```
ERR  LOC   OBJECT CODE      SEQ      SOURCE STATEMENT

                                                                    TOTAL 44
                            1   ;
                            2   ;
                            3   ;
                            4   ;
                            5   ;
                            6   ;
                            7   ;
                            8   ;
                            9   ;
                           10   ;
                           11   ;
                           12   ;
                           13   ;
                           14   ;
                           15   ;
                           16   ;
                           17   ; * * * * * * * * * * * * * * * * * * * * *
                           18   ; *                                       *
                           19   ; *            OKI TYPER 5230             *
                           20   ; *            MICRO LINE 82A             *
                           21   ; *                                       *
                           22   ; *          PROGRAM   LIST   ( 1 )       *
                           23   ; *                    REV. NO.1          *
                           24   ; *                                       *
                           25   ; * * * * * * * * * * * * * * * * * * * * *
                           26   ;
                           27   ;
                           28   ;    * * * * *   ROM ( 2716 )   * * * * *
                           29   ;
                           30   ;
                           31   ;     CHIP  NO.       005     ( MEMORY  BANK  0 )
                           32   ;
                           33   ;     ROM   NO.       LYH - 10255
                           34   ;
                           35   ;    WHITE DOT Q'TY FIVE
                           36   ;                                          LC - 97466 - 1
                           37   ;
                           38   ;                                           1981.10
                           39   ;
                           40   ;
                           41   ;
                           42   ;
                           43   ;
                           44   ;
                           45   ;
                           46   ;
                           47   ;
                           48   ;
                           49            EJECT
```

```
ERR  LOC   OBJECT CODE      SEQ      SOURCE STATEMENT                                    TOTAL 44

                             1   ;
                             2   ;
                             3   ;
                             4   ;
                             5   ;
                             6   ;
                             7   ;
                             8   ;
                             9   ;
                            10   ;
                            11   ;
                            12   ;
                            13   ;
                            14   ;
                            15   ;
                            16   ;
                            17   ; * * * * * * * * * * * * * * * * * * * * * *
                            18   ; *                                         *
                            19   ; *            OKI TYPER 5230               *
                            20   ; *            MICRO LINE 82A               *
                            21   ; *                                         *
                            22   ; *          PROGRAM   LIST   ( 1 )         *
                            23   ; *                    REV. NO.1            *
                            24   ; *                                         *
                            25   ; * * * * * * * * * * * * * * * * * * * * * *
                            26   ;
                            27   ;
                            28   ;   * * * * *   ROM ( 2716 )   * * * * *
                            29   ;
                            30   ;
                            31   ;    CHIP  NO.       005    ( MEMORY  BANK  0 )
                            32   ;
                            33   ;    ROM   NO.       LYH - 10255
                            34   ;
                            35   ;   WHITE DOT Q'TY FIVE
                            36   ;                                                   LC - 97466 - 1
                            37   ;
                            38   ;                                                    1981.10
                            39   ;
                            40   ;
                            41   ;
                            42   ;
                            43   ;
                            44   ;
                            45   ;
                            46   ;
                            47   ;
                            48   ;
                            49          EJECT
```

```
ERR  LOC   OBJECT CODE      SEQ      SOURCE STATEMENT

                            50   ;
                            51   ;
                            52   ;          ET - 5230  PROGRAM  ( MB 0 )
                            53   ;
                            54   ;            TABLE  OF  CONTENTS
                            55   ;
                            56   ;              TITLE                                    PAGE
                            57   ;
                            58   ; 1. INITIAL RESET ( IRT )                              6
                            59   ;  1. 1 POWER ON                                       4
                            60   ;  1. 2 I/O RESET                                      6
                            61   ;  1. 3 REGISTER CLEAR                                 7
                            62   ;  1. 4 CR HOMING                                      8
                            63   ;
                            64   ; 2. INTERRUPT DISTRIBUTOR                             4
                            65   ;  2. 1 TIMER INTERRUPT DISTRIBUTE                     4
                            66   ;  2. 2 INTERRUPT ROUTINE TERMINATE                    5
                            67   ;
                            68   ; 3. INPUT SUB ROUTINES                                5
                            69   ;  3. 1 8155 PC PORT WRITE                            5
                            70   ;  3. 2 DISP SWITCH READ                              5
                            71   ;  3. 3 SEL KEY ON MEMORY                             6
                            72   ;
                            73   ; 4. DATA INPUT CONTROL                               8
                            74   ;  4. 1 DATA WAIT                                     8
                            75   ;  4. 2 MANUAL KEY                                    11
                            76   ;  4. 3 DATA RECEIVE                                  11
                            77   ;  4. 4 INPUT END CONTROL                             11
                            78   ;  4. 5 BLOCK END CODE CONTROL                        12
                            79   ;  4. 6 LF AFTER CR CODE                              13
                            80   ;  4. 7 BUFFER EMPTY CONTROL                          14
                            81   ;  4. 8 PRINT START CONTROL                           15
                            82   ;  4. 9 INPUT TO PRINT MODE SHIFT                     13
                            83   ;  4.10 PRINT CNT PRESET                              16
                            84   ; 5. PRINT CONTROL SUB ROUTINES                       16
                            85   ;  5. 1 DATA READ                                     17
                            86   ;  5. 2 165CPI SPPM PHASE CHANGE  #1                 17
                            87   ;  5. 3 165CPI SPPM PHASE CHANGE  #2                 17
                            88   ;  5. 4 TIME DELAY                                    18
                            89   ;  5. 5 SPACE PULSE MOTOR PHASE CHANGE               18
                            90   ;  5. 6 LF PULSE MOTOR PHASE CHANGE                  19
                            91   ;  5. 7 LF PULSE MOTOR OVER DRIVE SET                19
                            92   ;  5. 8 LF PULSE MOTOR OVER DRIVE RESET              19
                            93   ;  5. 9 PB PORT OF 8155 READ                         19
                            94   ;  5.10 COLUMN COUNTER SET                           19
                            95   ;  5.11 LF STEP SET                                  20
                            96   ;
                            97   ;
                            98   ;
                            99         EJECT
```

