K 7

```
   SSSSSSSSSSSS  MMM         MMM     GGGGGGGGGGGG  RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
   SSSSSSSSSSSS  MMM         MMM     GGGGGGGGGGGG  RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
   SSSSSSSSSSSS  MMM         MMM     GGGGGGGGGGGG  RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
SSS              MMMMMM   MMMMMM  GGG              RRR         RRR        TTT        LLL
SSS              MMMMMM   MMMMMM  GGG              RRR         RRR        TTT        LLL
SSS              MMMMMM   MMMMMM  GGG              RRR         RRR        TTT        LLL
SSS              MMM   MMM   MMM  GGG              RRR         RRR        TTT        LLL
SSS              MMM   MMM   MMM  GGG              RRR         RRR        TTT        LLL
SSS              MMM   MMM   MMM  GGG              RRR         RRR        TTT        LLL
   SSSSSSSSS     MMM         MMM  GGG              RRRRRRRRRRRR           TTT        LLL
   SSSSSSSSS     MMM         MMM  GGG              RRRRRRRRRRRR           TTT        LLL
   SSSSSSSSS     MMM         MMM  GGG              RRRRRRRRRRRR           TTT        LLL
            SSS  MMM         MMM  GGG   GGGGGGGGG  RRR   RRR              TTT        LLL
            SSS  MMM         MMM  GGG   GGGGGGGGG  RRR   RRR              TTT        LLL
            SSS  MMM         MMM  GGG   GGGGGGGGG  RRR   RRR              TTT        LLL
            SSS  MMM         MMM  GGG         GGG  RRR      RRR           TTT        LLL
            SSS  MMM         MMM  GGG         GGG  RRR      RRR           TTT        LLL
            SSS  MMM         MMM  GGG         GGG  RRR      RRR           TTT        LLL
SSSSSSSSSSSS     MMM         MMM     GGGGGGGGG     RRR         RRR        TTT        LLLLLLLLLLLLLLL
SSSSSSSSSSSS     MMM         MMM     GGGGGGGGG     RRR         RRR        TTT        LLLLLLLLLLLLLLL
SSSSSSSSSSSS     MMM         MMM     GGGGGGGGG     RRR         RRR        TTT        LLLLLLLLLLLLLLL
```

```
**FILE**ID**SMGMINUPD                          C 3




 SSSSSSSS   MM      MM   GGGGGGGG   MM      MM  IIIIII      NN      NN  UU      UU  PPPPPPPP    DDDDDDDD
 SSSSSSSS   MM      MM   GGGGGGGG   MM      MM  IIIIII      NN      NN  UU      UU  PPPPPPPP    DDDDDDDD
SS          MMMM  MMMM  GG          MMMM  MMMM    II        NN      NN  UU      UU  PP      PP  DD      DD
SS          MMMM  MMMM  GG          MMMM  MMMM    II        NN      NN  UU      UU  PP      PP  DD      DD
SS          MM  MM  MM  GG          MM  MM  MM    II        NNNN    NN  UU      UU  PP      PP  DD      DD
SS          MM  MM  MM  GG          MM  MM  MM    II        NNNN    NN  UU      UU  PP      PP  DD      DD
 SSSSSS     MM      MM  GG          MM      MM    II        NN  NN  NN  UU      UU  PPPPPPPP    DD      DD
 SSSSSS     MM      MM  GG          MM      MM    II        NN  NN  NN  UU      UU  PPPPPPPP    DD      DD
       SS   MM      MM  GG  GGGGGG  MM      MM    II        NN    NNNN  UU      UU  PP          DD      DD
       SS   MM      MM  GG  GGGGGG  MM      MM    II        NN    NNNN  UU      UU  PP          DD      DD
       SS   MM      MM  GG      GG  MM      MM    II        NN      NN  UU      UU  PP          DD      DD    ....
       SS   MM      MM  GG      GG  MM      MM    II        NN      NN  UU      UU  PP          DD      DD    ....
SSSSSSSS    MM      MM    GGGGGG    MM      MM  IIIIII      NN      NN  UUUUUUUUUU  PP          DDDDDDDD      ....
SSSSSSSS    MM      MM    GGGGGG    MM      MM  IIIIII      NN      NN  UUUUUUUUUU  PP          DDDDDDDD      ....


LL          IIIIII       SSSSSSSS
LL          IIIIII       SSSSSSSS
LL            II        SS
LL            II        SS
LL            II        SS
LL            II        SS
LL            II         SSSSSS
LL            II         SSSSSS
LL            II               SS
LL            II               SS
LL            II               SS
LL            II               SS
LLLLLLLLLL  IIIIII      SSSSSSSS
LLLLLLLLLL  IIIIII      SSSSSSSS
```

```
:      1          0001  0 %TITLE 'SMG$$MINIMUM_UPDATE - Minimum update calculation and output'
:      2          0002  0 MODULE SMG$$MINIMUM_UPDATE (
:001 STAN1046     0003  0                 IDENT = '1-046' ! File: SMGMINUPD.B32 Edit: STAN1046
:      4-1        0004  0                 ) =
:      5          0005  1 BEGIN
:      6          0006  1 !
:      7          0007  1 !****************************************************************************
:      8          0008  1 !*                                                                          *
:      9          0009  1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
:     10          0010  1 !*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.                  *
:     11          0011  1 !*  ALL RIGHTS RESERVED.                                                    *
:     12          0012  1 !*                                                                          *
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:     14          0014  1 !*  ONLY IN  ACCORDANCE WITH  THE  TERMS  OF  SUCH  LICENSE  AND WITH THE  *
:     15          0015  1 !*  INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR  ANY  OTHER  *
:     16          0016  1 !*  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY  *
:     17          0017  1 !*  OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY  *
:     18          0018  1 !*  TRANSFERRED.                                                            *
:     19          0019  1 !*                                                                          *
:     20          0020  1 !*  THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE  *
:     21          0021  1 !*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT  *
:     22          0022  1 !*  CORPORATION.                                                            *
:     23          0023  1 !*                                                                          *
:     24          0024  1 !*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE  OR  RELIABILITY OF ITS  *
:     25          0025  1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                 *
:     26          0026  1 !*                                                                          *
:     27          0027  1 !*                                                                          *
:     28          0028  1 !****************************************************************************
:     29          0029  1 !
```

```
;    31          0030  1 !++
;    32          0031  1 ! FACILITY:     Screen Management
;    33          0032  1 !
;    34          0033  1 ! ABSTRACT:
;    35          0034  1 !
;    36          0035  1 !       This module contains routines which inspect two screen
;    37          0036  1 !       representations and calculate the near-minimal sequence of
;    38          0037  1 !       terminal commands to change the current contents of the screen
;    39          0038  1 !       to the new representation of the screen.
;    40          0039  1 !       Also contained herein are routines pertaining to buffering.
;    41          0040  1 !
;    42          0041  1 ! ENVIRONMENT:  User mode, Shared library routines.
;    43          0042  1 !
;    44          0043  1 ! AUTHOR: R. Reichert, CREATION DATE: 15-APR-1983
;    45          0044  1 !
;    46          0045  1 ! MODIFIED BY:
;    47          0046  1 !
;001 STAN1046    0047  1 ! 1-046 - STAN 21-Oct-1984. Don't reset attributes if none were set.
;002 STAN1046    0048  1 !-----------+
;003 STAN1046    0049  1 ! VMS V4.0  !
;004 STAN1046    0050  1 !-----------+
;    48          0051  1 ! 1-045 - STAN 17-Apr-1984. Store unknown terminal type correctly in PBCB.
;    49          0052  1 ! 1-044 - STAN  7-Apr-1984. Minor change for unsolicit input.
;    50          0053  1 ! 1-043 - STAN 31-Mar-1984. Fix dot bug in SET_ATTRIBUTES_OFF.
;    51          0054  1 ! 1-042 - STAN 21-Mar-1984. Fixed bug with border vector.
;    52          0055  1 ! 1-041 - STAN 18-Mar-1984. Renove use of %ASCID that causes PSECTS
;    53          0056  1 !         to be read/write thus making their use impractical for
;    54          0057  1 !         shared images.
;    55          0058  1 !         Home cursor before erasing screen.
;    56          0059  1 !         Change test for unknown terminal.
;    57          0060  1 ! 1-040 - STAN 14-Mar-1984. Ensure final cursor position doesn't change
;    58          0061  1 !         after removing any scrolling region in the exit handler.
;    59          0062  1 !         Change END_BOLD capability to BEGIN_NORMAL_RENDITION.
;    60          0063  1 !         Handle unknown terminals.
;    61          0064  1 !         Make truncation icon work again; also other control displays.
;    62          0065  1 !         Write two new routines, SET_ATTRIBUTES_ON and SET_ATTRIBUTES_OFF.
;    63          0066  1 ! 1-039 - STAN 23-Feb-1984. Bug fix.
;    64          0067  1 !         Initialize characteristics from terminal characteristics
;    65          0068  1 !         not from termtable capabilities.
;    66          0069  1 !         Allow long sequences for border vector.
;    67          0070  1 !         Add temporary SET_ATTRIBUTES_ONLY.
;    68          0071  1 ! 1-038 - STAN 21-Feb-1984. Bug fixes.
;    69          0072  1 ! 1-037 - STAN 21-Feb-1984. Store BS bit in PBCB.
;    70          0073  1 ! 1-036 - STAN 13-Feb-1984. Install Pam's fix for VT52s.
;    71          0074  1 !         Bug fix in exit handler.
;    72          0075  1 ! 1-035 - STAN  7-Feb-1984. Allow positive terminal codes.
;    73          0076  1 ! 1-034 - STAN 15-Jan-1983. Use TERMTABLE.
;    74          0077  1 !         Fix charset bug.
;    75          0078  1 ! 1-033 - STAN 14-Dec-1983. Fix dot bug in edit 32.
;    76          0079  1 ! 1-032 - RKR   2-Dec-1983. Add SMG$$ERASE_PASTEBOARD.  This inner routine
;    77          0080  1 !         goes directly to SMG$FLUSH_BUFFER rather than SMG$FLUSH_BUFFER.
;    78          0081  1 !         Redirect current calls to SMG$ERASE_PASTEBOARD to call
;    79          0082  1 !         SMG$$ERASE_PASTEBOARD instead.
;    80          0083  1 ! 1-031 - STAN  2-Nov-1983. Restore terminal width on exit.
;    81          0084  1 ! 1-030 - STAN 14-Oct-1983. Invalidate screen on CTRL/O.
;    82          0085  1 ! 1-029 - STAN 13-Oct-1983. Bug fix for scrolling wide lines.
;    83          0086  1 ! 1-028 - Handle DIAMOND and control character displays. STAN 5-Oct-1983.
```

```
1 ! 1-027 - Handle user graphics. STAN 19-sep-1983.
1 !         Clear screen on exit if so requested.
1 ! 1-026 - Add SMG$$AUTOB_OUTPUT so the autobender routines can
1 !         output directly to the pb without knowing the pb addr.
1 !         PLL 9-Sep-1983
1 ! 1-025 - Add SMG$ERASE_PASTEBOARD. STAN 25-Aug-1983
1 ! 1-024 - Changes to SMG$$CHECK_HDWR_SCROLL and SMG$$MIN_UPD to support
1 !         double-wide/double high text.  RKR 17-AUG-1983.
1 ! 1-023 - Add some preprocessing to SMG$$MIN_UPD to refine the range
1 !         of lines that actually changed.  RKR 12-AUG-1983.
1 ! 1-022 - Modify CHECK_HDWR_SCROLL to bypass situation where in fact
1 !         the virtual display contains line-by-line identical contents
1 !         except for the top or bottom line.
1 !         For example, if you fill up (except the last line ) a
1 !         virtual display with the text
1 !               COMMAND:
1 !               COMMAND:
1 !               COMMAND:
1 !
1 !         As you write the last line to COMMAND:, the current logic
1 !         will downscroll the virtual display and repaint the top line.
1 !         This will produce the right result but looks ugly.  Right
1 !         now this will also happen when you clear a display to all
1 !         spaces since it falls into the upscroll logic.
1 !         This fix intercepts the cases where the virtual display
1 !         has changed only in the 1st or last line, avoids scrolling,
1 !         and lets the rest of minimal update repaint just the last line
1 ! 1-021 - RKR Remove temporary fix to scrolling problem.  Compensating
1 !         code in SMG$$FIND_MIN_CURSOR_POS and SMG$$SET_PHYSICAL_CURSOR
1 !         should now take care of the problem.
1 ! 1-020 - RKR 3-AUG-1983. Consolidate lines of code pertaining to
1 !         actually setting the physical scrolling region into a new
1 !         subroutine SMG$$FORCE_SCROLL_REG.
1 ! 1-019 - RKR 1-AUG-1983. Modify SMG$$CHECK_HDWR_SCROLL to provide
1 !         downscrolling as well as upscrolling.
1 ! 1-018 - STAN 28-Jul-1983. Temporary fix to remove scrolling
1 !                           region after use.
1 ! 1-017 - RKR  15-JUL-1983. Fix bug found by J. Burrows.
1 ! 1-016 - RKR  14-JUL-1983. Minor code improvements and better comments
1 !         to newly-added code.
1 !
1 ! 1-015 - RKR  12-Jul-1983. Add SMG$$CHECK_HDWR_SCROLL.
1 ! 1-014 - STAN 21-Jun-1983. Temporary fix.
1 ! 1-013 - STAN 18-Jun-1983. File output.
1 ! 1-012 - RKR 20-May-1983 Remove external references to DD_ structures
1 !                         and counts -- no longer needed (or available).
1 ! 1-011 - STAN 16-May-1983 Pasteboard batching
1 ! 1-010 - STAN 11-May-1983
1 !         Use shift out and shift in.
1 ! 1-009 - STAN 10-May-1983
1 !         Temporary fix for rendition attribute.
1 ! 1-008 - STAN 8-May-1983
1 !         Flush buffer only on success exit.
1 ! 1-007 - STAN 2-May-1983
1 !         Fixed bug in buffering.
1 !         Handle border rendition.
1 !         Don't flush buffer on CLI forced exit.
```

```
;  141          0144  1 ! 1-006 - STAN 1-May-1983
;  142          0145  1 !         SMG$$PUT_OUTPUT,
;  143          0146  1 !         SMG$$OUTPUT,
;  144          0147  1 !         Finished SMG$$FLUSH_BUFFER.
;  145          0148  1 ! 1-005 - One additional tweak. RKR 26-APR-1983.
;  146          0149  1 ! 1-004 - Minor optimization.  RKR 26-APR-1983.
;  147          0150  1 ! 1-003 - Fix video attribute production.  RKR 21-APR-1983.
;  148          0151  1 ! 1-002 - Minor temp speed up.  RKR 18-APR-1983
;  149          0152  1 ! 1-001 - Shell for further development.  RKR 15-APR-1983.
;  150          0153  1 !--
```

```
1 %SBTTL 'Declarations'
1 !
1 ! TABLE OF CONTENTS:
1 !
1
1 FORWARD ROUTINE
1
1 !             Public entry points
1
1               SMG$ERASE_PASTEBOARD,              ! Clears screen
1
1               SMG$FLUSH_BUFFER,                  ! Flush remaining buffered
1                                                  ! output to screen by display id.
1
1               SMG$PUT_PASTEBOARD,                ! Output pasteboard via user routine
1
1               SMG$SNAPSHOT,                      ! Take an RMS snapshot
1
1 !             Private entry points
1
1               SMG$$CHECK_HDWR_SCROLL,            ! Check to see if harware scroll
1                                                  ! will help min. update
1
1               SMG$$ERASE_PASTEBOARD,             ! Inner ERASE_PASTEBOARD routine
1
1               SMG$$PBCB_EXIT_HANDLER,            ! Exit handler to flush pasteboard
1
1               SMG$$SETUP_TERMINAL_TYPE,          ! Find out type of terminal.
1
1               SMG$$FLUSH_BUFFER,                 ! Flush remaining buffered
1                                                  ! output to screen by PBCB.
1
1               SMG$$FORCE_SCROLL_REG,             ! Force physical scrolling
1                                                  ! region to that specified.
1
1               SMG$$PUT_SCREEN,                   ! Put text to screen with rendition
1                                                  ! and cursor positioning
1
1               SMG$$AUTOB_OUTPUT,                 ! Autobended entry to SMG$$OUTPUT
1
1               SMG$$SET_ATTRIBUTES_ON,
1               SMG$$SET_ATTRIBUTES_OFF,
1               SMG$$OUTPUT,                       ! Raw outputter
1               SMG$$MIN_UPD,                      ! force compatibility *** temp
1               SMG$$OUTPUT_PASTEBOARD,            ! Output pasteboard (use minimal
1                                                  ! update if this mode is enabled)
1
1 !             Local entry points
1
1               ESTABLISH_BORDER_VECTOR : NOVALUE,       ! Create border vector
1               RMS_RTN,                           ! Output record with RMS
1               OUTPUT;                            ! Low level output routine
1
1 !
1 ! SWITCHES:
1 !
1 !             in include files
```

```
1 !
1 ! LINKAGES:
1 !
1 !       in include files
1
1 !
1 ! INCLUDE FILES
1 !
1
1 REQUIRE 'RTLIN:SMGPROLOG';              ! defines psects, macros,
1                                         ! structures, & terminal symbols
1 REQUIRE 'RTLIN:STRLNK.REQ';             ! JSB linkages
1
1 !
1 ! EXTERNAL REFERENCES
1 !
1
1 EXTERNAL
1
1       PBD_L_COUNT,    ! No. of pasteboards we currently have
1
1       PBD_A_PBCB : VECTOR [PBD_K_MAX_PB, LONG],
1                       ! Table of addresses of PBCB's
1
1       PBD_V_PB_AVAIL : BITVECTOR [PBD_K_MAX_PB];
1                       ! Bit vector or pasteboard id numbers in use.
1
1 EXTERNAL LITERAL
1
1       SMG$_WILUSERMS, ! RMS will be used later to perform output
1       SMG$_INVPAS_ID; ! Invalid pasteboard id
1
1 EXTERNAL ROUTINE
1
1       LIB$GET_EF,
1       LIB$GET_VM,
1       SMG$$FIND_MIN_CURSOR_POS,
1       SMG$BEGIN_PASTEBOARD_UPDATE,
1       SMG$END_PASTEBOARD_UPDATE,
1       SMG$$OUTPUT_MINIMAL_UPDATE;
1
1 OWN
1
1       FIRST_TIME_FLAG : INITIAL (0);  !***** Kludge -- ignore ***
```

```
1 %SBTTL 'SMG$ERASE_PASTEBOARD- Clear Screen'
1 GLOBAL ROUTINE SMG$ERASE_PASTEBOARD ( PASTEBOARD_ID ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine erases the entire pasteboard.
1 !       The physical cursor is left at (1,1).
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$ERASE_PASTEBOARD ( PASTEBOARD_ID.rl.r )
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       PASTEBOARD_ID.rl.r      The id of the PASTEBOARD which is to be cleared.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       None
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       None
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !       SMG$_WRONUMARG  Wrong number of arguments.
1 !       SMG$_INVPAS_ID  Invalid pasteboard id.
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
2    BEGIN
2
2    LOCAL
2       PBCB    : REF $PBCB_DECL;       ! Address of pasteboard control block.
2
2
2    $SMG$VALIDATE_ARGCOUNT(1,1);
2
2 !+
2 ! Isolate pasteboard control block.
2 !-
2
2    $SMG$GET_PBCB(.PASTEBOARD_ID,PBCB); ! Get address of PBCB
2
2    RETURN (SMG$$ERASE_PASTEBOARD (.PBCB));
2
1 END;              ! routine SMG$ERASE_PASTEBOARD

                                        .TITLE  SMG$$MINIMUM_UPDATE SMG$$MINIMUM_UPDATE - Minim
;                                                                   um update calculatio
                                        .IDENT  \1-046\
                                                        .PSECT  _SMG$DATA,NOEXE,  PIC,2

                                  00000000  00000 FIRST_TIME_FLAG:
                                                        .LONG   0                                              ;

                                                        .EXTRN  PBD_L_COUNT, PBD_A_PBCB
                                                        .EXTRN  PBD_V_PB_AVAIL, SMG$_WILUSERMS
                                                        .EXTRN  SMG$_INVPAS_ID, LIB$GET_EF
                                                        .EXTRN  LIB$GET_VM, SMG$$FIND_MIN_CURSOR_POS
                                                        .EXTRN  SMG$BEGIN_PASTEBOARD_UPDATE
                                                        .EXTRN  SMG$END_PASTEBOARD_UPDATE
                                                        .EXTRN  SMG$$OUTPUT_MINIMAL_UPDATE
                                                        .EXTRN  SMG$_WRONUMARG

                                                        .PSECT  _SMG$CODE,NOWRT,  SHR,  PIC,2

                                      0000 00000        .ENTRY  SMG$ERASE_PASTEBOARD, Save nothing             : 0518
                    01             6C  91 00002         CMPB    (AP), #1                                       : 0557
                                   08  13 00005         BEQL    1$                                             :
                    50 00000000G   8F  D0 00007         MOVL    #SMG$_WRONUMARG, R0                            :
                                       04 0000E         RET                                                    :
                    50        04   BC  D0 0000F 1$:     MOVL    @PASTEBOARD_ID, R0                             : 0563
                                   11  19 00013         BLSS    2$                                             :
              00000000G 00             50  D1 00015         CMPL    R0, PBD_L_COUNT                                :
                                   08  14 0001C         BGTR    2$                                             :
           08 00000000G 00             50  E0 0001E         BBS     R0, PBD_V_PB_AVAIL, 3$                         :
                    50 00000000G   8F  D0 00026 2$:     MOVL    #SMG$_INVPAS_ID, R0                            :
                                       04 0002D         RET                                                    :
                    50 00000000G0040   D0 0002E 3$:     MOVL    PBD_A_PBCB[R0], PBCB                           :
                                   50  DD 00036         PUSHL   PBCB                                           : 0565
                 0000V CF          01  FB 00038         CALLS   #1, SMG$$ERASE_PASTEBOARD                      :
                                       04 0003D         RET                                                    : 0567

; Routine Size:  62 bytes,    Routine Base:  _SMG$CODE + 0000
```

```
1 %SBTTL 'SMG$$ERASE_PASTEBOARD- Clear Screen'
1 GLOBAL ROUTINE SMG$$ERASE_PASTEBOARD ( PBCB : REF $PBCB_DECL ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine erases the entire pasteboard.
1 !       The physical cursor is left at (1,1).
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$ERASE_PASTEBOARD ( PBCB.rab.r)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       PBCB.rab.r      Address of pasteboard control block
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       None
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       None
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
2 BEGIN
2
2 LOCAL
2
2         STATUS,
2         WCB     : REF $WCB_DECL;        ! Address of window control block.
2
2 !+
2 ! Flush out our buffers.
2 !-
2
2     STATUS=SMG$$FLUSH_BUFFER(.PBCB);
2     IF NOT .STATUS THEN SIGNAL(.STATUS);
2
2 !+
2 ! Home the cursor. (erase_whole_display doesn't necessarily do that).
2 !-
2
2     $SMG$GET_TERM_DATA(HOME);
2     STATUS=OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],.PBCB[PBCB_A_CAP_BUFFER]);
2     IF NOT .STATUS THEN RETURN .STATUS;
2
2 !+
2 ! Physically clear the screen with an escape sequence.
2 !-
2
2     $SMG$GET_TERM_DATA(ERASE_WHOLE_DISPLAY);
2
2 !+
2 ! Make sure it happens immediately by calling OUTPUT rather than SMG$$OUTPUT.
2 ! This way it won't get buffered.
2 !-
2
2     STATUS=OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],.PBCB[PBCB_A_CAP_BUFFER]);
2     IF NOT .STATUS THEN RETURN .STATUS;
2
2 !+
2 ! Set the screen buffers to all blanks.
2 !-
2
2     WCB=.PBCB[PBCB_A_WCB];
2     CH$FILL(%C' ',.WCB[WCB_L_BUFSIZE],.WCB[WCB_A_TEXT_BUF]);
2     CH$FILL(%C' ',.WCB[WCB_L_BUFSIZE],.WCB[WCB_A_SCR_TEXT_BUF]);
2     CH$FILL(0,    .WCB[WCB_L_BUFSIZE],.WCB[WCB_A_ATTR_BUF]);
2     CH$FILL(0,    .WCB[WCB_L_BUFSIZE],.WCB[WCB_A_SCR_ATTR_BUF]);
2     IF .WCB[WCB_A_CHAR_SET_BUF] NEQ 0
2     THEN
3         BEGIN
3         CH$FILL(0,.WCB[WCB_L_BUFSIZE],.WCB[WCB_A_CHAR_SET_BUF]);
2         END;
2
2     IF .WCB[WCB_A_SCR_CHAR_SET_BUF] NEQ 0
2     THEN
3         BEGIN
3         CH$FILL(0,.WCB[WCB_L_BUFSIZE],.WCB[WCB_A_SCR_CHAR_SET_BUF]);
2         END;
2
```

```
;    397        0657  2 !+
;    398        0658  2 ! The physical cursor moves to (1,1).
;    399        0659  2 !-
;    400        0660  2
;    401        0661  2     WCB[WCB_W_CURR_CUR_ROW]=1;
;    402        0662  2     WCB[WCB_W_OLD_CUR_ROW] =1;
;    403        0663  2     WCB[WCB_W_CURR_CUR_COL]=1;
;    404        0664  2     WCB[WCB_W_OLD_CUR_COL] =1;
;    405        0665  2
;    406        0666  2 !+
;    407        0667  2 ! The line characteristics get set back to 0.
;    408        0668  2 !-
;    409        0669  2
;    410        0670  2     CH$FILL(0,.WCB[WCB_W_NO_ROWS]+1,.WCB[WCB_A_LINE_CHAR]);
;    411        0671  2     CH$FILL(0,.WCB[WCB_W_NO_ROWS]+1,.WCB[WCB_A_SCR_LINE_CHAR]);
;    412        0672  2
;    413        0673  2     RETURN       SS$_NORMAL
;    414        0674  2
;    415        0675  1 END;             ! routine SMG$$ERASE_PASTEBOARD


                                                              .EXTRN   SMG$GET_TERM_DATA

                                      01FC 00000              .ENTRY   SMG$$ERASE_PASTEBOARD, Save R2,R3,R4,R5,R6,-; 0569
                                                                       R7,R8                                        :
                       58 00000000G  00  9E 00002             MOVAB    SMG$GET_TERM_DATA, R8                        :
                       5E            10  C2 00009             SUBL2    #16, SP                                      :
                       52      04    AC  D0 0000C             MOVL     PBCB, R2                                     ; 0611
                                     52  DD 00010             PUSHL    R2                                           :
                 0000V CF            01  FB 00012             CALLS    #1, SMG$$FLUSH_BUFFER                        :
                       56            50  D0 00017             MOVL     R0, STATUS                                   :
                       09            56  E8 0001A             BLBS     STATUS, 1$                                   ; 0612
                                     56  DD 0001D             PUSHL    STATUS                                       :
             00000000G 00            01  FB 0001F             CALLS    #1, LIB$SIGNAL                               :
                       53    0108    C2  9E 00026 1$:         MOVAB    264(R2), R3                                  ; 0618
                       55    00FC    C2  9E 0002B             MOVAB    252(R2), R5                                  :
                                     65  D5 00030             TSTL     (R5)                                         :
                                     04  12 00032             BNEQ     2$                                           :
                                     63  D4 00034             CLRL     (R3)                                         :
                                     21  11 00036             BRB      3$                                           :
                               04    AE  D4 00038 2$:         CLRL     INPUT_ARGS                                   :
                               04    AE  9F 0003B             PUSHAB   INPUT_ARGS                                   :
                             0104    C2  DD 0003E             PUSHL    260(R2)                                      :
                                     53  DD 00042             PUSHL    R3                                           :
                             0100    C2  9F 00044             PUSHAB   256(R2)                                      :
                    10 AE    01DC    8F  3C 00048             MOVZWL   #476, 16(SP)                                 :
                               10    AE  9F 0004E             PUSHAB   16(SP)                                       :
                                     55  DD 00051             PUSHL    R5                                           :
                       68            06  FB 00053             CALLS    #6, SMG$GET_TERM_DATA                        :
                       3A            50  E9 00056             BLBC     STATUS, 5$                                   :
                       54    0104    C2  9E 00059 3$:         MOVAB    260(R2), R4                                  ; 0619
                                     64  DD 0005E             PUSHL    (R4)                                         :
                                     63  DD 00060             PUSHL    (R3)                                         :
                                     52  DD 00062             PUSHL    R2                                           :
                 0000V CF            03  FB 00064             CALLS    #3, OUTPUT                                   :
                       56            50  D0 00069             MOVL     R0, STATUS                                   :
```

```
                                          38            56  E9 0006C           BLBC     STATUS, 7$                              : 0620
                                                        65  D5 0006F           TSTL     (R5)                                    : 0626
                                                        04  12 00071           BNEQ     4$                                      :
                                                        63  D4 00073           CLRL     (R3)                                    :
                                                        1F  11 00075           BRB      6$                                      :
                                                 04     AE  D4 00077 4$:       CLRL     INPUT_ARGS                              :
                                                 04     AE  9F 0007A           PUSHAB   INPUT_ARGS                              :
                                                        64  DD 0007D           PUSHL    (R4)                                    :
                                                        53  DD 0007F           PUSHL    R3                                      :
                                               0100     C2  9F 00081           PUSHAB   256(R2)                                 :
                                    10    AE   01DA     8F  3C 00085           MOVZWL   #474, 16(SP)                            :
                                                 10     AE  9F 0008B           PUSHAB   16(SP)                                  :
                                                        55  DD 0008E           PUSHL    R5                                      :
                                          68            06  FB 00090           CALLS    #6, SMG$GET_TERM_DATA                   :
                                          78            50  E9 00093 5$:       BLBC     STATUS, 11$                             :
                                                        64  DD 00096 6$:       PUSHL    (R4)                                    : 0633
                                                        63  DD 00098           PUSHL    (R3)                                    :
                                                        52  DD 0009A           PUSHL    R2                                      :
                                 0000V    CF            03  FB 0009C           CALLS    #3, OUTPUT                              :
                                          56            50  D0 000A1           MOVL     R0, STATUS                              :
                                          04            56  E8 000A4           BLBS     STATUS, 8$                              : 0634
                                          50            56  D0 000A7 7$:       MOVL     STATUS, R0                              :
                                                            04 000AA           RET                                              :
                                          56     08     A2  D0 000AB 8$:       MOVL     8(R2), WCB                              : 0640
                                          57     28     A6  D0 000AF           MOVL     40(WCB), R7                             : 0641
            57            20              6E            00  2C 000B3           MOVC5    #0, (SP), #32, R7, @8(WCB)              :
                                                 08     B6     000B8                                                            :
            57            20              6E            00  2C 000BA           MOVC5    #0, (SP), #32, R7, @20(WCB)             : 0642
                                                 14     B6     000BF                                                            :
            57            00              6E            00  2C 000C1           MuVC5    #0, (SP), #0, R7, @12(WCB)              : 0643
                                                 0C     B6     000C6                                                            :
            57            00              6E            00  2C 000C8           MOVC5    #0, (SP), #0, R7, @24(WCB)              : 0644
                                                 18     B6     000CD                                                            :
                                                 10     A6  D5 000CF           TSTL     16(WCB)                                 : 0645
                                                        07  13 000D2           BEQL     9$                                      :
            57            00              6E            00  2C 000D4           MOVC5    #0, (SP), #0, R7, @16(WCB)              : 0648
                                                 10     B6     000D9                                                            :
                                                 1C     A6  D5 000DB 9$:       TSTL     28(WCB)                                 : 0651
                                                        07  13 000DE           BEQL     10$                                     :
            57            00              6E            00  2C 000E0           MOVC5    #0, (SP), #0, R7, @28(WCB)              : 0654
                                                 1C     B6     000E5                                                            :
                                    24    A6 00010001   8F  D0 000E7 10$:      MOVL     #65537, 36(WCB)                         : 0662
                                    20    A6 00010001   8F  D0 000EF           MOVL     #65537, 32(WCB)                         : 0661
                                    57           02     A6  3C 000F7           MOVZWL   2(WCB), R7                              : 0670
                                                        57  D6 000FB           INCL     R7                                      :
            57            00              6E            00  2C 000FD           MOVC5    #0, (SP), #0, R7, @44(WCB)              :
                                                 2C     B6     00102                                                            :
            57            00              6E            00  2C 00104           MOVC5    #0, (SP), #0, R7, @48(WCB)              : 0671
                                                 30     B6     00109                                                            :
                                          50            01  D0 0010B           MOVL     #1, R0                                  : 0673
                                                            04 0010E 11$:      RET                                              : 0675

; Routine Size:  271 bytes,    Routine Base:  _SMG$CODE + 003E
```

```
1 %SBTTL 'SMG$FLUSH_BUFFER - Flush all buffered output to terminal'
1 GLOBAL ROUTINE SMG$FLUSH_BUFFER (
1                                  PASTEBOARD_ID
1                                ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !        This routine causes all output which has been buffered up but
1 !        not yet sent to the terminal, to be output at once.
