITY DUMP AREA
ppA1PEINT:      A1PEINT
ppA2PEINT:      A2PEINT
```

```
M6:             -6
SOFTPEC:        0

        .ZREL

; MACHINE STATE SAVED HERE ON PARITY INTERRUPT
PEAC0:          0               ; AC0
PEAC1:          0               ; AC1
PEAC2:          0               ; AC2
PEAC3:          0               ; AC3
PECY:           0               ; CARRY
PEPC:           0               ; PC

pIRET:          IRET            ;-> CODE TO DISMISS PARITY INTERRUPT

        .NREL
```

```
;------------------------------------------------------------------------
.TIMERINT:                      ; VERTICAL FIELD INTERRUPT
;------------------------------------------------------------------------
        STA 0 TS0
        STA 1 TS1
        STA 2 TS2
        STA 3 TS3
        MOVL 0 0
        STA 0 TC

        ISZ VINT                ; USED BY ALTO1 DTEST
         NOP

; THIS CODE DECIDES WHEN TO BROADCAST A SUMMARY OF THE TEST RESULTS.
; IT GENERATES ITS FIRST SUMMARY AFTER 1 MINUTE, THEN EVERY 128 MINUTES.
; IF AN ERROR IS REPORTED, THEN IT IMMEDIATELY GENERATES A SUMMARY,
; THEN ANOTHER AFTER 1 MINUTE, THEN 2 MINUTES LATER,
; THEN 4 MINUTES AFTER THAT, ... UP TO A MAX OF 128 MINUTES.
; WHEN IT REACHES 128, IT HOLDS THERE GENERATING REPORTS EVERY 128
; MINUTES THEREAFTER.

        DSZ SECOND
         JMP TI1
        LDA 0 D60               ; SECOND COUNTER UNDERFLOWED
        STA 0 SECOND

; DOS AND DORADOS RUN DMT FOR 60 MINUTES THEN POWER THEMSELVES OFF
        DSZ POWERTIME
         JMP TI3
        VERS                    ; AC0[0-3] IS ENGINEERING NUMBER
        CYCLE 4
        LDA 1 C17
        AND 1 0
        LDA 1 C5
        SNE 0 1                 ; SKIP UNLESS DORADO
         61034                  ; POWER OFF CPU: MAY TRAP

TI3:    DSZ MINUTE
         JMP TI1
        LDA 0 D60               ; MINUTE COUNTER UNDERFLOWED
        STA 0 MINUTE

        DSZ SLOWTIMER
         JMP TI2
        LDA 0 SLOWINTERVAL
        STA 0 SLOWTIMER
        STA 0 DOSLOWTESTS

TI2:    DSZ PEEKTIMER
         JMP TI1
        LDA 0 PEEKINTERVAL      ; TIME TO REPORT TEST RESULTS
        MOVZL 0 0               ; AND GENERATE A NEW TIME
        LDA 1 PEEKLIMIT
        SGTU 1 0                ; LIMIT > NEW INTERVAL?
         MOV 1 0                ; NO.  FORCE NEW INTERVAL = LIMIT
        STA 0 PEEKINTERVAL
        STA 0 PEEKTIMER
        STA 0 DOSUMMARY

TI1:    LDA 0 TC
        MOVR 0 0
        LDA 3 TS3
        LDA 2 TS2
        LDA 1 TS1
        LDA 0 TS0
        BRI

; CALLED BY ERROR LOGGING ROUTINES TO NOTIFY THE TIMER THAT AN ERROR
; HAS OCCURRED AND IT SHOULD START GENERATING FREQUENT REPORTS.
.ERROR: LDA 0 FIRST
        SZ 0 0
         JMP 0,3                ; NOT FIRST ERROR WE'VE SEEN
        MKONE 0 0
        STA 0 PEEKINTERVAL      ; GENERATE FREQUENT REPORTS FOR A WHILE
        STA 0 PEEKTIMER         ; GENERATE THE FIRST ONE 16 MS FROM NOW
```

```
        STA 0 SECOND
        STA 0 MINUTE
        STA 0 FIRST             ; REMEMBER THAT WE'VE SEEN AN ERROR
        JMP 0,3

FIRST:          0               ; ZERO IF HAVEN'T SEEN ANY ERRORS
C5:             5

TS0:            0
TS1:            0
TS2:            0
TS3:            0
TC:             0

D60:            60.
SECOND:         60.
MINUTE:         60.