ERR LOC OBJECT CODE SEQ SOURCE STATEMENT

```
100   ;
101   ;
102   ;          ET - 5230  PROGRAM  ( MB 0 )
103   ;
104   ;               TITLE                                              PAGE
105   ;
106   ; 6. PRINT CONTROL                                                  20
107   ;  6. 1 SPACE & PRINT CONTROL                                       20
108   ;   6.1. 1 SPACE PULSE MOTOR RISE UP                                21
109   ;   6.1. 2 SPPM PULSE RATE TABLE                                    22
110   ;   6.1. 3 SPPM PUASE CONTROL & TIMER SET                           22
111   ;   6.1. 4 DOT HEAD SET CONTROL                                     23
112   ;   6.1. 5 COLUMN ( CLM ) CNT & CHARACTER CNT SET                   24
113   ;   6.1. 6 PRINT CONTROL DISTRIBUTE                                 26
114   ;   6.1. 7 CHARACTER GENERATER READ ( GRAPHIC )                     26
115   ;   6.1. 8 DATA READ FROM RAM                                       27
116   ;   6.1. 9 CHARACTER GENERATOR READ ( CHARACTER )                   30
117   ;   6.1.10 PRINT END CONTROL ( SHORT LINE SEEKING )                 34
118   ;   6.1.11 SP PULSE MOTOR STOP CONTROL                              34
119   ;   6.1.12 SOFT STOP                                                35
120   ;   6.1.13 HOME DETECTION                                           35
121   ;   6.1.14 CONTROL AFTER SPPM STOP                                  37
122   ;  6. 3 LINE FEED CONTROL                                           29
123   ;   6.3. 1 LF NUMBER SET ( FF.VFU CONTROL ) .SUBROUTINE             38
124   ;   6.3. 2 LF CONTROL                                               39
125   ;  6. 4 CR END                                                      39
126   ;  6. 5 TIMER INTERRUPT                                             40
127   ;  6. 6 INTERRUT SEQUENCE END
128   ;                                                                   41
129   ; 7. LABEL LIST
130   ;                                                                   45
131   ; 8. OBJECT LIST
132   ;
133   ;
134   ;
135         EJECT
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

                           136   ;     *****  MODEL NAME ASSIGNMENT  *****
                           137   ;
                           138   ;
                           139   ;     ET-5230(ML82A).....ML82A : EQU 1
                           140   ;     ET-8220A(ML83A)....ML82A : EQU 0
                           141   ;
           (0001)          142   ML82A:  EQU     1
                           143   ;
                           144   ;
                           145   ;             TO ODC.....ODC : EQU 1
                           146   ;             TO OEE.....ODC : EQU 0
                           147   ;
           (0000)          148   ODC:    EQU     0
                           149   ;
                           150   ;
                           151   ;     *****  JUMP ADDRESS FROM MB0 TO MB1
                           152   ;
           (0000)          153   SIF1:   EQU     ^000
           (0062)          154   SIF2:   EQU     ^062
           (008B)          155   SIF3:   EQU     ^08B
           (0091)          156   SIF4:   EQU     ^091
           (0095)          157   SIF5:   EQU     ^095
           (00DE)          158   CRLF6:  EQU     ^0DE
           (0100)          159   CS1:    EQU     ^100
           (0250)          160   CON22:  EQU     ^250
           (02C8)          161   DTW:    EQU     ^2C8
           (05DA)          162   VFU15:  EQU     ^5DA
           (0603)          163   VFU12:  EQU     ^603
           (0612)          164   VFU16:  EQU     ^612
                           165   ;
                           166           TITLE   ' ET-5230(ML82A) PROGRAM (MB0) *1-2*'
                           167   ;
                           168   ;
                           169   ;
                           170   ;
                           171   ;
                           172   ;
                           173   ;
                           174   ;     ********** POWER ON  **********
                           175   ;
                           176   ;
           (0000)          177           ORG     0
                           178   ;
0000  9A FD                179           ANL     P2,#^FD         ; 8155 CS ON
0002  B8 00                180           MOV     R0,#^00
0004  75                   181           ENTO    CLK             ; CLOCK OUT FROM TO TERMINAL
0005  04 83                182           JMP     IRT             ;TO IRT
                           183   ;
                           184   ;     ****************************************
                           185   ;     *    INTERRUPT DISTRIBUTER             *
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

                            186   ;    ****************************************
                            187   ;
                            188   ;
                            189   ;    ********** TIMER INTERRUPT DISTRIBUTE **********
                            190   ;
                            191   ;
                  (0007)    192           ORG     7
                            193   ;
      0007  65              194           STOP    TCNT
      0008  16 0A           195           JTF     $+2
      000A  D5              196           SEL     RB1
      000B  B8 28           197           MOV     R0,#^28
      000D  A0              198           MOV     @R0,A           ;ACC RETIRE
      000E  18              199           INC     R0
      000F  0A              200           IN      A,P2            ;PORT-2 RETIRE
      0010  A0              201           MOV     @R0,A
      0011  8A FF           202           ORL     P2,#^FF
      0013  FB              203           MOV     A,R3            ;R3  INTERRUPT REG.
      0014  F2 24           204           JB7     INTR3
      0016  D2 1E           205           JB6     INTR1
      0018  B2 26           206           JB5     INTR5
      001A  C6 30           207           JZ      INTR8
      001C  64 9C           208           JMP     PRTR            ; TO SPACE & PRINT CONTROL
      001E  12 22           209   INTR1:  JB0     INTR2
      0020  C4 D9           210           JMP     CR2             ;TO  CR CONTROL (AFTER CR START)
      0022  C4 D2           211   INTR2:  JMP     CRST            ; TO CR START
      0024  E4 D5           212   INTR3:  JMP     TMG             ; TIME DELAY
                            213   ;
      0026  12 2A           214   INTR5:  JB0     INTR6
      0028  E4 BE           215           JMP     LF              ;TO LF CONTROL
      002A  32 2E           216   INTR6:  JB1     INTR7
      002C  E4 F8           217           JMP     LFED            ;TO LF END CONTROL
      002E  E4 6A           218   INTR7:  JMP     LF0             ;TO LF START CONTROL
                            219   ;
      0030  35              220   INTR8:  DIS     TCNTI
      0031  04 33           221           JMP     IREND
                            222   ;
                            223   ;
                            224   ;    **********  INTERRUPT ROUTINE TERMINATE  **********
                            225   ;
                            226   ;
                  (0033)    227           ORG     ^033
                            228   ;
      0033  B8 29           229   IREND:  MOV     R0,#^29
      0035  F0              230           MOV     A,@R0
      0036  3A              231           OUTL    P2,A            ;P2 RESTORE
      0037  8A F0           232           ORL     P2,#^F0
      0039  C8              233           DEC     R0
      003A  F0              234           MOV     A,@R0           ;ACC RESTORE
      003B  C5              235           SEL     RB0
```

```
ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

     003C  93              236            RETR                    ;INTERR. END
                           237    ;
                           238    ;
                           239    ;
                           240    ;    ****************************************
                           241    ;    *     INPUT SUBROUTINES                *
                           242    ;    ****************************************
                           243    ;
                           244    ;
                           245    ;    **********  8155 PC PORT WRITE  **********
                           246    ;
                           247    ;
           (003D)          248            ORG     ^03D
                           249    ;
     003D  B9 03           250    PCPW:   MOV     R1,#^03
     003F  9A FD           251            ANL     P2,#^FD
     0041  91              252            MOVX    @R1,A
     0042  8A 02           253            ORL     P2,#^02
     0044  83              254            RET
                           255    ;
                           256    ;
                           257    ;    **********  DIP SWITCH READ  **********
                           258    ;
                           259    ;
     0045  FA              260    DSWR:   MOV     A,R2            ; R2=DATA
     0046  E7              261            RL      A
     0047  AA              262            MOV     R2,A
     0048  19              263            INC     R1
     0049  F9              264            MOV     A,R1
     004A  3A              265            OUTL    P2,A
     004B  0A              266            IN      A,P2
     004C  F2 4F           267            JB7     $+3
     004E  CA              268            DEC     R2
     004F  E8 45           269            DJNZ    R0,DSWR         ; R0=READ #
     0051  8A FF           270            ORL     P2,#^FF
     0053  83              271            RET
                           272    ;
                           273    ;
                           274    ;    **********  SEL KEY ON MEM  **********
                           275    ;
                           276    ;
     0054  9A F2           277    SLKYM:  ANL     P2,#^F2
     0056  0A              278            IN      A,P2
     0057  F2 64           279            JB7     SLKY1
     0059  B8 80           280            MOV     R0,#^80
     005B  E8 5B           281            DJNZ    R0,$            ; TIME DELAY
     005D  0A              282            IN      A,P2
     005E  F2 64           283            JB7     SLKY1
     0060  FD              284            MOV     A,R5
     0061  43 04           285            ORL     A,#^04
```

```
ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

     0063  AD               286              MOV     R5,A
     0064  8A 0D            287     SLKY1:   ORL     P2,#^0D
     0066  83               288              RET
                            289     ;
                            290     ;
     0067  B0 00            291     TMG6:    MOV     @R0,#^00        ; WAIT REG CLEAR
     0069  C4 F9            292              JMP     PSTP4
                            293     ;
                            294     ;
                            295     ;
                            296     ;    ****************************************
                            297     ;    *     INITIAL RESET ( IRT )            *
                            298     ;    ****************************************
                            299     ;
                            300     ;
                            301     ;    ********** IO RESET  **********
                            302     ;
                            303     ;
           (0083)           304              ORG     ^083
                            305     ;
     0083  23 3B            306     IRT:     MOV     A,#^3B
     0085  90               307              MOVX    @R0,A
     0086  B9 03            308              MOV     R1,#^03
     0088  23 1D            309              MOV     A,#^1D
     008A  91               310              MOVX    @R1,A           ; ACK, BUSY, SEL SET
     008B  23 D4            311              MOV     A,#^D4
     008D  90               312              MOVX    @R0,A           ; PC=ALT3 MODE SET
     008E  C9               313              DEC     R1              ; R1=02
     008F  81               314              MOVX    A,@R1
     0090  85               315              CLR     F0
     0091  F2 94            316              JB7     $+3             ; 8155 PB7 PORT IN
     0093  95               317              CPL     F0
     0094  23 D6            318              MOV     A,#^D6
     0096  90               319              MOVX    @R0,A           ; ALT3, PB OUT SET
     0097  23 CC            320              MOV     A,#^CC
     0099  91               321              MOVX    @R1,A
     009A  8A 02            322              ORL     P2,#^02
     009C  B8 08            323              MOV     R0,#^08
     009E  B9 F7            324              MOV     R1,#^F7
     00A0  BA FF            325              MOV     R2,#^FF
     00A2  14 45            326              CALL    DSWR            ;DIP SWITCH READ
     00A4  FA               327              MOV     A,R2
     00A5  72 AA            328              JB3     IRT1            ; IF PARA. INTERFACE
     00A7  F5               329              SEL     MB1
     00A8  04 00            330              JMP     SIF1            ; TO MB1, SIF1 OF SERIAL INTERFACE
                            331     ;
                            332     ;
                            333     ;
                            334     ;
                            335     ;    **********  REGISTER CLEAR  **********
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

                            336   ;
                            337   ;
     00AA  FB               338   IRT1:   MOV     A,R3
     00AB  53 7F            339           ANL     A,#^7F
     00AD  B6 B1            340           JF0     $+4
     00AF  43 80            341           ORL     A,#^80
     00B1  AB               342           MOV     R3,A            ; 8155 PB7 IN SET
     00B2  27               343           CLR     A
     00B3  B8 2F            344           MOV     R0,#^2F
     00B5  B9 04            345           MOV     R1,#^04
     00B7  A1               346           MOV     @R1,A
     00B8  19               347           INC     R1
     00B9  E8 B7            348           DJNZ    R0,$-2
     00BB  B9 30            349           MOV     R1,#^30
     00BD  B1 0C            350           MOV     @R1,#^0C
     00BF  00               351           NOP
     00C0  F5               352           SEL     MB1
     00C1  C4 12            353           JMP     VFU16           ; TO MB1, VFU16 OF VFU CONTROL
                            354   ;
     00C3  37               355   IRT2:   CPL     A
     00C4  92 C7            356           JB4     $+3             ; IF PAPER END, NOT SELECT MODE
     00C6  1D               357           INC     R5
     00C7  04 D7            358           JMP     IRT3
     00C9  9A F0            359   IRT4:   ANL     P2,#^F0
     00CB  0A               360           IN      A,P2
     00CC  F2 C3            361           JB7     IRT2
     00CE  BD 02            362           MOV     R5,#^02
     00D0  B8 75            363           MOV     R0,#^75
     00D2  B0 00            364           MOV     @R0,#^00
     00D4  18               365           INC     R0
     00D5  B0 20            366           MOV     @R0,#^20
     00D7  B8 26            367   IRT3:   MOV     R0,#^26
     00D9  B0 FF            368           MOV     @R0,#^FF
     00DB  8A FF            369           ORL     P2,#^FF
                            370   ;
                            371   ;
                            372   ;     **********  CR HOMING  **********
                            373   ;
                            374   ;
     00DD  D5               375           SEL     RB1
     00DE  BB 7F            376           MOV     R3,#^7F
     00E0  25               377           EN      TCNTI
     00E1  55               378           STRT    T
     00E2  85               379           CLR     F0
                            380   ;
                            381   ;     ****************************************
                            382   ;     ****************************************
                            383   ;     *    DATA INPUT CONTROL                *
                            384   ;     ****************************************
                            385   ;     ****************************************
```

```
ERR  LOC   OBJECT CODE      SEQ      SOURCE STATEMENT

                           386   ;
                           387   ;
                           388   ;    ****************************************
                           389   ;    *    DATA WAIT                         *
                           390   ;    ****************************************
                           391   ;
           (00E3)          392         ORG     ^0E3
                           393   ;
     00E3  FB              394   DWT10: MOV     A,R3
     00E4  96 E3           395         JNZ     $-1             ;PRINING
     00E6  C5              396         SEL     RB0
     00E7  23 C7           397         MOV     A,#^C7
     00E9  54 FF           398         CALL    TDLY            ;3MS DELAY
     00EB  B9 04           399         MOV     R1,#^04
     00ED  9A F0           400         ANL     P2,#^F0
     00EF  0A              401   DWT6:  IN      A,P2            ; KEY READ
     00F0  37              402         CPL     A
     00F1  F2 EF           403         JB7     DWT6            ; KEY ON/OFF ?
     00F3  37              404         CPL     A
     00F4  17              405         INC     A
     00F5  43 80           406         ORL     A,#^80
     00F7  3A              407         OUTL    P2,A
     00F8  E9 EF           408         DJNZ    R1,DWT6
     00FA  8A FF           409         ORL     P2,#^FF
     00FC  23 C7           410         MOV     A,#^C7
     00FE  54 FF           411         CALL    TDLY            ;3MS DELAY
     0100  FD              412   DWT3:  MOV     A,R5
     0101  32 39           413         JB1     DWT1            ;LOCAL
     0103  37              414         CPL     A
     0104  12 4C           415         JB0     DWT7            ;IF NOT SELECT
     0106  9A FD           416         ANL     P2,#^FD         ; 8155 CS ON
     0108  B9 03           417         MOV     R1,#^03
     010A  23 25           418         MOV     A,#^25
     010C  35              419         DIS     TCNTI           ; "ACK" SIGNAL IS INTERRUPTED BY PRINT OPERATION
     010D  91              420         MOVX    @R1,A           ; BUSY RST, ACK SET, SEL SET
     010E  23 05           421         MOV     A,#^05          ; ACK RESET
     0110  91              422         MOVX    @R1,A
     0111  D5              423         SEL     RB1
     0112  FB              424         MOV     A,R3
     0113  C5              425         SEL     RB0
     0114  C6 17           426         JZ      $+3             ; IF NOT PRINTING
     0116  25              427         EN      TCNTI
     0117  16 24           428         JTF     DWT12           ; IF INTERRUPTTED WHEN INTR. DISENABLE
     0119  8A 02           429   DWT2:  ORL     P2,#^02         ; 8155 CS OFF
     011B  FD              430         MOV     A,R5
     011C  32 B3           431         JB1     DRC2            ;LOCAL MODE
     011E  FA              432         MOV     A,R2
     011F  72 30           433         JB3     DWT11           ; IF PARALELL I.F.
     0121  F5              434         SEL     MB1
     0122  04 62           435         JMP     SIF2            ; TO MB1, SIF2 OF SERIAL INTERFACE
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

     0124  B8 08            436  DWT12:  MOV     R0,#^08
     0126  F0                437          MOV     A,@R0
     0127  D3 24            438          XRL     A,#^24
     0129  C6 2E            439          JZ      $+5
     012B  23 FF            440          MOV     A,#^FF
     012D  62                441          MOV     T,A          ; IDLE TIME START
     012E  24 19            442          JMP     DWT2
                            443  ;
     0130  9A FD            444  DWT11:  ANL     P2,#^FD
     0132  B9 00            445          MOV     R1,#^00
     0134  81                446          MOVX    A,@R1
     0135  8A 02            447          ORL     P2,#^02
     0137  12 A0            448          JB0     DREC         ;TO DATA RECOGNITION, IF DATA RECEIVED
     0139  FE                449  DWT1:   MOV     A,R6
     013A  96 7C            450          JNZ     BLCK         ;IF NOT FIRST DATA
     013C  FD                451          MOV     A,R5
     013D  32 5B            452          JB1     PERD
     013F  B8 A0            453          MOV     R0,#^A0
     0141  9A F2            454  DWT8:   ANL     P2,#^F2
     0143  0A                455          IN      A,P2
     0144  8A 0F            456          ORL     P2,#^0F
     0146  37                457          CPL     A
     0147  F2 8A            458          JB7     SELKY        ; IF SEL KEY ON
     0149  FD                459          MOV     A,R5
     014A  12 5B            460          JB0     PERD
     014C  B8 24            461  DWT7:   MOV     R0,#^24
     014E  B9 FF            462          MOV     R1,#^FF
     0150  9A F0            463  DWT9:   ANL     P2,#^F0
     0152  0A                464          IN      A,P2
     0153  8A 0F            465          ORL     P2,#^0F
     0155  37                466          CPL     A
     0156  F2 91            467          JB7     LFKY         ; TO KEY ON
     0158  F5                468          SEL     MB1
     0159  A4 DA            469          JMP     VFU15        ; TO MB1, VFU15 OF VFU CONTROL
                            470  ;
     015B  C4 EE            471  PERD:   JMP     PERD2
     015D  00                472  PERD6:  NOP
     015E  09                473          IN      A,P1
     015F  37                474          CPL     A
     0160  F2 00            475          JB7     DWT3         ; PAPER END SET
     0162  FC                476          MOV     A,R4
     0163  96 78            477          JNZ     NPE          ;PAPER OVERRIDE
     0165  99 7F            478          ANL     P1,#^7F      ; PAPER END OF I.F. SET
     0167  FD                479  DWT4:   MOV     A,R5
     0168  53 FC            480          ANL     A,#^FC       ;SEL LOCAL RST
     016A  AD                481          MOV     R5,A
     016B  23 1D            482  DWT5:   MOV     A,#^1D
     016D  14 3D            483          CALL    PCPW         ; 8155 PC WRITE
     016F  FA                484          MOV     A,R2
     0170  72 75            485          JB3     DWAIT
```

```
ERR  LOC   OBJECT CODE    SEQ       SOURCE STATEMENT

     0172  F5             486             SEL     MB1
     0173  04 8B           487             JMP     SIF3            ; TO MB1, SIF3 OF SERIAL INTERFACE
     0175  D5             488     DWAIT:  SEL     RB1
     0176  04 E3           489             JMP     DWT10
                          490     ;
                          491     ;
     0178  89 80          492     NPE:    ORL     P1,#^80         ; PAPER END RESET
     017A  24 19           493             JMP     DWT2
                          494     ;
     017C  FD             495     BLCK:   MOV     A,R5
     017D  52 81           496             JB2     $+4             ; IF DESEL ON
     017F  14 54           497             CALL    SLKYM
     0181  24 19           498             JMP     DWT2
                          499     ;
                          500     ;
                          501     ;
     0183  FD             502     SELKY1: MOV     A,R5            ; IF SEL
     0184  12 67           503             JB0     DWT4
     0186  17             504             INC     A
     0187  AD             505             MOV     R5,A
     0188  24 75           506             JMP     DWAIT
                          507     ;
                          508     ;
     018A  F8             509     SELKY:  MOV     A,R0
     018B  C6 83           510             JZ      SELKY1          ; 2 TIMES READ OF SWITCH FOR NOISE PROTECTION.
     018D  E8 8D           511             DJNZ    R0,$            ; IDLE TIME 0.8 MS
     018F  24 41           512             JMP     DWT8
                          513     ;
                          514     ;
                          515     ;
                          516     ;    **********  MANUAL KEY  **********
                          517     ;
                          518     ;
           (0191)         519             ORG     ^191
                          520     ;
     0191  F9             521     LFKY:   MOV     A,R1
     0192  96 9C           522             JNZ     LFKY2
     0194  B9 88           523             MOV     R1,#^88
     0196  FD             524     FFKY:   MOV     A,R5            ;FF KEY
     0197  43 04           525             ORL     A,#^04
     0199  AD             526             MOV     R5,A
     019A  24 BE           527             JMP     BFIN            ; TO INPUT END
     019C  E9 9C           528     LFKY2:  DJNZ    R1,$
     019E  24 50           529             JMP     DWT9
                          530     ;
                          531     ;
                          532     ;
                          533     ;    ****************************************
                          534     ;    *    DATA RECEIVE                      *
                          535     ;    ****************************************
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

                            536   ;
                            537   ;
                            538           ORG     ^1A0
                            539   ;
                            540   ;
                            541   DREC:   MOV     A,R5
                            542           MOV     R5,#^30         ; BUSY & SEL SET
                            543           JB0     $+4             ; SEL ?
                            544           MOV     R5,#^38         ; BUSY SET, SEL RST
                            545           XCH     A,R5
                            546           CALL    PCPW
                            547           MOV     R1,#^01
                            548           ANL     P2,#^FD
                            549           MOVX    A,@R1           ;8155 PA PORT (INPUT DATA) READ
                            550           ORL     P2,#^02
                            551           CPL     A
                            552   DRC1:   MOV     R7,A
                            553   ;
                            554   DRC2:   SEL     MB1
                            555           JMP     CS1             ; TO MB1, CS1 OF CODE RECOGNITION
                            556   ;
                            557   ;
                            558   ;
                            559   ;     ****************************************
                            560   ;     *     INPUT END CONTROL                *
                            561   ;     ****************************************
                            562   ;
                            563   ;
                            564   ;     ********** BLOCK END CODE CONTROL  **********
                            565   ;
                            566   ;
                            567   ;
                            568           ORG     ^1B6
                            569   ;
                            570   LFIN:   MOV     A,@R1           ;LF CODE INPUT
                            571           INC     A
                            572           MOV     R1,#^88
                            573           JZ      CRLF            ;IF FIRST CHARACTER
                            574   ;
                            575           MOV     R1,#^08         ; R1=PRINT MODE
                            576   BFIN:   MOV     A,@R0           ;R0 24
                            577           ANL     A,#^43
                            578           ORL     A,R1
                            579           MOV     @R0,A           ;END CODE SET
                            580           MOV     R1,#^26
                            581           MOV     A,@R1
                            582           ADD     A,#^07
                            583           CPL     A
                            584           MOV     R0,#^17
                            585           ADD     A,@R0

            (01A0)

01A0  FD
01A1  BD 30
01A3  12 A7
01A5  BD 38
01A7  2D
01A8  14 3D
01AA  B9 01
01AC  9A FD
01AE  81
01AF  8A 02
01B1  37
01B2  AF

01B3  F5
01B4  24 00

            (01B6)

01B6  F1
01B7  17
01B8  B9 88
01BA  C6 FB

01BC  B9 08
01BE  F0
01BF  53 43
01C1  49
01C2  A0
01C3  B9 26
01C5  F1
01C6  03 07
01C8  37
01C9  B8 17
01CB  60
```

```
ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

     01CC  F6 DD           586            JC      IED2          ;IF CHARACTER CNT IS LARGER THAN START ADDRESS BY 8
     01CE  37              587            CPL     A
     01CF  17              588            INC     A
     01D0  AF              589            MOV     R7,A
     01D1  B9 20           590    IED1:   MOV     R1,#^20
     01D3  F5              591            SEL     MB1
     01D4  54 C8           592            CALL    DTW           ; SP CODE WRITE
     01D6  E5              593            SEL     MB0
     01D7  1E              594            INC     R6
     01D8  B8 17           595            MOV     R0,#^17
     01DA  10              596            INC     @R0
     01DB  EF D1           597            DJNZ    R7,IED1
     01DD  B9 27           598    IED2:   MOV     R1,#^27
     01DF  F0              599            MOV     A,@R0
     01E0  07              600            DEC     A
     01E1  A1              601            MOV     @R1,A         ;PRINT STOP ADDRESS SET
     01E2  B9 21           602    IED3:   MOV     R1,#^21
     01E4  B1 FF           603            MOV     @R1,#^FF      ; INPUT END SET
     01E6  FA              604            MOV     A,R2