1 !        It does not matter if our caller is also buffering output.
1 !        When a user requests a flush, we FLUSH. And NOW.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !        ret_status.wlc.v = SMG$FLUSH_BUFFER ( PASTEBOARD_ID.rl.r )
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !        PASTEBOARD_ID.rl.r      The id of the PASTEBOARD for which the
1 !                                flushing action is to take place.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !        None
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !        None
1 !
1 ! COMPLETION STATUS:
1 !
1 !        SS$_NORMAL      Normal successful completion
1 !        SMG$_WRONUMARG  Wrong number of arguments.
1 !        SMG$_INVPAS_ID  Invalid pasteboard id.
1 !
1 ! SIDE EFFECTS:
1 !
1 !        NONE
1 !--
```

```
;  457          0715  2 BEGIN
;  458          0716  2
;  459          0717  2 LOCAL
;  460          0718  2
;  461          0719  2         PBCB;                 ! Address of associated
;  462          0720  2                               ! pasteboard control block.
;  463          0721  2
;  464          0722  2 !+
;  465          0723  2 ! Isolate pasteboard control block and call inner routine to do the
;  466          0724  2 ! work.
;  467          0725  2 !-
;  468          0726  2
;  469          0727  2 $SMG$GET_PBCB(.PASTEBOARD_ID,PBCB);      ! Get address of PBCB
;  470          0728  2
;  471          0729  2 RETURN SMG$$FLUSH_BUFFER(.PBCB)
;  472          0730  2
;  473          0731  1 END;                          ! Routine SMG$FLUSH_BUFFER



                                       0000 00000             .ENTRY   SMG$FLUSH_BUFFER, Save nothing          ; 0677
                    50       04    BC    D0 00002             MOVL     @PASTEBOARD_ID, R0                      ; 0727
                                   11    19 00006             BLSS     1$                                      ;
             00000000G  00         50    D1 00008             CMPL     R0, PBD_L_COUNT                         ;
                                   08    14 0000F             BGTR     1$                                      ;
          08 00000000G  00         50    E0 00011             BBS      R0, PBD_V_PB_AVAIL, 2$                  ;
                    50 00000000G   8F    D0 00019 1$:         MOVL     #SMG$_INVPAS_ID, R0                     ;
                                         04 00020             RET                                              ;
                    50 00000000G0040     D0 00021 2$:         MOVL     PBD_A_PBCB[R0], PBCB                    ;
                                   50    DD 00029             PUSHL    PBCB                                    ; 0729
                 0000V  CF         01    FB 0002B             CALLS    #1, SMG$$FLUSH_BUFFER                   ;
                                         04 00030             RET                                              ; 0731

; Routine Size:  49 bytes,    Routine Base:  _SMG$CODE + 014D
```

```
1 %SBTTL 'SMG$$CHECK_HDWR_SCROLL - Check to see if use of hardware scroll will help'
1 GLOBAL ROUTINE SMG$$CHECK_HDWR_SCROLL (
1                                       PBCB : REF $PBCB_DECL
1                                       ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine checks to see if the WCB text buffer has changed
1 !       in such a way that we can optimize the output by using
1 !       hardware scrolling regions and letting the terminal scroll.
1 !
1 !       Screen Text            Text
1 !       Buffer                 Buffer
1 !
1 !       +---------------+      +---------------+
1 !       :               :      :               :
1 !       :               :      :               :
1 ! N --->:               :      :               :  <--- N
1 !       :               :      :               :
1 !       :               :      :               :
1 ! M --->:               :      :               :  <--- M
1 !       :               :      :               :
1 !       :               :      :               :
1 !       +---------------+      +---------------+
1 !
1 !       If information in the PBCB tells us that lines N through M
1 !       of the text buffer have been changed, we check to see if
1 !
1 !               Line N   of Text Buffer = Line N+1 of Screen Text Buf.
1 !               Line N+1 of Text Buffer = Line N+2 of Screen Text Buf.
1 !               .
1 !               .
1 !               .
1 !
1 !               Line M-1 of Text Buffer = Line M of Screen Text Buf.
1 !
1 !       This can be done with a single compare instruction since the
1 !       areas are continguous.
1 !
1 !       If these areas are the same, the probability is very high that
1 !       the text buffer was changed by scrolling line N through M
1 !       upward by one line and inserting a new line (M) into the buffer.
1 !       If we determine that this is the case, we use the hardware to
1 !       accomplish the scroll for us, update the screen text buffer to
1 !       reflect the effects of the scroll, and then fall into the
1 !       normal minimal update logic to patch up minor differences, e.g.,
1 !       attribute information.
1 !
1 !       In an analogous fashion, we also check to see if the change
1 !       represents a downscroll of one line.
1 !
1 !       This routine is called only when it has already been established
1 !       that we are dealing with a device that has settable scrolling
1 !       regions and at least 2 consecutive lines have changed.
1 !
1 ! CALLING SEQUENCE:
1 !
```

```
;    532        0789    1 !         ret_status.wlc.v = SMG$$CHECK_HDWR_SCROLL ( PBCB.rl.r)
;    533        0790    1 !
;    534        0791    1 ! FORMAL PARAMETERS:
;    535        0792    1 !
;    536        0793    1 !         PBCB.rl.r          Address of a Pasteboard Control Block
;    537        0794    1 !
;    538        0795    1 ! IMPLICIT INPUTS:
;    539        0796    1 !
;    540        0797    1 !         NONE
;    541        0798    1 !
;    542        0799    1 ! IMPLICIT OUTPUTS:
;    543        0800    1 !
;    544        0801    1 !         NONE
;    545        0802    1 !
;    546        0803    1 ! COMPLETION STATUS:
;    547        0804    1 !
;    548        0805    1 !         SS$_NORMAL         Normal Successful Completion
;    549        0806    1 !
;    550        0807    1 ! SIDE EFFECTS:
;    551        0808    1 !
;    552        0809    1 !         NONE
;    553        0810    1 !--
;  555        0811  2 BEGIN
;  556        0812  2
;  557        0813  2 LOCAL
;  558        0814  2
;  559        0815  2           STATUS,                 ! Status of subroutine calls
;  560        0816  2
;  561        0817  2           WCB : REF $WCB_DECL,    ! Address of associated Window Control
;  562        0818  2                                   ! Block
;  563        0819  2
;  564        0820  2           TB,                     ! Index of 1st byte in WCB text buffer
;  565        0821  2                                   ! that may have been changed.
;  566        0822  2
;  567        0823  2           STB,                    ! Index into WCB Screen Text buffer
;  568        0824  2                                   ! of starting byte position which
;  569        0825  2                                   ! should be the same if changes were
;  570        0826  2                                   ! made via a single-line scroll
;  571        0827  2                                   ! operation.
;  572        0828  2
;  573        0829  2           WIDTH,                  ! Longword counterpart of
;  574        0830  2                                   ! .WCB [WCB_W_NO_COLS] -- extracted to
;  575        0831  2                                   ! yield better code.
;  576        0832  2
;  577        0833  2           BTC,                    ! Number of bytes that need to be
;  578        0834  2                                   ! compared.
;  579        0835  2
;  580        0836  2           LCS : REF VECTOR [,BYTE],       ! Address of line
;  581        0837  2                                           ! characteristics vector assoc.
;  582        0838  2                                           ! with WCB [WCB_A_SCR_TEXT_BUF].
;  583        0839  2
;  584        0840  2           SR,       ! Top or bottom line of scrolling region.
;  585        0841  2                     ! =.LCR if scrolling up
;  586        0842  2                     ! =.FCR if scrolling down
;  587        0843  2
;  588        0844  2           FCR,      ! First changed row = .PBCB [PBCB_W_FIRST_CHANGED_ROW]
;  589        0845  2           LCR,      ! Last  changed row = .PBCB [PBCB_W_LAST_CHANGED_ROW]
;  590        0846  2                     ! Extracting the fields above gives better code
;  591        0847  2
;  592        0848  2           DL;       ! Delta number of lines (-1) that changed, = .LCR - .FCR
```

```
2 WCB = .PBCB [PBCB_A_WCB];
2
2 !+
2 ! Extract following fields for better code generation.
2 !-
2
2 WIDTH = .WCB [WCB_W_NO_COLS];
2 FCR = .PBCB [PBCB_W_FIRST_CHANGED_ROW];
2 LCR = .PBCB [PBCB_W_LAST_CHANGED_ROW];
2
2 DL = .LCR - .FCR;        ! Known to be 1 or greater
2
2 !+
2 ! Calc. the starting byte position in the text buffer that could have
2 ! changed.
2 !-
2
2 TB = (.FCR - 1) * .WIDTH;
2
2 !+
2 ! Calc. the corresponding byte position in the screen text buffer that
2 ! should match if change was brought about by an upward scroll of one
2 ! line -- a common phenomena.  This will be one line further down in the
2 ! buffer.
2 !-
2
2 STB = .TB + .WIDTH;
2
2 !+
2 ! Calc. how many byte positions in the text buffer should match the
2 ! given slot in the screen text buffer.
2 !-
2
2 BTC = ( .DL ) * .WIDTH;
2
2 !+
2 ! Check to see if an upscroll or downscroll of one line accounts for
2 ! the differences between the text and screen buffers.
2 !-
3 IF (CH$EQL ( .BTC, .WCB [WCB_A_TEXT_BUF]        + .TB,
3              .BTC, .WCB [WCB_A_SCR_TEXT_BUF] + .STB))
2 THEN
2     SR = .LCR    ! Will be upscrolling
2 ELSE
3     BEGIN        ! Check for downscrolling
3     TB = .FCR * .WIDTH ; ! Line N+1
3     STB = .TB - .WIDTH ; ! Line N
4     IF (CH$EQL ( .BTC, .WCB [WCB_A_TEXT_BUF]        + .TB,
4                  .BTC, .WCB [WCB_A_SCR_TEXT_BUF] + .STB))
3     THEN
3         SR = .FCR        ! Will be downscrolling
3     ELSE
3         RETURN (SS$_NORMAL);     ! Quit -- neither upscroll or downscroll
3                                  ! of 1 line will do it.
2     END;        ! Check for downscrolling
2
2 !+
2 ! If we reach here, we have a candidate for scrolling.
2 ! Check to see if physical scrolling region on the terminal matches
2 ! the area we want to scroll.  If not, set it to the desired region
2 ! and record where we left it.
2 !-
2
2 IF .FCR  NEQ .PBCB [PBCB_W_TOP_SCROLL_LINE]      OR
2    .LCR  NEQ .PBCB [PBCB_W_BOT_SCROLL_LINE]
2 THEN
3         BEGIN   ! Not where we want it, reset
4         IF NOT (STATUS = SMG$$FORCE_SCROLL_REG ( .PBCB, .FCR, .LCR))
3         THEN
3            RETURN .STATUS;
3
2         END;     ! Not where we want it, reset
2
2 !+
2 ! Set physical cursor to either top or bottom line of scroll region.
2 !-
2
2    SMG$$FIND_MIN_CURSOR_POS ( .PBCB,
2                               .WCB [WCB_W_OLD_CUR_ROW],  ! Current
2                               .WCB [WCB_W_OLD_CUR_COL],  ! Current
2                               .SR,                       ! Desired
2                               1);                        ! Desired
2 !+
2 ! Update screen image with respect to current cursor positioning.
2 !-
2
2     WCB [WCB_W_OLD_CUR_ROW] = .SR;
2     WCB [WCB_W_OLD_CUR_COL] = 1;
2     WCB [WCB_W_CURR_CUR_ROW] = .SR;
2     WCB [WCB_W_CURR_CUR_COL] = 1;
2
2 !+
2 ! Set up base of line characteristics vector for what is currently
2 ! on the screen.  This vector will have to have its entries shuffled
2 ! up or down.
2 !-
2     LCS = .WCB [WCB_A_SCR_LINE_CHAR];
2
2 !+
2 ! Write a line-feed into the bottom line of the scrolling region or
2 ! perform a down_scroll in the top line of the scrolling region,
2 ! causing current lines N through M to scroll either down or up.
2 !       ***NOTE:  This is not the best solution.  Writing a <LF> will
2 !                 cause a blank line to be written with video attributes
2 !                 of "normal".  This line should really be line M, with
2 !                 all its video attributes in all their glory.
2 !                 That takes too long to compute.  We compromise with
2 !                 a line of normal blanks and let the rest of Min Upd
2 !                 straigten it out later, even though the line will get
2 !                 written twice and will flicker at low baud rates.
2 !-
2
2 IF .SR EQL .LCR
```

```
2 THEN
3     BEGIN         ! Upscroll action
3     !+
3     ! Upscroll by outputting a <LF> in last line of scrolling region.
3     !-
3
3 !     $SMG$GET_TERM_DATA(SCROLL_FORWARD);
3 !     IF .PBCB[PBCB_L_CAP_LENGTH] EQL 0
3 !     THEN
3 !        RETURN 1;
3 !
3 !     STATUS = SMG$$OUTPUT (.PBCB, .PBCB[PBCB_L_CAP_LENGTH],
3 !                                  .PBCB[PBCB_A_CAP_BUFFER]);
3 !     IF NOT .STATUS THEN RETURN .STATUS;
3
3     STATUS = SMG$$OUTPUT (.PBCB, 1, UPLIT BYTE(10));
3     IF NOT .STATUS THEN RETURN .STATUS;
3
3     !+
3     ! Slide screen line characteristics vector up by one to correspond
3     ! to lines that got scrolled up.
3     !-
3     CH$MOVE ( .DL, LCS [.FCR+1], LCS [.FCR]);
3     LCS[.LCR]=0;
3
3     END           ! Upscroll action
3
2 ELSE
2
3     BEGIN         ! Downscroll action
3
3     !+
3     ! Downscroll by emitting a reverse index or a down-scroll escape sequence.
3     !-
3
3     $SMG$GET_TERM_DATA(REVERSE_INDEX);
3     IF .PBCB[PBCB_L_CAP_LENGTH] EQL 0
3     THEN
4        BEGIN
4        $SMG$GET_TERM_DATA(SCROLL_REVERSE,1);
4        IF .PBCB[PBCB_L_CAP_LENGTH] EQL 0
4        THEN
4           RETURN 1;
3        END;
3
3     STATUS = SMG$$OUTPUT (.PBCB, .PBCB[PBCB_L_CAP_LENGTH],
3                                  .PBCB[PBCB_A_CAP_BUFFER]);
3     IF NOT .STATUS THEN RETURN .STATUS;
3
3     !+
3     ! Slide screen line characteristics vector down by one to correspond
3     ! to lines that got scrolled down.
3     !-
3     CH$MOVE ( .DL, LCS [.FCR], LCS [.FCR+1]);
3     LCS[.FCR]=0;
3
2     END;          ! Downscroll action
```

```
2
2
2   !+
2   ! Update screen buffer to reflect what scrolling operation should have
2   ! done to the screen.
2   !-
2       ! Text that got scrolled, move screen text buffer by 1 line
2       CH$MOVE ( .BTC,
2                 .WCB [WCB_A_SCR_TEXT_BUF] + .STB,
2                 .WCB [WCB_A_SCR_TEXT_BUF] + .TB);
2
2       ! Attributes that go along with text that scrolled
2       CH$MOVE ( .BTC,
2                 .WCB [WCB_A_SCR_ATTR_BUF] + .STB,
2                 .WCB [WCB_A_SCR_ATTR_BUF] + .TB);
2
2       ! Blank line introduced by scroll operation
2       CH$FILL ( %C' ',                                ! Fill
2                 .WIDTH,                               ! No. of chars
2                 .WCB [WCB_A_SCR_TEXT_BUF] + (.SR -1) * .WIDTH);
2
2       ! Attributes for blank line introduced by scroll
2       !    NOTE: See note above.  This line of code is related.
2
2       CH$FILL ( 0,                                    ! Fill
2                 .WIDTH,                               ! No. of chars
2                 .WCB [WCB_A_SCR_ATTR_BUF] + (.SR -1) * .WIDTH);
2
2   RETURN  SS$_NORMAL
2
1   END;                    ! Routine SMG$$CHECK_HDWR_SCROLL


                                        0A  0017E P.AAA:   .BYTE    10                                          ;


                                      0FFC 00000           .ENTRY   SMG$$CHECK_HDWR_SCROLL, Save R2,R3,R4,R5,-  ; 0733
                                                                    R6,R7,R8,R9,R10,R11
                   5E            14  C2 00002              SUBL2    #20, SP                                     ;
                   5A       04   AC  D0 00005              MOVL     PBCB, R10                                   ; 0849
                   58       08   AA  D0 00009              MOVL     8(R10), WCB                                 ;
                   7E       06   A8  3C 0000D              MOVZWL   6(WCB), WIDTH                               ; 0855
                   56     00A8   CA  32 00011              CVTWL    168(R10), FCR                               ; 0856
            04     AE     00AA   CA  32 00016              CVTWL    170(R10), LCR                               ; 0857
    7E      04     AE            56  C3 0001C              SUBL3    FCR, LCR, DL                                ; 0859
                   50       FF   A6  9E 00021              MOVAB    -1(R6), R0                                  ; 0866
    5B             50       04   AE  C5 00025              MULL3    WIDTH, R0, TB                               ;
                            04 BE4B  9F 0002A              PUSHAB   @WIDTH[TB]                                  ; 0875
    7E      04     AE       08   AE  C5 0002E              MULL3    WIDTH, DL, BTC                              ; 0882
                   54       04   AE  D0 00034              MOVL     STB, R4                                     ; 0888
 14 B844    08 B84B              6E  29 00038              CMPC3    BTC, @8(WCB)[TB], @20(WCB)[R4]              ;
                                 06  12 00040              BNEQ     1$                                          ;
                   57       10   AE  D0 00042              MOVL     LCR, SR                                     ; 0891
                                 1F  11 00046              BRB      3$                                          ;
    5B             56       0C   AE  C5 00048 1$:          MULL3    WIDTH, FCR, TB                              ; 0894
```

```
             04    AE             5B     0C   AE  C3 0004D        SUBL3   WIDTH, TB, STB                          0895
                                  54     04   AE  D0 00053        MOVL    STB, R4                                 0896
          14 B844          08 B84B            6E  29 00057        CMPC3   BTC, @8(WCB)[TB], @20(WCB)[R4]
                                              03  13 0005F        BEQL    2$
                                        0146  31 00061            BRW     18$
                                  57          56  D0 00064  2$:   MOVL    FCR, SR                                 0899
        56   00F4    CA           10          00  ED 00067  3$:   CMPZV   #0, #16, 244(R10), FCR                  0912
                                              0A  12 0006E        BNEQ    4$
  10    AE   00F6    CA           10          00  ED 00070        CMPZV   #0, #16, 246(R10), LCR                  0913
                                              14  13 00078        BEQL    5$
                                         10   AE  DD 0007A  4$:   PUSHL   LCR                                     0916
                                              56  DD 0007D        PUSHL   FCR
                                              5A  DD 0007F        PUSHL   R10
                           0000V  CF          03  FB 00081        CALLS   #3, SMG$$FORCE_SCROLL_REG
                              14  AE          50  D0 00086        MOVL    R0, STATUS
                                  40     14   AE  E9 0008A        BLBC    STATUS, 6$
                                              01  DD 0008E  5$:   PUSHL   #1                                      0926
                                              57  DD 00090        PUSHL   SR                                      0929
                                  7E     26   A8  32 00092        CVTWL   38(WCB), -(SP)                          0928
                                  7E     24   A8  32 00096        CVTWL   36(WCB), -(SP)                          0927
                                              5A  DD 0009A        PUSHL   R10                                     0926
                       00000000G  00          05  FB 0009C        CALLS   #5, SMG$$FIND_MIN_CURSOR_POS
                              24  A8          57  B0 000A3        MOVW    SR, 36(WCB)                             0936
                              26  A8          01  B0 000A7        MOVW    #1, 38(WCB)                             0937
                              20  A8          57  B0 000AB        MOVW    SR, 32(WCB)                             0938
                              22  A8          01  B0 000AF        MOVW    #1, 34(WCB)                             0939
                                  59     30   A8  D0 000B3        MOVL    48(WCB), LCS                            0946
                              10  AE          57  D1 000B7        CMPL    SR, LCR                                 0962
                                              27  12 000BB        BNEQ    8$
                                       FF3E   CF  9F 000BD        PUSHAB  P.AAA                                   0978
                                              01  DD 000C1        PUSHL   #1
                                              5A  DD 000C3        PUSHL   R10
                           0000V  CF          03  FB 000C5        CALLS   #3, SMG$$OUTPUT
                              14  AE          50  D0 000CA        MOVL    R0, STATUS
                                  03     14   AE  E8 000CE  6$:   BLBS    STATUS, 7$                              0974
                                        0095  31 000D2            BRW     15$
                 6649      01 A649       08   AE  28 000D5  7$:   MOVC3   DL, 1(FCR)[LCS], (FCR)[LCS]             0985
                                         10 BE49  94 000DD        CLRB    @LCR[LCS]                               0986
                                        0096  31 000E1            BRW     17$                                     0962
                                  52   0108   CA  9E 000E4  8$:   MOVAB   264(R10), R2                            0998
                                  53   00FC   CA  9E 000E9        MOVAB   252(R10), R3
                                              63  D5 000EE        TSTL    (R3)
                                              04  12 000F0        BNEQ    9$
                                              62  D4 000F2        CLRL    (R2)
                                              25  11 000F4        BRB     10$
                                         18   AE  D4 000F6  9$:   CLRL    INPUT_ARGS
                                         18   AE  9F 000F9        PUSHAB  INPUT_ARGS
                                       0104   CA  DD 000FC        PUSHL   260(RT0)
                                              52  DD 00100        PUSHL   R2
                                       0100   CA  9F 00102        PUSHAB  256(R10)
                              20  AE   0252   8F  3C 00106        MOVZWL  #594, 32(SP)
                                         20   AE  9F 0010C        PUSHAB  32(SP)
                                              53  DD 0010F        PUSHL   R3
                       00000000G  00          06  FB 00111        CALLS   #6, SMG$GET_TERM_DATA
                                  33          50  E9 00118        BLBC    STATUS, 12$
                                              62  D5 0011B  10$:  TSTL    (R2)                                    0999
                                              36  12 0011D        BNEQ    14$
```

```
                                                      63 D5 0011F          TSTL    (R3)                                          ; 1002
                                                      04 12 00121          BNEQ    11$                                           ;
                                                      62 D4 00123          CLRL    (R2)                                          ;
                                                      2A 11 00125          BRB     13$                                           ;
                                   18   AE            01 D0 00127 11$:     MOVL    #1, INPUT_ARGS                                ;
                                   1C   AE            01 D0 0012B          MOVL    #1, INPUT_ARGS+4                              ;
                                                 18   AE 9F 0012F          PUSHAB  INPUT_ARGS                                    ;
                                               0104   CA DD 00132          PUSHL   260(R10)                                      ;
                                                      52 DD 00136          PUSHL   R2                                            ;
                                               0100   CA 9F 00138          PUSHAB  256(R10)                                      ;
                                   20   AE     0232   8F 3C 0013C          MOVZWL  #562, 32(SP)                                  ;
                                                 20   AE 9F 00142          PUSHAB  32(SP)                                        ;
                                                      53 DD 00145          PUSHL   R3                                            ;
                            00000000G   00            06 FB 00147          CALLS   #6, SMG$GET_TERM_DATA                         ;
                                        5C            50 E9 0014E 12$:     BLBC    STATUS, 19$                                   ;
                                                      62 D5 00151 13$:     TSTL    (R2)                                          ; 1003
                                                      55 13 00153          BEQL    18$                                           ;
                                               0104   CA DD 00155 14$:     PUSHL   260(R10)                                      ; 1009
                                                      62 DD 00159          PUSHL   (R2)                                          ; 1008
                                                      5A DD 0015B          PUSHL   R10                                           ;
                                0000V   CF            03 FB 0015D          CALLS   #3, SMG$$OUTPUT                               ;
                                   14   AE            50 D0 00162          MOVL    R0, STATUS                                    ;
                                        05       14   AE E8 00166          BLBS    STATUS, 16$                                   ; 1010
                                        50       14   AE D0 0016A 15$:     MOVL    STATUS, R0                                    ;
                                                      04 0016E             RET                                                   ;
                     01 A649          6649       08   AE 28 0016F 16$:     MOVC3   DL, (FCR)[LCS], 1(FCR)[LCS]                   ; 1016
                                                    6649 94 00177          CLRB    (FCR)[LCS]                                    ; 1017
                                        56       04   AE D0 0017A 17$:     MOVL    STB, R6                                       ; 1029
                     14 B84B       14 B846            6E 28 0017E          MOVC3   BTC, @20(WCB)[R6], @20(WCB)[TB]               ;
                                        56       04   AE D0 00186          MOVL    STB, R6                                       ; 1034
                     18 B84B       18 B846            6E 28 0018A          MOVC3   BTC, @24(WCB)[R6], @24(WCB)[TB]               ;
                                                      57 D7 00192          DECL    R7                                            ; 1039
                                        57       0C   AE C4 00194          MULL2   WIDTH, R7                                     ;
      0C   AE             20            6E            00 2C 00198          MOVC5   #0, (SP), #32, WIDTH, @20(WCB)[R7]            ;
                                                 14 B847    0019E                                                                ;
      0C   AE             00            6E            00 2C 001A1          MOVC5   #0, (SP), #0, WIDTH, @24(WCB)[R7]             ; 1046
                                                 18 B847    001A7                                                                ;
                                        50            01 D0 001AA 18$:     MOVL    #1, R0                                        ; 1048
                                                      04 001AD 19$:        RET                                                   ; 1050

; Routine Size:  430 bytes,    Routine Base:  _SMG$CODE + 017F
```

```
1 %SBTTL 'SMG$$FLUSH_BUFFER - Flush all buffered output to terminal'
1 GLOBAL ROUTINE SMG$$FLUSH_BUFFER ( P_PBCB ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine causes all output which has been buffered up but
1 !       not yet sent to the terminal, to be output at once.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$FLUSH_BUFFER ( P_PBCB.rab.r )
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       P_PBCB.rab.r    The pasteboard control block address for which
1 !                       the flushing action is to take place.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       PBCB[PBCB_W_OUTPUT_BUFLEN]      number of characters in buffer
1 !       PBCB[PBCB_W_OUTPUT_BUFFER]      address of buffer
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       PBCB[PBCB_W_OUTPUT_BUFLEN]      set to 0 (indicating buffer empty)
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !       SS$_xyz         errors from SMG$$OUTPUT.
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
;  833           1086  2 BEGIN
;  834           1087  2
;  835           1088  2 BIND
;  836           1089  2
;  837           1090  2         PBCB    = .P_PBCB          : $PBCB_DECL,    ! Pasteboard control block
;  838           1091  2         OUTBUF  = .PBCB[PBCB_A_OUTPUT_BOFFER]       : VECTOR,
;  839           1092  2         OUTLEN  =  PBCB[PBCB_W_OUTPUT_BUFLEN]       : WORD;
;  840           1093  2
;  841           1094  2 LOCAL
;  842           1095  2
;  843           1096  2         STATUS;
;  844           1097  2
;  845           1098  2 !+
;  846           1099  2 ! Do nothing if the buffer is empty.
;  847           1100  2 !-
;  848           1101  2
;  849           1102  2 IF .OUTLEN EQL 0
;  850           1103  2   THEN  RETURN  SS$_NORMAL;
;  851           1104  2
;  852           1105  2 !+
;  853           1106  2 ! Output the buffer now.
;  854           1107  2 ! Save time by calling OUTPUT directly rather than SMG$$OUTPUT.
;  855           1108  2 ! (SMG$$OUTPUT would try to buffer the text up anyhow.)
;  856           1109  2 !-
;  857           1110  2
;  858           1111  2 STATUS=OUTPUT(PBCB,.OUTLEN,OUTBUF);
;  859           1112  2 IF NOT .STATUS THEN RETURN .STATUS;
;  860           1113  2
;  861           1114  2 !+
;  862           1115  2 ! Note that the buffer is now empty.
;  863           1116  2 !-
;  864           1117  2
;  865           1118  2 OUTLEN=0;
;  866           1119  2
;  867           1120  2 RETURN  SS$_NORMAL
;  868           1121  2
;  869           1122  1 END;                       ! Routine SMG$$FLUSH_BUFFER



                                 0004 00000          .ENTRY  SMG$$FLUSH_BUFFER, Save R2                          ; 1052
                52      04   AC   D0 00002           MOVL    P_PBCB, R2                                          ; 1090
                        72   A2   B5 00006           TSTW    114(R2)                                             ; 1102
                             14   13 00009           BEQL    1$                                                  ;
                        6C   A2   DD 0000B           PUSHL   108(R2)                                             ; 1111
                7E      72   A2   3C 0000E           MOVZWL  114(R2), -(SP)                                      ;
                             52   DD 00012           PUSHL   R2                                                  ;
          0000V CF           03   FB 00014           CALLS   #3, OUTPUT                                          ;
                06           50   E9 00019           BLBC    STATUS, 2$                                          ; 1112
                        72   A2   B4 0001C           CLRW    114(R2)                                             ; 1118
                50           01   D0 0001F 1$:       MOVL    #1, R0                                              ; 1120
                                  04 00022 2$:       RET                                                         ; 1122

; Routine Size:  35 bytes,    Routine Base:  _SMG$CODE + 032D
```

```
1 %SBTTL 'SMG$$FORCE_SCROLL_REG - Force physical scrolling regions'
1 GLOBAL ROUTINE SMG$$FORCE_SCROLL_REG (
1                                               PBCB : REF $PBCB_DECL,
1                                               TOP_LINE,
1                                               BOT_LINE
1                                             ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine performs three actions:
1 !               a). Construct escape sequence needed to set scroll
1 !                   region.
1 !               b). Output this sequence to terminal.
1 !               c). Update PBCB to reflect new position of scroll
1 !                   region.
1 !
1 !       The physical cursor is left in first row of scrolling region,
1 !       COLUMN 1.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$FORCE_SCROLL_REG (
1 !                                                   PBCB.rab.r,
1 !                                                   TOP_LINE.rl.v,
1 !                                                   BOT_LINE.rl.v)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       PBCB.rab.r      Address of Pasteboard Control Block
1 !       TOP_LINE.rl.v   Top line of physical scroll region desired.
1 !       BOT_LINE.rl.v   Bottom line of physica scroll region desired.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       NONE
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !       SS$_xyz         errors from SMG$$OUTPUT.
1 !
1 ! SIDE EFFECTS:
1 !
1 !       Physical scrolling region changed.
1 !--
```

```
;  921        1172 2 BEGIN
;  922        1173 2 LOCAL
;  923        1174 2
;  924        1175 2     WCB          : REF $WCB_DECL,
;  925        1176 2     STATUS;                  ! Status of subroutine calls
;  926        1177 2
;  927        1178 2 WCB=.PBCB[PBCB_A_WCB];
;  928        1179 2
;  929        1180 2 !+
;  930        1181 2 ! Create escape sequence needed into capability buffer.
;  931        1182 2 !-
;  932        1183 2
;  933        1184 2 $SMG$GET_TERM_DATA(SET_SCROLL_REGION,.TOP_LINE,.BOT_LINE);
;  934        1185 2
;  935        1186 2 !+
;  936        1187 2 ! Output BUFFER.
;  937        1188 2 !-
;  938        1189 3 IF NOT (STATUS = SMG$$OUTPUT ( .PBCB, .PBCB[PBCB_L_CAP_LENGTH],
;  939        1190 3                                 .PBCB[PBCB_A_CAP_BUFFER]))
;  940        1191 2 THEN
;  941        1192 2     RETURN .STATUS;
;  942        1193 2
;  943        1194 2 !+
;  944        1195 2 ! Record where scrolling region now is.
;  945        1196 2 !-
;  946        1197 2
;  947        1198 2 PBCB [PBCB_W_TOP_SCROLL_LINE] = .TOP_LINE;
;  948        1199 2 PBCB [PBCB_W_BOT_SCROLL_LINE] = .BOT_LINE;
;  949        1200 2
;  950        1201 2 !+
;  951        1202 2 ! Move the cursor to the first row of the scrolling region, column 1.
;  952        1203 2 !-
;  953        1204 2
;  954        1205 2 $SMG$GET_TERM_DATA(SET_CURSOR_ABS,.TOP_LINE,1);
;  955        1206 2
;  956        1207 2 !+
;  957        1208 2 ! Output BUFFER.