PEEKTIMER:      1               ; time to next peek report
PEEKINTERVAL:   128.            ; minutes between peek reports
PEEKLIMIT:      128.            ; max interval in minutes

SLOWTIMER:      1               ; time to next slow test
SLOWINTERVAL:   2               ; minutes between slow tests

;-------------------------------------------------------------------------
.NOPARTRAP:                     ; unimpl nopar opcodes trap here
;-------------------------------------------------------------------------
        STA 3 TRAPAC3
        STA 0 TRAPAC0
        LDA 3 @.TRAPPC
        STA 3 NPT
        LDA 0 -1,3
        LDA 3 PWRINS
        SE 0,3
         77400
        LDA 0 TRAPAC0
        LDA 3 TRAPAC3
        JMP @.+1
NPT:    0

TRAPAC3:        0
TRAPAC0:        0
.TRAPPC:        527
POWERTIME:      3600.           ; 60 X 60 = 60 minutes
C4:             4
PWRINS:         61034
```

```
;-------------------------------------------------------------------------------
.LOADRAM:
;-------------------------------------------------------------------------------
        STA 3 LRRET
        MKZERO 1 1              ; RAM ADDRESS
        LDA 2 @pRAMIMAGE        ; MICROINSTRUCTION TABLE ADDRESS
        LDA 0 C400
        ADD 0 2                 ; SKIP THE CONSTANTS

LR3:    LDA 0 0 2               ; HIGH HALF
        INC 2 2                 ; INSTRUCTION TABLE ADDRESS
        LDA 3 0 2               ; LOW HALF
        INC 2 2                 ; INSTRUCTION TABLE ADDRESS
        61012                   ; WRITE INTO RAM
        INC 1 1                 ; RAM ADDRESS
        DSZ LRCNT               ; DONE?
         JMP LR3                ; NO

        LDA 1 USTART            ; STARTING ADDRESS
        61010                   ; CONTINUE EMULATOR IN RAM
        JMP @LRRET

LRRET:          0
LRCNT:          1024.           ; # OF 32 BIT MICROINSTRUCTIONS
C400:           400
USTART:         20              ; EMULATOR STARTING ADDRESS
pRAMIMAGE:      RamImage
```

```
;-------------------------------------------------------------------------
.RANDOM:                        ;AC0 ← RANDOM #.  PRESERVES AC2
;-------------------------------------------------------------------------
        STA 3 RANRET
        LDA 0 IRAN
        INC 0 0
        LDA 3 C20D
        SLTU 0 3
         SUB 0 0
        STA 0 IRAN
        LDA 1 C3
        ADD 0 1
        SLTU 1 3
         SUB 3 1
        LDA 3 PRAN
        ADD 0 3
        LDA 0 0 3
        LDA 3 PRAN
        ADD 1 3
        LDA 1 0 3
        ADD 1 0
        STA 0 0 3
        JMP@ RANRET

C3:     3
C20D:   20.
IRAN:   16.
PRAN:   XPRAN
RANRET: 0

        .SREL

XPRAN:  30200.
        27432.
        62096.
        39855.
        17884.
        58726.
        55595.
        20904.
        28164.
        27447.
        34709.
        35231.
        33770.
        31508.
        40689.
        1411.
        20373.
        3422.
        62938.
        40035.

        .NREL

;-------------------------------------------------------------------------
.OsFinish:                      ; <Left-Shift> <Swat>
;-------------------------------------------------------------------------
        MKZERO 0 0              ; BOOT FROM NET
        JSR @CHANGEBANK         ; FLIP BACK INTO BANK 0
        LDA 0 bfn
        JSRII .EtherBoot
         1

.EtherBoot:     EtherBoot
bfn:            10              ; NetExec

;-------------------------------------------------------------------------
; DMT1Test and DMT2Test share a common 'bad chip table'.
;-------------------------------------------------------------------------
LBCTAB = 17.*8.*8.              ; 17 bits * 8 rows/board * 8 boards
SBCTAB: .BLK LBCTAB
EBCTAB = .-1

        .END
```

```
; by Debbie Bernsen
        JSR Palm
        .TXT "DMT of Palm Sunday, Alto"
Palm:   STA 3 VERSION
        JSR CURSOR
         0                      ; padding -- not part of cursor
        33154
        75736
        46662
        6660
        63764
        177777
        103741
        101701
        1700
        1700
        1700
        1700
        1700
        1700
        1700

; by Boggs
        JSR Fool
        .TXT "DMT of April Fool's Day, Alto"
Fool:   STA 3 VERSION
        JSR CURSOR
         0
        .blk 16.                ; uninitialized => zeros

        JSR Heart
        .TXT "DMT of Valentine's Day, Alto"
Heart:  STA 3 VERSION
        JSR CURSOR
         0                      ; padding -- not part of cursor
        0
        36074
        77176
        -1
        -1
        -1
        -1
        77776
        77776
        37774
        37774
        17770
        7760
        3740
        1700
        600

; by Karen Kolling
        JSR Sham
        .TXT "DMT of St. Patrick's Day, Alto"
Sham:   STA 3 VERSION
        JSR CURSOR
         0                      ; padding -- not part of cursor
        1100
        3740
        7760
        7760
        7760
        3740
        33754
        77776
        177777
        77776
        77776
        177777
        76676
        30614
        600
        600
```

```
        JSR Ein
        .TXT "DMT of Einstein's 100th Birthday, Alto"
Ein:    STA 3 VERSION
        JSR CURSOR
         0
        17000
        10000
        10170
        17000
        10170
        10000
        17000
        17
        1
        4
        76750
        52417
        52400
        52400
        52400
        42740