     01E7  72 EC           605            JB3     IED4
     01E9  F5              606            SEL     MB1
     01EA  04 91           607            JMP     SIF4          ; TO MB1, SIF4 OF SERIAL INTERFACE
                           608    ;
     01EC  44 2D           609    IED4:   JMP     IBED1         ; TO BUFF EMPTY CONTROL
                           610    ;
                           611    ;
                           612    ;
                           613    ;    **********  INPUT TO PRINT MODE SHIFT (SUBROUTINE)  **********
                           614    ;
           (01EE)          615            ORG     ^1EE
                           616    ;
     01EE  B8 27           617    MODS:   MOV     R0,#^27
     01F0  B9 2F           618            MOV     R1,#^2F
     01F2  BF 04           619            MOV     R7,#^04
     01F4  F0              620    MS1:    MOV     A,@R0
     01F5  A1              621            MOV     @R1,A
     01F6  C8              622            DEC     R0
     01F7  C9              623            DEC     R1
     01F8  EF F4           624            DJNZ    R7,MS1
     01FA  83              625            RET
                           626    ;
                           627    ;
                           628    ;    *****     LF AFTER CR     *****
                           629    ;
           (01FB)          630            ORG     ^1FB
                           631    ;
     01FB  F0              632    CRLF:   MOV     A,@R0          ; R0=24
     01FC  53 03           633            ANL     A,#^03
     01FE  49              634            ORL     A,R1           ; LF BLOCK MODE SET
     01FF  20              635            XCH     A,@R0
```

```
ERR  LOC   OBJECT CODE    SEQ        SOURCE STATEMENT

     0200  53 7C          636              ANL     A,#^7C
     0202  D3 44          637              XRL     A,#^44
     0204  C6 17          638              JZ      CRLF7          ; IF GRAPHIC LINE & CR BLOCK
     0206  D5             639     CRLF1:   SEL     RB1
     0207  FB             640              MOV     A,R3
     0208  C5             641              SEL     RB0
     0209  C6 28          642              JZ      CRLF2          ; IF NOT PRINTING
     020B  B8 2A          643              MOV     R0,#^2A
     020D  F0             644              MOV     A,@R0
     020E  D2 28          645              JB6     CRLF2          ; IF CR(NEXT)
     0210  D5             646              SEL     RB1
     0211  FD             647              MOV     A,R5
     0212  D3 0B          648              XRL     A,#^0B
     0214  F5             649              SEL     MB1
     0215  04 DE          650              JMP     CRLF6
     0217  B8 2C          651     CRLF7:   MOV     R0,#^2C
     0219  F0             652              MOV     A,@R0
     021A  52 1F          653              JB2     CRLF3          ; IF LF ONLY IS INPUTTED
     021C  B9 32          654              MOV     R1,#^32        ; DIRECT SKIP REG. SET
     021E  11             655              INC     @R1
     021F  53 FB          656     CRLF3:   ANL     A,#^FB
     0221  43 08          657              ORL     A,#^08
     0223  A0             658              MOV     @R0,A          ; CHANGE CR BLOCK TO LF BLOCK
     0224  B6 2A          659              JF0     CRLF5          ; IF FULL+1 CHR.
     0226  44 5E          660              JMP     IBED3
     0228  24 E2          661     CRLF2:   JMP     IED3
     022A  F5             662     CRLF5:   SEL     MB1
     022B  44 50          663              JMP     CON22          ; TO MB1, FIRST CHR. CTL OF CODE RECOG.
                          664     ;
                          665     ;    ********** BUFFER EMPTY CONTROL  **********
                          666     ;
                          667     ;
           (022D)         668              ORG     ^22D
                          669     ;
     022D  D5             670     IBED1:   SEL     RB1
     022E  FB             671              MOV     A,R3
     022F  C5             672              SEL     RB0
     0230  C6 40          673              JZ      IBED8          ; IF PRINT END
     0232  F1             674              MOV     A,@R1
     0233  37             675              CPL     A
     0234  92 38          676              JB4     IBED2          ; IF AFTER PRINT TRIGGER
     0236  12 45          677              JB0     IBED4          ; IF NOT INPUT END
     0238  14 54          678     IBED2:   CALL    SLKYM          ; SEL KEY ON MEM
     023A  FA             679              MOV     A,R2
     023B  72 2D          680              JB3     IBED1          ; IF PE. OVERRIDE >=04
     023D  F5             681              SEL     MB1
     023E  04 95          682              JMP     SIF5           ; TO MB1, SIF5 OF SERIAL INTERFACE
     0240  F1             683     IBED8:   MOV     A,@R1
     0241  92 45          684              JB4     IBED4          ; IF AFTER PRINT TRIGGER
     0243  44 5E          685              JMP     IBED3
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

                            686   ;
                            687   IBED4:  DEC     R1
                            688           MOV     A,@R1
                            689           CPL     A
                            690           MOV     @R1,A           ; TOGGLE F/F COMPLEMENT
                            691           INC     R1
                            692           MOV     A,@R1           ; R1=21
                            693           JB0     PST             ; IF PRINT END
                            694   IBED7:  MOV     @R1,#^00        ; @21, B4=0 SET
                            695           MOV     R0,#^24
                            696           JNI     IBED9           ; IF HEAD IS LOW TEMPERATURE
                            697           JMP     IBED1
                            698   ;
                            699   IBED9:  MOV     A,@R0
                            700           ANL     A,#^1C
                            701           JZ      IBED1           ; IF FF BLOCK
                            702           IN      A,P2
                            703           CPL     A
                            704           JB4     IBED1           ; IF PAPER END
                            705   ;
                            706   IBED3:  MOV     R1,#^26
                            707           MOV     @R1,#^FF        ; CHR. CNT CLEAR
                            708           MOV     R6,#^00         ; CHR. REG CCLEAR
                            709           MOV     A,R5
                            710           JB2     IBED5           ; IF DESEL MEM ON
                            711           MOV     A,R4
                            712           JB3     IBED6           ; IF P.E. OVERRIDE >=04
                            713           JMP     DWT3
                            714   IBED5:  ANL     A,#^FA
                            715           MOV     R5,A            ; SEL RESET
                            716           JMP     DWT5
                            717   IBED6:  MOV     R4,#^00
                            718           JMP     DWT4
                            719   ;
                            720   ;
                            721   ;     ********** PRINT START CONTROL  **********
                            722   ;
                            723   ;
                            724           ORG     ^275
                            725   ;
                            726   PST:    SEL     RB1
                            727           MOV     R0,#^21
                            728           MOV     @R0,#^00        ;INPUT END RST
                            729           CALL    MODS            ;PRINT MODE SHIFT TO PRINT SIDE
                            730           INC     R1              ;R1 2C
                            731           MOV     R0,#^2A
                            732           MOV     @R0,#^00        ;PRINT MODE CLEAR
                            733           MOV     A,@R1
                            734           JB7     PST3            ;IF FUNCTION
                            735           SEL     RB0

                  0245  C9
                  0246  F1
                  0247  37
                  0248  A1
                  0249  19
                  024A  F1
                  024B  12 75
                  024D  B1 00
                  024F  B8 24
                  0251  86 55
                  0253  44 2D

                  0255  F0
                  0256  53 1C
                  0258  C6 2D
                  025A  0A
                  025B  37
                  025C  92 2D

                  025E  B9 26
                  0260  B1 FF
                  0262  BE 00
                  0264  FD
                  0265  52 6C
                  0267  FC
                  0268  72 71
                  026A  24 00
                  026C  53 FA
                  026E  AD
                  026F  24 6B
                  0271  BC 00
                  0273  24 67

                        (0275)

                  0275  D5
                  0276  B8 21
                  0278  00 00
                  027A  34 EE
                  027C  19
                  027D  B8 2A
                  027F  B0 00
                  0281  F1
                  0282  F2 9A
                  0284  C5
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

     0285  F5                736              SEL     MB1
     0286  C4 03              737              JMP     VFU12           ; TO MB1, VFU12 OF VFU CONTROL
     0288  D5                738    PST5:     SEL     RB1
     0289  54 A5              739              CALL    PRSET
     028B  62                740    PST4:     MOV     T,A
     028C  25                741              EN      TCNTI           ;INTTERRUPT ENABLE
     028D  55                742              STRT    T               ;TIMER START
     028E  C5                743              SEL     RB0
     028F  B6 93             744              JF0     $+4             ; IF FULL+1 CHR.
     0291  44 4D             745    PST1:     JMP     IBED7
     0293  B8 24             746    PST2:     MOV     R0,#^24
     0295  F0                747              MOV     A,@R0
     0296  52 91             748              JB2     PST1            ; IF AFTER BUFF. FULL PRINT
     0298  44 2A             749              JMP     CRLF5           ; IF AFTER FULL+1 INPUT
                             750    ;
                             751    ;
     029A  B4 9D             752    PST3:     CALL    LFST            ; LF NUNBER SET
     029C  BB 3F             753              MOV     R3,#^3F         ;LF INTR. SET
     029E  74 37             754              CALL    LFOVD           ;LF PM OVERDRIVE SET
     02A0  BD 0B             755              MOV     R5,#^0B         ; LF TRIGGERED SET
     02A2  27                756              CLR     A
     02A3  44 8B             757              JMP     PST4
                             758    ;
                             759    ;
                             760    ;
                             761    ;     **********  PRINT CNT PRESET (SUBROUTINE)  **********
                             762    ;
                             763    ;
     02A5  BB 01             764    PRSET:    MOV     R3,#^01
     02A7  74 37             765              CALL    LFOVD
     02A9  B8 2C             766              MOV     R0,#^2C
     02AB  F0                767              MOV     A,@R0
                             768    ;
     ....  (0001)       +1   769              IF      ML82A           ; ET-5230(ML82A)
                        +1   770    ;
     02AC  BD 07        +1   771              MOV     R5,#^07         ; CLM CNT SET, 16.5 CPI
     02AE  BE FD        +1   772              MOV     R6,#^FD         ; CHR CNT,     16.5 CPI
                        +1   773    ;
                        +1   774              ELSE                    ; ET-8220A(ML83A)
     ....  +            +1   775    ;
     ....  +            +1   776              MOV     R5,#^01
     ....  +            +1   777              MOV     R6,#^FB
     ....  +            +1   778    ;
                        +1   779              ENDIF
                             780    ;
     02B0  BF 06             781              MOV     R7,#^06         ; RISE PLS #, 16.5 CPI
     02B2  12 BA             782              JB0     $+8
                             783    ;
     ....  (0001)       +1   784              IF      ML82A           ; ET-5230(ML82A)
                        +1   785    ;
```

```
ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

     02B4  BD 06          +1   786            MOV     R5,#^06         ; CLM CNT, 10 CPI
     02B6  BE FE          +1   787            MOV     R6,#^FE         ; CHR CNT, 10 CPI
                          +1   788    ;
                          +1   789            ELSE                    ; ET-8220A(ML83A)
           +              +1   790    ;
           +              +1   791            MOV     R5,#^00
           +              +1   792            MOV     R6,#^FD
           +              +1   793    ;
                          +1   794            ENDIF
                               795    ;
     02B8  BF 0C                  796            MOV     R7,#^0C         ; RISE PLS # 10 CPI
     02BA  C8                     797            DEC     R0
     02BB  B0 00                  798            MOV     @R0,#^00
     02BD  74 25                  799            CALL    SPOVD
     02BF  27                     800            CLR     A
     02C0  83                     801            RET
                                  802    ;
                                  803    ;
                                  804    ;
                                  805    ;
                                  806    ;
                                  807    ;    ****************************************
                                  808    ;    *    PRINT CONTROL  SUBROUTINES        *
                                  809    ;    ****************************************
                                  810    ;
                                  811    ;
                                  812    ;
                                  813    ;
                                  814    ;     **********  DATA READ  **********
                                  815    ;
                                  816    ;
           (02C1)                 817            ORG     ^2C1
                                  818    ;
     02C1  B9 20                  819    DTR:    MOV     R1,#^20
     02C3  F1                     820            MOV     A,@R1
     02C4  12 CD                  821            JB0     DTR1
     02C6  FA                     822            MOV     A,R2
     02C7  F2 D7                  823            JB7     DTR3
     02C9  43 80                  824            ORL     A,#^80
     02CB  44 D0                  825            JMP     DTR2
     02CD  FA                     826    DTR1:   MOV     A,R2
     02CE  F2 D9                  827            JB7     DTR4
     02D0  9A F9                  828    DTR2:   ANL     P2,#^F9
     02D2  A9                     829            MOV     R1,A
     02D3  81                     830            MOVX    A,@R1
     02D4  8A 06                  831            ORL     P2,#^06
     02D6  83                     832            RET
     02D7  03 40                  833    DTR3:   ADD     A,#^40
     02D9  03 B8                  834    DTR4:   ADD     A,#^B8
     02DB  A9                     835            MOV     R1,A
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

                            836            MOV     A,@R1
                            837            RET
                            838    ;
                            839    ;
                            840    ;
                            841    ;     *****  16.5 CPI SPPM PHASE CHANGE #1  *****
                            842    ;
                            843            ORG     ^2DE
                            844    ;
     (02DE)                 845    SPPMS1: JF0     SPPMS3+2        ; IF  10 CPI
02DE 86 F0                  846            MOV     A,R4
02E0 FC                     847            XRL     A,#^02
02E1 D3 02                  848            JNZ     SPPMS3+2        ; IF R4 IS NOT 2
02E3 96 F0                  849            MOV     A,T
02E5 42                     850            XRL     A,#^F8
02E6 D3 F8                  851            JNZ     $-3
02E8 96 E5                  852            MOV     R0,#^08
02EA B8 08                  853            DJNZ    R0,$
02EC E8 EC                  854    SPPMS3: CALL    SPPM            ; SPACE PULCE MOTER PHASE CHANGE
02EE 74 07                  855            RET
02F0 83                     856    ;
                            857    ;
                            858    ;    *****  16.5 CPI SPPM PHASE CHANGE  #2   *****
                            859    ;
02F1 B6 F0                  860    SPPMS2: JF0     SPPMS3+2        ; IF 10 CPI
02F3 FC                     861            MOV     A,R4
02F4 D3 04                  862            XRL     A,#^04
02F6 96 F0                  863            JNZ     SPPMS3+2        ; IF R4 IS NOT 4
02F8 42                     864            MOV     A,T
02F9 03 03                  865            ADD     A,#^03
02FB E6 F8                  866            JNC     $-3
02FD 44 EE                  867            JMP     SPPMS3
                            868    ;
                            869    ;
                            870    ;
                            871    ;
                            872    ;    ********** TIME DELAY  **********
                            873    ;
                            874    ;
     (02FF)                 875            ORG     ^2FF
                            876    ;
02FF 62                     877    TDLY:   MOV     T,A
0300 55                     878            STRT    T
0301 16 05                  879            JTF     $+4
0303 64 01                  880            JMP     $-2
0305 65                     881            STOP    TCNT
0306 83                     882            RET
                            883    ;
                            884    ;
                            885    ;    ********** SPACE PULSE MOTOR PHASE CHANGE  **********
```

```
ERR  LOC   OBJECT CODE     SEQ      SOURCE STATEMENT

                           886   ;
                           887   ;
0307  B9 30                888   SPPM:   MOV     R1,#^30
0309  F1                   889           MOV     A,@R1
030A  47                   890           SWAP    A
030B  41                   891           ORL     A,@R1
030C  E7                   892           RL      A
030D  76 11                893           JF1     SPPM1           ; IF FORWARD
030F  77                   894           RR      A
0310  77                   895           RR      A
0311  53 0F                896   SPPM1:  ANL     A,#^0F
0313  A1                   897           MOV     @R1,A
0314  9A FD                898   SPPM2:  ANL     P2,#^FD
0316  B8 02                899           MOV     R0,#^02         ; PB PORT READ
0318  80                   900           MOVX    A,@R0
0319  53 F8                901           ANL     A,#^F8
031B  41                   902           ORL     A,@R1
031C  53 FB                903           ANL     A,#^FB
031E  90                   904           MOVX    @R0,A           ;PB SET. SPPM PHASE IS CHANGED & OVD SET
031F  43 8C                905   SPPM3:  ORL     A,#^8C
0321  90                   906           MOVX    @R0,A           ; SPPM OVD RESET
0322  8A 0F                907           ORL     P2,#^0F
0324  83                   908           RET
                           909   ;
                           910   ;
                           911   ;       *****   SPPM OVD SET & RESET    *****
                           912   ;
0325  B9 30                913   SPOVD:  MOV     R1,#^30
0327  64 14                914           JMP     SPPM2
                           915   ;
                           916   ;
                           917   ;
                           918   ;     ********** LF PULSE MOTOR PHASE CHANGE **********
                           919   ;
                           920   ;
      (0329)               921           ORG     ^329
                           922   ;
0329  74 41                923   LFPM:   CALL    PBRD            ; PB PORT READ
032B  E7                   924           RL      A
032C  D2 30                925           JB6     $+4
032E  43 10                926           ORL     A,#^10
0330  53 30                927           ANL     A,#^30
0332  B9 30                928   LFPM1:  MOV     R1,#^30
0334  41                   929           ORL     A,@R1
0335  64 1F                930           JMP     SPPM3
                           931   ;
                           932   ;
                           933   ;     **********  LF PULSE MOTER OVERDRIVE SET  **********
                           934   ;
                           935   ;
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

     0337  74 41             936  LFOVD:  CALL    PBRD
     0339  64 32             937          JMP     LFPM1
                            938  ;
                            939  ;
                            940  ;
                            941  ;    **********  LF PULSE MOTER OVERDRIVE RESET  **********
                            942  ;
                            943  ;
     033B  74 41             944  LFRST:  CALL    PBRD
     033D  43 40             945          ORL     A,#^40
     033F  64 32             946          JMP     LFPM1
                            947  ;
                            948  ;
                            949  ;    *****  PB PORT OF 8155 READ   *****
                            950  ;
     0341  B8 02             951  PBRD:   MOV     R0,#^02
     0343  9A FD             952          ANL     P2,#^FD
     0345  80                953          MOVX    A,@R0
     0346  53 30             954          ANL     A,#^30
     0348  83                955          RET
                            956  ;
                            957  ;
                            958  ;
                            959  ;
                            960  ;     *****  COLUMN COUNTER SET (SUB ROUTINE)   *****
                            961  ;
          (0349)            962          ORG     ^349
                            963  ;
     0349  FD                964  CLMS:   MOV     A,R5
     034A  76 53             965          JF1     CLM2            ; IF FORWARD
     034C  CD                966          DEC     R5
     034D  96 52             967          JNZ     CLM3
     034F  BD 0B             968          MOV     R5,#^0B
     0351  CE                969          DEC     R6              ; CHR CNT. -1
     0352  83                970  CLM3:   RET
                            971  ;
                            972  ;
     0353  1D                973  CLM2:   INC     R5
     0354  D3 0B             974          XRL     A,#^0B
     0356  96 5A             975          JNZ     CLM1            ;IF CHR CNT IS NOT 8N  WHEN 16.5CPI
     0358  AD                976          MOV     R5,A            ; R5=00
     0359  1E                977          INC     R6              ;CHR CNT +1
     035A  83                978  CLM1:   RET
                            979  ;
                            980  ;
                            981  ;
                            982  ;    **********  LF STEP SET (SUBROUTINE)  **********
                            983  ;
          (035B)            984          ORG     ^35B
                            985  ;
```

```
ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

     035B  B8 2C               986   LFSTP:  MOV     R0,#^2C
     035D  F0                  987           MOV     A,@R0
     035E  BF 09               988           MOV     R7,#^09
     0360  32 64               989           JB1     $+4
     0362  BF 0C               990           MOV     R7,#^0C
     0364  83                  991           RET
                               992   ;
                               993   ;
                               994   ;
     0365  12 69               995   PREEND: JB0     PREND1          ; IF NOT INPUT END
     0367  C4 14               996           JMP     PEND15
     0369  76 6D               997   PREND1: JF1     PREND2          ; IF FORWARD
     036B  C4 88               998   PREND3: JMP     PEND9
                               999   ;
     036D  32 6B              1000   PREND2: JB1     PREND3          ; IF NEXT LINE NOT YET
     036F  B9 2C              1001           MOV     R1,#^2C
     0371  F1                 1002           MOV     A,@R1
     0372  D2 6B              1003           JB6     PREND3          ; IF GRAPHIC LINE
     0374  B8 2F              1004           MOV     R0,#^2F
     0376  F0                 1005           MOV     A,@R0
     0377  B6 8A              1006           JF0     PREND4          ; IF 10 CPI
     0379  03 7D              1007           ADD     A,#^7D
     037B  F6 82              1008   PREND6: JC      PREND5          ; IF END OF LINE
     037D  10                 1009           INC     @R0             ; STP.ADR COUNT+1
     037E  B8 03              1010           MOV     R3,#^03         ; NEXT INTR. SET
     0380  A4 8B              1011           JMP     CGC5
                              1012   ;
     0382  B8 31              1013   PREND5: MOV     R0,#^31
     0384  B0 01              1014           MOV     @R0,#^01        ; WAIT REG SET
                              1015   ;
           (0001)        +1   1016           IF      ML82A           ; ET-5230(ML82A)
     0386  BA 2A           +1   1017           MOV     R2,#^2A
                           +1   1018   ;
                           +1   1019           ELSE                    ; ET-8220A(ML83A)
           *               +1   1020           MOV     R2,#^2A
           *               +1   1021   ;
                           +1   1022           ENDIF
                              1023   ;
     0388  C4 2E              1024           JMP     PEND4
                              1025   ;
                              1026   ;
           (0001)        +1   1027   PREND4: IF      ML82A           ; ET-5230(ML82A)
     038A  03 B1           +1   1028           ADD     A,#^B1
                           +1   1029   ;
                           +1   1030           ELSE                    ; ET-8220A(ML83A)
           *               +1   1031   ;
           *               +1   1032           ADD     A,#^79
           *               +1   1033   ;
                           +1   1034           ENDIF
                              1035   ;
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

     038C  64 7B            1036           JMP     PREND6
                            1037   ;
                            1038   ;
                            1039   ;
                            1040   ;    ****************************************
                            1041   ;    ****************************************
                            1042   ;    *                                      *
                            1043   ;    *     PRINT  CONTROL                   *
                            1044   ;    *                                      *
                            1045   ;    ****************************************
                            1046   ;    ****************************************
                            1047   ;
                            1048   ;    ****************************************
                            1049   ;    *     SPACE & PRINT CONTROL            *
                            1050   ;    ****************************************
                            1051   ;
                            1052   ;
                            1053   ;    ********** SPACE PULSE MOTER RISE UP  **********
                            1054   ;
                            1055   ;
                            1056           ORG     ^39C
                            1057   ;
                            1058   ;
     039C  23 F4            1059   PRTR:   MOV     A,#^F4
     039E  62               1060           MOV     T,A
     039F  55               1061           STRT    T               ; TIMER SET & START
     03A0  B8 2B            1062           MOV     R0,#^2B
     03A2  F0               1063           MOV     A,@R0
     03A3  A5               1064           CLR     F1              ; IF REV, F1=0
     03A4  B2 A7            1065           JB5     $+3
     03A6  B5               1066           CPL     F1              ; IF FOW, F1=1
     03A7  18               1067           INC     R0              ; R0=2C
     03A8  F0               1068           MOV     A,@R0
     03A9  85               1069           CLR     F0              ; IF 16.5 CPI, F0=1
     03AA  12 AD            1070           JB0     $+3
     03AC  95               1071           CPL     F0              ; IF 10 CPI, F0=00
     03AD  FB               1072           MOV     A,R3
     03AE  32 DA            1073           JB1     PRT6            ; IF NOT RISE UP
     03B0  B6 D2            1074           JF0     PRT2            ; IF 10 CPI
     03B2  23 E1            1075           MOV     A,#^E1
     03B4  76 B8            1076           JF1     $+4
     03B6  23 DB            1077           MOV     A,#^DB
     03B8  6F               1078   PRT1:   ADD     A,R7
     03B9  E3               1079           MOVP3   A,@A            ; PULSE TABLE CONFER.
     03BA  62               1080           MOV     T,A             ; TIMER SET
     03BB  55               1081           STRT    T
     03BC  74 07            1082           CALL    SPPM            ; SPACE PULSE MOTOR PHASE CHANGE & OVD
     03BE  74 49            1083           CALL    CLMS            ; COLUMN CNT SET
     03C0  EF D0            1084           DJNZ    R7,PRT4
     03C2  BB 03            1085           MOV     R3,#^03         ; NEXT INTR. SET
```