;  958        1209 2 !-
;  959        1210 2
;  960        1211 2 IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
;  961        1212 3   THEN  BEGIN
;  962        1213 4         IF NOT (STATUS = SMG$$OUTPUT ( .PBCB, .PBCB[PBCB_L_CAP_LENGTH],
;  963        1214 4                                        .PBCB[PBCB_A_CAP_BUFFER]))
;  964        1215 3         THEN
;  965        1216 3             RETURN .STATUS;
;  966        1217 3
;  967        1218 3         !+
;  968        1219 3         ! Record where the cursor is now.
;  969        1220 3         !-
;  970        1221 3
;  971        1222 3         WCB[WCB_W_CURR_CUR_ROW]=.TOP_LINE;
;  972        1223 3         WCB[WCB_W_CURR_CUR_COL]=1;
;  973        1224 3         WCB[WCB_W_OLD_CUR_ROW]=.TOP_LINE;
;  974        1225 3         WCB[WCB_W_OLD_CUR_COL]=1;
;  975        1226 3
;  976        1227 2         END;
;  977        1228 2
;  978          1229  2 RETURN SS$_NORMAL
;  979          1230  2
;  980          1231  1 END;              ! Routine SMG$$FORCE_SCROLL_REG



                                        01FC 00000          .ENTRY  SMG$$FORCE_SCROLL_REG, Save R2,R3,R4,R5,R6,-; 1124
                                                                    R7,R8
                    58 0000000G    00   9E 00002          MOVAB   SMG$GET_TERM_DATA, R8                      :
                    5E             10   C2 00009          SUBL2   #16, SP                                    :
                    52        04   AC   D0 0000C          MOVL    PBCB, R2                                   : 1178
                    53        08   A2   D0 00010          MOVL    8(R2), WCB                                 :
                    56      0108   C2   9E 00014          MOVAB   264(R2), R6                                : 1184
                    54      00FC   C2   9E 00019          MOVAB   252(R2), R4                                :
                                   64   D5 0001E          TSTL    (R4)                                       :
                                   04   12 00020          BNEQ    1$                                         :
                                   66   D4 00022          CLRL    (R6)                                       :
                                   27   11 00024          BRB     2$                                         :
              04    AE             02   D0 00026 1$:      MOVL    #2, INPUT_ARGS                             :
              08    AE        08   AC   7D 0002A          MOVQ    TOP_LINE, INPUT_ARGS+4                     :
                              04   AE   9F 0002F          PUSHAB  INPOT_ARGS                                 :
                            0104   C2   DD 00032          PUSHL   260(R2)                                    :
                                   56   DD 00036          PUSHL   R6                                         :
                            0100   C2   9F 00038          PUSHAB  256(R2)                                    :
              10    AE      023C   8F   3C 0003C          MOVZWL  #572, 16(SP)                               :
                              10   AE   9F 00042          PUSHAB  16(SP)                                     :
                                   54   DD 00045          PUSHL   R4                                         :
                    68             06   FB 00047          CALLS   #6, SMG$GET_TERM_DATA                      :
                    50             50   E9 0004A          BLBC    STATUS, 4$                                 :
                    55      0104   C2   9E 0004D 2$:      MOVAB   260(R2), R5                                : 1190
                                   65   DD 00052          PUSHL   (R5)                                       :
                                   66   DD 00054          PUSHL   (R6)                                       : 1189
                                   52   DD 00056          PUSHL   R2                                         :
           0000V    CF             03   FB 00058          CALLS   #3, SMG$$OUTPUT                            :
                    57             50   D0 0005D          MOVL    R0, STATUS                                 :
                    52             57   E9 00060          BLBC    STATUS, 6$                                 :
           00F4     C2        08   AC   B0 00063          MOVW    TOP_LINE, 244(R2)                          : 1198
           00F6     C2        0C   AC   B0 00069          MOVW    BOT_LINE, 246(R2)                          : 1199
                                   64   D5 0006F          TSTL    (R4)                                       : 1205
                                   04   12 00071          BNEQ    3$                                         :
                                   66   D4 00073          CLRL    (R6)                                       :
                                   29   11 00075          BRB     5$                                         :
              04    AE             02   D0 00077 3$:      MOVL    #2, INPUT_ARGS                             :
              08    AE        08   AC   D0 0007B          MOVL    TOP_LINE, INPUT_ARGS+4                     :
              0C    AE             01   D0 00080          MOVL    #1, INPUT_ARGS+8                           :
                              04   AE   9F 00084          PUSHAB  INPUT_ARGS                                 :
                                   65   DD 00087          PUSHL   (R5)                                       :
                                   56   DD 00089          PUSHL   R6                                         :
                            0100   C2   9F 0008B          PUSHAB  256(R2)                                    :
              10    AE      023A   8F   3C 0008F          MOVZWL  #570, 16(SP)                               :
                              10   AE   9F 00095          PUSHAB  16(SP)                                     :
                                   54   DD 00098          PUSHL   R4                                         :
                    68             06   FB 0009A          CALLS   #6, SMG$GET_TERM_DATA                      :
                    2E             50   E9 0009D 4$:      BLBC    STATUS, 9$                                 :
                                   66   D5 000A0 5$:      TSTL    (R6)                                       : 1211
```

```
                                    27  13 000A2       BEQL    8$                                      ;
                                    65  DD 000A4       PUSHL   (R5)                                    ; 1214
                                    66  DD 000A6       PUSHL   (R6)                                    ; 1213
                                    52  DD 000A8       PUSHL   R2                                      ;
                     0000V  CF      03  FB 000AA       CALLS   #3, SMG$$OUTPUT                         ;
                            57      50  D0 000AF       MOVL    R0, STATUS                              ;
                            04      57  E8 000B2       BLBS    STATUS, 7$                              ;
                            50      57  D0 000B5 6$:   MOVL    STATUS, R0                              ; 1216
                                        04 000B8       RET                                             ;
                       20   A3    08    AC  B0 000B9 7$:   MOVW    TOP_LINE, 32(WCB)                   ; 1222
                       22   A3          01  B0 000BE       MOVW    #1, 34(WCB)                         ; 1223
                       24   A3    08    AC  B0 000C2       MOVW    TOP_LINE, 36(WCB)                   ; 1224
                       26   A3          01  B0 000C7       MOVW    #1, 38(WCB)                         ; 1225
                            50          01  D0 000CB 8$:   MOVL    #1, R0                              ; 1229
                                        04 000CE 9$:   RET                                             ; 1231

; Routine Size:  207 bytes,    Routine Base:  _SMG$CODE + 0350
```

```
1 %SBTTL 'SMG$$PBCB_EXIT_HANDLER - Exit handler'
1 GLOBAL ROUTINE SMG$$PBCB_EXIT_HANDLER ( P_REASON, P_PBCB ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine gets called on image exit once for
1 !       each active pasteboard.  It flushes the output
1 !       on that device.  No flush occurs, however, if
1 !       the CLI forced the exit, as in the user typed
1 !       CTRL/Y then EXIT.
1 !
1 !       If device is a terminal, reset the physcial scrolling region to
1 !       full screen. If the user doesn't request the screen to be cleared,
1 !       then leave the cursor alone (unless the width needs to be reset).
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$PBCB_EXIT_HANDLER ( P_REASON.rl.r,
1 !                                                  P_PBCB.rab.r )
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       P_REASON        Address of word that contains exit reason.
1 !                       Should be PBCB[PBCB_L_EXIT_REASON].
1 !
1 !       P_PBCB.rab.r    The pasteboard control block address for which
1 !                       the flushing action is to take place.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       contents of PBCB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       PBCB[PBCB_W_OUTPUT_BUFLEN]      set to 0 (indicating buffer empty)
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
2 BEGIN
2
2 BIND
2
2         PBCB     = .P_PBCB         : $PBCB_DECL;
2
2 LOCAL
2         STATUS,
2         WCB : REF $WCB_DECL;     ! Address of window control block
2
2 EXTERNAL ROUTINE
2
2         SMG$CHANGE_PBD_CHARACTERISTICS;
```

```
  2 WCB = .PBCB [PBCB_A_WCB];
  2
  2 !+
  2 ! If a scrolling region is set (other than the full screen),
  2 ! then reset it now, being careful to leave the cursor alone
  2 ! even though SET SCROLLING REGION may move it.
  2 ! Note that if we never established any scrolling regions,
  2 ! the TOP_SCROLL line will be 0.
  2 !-
  2
  2 IF     .PBCB[PBCB_W_TOP_SCROLL_LINE] NEQ 0
  3 AND  (.PBCB[PBCB_W_TOP_SCROLL_LINE] NEQ 1    OR
  3       .PBCB[PBCB_W_BOT_SCROLL_LINE] NEQ .WCB[WCB_W_NO_ROWS])
  2 THEN
  3     BEGIN          ! Remove scrolling regions
  3
  3     LOCAL
  3
  3         FINAL_ROW,          ! Final cursor row
  3         FINAL_COL;          ! Final cursor column
  3
  3     !+
  3     ! Construct escape sequence (possibly null if not a supporting terminal)
  3     ! to set the hardware scroll region to the full height of the screen.
  3     !-
  3
P 3     $SMG$GET_TERM_DATA(SET_SCROLL_REGION,
P 3                        1,
  3                        .WCB [WCB_W_NO_ROWS]);
  3
  3     !+
  3     ! Output BUFFER.
  3     !-
  3
  3     IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
  3     THEN
  4         BEGIN   ! Issue the reset
  4
  4         !+
  4         ! Remember where the user left the physical cursor, since
  4         ! changing scrolling regions might upset this.
  4         !-
  4
  4         FINAL_ROW=.WCB[WCB_W_CURR_CUR_ROW];
  4         FINAL_COL=.WCB[WCB_W_CURR_CUR_COL];
  4
  4         STATUS = SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
  4                              .PBCB[PBCB_A_CAP_BUFFER]);
  4         IF NOT .STATUS THEN RETURN .STATUS;
  4
  4         !+
  4         ! Move the cursor back to where it was.
  4         ! (No need to do this if the screen will be cleared anyhow.)
  4         !-
  4
  4         IF NOT .PBCB[PBCB_V_CLEAR_SCREEN]
  5            THEN  BEGIN   ! Restore final cursor position
```

```

                $SMG$GET_TERM_DATA(SET_CURSOR_ABS,.FINAL_ROW,.FINAL_COL);

                STATUS = SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
                                          .PBCB[PBCB_A_CAP_BUFFER]);
                IF NOT .STATUS THEN RETURN .STATUS

                END     ! Restore final cursor position

        END     ! Issue the reset

    END;        ! Remove scrolling regions

!+
! Flush the buffer associated with this pasteboard if the exit
! was successful.
! This prevents us from flushing the buffer on things like
! CTRL/Y (SS$_CLIFRCEXT).
! Ignore any errors.
!-

IF .PBCB[PBCB_L_EXIT_REASON]
  THEN  BEGIN
        !+
        ! If output is being controlled by RMS, then
        ! do a final (or only) snapshot.
        ! Otherwise, merely flush the buffer.
        IF .PBCB[PBCB_V_RMS]
          THEN  SMG$SNAPSHOT(PBCB[PBCB_L_PBID])
          ELSE  SMG$$FLUSH_BUFFER(PBCB);
        END;

!+
! Change the terminal width back to what it used to be.
!-

IF .PBCB[PBCB_W_WIDTH] NEQ .PBCB[PBCB_W_ORIG_WIDTH]
  THEN  BEGIN   ! Change physical width

        LOCAL

                DESIRED_WIDTH,
                NORMAL_WIDTH,
                WIDE_WIDTH,
                WIDTH_SEQUENCE;

        DESIRED_WIDTH=.PBCB[PBCB_W_ORIG_WIDTH];

        !+
        ! First, clear the screen.
        !-

        $SMG$GET_TERM_DATA(HOME);
        STATUS=OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],.PBCB[PBCB_A_CAP_BUFFER]);
        IF NOT .STATUS THEN RETURN .STATUS;

        $SMG$GET_TERM_DATA(ERASE_WHOLE_DISPLAY);
```

```
3                   IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4                     THEN  BEGIN
4                           STATUS = SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                                     .PBCB[PBCB_A_CAP_BUFFER]);
4                           IF NOT .STATUS THEN RETURN .STATUS
3                           END;
3
3                   !+
3                   ! Second, get the normal size.
3                   !-
3
3                   $SMG$GET_TERM_DATA(COLUMNS);
3                   IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4                     THEN  BEGIN
4                           BIND RESULT=.PBCB[PBCB_A_CAP_BUFFER];
4                           STATUS = SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                                     .PBCB[PBCB_A_CAP_BUFFER]);
4                           IF NOT .STATUS THEN RETURN .STATUS;
4                           NORMAL_WIDTH=.RESULT
4                           END
3                     ELSE  NORMAL_WIDTH=80;
3
3                   !+
3                   ! Third, get the wide size.
3                   !-
3
3                   $SMG$GET_TERM_DATA(WIDTH_WIDE);
3                   IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4                     THEN  BEGIN
4                           BIND RESULT=.PBCB[PBCB_A_CAP_BUFFER];
4                           STATUS = SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                                     .PBCB[PBCB_A_CAP_BUFFER]);
4                           IF NOT .STATUS THEN RETURN .STATUS;
4                           WIDE_WIDTH=.RESULT
4                           END
3                     ELSE  WIDE_WIDTH=80;
3
3                   !+
3                   ! Decide which sequence to send.
3                   !-
3
3                   IF .DESIRED_WIDTH GTR .NORMAL_WIDTH
4                     THEN  $SMG$GET_TERM_DATA(WIDTH_NARROW)
3                     ELSE  $SMG$GET_TERM_DATA(WIDTH_WIDE);
3                   IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4                     THEN  BEGIN
4                           STATUS = SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                                     .PBCB[PBCB_A_CAP_BUFFER]);
4                           IF NOT .STATUS THEN RETURN .STATUS;
3                           END;
3
2                   END;        ! Change physical width
2
2           !+
2           ! Clear the screen if the user asked us to.
2           !-
2
```

```
; 1212          1460  2 IF .PBCB[PBCB_V_CLEAR_SCREEN]
; 1213          1461  2    THEN  SMG$$ERASE_PASTEBOARD(PBCB);
; 1214          1462  2
; 1215          1463  2 SMG$$FLUSH_BUFFER(PBCB);
; 1216          1464  2
; 1217          1465  2 ! ***     I don't know whether or not an exit routine is supposed
; 1218          1466  2 !         to return a value; so I'm returning SS$_NORMAL for now.
; 1219          1467  2
; 1220          1468  2 RETURN  SS$_NORMAL
; 1221          1469  2
; 1222          1470  1 END;                         ! Routine SMG$$PBCB_EXIT_HANDLER


                                                      .EXTRN   SMG$CHANGE_PBD_CHARACTERISTICS

                           0FFC 00000                 .ENTRY   SMG$$PBCB_EXIT_HANDLER, Save R2,R3,R4,R5,-    ; 1233
                                                               R6,R7,R8,R9,R10,R11                           :
          5B      0000V  CF  9E 00002                 MOVAB    SMG$$OUTPUT, R11                              :
          5A 00000000G   00  9E 00007                 MOVAB    SMG$GET_TERM_DATA, R10                        :
          5E             10  C2 0000E                 SUBL2    #16, SP                                       :
          52         08  AC  D0 00011                 MOVL     P_PBCB, R2                                    : 1280
          54         08  A2  D0 00015                 MOVL     8(R2), WCB                                    : 1289
          50       00F4  C2  3C 00019                 MOVZWL   244(R2), R0                                   : 1299
                         51  13 0001E                 BEQL     4$                                            :
          01             50  B1 00020                 CMPW     R0, #1                                        : 1300
                         08  12 00023                 BNEQ     1$                                            :
    02    A4       00F6  C2  B1 00025                 CMPW     246(R2), 2(WCB)                               : 1301
                         44  13 0002B                 BEQL     4$                                            :
          56       00FC  C2  9E 0002D 1$:             MOVAB    252(R2), R6                                   : 131
                         66  D5 00032                 TSTL     (R6)                                          :
                         09  12 00034                 BNEQ     2$                                            :
          53       0108  C2  9E 00036                 MOVAB    264(R2), R3                                   :
                         63  D4 0003B                 CLRL     (R3)                                          :
                         30  11 0003D                 BRB      3$                                            :
    04    AE             02  D0 0003F 2$:             MOVL     #2, INPUT_ARGS                                :
    08    AE             01  D0 00043                 MOVL     #1, INPUT_ARGS+4                              :
    0C    AE         02  A4  3C 00047                 MOVZWL   2(WCB), INPUT_ARGS+8                          :
                     04  AE  9F 0004C                 PUSHAB   INPUT_ARGS                                    :
                   0104  C2  DD 0004F                 PUSHL    260(R2)                                       :
          53       0108  C2  9E 00053                 MOVAB    264(R2), R3                                   :
                         53  DD 00058                 PUSHL    R3                                            :
                   0100  C2  9F 0005A                 PUSHAB   256(R2)                                       :
    10    AE       023C  8F  3C 0005E                 MOVZWL   #572, 16(SP)                                  :
                     10  AE  9F 00064                 PUSHAB   16(SP)                                        :
                         56  DD 00067                 PUSHL    R6                                            :
          6A             06  FB 00069                 CALLS    #6, SMG$GET_TERM_DATA                         :
          52             50  E9 0006C                 BLBC     STATUS, 6$                                    :
                         63  D5 0006F 3$:             TSTL     (R3)                                          : 1323
                         60  13 00071 4$:             BEQL     9$                                            :
          58         20  A4  32 00073                 CVTWL    32(WCB), FINAL_ROW                            : 1332
          57         22  A4  32 00077                 CVTWL    34(WCB), FINAL_COL                            : 1333
          55       0104  C2  9E 0007B                 MOVAB    260(R2), R5                                   : 1336
                         65  DD 00080                 PUSHL    (R5)                                          :
                         63  DD 00082                 PUSHL    (R3)                                          : 1335
                         52  DD 00084                 PUSHL    R2                                            :
          6B             03  FB 00086                 CALLS    #3, SMG$$OUTPUT                               :
```

```
                      54            50  D0 00089         MOVL    R0, STATUS                    ;
                      41            54  E9 0008C         BLBC    STATUS, 8$                    ; 1337
        3F      0C    A2            02  E0 0008F         BBS     #2, 12(R2), 9$                ; 1344
                                    66  D5 00094         TSTL    (R6)                          ; 1347
                                    04  12 00096         BNEQ    5$                            ;
                                    63  D4 00098         CLRL    (R3)                          ;
                                    28  11 0009A         BRB     7$                            ;
                04    AE            02  D0 0009C 5$:     MOVL    #2, INPUT_ARGS                ;
                08    AE            58  D0 000A0         MOVL    FINAL_ROW, INPUT_ARGS+4       ;
                0C    AE            57  D0 000A4         MOVL    FINAL_COL, INPUT_ARGS+8       ;
                                04  AE  9F 000A8         PUSHAB  INPUT_ARGS                    ;
                                    65  DD 000AB         PUSHL   (R5)                          ;
                                    53  DD 000AD         PUSHL   R3                            ;
                              0100  C2  9F 000AF         PUSHAB  256(R2)                       ;
                10    AE      023A  8F  3C 000B3         MOVZWL  #570, 16(SP)                  ;
                                10  AE  9F 000B9         PUSHAB  16(SP)                        ;
                                    56  DD 000BC         PUSHL   R6                            ;
                      6A            06  FB 000BE         CALLS   #6, SMG$GET_TERM_DATA         ;
                      70            50  E9 000C1 6$:     BLBC    STATUS, 14$                   ;
                                    65  DD 000C4 7$:     PUSHL   (R5)                          ; 1350
                                    63  DD 000C6         PUSHL   (R3)                          ; 1349
                                    52  DD 000C8         PUSHL   R2                            ;
                      6B            03  FB 000CA         CALLS   #3, SMG$$OUTPUT               ;
                      54            50  D0 000CD         MOVL    R0, STATUS                    ;
                      77            54  E9 000D0 8$:     BLBC    STATUS, 16$                   ; 1351
                      17      0088  C2  E9 000D3 9$:     BLBC    136(R2), 11$                  ; 1367
        0A    00D0    C2            03  E1 000D8         BBC     #3, 208(R2), 10$              ; 1373
                                14  A2  9F 000DE         PUSHAB  20(R2)                        ; 1374
             0000V    CF            01  FB 000E1         CALLS   #1, SMG$SNAPSHOT              ;
                                    07  11 000E6         BRB     11$                           ;
                                    52  DD 000E8 10$:    PUSHL   R2                            ; 1375
              FE1F    CF            01  FB 000EA         CALLS   #1, SMG$$FLUSH_BUFFER         ;
              00E6    C2        5A  A2  B1 000EF 11$:    CMPW    90(R2), 230(R2)               ; 1382
                                    03  12 000F5         BNEQ    12$                           ;
                                  0175  31 000F7         BRW     39$                           ;
                      59      00E6  C2  3C 000FA 12$:    MOVZWL  230(R2), DESIRED_WIDTH        ; 1392
                      56      00FC  C2  9E 000FF         MOVAB   252(R2), R6                   ; 1398
                                    66  D5 00104         TSTL    (R6)                          ;
                                    09  12 00106         BNEQ    13$                           ;
                      53      0108  C2  9E 00108         MOVAB   264(R2), R3                   ;
                                    63  D4 0010D         CLRL    (R3)                          ;
                                    26  11 0010F         BRB     15$                           ;
                                04  AE  D4 00111 13$:    CLRL    INPUT_ARGS                    ;
                                04  AE  9F 00114         PUSHAB  INPUT_ARGS                    ;
                              0104  C2  DD 00117         PUSHL   260(R2)                       ;
                      53      0108  C2  9E 0011B         MOVAB   264(R2), R3                   ;
                                    53  DD 00120         PUSHL   R3                            ;
                              0100  C2  9F 00122         PUSHAB  256(R2)                       ;
                10    AE      01DC  8F  3C 00126         MOVZWL  #476, 16(SP)                  ;
                                10  AE  9F 0012C         PUSHAB  16(SP)                        ;
                                    56  DD 0012F         PUSHL   R6                            ;
                      6A            06  FB 00131         CALLS   #6, SMG$GET_TERM_DATA         ;
                      73            50  E9 00134 14$:    BLBC    STATUS, 21$                   ;
                      55      0104  C2  9E 00137 15$:    MOVAB   260(R2), R5                   ; 1399
                                    65  DD 0013C         PUSHL   (R5)                          ;
                                    63  DD 0013E         PUSHL   (R3)                          ;
                                    62  DD 00140         PUSHL   (R2)                          ;
                0000V   CF          03  FB 00142         CALLS    #3, OUTPUT
                        54          50  D0 00147         MOVL     R0, STATUS
                        73          54  E9 0014A 16$:    BLBC     STATUS, 23$                   1400
                                    66  D5 0014D         TSTL     (R6)                          1402
                                    04  12 0014F         BNEQ     17$
                                    63  D4 00151         CLRL     (R3)
                                    1F  11 00153         BRB      18$
                              04    AE  D4 00155 17$:    CLRL     INPUT_ARGS
                              04    AE  9F 00158         PUSHAB   INPUT_ARGS
                                    65  DD 0015B         PUSHL    (R5)
                                    53  DD 0015D         PUSHL    R3
                            0100    C2  9F 0015F         PUSHAB   256(R2)
                   10   AE  01DA    8F  3C 00163         MOVZWL   #474, 16(SP)
                              10    AE  9F 00169         PUSHAB   16(SP)
                                    56  DD 0016C         PUSHL    R6
                        6A          06  FB 0016E         CALLS    #6, SMG$GET_TERM_DATA
                        7C          50  E9 00171         BLBC     STATUS, 27$
                                    63  D5 00174 18$:    TSTL     (R3)                          1403
                                    0F  13 00176         BEQL     19$
                                    65  DD 00178         PUSHL    (R5)                          1406
                                    63  DD 0017A         PUSHL    (R3)                          1405
                                    52  DD 0017C         PUSHL    R2
                        6B          03  FB 0017E         CALLS    #3, SMG$$OUTPUT
                        54          50  D0 00181         MOVL     R0, STATUS
                        7F          54  E9 00184         BLBC     STATUS, 29$                   1407
                                    66  D5 00187 19$:    TSTL     (R6)                          1414
                                    04  12 00189         BNEQ     20$
                                    63  D4 0018B         CLRL     (R3)
                                    1E  11 0018D         BRB      22$
                              04    AE  D4 0018F 20$:    CLRL     INPUT_ARGS
                              04    AE  9F 00192         PUSHAB   INPUT_ARGS
                                    65  DD 00195         PUSHL    (R5)
                                    53  DD 00197         PUSHL    R3
                            0100    C2  9F 00199         PUSHAB   256(R2)
                   10   AE    DD    8F  9A 0019D         MOVZBL   #221, 16(SP)
                              10    AE  9F 001A2         PUSHAB   16(SP)
                                    56  DD 001A5         PUSHL    R6
                        6A          06  FB 001A7         CALLS    #6, SMG$GET_TERM_DATA
                        43          50  E9 001AA 21$:    BLBC     STATUS, 27$
                                    63  D5 001AD 22$:    TSTL     (R3)                          1415
                                    17  13 001AF         BEQL     24$
                        57          65  D0 001B1         MOVL     (R5), R7                      1417
                                    65  DD 001B4         PUSHL    (R5)                          1419
                                    63  DD 001B6         PUSHL    (R3)                          1418
                                    52  DD 001B8         PUSHL    R2
                        6B          03  FB 001BA         CALLS    #3, SMG$$OUTPUT
                        54          50  D0 001BD         MOVL     R0, STATUS
                        43          54  E9 001C0 23$:    BLBC     STATUS, 29$                   1420
                        58          67  D0 001C3         MOVL     (R7), NORMAL_WIDTH            1421
                                    04  11 001C6         BRB      25$
                        58    50    8F  9A 001C8 24$:    MOVZBL   #80, NORMAL_WIDTH             1423
                                    66  D5 001CC 25$:    TSTL     (R6)                          1429
                                    04  12 001CE         BNEQ     26$
                                    63  D4 001D0         CLRL     (R3)
                                    1F  11 001D2         BRB      28$
                              04    AE  D4 001D4 26$:    CLRL     INPUT_ARGS
                              04    AE  9F 001D7         PUSHAB   INPUT_ARGS
```

```
                          65  DD 001DA          PUSHL   (R5)
                          53  DD 001DC          PUSHL   R3
                   0100   C2  9F 001DE          PUSHAB  256(R2)
        10   AE    0246   8F  3C 001E2          MOVZWL  #582, 16(SP)
                     10   AE  9F 001E8          PUSHAB  16(SP)
                          56  DD 001EB          PUSHL   R6
             6A           06  FB 001ED          CALLS   #6, SMG$GET_TERM_DATA
             62           50  E9 001F0   27$:   BLBC    STATUS, 36$
                          63  D5 001F3   28$:   TSTL    (R3)                                     : 1430
                          17  13 001F5          BEQL    30$
             57           65  D0 001F7          MOVL    (R5), R7                                 : 1432
                          65  DD 001FA          PUSHL   (R5)                                     : 1434
                          63  DD 001FC          PUSHL   (R3)                                     : 1433
                          52  DD 001FE          PUSHL   R2
             6B           03  FB 00200          CALLS   #3, SMG$$OUTPUT
             54           50  D0 00203          MOVL    R0, STATUS
             62           54  E9 00206   29$:   BLBC    STATUS, 38$                              : 1435
             50           67  D0 00209          MOVL    (R7), WIDE_WIDTH                         : 1436
                          04  11 0020C          BRB     31$
             50      50   8F  9A 0020E   30$:   MOVZBL  #80, WIDE_WIDTH                          : 1438
             58           59  D1 00212   31$:   CMPL    DESIRED_WIDTH, NORMAL_WIDTH              : 1444
                          1A  15 00215          BLEQ    32$
                          66  D5 00217          TSTL    (R6)                                     : 1445
                          1A  13 00219          BEQL    33$
                     04   AE  D4 0021B          CLRL    INPUT_ARGS
                     04   AE  9F 0021E          PUSHAB  INPUT_ARGS
                          65  DD 00221          PUSHL   (R5)
                          53  DD 00223          PUSHL   R3
                   0100   C2  9F 00225          PUSHAB  256(R2)
        10   AE    0245   8F  3C 00229          MOVZWL  #581, 16(SP)
                          1C  11 0022F          BRB     35$
                          66  D5 00231   32$:   TSTL    (R6)                                     : 1446
                          04  12 00233          BNEQ    34$
                          63  D4 00235   33$:   CLRL    (R3)
                          1F  11 00237          BRB     37$
                     04   AE  D4 00239   34$:   CLRL    INPUT_ARGS
                     04   AE  9F 0023C          PUSHAB  INPUT_ARGS
                          65  DD 0023F          PUSHL   (R5)
                          53  DD 00241          PUSHL   R3
                   0100   C2  9F 00243          PUSHAB  256(R2)
        10   AE    0246   8F  3C 00247          MOVZWL  #582, 16(SP)
                     1C   AE  9F 0024D   35$:   PUSHAB  16(SP)
                          56  DD 00250          PUSHL   R6
             6A           06  FB 00252          CALLS   #6, SMG$GET_TERM_DATA
             2D           50  E9 00255   36$:   BLBC    STATUS, 41$
                          63  D5 00258   37$:   TSTL    (R3)                                     : 1447
                          13  13 0025A          BEQL    39$
                          65  DD 0025C          PUSHL   (R5)                                     : 1450
                          63  DD 0025E          PUSHL   (R3)                                     : 1449
                          52  DD 00260          PUSHL   R2
             6B           03  FB 00262          CALLS   #3, SMG$$OUTPUT
             54           50  D0 00265          MOVL    R0, STATUS
             04           54  E8 00268          BLBS    STATUS, 39$                              : 1451
             50           54  D0 0026B   38$:   MOVL    STATUS, R0
                              04 0026E          RET
  07    0C   A2           02  E1 0026F   39$:   BBC     #2, 12(R2), 40$                          : 1460
                          52  DD 00274          PUSHL   R2                                       : 1461
                     F9A4   CF              01  FB 00276           CALLS   #1, SMG$$ERASE_PASTEBOARD                          ;
                                            52  DD 0027B 40$:      PUSHL   R2                                                 ; 1463
                     FC8C   CF              01  FB 0027D           CALLS   #1, SMG$$FLUSH_BUFFER                              ;
                            50              01  D0 00282           MOVL    #1, R0                                             ; 1468
                                                04 00285 41$:      RET                                                        ; 1470

; Routine Size:  646 bytes,    Routine Base:  _SMG$CODE + 041F
```

```
1 %SBTTL 'SMG$$SETUP_TERMINAL_TYPE - Setup terminal type for SMG$$ routines'
1 GLOBAL ROUTINE SMG$$SETUP_TERMINAL_TYPE (
1                       FILE_NAME,
1                       NAME_LEN,
1                       P_TERM_TYPE,
1                       PBCB_ADR
1                       ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine uses the specified file name to determine device
1 !       characteristics and assign a terminal type code which is understood
1 !       by other SMG$$ routines.  SMG$$ routines use the terminal type to
1 !       determine the correct escape sequence for a given function (ex. set
1 !       cursor).
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$SETUP_TERM_TYPE (FILE_NAME.rt.r,
1 !                                                NAME_LEN.rl.v,
1 !                                                P_TERM_TYPE.wl.r
1 !                                                [,PBCB_ADR.wl.r])
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       FILE_NAME.rt.r          addr of file name text
1 !       NAME_LEN.rl.v           length of file name text
1 !       P_TERM_TYPE.wl.r        terminal type code, one of the following:
1 !                                       unknown
1 !                                       vt05            (unused)
1 !                                       vt52            (unused)
1 !                                       vt100           (unused)
1 !                                       vtforeign
1 !                                       hardcopy
1 !
1 !       PBCB_ADR.wl.r           Address of longword to receive address
1 !                               of the pasteboard control block.
1 !                               If 0 or omitted, no PBCB gets allocated.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       NONE
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       PBCB fields get filled in.
1 !
1 ! COMPLETION STATUS:
1 !