        JSR SB
        .TXT "DMT of the Softball season, Alto"
SB:     STA 3 VERSION
        JSR CURSOR
         0
        001700
        007760
        017770
        027764
        073756
        073756
        175737
        175737
        175737
        175737
        073756
        073756
        027764
        017770
        007760
        001700

        JSR Egg
        .TXT "DMT of Easter, Alto"
Egg:    STA 3 VERSION
        JSR CURSOR
         0
        0
        0
        7740
        32370
        62354
        44716
        144731
        144733
        144733
        144731
        44716
        62354
        32370
        7740
        0
        0

        JSR Bun1
        .TXT "DMT of Easter, Alto"
Bun1:   STA 3 VERSION
        JSR CURSOR
         0
        0
        20002
        70007
        74017
```

```
        76037
        47071
        1540
        700
        1740
        3760
        7270
        7570
        3260
        1540
        700
        700

        JSR Bun2
        .TXT "DMT of Easter, Alto"
Bun2:   STA 3 VERSION
        JSR CURSOR
         0
        0
        42
        167
        167
        167
        167
        66
        34
        3476
        7675
        17777
        57777
        177776
        177774
        177777
        57777

        JSR Cinco
        .TXT "DMT of Cinco de Mayo, Alto"
Cinco:  STA 3 VERSION
        JSR CURSOR
         0
        0
        77776
        74052
        74466
        75252
        74466
        75252
        74066
        77776
        40000
        56034
        50020
        56334
        41002
        56034
        0

        JSR MayDay
        .TXT "DMT of May day, Alto"
MayDay: STA 3 VERSION
        JSR CURSOR
         0
        160
        7610
        10204
        30212
        50021
        104001
        40201
        40706
        61741
        110701
        100211
        100006
        104002
        70102
```

```
        4136
        7740

        JSR Domin
        .TXT "DMT of Dominion Day, Alto"
Domin:  STA 3 VERSION
        JSR CURSOR
         0
        400
        1600
        1600
        103702
        143706
        163716
        167756
        177776
        177776
        177776
        177776
        77774
        37770
        7740
        400
        400

        JSR Domin
        .TXT "DMT of Dominion Day, Alto"
Domin:  STA 3 VERSION
        JSR CURSOR
         0
        600
        1700
        3740
        7760
        7760
        177777
        177777
        177777
        177777
        77776
        37774
        77776
        37774
        17770
        6660
        600

; by Dan Bobrow
        JSR Mem
        .TXT "DMT of Memorial Day, Alto"
Mem:    STA 3 VERSION
        JSR CURSOR
         0
        0
        37700
        30400
        30400
        30400
        30400
        37770
        77774
        177776
        177777
        77776
        36074
        36074
        14030
        0
        0

        JSR Mem
        .TXT "DMT of Memorial Day, Alto"
Mem:    STA 3 VERSION
        JSR CURSOR
         0
        146314
```

```
        146314
        31463
        31463
        146314
        146314
        31463
        31463
        0
        37774
        37774
        4620
        73756
        167767
        174037
        167767

        JSR Flag
        .TXT "DMT of Flag Day, Alto"
Flag:   STA 3 VERSION
        JSR CURSOR
         0
        53437
        125360
        52417
        125370
        52407
        125374
        53603
        176176
        7701
        174077
        3740
        176037
        1760
        177017
        770
        177400

        JSR Flag
        .TXT "DMT of Flag Day, Alto"
Flag:   STA 3 VERSION
        JSR CURSOR
         0
        100000
        134002
        153636
        165362
        53016
        67363
        30415
        23173
        34506
        11714
        12370
        10000
        14000
        4000
        4000
        6000

        JSR Bell
        .TXT "DMT of Independence Day, Alto"
Bell:   STA 3 VERSION
        JSR CURSOR
         0
        167767
        177777
        177777
        167767
        163747
        17770
        17770
        37774
        37774
        37774
        37774
```

```
        37734
        37754
        77756
        177767
        7000

        JSR Mom
        .TXT "DMT of Mother's Day, Alto"
Mom:    STA 3 VERSION
        JSR CURSOR
         0
        105721
        155133
        125125
        125125
        125125
        125125
        105121
        105121
        105121
        105121
        105121
        105121
        105121
        105121
        105121

        JSR Mom
        .TXT "DMT of Mother's Day, Alto"
Mom:    STA 3 VERSION
        JSR CURSOR
         0
        6720
        32554
        77766
        54016
        170013
        120006
        161543
        42022
        140001
        140201
        40002
        41042
        20704
        10010
        4020
        2040

        JSR Norges
        .TXT "DMT of Norges Nasjonaldag, Alto"
Norges: STA 3 VERSION
        JSR CURSOR
         0
        171777
        171777
        171777
        171777
        0
        0
        171777
        171777
        171777
        171777
        100000
        102725
        102525
        102727
        102521
        102721

        JSR NY
        .TXT "DMT of 'I love NY' week 1979, Alto"
NY:     STA 3 VERSION
        JSR CURSOR
```

```
         0
        77543
        4167
        4177
        4076
        4034
        4010
        77400
        0
        60501
        60442
        50424
        44410
        42410
        41410
        41410
        0