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ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

     03C4  74 3B              1086            CALL    LFRST           ; LF PM OVER DRIVE RESET
     03C6  BC 01              1087            MOV     R4,#^01
     03C8  B6 D0              1088            JFO     PRT4
     03CA  BF 04              1089            MOV     R7,#^04
     03CC  74 49              1090    PRT3:   CALL    CLMS            ; COLUMN CNT SET
     03CE  EF CC              1091            DJNZ    R7,PRT3
     03D0  04 33              1092    PRT4:   JMP     IREND
     03D2  23 F3              1093    PRT2:   MOV     A,#^F3
     03D4  76 D8              1094            JF1     $+4
     03D6  23 E7              1095            MOV     A,#^E7
     03D8  64 B8              1096            JMP     PRT1
     03DA  84 04              1097    PRT6:   JMP     PRT
                              1098    ;
                              1099    ;
                              1100    ;
                              1101    ;    *****  SPPM  PULSE RATE TABLE  *****
                              1102    ;
                              1103    ;
           (03DC)             1104            ORG     ^3DC
                              1105    ;
           (0001)       +1    1106            IF      ML82A           ; ET-5230(ML82A)
                        +1    1107    ;
                        +1    1108    ;
                        +1    1109    ;    ***  FOR ET-5230(ML82A)  ***
                        +1    1110    ;
                        +1    1111    ;
                        +1    1112    ;
     03DC  E9 E8 E6 E3  +1    1113            DB      ^E9,^E8,^E6,^E3,^DF,^DA ; 16.5 CPI REV
     03E0  DF DA
     03E2  E9 E8 E6 E3  +1    1114            DB      ^E9,^E8,^E6,^E3,^DF,^DA ; 16.5 CPI FOW
     03E6  DF DA
     03E8  F5 F4 F3 F2  +1    1115            DB      ^F5,^F4,^F3,^F2,^F1,^F0,^EF,^EE,^ED,^EC,^EB,^EA ; 10 CPI REV
     03EC  F1 F0 EF EE
     03F0  ED EC EB EA
     03F4  F6 F5 F4 F3  +1    1116            DB      ^F6,^F5,^F4,^F3,^F2,^F1,^F0,^EF,^EE,^ED,^EC,^EB
     03F8  F2 F1 F0 EF
     03FC  EE ED EC EB
                        +1    1117    ;
                        +1    1118    ;
                        +1    1119            ELSE                    ; ET-8220A(ML83A)
                        +1    1120    ;
                        +1    1121    ;    ***  FOR ET-8220A(ML83A)  ***
                        +1    1122    ;
                        +1    1123    ;
                        +1    1124            DB      ^E9,^E8,^E6,^E3,^DF,^DA ; 16.5 CPI REV
                        +1    1125            DB      ^E9,^E8,^E6,^E3,^DF,^DA ; 16.5 CPI FOW
                        +1    1126            DB      ^F5,^F4,^F3,^F2,^F1,^F0,^EF,^EE,^ED,^EC,^EB,^EA ; 10 CPI REV
                        +1    1127            DB      ^F5,^F4,^F3,^F2,^F1,^F0,^EF,^EE,^ED,^EC,^EB,^EA ; 10 CPI FOW
                        +1    1128    ;
                        +1    1129    ;
```

```
ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

           +                  +1  1130   ;
                              +1  1131           ENDIF
                                  1132   ;
                                  1133   ;
                                  1134   ;    ********** SPPM PHASE CONTROL & TIMER SET **********
                                  1135   ;
                                  1136   ;
           (0400)                 1137           ORG     ^400
                                  1138   ;
                                  1139   ;
     0400  B6 06                  1140   PRPM2:  JF0     PRPM1           ; IF 10 CPI
     0402  84 0A                  1141           JMP     DOT
                                  1142   ;
     0404  EC 00                  1143   PRT:    DJNZ    R4,PRPM2
     0406  BC 05                  1144   PRPM1:  MOV     R4,#^05         ; PHASE CNT SET
     0408  74 07                  1145           CALL    SPPM            ; SPACE PULSE MOTER PHASE CHANGE
                                  1146   ;
                                  1147   ;    ********** DOT HEAD SET CONTROL **********
                                  1148   ;
                                  1149   ;
     040A  FB                     1150   DOT:    MOV     A,R3
     040B  D3 07                  1151           XRL     A,#^07
     040D  96 35                  1152           JNZ     CLM             ;IF NOT PRINT CYCLE
     040F  B8 2A                  1153           MOV     R0,#^2A
     0411  F0                     1154           MOV     A,@R0
     0412  F2 35                  1155           JB7     CLM
     0414  52 53                  1156           JB2     DOT3            ;IF GRAPHIC
     0416  92 35                  1157           JB4     CLM             ;IF LOWER LINE OF GRAPHIC
     0418  32 53                  1158           JB1     DOT3            ;IF ELONGATED CHARACTER
     041A  23 F7                  1159           MOV     A,#^F7
     041C  6D                     1160   DOT1:   ADD     A,R5
     041D  F6 35                  1161           JC      CLM             ;IF CLM CNT IS UPPER THAN 9
     041F  B8 23                  1162   DOT2:   MOV     R0,#^23
     0421  B9 77                  1163           MOV     R1,#^77
     0423  F0                     1164           MOV     A,@R0
     0424  39                     1165           OUTL    P1,A            ; #1-#7 DOT SET
     0425  23 FD                  1166           MOV     A,#^FD
     0427  51                     1167           ANL     A,@R1
     0428  A1                     1168           MOV     @R1,A
     0429  3A                     1169           OUTL    P2,A            ; #8, #0, DOT SET
     042A  B8 02                  1170           MOV     R0,#^02
     042C  80                     1171           MOVX    A,@R0
     042D  53 F7                  1172           ANL     A,#^F7
     042F  90                     1173           MOVX    @R0,A           ; HEAD ON SET
     0430  43 08                  1174           ORL     A,#^08
     0432  90                     1175           MOVX    @R0,A           ; HEAD ON RESET
     0433  BA 02                  1176           ORL     P2,#^02
                                  1177   ;
                                  1178   ;
                                  1179   ;    ********** COLUMN(CLM) CNT & CHARACTER CNT  SET  **********
```

```
ERR  LOC   OBJECT CODE      SEQ       SOURCE STATEMENT

                            1180  ;
                            1181  ;
                 (0435)     1182        ORG     ^435
                            1183  ;
     0435  74 49            1184  CLM:  CALL    CLM5          ; CLM CNT SET
     0437  FB               1185        MOV     A,R3
     0438  92 4F            1186        JB4     CLM6          ; IF STOP INTR.
     043A  FD               1187        MOV     A,R5
     043B  AA               1188        MOV     R2,A          ;R2  CLM REG.
     043C  B8 2A            1189        MOV     R0,#^2A
     043E  F0               1190        MOV     A,@R0
     043F  37               1191        CPL     A
     0440  32 4D            1192        JB1     CLM9          ;IF NOT ELONG
     0442  B9 00            1193        MOV     R1,#^00
     0444  12 48            1194        JB0     CLM4          ;IF LEFT SIDE ELONG.
     0446  B9 06            1195        MOV     R1,#^06
     0448  FD               1196  CLM4: MOV     A,R5
     0449  97               1197        CLR     C
     044A  67               1198        RRC     A
     044B  69               1199        ADD     A,R1
     044C  AA               1200        MOV     R2,A
     044D  84 62            1201  CLM9: JMP     PDBT          ; TO PRINT CONTROL DISTRIBUTE
     044F  54 DE            1202  CLM6: CALL    SPPMS1        ; IF 16.5 CPI, SPPM CHANGE
     0451  C4 A9            1203        JMP     PSTP          ; TO SPPM STOP INTR.
                            1204  ;
                            1205  ;
     0453  FD               1206  DOT3: MOV     A,R5
     0454  12 35            1207        JB0     CLM           ;IF  CLM CNT IS NOT 2N
     0456  F0               1208        MOV     A,@R0         ;R0 2A
     0457  52 1F            1209        JB2     DOT2
     0459  B0 F8            1210        MOV     @R0,#^F8
     045B  12 5F            1211        JB0     $+4           ;IF RIGHT SIDE OF ELONG. CHR.
     045D  B0 F4            1212        MOV     @R0,#^F4
     045F  20               1213        XCH     A,@R0
     0460  84 1C            1214        JMP     DOT1
                            1215  ;
                            1216  ;
                            1217  ;
                            1218  ;    ********** PRINT CONTROL DISTRIBUTE  **********
                            1219  ;
                            1220  ;
                 (0462)     1221        ORG     ^462
                            1222  ;
     0462  FD               1223  PDBT: MOV     A,R5
     0463  D3 0B            1224        XRL     A,#^0B
     0465  96 A8            1225  PDBT11: JNZ   PDBT12        ;IF CLM CNT IS NOT 11
     0467  54 DE            1226        CALL    SPPMS1        ; IF 16.5 CPI, SPPM PHASE CHANGE
     0469  B8 2A            1227        MOV     R0,#^2A
     046B  FB               1228        MOV     A,R3
     046C  72 7C            1229        JB3     PDBT8         ;WHEN TRAIL
```

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ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

     046E  B9 2F            1230  PDBT1:  MOV     R1,#^2F
     0470  76 9C            1231          JF1     PDBT4           ;IF FOW
     0472  C9               1232          DEC     R1              ;R1 2E
     0473  FE               1233          MOV     A,R6
     0474  17               1234          INC     A
     0475  D1               1235          XRL     A,@R1           ;CHARACTER CNT IS START ADDRESS REG. ?
     0476  C6 A0            1236          JZ      PDBT5
     0478  19               1237          INC     R1              ;R1 2F
     0479  FE               1238          MOV     A,R6
     047A  84 82            1239          JMP     PDBT3
                            1240  ;
                            1241  ;
     047C  CF               1242  PDBT8:  DEC     R7
     047D  C4 34            1243          JMP     TRL             ;TO TRAIL CONTROL
                            1244  ;
                            1245  ;
     047F  C9               1246  PDBT2:  DEC     R1              ;R1 2E
     0480  FE               1247          MOV     A,R6
     0481  17               1248          INC     A
     0482  D1               1249  PDBT3:  XRL     A,@R1
     0483  96 87            1250          JNZ     $+4             ;TO DATA READ
     0485  BB 07            1251          MOV     R3,#^07         ;PRINT INTRR. SET    TO DATA READ
                            1252  ;
     0487  D1               1253          XRL     A,@R1
     0488  A9               1254          MOV     R1,A
                            1255  ;
     0489  F0               1256          MOV     A,@R0           ;R0=2A
     048A  D3 01            1257          XRL     A,#^01
     048C  A0               1258          MOV     @R0,A
     048D  37               1259          CPL     A
     048E  32 94            1260          JB1     PDBT10          ;IF NOT ELONG.
     0490  12 98            1261          JB0     PDBT9           ;IF LEFT
     0492  76 9A            1262          JF1     PDBT9+2         ;IF LOW
     0494  F9               1263  PDBT10: MOV     A,R1
     0495  AA               1264          MOV     R2,A
     0496  84 F8            1265          JMP     PDR             ; TO RAM READ
                            1266  ;
     0498  76 94            1267  PDBT9:  JF1     PDBT10
     049A  84 B0            1268          JMP     PDBT6
                            1269  ;
     049C  FE               1270  PDBT4:  MOV     A,R6
     049D  D1               1271          XRL     A,@R1
     049E  96 7F            1272          JNZ     PDBT2
     04A0  C4 00            1273  PDBT5:  JMP     PEND            ;TO PRINT END CONTROL
                            1274  ;
     04A2  C4 BC            1275  PDBT13: JMP     PSTP3           ; TO STOP INTR.
                            1276  ;
     04A4  B1 FF            1277  PDBT7:  MOV     @R1,#^FF        ;R1 22
     04A6  A4 2F            1278          JMP     CGC             ;TO CG READ
                            1279  ;
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ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

                            1280   ;
     04A8  54 DE            1281   PDBT12: CALL    SPPMS1          ; IF 16.5 CPI, SPPM PHASE CHANGE
     04AA  B8 2A            1282           MOV     R0,#^2A
     04AC  FB               1283           MOV     A,R3
     04AD  37               1284           CPL     A
     04AE  52 A2            1285           JB2     PDBT13
                            1286   ;
                            1287   ;
     04B0  B9 22            1288   PDBT6:  MOV     R1,#^22
     04B2  9A F7            1289           ANL     P2,#^F7         ;CHR. GENERATER CS SET
     04B4  F0               1290           MOV     A,@R0           ;R0 2A
     04B5  52 C7            1291           JB2     CGG             ;TO GRAPHIC CG READ
     04B7  37               1292           CPL     A
     04B8  32 A4            1293           JB1     PDBT7           ;IF NOT ELONG.
     04BA  FA               1294           MOV     A,R2
     04BB  C6 A4            1295           JZ      PDBT7
     04BD  FD               1296           MOV     A,R5
     04BE  12 C5            1297           JB0     PDBT15
     04C0  76 C3            1298           JF1     PDBT16          ; IF FORWARD
     04C2  CA               1299           DEC     R2              ;TO CG READ
     04C3  A4 2F            1300   PDBT16: JMP     CGC             ; TO CG READ
     04C5  A4 8B            1301   PDBT15: JMP     CGC5            ; IF REVERSE WHEN ELONG
                            1302   ;
                            1303   ;
                            1304   ;
                            1305   ;
                            1306   ;     ********** CHARACTER GENERATER READ (GRAPHIC)  **********
                            1307   ;
                            1308   ;
     (04C7)                 1309           ORG     ^4C7
                            1310   ;
     04C7  B1 FF            1311   CGG:    MOV     @R1,#^FF        ;R1 22
     04C9  B9 2C            1312           MOV     R1,#^2C
     04CB  F1               1313           MOV     A,@R1
     04CC  32 D0            1314           JB1     $+4             ;IF 8LPI
     04CE  9A FB            1315           ANL     P2,#^FB
     04D0  F0               1316           MOV     A,@R0           ;R0 2A
     04D1  92 D5            1317           JB4     $+4             ;IF LOWER LINE
     04D3  9A FD            1318           ANL     P2,#^FD
     04D5  FF               1319           MOV     A,R7
     04D6  53 03            1320           ANL     A,#^03
     04D8  A8               1321           MOV     R0,A
     04D9  FF               1322           MOV     A,R7
     04DA  F2 DE            1323           JB7     $+4
     04DC  43 20            1324           ORL     A,#^20
     04DE  77               1325           RR      A
     04DF  77               1326           RR      A
     04E0  53 0C            1327           ANL     A,#^0C
     04E2  48               1328           ORL     A,R0
     04E3  A8               1329           MOV     R0,A
```