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
2       BEGIN
2
2       BIND
2
2           TERM_TYPE       = .P_TERM_TYPE;         ! Address to get terminal type
2
2       BUILTIN
2
2           NULLPARAMETER;
2
2       LOCAL
2
2           SMGFAB          : $FAB_DECL,
2           SMGNAM          : $NAM_DECL,
2           DEVNAM_DSC : BLOCK [8, BYTE],                   ! dsc for name
2           DVI_ITMLST : VECTOR [6*3 + 1] INITIAL           ! item list for $GETDVI
2                   (DVI$_DEVTYPE    ^ 16 + 4, 0, 0,!  device type  (DT$_xyz)
2                    DVI$_DEVDEPEND  ^ 16 + 4, 0, 0,!  device dependent bits (1)
2                    DVI$_DEVDEPEND2 ^ 16 + 4, 0, 0,!  device dependent bits (2)
2                    DVI$_DEVBUFSIZ  ^ 16 + 4, 0, 0,!  terminal width
2                    DVI$_DEVCLASS   ^ 16 + 4, 0, 0,!  device class (DC$_xyz)
2                    DVI$_DEVNAM     ^ 16 +64, 0, 0,!  result name string
2                    0),                            !  terminater
2
2           DVI_EFN,                                        ! event flag for $GETDVI,
2           DVI_IOSB        : VECTOR [4, WORD],             ! I/O Status block for $GETDVI
2           STATUS,                                         ! status retd by called routines
2           DEV_TYPE        : VOLATILE,                     ! storage for $GETDVI value
2           DEV_DEPEND      : VOLATILE BLOCK [4, BYTE],     ! device dependent bits (1)
2           DEV_DEPEND2     : VOLATILE BLOCK [4, BYTE],     ! device dependent bits (2)
2           DEV_BUFSIZ      : VOLATILE,                     ! storage for $GETDVI value
2           DEV_CLASS       : VOLATILE,                     ! storage fpr $GETDVI value
2
2           DEV_PAGSIZ,                                     ! gets the number of rows of device
2
2           DEV_DEVNAM : VECTOR [64, BYTE],                 ! Buffer for result name
2                                                           ! string
2
2           DEV_NAMLEN : VOLATILE WORD,                     ! Length of returned
2                                                           ! resultant name string
2           TERMTABLE;                                      ! Address of terminal table
2
2       BIND
2           DVI_TYPE    = DVI_ITMLST + 4,                   ! make it easy to reference
2           DVI_DEPEND  = DVI_ITMLST + 16,                  !
2           DVI_DEPEND2 = DVI_ITMLST + 28,                  !  items retd by $GETDVI
2           DVI_BUFSIZ  = DVI_ITMLST + 40,                  !
2           DVI_CLASS   = DVI_ITMLST + 52,                  !
2           DVI_DEVNAM  = DVI_ITMLST + 64,                  !
2           DVI_NAMLEN  = DVI_ITMLST + 68;                  !
2
2       BIND
2
2           FABDEV          = SMGFAB[FAB$L_DEV]     : BLOCK[,BYTE], ! Device characteristcs
2           DVI_NAME_LEN    = SMGNAM[NAM$T_DVI]     : BYTE,
2           DVI_NAME        = SMGNAM[NAM$T_DVI]+1   : VECTOR[,BYTE];
2
```

```
; 1336          1582  2      OWN
; 1337          1583  2
; 1338          1584  2          GENERIC_ANSI_CRT_BUF      : VECTOR[16,BYTE]
; 1339          1585  2
; 1340          1586  2                  INITIAL(BYTE('GENERIC_ANSI_CRT')),
; 1341          1587  2
; 1342          1588  2          GENERIC_DEC_CRT_BUF       : VECTOR[15,BYTE]
; 1343          1589  2
; 1344          1590  2                  INITIAL(BYTE('GENERIC_DEC_CRT')),
; 1345          1591  2
; 1346          1592  2          GENERIC_ANSI_CRT_DESC     : VECTOR[2],
; 1347          1593  2          GENERIC_DEC_CRT_DESC      : VECTOR[2];
; 1348          1594  2
; 1349          1595  2      EXTERNAL ROUTINE
; 1350          1596  2
; 1351          1597  2          SMG$INIT_TERM_TABLE_BY_TYPE,                 ! Initialize terminal table by type
; 1352          1598  2          SMG$INIT_TERM_TABLE,                         ! Initialize terminal table by name
; 1353          1599  2          SMG$$CREATE_PASTEBOARD,                      ! Create a PBCB.
; 1354          1600  2          LIB$LP_LINES;                                ! Get number of rows for lpt
```

```
  2      !+
  2      ! Use RMS to parse the device name.
  2      ! This will give us a 1-15 character physical device name
  2      ! in the DVI field in the NAM block.
  2      ! (If we just use $GETDVI, it may return a 63-character hidden
  2      ! device name.)
  2      ! The main reason we call $PARSE is so that we can allow filenames.
  2      ! If the user specifies "TTB5:" as his device, he gets a terminal.
  2      ! If the user specifies "TTB5" as his output, he gets the file
  2      ! TTB5.LIS on his default disk and directory.
  2      !-
  2
  2      !+
  2      ! Initialize the FAB and NAM blocks.
  2      !-
  2
P 2      $FAB_INIT(  FAB     = SMGFAB,
P 2                  DNM     = 'SMGOUTPUT.LIS',
P 2                  NAM     = SMGNAM,
P 2                  FNA     = .FILE_NAME,
  2                  FNS     = .NAME_LEN);
  2
  2      $NAM_INIT(NAM=SMGNAM);
  2
  2      STATUS=$PARSE(FAB=SMGFAB);
  2      IF NOT .STATUS THEN RETURN .STATUS;
  2
  2      !+
  2      ! The device name is now a counted string in the NAM block
  2      ! beginning at offset NAM$T_DVI.
  2      ! There is an obscure case though that can occur.  If the output device
  2      ! is on another node, then RMS cannot figure out the device name
  2      ! so the DVI field is empty.  This can happen if an SMG job is
  2      ! run as a TASK with SYS$OUTPUT defined to be SYS$NET.
  2      ! This happens when you use the "TASK=FOO" kind of filespecification
  2      ! to RMS.
  2      ! To allow this to work, we check to see if the device characteristic
  2      ! of the pasteboard device is DEV$M_NET.  If so, we bypass the call
  2      ! to $GETDVI, and we fill in the fields the best we can.
  2      !-
  2
  2      IF .FABDEV[DEV$V_NET]
  2      THEN
  3          BEGIN           ! Network device
  3
  3          !+
  3          ! Fudge the items to reasonable values.
  3          !-
  3
  3          DEV_TYPE        = DT$_MBX;
  3          DEV_DEPEND      = 0;
  3          DEV_DEPEND2     = 0;
  3          DEV_CLASS       = DC$_MAILBOX;
  3          DEV_BUFSIZ      = 80;
  3          DEV_DEVNAM      = .FILE_NAME;
  3          DEV_NAMLEN      = .NAME_LEN;
  3          END             ! Network device
  2     ELSE
  3         BEGIN               ! Normal device
  3
  3         DVI_TYPE     = DEV_TYPE;                    ! fill in rest of itmlst
  3         DVI_DEPEND   = DEV_DEPEND;
  3         DVI_DEPEND2  = DEV_DEPEND2;
  3         DVI_CLASS    = DEV_CLASS;
  3         DVI_BUFSIZ   = DEV_BUFSIZ;
  3         DVI_DEVNAM   = DEV_DEVNAM;
  3         DVI_NAMLEN   = DEV_NAMLEN;
  3
  4         IF NOT (STATUS = LIB$GET_EF (DVI_EFN))
  3         THEN RETURN (.STATUS);              ! get unique event flag number
  3
  3         !+
  3         ! Create a descriptor for use by $GETDVI.
  3         !-
  3
  3         DEVNAM_DSC [DSC$B_DTYPE]   =  DSC$K_DTYPE_T;
  3         DEVNAM_DSC [DSC$B_CLASS]   =  DSC$K_CLASS_S;
  3         DEVNAM_DSC [DSC$W_LENGTH]  = .DVI_NAME_LEN;
  3         DEVNAM_DSC [DSC$A_POINTER] =  DVI_NAME;
  3
P 3         STATUS = $GETDVI(         EFN     = .DVI_EFN,
P 3                                   IOSB    =  DVI_IOSB,
P 3                                   DEVNAM  =  DEVNAM_DSC,
  3                                   ITMLST  =  DVI_ITMLST);
  3         IF NOT .STATUS THEN RETURN (.STATUS);
  3
  3         ! *** Possible bug: Should we deallocate the event flag if the
  3         !          $getdvi fails?  Otherwise, enough calls to this routine
  3         !          that return errors will use up all the event flags.
  3
  3         STATUS=$WAITFR (EFN = .DVI_EFN);                 ! make $GETDVI synchronous
  3         IF NOT .STATUS THEN RETURN (.STATUS);
  3
  3         !+
  3         ! When the operation completes, the final status
  3         ! is left in the first word of the I/O status block.
  3         !-
  3
  3         IF NOT .DVI_IOSB [0] THEN RETURN (.DVI_IOSB [0]);
  3
  2         END;     ! Normal device
  2
  2     !+
  2     ! Calculate the number of rows and columns for our pasteboard.
  2     ! If the device is a terminal, then the number of rows
  2     ! is the high byte in DEVDEPEND.
  2     ! If the device is not a terminal, then the number of rows
  2     ! is hereby declared to be that returned by LIB$LP_LINES.
  2     ! (We don't let this get bigger than 511 however, since we
  2     ! store the result in a byte.)
  2     ! The number of columns is the device buffer size, whether or not
  2     ! the device is a terminal.
  2     ! If the device is not aterminal, then we assume it will eventually
  2     ! be printed on a terminal or a lineprinter, so we minimize
```

```
! the width with 132.  We might wish to reconsider this idea
! in the future if we ever start producing wider terminals.
!-

IF .DEV_CLASS EQL DC$_TERM
THEN
    DEV_PAGSIZ = .DEV_DEPEND[TT$V_PAGE]
ELSE
    BEGIN
    DEV_PAGSIZ = MIN(LIB$LP_LINES(),511);
    DEV_BUFSIZ = MIN(.DEV_BUFSIZ,132)
    END;

!+
! Allocate a pasteboard control block (PBCB).
!-

IF NOT NULLPARAMETER(PBCB_ADR)
THEN
    BEGIN
    STATUS = SMG$$CREATE_PASTEBOARD ( DEV_PAGSIZ, DEV_BUFSIZ, .PBCB_ADR );
    IF NOT .STATUS THEN RETURN (.STATUS);
    END;

!+
! If the device is a terminal, we get information about it from
! TERMTABLE.EXE.  We set TERM_TYPE to VTTERMTABLE.
!-

TERMTABLE=0;

IF .DEV_CLASS EQL DC$_TERM
THEN
    BEGIN   ! Get info from TERMTABLE
    IF .DEV_TYPE EQL TT$_UNKNOWN
      THEN BEGIN   ! TERMTABLE never heard of it
            LOCAL GENERIC_NAME;
            !+
            ! Initialize our descriptors.
            ! We couldn't do this with an INITIAL clause
            ! because that would generate a .ADDRESS directive
            ! which would require fixup vectors
            ! which would make the PSECT read/write
            ! which would prevent sharing in our shared image.
            !-

            GENERIC_ANSI_CRT_DESC[0]=%ALLOCATION(GENERIC_ANSI_CRT_BUF);
            GENERIC_ANSI_CRT_DESC[1]=GENERIC_ANSI_CRT_BUF;
            GENERIC_DEC_CRT_DESC[0]=%ALLOCATION(GENERIC_DEC_CRT_BUF);
            GENERIC_DEC_CRT_DESC[1]=GENERIC_DEC_CRT_BUF;

            !+
            ! Well, if it's either an ANSI_CRT or a DEC_CRT,
            ! we can handle it. DEC_CRT has priority over ANSI.
            !-
            GENERIC_NAME=0;
            IF .DEV_DEPEND2[TT2$V_ANSICRT]
```

```
4                  THEN  GENERIC_NAME=GENERIC_ANSI_CRT_DESC;
4                IF .DEV_DEPEND2[TT2$V_DECCRT]
4                  THEN  GENERIC_NAME=GENERIC_DEC_CRT_DESC;
4                IF .GENERIC_NAME EQL 0
4                  THEN  TERM_TYPE=UNKNOWN
5                  ELSE  BEGIN   ! Use a generic terminal
5                        STATUS=SMG$INIT_TERM_TABLE(.GENERIC_NAME,TERMTABLE);
5                        IF NOT .STATUS THEN RETURN .STATUS;
5                        TERM_TYPE=VTTERMTABLE
4                        END;      ! Use a generic terminal
4                END     ! TERMTABLE never heard of it
4          ELSE  BEGIN   ! Standard TERMTABLE terminal
4                STATUS=SMG$INIT_TERM_TABLE_BY_TYPE(DEV_TYPE,TERMTABLE);
4                IF NOT .STATUS THEN RETURN .STATUS;
4                TERM_TYPE=VTTERMTABLE
4                END     ! Standard TERMTABLE terminal
3       END      ! Get info from TERMTABLE
2   ELSE
2       TERM_TYPE=UNKNOWN;
2
2   !+
2   ! Store items in the PBCB if one was created.
2   !-
2
2   IF NOT NULLPARAMETER(4)
2   THEN
3       BEGIN    ! storing into PBCB
3
3       BIND     PBCB = ..PBCB_ADR : $PBCB_DECL ;
3
3       !+
3       ! We will need an event flag for many future operations on this
3       ! pasteboard, so we store away the event flag in the PBCB.
3       !-
3
3       PBCB [PBCB_B_EFN] = .DVI_EFN;
3
3       PBCB [PBCB_B_DEVTYPE]   = .TERM_TYPE;   ! Internal type
3
3       !+
3       ! Fill in the 12-byte device characteristics block in the PBCB.
3       ! Note that the DEVDEPEND field will not be valid if the device
3       ! is not a terminal because we replace the top byte of this
3       ! longword with the device page size (as it would be for a terminal).
3       !-
3
3       PBCB [PBCB_B_PHY_DEV_TYPE]= .DEV_TYPE;  ! Physical type.
3       PBCB [PBCB_B_CLASS]     = .DEV_CLASS;   ! Device class
3       PBCB [PBCB_W_WIDTH]     = .DEV_BUFSIZ;  ! Number of columns.
3       PBCB [PBCB_W_ORIG_WIDTH]= .DEV_BUFSIZ;  ! Number of columns (original value)
3       PBCB [PBCB_L_DEVDEPEND] = .DEV_DEPEND;  ! Implicitly sets overlapped
3                                               ! field PBCB_B_ROWS also.
3       PBCB [PBCB_B_ROWS]      = .DEV_PAGSIZ;  ! Reset it again.
3       PBCB [PBCB_L_DEVDEPEND2]= .DEV_DEPEND2; ! Secondary characteristics.
3       PBCB [PBCB_L_TERMTABLE] = .TERMTABLE;   ! Terminal table
3       PBCB [PBCB_L_LONGEST_SEQUENCE]=SMG$K_LONGEST_SEQUENCE;
3
```

```
3          !+
3          ! Allocate a buffer tu hold the longest possible sequence
3          ! that can be returned to us.
3          !-
3
3          STATUS=LIB$GET_VM(PBCB[PBCB_L_LONGEST_SEQUENCE],
3                         PBCB[PBCB_A_CAP_BUFFER]);
3          IF NOT .STATUS THEN RETURN .STATUS;
3
3          !+
3          ! Create the border vector.
3          !-
3
3          ESTABLISH_BORDER_VECTOR(PBCB);
3
3          !+
3          !          If terminal does not support direct cursor positioning,
3          !          then treat it as a hardcopy device.
3          !          Otherwise, treat it as a TERMTABLE scope terminal.
3          !-
3
3          IF .TERM_TYPE EQL VTTERMTABLE
4            THEN  BEGIN
4                  $SMG$GET_TERM_DATA(SET_CURSOR_ABS, 1, 1);
4                  IF .PBCB[PBCB_L_CAP_LENGTH] EQL 0
5                    THEN  BEGIN
5                          TERM_TYPE=HARDCOPY;
5                          PBCB [PBCB_B_DEVTYPE]   = .TERM_TYPE;   ! Internal type
4                          END;
4                  $SMG$GET_TERM_DATA(SCOPE);
4                  IF .PBCB[PBCB_L_CAP_LENGTH] EQL 0
5                    THEN  BEGIN
5                          TERM_TYPE=HARDCOPY;
5                          PBCB [PBCB_B_DEVTYPE]   = .TERM_TYPE;   ! Internal type
5                          END
5                    ELSE  BEGIN
5                          BIND BOOL = .PBCB[PBCB_A_CAP_BUFFER];
5                          IF NOT .BOOL
6                            THEN  BEGIN
6                                  TERM_TYPE=HARDCOPY;
6                                  PBCB [PBCB_B_DEVTYPE]   = .TERM_TYPE;   ! Internal type
5                                  END;
4                          END;
3                  END;
3
3          !+
3          ! Find out if this terminal supports high and/or wide lines,
3          ! and if it has physical tabs and backspaces.
3          !-
3
3          IF .TERMTABLE NEQ 0
4            THEN  BEGIN   ! Get info from TERMTABLE
4
4                  $SMG$GET_TERM_DATA(DOUBLE_WIDE);
4                  IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4                    THEN  PBCB[PBCB_V_WIDE] = 1;  ! It handles wide lines
```

```
4                $SMG$GET_TERM_DATA(DOUBLE_HIGH_TOP);
4                IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4                  THEN  PBCB[PBCB_V_HIGH] = 1;  ! It handles double high lines
4
4                IF .DEV_DEPEND[TT$V_MECHTAB]
5                  THEN  BEGIN
5                        PBCB[PBCB_V_TABS] = 1;                 ! It handles physical tabs
5                                                               ! We check the NOTABS bit
5                                                               ! elsewhere, because the user
5                                                               ! can dynamically change that
5                                                               ! at runtime.
4                        END;
4
4                $SMG$GET_TERM_DATA(BACKSPACE);
4                IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
5                  THEN  BEGIN
5                        BIND ANSWER = .PBCB[PBCB_A_CAP_BUFFER];
5                        IF .ANSWER
5                          THEN  PBCB[PBCB_V_BS] = 1;     ! It handles backspace
4                        END;
4
3                END;     ! Get info from TERMTABLE
3
3            !+
3            ! Fill in the device name.
3            !-
3
3            PBCB [PBCB_W_DEVNAM_LEN]= .DEV_NAMLEN;  ! Length of device name
3            CH$MOVE ( .DEV_NAMLEN, DEV_DEVNAM, PBCB[PBCB_T_DEVNAM]);
3
3            !+
3            ! Initially, we don't know what color the background is.
3            !-
3
3            PBCB [PBCB_B_BACKGROUND_COLOR] = SMG$C_COLOR_UNKNOWN;
3
3            !+
3            ! Output any initialization sequence now.
3            !-
3
3            $SMG$GET_TERM_DATA(INIT_STRING);
3
3            IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4              THEN  BEGIN
4                    STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                            .PBCB[PBCB_A_CAP_BUFFER]);
4                    IF NOT .STATUS THEN RETURN .STATUS
3                    END;
3
2            END;     ! storing into PBCB
2
2        RETURN .STATUS
2
1        END;                               ! End of routine SMG$$SETUP_TERMINAL_TYPE
```

```
                                                                        .PSECT  _SMG$DATA,NOEXE,  PIC,2

52 43 5F 49 53 4E 41 5F 43 49 52 45 4E 45 47  00004 GENERIC_ANSI_CRT_BUF:
                                                                        .ASCII  \GENERIC_ANSI_CRT\                    ;
                                          54  00013
54 52 43 5F 43 45 44 5F 43 49 52 45 4E 45 47  00014 GENERIC_DEC_CRT_BUF:
                                                                        .ASCII  \GENERIC_DEC_CRT\                     ;
                                              00023                     .BLKB   1
                                              00024 GENERIC_ANSI_CRT_DESC:
                                                                        .BLKB   8
                                              0002C GENERIC_DEC_CRT_DESC:
                                                                        .BLKB   8

                                                                        .PSECT  _SMG$CODE,NOWRT,  SHR,  PIC,2

                                              006A5                     .BLKB   3
00000000 00000000 000A0004 00000000 00000000 00060004 006A8 P.AAB:     .LONG   393220, 0, 0, 655364, 0, 0, 1835012, 0, -   ;
00000000 00000000 00080004 00000000 00000000 001C0004 006C0                    0, 524292, 0, 0, 262148, 0, 0, 2097216, -    ;
00000000 00000000 00200040 00000000 00000000 00040004 006D8                    0, 0, 0                                      ;
                                             00000000 006F0                                                                 ;
      53 49 4C 2E 54 55 50 54 55 4F 47 4D 53  006F4 P.AAC:              .ASCII  \SMGOUTPUT.LIS\                       ;

                                                                        .EXTRN  SMG$INIT_TERM_TABLE_BY_TYPE
                                                                        .EXTRN  SMG$INIT_TERM_TABLE
                                                                        .EXTRN  SMG$$CREATE_PASTEBOARD
                                                                        .EXTRN  LIB$LP_LINES, SYS$PARSE
                                                                        .EXTRN  SYS$GETDVI, SYS$WAITFR

                                         0FFC 00000                     .ENTRY  SMG$$SETUP_TERMINAL_TYPE, Save R2,R3,R4,R5,-; 1472
                                                                                R6,R7,R8,R9,R10,R11                          ;
                          5E    FE80  CE  9E 00002                      MOVAB   -384(SP), SP                                 ;
                          5B      0C  AC  D0 00007                      MOVL    P_TERM_TYPE, R11                             ; 1529
              7C  AE  96  AF    004C  8F  28 0000B                      MOVC3   #76, P.AAB, DVI_ITMLST                       ; 1547
  0050  8F        00      6E          00  2C 00013                      MOVC5   #0, (SP), #0, #80, $RMS_PTR                  ; 1621
                                  B0  AD     0001A                                                                          ;
                      B0  AD    5003  8F  B0 0001C                      MOVW    #20483, $RMS_PTR                             ;
                      C6  AD          02  90 00022                      MOVB    #2, $RMS_PTR+22                              ;
                      CF  AD          02  90 00026                      MOVB    #2, $RMS_PTR+31                              ;
                      D8  AD    FF50  CD  9E 0002A                      MOVAB   SMGNAM, $RMS_PTR+40                          ;
                      DC  AD      04  AC  D0 00030                      MOVL    FILE_NAME, $RMS_PTR+44                       ;
                      E0  AD      BB  AF  9E 00035                      MOVAB   P.AAC, $RMS_PTR+48                           ;
                      E4  AD      08  AC  90 0003A                      MOVB    NAME_LEN, $RMS_PTR+52                        ;
                      E5  AD          0D  90 0003F                      MOVB    #13, $RMS_PTR+53                             ;
  0060  8F        00      6E          00  2C 00043                      MOVC5   #0, (SP), #0, #96, $RMS_PTR                  ; 1623
                                FF50  CD     0004A                                                                          ;
                FF50  CD        6002  8F  B0 0004D                      MOVW    #24578, $RMS_PTR                             ;
                                  B0  AD  9F 00054                      PUSHAB  SMGFAB                                       ; 1625
           00000000G  00              01  FB 00057                      CALLS   #1, SYS$PARSE                                ;
                      59              50  D0 0005E                      MOVL    R0, STATUS                                   ;
                      5D              59  E9 00061                      BLBC    STATUS, 2$                                   ; 1626
              21  F1  AD              05  E1 00064                      BBC     #5, FABDEV+1, 1$                             ; 1642
                  70  AE              01  D0 00069                      MOVL    #1, DEV_TYPE                                 ; 1650
                                  6C  AE  D4 0006D                      CLRL    DEV_DEPEND                                   ; 1651
                                  68  AE  D4 00070                      CLRL    DEV_DEPEND2                                  ; 1652
                      60  AE      A0  8F  9A 00073                      MOVZBL  #160, DEV_CLASS                              ; 1653
                      64  AE      50  8F  9A 00078                      MOVZBL  #80, DEV_BUFSIZ                              ; 1654
                      20  AE      04  AC  D0 0007D                      MOVL    FILE_NAME, DEV_DEVNAM                        ; 1655
```

```
                 1E   AE        08   AC   B0 00082          MOVW    NAME_LEN, DEV_NAMLEN                         : 1656
                                   008A   31 00087          BRW     4$                                           : 1642
               0080   CE        70   AE   9E 0008A 1$:      MOVAB   DEV_TYPE, DVI_TYPE                           : 1661
               008C   CE        6C   AE   9E 00090          MOVAB   DEV_DEPEND, DVI_DEPEND                       : 1662
               0098   CE        68   AE   9E 00096          MOVAB   DEV_DEPEND2, DVI_DEPEND2                     : 1663
               00B0   CE        60   AE   9E 0009C          MOVAB   DEV_CLASS, DVI_CLASS                         : 1664
               00A4   CE        64   AE   9E 000A2          MOVAB   DEV_BUFSIZ, DVI_BUFSIZ                       : 1665
               00BC   CE        20   AE   9E 000A8          MOVAB   DEV_DEVNAM, DVI_DEVNAM                       : 1666
               FF40   CD        1E   AE   9E 000AE          MOVAB   DEV_NAMLEN, DVI_NAMLEN                       : 1667
                                04   AE   9F 000B4          PUSHAB  DVI_EFN                                      : 1669
          00000000G   00             01   FB 000B7          CALLS   #1, LIB$GET_EF                               :
                      59             50   D0 000BE          MOVL    R0, STATUS                                   :
                      44             59   E9 000C1 2$:      BLBC    STATUS, 3$                                   :
               FF4A   CD      010E   8F   B0 000C4          MOVW    #270, DEVNAM_DSC+2                           : 1676
               FF48   CD      FF64   CD   9B 000CB          MOVZBW  DVI_NAME_LEN, DEVNAM_DSC                     : 1678
               FF4C   CD      FF65   CD   9E 000D2          MOVAB   DVI_NAME, DEVNAM_DSC+4                       : 1679
                                     7E   7C 000D9          CLRQ    -(SP)                                        : 1684
                                     7E   D4 000DB          CLRL    -(SP)                                        :
                              0080   CE   9F 000DD          PUSHAB  DVI_IOSB                                     :
                              008C   CE   9F 000E1          PUSHAB  DVI_ITMLST                                   :
                              FF48   CD   9F 000E5          PUSHAB  DEVNAM_DSC                                   :
                                     7E   D4 000E9          CLRL    -(SP)                                        :
                                20   AE   DD 000EB          PUSHL   DVI_EFN                                      :
          00000000G   00             08   FB 000EE          CALLS   #8, SYS$GETDVI                               :
                      59             50   D0 000F5          MOVL    R0, STATUS                                   :
                      75             59   E9 000F8          BLBC    STATUS, 9$                                   : 1685
                                04   AE   DD 000FB          PUSHL   DVI_EFN                                      : 1691
          00000000G   00             01   FB 000FE          CALLS   #1, SYS$WAITFR                               :
                      59             50   D0 00105          MOVL    R0, STATUS                                   :
                      65             59   E9 00108 3$:      BLBC    STATUS, 9$                                   : 1692
                      05        74   AE   E8 0010B          BLBS    DVI_IOSB, 4$                                 : 1699
                      50        74   AE   3C 0010F          MOVZWL  DVI_IOSB, R0                                 :
                                          04 00113          RET                                                  :
           00000042   8F        60   AE   D1 00114 4$:      CMPL    DEV_CLASS, #66                               : 1719
                                     07   12 0011C          BNEQ    5$                                           :
                 08   AE        6F   AE   9A 0011E          MOVZBL  DEV_DEPEND+3, DEV_PAGSIZ                     : 1721
                                     2E   11 00123          BRB     8$                                           :
          00000000G   00             00   FB 00125 5$:      CALLS   #0, LIB$LP_LINES                             : 1724
           000001FF   8F             50   D1 0012C          CMPL    R0, #511                                     :
                                     05   15 00133          BLEQ    6$                                           :
                      50      01FF   8F   3C 00135          MOVZWL  #511, R0                                     :
                 08   AE             50   D0 0013A 6$:      MOVL    R0, DEV_PAGSIZ                               :
                      50        64   AE   D0 0013E          MOVL    DEV_BUFSIZ, R0                               : 1725
           00000084   8F             50   D1 00142          CMPL    R0, #132                                     :
                                     04   15 00149          BLEQ    7$                                           :
                      50        84   8F   9A 0014B          MOVZBL  #132, R0                                     :
                 64   AE             50   D0 0014F 7$:      MOVL    R0, DEV_BUFSIZ                               :
                      04             6C   91 00153 8$:      CMPB    (AP), #4                                     : 1732
                                     1B   1F 00156          BLSSU   10$                                          :
                                10   AC   D5 00158          TSTL    16(AP)                                       :
                                     16   13 0015B          BEQL    10$                                          :
                                10   AC   DD 0015D          PUSHL   PBCB_ADR                                     : 1735
                                68   AE   9F 00160          PUSHAB  DEV_BUFSIZ                                   :
                                10   AE   9F 00163          PUSHAB  DEV_PAGSIZ                                   :
          00000000G   00             03   FB 00166          CALLS   #3, SMG$$CREATE_PASTEBOARD                   :
                      59             50   D0 0016D          MOVL    R0, STATUS                                   :
                      65             59   E9 00170 9$:      BLBC    STATUS, 14$                                  : 1736
```

```
                           0C  AE  D4 00173 10$:   CLRL     TERMTABLE                                     ; 1744
      00000042   8F        60  AE  D1 00176        CMPL     DEV_CLASS, #66                                ; 1746
                               6F  12 0017E        BNEQ     17$                                           ;
                           70  AE  D5 00180        TSTL     DEV_TYPE                                      ; 1749
                               56  12 00183        BNEQ     15$                                           ;
      00000000'  EF                10  D0 00185        MOVL     #16, GENERIC_ANSI_CRT_DESC                    ; 1761
      00000000'  EF 00000000'  EF  9E 0018C        MOVAB    GENERIC_ANSI_CRT_BUF, -                       ; 1762
                                                            GENERIC_ANSI_CRT_DESC+4                       ;
      00000000'  EF                0F  D0 00197        MOVL     #15, GENERIC_DEC_CRT_DESC                     ; 1763
      00000000'  EF 00000000'  EF  9E 0019E        MOVAB    GENERIC_DEC_CRT_BUF, GENERIC_DEC_CRT_DESC+4   ; 1764
                               50  D4 001A9        CLRL     GENERIC_NAME                                  ; 1770
                 07        6B  AE  E9 001AB        BLBC     DEV_DEPEND2+3, 11$                            ; 1771
                 50 00000000'  EF  9E 001AF        MOVAB    GENERIC_ANSI_CRT_DESC, GENERIC_NAME           ; 1772
  07        6B   AE            05  E1 001B6 11$:   BBC      #5, DEV_DEPEND2+3, 12$                        ; 1773
                 50 00000000'  EF  9E 001BB        MOVAB    GENERIC_DEC_CRT_DESC, GENERIC_NAME            ; 1774
                               50  D5 001C2 12$:   TSTL     GENERIC_NAME                                  ; 1775
                               29  13 001C4        BEQL     17$                                           ;
                           0C  AE  9F 001C6        PUSHAB   TERMTABLE                                     ; 1778
                               50  DD 001C9        PUSHL    GENERIC_NAME                                  ;
      00000000G  00                02  FB 001CB        CALLS    #2, SMG$INIT_TERM_TABLE                       ;
                 59                50  D0 001D2 13$:   MOVL     R0, STATUS                                    ;
                 12                59  E8 001D5        BLBS     STATUS, 16$                                   ; 1779
                             020A  31 001D8 14$:   BRW      42$                                           ;
                           0C  AE  9F 001DB 15$:   PUSHAB   TERMTABLE                                     ; 1784
                           74  AE  9F 001DE        PUSHAB   DEV_TYPE                                      ;
      00000000G  00                02  FB 001E1        CALLS    #2, SMG$INIT_TERM_TABLE_BY_TYPE               ;
                               E8  11 001E8        BRB      13$                                           ;
                 6B                06  D0 001EA 16$:   MOVL     #6, (R11)                                     ; 1786
                               02  11 001ED        BRB      18$                                           ; 1748
                               6B  D4 001EF 17$:   CLRL     (R11)                                         ; 1790
                 04                6C  91 001F1 18$:   CMPB     (AP), #4                                      ; 1796
                               E2  1F 001F4        BLSSU    14$                                           ;
                           10  AC  D5 001F6        TSTL     16(AP)                                        ;
                               DD  13 001F9        BEQL     14$                                           ;
                 56        10  BC  D0 001FB        MOVL     @PBCB_ADR, R6                                 ; 1800
            66   A6        04  AE  90 001FF        MOVB     DVI_EFN, 102(R6)                              ; 1807
            10   A6            6B  90 00204        MOVB     (R11), 16(R6)                                 ; 1809
            59   A6        70  AE  90 00208        MOVB     DEV_TYPE, 89(R6)                              ; 1818
            58   A6        60  AE  90 0020D        MOVB     DEV_CLASS, 88(R6)                             ; 1819
            5A   A6        64  AE  B0 00212        MOVW     DEV_BUFSIZ, 90(R6)                            ; 1820
          00E6   C6        64  AE  B0 00217        MOVW     DEV_BUFSIZ, 230(R6)                           ; 1821
            5C   A6        6C  AE  D0 0021D        MOVL     DEV_DEPEND, 92(R6)                            ; 1822
            5F   A6        08  AE  90 00222        MOVB     DEV_PAGSIZ, 95(R6)                            ; 1824
            60   A6        68  AE  D0 00227        MOVL     DEV_DEPEND2, 96(R6)                           ; 1825
                 58      00FC  C6  9E 0022C        MOVAB    252(R6), R8                                   ; 1826
                 68        0C  AE  D0 00231        MOVL     TERMTABLE, (R8)                               ;
                 5A      0100  C6  9E 00235        MOVAB    256(R6), R10                                  ; 1827
                 6A        FF  8F  9A 0023A        MOVZBL   #255, (R10)                                   ;
                 57      0104  C6  9E 0023E        MOVAB    260(R6), R7                                   ; 1835
                               57  DD 00243        PUSHL    R7                                            ;
                               5A  DD 00245        PUSHL    R10                                           ;
      00000000G  00                02  FB 00247        CALLS    #2, LIB$GET_VM                                ;
                 59                50  D0 0024E        MOVL     R0, STATUS                                    ;
                 84                59  E9 00251        BLBC     STATUS, 14$                                   ; 1836
                                   56  DD 00254        PUSHL    R6                                            ; 1842
         0000V   CF                01  FB 00256        CALLS    #1, ESTABLISH_BORDER_VECTOR                   ;
                 06                6B  D1 0025B        CMPL     (R11), #6                                     ; 1850
```

```
                               7D  12 0025E          BNEQ    25$                                  ;
                               68  D5 00260          TSTL    (R8)                                 ; 1852
                               09  12 00262          BNEQ    19$                                  ;
                52      0108   C6  9E 00264          MOVAB   264(R6), R2                          ;
                               62  D4 00269          CLRL    (R2)                                 ;
                               2F  11 0026B          BRB     20$                                  ;
          10    AE             02  D0 0026D  19$:    MOVL    #2, INPUT_ARGS                       ;
          14    AE             01  D0 00271          MOVL    #1, INPUT_ARGS+4                     ;
          18    AE             01  D0 00275          MOVL    #1, INPUT_ARGS+8                     ;
                          10   AE  9F 00279          PUSHAB  INPUT_ARGS                           ;
                               67  DD 0027C          PUSHL   (R7)                                 ;
                52      0108   C6  9E 0027E          MOVAB   264(R6), R2                          ;
                               52  DD 00283          PUSHL   R2                                   ;
                               5A  DD 00285          PUSHL   R10                                  ;
          10    AE      023A   8F  3C 00287          MOVZWL  #570, 16(SP)                         ;