        JSR POP
        .TXT "DMT of Father's Day, Alto"
POP:    STA 3 VERSION
        JSR CURSOR
         0
        37
        3
        5
        7611
        30131
        40020
        154620
        114310
        101010
        101010
        103410
        110110
        44220
        43420
        30140
        7600

        JSR VES
        .TXT "DMT of the 1900th anniversary of Vesuvius' explosion, Alto"
VES:    STA 3 VERSION
        JSR CURSOR
         0
        500
        5220
        12640
        24714
        2620
        5612
        1304
        25551
        103740
        3764
        27760
        7772
        117770
        37774
        77776
        177777

        JSR SAT1
        .TXT "DMT of the Pioneer 11 Saturn encounter, Alto"
SAT1:   STA 3 VERSION
        JSR CURSOR
         0
        3
        17
        1322
        7666
        15674
        17570
        27364
        36764
        31754
```

```
        27734
        17670
        37550
        46360
        55700
        170000
        140000

        JSR SAT2
        .TXT "DMT of the Pioneer 11 Saturn encounter, Alto"
SAT2:   STA 3 VERSION
        JSR CURSOR
         0
        3
        17
        1722
        7566
        17354
        16730
        37664
        37564
        37354
        36734
        15670
        33550
        46360
        55700
        170000
        140000

; by Rich Pasco, submitted 10 Sept 79
        JSR HALLOW
        .TXT "DMT of Halloween, Alto"
HALLOW: STA 3 VERSION
        JSR CURSOR
         0
        300
        600
        600
        16660
        17774
        77776
        71717
        175757
        177177
        177577
        177777
        71746
        74016
        37274
        7760
        0

; by Brodie, submitted 6 Sept 79
        JSR ESCHER
        .TXT "DMT of the S.F. M.C. Escher exhibition, Alto"
ESCHER: STA 3 VERSION
        JSR CURSOR
         0
        200
        500
        1100
        2220
        4450
        11110
        22222
        31445
        24511
        22222
        11044
        4510
        2220
        1240
        700
        200
```

```
; by (Bill) Stevenson.WBST, submitted 6 Sept 79
        JSR Trek
        .TXT "DMT of the 13th anniversary of Star Trek, Alto"
Trek:   STA 3 VERSION
        JSR CURSOR
         0
        167116
        102252
        62354
        162252
        0
        167352
        45214
        46314
        45352
        0
        177470
        1174
        7774
        7774
        1174
        177470

; by Rich Brodie, submitted 18 Sept 79
        JSR SunSpot
        .TXT "DMT of the 280-year Sun spot maximum, Alto"
SunSpot:STA 3 VERSION
        JSR CURSOR
         0
        1000
        404
        40430
        31740
        7363
        7574
        134774
        57734
        17374
        14772
        56771
        127660
        3750
        4610
        4204
        10400

; by Dan Swinehart, submitted 19 October 79
        JSR SU
        .TXT "Stanford University DMT, Alto"
SU:     STA 3 VERSION
        JSR CURSOR
         0
        1700
        7760
        16070
        34634
        71616
        62706
        144643
        141623
        142703
        144643
        61606
        72716
        34674
        16670
        7760
        1700

; by Mike Schroeder, submitted 19 October 79
        JSR MIT
        .TXT "Massachusetts Institute of Technology DMT, Alto"
MIT:    STA 3 VERSION
        JSR CURSOR
         0
```

```
        0
        160340
        60300
        50500
        50500
        45100
        45100
        42100
        162340
        0
        0
        0
        0
        0
        0
        0

; by Roy Levin, submitted 19 October 79
        JSR CMU
        .TXT "Carnegie-Mellon University DMT, Alto"
CMU:    STA 3 VERSION
        JSR CURSOR
         0
        401
        176576
        102506
        103712
        100422
        100742
        161556
        22650
        177777
        25510
        166616
        107402
        110402
        123702
        142502
        176576

; by Wally Engle, submitted 19 November 79
        JSR Turkey
        .TXT "DMT of Thanksgiving, Alto"
Turkey: STA 3 VERSION
        JSR CURSOR
         0
        0
        41044
        22102
        41044
        22100
        40014
        21726
        46150
        10230
        26224
        51346
        50403
        177777
        60006
        37774
        0

; by Wally Engle, submitted 18 December 79
        JSR Tree
        .TXT "DMT of Christmas, Alto"
Tree:   STA 3 VERSION
        JSR CURSOR
         0
        604
        616
        1337
        1716
        2644
        6560
        5720
```

```
        17250
        27730
        35374
        67666
        75356
        153665
        177377
        1700
        1700

; by Jerry Morrison, submitted 14 December 1979
        JSR Fire
        .TXT "DMT of New Year's Day, Alto"
Fire:   STA 3 VERSION
        JSR CURSOR
         0
        1042
        10125
        40045
        1125
        24125
        1042
        50000
        2760
        10010
        4
        4
        174444
        171150
        162360
        144740
        111740