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ERR  LOC   OBJECT CODE    SEQ        SOURCE STATEMENT

                          1330               MOV     A,R2              ;CLM REG
     04E4  FA             1331               ADD     A,#^FA
     04E5  03 FA          1332               JC      CGG1
     04E7  F6 EB          1333               ANL     P2,#^FE
     04E9  9A FE          1334     CGG1:     MOV     A,R7
     04EB  FF             1335               CPL     A
     04EC  37             1336               JC      $+3               ;IF RIGHT SIDE
     04ED  F6 F0          1337               RL      A
     04EF  E7             1338               JB3     $+6               ;IF B2 OR B3 IS 0
     04F0  72 F6          1339               MOV     A,R0
     04F2  F8             1340               ORL     A,#^80
     04F3  43 80          1341               MOV     R0,A
     04F5  A8             1342               JMP     CGC3              ;TO CG READ
     04F6  A4 4D          1343     ;
                          1344     ;
                          1345     ;
                          1346     ;    ********** DATA  READ  FROM  RAM  **********
                          1347     ;
                          1348     ;
                          1349               ORG     ^4F8
           (04F8)         1350     ;
     04F8  F0             1351     PDR:      MOV     A,@R0             ;R0 2A
     04F9  53 F8          1352               ANL     A,#^F8
     04FB  A0             1353               MOV     @R0,A
     04FC  FB             1354               MOV     A,R3
     04FD  37             1355               CPL     A
     04FE  52 A2          1356               JB2     PDBT13            ; IF NOT PRINT
     0500  54 C1          1357               CALL    DTR
     0502  AF             1358               MOV     R7,A              ;IF FOW
     0503  76 23          1359               JF1     PDR2
     0505  B9 2E          1360               MOV     R1,#^2E
     0507  FA             1361               MOV     A,R2
     0508  D1             1362               XRL     A,@R1
     0509  C6 16          1363               JZ      PDR1
     050B  CA             1364               DEC     R2
     050C  54 C1          1365               CALL    DTR
     050E  D3 80          1366               XRL     A,#^80
     0510  96 16          1367               JNZ     PDR1              ;IF NOT GS
     0512  23 03          1368               MOV     A,#^03
     0514  40             1369     PDR5:     ORL     A,@R0
     0515  A0             1370               MOV     @R0,A
     0516  FF             1371     PDR1:     MOV     A,R7
     0517  53 60          1372               ANL     A,#^60
     0519  96 21          1373               JNZ     PDR4              ;IF NOT GRAPHIC CODE
     051B  F0             1374               MOV     A,@R0
     051C  F2 20          1375               JB7     $+4
     051E  43 0C          1376               ORL     A,#^0C
     0520  A0             1377               MOV     @R0,A             ;GRAPHIC READ SET
     0521  A4 8B          1378     PDR4:     JMP     CGC5              ;TO 500 MICRO SEC WAIT
                          1379     ;
```

```
ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

                              1380   ;
     0523  D3 80              1381   PDR2:   XRL     A,#^80
     0525  96 16              1382           JNZ     PDR1            ;IF NOT GS
     0527  1A                 1383           INC     R2
     0528  54 C1              1384           CALL    DTR
     052A  AF                 1385           MOV     R7,A
     052B  23 02              1386           MOV     A,#^02
     052D  A4 14              1387           JMP     PDR5
                              1388   ;
                              1389   ;
                              1390   ;     ********** CHARACTER GENERATER READ (CHARACTER) **********
                              1391   ;
                              1392   ;
           (052F)             1393           ORG     ^52F
                              1394   ;
     052F  FA                 1395   CGC:    MOV     A,R2
     0530  72 8F              1396           JB3     CGC1            ;IF COLUMN IS 8 TO 11
     0532  32 36              1397   CGC6:   JB1     $+4
     0534  9A FE              1398           ANL     P2,#^FE
     0536  52 3A              1399           JB2     $+4
     0538  9A FD              1400           ANL     P2,#^FD
     053A  B8 80              1401           MOV     R0,#^80
     053C  12 40              1402           JB0     $+4
     053E  B8 00              1403           MOV     R0,#^00
     0540  FF                 1404           MOV     A,R7
     0541  F2 45              1405           JB7     $+4
     0543  9A FB              1406           ANL     P2,#^FB
     0545  FA                 1407           MOV     A,R2
     0546  72 96              1408           JB3     CGC2
     0548  FF                 1409           MOV     A,R7
     0549  53 7F              1410           ANL     A,#^7F
     054B  48                 1411           ORL     A,R0
     054C  A8                 1412           MOV     R0,A
     054D  80                 1413   CGC3:   MOVX    A,@R0
     054E  B8 22              1414           MOV     R0,#^22
     0550  20                 1415           XCH     A,@R0
     0551  50                 1416           ANL     A,@R0           ;R0 23
     0552  18                 1417           INC     R0              ;R0 23
     0553  A0                 1418           MOV     @R0,A           ;DOT REG. SET
     0554  B9 FF              1419           MOV     R1,#^FF
     0556  F2 7D              1420           JB7     CGC9            ; IF NOT DESCENDER LETTER
     0558  B8 2C              1421           MOV     R0,#^2C
     055A  F0                 1422           MOV     A,@R0
     055B  B8 23              1423           MOV     R0,#^23
                              1424   ;
           (0000)        +1   1425           IF      ODC             ; ODC
           +             +1   1426           JB1     CGC12           ; IF 8 LPI
           +             +1   1427   ;
                         +1   1428           ELSE                    ; OEE
     055D  32 7D           +1   1429           JB1     CGC9            ; IF 8 LPI
```

```
ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

                              +1  1430   ;
                              +1  1431           ENDIF
                                  1432   ;
                                  1433           MOV     A,@R0
                                  1434           JB6     $+4
                                  1435           MOV     R1,#^BF          ; #0 DOT REG SET
                                  1436           RL      A
                                  1437           ORL     A,#^81           ; #1-7 DOT SET
                                  1438   CGC4:   MOV     @R0,A
                                  1439           MOV     A,R1
                                  1440   CGC7:   ORL     P2,#^0F          ; 8155 CS RESET
                                  1441           MOV     R0,#^77
                                  1442           XCH     A,@R0
                                  1443           JB1     CGC10            ; IF NOT HEAD PRINT DRIVED
                                  1444           CALL    SPPMS2           ; IF 16.5 CPI, SPPM PHASE CHANGE
                                  1445   CGC8:   MOV     A,T
                                  1446           ADD     A,#^02           ; 0.380 MS WAIT FOR DOT IMPACT TIME
                                  1447           JNC     CGC8
                                  1448           ORL     P1,#^7F          ; DOT RESET (#1-7)
                                  1449           ORL     P2,#^FF
                                  1450           JMP     IREND
                                  1451   ;
                                  1452   CGC9:   MOV     A,@R0
                                  1453           JB0     $+4
                                  1454           MOV     R1,#^DF          ; #8 DOT SET
                                  1455           RR      A
                                  1456           ORL     A,#^C0
                                  1457           JMP     CGC4
                                  1458   ;
                                  1459   CGC10:  CALL    SPPMS2           ; IF 16.5 CPI, SPPM PHASE CHANGE
                                  1460           JMP     IREND
                                  1461   CGC5:   MOV     A,#^FF
                                  1462           JMP     CGC7
                                  1463   ;
                                  1464   CGC1:   INC     A
                                  1465           JB2     CGC5
                                  1466           MOV     A,R7
                                  1467           SWAP    A
                                  1468           JMP     CGC6
                                  1469   ;
                                  1470   CGC2:   MOV     A,R7
                                  1471           ANL     A,#^1F
                                  1472           ORL     A,#^10
                                  1473           JMP     CGC3-2
                                  1474   ;
                                  1475   ;
                                  1476   ;
                                  1477   ;    ********** LF NUMBER SET ( FF, VFU CONTROL ) SUBROUTINE **********
                                  1478   ;
                                  1479   ;

0[illegible]F  F0
0560  D2 64
0562  B9 BF
0564  E7
0565  43 81
0567  A0
0568  F9
0569  8A 0F
056B  B8 77
056D  20
056E  32 87
0570  54 F1
0572  42
0573  03 02
0575  E6 72
0577  89 7F
0579  8A FF
057B  04 33

057D  F0
057E  12 82
0580  B9 DF
0582  77
0583  43 C0
0585  A4 67

0587  54 F1
0589  04 33
058B  23 FF
058D  A4 69

058F  17
0590  52 8B
0592  FF
0593  47
0594  A4 32

0596  FF
0597  53 1F
0599  43 10
059B  A4 4B
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

           (059D)           1480              ORG     ^59D
                            1481    ;
059D  BA 00                 1482    LFST:     MOV     R2,#^00       ;R2  HOW MANY LF SET
059F  B9 2A                 1483              MOV     R1,#^2A
05A1  A5                    1484              CLR     F1
05A2  F1                    1485              MOV     A,@R1
05A3  CA                    1486              DEC     R2
05A4  92 AB                 1487              JB4     LFST1         ; IF DOWN LINE OF GRAPHIC
05A6  1A                    1488              INC     R2
05A7  1A                    1489              INC     R2
05A8  72 DB                 1490              JB3     LFST8         ;IF GRAPHIC LINE
05AA  CA                    1491              DEC     R2
05AB  B8 33                 1492    LFST1:    MOV     R0,#^33       ;@33 FFLF CNT
05AD  F0                    1493              MOV     A,@R0
05AE  07                    1494              DEC     A
05AF  96 BA                 1495              JNZ     LFST6         ; IF FF CNT IS NOT ONE
05B1  B9 2C                 1496              MOV     R1,#^2C
05B3  F1                    1497              MOV     A,@R1
05B4  53 DF                 1498              ANL     A,#^DF
05B6  A1                    1499              MOV     @R1,A         ; FF BLOCK RESET
05B7  B9 34                 1500              MOV     R1,#^34
05B9  F1                    1501              MOV     A,@R1
05BA  A0                    1502    LFST6:    MOV     @R0,A
05BB  B8 37                 1503              MOV     R0,#^37       ; @37 VT CNT(SP CODE NB CNT)
05BD  F0                    1504              MOV     A,@R0
05BE  C6 CD                 1505              JZ      LFST3         ;IF NO LOAD TO VFU
05C0  07                    1506              DEC     A
05C1  A0                    1507              MOV     @R0,A
05C2  96 CD                 1508              JNZ     LFST3         ;IF  VT CNT NOT 0
05C4  B9 36                 1509    LFST2:    MOV     R1,#^36       ;@36 VFU RAM ADDRESS REG.
05C6  11                    1510              INC     @R1
05C7  F1                    1511              MOV     A,@R1
05C8  A9                    1512              MOV     R1,A
05C9  F1                    1513              MOV     A,@R1
05CA  F2 DC                 1514              JB7     LFST5         ;IF B7=1
05CC  A0                    1515              MOV     @R0,A
05CD  1A                    1516    LFST3:    INC     R2
05CE  1A                    1517              INC     R2
05CF  B8 2C                 1518              MOV     R0,#^2C
05D1  F0                    1519              MOV     A,@R0
05D2  B2 AB                 1520              JB5     LFST1         ;IF FF BLOCK
05D4  92 F0                 1521              JB4     LFST10        ;IF VT BLOCK
05D6  B8 32                 1522    LFST4:    MOV     R0,#^32
05D8  F0                    1523              MOV     A,@R0
05D9  96 F4                 1524              JNZ     LFST12
05DB  83                    1525    LFST8:    RET
                            1526    ;
05DC  17                    1527    LFST5:    INC     A
05DD  96 E5                 1528              JNZ     LFST7         ;IF NOT ? CODE
05DF  B9 36                 1529    LFST14:   MOV     R1,#^36
```

```
ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

                           1530            MOV     @R1,#^3F
                           1531            JMP     LFST2
                           1532    ;
     05E1  B1 3F           1533    LFST7:  DEC     A
     05E3  A4 C4           1534            MOV     R1,#^2D         ; @2D IS VT CHANNEL
                           1535            XRL     A,@R1
     05E5  07              1536            JNZ     LFST2
     05E6  B9 2D           1537            JF1     $+3
     05E8  D1              1538            CPL     F1
     05E9  96 C4           1539            JMP     LFST2
     05EB  76 EE           1540    ;
     05ED  B5              1541    LFST10: JF1     LFST4           ;IF VT END.
     05EE  A4 C4           1542            JMP     LFST1
                           1543    ;
     05F0  76 D6           1544    LFST12: DEC     A
     05F2  A4 AB           1545            MOV     @R0,A
                           1546            JMP     LFST1
     05F4  07              1547    ;
     05F5  A0              1548    ;
     05F6  A4 AB           1549    ;
                           1550    CGC12:  IF      0DC             ; 0DC
                           1551            MOV     A,@R0
                           1552            ORL     A,#^80
                           1553            JMP     CGC4
                           1554    ;
                           1555            ELSE                    ; 0EE
                           1556    ;
                           1557            ENDIF
                           1558    ;
                           1559    ;
                           1560    ;
                           1561    ;
                           1562    ;
                           1563    ;
                           1564    ;   ********** PRINT END CONTROL ( SHORT LINE SEEKING ) **********
                           1565    ;
                           1566    ;
                           1567            ORG     ^600
                           1568    ;
                           1569    PEND:   MOV     R7,#^00         ;TRAIL = 0  SET
                           1570            MOV     A,@R0           ; R0=2A
                           1571            MOV     R3,#^1F
                           1572            JB6     TRL1            ; IF CR RETURNED
                           1573            JB3     PEND10          ; IF GRAPHIC LINE
                           1574            MOV     R1,#^2B
                           1575            MOV     A,@R1
                           1576            JB0     PEND1
                           1577    PEND13: MOV     R1,#^21
                           1578            MOV     A,@R1           ;INPUT END  SET
                           1579            CPL     A
```

```
     (0000)
      +
      +
      +
      +

     (0600)

0600  BF 00
0602  F0
0603  BB 1F
0605  D2 3B
0607  72 95
0609  B9 2B
060B  F1
060C  12 9D
060E  B9 21
0610  F1
0611  37
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

                           1580              JMP     PREEND
                           1581   PEND15:    MOV     R1,#^24
0612  64 65                1582              MOV     A,@R0          ;R0 2A
0614  B9 24                1583              JB3     PEND11         ;IF UPPER LINE OF GRAPHIC
0616  F0                   1584   PEND14:    MOV     A,@R1
0617  72 A0                1585              JB7     PEND9          ;IF NEXT BLOCK IS FUNCTION ONLY
0619  F1                   1586              MOV     R1,#^2E
061A  F2 88                1587              MOV     R0,#^26
061C  B9 2E                1588              JF1     PEND8          ;IF FOW
061E  B8 26                1589              INC     R0
0620  76 5F                1590              MOV     A,@R0
0622  18                  1591   ;
0623  F0                 +1 1592              IF      ML82A          ; ET-5230(ML82A)
                           +1 1593              ADD     A,#^03         ; IDLE SPACE SET
       (0001)              +1 1594              JF0     $+4
0624  03 03                +1 1595              ADD     A,#^02         ; IF 16.5 CPI
0626  B6 2A                +1 1596   ;
0628  03 02                +1 1597              ELSE                   ; ET-8220A(ML83A)
                           +1 1598   ;
                           +1 1599              ADD     A,#^06
                           +1 1600              JF0     $+4
                           +1 1601              ADD     A,#^04
                           +1 1602   ;
                           +1 1603              ENDIF
                           1604   ;
                           1605              CPL     A
                           1606              ADD     A,@R1
062A  37                   1607              JNC     PEND5          ;IF  L <= (NEXT R +6 )
062B  61                   1608   PEND4:     MOV     R0,#^2A
062C  E6 4B                1609              MOV     A,@R0
062E  B8 2A                1610   PEND2:     ORL     A,#^20         ;NEXT LINE IS REVERSE
0630  F0                   1611              MOV     @R0,A
0631  43 20                1612   ;
0633  A0                   1613   TRL:       MOV     A,R7
                           1614              MOV     R3,#^0F        ;TRAIL INTR. SET
0634  FF                   1615              JNZ     TRL4
0635  BB 0F                1616              MOV     R3,#^1E        ;PRINT STOP INTR. SET
0637  96 44                1617   ;
0639  BB 1E                +1 1618              IF      ML82A          ; ET-5230(ML82A)
                           +1 1619   ;
       (0001)              +1 1620   TRL1:      MOV     R7,#^11        ; 10 CPI, RISE UP NO.
                           +1 1621              JF0     TRL3
063B  BF 11                +1 1622              MOV     R7,#^06        ; 16.5 CPI, RISE UP NO.
063D  B6 46                +1 1623   ;
063F  BF 06                +1 1624   TRL2:      NOP
                           +1 1625              NOP
0641  00                   +1 1626              NOP
0642  00                   +1 1627   ;
0643  00                   +1 1628              ELSE                   ; ET-8220A(ML83A)
                           +1 1629   ;
```