                          10   AE  9F 0028D          PUSHAB  16(SP)                               ;
                               58  DD 00290          PUSHL   R8                                   ;
   00000000G    00             06  FB 00292          CALLS   #6, SMG$GET_TERM_DATA                ;
                79             50  E9 00299          BLBC    STATUS, 28$                          ;
                               62  D5 0029C  20$:    TSTL    (R2)                                 ; 1853
                               07  12 0029E          BNEQ    21$                                  ;
                6B             05  D0 002A0          MOVL    #5, (R11)                            ; 1855
          10    A6             6B  90 002A3          MOVB    (R11), 16(R6)                        ; 1856
                               68  D5 002A7  21$:    TSTL    (R8)                                 ; 1858
                               04  12 002A9          BNEQ    22$                                  ;
                               62  D4 002AB          CLRL    (R2)                                 ;
                               1F  11 002AD          BRB     23$                                  ;
                          10   AE  D4 002AF  22$:    CLRL    INPUT_ARGS                           ;
                          10   AE  9F 002B2          PUSHAB  INPUT_ARGS                           ;
                               67  DD 002B5          PUSHL   (R7)                                 ;
                               52  DD 002B7          PUSHL   R2                                   ;
                               5A  DD 002B9          PUSHL   R10                                  ;
          10    AE             12  D0 002BB          MOVL    #18, 16(SP)                          ;
                          10   AE  9F 002BF          PUSHAB  16(SP)                               ;
                               58  DD 002C2          PUSHL   R8                                   ;
   00000000G    00             06  FB 002C4          CALLS   #6, SMG$GET_TERM_DATA                ;
                79             50  E9 002CB          BLBC    STATUS, 32$                          ;
                               62  D5 002CE  23$:    TSTL    (R2)                                 ; 1859
                               04  13 002D0          BEQL    24$                                  ;
                07        00   B7  E8 002D2          BLBS    @0(R7), 25$                          ; 1866
                6B             05  D0 002D6  24$:    MOVL    #5, (R11)                            ; 1868
          10    A6             6B  90 002D9          MOVB    (R11), 16(R6)                        ; 1869
                          0C   AE  D5 002DD  25$:    TSTL    TERMTABLE                            ; 1879
                               03  12 002E0          BNEQ    26$                                  ;
                             00AB  31 002E2          BRW     39$                                  ;
                               68  D5 002E5  26$:    TSTL    (R8)                                 ; 1882
                               09  12 002E7          BNEQ    27$                                  ;
                52      0108   C6  9E 002E9          MOVAB   264(R6), R2                          ;
                               62  D4 002EE          CLRL    (R2)                                 ;
                               26  11 002F0          BRB     29$                                  ;
                          10   AE  D4 002F2  27$:    CLRL    INPUT_ARGS                           ;
                          10   AE  9F 002F5          PUSHAB  INPUT_ARGS                           ;
                               67  DD 002F8          PUSHL   (R7)                                 ;
                52      0108   C6  9E 002FA          MOVAB   264(R6), R2                          ;
                               52  DD 002FF          PUSHL   R2                                   ;
                               5A  DD 00301          PUSHL   R10                                  ;
          10    AE      01CE   8F  3C 00303          MOVZWL  #462, 16(SP)                         ;
```

```
                                  10  AE  9F 00309       PUSHAB  16(SP)                                   ;
                                      58  DD 0030C       PUSHL   R8                                       ;
                  00000000G  00       06  FB 0030E       CALLS   #6, SMG$GET_TERM_DATA                    ;
                             68       50  E9 00315 28$:  BLBC    STATUS, 37$                              ;
                                      62  D5 00318 29$:  TSTL    (R2)                                     ; 1883
                                      05  13 0031A       BEQL    30$                                      ;
                       00FA  C6       01  88 0031C       BISB2   #1, 250(R6)                              ; 1884
                                      68  D5 00321 30$:  TSTL    (R8)                                     ; 1886
                                      04  12 00323       BNEQ    31$                                      ;
                                      62  D4 00325       CLRL    (R2)                                     ;
                                      21  11 00327       BRB     33$                                      ;
                                  10  AE  D4 00329 31$:  CLRL    INPUT_ARGS                               ;
                                  10  AE  9F 0032C       PUSHAB  INPUT_ARGS                               ;
                                      67  DD 0032F       PUSHL   (R7)                                     ;
                                      52  DD 00331       PUSHL   R2                                       ;
                                      5A  DD 00333       PUSHL   R10                                      ;
                   10  AE           01CD  8F  3C 00335       MOVZWL  #461, 16(SP)                         ;
                                  10  AE  9F 0033B       PUSHAB  16(SP)                                   ;
                                      58  DD 0033E       PUSHL   R8                                       ;
                  00000000G  00       06  FB 00340       CALLS   #6, SMG$GET_TERM_DATA                    ;
                             36       50  E9 00347 32$:  BLBC    STATUS, 37$                              ;
                                      62  D5 0034A 33$:  TSTL    (R2)                                     ; 1887
                                      05  13 0034C       BEQL    34$                                      ;
                       00FA  C6       02  88 0034E       BISB2   #2, 250(R6)                              ; 1888
                             05   6D  AE  E9 00353 34$:  BLBC    DEV_DEPEND+1, 35$                        ; 1890
                       00FA  C6       04  88 00357       BISB2   #4, 250(R6)                              ; 1892
                                      68  D5 0035C 35$:  TSTL    (R8)                                     ; 1899
                                      04  12 0035E       BNEQ    36$                                      ;
                                      62  D4 00360       CLRL    (R2)                                     ;
                                      1F  11 00362       BRB     38$                                      ;
                                  10  AE  D4 00364 36$:  CLRL    INPUT_ARGS                               ;
                                  10  AE  9F 00367       PUSHAB  INPUT_ARGS                               ;
                                      67  DD 0036A       PUSHL   (R7)                                     ;
                                      52  DD 0036C       PUSHL   R2                                       ;
                                      5A  DD 0036E       PUSHL   R10                                      ;
                   10  AE             04  D0 00370       MOVL    #4, 16(SP)                               ;
                                  10  AE  9F 00374       PUSHAB  16(SP)                                   ;
                                      58  DD 00377       PUSHL   R8                                       ;
                  00000000G  00       06  FB 00379       CALLS   #6, SMG$GET_TERM_DATA                    ;
                             65       50  E9 00380 37$:  BLBC    STATUS, 43$                              ;
                                      62  D5 00383 38$:  TSTL    (R2)                                     ; 1900
                                      09  13 00385       BEQL    39$                                      ;
                             05   00  B7  E9 00387       BLBC    @0(R7), 39$                              ; 1903
                       00D1  C6       01  88 0038B       BISB2   #1, 209(R6)                              ; 1904
                         12  A6   1E  AE  B0 00390 39$:  MOVW    DEV_NAMLEN, 18(R6)                       ; 1913
        18   A6          20  AE   1E  AE  28 00395       MOVC3   DEV_NAMLEN, DEV_DEVNAM, 24(R6)           ; 1914
                                00F9  C6  94 0039C       CLRB    249(R6)                                  ; 1920
                                      68  D5 003A0       TSTL    (R8)                                     ; 1926
                                      09  12 003A2       BNEQ    40$                                      ;
                             52 0108  C6  9E 003A4       MOVAB   264(R6), R2                              ;
                                      62  D4 003A9       CLRL    (R2)                                     ;
                                      26  11 003AB       BRB     41$                                      ;
                                  10  AE  D4 003AD 40$:  CLRL    INPUT_ARGS                               ;
                                  10  AE  9F 003B0       PUSHAB  INPUT_ARGS                               ;
                                      67  DD 003B3       PUSHL   (R7)                                     ;
                             52 0108  C6  9E 003B5       MOVAB   264(R6), R2                              ;
                                      52  DD 003BA       PUSHL   R2                                       ;
```

```
                                   5A  DD 003BC          PUSHL   R10                                   ;
                  10    AE   01DE  8F  3C 003BE          MOVZWL  #478, 16(SP)                          ;
                               10  AE  9F 003C4          PUSHAB  16(SP)                                ;
                                   58  DD 003C7          PUSHL   R8                                    ;
             00000000G  00         06  FB 003C9          CALLS   #6, SMG$GET_TERM_DATA                 ;
                        15         50  E9 003D0          BLBC    STATUS, 43$                           ;
                                   62  D5 003D3   41$:   TSTL    (R2)                                  ; 1928
                                   0E  13 003D5          BEQL    42$                                   ;
                                   67  DD 003D7          PUSHL   (R7)                                  ; 1931
                                   62  DD 003D9          PUSHL   (R2)                                  ; 1930
                                   56  DD 003DB          PUSHL   R6                                    ;
                 0000V  CF         03  FB 003DD          CALLS   #3, SMG$$OUTPUT                       ;
                        59         50  D0 003E2          MOVL    R0, STATUS                            ;
                        50         59  D0 003E5   42$:   MOVL    STATUS, R0                            ; 1937
                                       04 003E8   43$:   RET                                           ; 1939

; Routine Size:  1001 bytes,    Routine Base:  _SMG$CODE + 0701
```

```
1 %SBTTL 'ESTABLISH_BORDER_VECTOR'
1 ROUTINE ESTABLISH_BORDER_VECTOR( P_PBCB) : NOVALUE =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Creates a 16-longword vector used for translating border characters.
1 !       If the longword has a value less than 256, then it is a border
1 !       character.  If it is greater than 256, then it is the addresss of
1 !       a border character sequence.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = ESTABLISH_BORDER_VECTOR(P_PBCB)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       P_PBCB.rab.r            Address of PBCB
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       contents of PBCB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       R_BORDER_VECTOR field in PBCB gets set up
1 !       V_COMPLEX_BORDER is set to 1 if some border element
1 !                        is longer than a byte
1 !
1 ! COMPLETION STATUS:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
BEGIN

BIND    PBCB    = .P_PBCB               : $PBCB_DECL;

LOCAL   STATUS;

!+
! Macro to set code longword in border_vector if
! corresponding capability is defined.
! We use the default character if the capability doesn't exisit
! or if it does exist but the terminal is a non-AVO ANSI CRT.
!-

MACRO

    $VECTOR_SET(CODE,CAP,DEFAULT) =

        BEGIN

        BIND TT2 = PBCB[PBCB_L_DEVDEPEND2]         : $BBLOCK;

        BIND VECT =  PBCB[PBCB_R_BORDER_VECTOR] : VECTOR[16];

        $SMG$GET_TERM_DATA(CAP);

        IF .PBCB[PBCB_L_CAP_LENGTH] EQL 0
        OR (.TT2[TT2$V_ANSICRT] AND NOT .TT2[TT2$V_AVO])
          THEN  BEGIN    ! Use default character
                VECT[CODE]=DEFAULT
                END      ! Use default character
          ELSE  BEGIN    ! Use specified string
                IF .PBCB[PBCB_L_CAP_LENGTH] GTR 1
                  THEN  BEGIN   ! It's a long string

                        LOCAL   SIZE;

                        !+
                        ! Build a byte-counted string for this string.
                        !-

                        SIZE=.PBCB[PBCB_L_CAP_LENGTH]+1;

                        !+
                        ! Allocate virtual memory for the capability.
                        ! Store it as a counted string.
                        !-

                        STATUS=LIB$GET_VM(SIZE,VECT[CODE]);
                        IF NOT .STATUS THEN RETURN .STATUS;

                        !+
                        ! Copy the capability in.
                        !-

                        CH$MOVE(.PBCB[PBCB_L_CAP_LENGTH],
                                .PBCB[PBCB_A_CAP_BUFFER],
                                .VECT[CODE]+1);
```

```
; 1790       M 2033  2
; 1791       M 2034  2                       !+
; 1792       M 2035  2                       ! Set the byte count.
; 1793       M 2036  2                       !-
; 1794       M 2037  2
; 1795       M 2038  2                               BEGIN
; 1796       M 2039  2                               BIND COUNT = .VECT[CODE] : BYTE;
; 1797       M 2040  2                               COUNT=.PBCB[PBCB_L_CAP_LENGTH]
; 1798       M 2041  2                               END;
; 1799       M 2042  2
; 1800       M 2043  2                       PBCB[PBCB_V_COMPLEX_BORDER]=1
; 1801       M 2044  2
; 1802       M 2045  2                       END      ! It's a long string
; 1803       M 2046  2                 ELSE  BEGIN    ! It's a single character
; 1804       M 2047  2                       BIND CHAR = .PBCB[PBCB_A_CAP_BUFFER] : BYTE;
; 1805       M 2048  2                       VECT[CODE]=.CHAR
; 1806       M 2049  2                       END      ! It's a single character
; 1807       M 2050  2               END;    ! Use specified string
; 1808       M 2051  2
; 1809       M 2052  2       END
; 1810       M 2053  2
; 1811         2054  2   %;
```

```
2 !+
2 ! The border vector is a 16-longword vector.
2 ! The nth longword represents the character used to represent
2 ! the nth border element.  It is the character itself (if <256,
2 ! or the address of a (byte) counted string for the capability.
2 ! These elements are described below:
2 !
2 ! code  description             default
2 !
2 ! 0     unused                  space
2 ! 1     right                   -
2 ! 2     up                      |
2 ! 3     lower left corner       +
2 ! 4     left                    -
2 ! 5     horizontal              -
2 ! 6     lower right corner      +
2 ! 7     tup                     +
2 ! 8     down                    |
2 ! 9     upper left corner       +
2 ! 10    vertical                |
2 ! 11    tright                  +
2 ! 12    upper right corner      +
2 ! 13    tdown                   +
2 ! 14    tleft                   +
2 ! 15    cross                   +
2 !-
2
2 !+
2 ! Note: "tright" means a T with the stem pointing to the right.
2 !       (This is called a left T in the VT100 manual.)
2 !-
2
2 !+
2 ! Note how the codes "or" together.
2 !-
2
2 BIND
2
2         HARD_SEQUENCE   = UPLIT BYTE(' -|+--++|+|+++++') : VECTOR[16,BYTE];
2
2 !+
2 ! Now replace each element, one at a time, with the appropriate special
2 ! character, if one was specified in the TERMTABLE file.
2 ! Otherwise, store in the default character.
2 !-
2
2 $VECTOR_SET( 1,HORIZONTAL_BAR,%C'-');
2 $VECTOR_SET( 2,VERTICAL_BAR,%C'|');
2 $VECTOR_SET( 3,LOWER_LEFT_CORNER,%C'+');
2 $VECTOR_SET( 4,HORIZONTAL_BAR,%C'-');
2 $VECTOR_SET( 5,HORIZONTAL_BAR,%C'-');
2 $VECTOR_SET( 6,LOWER_RIGHT_CORNER,%C'+');
2 $VECTOR_SET( 7,BOTTOM_T_CHAR,%C'+');
2 $VECTOR_SET( 8,VERTICAL_BAR,%C'|');
2 $VECTOR_SET( 9,UPPER_LEFT_CORNER,%C'+');
2 $VECTOR_SET(10,VERTICAL_BAR,%C'|');
2 $VECTOR_SET(11,LEFT_T_CHAR,%C'+');
```

```
; 1870          2112  2 $VECTOR_SET(12,UPPER_RIGHT_CORNER,%C'+');
; 1871          2113  2 $VECTOR_SET(13,TOP_T_CHAR,%C'+');
; 1872          2114  2 $VECTOR_SET(14,RIGHT_T_CHAR,%C'+');
; 1873          2115  2 $VECTOR_SET(15,CROSS_CHAR,%C'+');
; 1874          2116  2
; 1875          2117  1 END;



2B  2B  2B  2B  7C  2B  7C  2B  2B  2D  2D  2B  7C  2D  20  00AEA P.AAD:   .ASCII  \ -¦+--++¦+¦+++++\                         ;
                                                        2B  00AF9                                                              ;

                                                                  HARD_SEQUENCE=        P.AAD


                                                     0FFC 00000 ESTABLISH_BORDER_VECTOR:
                                                                          .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11       ; 1941
                                 5E        B0    AE   9E 00002            MOVAB   -80(SP), SP                                 ;
                                 56        04    AC   D0 00006            MOVL    P_PBCB, R6                                  ; 1978
                                 5B        60    A6   9E 0000A            MOVAB   96(R6), R11                                 ; 2101
                                 57      010C    C6   9E 0000E            MOVAB   268(R6), R7                                 ;
                                 5A      00FC    C6   9E 00013            MOVAB   252(R6), R10                                ;
                                                 6A   D5 00018            TSTL    (R10)                                       ;
                                                 09   12 0001A            BNEQ    1$                                          ;
                                 58      0108    C6   9E 0001C            MOVAB   264(R6), R8                                 ;
                                                 68   D4 00021            CLRL    (R8)                                        ;
                                                 2A   11 00023            BRB     2$                                          ;
                                           44    AE   D4 00025 1$:        CLRL    INPUT_ARGS                                  ;
                                           44    AE   9F 00028            PUSHAB  INPUT_ARGS                                  ;
                                         0104    C6   DD 0002B            PUSHL   260(R6)                                     ;
                                 58      0108    C6   9E 0002F            MOVAB   264(R6), R8                                 ;
                                                 58   DD 00034            PUSHL   R8                                          ;
                                         0100    C6   9F 00036            PUSHAB  256(R6)                                     ;
                            14   AE      01DD    8F   3C 0003A            MOVZWL  #477, 20(SP)                                ;
                                           14    AE   9F 00040            PUSHAB  20(SP)                                      ;
                                                 5A   DD 00043            PUSHL   R10                                         ;
                      00000000G  00              06   FB 00045            CALLS   #6, SMG$GET_TERM_DATA                       ;
                                 76              50   E9 0004C            BLBC    STATUS, 8$                                  ;
                                                 68   D5 0004F 2$:        TSTL    (R8)                                        ;
                                                 08   13 00051            BEQL    3$                                          ;
                                 0A        03    AB   E9 00053            BLBC    3(R11), 4$                                  ;
                      06         6B              1B   E0 00057            BBS     #27, (R11), 4$                              ;
                            04   A7              2D   D0 0005B 3$:        MOVL    #45, 4(R7)                                  ;
                                                 3A   11 0005F            BRB     6$                                          ;
                                 01              68   D1 00061 4$:        CMPL    (R8), #1                                    ;
                                                 2F   15 00064            BLEQ    5$                                          ;
                 08   AE         68              01   C1 00066            ADDL3   #1, (R8), SIZE                              ;
                                           04    A7   9F 0006B            PUSHAB  4(R7)                                       ;
                                           0C    AE   9F 0006E            PUSHAB  SIZE                                        ;
                      00000000G  00              02   FB 00071            CALLS   #2, LIB$GET_VM                              ;
                             04  AE              50   D0 00078            MOVL    R0, STATUS                                  ;
                                 76        04    AE   E9 0007C            BLBC    STATUS, 12$                                 ;
                                 59        04    A7   D0 00080            MOVL    4(R7), R9                                   ;
                 01   A9   0104  D6              68   28 00084            MOVC3   (R8), @260(R6), 1(R9)                       ;
                                 69              68   90 0008B            MOVB    (R8), (R9)                                  ;
                           00D1  C6              02   88 0008E            BISB2   #2, 209(R6)                                 ;
                                                 06   11 00093            BRB     6$                                          ;
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                  04  A7  0104   D6 9A 00095 5$:   MOVZBL   @260(R6), 4(R7)
                                 6A D5 0009B 6$:   TSTL     (R10)                        2102
                                 04 12 0009D       BNEQ     7$
                                 68 D4 0009F       CLRL     (R8)
                                 25 11 000A1       BRB      9$
                            44   AE D4 000A3 7$:   CLRL     INPUT_ARGS
                            44   AE 9F 000A6       PUSHAB   INPUT_ARGS
                          0104   C6 DD 000A9       PUSHL    260(R6)
                                 58 DD 000AD       PUSHL    R8
                          0100   C6 9F 000AF       PUSHAB   256(R6)
                  10  AE  0244   8F 3C 000B3       MOVZWL   #580, 16(SP)
                            10   AE 9F 000B9       PUSHAB   16(SP)
                                 5A DD 000BC       PUSHL    R10
           00000000G  00         06 FB 000BE       CALLS    #6, SMG$GET_TERM_DATA
                      77         50 E9 000C5 8$:   BLBC     STATUS, 16$
                                 68 D5 000C8 9$:   TSTL     (R8)
                                 08 13 000CA       BEQL     10$
                      0B    03   AB E9 000CC       BLBC     3(R11), 11$
     07               6B         1B E0 000D0       BBS      #27, (R11), 11$
                  08  A7    7C   8F 9A 000D4 10$:  MOVZBL   #124, 8(R7)
                                 3A 11 000D9       BRB      14$
                      01         68 D1 000DB 11$:  CMPL     (R8), #1
                                 2F 15 000DE       BLEQ     13$
0C   AE                     68   01 C1 000E0       ADDL3    #1, (R8), SIZE
                            08   A7 9F C00E5       PUSHAB   8(R7)
                            10   AE 9F 000E8       PUSHAB   SIZE
           00000000G  00         02 FB 000EB       CALLS    #2, LIB$GET_VM
                  04  AE         50 D0 000F2       MOVL     R0, STATUS
                      75    04   AE E9 000F6 12$:  BLBC     STATUS, 20$
                      59    08   A7 D0 000FA       MOVL     8(R7), R9
01   A9         0104  D6         68 28 000FE       MOVC3    (R8), @260(R6), 1(R9)
                      69         68 90 00105       MOVB     (R8), (R9)
                0OD1  C6         02 88 00108       BISB2    #2, 209(R6)
                                 06 11 0010D       BRB      14$
                  08  A7  0104   D6 9A 0010F 13$:  MOVZBL   @260(R6), 8(R7)
                                 6A D5 00115 14$:  TSTL     (R10)                        2103
                                 04 12 00117       BNEQ     15$
                                 68 D4 00119       CLRL     (R8)
                                 25 11 0011B       BRB      17$
                            44   AE D4 0011D 15$:  CLRL     INPUT_ARGS
                            44   AE 9F 00120       PUSHAB   INPUT_ARGS
                          0104   C6 DD 00123       PUSHL    260(R6)
                                 58 DD 00127       PUSHL    R8
                          0100   C6 9F 00129       PUSHAB   256(R6)
                  10  AE  0229   8F 3C 0012D       MOVZWL   #553, 16(SP)
                            10   AE 9F 00133       PUSHAB   16(SP)
                                 5A DD 00136       PUSHL    R10
           00000000G  00         06 FB 00138       CALLS    #6, SMG$GET_TERM_DATA
                      76         50 E9 0013F 16$:  BLBC     STATUS, 24$
                                 68 D5 00142 17$:  TSTL     (R8)
                                 08 13 00144       BEQL     18$
                      0A    03   AB E9 00146       BLBC     3(R11), 19$
     06               6B         1B E0 0014A       BBS      #27, (R11), 19$
                  0C  A7         2B D0 0014E 18$:  MOVL     #43, 12(R7)
                                 3A 11 00152       BRB      22$
                      01         68 D1 00154 19$:  CMPL     (R8), #1
                                 2F 15 00157       BLEQ     21$
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10   AE             68        01 C1 00159        ADDL3   #1, (R8), SIZE
                          0C  A7 9F 0015E        PUSHAB  12(R7)
                          14  AE 9F 00161        PUSHAB  SIZE
         00000000G  00        02 FB 00164        CALLS   #2, LIB$GET_VM
                04  AE        50 D0 0016B        MOVL    R0, STATUS
                    75    04  AE E9 0016F 20$:   BLBC    STATUS, 28$
                    59    0C  A7 D0 00173        MOVL    12(R7), R9
01   A9       0104  D6        68 28 00177        MOVC3   (R8), @260(R6), 1(R9)
                    69        68 90 0017E        MOVB    (R8), (R9)
              00D1  C6        02 88 00181        BISB2   #2, 209(R6)
                              06 11 00186        BRB     22$
                0C  A7  0104  D6 9A 00188 21$:   MOVZBL  @260(R6), 12(R7)
                              6A D5 0018E 22$:   TSTL    (R10)                                2104
                              04 12 00190        BNEQ    23$
                              68 D4 00192        CLRL    (R8)
                              25 11 00194        BRB     25$
                          44  AE D4 00196 23$:   CLRL    INPUT_ARGS
                          44  AE 9F 00199        PUSHAB  INPUT_ARGS
                        0104  C6 DD 0019C        PUSHL   260(R6)
                              58 DD 001A0        PUSHL   R8
                        0100  C6 9F 001A2        PUSHAB  256(R6)
                10  AE  01DD  8F 3C 001A6        MOVZWL  #477, 16(SP)
                          10  AE 9F 001AC        PUSHAB  16(SP)
                              5A DD 001AF        PUSHL   R10
         00000000G  00        06 FB 001B1        CALLS   #6, SMG$GET_TERM_DATA
                    76        50 E9 001B8 24$:   BLBC    STATUS, 32$
                              68 D5 001BB 25$:   TSTL    (R8)
                              08 13 001BD        BEQL    26$
                    0A    03  AB E9 001BF        BLBC    3(R11), 27$
     06             6B        1B E0 001C3        BBS     #27, (R11), 27$
                10  A7        2D D0 001C7 26$:   MOVL    #45, 16(R7)
                              3A 11 001CB        BRB     30$
                    01        68 D1 001CD 27$:   CMPL    (R8), #1
                              2F 15 001D0        BLEQ    29$
14   AE             68        01 C1 001D2        ADDL3   #1, (R8), SIZE
                          10  A7 9F 001D7        PUSHAB  16(R7)
                          18  AE 9F 001DA        PUSHAB  SIZE
         00000000G  00        02 FB 001DD        CALLS   #2, LIB$GET_VM
                04  AE        50 D0 001E4        MOVL    R0, STATUS
                    75    04  AE E9 001E8 28$:   BLBC    STATUS, 36$
                    59    10  A7 D0 001EC        MOVL    16(R7), R9
01   A9       0104  D6        68 28 001F0        MOVC3   (R8), @260(R6), 1(R9)
                    69        68 90 001F7        MOVB    (R8), (R9)
              00D1  C6        02 88 001FA        BISB2   #2, 209(R6)
                              06 11 001FF        BRB     30$
                10  A7  0104  D6 9A 00201 29$:   MOVZBL  @260(R6), 16(R7)
                              6A D5 00207 30$:   TSTL    (R10)                                2105
                              04 12 00209        BNEQ    31$
                              68 D4 0020B        CLRL    (R8)
                              25 11 0020D        BRB     33$
                          44  AE D4 0020F 31$:   CLRL    INPUT_ARGS
                          44  AE 9F 00212        PUSHAB  INPUT_ARGS
                        0104  C6 DD 00215        PUSHL   260(R6)
                              58 DD 00219        PUSHL   R8
                        0100  C6 9F 0021B        PUSHAB  256(R6)
                10  AE  01DD  8F 3C 0021F        MOVZWL  #477, 16(SP)
                          10  AE 9F 00225        PUSHAB  16(SP)
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                                5A DD 00228       PUSHL   R10
         00000000G  00          06 FB 0022A       CALLS   #6, SMG$GET_TERM_DATA
                    76          50 E9 00231 32$:  BLBC    STATUS, 40$
                                68 D5 00234 33$:  TSTL    (R8)
                                08 13 00236       BEQL    34$
                    0A      03  AB E9 00238       BLBC    3(R11), 35$
     06             6B          1B E0 0023C       BBS     #27, (R11), 35$
                14  A7          2D D0 00240 34$:  MOVL    #45, 20(R7)
                                3A 11 00244       BRB     38$
                    01          68 D1 00246 35$:  CMPL    (R8), #1
                                2F 15 00249       BLEQ    37$
18   AE             68          01 C1 0024B       ADDL3   #1, (R8), SIZE
                            14  A7 9F 00250       PUSHAB  20(R7)
                            1C  AE 9F 00253       PUSHAB  SIZE
         00000000G  00          02 FB 00256       CALLS   #2, LIB$GET_VM
                04  AE          50 D0 0025D       MOVL    R0, STATUS
                    75      04  AE E9 00261 36$:  BLBC    STATUS, 44$
                    59      14  A7 D0 00265       MOVL    20(R7), R9
01   A9       0104  D6          68 28 00269       MOVC3   (R8), @260(R6), 1(R9)
                    69          68 90 00270       MOVB    (R8), (R9)
              00D1  C6          02 88 00273       BISB2   #2, 209(R6)
                                06 11 00278       BRB     38$
                14  A7    0104  D6 9A 0027A 37$:  MOVZBL  @260(R6), 20(R7)
                                6A D5 00280 38$:  TSTL    (R10)                          2106
                                04 12 00282       BNEQ    39$
                                68 D4 00284       CLRL    (R8)
                                25 11 00286       BRB     41$
                            44  AE D4 00288 39$:  CLRL    INPUT_ARGS
                            44  AE 9F 0028B       PUSHAB  INPUT_ARGS
                          0104  C6 DD 0028E       PUSHL   260(R6)
                                58 DD 00292       PUSHL   R8
                          0100  C6 9F 00294       PUSHAB  256(R6)
                10  AE    022A  8F 3C 00298       MOVZWL  #554, 16(SP)
                            10  AE 9F 0029E       PUSHAB  16(SP)
                                5A DD 002A1       PUSHL   R10
         00000000G  00          06 FB 002A3       CALLS   #6, SMG$GET_TERM_DATA
                    76          50 E9 002AA 40$:  BLBC    STATUS, 48$
                                68 D5 002AD 41$:  TSTL    (R8)
                                08 13 002AF       BEQL    42$
                    0A      03  AB E9 002B1       BLBC    3(R11), 43$
     06             6B          1B E0 002B5       BBS     #27, (R11), 43$
                18  A7          2B D0 002B9 42$:  MOVL    #43, 24(R7)
                                3A 11 002BD       BRB     46$
                    01          68 D1 002BF 43$:  CMPL    (R8), #1
                                2F 15 002C2       BLEQ    45$
1C   AE             68          01 C1 002C4       ADDL3   #1, (R8), SIZE
                            18  A7 9F 002C9       PUSHAB  24(R7)
                            20  AE 9F 002CC       PUSHAB  SIZE
         00000000G  00          02 FB 002CF       CALLS   #2, LIB$GET_VM
                04  AE          50 D0 002D6       MOVL    R0, STATUS
                    75      04  AE E9 002DA 44$:  BLBC    STATUS, 52$
                    59      18  A7 D0 002DE       MOVL    24(R7), R9
01   A9       0104  D6          68 28 002E2       MOVC3   (R8), @260(R6), 1(R9)
                    69          68 90 002E9       MOVB    (R8), (R9)
              00D1  C6          02 88 002EC       BISB2   #2, 209(R6)
                                06 11 002F1       BRB     46$
                18  A7    0104  D6 9A 002F3 45$:  MOVZBL  @260(R6), 24(R7)
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                                 6A  D5 002F9 46$:   TSTL    (R10)                      : 2107
                                 04  12 002FB        BNEQ    47$
                                 68  D4 002FD        CLRL    (R8)
                                 25  11 002FF        BRB     49$
                             44  AE  D4 00301 47$:   CLRL    INPUT_ARGS
                             44  AE  9F 00304        PUSHAB  INPUT_ARGS
                           0104  C6  DD 00307        PUSHL   260(R8)
                                 58  DD 0030B        PUSHL   R8
                           0100  C6  9F 0030D        PUSHAB  256(R6)
                  10  AE   01C1  8F  3C 00311        MOVZWL  #449, 16(SP)
                             10  AE  9F 00317        PUSHAB  16(SP)
                                 5A  DD 0031A        PUSHL   R10
           00000000G  00         06  FB 0031C        CALLS   #6, SMG$GET_TERM_DATA
                      76         50  E9 00323 48$:   BLBC    STATUS, 56$
                                 68  D5 00326 49$:   TSTL    (R8)
                                 08  13 00328        BEQL    50$
                      0A     03  AB  E9 0032A        BLBC    3(R11), 51$
       06             6B         1B  E0 0032E        BBS     #27, (R11), 51$
                  1C  A7         2B  D0 00332 50$:   MOVL    #43, 28(R7)
                                 3A  11 00336        BRB     54$
                      01         68  D1 00338 51$:   CMPL    (R8), #1
                                 2F  15 0033B        BLEQ    53$
  20   AE             68         01  C1 0033D        ADDL3   #1, (R8), SIZE
                             1C  A7  9F 00342        PUSHAB  28(R7)
                             24  AE  9F 00345        PUSHAB  SIZE
           00000000G  00         02  FB 00348        CALLS   #2, LIB$GET_VM
                  04  AE         50  D0 0034F        MOVL    R0, STATUS
                      76     04  AE  E9 00353 52$:   BLBC    STATUS, 60$
                      59     1C  A7  D0 00357        MOVL    28(R7), R9