; by Rudi Sherry, submitted 20 December 1979
        JSR Hanukah
        .TXT "DMT of Hanukah, Alto"
Hanukah:STA 3 VERSION
        JSR CURSOR
         0
        100402
        120412
        125652
        125652
        125652
        125652
        125652
        125652
        75274
        7740
        400
        1600
        1600
        3700
        7710
        0

; by Rich Hoffarth, submitted 28 December 1979
        JSR Champagne
        .TXT "DMT of New Year's Day, Alto"
Champagne: STA 3 VERSION
        JSR CURSOR
         0
        140
        140
        14014
        14614
        600
        0
        37774
        17770
        7760
        3740
        1700
        600
        600
        600
```

```
        600
        7760

; by Eric Rawson, submitted 2 Jan 1980
        JSR Ski
        .TXT "DMT of the 1980 ski season, Alto"
Ski:    STA 3 VERSION
        JSR CURSOR
         0
        704
        702
        205
        1770
        22700
        34700
        20702
        20705
        20512
        20524
        20250
        70120
        20240
        500
        3200
        1400

; by Pettit, submitted 22 Jan 1980
        JSR GW
        .TXT "DMT of George Washington's birthday, Alto"
GW:     STA 3 VERSION
        JSR CURSOR
         0
        6760
        15010
        65764
        73772
        33772
        164143
        122453
        167673
        3432
        13772
        13430
        15760
        46742
        102001
        3160
        660

; by R. Lyon, submitted 1 Feb 80
        JSR GHog
        .TXT "DMT of Ground Hog's day, Alto"
GHog:   STA 3 VERSION
        JSR CURSOR
         0
        740
        7030
        70004
        143002
        165462
        163011
        40011
        40021
        30401
        27002
        10002
        4002
        2001
        5001
        5001
        10401i

; by S. Weyer, submitted 1 Apr 80
        JSR CENSUS
        .TXT "DMT of the 1980 U.S. Census, Alto"
CENSUS: STA 3 VERSION
```

```
        JSR CURSOR
         0
        20406
        61211
        20201
        20207
        20201
        20411
        71707
        0
        20202
        20202
        70707
        125252
        20202
        50505
        50505
        0

; by D. Curry, submitted April 80
        JSR BUZZ
        .TXT "DMT - Buzzards return to Hinkley Ohio - Alto"
BUZZ:   STA 3 VERSION
        JSR CURSOR
         0
        16000
        37000
        37034
        77426
        77637
        77671
        77760
        177340
        176000
        176000
        176000
        176000
        166000
        166000
        42000
        5000

; by K. Kolling, submitted May 6, 1980
        JSR Paw
        .TXT "DMT of 'Be Kind to Animals Week', Alto"
Paw:    STA 3 VERSION
        JSR CURSOR
         0
        600
        1700
        1700
        60606
        170017
        170017
        61706
        7760
        7760
        17770
        17770
        17770
        17770
        7760
        7760
        1700

; by Capps.wbst, submitted 9 May 80
        JSR Astoria
        .TXT "DMT - First Xerographic print 22 Oct 38 - Alto"
Astoria:STA 3 VERSION
        JSR CURSOR
         0
        47356
        127112
        161112
        127116
        0
```

```
        7220
        5250
        6270
        5250
        0
        0
        67356
        25052
        27156
        21052
        21356

; by CParker.wbst, submitted 9 June 80
        jsr OuterSpace
        .TXT "DMT of Outer Space Week, Alto"
OuterSpace:STA 3 VERSION
        JSR CURSOR
         0
        7400
        14600
        30340
        60074
        40006
        40002
        140002
        100002
        100002
        100006
        140014
        43410
        66670
        34340
        0
        0

; by Norm Cox (dlos), submitted 29 May 80
        jsr OPD
        .TXT "'OPIE' - 1st anniversary of OPD, by Norm Cox*NAlto"
OPD:    STA 3 VERSION
        JSR CURSOR
         0
        60000
        70340
        70160
        74060
        34036
        36034
        16020
        6060
        3740
        3700
        1600
        3000
        1000
        400
        200
        1740

; by Capps.wbst, submitted 12 June 80
        JSR Fri13
        .TXT "DMT of Friday the 13th, Alto"
Fri13:  STA 3 VERSION
        JSR CURSOR
         0
        36074
        37174
        35134
        17170
        0
        0
        0
        1100
        0
        170017
        6060
        177177
```

```
        2040
        174037
        0
        0

; by L. Clark, submitted 13 June 80
        JSR Helen
        .TXT "DMT - Mt. St. Helens, by LClark.PA*NAlto"
Helen:  STA 3 VERSION
        JSR CURSOR
         0
        43542
        116270
        71536
        156563
        167376
        65254
        11260
        100702
        4710
        20502
        3060
        47771
        7730
        15514
        22554
        63176

; by Geoff Thompson, submitted 11 July 80
        JSR xxx
        .TXT "DMT *NAlto"
xxx:    STA 3 VERSION
        JSR CURSOR
         0
        36
        365
        3665
        6651
        6113
        1130
        1300
        3027
        25
        27
        0
        167356
        125252
        167310
        105252
        105252