```
ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

     +                +1  1630  TRL1:  MOV   R7,#^23        ; 10 CPI
     +                +1  1631        JF0   TRL3
     +                +1  1632        MOV   R7,#^0C        ; 16.5 CPI
     +                +1  1633  ;
     +                +1  1634  TRL2:  NOP
     +                +1  1635        NOP
     +                +1  1636        NOP
     +                +1  1637  ;
                      +1  1638        ENDIF
                          1639  ;
0644  A4 8B              1640  TRL4:  JMP   CGC5          ; TO HEAD RESET WAIT
0646  76 41              1641  TRL3:  JF1   TRL2          ; IF FOW
0648  CF                1642        DEC   R7
0649  C4 41              1643        JMP   TRL2
                         1644  ;
                         1645  ;
064B  C8                 1646  PEND5: DEC   R0            ;R0 26
064C  F0                 1647        MOV   A,@R0
064D  37                 1648        CPL   A
064E  61                 1649        ADD   A,@R1
064F  17                 1650        INC   A
0650  F6 59              1651        JC    PEND7        ;IF  L>< ( NEXT L )
0652  B8 2A              1652  PEND6: MOV   R0,#^2A
0654  F0                 1653        MOV   A,@R0
0655  53 DF              1654        ANL   A,#^DF       ;NEXT LINE IS FORWARD
0657  C4 33              1655        JMP   PEND2+2
                         1656  ;
0659  B8 2F              1657  PEND7: MOV   R0,#^2F
065B  B9 27              1658        MOV   R1,#^27
065D  C4 72              1659        JMP   PEND12
                         1660  ;
065F  19                 1661  PEND8: INC   R1            ;R1 2F
0660  F1                 1662        MOV   A,@R1
                         1663  ;
      (0001)         +1  1664        IF    ML82A        ; ET-5230(ML82A)
                     +1  1665  ;
0661  03 03            +1  1666        ADD   A,#^03       ; IDLE SPACE SET
0663  B6 67            +1  1667        JF0   $+4
0665  03 02            +1  1668        ADD   A,#^02       ; 16.5 CPI
                     +1  1669  ;
                     +1  1670        ELSE               ; ET-8220A(ML83A)
     +               +1  1671  ;
     +               +1  1672        ADD   A,#^06
     +               +1  1673        JF0   $+4
     +               +1  1674        ADD   A,#^04
     +               +1  1675  ;
                     +1  1676        ENDIF
                         1677  ;
0667  37                 1678        CPL   A
0668  60                 1679        ADD   A,@R0
```

```
ERR  LOC   OBJECT CODE    SEQ        SOURCE STATEMENT

     0669  F6 52                1680            JC      PEND6           ;IF ( NEXT L ) > R + 6
     066B  18                  1681            INC     R0              ;R0 27
     066C  F1                  1682            MOV     A,@R1
     066D  37                  1683            CPL     A
     066E  17                  1684            INC     A
     066F  60                  1685            ADD     A,@R0
     0670  E6 99               1686            JNC     PEND3           ;IF  R >= NEXT R
     0672  AF                  1687  PEND12:   MOV     R7,A
     0673  C8                  1688            DEC     R0
     0674  F0                  1689            MOV     A,@R0           ; R0=26
     0675  37                  1690            CPL     A
     0676  03 10               1691            ADD     A,#^10
     0678  61                  1692            ADD     A,@R1
     0679  37                  1693            CPL     A
     067A  6F                  1694            ADD     A,R7
     067B  E6 99               1695            JNC     PEND3           ; IF NOT TURN-BACK
     067D  B8 2A               1696            MOV     R0,#^2A
     067F  F0                  1697            MOV     A,@R0           ; IF GRAPH 2ND LINE
     0680  92 99               1698            JB4     PEND3
                               1699  ;
                               +1 1700         IF      ML82A           ; ET-5230(ML82A)
                               +1 1701  ;
     0682  BF 06               +1 1702         MOV     R7,#^06
                               +1 1703  ;
                               +1 1704         ELSE                    ; ET-8220A(ML83A)
                               +1 1705  ;
     0684  18                  +1 1706         MOV     R7,#^0B
     0685  10                  +1 1707  ;
     0686  C4 99               +1 1708         ENDIF
                               1709  ;
     0688  76 8E               1710            INC     R0              ; R0=2B
     068A  B9 2E               1711            INC     @R0             ; TURN=BACK SET
     068C  F1                  1712            JMP     PEND3
     068D  AF                  1713  ;
     068E  B8 2A               1714  PEND9:    JF1     $+6
     0690  F0                  1715            MOV     R1,#^2E
     0691  43 40               1716            MOV     A,@R1           ; STSRRT @
     0693  C4 31               1717            MOV     R7,A
     0695  F2 99               1718            MOV     R0,#^2A
     0697  92 0E               1719            MOV     A,@R0
     0699  76 2E               1720            ORL     A,#^40
     069B  C4 52               1721            JMP     PEND2
                               1722  PEND10:   JB7     PEND3           ; IF NO PR LINE
     069D  11                  1723            JB4     PEND13          ; IF 2ND LINE OF GRAPHIC
     069E  C4 99               1724  PEND3:    JF1     PEND4           ;IF  FOW
                               1725            JMP     PEND6
                               1726  ;
                               1727  PEND1:    INC     @R1             ; TURN BACK 2 SET
                               1728            JMP     PEND3
                               1729  ;
```

```
ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

     06A0  F1              1730  PEND11: MOV     A,@R1           ; R1=24
     06A1  D2 99           1731          JB6     PEND3           ; IF NEXT IS GRAPHIC LINE
     06A3  23 F7           1732          MOV     A,#^F7
     06A5  50              1733          ANL     A,@R0           ; R0=2A
     06A6  A0              1734          MOV     @R0,A           ; GRAPH SET
     06A7  C4 19           1735          JMP     PEND14
                           1736  ;
                           1737  ;
                           1738  ;     **********  SPACE PULSE MOTOR STOP CONTROL  **********
                           1739  ;
           (06A9)          1740          ORG     ^6A9
                           1741  ;
     06A9  B6 C0           1742  PSTP:   JF0     PSTP15          ; IF  10 CPI
     06AB  FC              1743          MOV     A,R4
     06AC  D3 01           1744          XRL     A,#^01
     06AE  96 BC           1745          JNZ     PSTP3           ; IF R4 IS NOT  5
     06B0  EF BC           1746  PSTP1:  DJNZ    R7,PSTP3
     06B2  BF 02           1747          MOV     R7,#^02
     06B4  FB              1748  PSTP2:  MOV     A,R3
     06B5  43 80           1749          ORL     A,#^80
     06B7  AB              1750          MOV     R3,A            ; TMG INTR. SET
     06B8  23 80           1751          MOV     A,#^80          ; 7.0 MS SET
     06BA  E4 A4           1752          JMP     LFED11
                           1753  ;
     06BC  54 F1           1754  PSTP3:  CALL    SPPMS2          ; 16.5 CPI SP PM PHASE CHANGE
     06BE  04 33           1755          JMP     IREND
                           1756  ;
                           1757  ;
                           1758  ;
                           1759  ;          *****     SOFT STOP      *****
                           1760  ;
     06C0  FF              1761  PSTP15: MOV     A,R7
     06C1  03 F3           1762          ADD     A,#^F3
     06C3  F6 B0           1763          JC      PSTP1
     06C5  23 FF           1764          MOV     A,#^FF
     06C7  76 CB           1765          JF1     $+4             ; IF REV
     06C9  23 0B           1766          MOV     A,#^0B
     06CB  6F              1767          ADD     A,R7
     06CC  37              1768          CPL     A
     06CD  E3              1769          MOVP3   A,@A            ; TABLE READ
     06CE  62              1770          MOV     T,A
     06CF  55              1771          STRT    T
     06D0  C4 B0           1772          JMP     PSTP1
                           1773  ;
                           1774  ;
                           1775  ;
                           1776  ;
                           1777  ;
                           1778  ;     *****     HOME DETECTION     *****
                           1779  ;
```

```
ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

                              1780   ;
                              1781   ;
                              1782           ORG     ^6D2
       (06D2)                 1783   ;
       06D2  A5               1784   CRST:   CLR     F1
                              1785   ;
       (0001)          +1     1786           IF      ML82A           ; ET-5230(ML82A)
       06D3  BA 26     +1     1787           MOV     R2,#^26         ; HOME POSITION SET
                       +1     1788   ;
                       +1     1789           ELSE                    ; ET-8220A(ML83A)
                       +      1790   ;
                       +      1791           MOV     R2,#^20         ; HOME POSITION
                       +      1792   ;
                       +1     1793           ENDIF
                              1794   ;
       06D5  46 D8            1795   CR4:    JNT1    CR1             ; IF NOT AT THE HOME POSITION
       06D7  B5               1796           CPL     F1              ;F1  FOW/REV
       06D8  CB               1797   CR1:    DEC     R3
                              1798   ;
       06D9  76 E1            1799   CR2:    JF1     CR7             ; IF FORWARD
       06DB  46 E3            1800           JNT1    CR3             ; IF NOT HOME
       06DD  EA E3            1801           DJNZ    R2,CR3
       06DF  E4 A8            1802           JMP     LFED6
       06E1  46 E9            1803   CR7:    JNT1    CR5             ; IF NOT HOME
       06E3  74 07            1804   CR3:    CALL    SPPM            ;SPPM PHASE CHANGE
       06E5  23 E4            1805           MOV     A,#^E4          ; 1.5 MS SET
       06E7  E4 A4            1806           JMP     LFED11
                              1807   ;
       06E9  EA E3            1808   CR5:    DJNZ    R2,CR3
       06EB  18               1809           INC     R3
       06EC  E4 A3            1810           JMP     LFED9
                              1811   ;
                              1812   ;      ********** PAPER END ADDITION **********
                              1813   ;
       06EE  8A 10            1814   PERD2:  ORL     P2,#^10
       06F0  0A               1815           IN      A,P2
       06F1  92 F5            1816           JB4     PERD4           ; NOT PAPER END
       06F3  24 5D            1817           JMP     PERD6
                              1818   ;
                              1819   ;
       06F5  24 78            1820   PERD4:  JMP     NPE
                              1821   ;
                              1822   ;
                              1823   ;
                              1824   ;
                              1825   ;     **********  CONTROL AFTER SP PM STOP  **********
                              1826   ;
       (06F7)                 1827           ORG     ^6F7
                              1828   ;
       06F7  E4 C6            1829   PSTP11: JMP     PED
```

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ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

                           1830   ;
06F9  FB                   1831   PSTP4:  MOV     A,R3
06FA  12 F7                1832           JB0     PSTP11          ; IF CR' IS END
06FC  B9 2A                1833           MOV     R1,#^2A
06FE  F1                   1834           MOV     A,@R1
06FF  F2 14                1835           JB7     PSTP7           ; IF NO PRNT LINE
0701  72 0E                1836           JB3     PSTP6           ; IF GRAPH
0703  92 0E                1837           JB4     PSTP6           ; IF 2 ND LINE OF GRH
0705  19                   1838           INC     R1
0706  F1                   1839           MOV     A,@R1
0707  32 14                1840           JB1     PSTP7           ; IF AFTER TURN-BACK 2
0709  B8 2C                1841           MOV     R0,#^2C
070B  F0                   1842           MOV     A,@R0
070C  52 14                1843           JB2     PSTP7           ; IF CR BLOCK
070E  B4 9D                1844   PSTP6:  CALL    LFST            ; IF NUMBER SET
0710  74 37                1845           CALL    LFOVD           ; LF PM OVER DRIVE SET
0712  BB 3F                1846           MOV     R3,#^3F         ; LF INTR. SET
0714  B9 2A                1847   PSTP7:  MOV     R1,#^2A
0716  F1                   1848           MOV     A,@R1
0717  D2 28                1849           JB6     PSTP5           ; IF NEXT IS CR
0719  72 36                1850           JB3     PSTP9           ; IF GRH
071B  53 6F                1851           ANL     A,#^6F
071D  A1                   1852           MOV     @R1,A           ; GRH 2ND RST, NO PRINT RST
071E  19                   1853           INC     R1
071F  F1                   1854           MOV     A,@R1
0720  32 49                1855           JB1     PSTP14          ; IF AFTER TURN-BACK 2
                           1856   ;
0722  34 EE                1857           CALL    MODS            ; IN TO PR MODE SHIFT
0724  B8 21                1858           MOV     R0,#^21
0726  B0 F0                1859           MOV     @R0,#^F0        ; INPUT END RESET
0728  B9 2A                1860   PSTP5:  MOV     R1,#^2A
072A  F1                   1861           MOV     A,@R1
072B  19                   1862           INC     R1
072C  D1                   1863           XRL     A,@R1           ; R1=2B
072D  B2 4D                1864           JB5     PSTP8           ; IF NEXT DIRECTION IS INVERT
072F  FB                   1865   PSTP18: MOV     A,R3
0730  B2 34                1866           JB5     $+4
0732  E4 8A                1867           JMP     LFED1
0734  E4 A3                1868           JMP     LFED9
                           1869   ;
                           1870   ;
0736  F2 3F                1871   PSTP9:  JB7     PSTP12          ; IF NOT PRINT LINE
0738  92 43                1872           JB4     PSTP13          ; IF 2ND LINE OF GRH
073A  43 90                1873           ORL     A,#^90          ; NO PR, 2ND SET
073C  A1                   1874   PSTP10: MOV     @R1,A
073D  E4 28                1875           JMP     PSTP5
                           1876   ;
073F  53 7F                1877   PSTP12: ANL     A,#^7F          ; PR RST
0741  E4 3C                1878           JMP     PSTP10
                           1879   ;
```

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ERR  LOC   OBJECT CODE        SEQ        SOURCE STATEMENT