  01   A9       0104  D6         68  28 0035B        MOVC3   (R8), @260(R6), 1(R9)
                      69         68  90 00362        MOVB    (R8), (R9)
                00D1  C6         02  88 00365        BISB2   #2, 209(R6)
                                 06  11 0036A        BRB     54$
                  1C  A7   0104  D6  9A 0036C 53$:   MOVZBL  @260(R6), 28(R7)
                                 6A  D5 00372 54$:   TSTL    (R10)                      : 2108
                                 04  12 00374        BNEQ    55$
                                 68  D4 00376        CLRL    (R8)
                                 25  11 00378        BRB     57$
                             44  AE  D4 0037A 55$:   CLRL    INPUT_ARGS
                             44  AE  9F 0037D        PUSHAB  INPUT_ARGS
                           0104  C6  DD 00380        PUSHL   260(R8)
                                 58  DD 00384        PUSHL   R8
                           0100  C6  9F 00386        PUSHAB  256(R6)
                  10  AE   0244  8F  3C 0038A        MOVZWL  #580, 16(SP)
                             10  AE  9F 00390        PUSHAB  16(SP)
                                 5A  DD 00393        PUSHL   R10
           00000000G  00         06  FB 00395        CALLS   #6, SMG$GET_TERM_DATA
                      77         50  E9 0039C 56$:   BLBC    STATUS, 64$
                                 68  D5 0039F 57$:   TSTL    (R8)
                                 08  13 003A1        BEQL    58$
                      0B     03  AB  E9 003A3        BLBC    3(R11), 59$
       07             6B         1B  E0 003A7        BBS     #27, (R11), 59$
                  20  A7     7C  8F  9A 003AB 58$:   MOVZBL  #124, 32(R7)
                                 3A  11 003B0        BRB     62$
                      01         68  D1 003B2 59$:   CMPL    (R8), #1
                                 2F  15 003B5        BLEQ    61$
  24   AE             68         01  C1 003B7        ADDL3   #1, (R8), SIZE
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                           20    A7  9F 003BC        PUSHAB  32(R7)
                           28    AE  9F 003BF        PUSHAB  SIZE
          00000000G  00          02  FB 003C2        CALLS   #2, LIB$GET_VM
                 04  AE          50  D0 003C9        MOVL    R0, STATUS
                     75    04    AE  E9 003CD 60$:   BLBC    STATUS, 68$
                     59    20    A7  D0 003D1        MOVL    32(R7), R9
01    A9       0104  D6          68  28 003D5        MOVC3   (R8), @260(R6), 1(R9)
                     69          68  90 003DC        MOVB    (R8), (R9)
               00D1  C6          02  88 003DF        BISB2   #2, 209(R6)
                                 06  11 003E4        BRB     62$
                 20  A7  0104    D6  9A 003E6 61$:   MOVZBL  @260(R6), 32(R7)
                                 6A  D5 003EC 62$:   TSTL    (R10)                                     2109
                                 04  12 003EE        BNEQ    63$
                                 68  D4 003F0        CLRL    (R8)
                                 25  11 003F2        BRB     65$
                           44    AE  D4 003F4 63$:   CLRL    INPUT_ARGS
                           44    AE  9F 003F7        PUSHAB  INPUT_ARGS
                         0104    C6  DD 003FA        PUSHL   260(R8)
                                 58  DD 003FE        PUSHL   R8
                         0100    C6  9F 00400        PUSHAB  256(R6)
                 10  AE  0242    8F  3C 00404        MOVZWL  #578, 16(SP)
                           10    AE  9F 0040A        PUSHAB  16(SP)
                                 5A  DD 0040D        PUSHL   R10
          00000000G  00          06  FB 0040F        CALLS   #6, SMG$GET_TERM_DATA
                     76          50  E9 00416 64$:   BLBC    STATUS, 72$
                                 68  D5 00419 65$:   TSTL    (R8)
                                 08  13 0041B        BEQL    66$
                     0A    03    AB  E9 0041D        BLBC    3(R11), 67$
      06             6B          1B  E0 00421        BBS     #27, (R11), 67$
                 24  A7          2B  D0 00425 66$:   MOVL    #43, 36(R7)
                                 3A  11 00429        BRB     70$
                     01          68  D1 0042B 67$:   CMPL    (R8), #1
                                 2F  15 0042E        BLEQ    69$
28    AE             68          01  C1 00430        ADDL3   #1, (R8), SIZE
                           24    A7  9F 00435        PUSHAB  36(R7)
                           2C    AE  9F 00438        PUSHAB  SIZE
          00000000G  00          02  FB 0043B        CALLS   #2, LIB$GET_VM
                 04  AE          50  D0 00442        MOVL    R0, STATUS
                     76    04    AE  E9 00446 68$:   BLBC    STATUS, 76$
                     59    24    A7  D0 0044A        MOVL    36(R7), R9
01    A9       0104  D6          68  28 0044E        MOVC3   (R8), @260(R6), 1(R9)
                     69          68  90 00455        MOVB    (R8), (R9)
               00D1  C6          02  88 00458        BISB2   #2, 209(R6)
                                 06  11 0045D        BRB     70$
                 24  A7  0104    D6  9A 0045F 69$:   MOVZBL  @260(R6), 36(R7)
                                 6A  D5 00465 70$:   TSTL    (R10)                                     2110
                                 04  12 00467        BNEQ    71$
                                 68  D4 00469        CLRL    (R8)
                                 25  11 0046B        BRB     73$
                           44    AE  D4 0046D 71$:   CLRL    INPUT_ARGS
                           44    AE  9F 00470        PUSHAB  INPUT_ARGS
                         0104    C6  DD 00473        PUSHL   260(R8)
                                 58  DD 00477        PUSHL   R8
                         0100    C6  9F 00479        PUSHAB  256(R6)
                 10  AE  0244    8F  3C 0047D        MOVZWL  #580, 16(SP)
                           10    AE  9F 00483        PUSHAB  16(SP)
                                 5A  DD 00486        PUSHL   R10
          00000000G  00           06  FB 00488        CALLS    #6, SMG$GET_TERM_DATA
                     77           50  E9 0048F 72$:  BLBC     STATUS, 80$
                                  68  D5 00492 73$:  TSTL     (R8)
                                  08  13 00494        BEQL     74$
                     0B      03   AB  E9 00496        BLBC     3(R11), 75$
    07               6B           1B  E0 0049A        BBS      #27, (R11), 75$
                 28  A7      7C   8F  9A 0049E 74$:  MOVZBL   #124, 40(R7)
                                  3A  11 004A3        BRB      78$
                     01           68  D1 004A5 75$:  CMPL     (R8), #1
                                  2F  15 004A8        BLEQ     77$
2C  AE               68           01  C1 004AA        ADDL3    #1, (R8), SIZE
                             28   A7  9F 004AF        PUSHAB   40(R7)
                             30   AE  9F 004B2        PUSHAB   SIZE
          00000000G  00           02  FB 004B5        CALLS    #2, LIB$GET_VM
                 04  AE           50  D0 004BC        MOVL     R0, STATUS
                     75      04   AE  E9 004C0 76$:  BLBC     STATUS, 84$
                     59      28   A7  D0 004C4        MOVL     40(R7), R9
01  A9         0104  D6           68  28 004C8        MOVC3    (R8), @260(R6), 1(R9)
                     69           68  90 004CF        MOVB     (R8), (R9)
               00D1  C6           02  88 004D2        BISB2    #2, 209(R6)
                                  06  11 004D7        BRB      78$
                 28  A7    0104   D6  9A 004D9 77$:  MOVZBL   @260(R6), 40(R7)
                                  6A  D5 004DF 78$:  TSTL     (R10)                          2111
                                  04  12 004E1        BNEQ     79$
                                  68  D4 004E3        CLRL     (R8)
                                  25  11 004E5        BRB      81$
                             44   AE  D4 004E7 79$:  CLRL     INPUT_ARGS
                             44   AE  9F 004EA        PUSHAB   INPUT_ARGS
                           0104   C6  DD 004ED        PUSHL    260(R6)
                                  58  DD 004F1        PUSHL    R8
                           0100   C6  9F 004F3        PUSHAB   256(R6)
                 10  AE    0227   8F  3C 004F7        MOVZWL   #551, 16(SP)
                             10   AE  9F 004FD        PUSHAB   16(SP)
                                  5A  DD 00500        PUSHL    R10
          00000000G  00           06  FB 00502        CALLS    #6, SMG$GET_TERM_DATA
                     76           50  E9 00509 80$:  BLBC     STATUS, 88$
                                  68  D5 0050C 81$:  TSTL     (R8)
                                  08  13 0050E        BEQL     82$
                     0A      03   AB  E9 00510        BLBC     3(R11), 83$
    06               6B           1B  E0 00514        BBS      #27, (R11), 83$
                 2C  A7           2B  D0 00518 82$:  MOVL     #43, 44(R7)
                                  3A  11 0051C        BRB      86$
                     01           68  D1 0051E 83$:  CMPL     (R8), #1
                                  2F  15 00521        BLEQ     85$
30  AE               68           01  C1 00523        ADDL3    #1, (R8), SIZE
                             2C   A7  9F 00528        PUSHAB   44(R7)
                             34   AE  9F 0052B        PUSHAB   SIZE
          00000000G  00           02  FB 0052E        CALLS    #2, LIB$GET_VM
                 04  AE           50  D0 00535        MOVL     R0, STATUS
                     75      04   AE  E9 00539 84$:  BLBC     STATUS, 92$
                     59      2C   A7  D0 0053D        MOVL     44(R7), R9
01  A9         0104  D6           68  28 00541        MOVC3    (R8), @260(R6), 1(R9)
                     69           68  90 00548        MOVB     (R8), (R9)
               00D1  C6           02  88 0054B        BISB2    #2, 209(R6)
                                  06  11 00550        BRB      86$
                 2C  A7    0104   D6  9A 00552 85$:  MOVZBL   @260(R6), 44(R7)
                                  6A  D5 00558 86$:  TSTL     (R10)                          2112
```

```
                                04  12 0055A        BNEQ     87$
                                68  D4 0055C        CLRL     (R8)
                                25  11 0055E        BRB      89$
                              44  AE  D4 00560 87$:   CLRL     INPUT_ARGS
                              44  AE  9F 00563        PUSHAB   INPUT_ARGS
                            0104  C6  DD 00566        PUSHL    260(R6)
                                  58  DD 0056A        PUSHL    R8
                            0100  C6  9F 0056C        PUSHAB   256(R6)
                10  AE      0243  8F  3C 00570        MOVZWL   #579, 16(SP)
                              10  AE  9F 00576        PUSHAB   16(SP)
                                  5A  DD 00579        PUSHL    R10
         00000000G  00                06  FB 0057B        CALLS    #6, SMG$GET_TERM_DATA
                    76                50  E9 00582 88$:   BLBC     STATUS, 96$
                                  68  D5 00585 89$:   TSTL     (R8)
                                  08  13 00587        BEQL     90$
                    0A        03  AB  E9 00589        BLBC     3(R11), 91$
    06              6B                1B  E0 0058D        BBS      #27, (R11), 91$
                30  A7                2B  D0 00591 90$:   MOVL     #43, 48(R7)
                                  3A  11 00595        BRB      94$
                    01                68  D1 00597 91$:   CMPL     (R8), #1
                                  2F  15 0059A        BLEQ     93$
34  AE              68                01  C1 0059C        ADDL3    #1, (R8), SIZE
                              30  A7  9F 005A1        PUSHAB   48(R7)
                              38  AE  9F 005A4        PUSHAB   SIZE
         00000000G  00                02  FB 005A7        CALLS    #2, LIB$GET_VM
                04  AE                50  D0 005AE        MOVL     R0, STATUS
                    75        04  AE  E9 005B2 92$:   BLBC     STATUS, 100$
                    59        30  A7  D0 005B6        MOVL     48(R7), R9
01  A9        0104  D6                68  28 005BA        MOVC3    (R8), @260(R6), 1(R9)
                    69                68  90 005C1        MOVB     (R8), (R9)
              00D1  C6                02  88 005C4        BISB2    #2, 209(R6)
                                  06  11 005C9        BRB      94$
                30  A7      0104  D6  9A 005CB 93$:   MOVZBL   @260(R6), 48(R7)
                                  6A  D5 005D1 94$:   TSTL     (R10)                           2113
                                  04  12 005D3        BNEQ     95$
                                  68  D4 005D5        CLRL     (R8)
                                  25  11 005D7        BRB      97$
                              44  AE  D4 005D9 95$:   CLRL     INPUT_ARGS
                              44  AE  9F 005DC        PUSHAB   INPUT_ARGS
                            0104  C6  DD 005DF        PUSHL    260(R6)
                                  58  DD 005E3        PUSHL    R8
                            0100  C6  9F 005E5        PUSHAB   256(R6)
                10  AE      0240  8F  3C 005E9        MOVZWL   #576, 16(SP)
                              10  AE  9F 005EF        PUSHAB   16(SP)
                                  5A  DD 005F2        PUSHL    R10
         00000000G  00                06  FB 005F4        CALLS    #6, SMG$GET_TERM_DATA
                    76                50  E9 005FB 96$:   BLBC     STATUS, 104$
                                  68  D5 005FE 97$:   TSTL     (R8)
                                  08  13 00600        BEQL     98$
                    0A        03  AB  E9 00602        BLBC     3(R11), 99$
    06              6B                1B  E0 00606        BBS      #27, (R11), 99$
                34  A7                2B  D0 0060A 98$:   MOVL     #43, 52(R7)
                                  3A  11 0060E        BRB      102$
                    01                68  D1 00610 99$:   CMPL     (R8), #1
                                  2F  15 00613        BLEQ     101$
38  AE              68                01  C1 00615        ADDL3    #1, (R8), SIZE
                              34  A7  9F 0061A        PUSHAB   52(R7)
```

```
                                   3C   AE  9F 0061D          PUSHAB  SIZE
                00000000G  00           02  FB 00620          CALLS   #2, LIB$GET_VM
                       04  AE           50  D0 00627          MOVL    R0, STATUS
                           75      04   AE  E9 0062B 100$:    BLBC    STATUS, 108$
                           59      34   A7  D0 0062F          MOVL    52(R7), R9
    01    A9         0104  D6           68  28 00633          MOVC3   (R8), @260(R6), 1(R9)
                           69           68  90 0063A          MOVB    (R8), (R9)
                     00D1  C6           02  88 0063D          BISB2   #2, 209(R6)
                                        06  11 00642          BRB     102$
                       34  A7    0104   D6  9A 00644 101$:    MOVZBL  @260(R6), 52(R7)
                                        6A  D5 0064A 102$:    TSTL    (R10)                                    2114
                                        04  12 0064C          BNEQ    103$
                                        68  D4 0064E          CLRL    (R8)
                                        25  11 00650          BRB     105$
                                   44   AE  D4 00652 103$:    CLRL    INPUT_ARGS
                                   44   AE  9F 00655          PUSHAB  INPUT_ARGS
                                 0104   C6  DD 00658          PUSHL   260(R6)
                                        58  DD 0065C          PUSHL   R8
                                 0100   C6  9F 0065E          PUSHAB  256(R6)
                       10  AE    022F   8F  3C 00662          MOVZWL  #559, 16(SP)
                                   10   AE  9F 00668          PUSHAB  16(SP)
                                        5A  DD 0066B          PUSHL   R10
                00000000G  00           06  FB 0066D          CALLS   #6, SMG$GET_TERM_DATA
                           76           50  E9 00674 104$:    BLBC    STATUS, 112$
                                        68  D5 00677 105$:    TSTL    (R8)
                                        08  13 00679          BEQL    106$
                           0A      03   AB  E9 0067B          BLBC    3(R11), 107$
          06               6B           1B  E0 0067F          BBS     #27, (R11), 107$
                       38  A7           2B  D0 00683 106$:    MOVL    #43, 56(R7)
                                        3A  11 00687          BRB     110$
                           01           68  D1 00689 107$:    CMPL    (R8), #1
                                        2F  15 0068C          BLEQ    109$
    3C    AE                       68   01  C1 0068E          ADDL3   #1, (R8), SIZE
                                   38   A7  9F 00693          PUSHAB  56(R7)
                                   40   AE  9F 00696          PUSHAB  SIZE
                00000000G  00           02  FB 00699          CALLS   #2, LIB$GET_VM
                       04  AE           50  D0 006A0          MOVL    R0, STATUS
                           74      04   AE  E9 006A4 108$:    BLBC    STATUS, 116$
                           59      38   A7  D0 006A8          MOVL    56(R7), R9
    01    A9         0104  D6           68  28 006AC          MOVC3   (R8), @260(R6), 1(R9)
                           69           68  90 006B3          MOVB    (R8), (R9)
                     00D1  C6           02  88 006B6          BISB2   #2, 209(R6)
                                        06  11 006BB          BRB     110$
                       38  A7    0104   D6  9A 006BD 109$:    MOVZBL  @260(R6), 56(R7)
                                        6A  D5 006C3 110$:    TSTL    (R10)                                    2115
                                        04  12 006C5          BNEQ    111$
                                        68  D4 006C7          CLRL    (R8)
                                        25  11 006C9          BRB     113$
                                   44   AE  D4 006CB 111$:    CLRL    INPUT_ARGS
                                   44   AE  9F 006CE          PUSHAB  INPUT_ARGS
                                 0104   C6  DD 006D1          PUSHL   260(R6)
                                        58  DD 006D5          PUSHL   R8
                                 0100   C6  9F 006D7          PUSHAB  256(R6)
                       10  AE    01C3   8F  3C 006DB          MOVZWL  #451, 16(SP)
                                   10   AE  9F 006E1          PUSHAB  16(SP)
                                        5A  DD 006E4          PUSHL   R10
                00000000G  00           06  FB 006E6          CALLS   #6, SMG$GET_TERM_DATA
```

```
                             4A           50 E9 006ED 112$:  BLBC    STATUS, 118$                 :
                                          68 D5 006F0 113$:  TSTL    (R8)                         :
                                          08 13 006F2        BEQL    114$                         :
                             09     03    AB E9 006F4        BLBC    3(R11), 115$                 :
             05              6B           1B E0 006F8        BBS     #27, (R11), 115$             :
                       3C    A7           2B D0 006FC 114$:  MOVL    #43, 60(R7)                  :
                                             04 00700        RET                                  :
                             01           68 D1 00701 115$:  CMPL    (R8), #1                     :
                                          2E 15 00704        BLEQ    117$                         :
         40  AE              68           01 C1 00706        ADDL3   #1, (R8), SIZE               :
                                    3C    A7 9F 0070B        PUSHAB  60(R7)                       :
                                    44    AE 9F 0070E        PUSHAB  SIZE                         :
                00000000G    00           02 FB 00711        CALLS   #2, LIB$GET_VM               :
                       04    AE           50 D0 00718        MOVL    R0, STATUS                   :
                             1A     04    AE E9 0071C 116$:  BLBC    STATUS, 118$                 :
                             59     3C    A7 D0 00720        MOVL    60(R7), R9                   :
         01  A9      0104    D6           68 28 00724        MOVC3   (R8), @260(R6), 1(R9)        :
                             69           68 90 0072B        MOVB    (R8), (R9)                   :
                     00D1    C6           02 88 0072E        BISB2   #2, 209(R6)                  :
                                             04 00733        RET                                  :
                       3C    A7   0104    D6 9A 00734 117$:  MOVZBL  @260(R6), 60(R7)             :
                                             04 0073A 118$:  RET                                  : 2117

; Routine Size:  1851 bytes,    Routine Base:  _SMG$CODE + 0AFA
```

```
1 %SBTTL 'SMG$PUT_PASTEBOARD - Output pasteboard via routine'
1 GLOBAL ROUTINE SMG$PUT_PASTEBOARD ( PASTEBOARD_ID, P_RTN, P_PRM, P_FF_FLAG ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine is used to get access to the contents of a pasteboard.
1 !       The caller specifies an action routine.  The action routine
1 !       will then get called once for each line in the pasteboard.
1 !       The action routine will be passed a descriptor for that line
1 !       followed by a user-specified parameter.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$PUT_PASTEBOARD ( PASTEBOARD_ID.rl.r
1 !                                               ,P_RTN
1 !                                               [,P_PRM.rl.r]
1 !                                               [,P_FF_FLAG.rl.r])
1 !       ACTION ROUTINE:
1 !
1 !       ret_status.wlc.v = RTN(LINE.rt.dx,PRM.rl.v)
1 !
1 !               A false status return means stop sending lines.
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       PASTEBOARD_ID.rl.r      pasteboard id
1 !
1 !       P_RTN.rzem.r            Address of routine to be called.
1 !
1 !       P_PRM.rl.r              User-specified parameter to be passed
1 !                               along to the action routine
1 !                               If omitted, a 0 will be passed as
1 !                               the user parameter.
1 !
1 !       P_FF_FLAG.rl.r          A flag (0 or 1).  If 1, then the first
1 !                               line passed to the action routine
1 !                               will be prepended with a formfeed.
1 !                               (If the output device is a terminal
1 !                               and if the terminal does not have
1 !                               the MECHFORM characteristic, then
1 !                               a linefeed will be used instead.)
1 !                               If not specified, then no form feed
1 !                               will be prepended.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       contents of PBCB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !
1 !       other           Error return passed back by an action routine
```

```
; 1934          2175  1 !
; 1935          2176  1 ! SIDE EFFECTS:
; 1936          2177  1 !
; 1937          2178  1 !        NONE
; 1938          2179  1 !--
; 1940          2180  2 BEGIN
; 1941          2181  2
; 1942          2182  2 BIND
; 1943          2183  2
; 1944          2184  2         PRM     = .P_PRM,
; 1945          2185  2         FF_FLAG = .P_FF_FLAG;
; 1946          2186  2
; 1947          2187  2 LOCAL
; 1948          2188  2
; 1949          2189  2         TEMP_BUF        : VECTOR[512,BYTE],     ! *** TEMP
; 1950          2190  2         STATUS,
; 1951          2191  2         BUF_DESC        : BLOCK[8,BYTE],        ! Descriptor for buffer to be
; 1952          2192  2                                                 ! passed to the user
; 1953          2193  2         ACTION_PRM,                             ! Value of action parameter
; 1954          2194  2         ACTION_FF_FLAG,
; 1955          2195  2         PBCB            : REF $PBCB_DECL,
; 1956          2196  2         WCB             : REF $WCB_DECL;
; 1957          2197  2
; 1958          2198  2 BUILTIN
; 1959          2199  2
; 1960          2200  2         NULLPARAMETER;
; 1961          2201  2
; 1962          2202  2 OWN
; 1963          2203  2
; 1964          2204  2         BORDER_TRANS    : VECTOR[16,BYTE]
; 1965          2205  2                           INITIAL (BYTE(' -¦+--++¦+¦+++++'));
; 1967          2206  2 $SMG$VALIDATE_ARGCOUNT(2,4);
; 1968          2207  2
; 1969          2208  2 !+
; 1970          2209  2 ! Get the pasteboard control block from the pasteboard id.
; 1971          2210  2 !-
; 1972          2211  2
; 1973          2212  2 $SMG$GET_PBCB(.PASTEBOARD_ID,PBCB);
; 1974          2213  2
; 1975          2214  2 !+
; 1976          2215  2 ! Get the value of the action routine parameter.
; 1977          2216  2 !-
; 1978          2217  2
; 1979          2218  2 IF NULLPARAMETER(3)
; 1980          2219  2   THEN  ACTION_PRM=0
; 1981          2220  2   ELSE  ACTION_PRM=.PRM;
; 1982          2221  2
; 1983          2222  2 !+
; 1984          2223  2 ! Get the value of the formfeed flag.
; 1985          2224  2 !-
; 1986          2225  2
; 1987          2226  2 IF NULLPARAMETER(4)
; 1988          2227  2   THEN  ACTION_FF_FLAG=0
; 1989          2228  2   ELSE  ACTION_FF_FLAG=.FF_FLAG;
; 1990          2229  2
; 1991          2230  2 !+
; 1992          2231  2 ! Set up the WCB reference.
; 1993          2232  2 !-
; 1994          2233  2
; 1995          2234  2 WCB=.PBCB[PBCB_A_WCB];
; 1996          2235  2
; 1997          2236  2 !+
; 1998          2237  2 ! Temporary fix: ****
; 1999          2238  2 !-
; 2000          2239  2
; 2001          2240  2 IF .PBCB[PBCB_A_RBF] EQL 0
; 2002          2241  2   THEN  PBCB[PBCB_A_RBF]=TEMP_BUF;
; 2003          2242  2
; 2004          2243  2 !+
; 2005          2244  2 ! Set up the descriptor for our buffer.
; 2006          2245  2 !-
; 2007          2246  2
; 2008          2247  2 BUF_DESC[DSC$W_LENGTH] =.WCB[WCB_W_NO_COLS];
; 2009          2248  2 BUF_DESC[DSC$B_CLASS]  = DSC$K_CLASS_S;
; 2010          2249  2 BUF_DESC[DSC$B_DTYPE]  = DSC$K_DTYPE_T;
; 2011          2250  2 BUF_DESC[DSC$A_POINTER]= .PBCB[PBCB_A_RBF];
; 2012          2251  2
; 2013          2252  2 !+
; 2014          2253  2 ! Call the action routine once for each line in the pasteboard.
; 2015          2254  2 !-
; 2016          2255  2
; 2017          2256  2 INCR ROW FROM 0 TO .PBCB[PBCB_B_ROWS]-1 DO
; 2018          2257  3         BEGIN   ! Output a row
; 2019          2258  3
; 2020          2259  3         BIND
; 2021          2260  3
; 2022          2261  3                 WIDTH   = WCB[WCB_W_NO_COLS]                 : WORD,
; 2023          2262  3                 TEXT    = .WCB[WCB_A_TEXT_BUF]+.ROW*.WIDTH : VECTOR[,BYTE],
3                       ATTR    = .WCB[WCB_A_ATTR_BUF]+.ROW*.WIDTH : VECTOR[,BYTE],
3                       RBF     = .PBCB[PBCB_A_RBF]                : VECTOR[,BYTE];
3
3               BIND ROUTINE
3
3                       ACTION_ROUTINE = .P_RTN;
3
3               !+
3               ! Copy the appropriate row into the record buffer.
3               !-
3
3               CH$MOVE(.WCB[WCB_W_NO_COLS],TEXT,RBF);
3
3               !+
3               ! Scan the attribute buffer looking for any border elements.
3               ! If we find one, change its representation in the record buffer
3               ! to something more reasonable.
3               !-
3
3               INCR COL FROM 0 TO .WCB[WCB_W_NO_COLS]-1 DO
4                       BEGIN   ! Scan record buffer
4                       BIND CHAR = RBF[.COL] : BYTE;
4                       LITERAL BORDER_MASK = ATTR_M_BORD_ELEM OR ATTR_M_USER_GRAPHIC;
4                       IF (.ATTR[.COL] AND BORDER_MASK) NEQ 0
5                         THEN  BEGIN
5                               IF .CHAR GTRU 16
5                                 THEN  RBF[.COL]=%C'*'
5                                 ELSE  RBF[.COL]=.BORDER_TRANS[.CHAR<0,4>];
5                               END
3                       END;    ! Scan record buffer
3
3               STATUS=ACTION_ROUTINE(BUF_DESC,.ACTION_PRM);
3               IF NOT .STATUS THEN RETURN .STATUS
3
2               END;    ! Output a row
2
2       RETURN  SS$_NORMAL
2
1       END;                    ! Routine SMG$PUT_PASTEBOARD


                                                        .PSECT  _SMG$DATA,NOEXE,  PIC,2

2B 2B 2B 2B 7C 2B 7C 2B 2B 2D 2D 2B 7C 2D 20  00034 BORDER_TRANS:
                                                        .ASCII  \ -|+--++|+|+++++\                      ;
                                          2B  00043                                                 ;


                                                        .PSECT  _SMG$CODE,NOWRT,  SHR,  PIC,2

                                        0FFC  00000     .ENTRY  SMG$PUT_PASTEBOARD, Save R2,R3,R4,R5,R6,R7,-; 2119
                                                                R8,R9,R10,R11                       ;
                    5E       FDF4   CE   9E   00002     MOVAB   -524(SP), SP                        ;
        50          6C              02   83   00007     SUBB3   #2, (AP), DIFF                      ; 2206
                    02              50   91   0000B     CMPB    DIFF, #2                            ;
```

```
                                            08  1B 0000E       BLEQU   1$                                      ;
                              50 00000000G  8F  D0 00010       MOVL    #SMG$_WRONUMARG, R0                     ;
                                                04 00017       RET                                             ;
                              50        04  BC  D0 00018 1$:   MOVL    @PASTEBOARD_ID, R0                      ; 2212
                                            11  19 0001C       BLSS    2$                                      ;
                    00000000G 00            50  D1 0001E       CMPL    R0, PBD_L_COUNT                         ;
                                            08  14 00025       BGTR    2$                                      ;
                 08 00000000G 00            50  E0 00027       BBS     R0, PBD_V_PB_AVAIL, 3$                  ;
                              50 00000000G  8F  D0 0002F 2$:   MOVL    #SMG$_INVPAS_ID, R0                     ;
                                                04 00036       RET                                             ;
                              50 00000000G0040  D0 00037 3$:   MOVL    PBD_A_PBCB[R0], PBCB                    ;
                              03            6C  91 0003F       CMPB    (AP), #3                                ; 2218
                                            05  1F 00042       BLSSU   4$                                      ;
                                        0C  AC  D5 00044       TSTL    12(AP)                                  ;
                                            04  12 00047       BNEQ    5$                                      ;
                                            6E  D4 00049 4$:   CLRL    ACTION_PRM                              ; 2219
                                            04  11 0004B       BRB     6$                                      ;
                              6E        0C  BC  D0 0004D 5$:   MOVL    @P_PRM, ACTION_PRM                      ; 2220
                              04            6C  91 00051 6$:   CMPB    (AP), #4                                ; 2226
                                            05  1F 00054       BLSSU   7$                                      ;
                                        10  AC  D5 00056       TSTL    16(AP)                                  ;
                                            04  12 00059       BNEQ    8$                                      ;
                                            51  D4 0005B 7$:   CLRL    ACTION_FF_FLAG                          ; 2227
                                            04  11 0005D       BRB     9$                                      ;
                              51        10  BC  D0 0005F 8$:   MOVL    @P_FF_FLAG, ACTION_FF_FLAG              ; 2228
                              56        08  A0  D0 00063 9$:   MOVL    8(PBCB), WCB                            ; 2234
                              59      00F0  C0  9E 00067       MOVAB   240(PBCB), R9                           ; 2240
                                            69  D5 0006C       TSTL    (R9)                                    ;
                                            04  12 0006E       BNEQ    10$                                     ;
                              69        0C  AE  9E 00070       MOVAB   TEMP_BUF, (R9)                          ; 2241
                        04    AE        06  A6  B0 00074 10$:  MOVW    6(WCB), BUF_DESC                        ; 2247
                        06    AE      010E  8F  B0 00079       MOVW    #270, BUF_DESC+2                        ; 2249
                        08    AE            69  D0 0007F       MOVL    (R9), BUF_DESC+4                        ; 2250
                              5A        5F  A0  9A 00083       MOVZBL  95(PBCB), R10                           ; 2256
                              57            01  CE 00087       MNEGL   #1, ROW                                 ; 2294
                                            59  11 0008A       BRB     15$                                     ;
                              50        06  A6  3C 0008C 11$:  MOVZWL  6(WCB), R0                              ; 2262
                              50            57  C4 00090       MULL2   ROW, R0                                 ;
                51            50        08  A6  C1 00093       ADDL3   8(WCB), R0, R1                          ;
                58            50        0C  A6  C1 00098       ADDL3   12(WCB), R0, R8                         ; 2263
          00    B9            61        06  A6  28 0009D       MOVC3   6(WCB), (R1), @0(R9)                    ; 2274
                              53        06  A6  3C 000A3       MOVZWL  6(WCB), R3                              ; 2282
                              52            01  CE 000A7       MNEGL   #1, COL                                 ;
                                            22  11 000AA       BRB     14$                                     ;
                51            69            52  C1 000AC 12$:  ADDL3   COL, (R9), R1                           ; 228'
                        C0    8F          6248  93 000B0       BITB    (COL)[R8], #192                         ; 2286
                                            17  13 000B5       BEQL    14$                                     ;
                              10            61  91 000B7       CMPB    (R1), #16                               ; 2288
                                            05  1B 000BA       BLEQU   13$                                     ;
                              61            2A  90 000BC       MOVB    #42, (R1)                               ; 2289
                                            0D  11 000BF       BRB     14$                                     ;
50              61            04            00  EF 000C1 13$:  EXTZV   #0, #4, (R1), R0                        ; 2290
                              61 00000000'EF40  90 000C6       MOVB    BORDER_TRANS[R0], (R1)                  ;
                DA            52            53  F2 000CE 14$:  AOBLSS  R3, COL, 12$                            ; 2286
                                            6E  DD 000D2       PUSHL   ACTION_PRM                              ; 2294
                                        08  AE  9F 000D4       PUSHAB  BUF_DESC                                ;
                        08    BC            02  FB 000D7       CALLS   #2, @P_RTN                              ;
```

```
                             5B            50  D0 000DB           MOVL    R0, STATUS                               ;
                             04            5B  E8 000DE           BLBS    STATUS, 15$                              ; 2295
                             50            5B  D0 000E1           MOVL    STATUS, R0                               ;
                                               04 000E4           RET                                              ;
              A3             57            5A  F2 000E5  15$:     AOBLSS  R10, ROW, 11$                            ;
                             50            01  D0 000E9           MOVL    #1, R0                                   ; 2299
                                               04 000EC           RET                                              ; 2301

; Routine Size:  237 bytes,    Routine Base:  _SMG$CODE + 1235
```

```
1 %SBTTL 'SMG$SNAPSHOT - Snapshot pasteboard into a file'
1 GLOBAL ROUTINE SMG$SNAPSHOT ( PASTEBOARD_ID ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       If the output device is being controlled by RMS
1 !       (i.e. it is a file or unknown terminal)
1 !       then calling this routine causes a snapshot
1 !       of the current pasteboard to be taken and output
1 !       to the output file.