; by Ted Kaehler, submitted 10 July 80
        JSR Light
        .TXT "Dealing lightning: Parc's tenth anniversary*NAlto"
Light:  STA 3 VERSION
        JSR CURSOR
         0
        1
        41
        173
        316
        1606
        1000
        7400
        4200
        10100
        10600
        21040
        41000
        101040
        102400
        104020
        110010

; by Bob Weissman, submitted 29 July 80
        JSR Skull
```

```
        .TXT "Cursor design by Bob Weissman*NAlto"
Skull:  STA 3 VERSION
        JSR CURSOR
         0
        1600
        2100
        4040
        7340
        4440
        2500
        2100
        1200
        4440
        6140
        1200
        400
        1200
        6140
        4040
        0

; by T. Pettit, submitted 30 July 80
        JSR Legs
        .TXT "DMT of the Parc Picnic - cursor by T. Pettit*NAlto"
Legs:   STA 3 VERSION
        JSR CURSOR
         0
        7160
        7160
        107160
        42040
        37770
        2656
        2642
        2642
        2642
        6660
        15720
        31720
        21730
        21714
        21706
        61702

; by Mike Trigoboff, submitted 9 Sept 80
        JSR Leaf
        .TXT "DMT of Autumn 1980 - cursor by Mike Trigoboff*NAlto"
Leaf:   STA 3 VERSION
        JSR CURSOR
         0
        1
        17
        63
        305
        411
        1021
        2042
        4102
        4204
        10410
        11020
        12140
        24600
        33000
        174000
        140000

; by George Komorowski, submitted 11 Sept 80
        JSR Grape
        .TXT "The grapes of September - cursor by George Komorowski*NAlto"
Grape:  STA 3 VERSION
        JSR CURSOR
         0
        6003
        76407
        173706
```

```
        152340
        16070
        33073
        72353
        35416
        73164
        67126
        12076
        36154
        34176
        72
        20
        0

; by David Cheng, submitted 15 Sept 80
        JSR China
        .TXT "China exhibit in S.F. thru 9/28 - cursor by D. Cheng *NAlto "
China:  STA 3 VERSION
        JSR CURSOR
         0
        10377
        10201
        10201
        177275
        111221
        111221
        111221
        111221
        111275
        177221
        10225
        10225
        10221
        10275
        10201
        10377

; by Aden.ES, submitted 17 Sept 80
        JSR X5700
        .TXT "DMT of the Xerox 5700 announcement*NAlto "
X5700:  STA 3 VERSION
        JSR CURSOR
         0
        177177
        100101
        100002
        177004
        1010
        1020
        177040
        0
        0
        177177
        101101
        101101
        101101
        101101
        101101
        177177

; by Allen Wells, submitted 9 Oct 80
        JSR COL
        .TXT "Columbus stops short of India -- 1492*NAlto "
COL:    STA 3 VERSION
        JSR CURSOR
         0
        3760
        2024
        17237
        31221
        61721
        41221
        141221
        101221
        177037
        13764
```

```
        150205
        177777
        72527
        37776
        17774
        7770

; by Allen Wells, submitted 18 Oct 80
        JSR TAE
        .TXT "Thomas Edison died -- 18 Oct 1931*NAlto "
TAE:    STA 3 VERSION
        JSR CURSOR
         0
        173131
        117575
        103743
        141103
        41102
        61706
        30614
        17770
        4160
        7620
        4360
        7420
        4760
        7060
        2640
        3740

; by Allen Wells, submitted 18 Oct 80
        JSR Hallo1
        .TXT "Werewolves howl and goblins prowl - by A. Wells*NAlto "
Hallo1: STA 3 VERSION
        JSR CURSOR
         0
        660
        370
        370
        1760
        770
        710
        3600
        157600
        71600
        16600
        3600
        7700
        7774
        17477
        17037
        3017

; by Capps.wbst, submitted 22 Oct 80
        JSR Hallo2
        .TXT "Werewolves howl and goblins prowl - by Capps.wbst*NAlto "
Hallo2: STA 3 VERSION
        JSR CURSOR
         0
        3540
        17170
        37174
        76076
        77176
        177177
        176016
        176171
        176147
        176037
        177037
        76636
        71636
        7614
        17770
        3740
```

```
; by Trigoboff, submitted 21 Oct 80
        JSR Hallo3
        .TXT "Werewolves howl and goblins prowl - by M. Trigoboff*NAlto "
Hallo3: STA 3 VERSION
        JSR CURSOR
         0
        0
        140
        300
        1700
        760
        700
        200
        167700
        34340
        7360
        1770
        3740
        1477
        617
        1406
        2

; by Capps.wbst, submitted 16 Sept 80
        JSR Babbage
        .TXT "Charles Babbage born 26 Dec 1792*NAlto "
Babbage:STA 3 VERSION
        JSR CURSOR
         0
        400
        14620
        7760
        17172
        77176
        36074
        36074
        74637
        175636
        35714
        30014
        77776
        57770
        7760
        7760
        4630
        200