     0743  43 90              1880  PSTP13: ORL     A,#^90
     0745  53 F7              1881          ANL     A,#^F7          ; NO PR SET, GRH RST
     0747  E4 3C              1882          JMP     PSTP10
                              1883  ;
     0749  53 FC              1884  PSTP14: ANL     A,#^FC
     074B  E4 3C              1885          JMP     PSTP10
                              1886  ;
     074D  A5                 1887  PSTP8:  CLR     F1
     074E  F1                 1888          MOV     A,@R1           ; R1=2B
     074F  B2 52              1889          JB5     $+3             ; IF REV
     0751  B5                 1890          CPL     F1
     0752  74 49              1891          CALL    CLMS            ; CLM CNT SET
                              1892  ;
           (0001)        +1   1893          IF      ML82A           ; ET-5230(ML82A)
                         +1   1894  ;
     0754  00              +1   1895          NOP
     0755  00              +1   1896          NOP
                           +1   1897  ;
                           +1   1898          ELSE                    ; ET-8220A(ML83A)
                           +1   1899  ;
                           +1   1900          NOP
                           +1   1901          NOP
                           +1   1902  ;
                           +1   1903          ENDIF
                              1904  ;
     0756  B8 2C              1905          MOV     R0,#^2C
     0758  F0                 1906          MOV     A,@R0
     0759  37                 1907          CPL     A
     075A  12 5E              1908          JB0     $+4             ; IF 10 CPI
     075C  74 49              1909          CALL    CLMS            ; CLM CNT SET
     075E  B9 2A              1910          MOV     R1,#^2A
     0760  F1                 1911          MOV     A,@R1
     0761  D2 68              1912          JB6     $+7             ; IF NEXT IS CR
     0763  19                 1913          INC     R1              ; R1=2B
     0764  F1                 1914          MOV     A,@R1
     0765  D3 20              1915          XRL     A,#^20
     0767  A1                 1916          MOV     @R1,A           ; NEXT DIRECTION SET
     0768  E4 2F              1917          JMP     PSTP18
                              1918  ;
                              1919  ;
                              1920  ;
                              1921  ;    ****************************************
                              1922  ;    *    LINE FEED CONTROL                 *
                              1923  ;    ****************************************
                              1924  ;
                              1925  ;
                              1926  ;
           (076A)             1927          ORG     ^76A
                              1928  ;
     076A  CB                 1929  LF0:    DEC     R3              ;LF INTR. SET
```

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ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

     076B  74 5B           1930             CALL    LFSTP          ;HALF PITCH OF LF   SET
     076D  23 8F           1931             MOV     A,#^8F         ; 6MS SET. FIRST PULSE OF LF
     076F  62              1932   LF1:      MOV     T,A
     0770  55              1933             STRT    T
     0771  74 3B           1934             CALL    LFRST
     0773  74 29           1935             CALL    LFPM           ;LF PULSE MOTOR PHASE CHANGE
     0775  74 37           1936             CALL    LFOVD
     0777  EF A6           1937             DJNZ    R7,LFED7
     0779  74 5B           1938             CALL    LFSTP
     077B  C5              1939             SEL     RB0
     077C  FD              1940             MOV     A,R5
     077D  37              1941             CPL     A
     077E  12 C2           1942             JB0     LF3            ; IF NOT=SELECT MODE
     0780  0A              1943             IN      A,P2
     0781  92 C2           1944             JB4     LF3            ; IF NOT PAPER END
     0783  1C              1945             INC     R4             ; PAPEROVERRIDE CNT +1
     0784  FC              1946   LF2:      MOV     A,R4
     0785  D5              1947             SEL     RB1
     0786  72 8A           1948             JB3     $+4            ; IF 4 LINE AFTER PAPER END
     0788  EA A6           1949             DJNZ    R2,LFED7
                           1950   ;
                           1951   ;
                           1952   ;     ********** LF END CONTROL  **********
                           1953   ;
                           1954   ;
     078A  B9 2A           1955   LFED1:    MOV     R1,#^2A
     078C  F1              1956             MOV     A,@R1
     078D  D2 AC           1957             JB6     LFED8          ;IF NEXT IS CR
     078F  B8 2C           1958             MOV     R0,#^2C
     0791  F0              1959             MOV     A,@R0
     0792  F2 A8           1960             JB7     LFED6          ; IF FUNC
     0794  F1              1961             MOV     A,@R1          ; R1=2A
     0795  53 98           1962             ANL     A,#^98
     0797  A1              1963             MOV     @R1,A
     0798  BB 01           1964   LFED3:    MOV     R3,#^01        ; PR INTR. SET
     079A  F0              1965             MOV     A,@R0
     079B  BF 06           1966             MOV     R7,#^06
     079D  12 A1           1967             JB0     $+4            ; IF 16.5 CPI
     079F  BF 0C           1968             MOV     R7,#^0C
     07A1  74 25           1969             CALL    SPOVD
     07A3  27              1970   LFED9:    CLR     A
     07A4  62              1971   LFED11:   MOV     T,A
     07A5  55              1972             STRT    T
     07A6  04 33           1973   LFED7:    JMP     IREND
                           1974   ;
     07A8  BB 3D           1975   LFED6:    MOV     R3,#^3D        ; LF STOP INTR SET
     07AA  E4 A3           1976             JMP     LFED9
                           1977   ;
     07AC  19              1978   LFED8:    INC     R1             ; R0=2B
     07AD  F1              1979             MOV     A,@R1
```

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ERR  LOC   OBJECT CODE     SEQ        SOURCE STATEMENT

     07AE  B2 C6           1980            JB5     PED
     07B0  43 20           1981            ORL     A,#^20
     07B2  A1              1982            MOV     @R1,A           ; REV SET
     07B3  27              1983            CLR     A
     07B4  B8 2E           1984            MOV     R0,#^2E
     07B6  A0              1985            MOV     @R0,A           ; START ADDRESS =00 SET
     07B7  37              1986            CPL     A
     07B8  18              1987            INC     R0
     07B9  A0              1988            MOV     @R0,A           ; STOP ADDRESS =FF SET
     07BA  B8 2C           1989            MOV     R0,#^2C
     07BC  E4 98           1990            JMP     LFED3
                           1991  ;
                           1992  ;
     07BE  23 BF           1993  LF:       MOV     A,#^BF
     07C0  E4 6F           1994            JMP     LF1
                           1995  ;
     07C2  BC 00           1996  LF3:      MOV     R4,#^00
     07C4  E4 84           1997            JMP     LF2
                           1998  ;
                           1999  ;
                           2000  ;
                           2001  ;
                           2002  ;
                           2003  ;     **********  CR END  **********
                           2004  ;
           (07C6)          2005            ORG     ^7C6
                           2006  ;
     07C6  86 E7           2007  PED:      JNI     TMG3            ; IF HEAD TEMPERATURE IS HIGH
     07C8  B8 24           2008            MOV     R0,#^24
     07CA  F0              2009            MOV     A,@R0
     07CB  BF 64           2010            MOV     R7,#^64         ; 1.4 SEC SET
     07CD  D2 D1           2011            JB6     PED1            ; GRAPH ?
     07CF  BF 32           2012            MOV     R7,#^32         ; 0.7 SEC SET
     07D1  BB C0           2013  PED1:     MOV     R3,#^C0         ; TMG INTR. SET
     07D3  E4 A3           2014            JMP     LFED9
                           2015  ;
                           2016  ;
                           2017  ;     **********  TIMER INTERRUPT   **********
                           2018  ;
                           2019  ;
     07D5  B8 31           2020  TMG:      MOV     R0,#^31
     07D7  F0              2021            MOV     A,@R0
     07D8  96 E9           2022            JNZ     TMG4            ; IF WAIT REG SET
     07DA  FB              2023            MOV     A,R3
     07DB  D2 E5           2024            JB6     TMG2            ; AFTER CR END
     07DD  74 25           2025            CALL    SPOVD           ; SPPM OVER DRIVE SET
     07DF  EF E3           2026            DJNZ    R7,TMG1
     07E1  C4 F9           2027            JMP     PSTP4           ; TO CTL AFTER STOP
                           2028  ;
     07E3  C4 B4           2029  TMG1:     JMP     PSTP2           ; TO SPPM STOP CTL
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ERR  LOC   OBJECT CODE      SEQ        SOURCE STATEMENT