1 !       Pasteboard batching has no affect on this routine.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$SNAPSHOT ( PASTEBOARD_ID.rl.r)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       PASTEBOARD_ID.rl.r       pasteboard id
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       contents of PBCB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL       Normal successful completion
1 !       SMG$_NOTRMSOUT   (success) no action taken since output is
1 !                        not being controlled by RMS
1 !       RMS$_xyz         Errors from RMS
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
; 2104          2341  2 BEGIN
; 2105          2342  2
; 2106          2343  2 EXTERNAL LITERAL
; 2107          2344  2
; 2108          2345  2         SMG$_NOTRMSOUT;          ! Not RMS output
; 2109          2346  2
; 2110          2347  2 LOCAL
; 2111          2348  2
; 2112          2349  2         STATUS,
; 2113          2350  2         PBCB             : REF $PBCB_DECL;
; 2114          2351  2
; 2115          2352  2 $SMG$VALIDATE_ARGCOUNT(1,1);
; 2116          2353  2
; 2117          2354  2 !+
; 2118          2355  2 ! Get the pasteboard control block from the pasteboard id.
; 2119          2356  2 !-
; 2120          2357  2
; 2121          2358  2 $SMG$GET_PBCB(.PASTEBOARD_ID,PBCB);
; 2122          2359  2
; 2123          2360  2 !+
; 2124          2361  2 ! Do nothing if output is not being controlled by RMS.
; 2125          2362  2 !-
; 2126          2363  2
; 2127          2364  2 IF NOT .PBCB[PBCB_V_RMS]
; 2128          2365  2   THEN RETURN  SMG$_NOTRMSOUT;
; 2129          2366  2
; 2130          2367  2 !+
; 2131          2368  2 ! Output this pasteboard using our special RMS output routine.
; 2132          2369  2 !-
; 2133          2370  2
; 2134          2371  2 STATUS=SMG$PUT_PASTEBOARD(.PASTEBOARD_ID,RMS_RTN,PBCB);
; 2135          2372  2 IF NOT .STATUS THEN RETURN .STATUS;
; 2136          2373  2
; 2137          2374  2 RETURN  SS$_NORMAL
; 2138          2375  2
; 2139          2376  1 END;                    ! Routine SMG$SNAPSHOT


                                                          .EXTRN  SMG$_NOTRMSOUT

                                     0000 00000          .ENTRY  SMG$SNAPSHOT, Save nothing                    : 2303
                      5E          04   C2 00002          SUBL2   #4, SP                                        :
                      01          6C   91 00005          CMPB    (AP), #1                                      : 2352
                                  08   13 00008          BEQL    1$                                            :
                      50 00000000G  8F   D0 0000A          MOVL    #SMG$_WRONUMARG, R0                           :
                                  04   00011          RET                                                   :
                      50       04   BC   D0 00012 1$:     MOVL    @PASTEBOARD_ID, R0                            : 2358
                                  11   19 00016          BLSS    2$                                            :
             00000000G  00          50   D1 00018          CMPL    R0, PBD_L_COUNT                               :
                                  08   14 0001F          BGTR    2$                                            :
          08 00000000G  00          50   E0 00021          BBS     R0, PBD_V_PB_AVAIL, 3$                        :
                      50 00000000G  8F   D0 00029 2$:     MOVL    #SMG$_INVPAS_ID, R0                           :
                                  04   00030          RET                                                   :
                      6E 00000000G0040   D0 00031 3$:     MOVL    PBD_A_PBCB[R0], PBCB                          :
                      50          6E   D0 00039          MOVL    PBCB, R0                                      : 2364
          08       00D0  C0          03   E0 0003C          BBS     #3, 208(R0), 4$                               :
```

```
                    50 00000000G  8F   D0 00042          MOVL    #SMG$_NOTRMSOUT, R0                       ; 2365
                                       04 00049          RET
                                  5E   DD 0004A 4$:      PUSHL   SP                                        ; 2371
                           0000V  CF   9F 0004C          PUSHAB  RMS_RTN                                   :
                              04  AC   DD 00050          PUSHL   PASTEBOARD_ID                             :
               FEBB   CF          03   FB 00053          CALLS   #3, SMG$PUT_PASTEBOARD                    :
                      03          50   E9 00058          BLBC    STATUS, 5$                                ; 2372
                      50          01   D0 0005B          MOVL    #1, R0                                    ; 2374
                                       04 0005E 5$:      RET                                               ; 2376

; Routine Size:  95 bytes,    Routine Base:  _SMG$CODE + 1322
```

```
1 %SBTTL 'SMG$$SET_ATTRIBUTES_ON'
1 GLOBAL ROUTINE SMG$$SET_ATTRIBUTES_ON (
1                   PBCB : REF $PBCB_DECL,
1                   FLAGS : BITVECTOR
1               ) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine generates the escape sequences turning on
1 !       attributes such as bolding and blinking.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$SET_ATTRIBUTES_ON (PBCB,
1 !                                                  FLAGS.rl.v)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       PBCB
1 !       FLAGS.rl.v              flags specifying which attributes to turn on
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       NONE
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! COMPLETION STATUS:
1 !
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
2 BEGIN
2
2 LOCAL
2
2         STATUS;
2
2 BIND    TT2 = PBCB[PBCB_L_DEVDEPEND2]    : $BBLOCK;
2
2 !+
2 ! Renditions requires that the AVO (ADVANCED VIDEO) terminal
2 ! characteristic bit be set.  Even if the TERMTABLE entries
2 ! show that the terminal has the BEGIN_BOLD capability,
2 ! the terminal might not have the advanced video option.
2 !-
2
2 IF .FLAGS[ATTR_V_REND_GRAPHIC]
3 AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
3   THEN  BEGIN
3         $SMG$GET_TERM_DATA(BEGIN_LINE_DRAWING_CHAR);
3
3         IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4           THEN  BEGIN
4                 STATUS=SMG$$OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                          .PBCB[PBCB_A_CAP_BUFFER]);
4                 IF NOT .STATUS THEN RETURN .STATUS
3                 END;
2         END;
2
2 !+
2 ! Get and output the string to set the correct attributes.
2 !-
2
2 IF .FLAGS[ATTR_V_REND_BOLD]
3 AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
3   THEN  BEGIN
3         $SMG$GET_TERM_DATA(BEGIN_BOLD);
3
3         IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4           THEN  BEGIN
4                 STATUS=SMG$$OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                          .PBCB[PBCB_A_CAP_BUFFER]);
4                 IF NOT .STATUS THEN RETURN .STATUS;
3                 END;
2         END;
2
2 IF .FLAGS[ATTR_V_REND_BLINK]
3 AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
3   THEN  BEGIN
3         $SMG$GET_TERM_DATA(BEGIN_BLINK);
3
3         IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
4           THEN  BEGIN
4                 STATUS=SMG$$OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],
4                                          .PBCB[PBCB_A_CAP_BUFFER]);
4                 IF NOT .STATUS THEN RETURN .STATUS;
3                 END;
2         END;
```

```
; 2235          2470  2
; 2236          2471  2  IF .FLAGS[ATTR_V_REND_REV]
; 2237          2472  3  AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2238          2473  3    THEN  BEGIN
; 2239          2474  3          $SMG$GET_TERM_DATA(BEGIN_REVERSE);
; 2240          2475  3
; 2241          2476  3          IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2242          2477  4            THEN  BEGIN
; 2243          2478  4                  STATUS=SMG$$OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2244          2479  4                                          .PBCB[PBCB_A_CAP_BUFFER]);
; 2245          2480  4                  IF NOT .STATUS THEN RETURN .STATUS;
; 2246          2481  3                  END;
; 2247          2482  2          END;
; 2248          2483  2
; 2249          2484  2  IF .FLAGS[ATTR_V_REND_UNDER]
; 2250          2485  3  AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2251          2486  3    THEN  BEGIN
; 2252          2487  3          $SMG$GET_TERM_DATA(BEGIN_UNDERSCORE);
; 2253          2488  3
; 2254          2489  3          IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2255          2490  4            THEN  BEGIN
; 2256          2491  4                  STATUS=SMG$$OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2257          2492  4                                          .PBCB[PBCB_A_CAP_BUFFER]);
; 2258          2493  4                  IF NOT .STATUS THEN RETURN .STATUS;
; 2259          2494  3                  END;
; 2260          2495  2          END;
; 2261          2496  2
; 2262          2497  2  RETURN  SS$_NORMAL
; 2263          2498  2
; 2264          2499  1  END;                            ! End of routine SMG$$SET_ATTRIBUTES_ON



                                 00FC 00000          .ENTRY   SMG$$SET_ATTRIBUTES_ON, Save R2,R3,R4,R5,-   ; 2378
                                                              R6,R7                                        :
                 57      0000V  CF   9E 00002        MOVAB    SMG$$OUTPUT, R7                              :
                 56  00000000G  00   9E 00007        MOVAB    SMG$GET_TERM_DATA, R6                        :
                 5E             10   C2 0000E        SUBL2    #16, SP                                      :
                 52         04  AC   D0 00011        MOVL     PBCB, R2                                     ; 2419
                 54         60  A2   9E 00015        MOVAB    96(R2), R4                                   :
    4F       08  AC             04   E1 00019        BBC      #4, FLAGS, 4$                                ; 2428
    04           64             1B   E0 0001E        BBS      #27, (R4), 1$                                ; 2429
                 47         03  A4   E8 00022        BLBS     3(R4), 4$                                    :
                 53       0108  C2   9E 00026  1$:   MOVAB    264(R2), R3                                  ; 2431
                          00FC  C2   D5 0002B        TSTL     252(R2)                                      :
                                04   12 0002F        BNEQ     2$                                           :
                                63   D4 00031        CLRL     (R3)                                         :
                                23   11 00033        BRB      3$                                           :
                            04  AE   D4 00035  2$:   CLRL     INPUT_ARGS                                   :
                            04  AE   9F 00038        PUSHAB   INPUT_ARGS                                   :
                          0104  C2   DD 0003B        PUSHL    260(R2)                                      :
                                53   DD 0003F        PUSHL    R3                                           :
                          0100  C2   9F 00041        PUSHAB   256(R2)                                      :
             10  AE       01BE  8F   3C 00045        MOVZWL   #446, 16(SP)                                 :
                            10  AE   9F 0004B        PUSHAB   16(SP)                                       :
```

```
                      00FC  C2 9F 0004E        PUSHAB  252(R2)                         :
                66            06 FB 00052        CALLS   #6, SMG$GET_TERM_DATA           :
                50            50 E9 00055        BLBC    STATUS, 7$                      :
                              63 D5 00058 3$:    TSTL    (R3)                            : 2433
                              11 13 0005A        BEQL    4$                              :
                      0104  C2 DD 0005C        PUSHL   260(R2)                         : 2436
                              63 DD 00060        PUSHL   (R3)                            : 2435
                              52 DD 00062        PUSHL   R2                              :
                67            03 FB 00064        CALLS   #3, SMG$$OUTPUT                 :
                55            50 D0 00067        MOVL    R0, STATUS                      :
                50            55 E9 0006A        BLBC    STATUS, 9$                      : 2437
                4F        08  AC E9 0006D 4$:    BLBC    FLAGS, 10$                      : 2445
    04          64            1B E0 00071        BBS     #27, (R4), 5$                   : 2446
                47        03  A4 E8 00075        BLBS    3(R4), 10$                      :
                53      0108  C2 9E 00079 5$:    MOVAB   264(R2), R3                     : 2443
                        00FC  C2 D5 0007E        TSTL    252(R2)                         :
                              04 12 00082        BNEQ    6$                              :
                              63 D4 00084        CLRL    (R3)                            :
                              23 11 00086        BRB     8$                              :
                          04  AE D4 00088 6$:    CLRL    INPUT_ARGS                      :
                          04  AE 9F 0008B        PUSHAB  INPUT_ARGS                      :
                        0104  C2 DD 0008E        PUSHL   260(R2)                         :
                              53 DD 00092        PUSHL   R3                              :
                        0100  C2 9F 00094        PUSHAB  256(R2)                         :
          10    AE      01BB  8F 3C 00098        MOVZWL  #443, 16(SP)                    :
                          10  AE 9F 0009E        PUSHAB  16(SP)                          :
                        00FC  C2 9F 000A1        PUSHAB  252(R2)                         :
                66            06 FB 000A5        CALLS   #6, SMG$GET_TERM_DATA           :
                51            50 E9 000A8 7$:    BLBC    STATUS, 13$                     :
                              63 D5 000AB 8$:    TSTL    (R3)                            : 2450
                              11 13 000AD        BEQL    10$                             :
                        0104  C2 DD 000AF        PUSHL   260(R2)                         : 2453
                              63 DD 000B3        PUSHL   (R3)                            : 2452
                              52 DD 000B5        PUSHL   R2                              :
                67            03 FB 000B7        CALLS   #3, SMG$$OUTPUT                 :
                55            50 D0 000BA        MOVL    R0, STATUS                      :
                51            55 E9 000BD 9$:    BLBC    STATUS, 15$                     : 2454
    4F    08    AC            02 E1 000C0 10$:   BBC     #2, FLAGS, 16$                  : 2458
    04          64            1B E0 000C5        BBS     #27, (R4), 11$                  : 2459
                47        03  A4 E8 000C9        BLBS    3(R4), 16$                      :
                53      0108  C2 9E 000CD 11$:   MOVAB   264(R2), R3                     : 2461
                        00FC  C2 D5 000D2        TSTL    252(R2)                         :
                              04 12 000D6        BNEQ    12$                             :
                              63 D4 000D8        CLRL    (R3)                            :
                              23 11 000DA        BRB     14$                             :
                          04  AE D4 000DC 12$:   CLRL    INPUT_ARGS                      :
                          04  AE 9F 000DF        PUSHAB  INPUT_ARGS                      :
                        0104  C2 DD 000E2        PUSHL   260(R2)                         :
                              53 DD 000E6        PUSHL   R3                              :
                        0100  C2 9F 000E8        PUSHAB  256(R2)                         :
          10    AE      01BA  8F 3C 000EC        MOVZWL  #442, 16(SP)                    :
                          10  AE 9F 000F2        PUSHAB  16(SP)                          :
                        00FC  C2 9F 000F5        PUSHAB  252(R2)                         :
                66            06 FB 000F9        CALLS   #6, SMG$GET_TERM_DATA           :
                51            50 E9 000FC 13$:   BLBC    STATUS, 19$                     :
                              63 D5 000FF 14$:   TSTL    (R3)                            : 2463
                              11 13 00101        BEQL    16$                             :
                                 0104     C2  DD 00103          PUSHL   260(R2)                                        ; 2466
                                          63  DD 00107          PUSHL   (R3)                                           ; 2465
                                          52  DD 00109          PUSHL   R2                                             ;
                          67              03  FB 0010B          CALLS   #3, SMG$$OUTPUT                                ;
                          55              50  D0 0010E          MOVL    R0, STATUS                                     ;
                          51              55  E9 00111  15$:    BLBC    STATUS, 21$                                    ; 2467
          4F        08    AC              01  E1 00114  16$:    BBC     #1, FLAGS, 22$                                 ; 2471
          04              64              1B  E0 00119          BBS     #27, (R4), 17$                                 ; 2472
                          47       03     A4  E8 0011D          BLBS    3(R4), 22$                                     ;
                          53     0108     C2  9E 00121  17$:    MOVAB   264(R2), R3                                    ; 2474
                                 00FC     C2  D5 00126          TSTL    252(R2)                                        ;
                                          04  12 0012A          BNEQ    18$                                            ;
                                          63  D4 0012C          CLRL    (R3)                                           ;
                                          23  11 0012E          BRB     20$                                            ;
                                   04     AE  D4 00130  18$:    CLRL    INPUT_ARGS                                     ;
                                   04     AE  9F 00133          PUSHAB  INPUT_ARGS                                     ;
                                 0104     C2  DD 00136          PUSHL   260(R2)                                        ;
                                          53  DD 0013A          PUSHL   R3                                             ;
                                 0100     C2  9F 0013C          PUSHAB  256(R2)                                        ;
                    10    AE     01BF     8F  3C 00140          MOVZWL  #447, 16(SP)                                   ;
                                   10     AE  9F 00146          PUSHAB  16(SP)                                         ;
                                 00FC     C2  9F 00149          PUSHAB  252(R2)                                        ;
                          66              06  FB 0014D          CALLS   #6, SMG$GET_TERM_DATA                          ;
                          70              50  E9 00150  19$:    BLBC    STATUS, 28$                                    ;
                                          63  D5 00153  20$:    TSTL    (R3)                                           ; 2476
                                          11  13 00155          BEQL    22$                                            ;
                                 0104     C2  DD 00157          PUSHL   260(R2)                                        ; 2479
                                          63  DD 0015B          PUSHL   (R3)                                           ; 2478
                                          52  DD 0015D          PUSHL   R2                                             ;
                          67              03  FB 0015F          CALLS   #3, SMG$$OUTPUT                                ;
                          55              50  D0 00162          MOVL    R0, STATUS                                     ;
                          54              55  E9 00165  21$:    BLBC    STATUS, 26$                                    ; 2480
          53        08    AC              03  E1 00168  22$:    BBC     #3, FLAGS, 27$                                 ; 2484
          04              64              1B  E0 0016D          BBS     #27, (R4), 23$                                 ; 2485
                          4B       03     A4  E8 00171          BLBS    3(R4), 27$                                     ;
                          53     0108     C2  9E 00175  23$:    MOVAB   264(R2), R3                                    ; 2487
                                 00FC     C2  D5 0017A          TSTL    252(R2)                                        ;
                                          04  12 0017E          BNEQ    24$                                            ;
                                          63  D4 00180          CLRL    (R3)                                           ;
                                          23  11 00182          BRB     25$                                            ;
                                   04     AE  D4 00184  24$:    CLRL    INPUT_ARGS                                     ;
                                   04     AE  9F 00187          PUSHAB  INPUT_ARGS                                     ;
                                 0104     C2  DD 0018A          PUSHL   260(R2)                                        ;
                                          53  DD 0018E          PUSHL   R3                                             ;
                                 0100     C2  9F 00190          PUSHAB  256(R2)                                        ;
                    10    AE     01C0     8F  3C 00194          MOVZWL  #448, 16(SP)                                   ;
                                   10     AE  9F 0019A          PUSHAB  16(SP)                                         ;
                                 00FC     C2  9F 0019D          PUSHAB  252(R2)                                        ;
                          66              06  FB 001A1          CALLS   #6, SMG$GET_TERM_DATA                          ;
                          1C              50  E9 001A4          BLBC    STATUS, 28$                                    ;
                                          63  D5 001A7  25$:    TSTL    (R3)                                           ; 2489
                                          15  13 001A9          BEQL    27$                                            ;
                                 0104     C2  DD 001AB          PUSHL   260(R2)                                        ; 2492
                                          63  DD 001AF          PUSHL   (R3)                                           ; 2491
                                          52  DD 001B1          PUSHL   R2                                             ;
                          67              03  FB 001B3          CALLS   #3, SMG$$OUTPUT                                ;
                          55              50  D0 001B6          MOVL    R0, STATUS                                     ;
```

```
                              04          55  E8 001B9          BLBS     STATUS, 27$                                          ; 2493
                              50          55  D0 001BC  26$:    MOVL     STATUS, R0                                           ;
                                              04 001BF          RET                                                           ;
                              50          01  D0 001C0  27$:    MOVL     #1, R0                                               ; 2497
                                              04 001C3  28$:    RET                                                           ; 2499

; Routine Size:  452 bytes,    Routine Base:  _SMG$CODE + 1381
; 2266          2500  1 %SBTTL 'SMG$$SET_ATTRIBUTES_OFF'
; 2267          2501  1 GLOBAL ROUTINE SMG$$SET_ATTRIBUTES_OFF (
; 2268          2502  1                         PBCB : REF $PBCB_DECL,
; 2269          2503  1                         FLAGS : BITVECTOR
; 2270          2504  1                 ) =
; 2271          2505  1 !++
; 2272          2506  1 ! FUNCTIONAL DESCRIPTION:
; 2273          2507  1 !
; 2274          2508  1 !       This routine generates the escape sequences turning on
; 2275          2509  1 !       attributes such as bolding and blinking.
; 2276          2510  1 !
; 2277          2511  1 ! CALLING SEQUENCE:
; 2278          2512  1 !
; 2279          2513  1 !       ret_status.wlc.v = SMG$$SET_ATTRIBUTES_OFF (PBCB,
; 2280          2514  1 !                                               FLAGS.rl.v)
; 2281          2515  1 !
; 2282          2516  1 ! FORMAL PARAMETERS:
; 2283          2517  1 !
; 2284          2518  1 !       PBCB
; 2285          2519  1 !       FLAGS.rl.v              flags specifying which attributes to turn on
; 2286          2520  1 !
; 2287          2521  1 ! IMPLICIT INPUTS:
; 2288          2522  1 !
; 2289          2523  1 !       NONE
; 2290          2524  1 !
; 2291          2525  1 ! IMPLICIT UUTPUTS:
; 2292          2526  1 !
; 2293          2527  1 !       NONE
; 2294          2528  1 !
; 2295          2529  1 ! COMPLETION STATUS:
; 2296          2530  1 !
; 2297          2531  1 !
; 2298          2532  1 ! SIDE EFFECTS:
; 2299          2533  1 !
; 2300          2534  1 !       NONE
; 2301          2535  1 !--
; 2303          2536 2 BEGIN
; 2304          2537 2
; 2305          2538 2 LOCAL
; 2306          2539 2
; 2307          2540 2         STATUS;
; 2308          2541 2
; 2309          2542 2 BIND    TT2 = PBCB[PBCB_L_DEVDEPEND2]    : $BBLOCK;
; 2310          2543 2
; 2311          2544 2 !+
; 2312          2545 2 ! Renditions requires that the AVO (ADVANCED VIDEO) terminal
; 2313          2546 2 ! characteristic bit be set.  Even if the TERMTABLE entries
; 2314          2547 2 ! show that the terminal has the BEGIN_BOLD capability,
; 2315          2548 2 ! the terminal might not have the advanced video option.
; 2316          2549 2 !-
; 2317          2550 2
; 2318          2551 2 !+
; 2319          2552 2 ! Get and output the suffix string to reset attributes to normal.
; 2320          2553 2 ! We used to assume that END_BOLD brings back normal attributes.
; 2321          2554 2 ! Now we rely on BEGIN_NORMAL_RENDITION.
; 2322          2555 2 !-
; 2323          2556 2
; 2324          2557 2 IF .TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT]
; 2325          2558 3   THEN  BEGIN
; 2326          2559 3
; 2327        L 2560 3         %IF %DECLARED( SMG$K_BEGIN_NORMAL_RENDITION )
; 2328          2561 3         %THEN
; 2329          2562 3                 $SMG$GET_TERM_DATA(BEGIN_NORMAL_RENDITION);
; 2330        U 2563 3         %ELSE
; 2331        U 2564 3                 $SMG$GET_TERM_DATA(END_BOLD);
; 2332          2565 3         %FI
; 2333          2566 3
; 2334          2567 3         IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2335          2568 4           THEN  BEGIN
; 2336          2569 4                 STATUS=SMG$$OUTPUT(.PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2337          2570 4                                        .PBCB[PBCB_A_CAP_BUFFER]);
; 2338          2571 4                 IF NOT .STATUS THEN RETURN .STATUS;
; 2339          2572 3                 END;
; 2340          2573 2         END;
; 2341          2574 2
; 2342          2575 2 RETURN  SS$_NORMAL
; 2343          2576 2
; 2344          2577 1 END;



                                     000C 00000           .ENTRY  SMG$$SET_ATTRIBUTES_OFF, Save R2,R3          ; 2501
                  5E            10    C2 00002            SUBL2   #16, SP                                      ;
                  52      04    AC    D0 00005            MOVL    PBCB, R2                                     ; 2542
     04      63   A2            03    E0 00009            BBS     #3, 99(R2), 1$                               ; 2557
                  4A      63    A2    E8 0000E            BLBS    99(R2), 4$                                   ;
                  53    0108    C2    9E 00012  1$:       MOVAB   264(R2), R3                                  ; 2562
                        00FC    C2    D5 00017            TSTL    252(R2)                                      ;
                                04    12 0001B            BNEQ    2$                                           ;
                                63    D4 0001D            CLRL    (R3)                                         ;
                                27    11 0001F            BRB     3$                                           ;
```

```
                                  04     AE  D4 00021 2$:     CLRL    INPUT_ARGS                            :
                                  04     AE  9F 00024         PUSHAB  INPUT_ARGS                            :
                                0104     C2  DD 00027         PUSHL   260(R2)                               :
                                         53  DD 0002B         PUSHL   R3                                    :
                                0100     C2  9F 0002D         PUSHAB  256(R2)                               :
                   10    AE     0253     8F  3C 00031         MOVZWL  #595, 16(SP)                          :
                                  10     AE  9F 00037         PUSHAB  16(SP)                                :
                                00FC     C2  9F 0003A         PUSHAB  252(R2)                               :
            00000000G    00              06  FB 0003E         CALLS   #6, SMG$GET_TERM_DATA                 :
                         17              50  E9 00045         BLBC    STATUS, 5$                            :
                                         63  D5 00048 3$:     TSTL    (R3)                                  : 2567
                                         10  13 0004A         BEQL    4$                                    :
                                0104     C2  DD 0004C         PUSHL   260(R2)                               : 2570
                                         63  DD 00050         PUSHL   (R3)                                  : 2569
                                         52  DD 00052         PUSHL   R2                                    :
                0000V    CF              03  FB 00054         CALLS   #3, SMG$$OUTPUT                       :
                         03              50  E9 00059         BLBC    STATUS, 5$                            : 2571
                         50              01  D0 0005C 4$:     MOVL    #1, R0                                : 2575
                                             04 0005F 5$:     RET                                           : 2577

; Routine Size:  96 bytes,    Routine Base:  _SMG$CODE + 1545
; 2346          2578  1 %SBTTL 'RMS_RTN - Action routine used to output a line with RMS'
; 2347          2579  1 ROUTINE RMS_RTN ( P_LINE_DESC, P_PBCB ) =
; 2348          2580  1 !++
; 2349          2581  1 ! FUNCTIONAL DESCRIPTION:
; 2350          2582  1 !
; 2351          2583  1 !       Outputs a line to the output file using RMS.
; 2352          2584  1 !
; 2353          2585  1 ! CALLING SEQUENCE:
; 2354          2586  1 !
; 2355          2587  1 !       ret_status.wlc.v = RMS_RTN ( P_LINE_DESC.rt.ds, P_PBCB.rab.r)
; 2356          2588  1 !
; 2357          2589  1 ! FORMAL PARAMETERS:
; 2358          2590  1 !
; 2359          2591  1 !       P_LINE_DESC.rt.ds         Address of fixed length string descriptor
; 2360          2592  1 !                                 for line to be output.
; 2361          2593  1 !
; 2362          2594  1 !       P_PBCB.rab.r              Address of pasteboard control block
; 2363          2595  1 !
; 2364          2596  1 ! IMPLICIT INPUTS:
; 2365          2597  1 !
; 2366          2598  1 !       contents of PBCB
; 2367          2599  1 !
; 2368          2600  1 ! IMPLICIT OUTPUTS:
; 2369          2601  1 !
; 2370          2602  1 !       NONE
; 2371          2603  1 !
; 2372          2604  1 ! COMPLETION STATUS:
; 2373          2605  1 !
; 2374          2606  1 !       RMS$_NORMAL      Normal successful completion
; 2375          2607  1 !       RMS$_xyz         Errors from RMS
; 2376          2608  1 !
; 2377          2609  1 ! SIDE EFFECTS:
; 2378          2610  1 !
; 2379          2611  1 !       NONE
; 2380          2612  1 !--
; 2382          2613  2 BEGIN
; 2383          2614  2
; 2384          2615  2 BIND
; 2385          2616  2
; 2386          2617  2         LINE_DESC       = .P_LINE_DESC          : BLOCK[8,BYTE],
; 2387          2618  2         PBCB            = .P_PBCB               : $PBCB_DECL,
; 2388          2619  2         SMGRAB          = .PBCB[PBCB_A_RAB]     : $RAB_DECL;
; 2389          2620  2
; 2390          2621  2 !+
; 2391          2622  2 ! Output this line using RMS.
; 2392          2623  2 !-
; 2393          2624  2
; 2394          2625  2 SMGRAB[RAB$W_RSZ]         = .LINE_DESC[DSC$W_LENGTH];
; 2395          2626  2 SMGRAB[RAB$L_RBF]         = .LINE_DESC[DSC$A_POINTER];
; 2396          2627  2
; 2397          2628  3 RETURN $PUT(RAB=SMGRAB)
; 2398          2629  3
; 2399          2630  1 END;                      ! Routine RMS_RTN



                                                              .EXTRN  SYS$PUT

                                     0000 00000 RMS_RTN:.WORD   Save nothing                                         ; 2579
                   51       04    AC   D0 00002         MOVL    P_LINE_DESC, R1                                      ; 2617
                   50       08    AC   D0 00006         MOVL    P_PBCB, R0                                           ; 2618
                   50     00EC    C0   D0 0000A         MOVL    236(R0), R0                                          ; 2619
             22    A0             61   B0 0000F         MOVW    (R1), 34(R0)                                         ; 2625
             28    A0       04    A1   D0 00013         MOVL    4(R1), 40(R0)                                        ; 2626
                                  50   DD 00018         PUSHL   R0                                                   ; 2628
      00000000G    00             01   FB 0001A         CALLS   #1, SYS$PUT                                          ;
                                       04 00021         RET                                                          ; 2630

; Routine Size:  34 bytes,    Routine Base:  _SMG$CODE + 15A5
; 2401          2631   1 %SBTTL 'SMG$$MIN_UPD - Calculate minimum update sequence and output'
; 2402          2632   1 GLOBAL ROUTINE SMG$$MIN_UPD (
; 2403          2633   1                                PBCB : REF $PBCB_DECL
; 2404          2634   1                             ) =
; 2405          2635   1 !++
; 2406          2636   1 ! FUNCTIONAL DESCRIPTION:
; 2407          2637   1 !