; by Capps.wbst, submitted 16 Sept 80
        JSR Turing
        .TXT "A. M. Turing born 23 June 1912*NAlto "
Turing: STA 3 VERSION
        JSR CURSOR
         0
        7740
        4040
        177777
        4040
        125656
        125252
        125252
        125252
        125656
        4040
        177777
        4040
        7740
        0
        0
        0

; by Capps.wbst, submitted 16 Sept 80
        JSR Hollerith
        .TXT "Hollerith born 29 Feb 1860*NAlto "
Hollerith:STA 3 VERSION
        JSR CURSOR
         0
```

```
        17777
        37777
        77777
        172727
        172727
        177575
        177575
        177767
        177767
        173577
        173577
        177775
        177775
        176737
        176737
        177777

; by Komoroski.wbst, submitted 16 Sept 80
        JSR AmCup
        .TXT "America's Cup race*NAlto "
AmCup:  STA 3 VERSION
        JSR CURSOR
         0
        177737
        177637
        177637
        177427
        177427
        177023
        176023
        174023
        172721
        162121
        142721
        102420
        2720
        177757
        100000
        170007

; by Allen Wells, submitted 30 Oct 80
        JSR Vote
        .TXT "You'll have to live with the winner for 4 years*NAlto "
Vote:   STA 3 VERSION
        JSR CURSOR
         0
        141436
        141477
        63163
        63343
        36307
        36316
        14374
        14170
        0
        177576
        177576
        14140
        14176
        14140
        14176
        14176

; by Allen Wells, submitted 30 Oct 80
        JSR Frog
        .TXT "Frog hunting season starts Nov 5*NAlto "
Frog:   STA 3 VERSION
        JSR CURSOR
         0
        70
        707
        17673
        37707
        77776
        77770
        177777
```

```
        177774
        77760
        77660
        17037
        17406
        177001
        174000
        77600
        17760

; by S. Quarterman, sumbitted 7 Nov 80
        JSR Tank
        .TXT "DMT of November 15 - Erwin Rommel's 89th birthday*NAlto "
Tank:   STA 3 VERSION
        JSR CURSOR
         0
        0
        0
        0
        0
        3700
        77740
        7740
        37770
        40004
        52524
        40004
        37770
        0
        0
        0
        0

; by Allen Wells, submitted 19 Nov 80
        JSR CT
        .TXT "Americans get ready for Thanksgiving with X-mas sales*NAlto "
CT:     STA 3 VERSION
        JSR CURSOR
         0
        600
        1700
        1100
        3340
        2440
        6160
        5020
        16230
        10050
        35114
        20404
        36074
        13750
        2640
        600
        1700

; by Allen Wells, submitted 19 Nov 80
        JSR TK
        .TXT "Indians help pilgrims celebrate first Thanksgiving*NAlto "
TK:     STA 3 VERSION
        JSR CURSOR
         0
        400
        1200
        7340
        35270
        25250
        165256
        125652
        126552
        130032
        127752
        123312
        170436
        54464
        51624
```

```
        54064
        63714

; by Teri Pettit, submitted 1 Dec 80
        JSR Hannuk
        .TXT "DMT of the first day of Hannukah*NAlto "
Hannuk: STA 3 VERSION
        JSR CURSOR
         0
        1
        1
        1
        1
        0
        52725
        52225
        53765
        50205
        57775
        40201
        77777
        200
        200
        700
        3760

2nd night (Dec 3): same as above but 5 instead of 1 in lines 0-3
3rd night (Dec 4): ditto but 25
4th night (Dec 5): ditto but 125
5th night (Dec 6): ditto but 525
6th night (Dec 7): ditto but 2525
7th night (Dec 8): ditto but 12525
8th night (Dec 9): ditto but 52525

; by Allen Wells, submitted 10 Dec 80
        JSR Winter
        .TXT "Winter begins - cursor by A. Wells*NAlto "
Winter: STA 3 VERSION
        JSR CURSOR
         0
        0
        7160
        10010
        12650
        0
        5120
        51112
        100601
        127165
        100601
        51112
        5120
        0
        12650
        10010
        7160


; by Craig Everhart, on 11 June 1980
        JSR PIESky
        .TXT "Personal Integrated Environment in the Sky*NAlto "
PIESky: STA 3 VERSION
        JSR CURSOR
         0
        0
        36
        141
        603
        1002
        2616
        4312
        10012
        12072
        22042
        22142
        40304
```

```
        41610
        41020
        57740
        30000


; by Craig Everhart, on 25 March 1981
        JSR Squeaky
        .TXT "The Squeaking Wheel gets the Vax*NAlto "
Squeaky:        STA 3 VERSION
        JSR CURSOR
         0
        760
        3114
        3114
        4522
        4342
        7776
        4342
        4522
        3114
        3114
        760
        167356
        104210
        167356
        104210
        167356


; by Jim Gasbarro, 2 April 1981
        JSR     Tulip
        .TXT "DMT of Spring 1981*NAlto "
Tulip:  STA 3 VERSION
        JSR CURSOR
         0
        6140                    ; cursor bitmap begins here
        6540
        6540
        6540
        3700
        3700
        1607
        415
        431
        160421
        130462
        114442
        146544
        63710
        35730
        7740