     07E5  EF D1            2030  TMG2:   DJNZ    R7,PED1
     07E7  E4 A8            2031  TMG3:   JMP     LFED6
     07E9  B9 21            2032  TMG4:   MOV     R1,#^21
     07EB  F1               2033          MOV     A,@R1
     07EC  12 F6            2034          JBO     TMG5            ; IF INPUT END
     07EE  EA A3            2035          DJNZ    R2,LFED9        ; IF WAIT NB CNT NOT ZERO
     07F0  B9 2A            2036          MOV     R1,#^2A
     07F2  F1               2037          MOV     A,@R1
     07F3  43 40            2038          ORL     A,#^40          ; NEXT LINE CR SET
     07F5  A1               2039          MOV     @R1,A
     07F6  04 67            2040  TMG5:   JMP     TMG6
                            2041  ;
                            2042  ;
                            2043  ;     **********  INTERRUPT SEQUENCE END  **********
                            2044  ;
     07F8  74 3B            2045  LFED:   CALL    LFRST
     07FA  BB 00            2046          MOV     R3,#^00         ; INTR. CLEAR
     07FC  35               2047          DIS     TCNTI
     07FD  04 33            2048          JMP     IREND
                            2049  ;
                            2050  ;
                            2051  ;
                            2052  ;
                            2053          END
```

NO.	SYMBOL	VALUE	STATEMENT NUMBERS									
1	BFIN	(01BE)	527	576 *								
2	BLCK	(017C)	450	495 *								
3	CGC	(052F)	1278	1300	1395 *							
4	CGC1	(058F)	1396	1464 *								
5	CGC10	(0587)	1443	1459 *								
6	CGC12	(05F8)	1426	1550 *								
7	CGC2	(0596)	1408	1470 *								
8	CGC3	(054D)	1342	1413 *	1473							
9	CGC4	(0567)	1438 *	1457	1553							
10	CGC5	(058B)	1011	1301	1378	1461 *	1465	1640				
11	CGC6	(0532)	1397 *	1468								
12	CGC7	(0569)	1440 *	1462								
13	CGC8	(0572)	1445 *	1447								
14	CGC9	(057D)	1420	1429	1452 *							
15	CGG	(04C7)	1291	1311 *								
16	CGG1	(04EB)	1332	1334 *								
17	CLM	(0435)	1152	1155	1157	1161	1184 *	1207				
18	CLM1	(035A)	975	978 *								
19	CLM2	(0353)	965	973 *								
20	CLM3	(0352)	967	970 *								
21	CLM4	(0448)	1194	1196 *								
22	CLM6	(044F)	1186	1202 *								
23	CLM9	(044D)	1192	1201 *								
24	CLMS	(0349)	964 *	1083	1090	1184	1891	1909				
25	CON22	(0250)	160 *	663								
26	CR1	(06D8)	1795	1797 *								
27	CR2	(06D9)	210	1799 *								
28	CR3	(06E3)	1800	1801	1804 *	1808						
29	CR4	(06D5)	1795 *									
30	CR5	(06E9)	1803	1808 *								
31	CR7	(06E1)	1799	1803 *								
32	CRLF	(01FB)	573	632 *								
33	CRLF1	(0206)	639 *									
34	CRLF2	(0228)	642	645	661 *							
35	CRLF3	(021F)	653	656 *								
36	CRLF5	(022A)	659	662 *	749							
37	CRLF6	(00DE)	158 *	650								
38	CRLF7	(0217)	638	651 *								
39	CRST	(06D2)	211	1784 *								
40	CS1	(0100)	159 *	555								
41	DOT	(040A)	1141	1150 *								
42	DOT1	(041C)	1160 *	1214								
43	DOT2	(041F)	1162 *	1209								
44	DOT3	(0453)	1156	1158	1206 *							
45	DRC1	(01B2)	552 *									
46	DRC2	(01B3)	431	554 *								
47	DREC	(01A0)	448	541 *								
48	DSWR	(0045)	260 *	269	326							
49	DTR	(02C1)	819 *	1357	1365	1384						
50	DTR1	(02CD)	821	826 *								

NO.	SYMBOL	VALUE	STATEMENT NUMBERS						
51	DTR2	(02D0)	825	828 *					
52	DTR3	(02D7)	823	833 *					
53	DTR4	(02D9)	827	834 *					
54	DTW	(02C8)	161 *	592					
55	DWAIT	(0175)	485	488 *	506				
56	DWT1	(0139)	413	449 *					
57	DWT10	(00E3)	394 *	489					
58	DWT11	(0130)	433	444 *					
59	DWT12	(0124)	428	436 *					
60	DWT2	(0119)	429 *	442	493	498			
61	DWT3	(0100)	412 *	475	713				
62	DWT4	(0167)	479 *	503	718				
63	DWT5	(016B)	482 *	716					
64	DWT6	(00EF)	401 *	403	408				
65	DWT7	(014C)	415	461 *					
66	DWT8	(0141)	454 *	512					
67	DWT9	(0150)	463 *	529					
68	FFKY	(0196)	524 *						
69	IBED1	(022D)	609	670 *	680	697	701	704	
70	IBED2	(0238)	676	678 *					
71	IBED3	(025E)	660	685	706 *				
72	IBED4	(0245)	677	684	687 *				
73	IBED5	(026C)	710	714 *					
74	IBED6	(0271)	712	717 *					
75	IBED7	(024D)	694 *	745					
76	IBED8	(0240)	673	683 *					
77	IBED9	(0255)	696	699 *					
78	IED1	(01D1)	590 *	597					
79	IED2	(01DD)	586	598 *					
80	IED3	(01E2)	602 *	661					
81	IED4	(01EC)	605	609 *					
82	INTR1	(001E)	205	209 *					
83	INTR2	(0022)	209	211 *					
84	INTR3	(0024)	204	212 *					
85	INTR5	(0026)	206	214 *					
86	INTR6	(002A)	214	216 *					
87	INTR7	(002E)	216	218 *					
88	INTR8	(0030)	207	220 *					
89	IREND	(0033)	221	229 *	1092	1450	1460	1755	1973	2048
90	IRT	(0083)	182	306 *					
91	IRT1	(00AA)	328	338 *					
92	IRT2	(00C3)	355 *	361					
93	IRT3	(00D7)	358	367 *					
94	IRT4	(00C9)	359 *						
95	LF	(07BE)	215	1993 *					
96	LFO	(076A)	218	1929 *					
97	LF1	(076F)	1932 *	1994					
98	LF2	(0784)	1946 *	1997					
99	LF3	(07C2)	1942	1944	1996 *				
100	LFED	(07F8)	217	2045 *					

NO.	SYMBOL	VALUE	STATEMENT NUMBERS								
101	LFED1	(078A)	1867	1955 *							
102	LFED11	(07A4)	1752	1806	1971 *						
103	LFED3	(0798)	1964 *	1990							
104	LFED6	(07A8)	1802	1960	1975 *	2031					
105	LFED7	(07A6)	1937	1949	1973 *						
106	LFED8	(07AC)	1957	1978 *							
107	LFED9	(07A3)	1810	1868	1970 *	1976	2014	2035			
108	LFIN	(01B6)	570 *								
109	LFKY	(0191)	467	521 *							
110	LFKY2	(019C)	522	528 *							
111	LFOVD	(0337)	754	765	936 *	1845	1936				
112	LFPM	(0329)	923 *	1935							
113	LFPM1	(0332)	928 *	937	946						
114	LFRST	(033B)	944 *	1086	1934	2045					
115	LFST	(059D)	752	1482 *	1844						
116	LFST1	(05AB)	1487	1492 *	1520	1542	1546				
117	LFST10	(05F0)	1521	1541 *							
118	LFST12	(05F4)	1524	1544 *							
119	LFST14	(05DF)	1529 *								
120	LFST2	(05C4)	1509 *	1531	1536	1539					
121	LFST3	(05CD)	1505	1508	1516 *						
122	LFST4	(05D6)	1522 *	1541							
123	LFST5	(05DC)	1514	1527 *							
124	LFST6	(05BA)	1495	1502 *							
125	LFST7	(05E5)	1528	1533 *							
126	LFST8	(05DB)	1490	1525 *							
127	LFSTP	(035B)	986 *	1930	1938						
128	ML82A	(0001)	142 *	769	784	1016	1027	1106	1592	1618	1664	1700
			1786	1893							
129	MODS	(01EE)	617 *	729	1857						
130	MS1	(01F4)	620 *	624							
131	NPE	(0178)	477	492 *	1820						
132	ODC	(0000)	148 *	1425	1550						
133	PBRD	(0341)	923	936	944	951 *					
134	PCPW	(003D)	250 *	483	546						
135	PDBT	(0462)	1201	1223 *							
136	PDBT1	(046E)	1230 *								
137	PDBT10	(0494)	1260	1263 *	1267						
138	PDBT11	(0465)	1225 *								
139	PDBT12	(04A8)	1225	1281 *							
140	PDBT13	(04A2)	1275 *	1285	1356						
141	PDBT15	(04C5)	1297	1301 *							
142	PDBT16	(04C3)	1298	1300 *							
143	PDBT2	(047F)	1246 *	1272							
144	PDBT3	(0482)	1239	1249 *							
145	PDBT4	(049C)	1231	1270 *							
146	PDBT5	(04A0)	1236	1273 *							
147	PDBT6	(04B0)	1268	1288 *							
148	PDBT7	(04A4)	1277 *	1293	1295						
149	PDBT8	(047C)	1229	1242 *							

NO.	SYMBOL	VALUE	STATEMENT NUMBERS						
150	PDBT9	(0498)	1261	1262	1267 *				
151	PDR	(04F8)	1265	1351 *					
152	PDR1	(0516)	1363	1367	1371 *	1382			
153	PDR2	(0523)	1359	1381 *					
154	PDR4	(0521)	1373	1378 *					
155	PDR5	(0514)	1369 *	1387					
156	PED	(07C6)	1829	1980	2007 *				
157	PED1	(07D1)	2011	2013 *	2030				
158	PEND	(0600)	1273	1569 *					
159	PEND1	(069D)	1576	1727 *					
160	PEND10	(0695)	1573	1722 *					
161	PEND11	(06A0)	1583	1730 *					
162	PEND12	(0672)	1659	1687 *					
163	PEND13	(060E)	1577 *	1723					
164	PEND14	(0619)	1584 *	1735					
165	PEND15	(0614)	996	1581 *					
166	PEND2	(0631)	1610 *	1655	1721				
167	PEND3	(0699)	1686	1695	1698	1712	1722	1724 *	1728 1731
168	PEND4	(062E)	1024	1608 *	1724				
169	PEND5	(064B)	1607	1646 *					
170	PEND6	(0652)	1652 *	1680	1725				
171	PEND7	(0659)	1651	1657 *					
172	PEND8	(065F)	1588	1661 *					
173	PEND9	(0688)	998	1585	1714 *				
174	PERD	(015B)	452	460	471 *				
175	PERD2	(06EE)	471	1814 *					
176	PERD4	(06F5)	1816	1820 *					
177	PERD6	(015D)	472 *	1817					
178	PREEND	(0365)	995 *	1580					
179	PREND1	(0369)	995	997 *					
180	PREND2	(036D)	997	1000 *					
181	PREND3	(036B)	998 *	1000	1003				
182	PREND4	(038A)	1006	1027 *					
183	PREND5	(0382)	1008	1013 *					
184	PREND6	(037B)	1008 *	1036					
185	PRPM1	(0406)	1140	1144 *					
186	PRPM2	(0400)	1140 *	1143					
187	PRSET	(02A5)	739	764 *					
188	PRT	(0404)	1097	1143 *					
189	PRT1	(03B8)	1078 *	1096					
190	PRT2	(03D2)	1074	1093 *					
191	PRT3	(03CC)	1090 *	1091					
192	PRT4	(03D0)	1084	1088	1092 *				
193	PRT6	(03DA)	1073	1097 *					
194	PRTR	(039C)	208	1059 *					
195	PST	(0275)	693	726 *					
196	PST1	(0291)	745 *	748					
197	PST2	(0293)	746 *						
198	PST3	(029A)	734	752 *					
199	PST4	(028B)	740 *	757					

NO.	SYMBOL	VALUE	STATEMENT NUMBERS
200	PST5	(0288)	738 *
201	PSTP	(06A9)	1203 1742 *
202	PSTP1	(06B0)	1746 * 1763 1772
203	PSTP10	(073C)	1874 * 1878 1882 1885
204	PSTP11	(06F7)	1829 * 1832
205	PSTP12	(073F)	1871 1877 *
206	PSTP13	(0743)	1872 1880 *
207	PSTP14	(0749)	1855 1884 *
208	PSTP15	(06C0)	1742 1761 *
209	PSTP18	(072F)	1865 * 1917
210	PSTP2	(06B4)	1748 * 2029
211	PSTP3	(06BC)	1275 1745 1746 1754 *
212	PSTP4	(06F9)	292 1831 * 2027
213	PSTP5	(0728)	1849 1860 * 1875
214	PSTP6	(070E)	1836 1837 1844 *
215	PSTP7	(0714)	1835 1840 1843 1847 *
216	PSTP8	(074D)	1864 1887 *
217	PSTP9	(0736)	1850 1871 *
218	SELKY	(018A)	458 509 *
219	SELKY1	(0183)	502 * 510
220	SIF1	(0000)	153 * 330
221	SIF2	(0062)	154 * 435
222	SIF3	(008B)	155 * 487
223	SIF4	(0091)	156 * 607
224	SIF5	(0095)	157 * 682
225	SLKY1	(0064)	279 283 287 *
226	SLKYM	(0054)	277 * 497 678
227	SPOVD	(0325)	799 913 * 1969 2025
228	SPPM	(0307)	854 888 * 1082 1145 1804
229	SPPM1	(0311)	893 896 *
230	SPPM2	(0314)	898 * 914
231	SPPM3	(031F)	905 * 930
232	SPPMS1	(02DE)	845 * 1202 1226 1281
233	SPPMS2	(02F1)	860 * 1444 1459 1754
234	SPPMS3	(02EE)	845 848 854 * 860 863 867
235	TDLY	(02FF)	398 411 877 *
236	TMG	(07D5)	212 2020 *
237	TMG1	(07E3)	2026 2029 *
238	TMG2	(07E5)	2024 2030 *
239	TMG3	(07E7)	2007 2031 *
240	TMG4	(07E9)	2022 2032 *
241	TMG5	(07F6)	2034 2040 *
242	TMG6	(0067)	291 * 2040
243	TRL	(0634)	1243 1613 *
244	TRL1	(063B)	1572 1620 * 1630 *
245	TRL2	(0641)	1624 * 1634 * 1641 1643
246	TRL3	(0646)	1621 1631 1641 *
247	TRL4	(0644)	1615 1640 *
248	VFU12	(0603)	163 * 737
249	VFU15	(05DA)	162 * 469

NO.	SYMBOL	VALUE	STATEMENT NUMBERS
250	VFU16	(0612)	164 * 353

ASSEMBLY COMPLETE. NO ERRORS

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	9A	FD	B8	00	75	04	83	65	16	0A	D5	B8	28	A0	18	0A
0010	A0	8A	FF	FB	F2	24	D2	1E	B2	26	C6	30	64	9C	12	22
0020	C4	D9	C4	D2	E4	D5	12	2A	E4	BE	32	2E	E4	F8	E4	6A
0030	35	04	33	B8	29	F0	3A	8A	F0	C8	F0	C5	93	B9	03	9A
0040	FD	91	8A	02	83	FA	E7	AA	19	F9	3A	0A	F2	4F	CA	E8
0050	45	8A	FF	83	9A	F2	0A	F2	64	B8	80	E8	5B	0A	F2	64
0060	FD	43	04	AD	8A	0D	83	B0	00	C4	F9	00	00	00	00	00
0070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0080	00	00	00	23	3B	90	B9	03	23	1D	91	23	D4	90	C9	81
0090	85	F2	94	95	23	D6	90	23	CC	91	8A	02	B8	08	B9	F7
00A0	BA	FF	14	45	FA	72	AA	F5	04	00	FB	53	7F	B6	B1	43
00B0	80	AB	27	B8	2F	B9	04	A1	19	E8	B7	B9	30	B1	0C	00
00C0	F5	C4	12	37	92	C7	1D	04	D7	9A	F0	0A	F2	C3	BD	02
00D0	B8	75	B0	00	18	B0	20	B8	26	B0	FF	8A	FF	D5	BB	7F
00E0	25	55	85	FB	96	E3	C5	23	C7	54	FF	B9	04	9A	F0	0A
00F0	37	F2	EF	37	17	43	80	3A	E9	EF	8A	FF	23	C7	54	FF

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0100	FD	32	39	37	12	4C	9A	FD	B9	03	23	25	35	91	23	05
0110	91	D5	FB	C5	C6	17	25	16	24	8A	02	FD	32	B3	FA	72
0120	30	F5	04	62	B8	08	F0	D3	24	C6	2E	23	FF	62	24	19
0130	9A	FD	B9	00	81	8A	02	12	A0	FE	96	7C	FD	32	5B	B8
0140	A0	9A	F2	0A	8A	0F	37	F2	8A	FD	12	5B	B8	24	B9	FF
0150	9A	F0	0A	8A	0F	37	F2	91	F5	A4	DA	C4	EE	00	09	37
0160	F2	00	FC	96	78	99	7F	FD	53	FC	AD	23	1D	14	3D	FA
0170	72	75	F5	04	8B	D5	04	E3	89	80	24	19	FD	52	81	14
0180	54	24	19	FD	12	67	17	AD	24	75	F8	C6	83	E8	8D	24
0190	41	F9	96	9C	B9	88	FD	43	04	AD	24	BE	E9	9C	24	50
01A0	FD	BD	30	12	A7	BD	38	2D	14	3D	B9	01	9A	FD	81	8A
01B0	02	37	AF	F5	24	00	F1	17	B9	88	C6	FB	B9	08	F0	53
01C0	43	49	A0	B9	26	F1	03	07	37	B8	17	60	F6	DD	37	17
01D0	AF	B9	20	F5	54	C8	E5	1E	B8	17	10	EF	D1	B9	27	F0
01E0	07	A1	B9	21	B1	FF	FA	72	EC	F5	04	91	44	2D	B8	27
01F0	B9	2F	BF	04	F0	A1	C8	C9	EF	F4	83	F0	53	03	49	20

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0200	53	7C	D3	44	C6	17	D5	FB	C5	C6	28	B8	2A	F0	D2	28
0210	D5	FD	D3	0B	F5	04	DE	B8	2C	F0	52	1F	B9	32	11	53
0220	FB	43	08	A0	B6	2A	44	5E	24	E2	F5	44	50	D5	FB	C5
0230	C6	40	F1	37	92	38	12	45	14	54	FA	72	2D	F5	04	95
0240	F1	92	45	44	5E	C9	F1	37	A1	19	F1	12	75	B1	00	B8
0250	24	86	55	44	2D	F0	53	1C	C6	2D	0A	37	92	2D	B9	26
0260	B1	FF	BE	00	FD	52	6C	FC	72	71	24	00	53	FA	AD	24
0270	6B	BC	00	24	67	D5	B8	21	B0	00	34	EE	19	B8	2A	B0
0280	00	F1	F2	9A	C5	F5	C4	03	D5	54	A5	62	25	55	C5	B6
0290	93	44	4D	B8	24	F0	52	91	44	2A	B4	9D	BB	3F	74	37
02A0	BD	0B	27	44	8B	BB	01	74	37	B8	2C	F0	BD	07	BE	FD
02B0	BF	06	12	BA	BD	06	BE	FE	BF	0C	C8	B0	00	74	25	27
02C0	83	B9	20	F1	12	CD	FA	F2	D7	43	80	44	D0	FA	F2	D9
02D0	9A	F9	A9	81	8A	06	83	03	40	03	B8	A9	F1	83	B6	F0
02E0	FC	D3	02	96	F0	42	D3	F8	96	E5	B8	08	E8	EC	74	07
02F0	83	B6	F0	FC	D3	04	96	F0	42	03	03	E6	F8	44	EE	62

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0300	55	16	05	64	01	65	83	B9	30	F1	47	41	E7	76	11	77
0310	77	53	0F	A1	9A	FD	B8	02	80	53	F8	41	53	FB	90	43
0320	8C	90	8A	0F	83	B9	30	64	14	74	41	E7	D2	30	43	10
0330	53	30	B9	30	41	64	1F	74	41	64	32	74	41	43	40	64
0340	32	B8	02	9A	FD	80	53	30	83	FD	76	53	CD	96	52	BD
0350	0B	CE	83	1D	D3	0B	96	5A	AD	1E	83	B8	2C	F0	BF	09
0360	32	64	BF	0C	83	12	69	C4	14	76	6D	C4	88	32	6B	B9
0370	2C	F1	D2	6B	B8	2F	F0	B6	8A	03	7D	F6	82	10	BB	03
0380	A4	8B	B8	31	B0	01	BA	2A	C4	2E	03	B1	64	7B	00	00
0390	00	00	00	00	00	00	00	00	00	00	00	00	23	F4	62	55
03A0	B8	2B	F0	A5	B2	A7	B5	18	F0	85	12	AD	95	FB	32	DA
03B0	B6	D2	23	E1	76	B8	23	DB	6F	E3	62	55	74	07	74	49
03C0	EF	D0	BB	03	74	3B	BC	01	B6	D0	BF	04	74	49	EF	CC
03D0	04	33	23	F3	76	D8	23	E7	64	B8	84	04	E9	E8	E6	E3
03E0	DF	DA	E9	E8	E6	E3	DF	DA	F5	F4	F3	F2	F1	F0	EF	EE
03F0	ED	EC	EB	EA	F6	F5	F4	F3	F2	F1	F0	EF	EE	ED	EC	EB

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0400	B6	06	84	0A	EC	00	BC	05	74	07	FB	D3	07	96	35	B8
0410	2A	F0	F2	35	52	53	92	35	32	53	23	F7	6D	F6	35	B8
0420	23	B9	77	F0	39	23	FD	51	A1	3A	B8	02	80	53	F7	90
0430	43	08	90	8A	02	74	49	FB	92	4F	FD	AA	B8	2A	F0	37
0440	32	4D	B9	00	12	48	B9	06	FD	97	67	69	AA	84	62	54
0450	DE	C4	A9	FD	12	35	F0	52	1F	B0	F8	12	5F	B0	F4	20
0460	84	1C	FD	D3	0B	96	A8	54	DE	B8	2A	FB	72	7C	B9	2F
0470	76	9C	C9	FE	17	D1	C6	A0	19	FE	84	82	CF	C4	34	C9
0480	FE	17	D1	96	87	BB	07	D1	A9	F0	D3	01	A0	37	32	94
0490	12	98	76	9A	F9	AA	84	F8	76	94	84	B0	FE	D1	96	7F
04A0	C4	00	C4	BC	B1	FF	A4	2F	54	DE	B8	2A	FB	37	52	A2
04B0	B9	22	9A	F7	F0	52	C7	37	32	A4	FA	C6	A4	FD	12	C5
04C0	76	C3	CA	A4	2F	A4	8B	B1	FF	B9	2C	F1	32	D0	9A	FB
04D0	F0	92	D5	9A	FD	FE	53	03	A8	FF	F2	DE	43	20	77	77
04E0	53	0C	48	A8	FA	03	FA	F6	EB	9A	FE	FF	37	F6	F0	E7
04F0	72	F6	F8	43	80	A8	A4	4D	F0	53	F8	A0	FB	37	52	A2

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0500	54	C1	AF	76	23	B9	2E	FA	D1	C6	16	CA	54	C1	D3	80
0510	96	16	23	03	40	A0	FF	53	60	96	21	F0	F2	20	43	0C
0520	A0	A4	8B	D3	80	96	16	1A	54	C1	AF	23	02	A4	14	FA
0530	72	8F	32	36	9A	FE	52	3A	9A	FD	B8	80	12	40	B8	00
0540	FF	F2	45	9A	FB	FA	72	96	FF	53	7F	48	A8	80	B8	22
0550	20	50	18	A0	B9	FF	F2	7D	B8	2C	F0	B8	23	32	7D	F0
0560	D2	64	B9	BF	E7	43	81	A0	F9	8A	0F	B8	77	20	32	87
0570	54	F1	42	03	02	E6	72	89	7F	8A	FF	04	33	F0	12	82
0580	B9	DF	77	43	C0	A4	67	54	F1	04	33	23	FF	A4	69	17
0590	52	8B	FF	47	A4	32	FF	53	1F	43	10	A4	4B	BA	00	B9
05A0	2A	A5	F1	CA	92	AB	1A	1A	72	DB	CA	B8	33	F0	07	96
05B0	BA	B9	2C	F1	53	DF	A1	B9	34	F1	A0	B8	37	F0	C6	CD
05C0	07	A0	96	CD	B9	36	11	F1	A9	F1	F2	DC	A0	1A	1A	B8
05D0	2C	F0	B2	AB	92	F0	B8	32	F0	96	F4	83	17	96	E5	B9
05E0	36	B1	3F	A4	C4	07	B9	2D	D1	96	C4	76	EE	B5	A4	C4
05F0	76	D6	A4	AB	07	A0	A4	AB	00	00	00	00	00	00	00	00

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0600	BF	00	F0	BB	1F	D2	3B	72	95	B9	2B	F1	12	9D	B9	21
0610	F1	37	64	65	B9	24	F0	72	A0	F1	F2	88	B9	2E	B8	26
0620	76	5F	18	F0	03	03	B6	2A	03	02	37	61	E6	4B	B8	2A
0630	F0	43	20	A0	FF	B8	0F	96	44	BB	1E	BF	11	B6	46	BF
0640	06	00	00	00	A4	8B	76	41	CF	C4	41	C8	F0	37	61	17
0650	F6	59	B8	2A	F0	53	DF	C4	33	B8	2F	B9	27	C4	72	19
0660	F1	03	03	B6	67	03	02	37	60	F6	52	18	F1	37	17	60
0670	E6	99	AF	C8	F0	37	03	10	61	37	6F	E6	99	B8	2A	F0
0680	92	99	BF	06	18	10	C4	99	76	8E	B9	2E	F1	AF	B8	2A
0690	F0	43	40	C4	31	F2	99	92	0E	76	2E	C4	52	11	C4	99
06A0	F1	D2	99	23	F7	50	A0	C4	19	B6	C0	FC	D3	01	96	BC
06B0	EF	BC	BF	02	FB	43	80	AB	23	80	E4	A4	54	F1	04	33
06C0	FF	03	F3	F6	B0	23	FF	76	CB	23	0B	6F	37	E3	62	55
06D0	C4	B0	A5	BA	26	46	D8	B5	CB	76	E1	46	E3	EA	E3	E4
06E0	A8	46	E9	74	07	23	E4	E4	A4	EA	E3	1B	E4	A3	8A	10
06F0	0A	92	F5	24	5D	24	78	E4	C6	FB	12	F7	B9	2A	F1	F2

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0700	14	72	0E	92	0E	19	F1	32	14	B8	2C	F0	52	14	B4	9D
0710	74	37	BB	3F	B9	2A	F1	D2	28	72	36	53	6F	A1	19	F1
0720	32	49	34	EE	B8	21	B0	F0	B9	2A	F1	19	D1	B2	4D	FB
0730	B2	34	E4	8A	E4	A3	F2	3F	92	43	43	90	A1	E4	28	53
0740	7F	E4	3C	43	90	53	F7	E4	3C	53	FC	E4	3C	A5	F1	B2
0750	52	B5	74	49	00	00	B8	2C	F0	37	12	5E	74	49	B9	2A
0760	F1	D2	68	19	F1	D3	20	A1	E4	2F	CB	74	5B	23	8F	62
0770	55	74	3B	74	29	74	37	EF	A6	74	5B	C5	FD	37	12	C2
0780	0A	92	C2	1C	FC	D5	72	8A	EA	A6	B9	2A	F1	D2	AC	B8
0790	2C	F0	F2	A8	F1	53	98	A1	BB	01	F0	BF	06	12	A1	BF
07A0	0C	74	25	27	62	55	04	33	BB	3D	E4	A3	19	F1	B2	C6
07B0	43	20	A1	27	B8	2E	A0	37	18	A0	B8	2C	E4	98	23	BF
07C0	E4	6F	BC	00	E4	84	86	E7	B8	24	F0	BF	64	D2	D1	BF
07D0	32	BB	C0	E4	A3	B8	31	F0	96	E9	FB	D2	E5	74	25	EF
07E0	E3	C4	F9	C4	B4	EF	D1	E4	A8	B9	21	F1	12	F6	EA	A3
07F0	B9	2A	F1	43	40	A1	04	67	74	3B	BB	00	35	04	33	00