; by Craig Everhart, 7 June 1981
        JSR     NebNose
        .TXT "DMT of 'If The Privilege Tempts, Give It Up' week*NAlto "
NebNose:        STA 3 VERSION
        JSR CURSOR
         0
        140                     ; cursor bitmap begins here
        300
        600
        1400
        3000
        6000
        14000
        30000
        60170   ; or 60120
        140004
        100002
        100002
        116002  ; or 112002
        61602   ; or 61202
        30174
        7600            ; or 5200
```

```
; by Keith Marzullo, submitted December 10, 1980  10:55 AM
        jsr Fri13
        .TXT "DMT of Dead Week, Alto"
Fri13:  STA 3 VERSION
        JSR CURSOR
         0
        0
        1740
        2020
        4210
        4210
        5750
        4210
        4210
        4210
        24010
        44012
        146511
        44212
        54416
        177777
        177777


; by Craig Everhart, 20 July 1981
        JSR     WeddingNight
        .TXT "DMT of the Royal Wedding Night*NAlto "
WeddingNight:   STA 3 VERSION
        JSR CURSOR
         0
        20000                   ; cursor bitmap begins here
        10000
        5400
        3600
        7600
        6740
        770
        30774
        75776
        157476
        177737
        37777
        177747
        36746
        34704
        16344


; by Craig Everhart, 17 August 1981, plagiarized from Sat2, below
        JSR     Sat3
        .TXT "DMT of the Voyager 2 Saturn fly-by, 25 August 1981*NAlto "
Sat3:   STA 3 VERSION
        JSR CURSOR
         0
        3                       ; cursor bitmap begins here
        17
        1722
        7766
        17754
        17730
        37664
        37564
        37354
        36734
        15670
        33570
        46360
        55700
        170000
        140000


; by solomon, 15 Sept 1981
        JSR     pig
```

```
        .TXT "DMT of International CONE PIG Week, 15 Sept. 1981*NAlto "
pig:    STA 3 VERSION
        JSR CURSOR
         0
        000606                  ; cursor bitmap begins here
        003145
        014431
        025246
        026144
        044042
        111221
        120011
        120411
        052122
        051622
        026144
        021604
        014030
        003740
        001100


; by Dave Solomon, 23 September 1981
        JSR     pac
        .TXT "DMT of International PACMAN week 23 Sept. 1981*NAlto "
pac:    STA 3 VERSION
        JSR CURSOR
         0
        003740                  ; cursor bitmap begins here
        004020
        010010
        020004
        020004
        040002
        057172
        117171
        111111
        100001
        100001
        100001
        100001
        100001
        114631
        063146


; by Joe Newcomer, 1980
        JSR GOP
        .TXT "Floundering about in Alto "
GOP:    STA 3 VERSION
        JSR CURSOR
        0
        100360
        140410
        121004
        112052
        104402
        103001
        100512
        104062
        112004
        121010
        140760
        100000
        000000
        000000
        000000
        000000

        JSR SADIE
        .TXT "DMT of Sadie Hawkins Day, February 29th, 1980, Alto "
SADIE:  STA 3 VERSION
        JSR CURSOR
        0
        377
        377
```

```
        17
        37
        3073
        17763
        34743
        60143
        60140
        140060
        140060
        60140
        60140
        34700
        17600
        3000

        JSR NHP
        .TXT "DMT of the New Hampshire Primary, February 26th, 1980, Alto "
NHP:    STA 3 VERSION
        JSR CURSOR
        0
        112214
        152234
        152234
        133634
        132234
        112274
        112274
        174
        167174
        125376
        165376
        125376
        167377
        377
        776
        360

        JSR FDS
        .TXT "DMT of the First Day of Spring, '80, Alto "
FDS:    STA 3 VERSION
        JSR CURSOR
        0
        000200
        011244
        015354
        046630
        033164
        051512
        122324
        056556
        035264
        012720
        102603
        160617
        170636
        074636
        036674
        017760

        JSR TITAN
        .TXT "68th Anniversary of the TITANIC sinking, April 15th, 1912, Alto "
TITAN:  STA 3 VERSION
        JSR CURSOR
        0
        005000
        000240
        000000
        000124
        030300
        064625
        143460
        111145
        104714
        142231
        061163
        030446
```

```
        014234
        006110
        003464
        001356


        JSR GOP
        .TXT "1980 Republican National Convention, Detroit, Alto "
GOP:    STA 3 VERSION
        JSR CURSOR
        0
        000000
        017740
        037760
        056730
        125250
        156730
        177774
        000004
        177764
        177764
        177764
        170365
        170362
        170360
        000000
        000000


; by Craig Everhart, 28 September 1981
        JSR     xDMTx
        .TXT "DMT of the Diagnostic Memory Test*NAlto "
xDMTx:  STA 3 VERSION
        JSR CURSOR
         0
        1000                    ; cursor bitmap begins here
        1200
        1200
        1200
        1200
        3200
        6200
        14200
        31200
        1300
        1140
        1074
        3000
        2200
        6300
        34170
```