; 2408          2638   1 !        Obsolete.
; 2409          2639   1 !        SMG$$OUTPUT_PASTEBOARD should be called instead.
; 2410          2640   1 !        If this or that bombs out, you can use the old original temporary
; 2411          2641   1 !        routine that Rich wrote.  It's called SMG$$OLD_MIN_UPD.
; 2412          2642   1 !
; 2413          2643   1 ! CALLING SEQUENCE:
; 2414          2644   1 !
; 2415          2645   1 !        ret_status.wlc.v = SMG$$MIN_UPD ( PBCB.rab.r )
; 2416          2646   1 !
; 2417          2647   1 ! FORMAL PARAMETERS:
; 2418          2648   1 !
; 2419          2649   1 !        PBCB.rab.r                 Address of pasteboard control block.
; 2420          2650   1 !
; 2421          2651   1 ! IMPLICIT INPUTS:
; 2422          2652   1 !
; 2423          2653   1 !        NONE
; 2424          2654   1 !
; 2425          2655   1 ! IMPLICIT OUTPUTS:
; 2426          2656   1 !
; 2427          2657   1 !        NONE
; 2428          2658   1 !
; 2429          2659   1 ! COMPLETION STATUS:
; 2430          2660   1 !
; 2431          2661   1 !        SS$_NORMAL      Normal successful completion
; 2432          2662   1 !
; 2433          2663   1 ! SIDE EFFECTS:
; 2434          2664   1 !
; 2435          2665   1 !        NONE
; 2436          2666   1 !--
```

```
2 BEGIN
2 LOCAL
2     WCB : REF $WCB_DECL;            ! Address of Window Control Block.
2
2 WCB = .PBCB [PBCB_A_WCB];
2 IF .PBCB [PBCB_W_LAST_CHANGED_ROW] NEQ 0
2 THEN
3     BEGIN         ! Normal case
3     LOCAL
3         LC  : REF VECTOR [,BYTE],         ! Addr of line characteristics
3                                           ! vector for text buffer.
3         LCS : REF VECTOR [,BYTE],         ! Addr of line characteristics
3                                           ! vector for screen text buffer.
3         B_OFFSET,       ! Byte offset to begining of line of interest
3         WIDTH;          ! Extracted copy of .WCB [WCB_W_NO_COLS]
3
3     WIDTH = .WCB [WCB_W_NO_COLS];
3     B_OFFSET = (.PBCB [PBCB_W_FIRST_CHANGED_ROW] - 1 ) * .WIDTH;
3     LC  = .WCB [WCB_A_LINE_CHAR];
3     LCS = .WCB [WCB_A_SCR_LINE_CHAR];
3
3     !+
3     ! Try to narrow the range of lines that claim to have been changed.
3     ! If we can collapse it to 1 or less, scrolling is not feasible.
3     ! As a by-product of doing these tests, the range of lines that
3     ! may have changed will possibly be narrowed, making minimum
3     ! update's work faster.
3     ! First try to refine the "first changed line" downwards.
3     !-
3     WHILE .PBCB [PBCB_W_FIRST_CHANGED_ROW] LSS
3         .PBCB [PBCB_W_LAST_CHANGED_ROW]
3     DO
4         BEGIN   ! Collapsing loop
4         !+
4         ! If this line is the same, with respect to the text buffer,
4         ! the attribute buffer, and the line characteristics vector,
4         ! then it is not changed -- drag down the first changed line by
4         ! 1.
4         !-
4         IF CH$EQL ( .WIDTH, .WCB [WCB_A_TEXT_BUF]     + .B_OFFSET,
4                     .WIDTH, .WCB [WCB_A_SCR_TEXT_BUF] + .B_OFFSET)
4
4            AND
4
4            CH$EQL ( .WIDTH, .WCB [WCB_A_ATTR_BUF]     + .B_OFFSET,
4                     .WIDTH, .WCB [WCB_A_SCR_ATTR_BUF] + .B_OFFSET)
4
4            AND
4
4            .LC  [.PBCB [PBCB_W_FIRST_CHANGED_ROW] ] EQL
4            .LCS [.PBCB [PBCB_W_FIRST_CHANGED_ROW] ]
4
4         THEN
5             BEGIN       ! Advance one row
5             PBCB [PBCB_W_FIRST_CHANGED_ROW] =
5                                     .PBCB [PBCB_W_FIRST_CHANGED_ROW] + 1;
5             B_OFFSET = .B_OFFSET + .WIDTH;
```

```
5               END ! Advance one row
4           ELSE
4               EXITLOOP;   ! 1st refined downward as far as possible
3           END;    ! Collapsing loop
3
3       !+
3       ! Now try to refine "last changed line" upward in a similar manner.
3       !-
3       B_OFFSET = (.PBCB [PBCB_W_LAST_CHANGED_ROW] - 1 ) * .WIDTH;
3
3       WHILE .PBCB [PBCB_W_FIRST_CHANGED_ROW] LSS
3             .PBCB [PBCB_W_LAST_CHANGED_ROW]
3       DO
4           BEGIN   ! Collapsing loop
4
4           !+
4           ! If this line is the same, with respect to the text buffer,
4           ! the attribute buffer, and the line characteristics vector,
4           ! then it is not changed -- drag up the last changed line by 1.
4           !-
4           IF CHSEQL ( .WIDTH, .WCB [WCB_A_TEXT_BUF]      + .B_OFFSET,
4                       .WIDTH, .WCB [WCB_A_SCR_TEXT_BUF]  + .B_OFFSET)
4
4              AND
4
4                CHSEQL ( .WIDTH, .WCB [WCB_A_ATTR_BUF]     + .B_OFFSET,
4                         .WIDTH, .WCB [WCB_A_SCR_ATTR_BUF] + .B_OFFSET)
4
4              AND
4
4              .LC  [.PBCB [PBCB_W_LAST_CHANGED_ROW] ] EQL
4              .LCS [.PBCB [PBCB_W_LAST_CHANGED_ROW] ]
4
4           THEN
5               BEGIN       ! Back up one row
5               PBCB [PBCB_W_LAST_CHANGED_ROW] =
5                                   .PBCB [PBCB_W_LAST_CHANGED_ROW] - 1;
5               B_OFFSET = .B_OFFSET - .WIDTH;
5               END ! Back up one row
4           ELSE
4               EXITLOOP;   ! 1st refined downward as far as possible
3           END;        ! Collapsing loop
3       END             ! Normal case
3
2   ELSE
2
3       BEGIN           ! Range not set case
3       !+
3       ! It is possible, in some obscure cases, to reach here with the
3       ! the 1st changed row set to #rows+1 and last changed row set to 0.
3       ! In this case, set range to whole pasteboard.
3       !-
3       PBCB [PBCB_W_FIRST_CHANGED_ROW] = 1;
3       PBCB [PBCB_W_LAST_CHANGED_ROW]  = .WCB [WCB_W_NO_ROWS];
2       END;            ! Range not set case
2
2   !+
; 2552          2781  2 ! If we reach here, we have legitimate differences on the lines
; 2553          2782  2 ! between .PBCB [PBCB_FIRST_CHANGED_ROW] and
; 2554          2783  2 ! .PBCB [PBCB_LAST_CHANGED_ROW]
; 2555          2784  2 !-
; 2556          2785  2
; 2557          2786  2 !+
; 2558          2787  2 ! If terminal supports scrolling regions, check to see if minimal update can be helped
; 2559          2788  2 ! by using physical scrolling regions.
; 2560          2789  2 ! *** Actually, we could also do full screen scrolling if we wanted to.
; 2561          2790  2 !-
; 2562          2791  2
; 2563          2792  2 $SMG$GET_TERM_DATA(SET_SCROLL_REGION,1,2);
; 2564          2793  2
; 2565          2794  2 IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2566          2795  2 THEN
; 2567          2796  3     BEGIN        ! Terminal supports scrolling regions
; 2568          2797  3     !+
; 2569          2798  3     ! Changed area must be at least 2 lines high for scrolling to be
; 2570          2799  3     ! useful.
; 2571          2800  3     !-
; 2572          2801  3     IF .PBCB [PBCB_W_LAST_CHANGED_ROW] -
; 2573          2802  3        .PBCB [PBCB_W_FIRST_CHANGED_ROW] GEQ 1
; 2574          2803  3     THEN
; 2575          2804  4         BEGIN   ! Scrolling may be possible
; 2576          2805  4
; 2577          2806  4         SMG$$CHECK_HDWR_SCROLL (.PBCB);
; 2578          2807  4
; 2579          2808  3         END;    ! Scrolling may be possible
; 2580          2809  2     END;        ! Terminal is a VT100
; 2581          2810  2
; 2582          2811  2 RETURN  SMG$$OUTPUT_PASTEBOARD(.PBCB)
; 2583          2812  2
; 2584          2813  1 END;                    ! End of routine SMG$$MIN_UPD



                                         0FFC 00000          .ENTRY  SMG$$MIN_UPD, Save R2,R3,R4,R5,R6,R7,R8,R9,-; 2632
                                                                     R10,R11                                      :
                           5E        10   C2 00002           SUBL2   #16, SP                                      :
                           56    04  AC   D0 00005           MOVL    PBCB, R6                                     ; 2671
                           54    08  A6   D0 00009           MOVL    8(R6), WCB                                   :
                               00A8  C6   9F 0000D           PUSHAB  168(R6)                                      ; 2684
                           5B  00AA  C6   9E 00011           MOVAB   170(R6), R11                                 ; 2672
                                     6B   B5 00016           TSTW    (R11)                                        :
                                     7A   13 00018           BEQL    4$                                           :
                           57    06  A4   3C 0001A           MOVZWL  6(WCB), WIDTH                                ; 2683
                           50    00  BE   32 0001E           CVTWL   @0(SP), R0                                   ; 2684
                                     50   D7 00022           DECL    R0                                           :
                  55       50        57   C5 00024           MULL3   WIDTH, R0, B_OFFSET                          :
                           59    2C  A4   D0 00028           MOVL    44(WCB), LC                                  ; 2685
                           58    30  A4   D0 0002C           MOVL    48(WCB), LCS                                 ; 2686
                           5A    00  BE   32 00030 1$:       CVTWL   @0(SP), R10                                  ; 2696
                           5A        6B   B1 00034           CMPW    (R11), R10                                   ; 2697
                                     25   15 00037           BLEQ    2$                                           :
             14 B445    08 B445      57   29 00039           CMPC3   WIDTH, @8(WCB)[B_OFFSET], @20(WCB)-          ; 2706
```

```
                                                                        [B_OFFSET]                                    :
                                     1B  12 00041       BNEQ    2$                                            :
        18 B445      0C B445         57  29 00043       CMPC3   WIDTH, @12(WCB)[B_OFFSET], @24(WCB)-          : 2711
                                                                [B_OFFSET]                                    :
                                     11  12 0004B       BNEQ    2$                                            :
                        6A48       6A49  91 0004D       CMPB    (R10)[LC], (R10)[LCS]                         : 2717
                                     0A  12 00052       BNEQ    2$                                            :
        00   BE           5A         01  A1 00054       ADDW3   #1, R10, @0(SP)                               : 2722
                          55         57  C0 00059       ADDL2   WIDTH, B_OFFSET                               : 2723
                                     D2  11 0005C       BRB     1$                                            : 2706
                          50         6B  32 0005E 2$:   CVTWL   (R11), R0                                     : 2732
                                     50  D7 00061       DECL    R0                                            :
             55           50         57  C5 00063       MULL3   WIDTH, R0, B_OFFSET                           :
                          5A         6B  32 00067 3$:   CVTWL   (R11), R10                                    : 2735
                          5A     00  BE  B1 0006A       CMPW    @0(SP), R10                                   :
                                     2C  18 0006E       BGEQ    5$                                            :
        14 B445      08 B445         57  29 00070       CMPC3   WIDTH, @8(WCB)[B_OFFSET], @20(WCB)-           : 2744
                                                                [B_OFFSET]                                    :
                                     22  12 00078       BNEQ    5$                                            :
        18 B445      0C B445         57  29 0007A       CMPC3   WIDTH, @12(WCB)[B_OFFSET], @24(WCB)-          : 2749
                                                                [B_OFFSET]                                    :
                                     18  12 00082       BNEQ    5$                                            :
                        6A48       6A49  91 00084       CMPB    (R10)[LC], (R10)[LCS]                         : 2755
                                     11  12 00089       BNEQ    5$                                            :
             6B           5A         01  A3 0008B       SUBW3   #1, R10, (R11)                                : 2760
                          55         57  C2 0008F       SUBL2   WIDTH, B_OFFSET                               : 2761
                                     D3  11 00092       BRB     3$                                            : 2744
                     00   BE         01  B0 00094 4$:   MOVW    #1, @0(SP)                                    : 2776
                          6B     02  A4  B0 00098       MOVW    2(WCB), (R11)                                 : 2777
                          52   0108  C6  9E 0009C 5$:   MOVAB   264(R6), R2                                   : 2792
                               00FC  C6  D5 000A1       TSTL    252(R6)                                       :
                                     04  12 000A5       BNEQ    6$                                            :
                                     62  D4 000A7       CLRL    (R2)                                          :
                                     30  11 000A9       BRB     7$                                            :
                     08   AE         02  D0 000AB 6$:   MOVL    #2, INPUT_ARGS                                :
                     0C   AE         01  D0 000AF       MOVL    #1, INPUT_ARGS+4                              :
                     10   AE         02  D0 000B3       MOVL    #2, INPUT_ARGS+8                              :
                                 08  AE  9F 000B7       PUSHAB  INPUT_ARGS                                    :
                               0104  C6  DD 000BA       PUSHL   260(R6)                                       :
                                     52  DD 000BE       PUSHL   R2                                            :
                               0100  C6  9F 000C0       PUSHAB  256(R6)                                       :
                     14   AE   023C  8F  3C 000C4       MOVZWL  #572, 20(SP)                                  :
                                 14  AE  9F 000CA       PUSHAB  20(SP)                                        :
                               00FC  C6  9F 000CD       PUSHAB  252(R6)                                       :
              00000000G   00         06  FB 000D1       CALLS   #6, SMG$GET_TERM_DATA                         :
                          1F         50  E9 000D8       BLBC    STATUS, 9$                                    :
                                     62  D5 000DB 7$:   TSTL    (R2)                                          : 2794
                                     14  13 000DD       BEQL    8$                                            :
                          50     00  BE  32 000DF       CVTWL   @0(SP), R0                                    : 2802
                                     50  D6 000E3       INCL    R0                                            :
  50         6B           10         00  EC 000E5       CMPV    #0, #16, (R11), R0                            :
                                     07  19 000EA       BLSS    8$                                            :
                                     56  DD 000EC       PUSHL   R6                                            : 2806
                   EAC5   CF         01  FB 000EE       CALLS   #1, SMG$$CHECK_HDWR_SCROLL                    :
                                     56  DD 000F3 8$:   PUSHL   R6                                            : 2811
                  0000V   CF         01  FB 000F5       CALLS   #1, SMG$$OUTPUT_PASTEBOARD                    :
                                         04 000FA 9$:   RET                                                   : 2813
```

```
; Routine Size:  251 bytes,    Routine Base:  _SMG$CODE + 15C7
```

```
1 %SBTTL 'SMG$$OUTPUT_PASTEBOARD - bring pasteboard up-to-date'
1 GLOBAL ROUTINE SMG$$OUTPUT_PASTEBOARD ( P_PBCB ) =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Brings the display associated with this pasteboard up-to-date.
1 !       It does this by either redrawing it in its entirety,
1 !       or by perfomring minimal update if that mode is enabled.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = SMG$$OUTPUT_PASTEBOARD ( P_PBCB.rab.r )
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       P_PBCB.rab.r            Address of pasteboard control block.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       contents of PBCB and its WCB
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SMG$_BATWAS_ON  OK, but batching was on, so nothing happened
1 !       SS$_NORMAL      Normal successful completion
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
2 BEGIN
2
2 BIND
2
2              PBCB             = .P_PBCB                    : $PBCB_DECL,
2              WCB              = .PBCB[PBCB_A_WCB]          : $WCB_DECL,
2              TEXT_BUF         = .WCB[WCB_A_TEXT_BUF]       : VECTOR[,BYTE],
2              ATTR_BUF         = .WCB[WCB_A_ATTR_BUF]       : VECTOR[,BYTE],
2              ROWS             =  WCB[WCB_W_NO_ROWS]        : WORD,
2              COLS             =  WCB[WCB_W_NO_COLS]        : WORD;
2
2 LOCAL
2
2              STATUS,
2              SIZE;
2
2 EXTERNAL LITERAL
2
2              SMG$_BATWAS_ON;
```

```
; 2642          2868  2 !+
; 2643          2869  2 ! Do nothing if the output is being controlled by RMS.
; 2644          2870  2 !-
; 2645          2871  2
; 2646          2872  2 IF .PBCB[PBCB_V_RMS]
; 2647          2873  2   THEN  RETURN  SMG$_WILUSERMS;
; 2648          2874  2
; 2649          2875  2 !+
; 2650          2876  2 ! Do nothing if batching is in effect.
; 2651          2877  2 !-
; 2652          2878  2
; 2653          2879  2 IF .PBCB[PBCB_L_BATCH_LEVEL] NEQ 0
; 2654          2880  2   THEN  RETURN  SMG$_BATWAS_ON;
; 2655          2881  2
; 2656          2882  2 SIZE = .ROWS * .COLS;
; 2657          2883  2
; 2658          2884  2 !+
; 2659          2885  2 ! If minimal updating is in effect, then call
; 2660          2886  2 ! SMG$$OUTPUT_MINIMAL_UPDATE to output a minimal update sequence.
; 2661          2887  2 ! Then return.
; 2662          2888  2 !-
; 2663          2889  2
; 2664          2890  2 IF .PBCB[PBCB_V_MINUPD]
; 2665          2891  2   THEN  RETURN SMG$$OUTPUT_MINIMAL_UPDATE(PBCB);
; 2666          2892  2
; 2667          2893  2 !+
; 2668          2894  2 ! Otherwise, do nothing (for now).
; 2669          2895  2 !-
; 2670          2896  2
; 2671          2897  2 RETURN  SS$_NORMAL
; 2672          2898  2
; 2673          2899  1 END;                        ! End of routine SMG$$OUTPUT_PASTEBOARD


                                                                    .EXTRN  SMG$_BATWAS_ON

                                            000C 00000              .ENTRY  SMG$$OUTPUT_PASTEBOARD, Save R2,R3              : 2815
                         50         04   AC   D0 00002              MOVL    P_PBCB, R0                                      : 2853
           52      08    A0              02   C1 00006              ADDL3   #2, 8(R0), R2                                   : 2857
           51      08    A0              06   C1 0000B              ADDL3   #6, 8(R0), R1                                   : 2858
           08    00D0    C0              03   E1 00010              BBC     #3, 208(R0), 1$                                 : 2872
                         50  00000000G   8F   D0 00016              MOVL    #SMG$_WILUSERMS, R0                             : 2873
                                              04 0001D              RET                                                     :
                                 00A4    C0   D5 0001E  1$:         TSTL    164(R0)                                         : 2879
                                         08   13 00022              BEQL    2$                                              :
                         50  00000000G   8F   D0 00024              MOVL    #SMG$_BATWAS_ON, R0                             : 2880
                                              04 0002B              RET                                                     :
                         53              62   3C 0002C  2$:         MOVZWL  (R2), R3                                        : 2882
                         51              61   3C 0002F              MOVZWL  (R1), SIZE                                      :
                         51              53   C4 00032              MULL2   R3, SIZE                                        :
           0A      0C    A0              01   E1 00035              BBC     #1, 12(R0), 3$                                  : 2890
                                         50   DD 0003A              PUSHL   R0                                              : 2891
              00000000G  00              01   FB 0003C              CALLS   #1, SMG$$OUTPUT_MINIMAL_UPDATE                  :
                                              04 00043              RET                                                     :
                         50              01   D0 00044  3$:         MOVL    #1, R0                                          : 2897
                                              04 00047              RET                                                     : 2899
```

```
; Routine Size:  72 bytes,    Routine Base:  _SMG$CODE + 16C2
```

```
: 2675        2900  1 %SBTTL 'SMG$$PUT_SCREEN - Output to screen'
: 2676        2901  1 GLOBAL ROUTINE SMG$$PUT_SCREEN (
: 2677        2902  1                     P_PBCB,
: 2678        2903  1                     TEXT_LEN,
: 2679        2904  1                     TEXT_ADR,
: 2680        2905  1                     ROW_NUM,
: 2681        2906  1                     COL_NUM,
: 2682        2907  1                     FLAGS : BITVECTOR[32] ) =
: 2683        2908  1 !++
: 2684        2909  1 ! FUNCTIONAL DESCRIPTION:
: 2685        2910  1 !
: 2686        2911  1 !       Logically outputs a string to the screen using calls
: 2687        2912  1 !       to SMG$$OUTPUT.  The text may be accomapnied by
: 2688        2913  1 !       renditions and cursor positioning.
: 2689        2914  1 !       Note that the output sequences generated may get
: 2690        2915  1 !       buffered up by SMG$$OUTPUT if buffering is enabled.
: 2691        2916  1 !
: 2692        2917  1 ! CALLING SEQUENCE:
: 2693        2918  1 !
: 2694        2919  1 !       ret_status.wlc.v = SMG$$PUT_SCREEN(
: 2695        2920  1 !                                       P_PBCB.rab.r,
: 2696        2921  1 !                                       TEXT_LEN.rl.v,
: 2697        2922  1 !                                       TEXT_ADR.rt.r
: 2698        2923  1 !                                       ROW_NUM.rl.v,
: 2699        2924  1 !                                       COL_NUM.rl.v
: 2700        2925  1 !                                       [,FLAGS.rl.v])
: 2701        2926  1 !
: 2702        2927  1 ! FORMAL PARAMETERS:
: 2703        2928  1 !
: 2704        2929  1 !       P_PBCB.rab.r            Address of pasteboard control block.
: 2705        2930  1 !
: 2706        2931  1 !       TEXT_LEN.rl.v           Number of characters in text string
: 2707        2932  1 !
: 2708        2933  1 !       TEXT_ADR.rt.r           Address of start of text string
: 2709        2934  1 !
: 2710        2935  1 !       ROW_NUM.rl.v            Row number
: 2711        2936  1 !
: 2712        2937  1 !       COL_NUM.rl.v            Column number
: 2713        2938  1 !
: 2714        2939  1 !       FLAGS.rl.v              Rendition codes. (bit encoded)
;001 STAN1046  2940  1 !                               Optional.  If omitted, normal rendition
: 2716-1      2941  1 !                               occurs.
: 2717        2942  1 !
: 2718        2943  1 ! IMPLICIT INPUTS:
: 2719        2944  1 !
: 2720        2945  1 !       NONE
: 2721        2946  1 !
: 2722        2947  1 ! IMPLICIT OUTPUTS:
: 2723        2948  1 !
: 2724        2949  1 !       NONE
: 2725        2950  1 !
: 2726        2951  1 ! COMPLETION STATUS:
: 2727        2952  1 !
: 2728        2953  1 !       SS$_NORMAL      Normal successful completion
: 2729        2954  1 !
: 2730        2955  1 ! SIDE EFFECTS:
: 2731        2956  1 !
```

```
; 2732          2957  1 !       NONE
; 2733          2958  1 !--
; 2735          2959  2 BEGIN
; 2736          2960  2
; 2737          2961  2 BIND
; 2738          2962  2
; 2739          2963  2         PBCB    = .P_PBCB           : $PBCB_DECL;    ! Pasteboard control block
; 2740          2964  2
; 2741          2965  2 LOCAL
; 2742          2966  2
;001 STAN1046   2967  2         RENDITION_CHANGED,          ! TRUE if we changed rendition
; 2743          2968  2         STATUS;
; 2744          2969  2
; 2745          2970  2 OWN
; 2746          2971  2
; 2747          2972  2         TRANSLATED_TEXT_DESC        : BLOCK[8,BYTE] ! reusable dynamic descriptor
; 2748          2973  2                                                     ! must be OWN storage
; 2749          2974  2         PRESET( [DSC$B_DTYPE]   = DSC$K_DTYPE_T,
; 2750          2975  2                 [DSC$B_CLASS]   = DSC$K_CLASS_D,
; 2751          2976  2                 [DSC$W_LENGTH]  = 0,
; 2752          2977  2                 [DSC$A_POINTER] = 0);
; 2753          2978  2
; 2754          2979  2 BUILTIN
; 2755          2980  2
; 2756          2981  2         ACTUALCOUNT;
; 2758          2982  2  !+
; 2759          2983  2  ! Do nothing if the output is being controlled by RMS.
; 2760          2984  2  !-
; 2761          2985  2
; 2762          2986  2  IF .PBCB[PBCB_V_RMS]
; 2763          2987  2    THEN  RETURN  SMG$_WILUSERMS;
; 2764          2988  2
; 2765          2989  2  !+
; 2766          2990  2  ! If a rendition was specified, then output it now.
; 2767          2991  2  !-
; 2768          2992  2
; 2769          2993  2  IF ACTUALCOUNT() GEQU 6
; 2770          2994  3    THEN  BEGIN   ! output text and renditions and cursor positioning
; 2771          2995  3
; 2772          2996  3      BIND    TT2 = PBCB[PBCB_L_DEVDEPEND2]    : $BBLOCK;
; 2773          2997  3
; 2774          2998  3      !+
;001 STAN1046   2999  3      ! Note that renditions haven't changed yet.
;002 STAN1046   3000  3      ! [Set to 1 if they have changed.]
;003 STAN1046   3001  3      !-
;004 STAN1046   3002  3
;005 STAN1046   3003  3      RENDITION_CHANGED=0;
;006 STAN1046   3004  3
;007 STAN1046   3005  3      !+
; 2775          3006  3      ! Renditions requires that the AVO (ADVANCED VIDEO) terminal
; 2776          3007  3      ! characteristic bit be set.  Even if the TERMTABLE entries
; 2777          3008  3      ! show that the terminal has the BEGIN_BOLD capability,
; 2778          3009  3      ! the terminal might not have the advanced video option.
; 2779          3010  3      !-
; 2780          3011  3
; 2781          3012  3      IF .FLAGS[ATTR_V_REND_GRAPHIC]
; 2782          3013  4      AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2783          3014  4        THEN  BEGIN
; 2784          3015  4          $SMG$GET_TERM_DATA(BEGIN_LINE_DRAWING_CHAR);
; 2785          3016  4
; 2786          3017  4          IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2787          3018  5            THEN  BEGIN
; 2788          3019  5              STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2789          3020  5                                 .PBCB[PBCB_A_CAP_BUFFER]);
; 2790          3021  5              IF NOT .STATUS THEN RETURN .STATUS
; 2791          3022  4              END;
; 2792          3023  3          END;
; 2793          3024  3
; 2794          3025  3      !+
; 2795          3026  3      ! Get and output the string to set the correct attributes.
; 2796          3027  3      !-
; 2797          3028  3
; 2798          3029  3      IF .FLAGS[ATTR_V_REND_BOLD]
; 2799          3030  4      AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2800          3031  4        THEN  BEGIN
; 2801          3032  4          $SMG$GET_TERM_DATA(BEGIN_BOLD);
; 2802          3033  4
; 2803          3034  4          IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2804          3035  5            THEN  BEGIN
; 2805          3036  5              STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2806          3037  5                                 .PBCB[PBCB_A_CAP_BUFFER]);
; 2807          3038  5              IF NOT .STATUS THEN RETURN .STATUS;
```

```
;001 STAN1046   3039  5                         RENDITION_CHANGED=1
; 2808          3040  4                         END;
; 2809          3041  3             END;
; 2810          3042  3
; 2811          3043  3     IF .FLAGS[ATTR_V_REND_BLINK]
; 2812          3044  4     AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2813          3045  4       THEN  BEGIN
; 2814          3046  4             $SMG$GET_TERM_DATA(BEGIN_BLINK);
; 2815          3047  4
; 2816          3048  4             IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2817          3049  5               THEN  BEGIN
; 2818          3050  5                     STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2819          3051  5                                             .PBCB[PBCB_A_CAP_BUFFER]);
; 2820          3052  5                     IF NOT .STATUS THEN RETURN .STATUS;
;001 STAN1046   3053  5                     RENDITION_CHANGED=1
; 2821          3054  4                     END;
; 2822          3055  3             END;
; 2823          3056  3
; 2824          3057  3     IF .FLAGS[ATTR_V_REND_REV]
; 2825          3058  4     AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2826          3059  4       THEN  BEGIN
; 2827          3060  4             $SMG$GET_TERM_DATA(BEGIN_REVERSE);
; 2828          3061  4
; 2829          3062  4             IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2830          3063  5               THEN  BEGIN
; 2831          3064  5                     STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2832          3065  5                                             .PBCB[PBCB_A_CAP_BUFFER]);
; 2833          3066  5                     IF NOT .STATUS THEN RETURN .STATUS;
;001 STAN1046   3067  5                     RENDITION_CHANGED=1
; 2834          3068  4                     END;
; 2835          3069  3             END;
; 2836          3070  3
; 2837          3071  3     IF .FLAGS[ATTR_V_REND_UNDER]
; 2838          3072  4     AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 2839          3073  4       THEN  BEGIN
; 2840          3074  4             $SMG$GET_TERM_DATA(BEGIN_UNDERSCORE);
; 2841          3075  4
; 2842          3076  4             IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 2843          3077  5               THEN  BEGIN
; 2844          3078  5                     STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 2845          3079  5                                             .PBCB[PBCB_A_CAP_BUFFER]);
; 2846          3080  5                     IF NOT .STATUS THEN RETURN .STATUS;
;001 STAN1046   3081  5                     RENDITION_CHANGED=1
; 2847          3082  4                     END;
; 2848          3083  3             END;
; 2849          3084  3
; 2850          3085  3     !+
; 2851          3086  3     ! Output the text if they are not border elements.
; 2852          3087  3     ! Output translated text for border elements.
; 2853          3088  3     !-
; 2854          3089  3
; 2855          3090  3     IF .FLAGS[ATTR_V_BORD_ELEM] OR .FLAGS[ATTR_V_USER_GRAPHIC]
; 2856          3091  4       THEN  BEGIN   ! handing border element
; 2857          3092  4
; 2858          3093  4             LOCAL
; 2859          3094  4
; 2860          3095  4                     TEXT_DESC       : VECTOR[2];
```

```

EXTERNAL ROUTINE

        LIB$SCOPY_DXDX;

!+
! Build a fixed-length string descriptor for the
! source text.
!-

TEXT_DESC[0]=.TEXT_LEN;
TEXT_DESC[1]=.TEXT_ADR;

!+
! Get and output the prefix string to start borders.
!-

IF .TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT]
  THEN  BEGIN
        $SMG$GET_TERM_DATA(BEGIN_LINE_DRAWING_CHAR);

        IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
          THEN  BEGIN
                STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
                                        .PBCB[PBCB_A_CAP_BUFFER]);
                IF NOT .STATUS THEN RETURN .STATUS;
                END;
        END;

!+
! If the COMPLEX_BORDER bit is set, then we have to output
! the border characters one at a time.
! Otherwise, we can do a byte for byte translation.
!-

IF .PBCB[PBCB_V_COMPLEX_BORDER]
  THEN  BEGIN   ! Complex border

        INCR I FROM 0 TO .TRANSLATED_TEXT_DESC[DSC$W_LENGTH]-1 DO
                BEGIN
                LOCAL CHAR;
                BIND    BUF = .TRANSLATED_TEXT_DESC[DSC$A_POINTER]
                        : VECTOR[,BYTE];
                BIND    BORDER_VECTOR = PBCB[PBCB_R_BORDER_VECTOR]
                        : VECTOR[16];
                CHAR=.BUF[.I];
                IF .CHAR GEQU 16
                  THEN  BEGIN
                        CHAR=.CHAR/16;
                        !+
                        ! The following code is ridiculous.
                        ! We should really have a control_vector in the PBCB
                        ! so that these characters will be gotton just once.
                        ! However, we had no chance to do this before final code freeze.
                        !-

                        SELECTONE .CHAR OF
```

```
7
7                         SET
7
7                         [6]:        $SMG$GET_TERM_DATA(TRUNCATION_ICON);
7                         [9]:        $SMG$GET_TERM_DATA(HT_GRAPHIC);
7                         [10]:       $SMG$GET_TERM_DATA(LF_GRAPHIC);
7                         [11]:       $SMG$GET_TERM_DATA(VT_GRAPHIC);
7                         [12]:       $SMG$GET_TERM_DATA(FF_GRAPHIC);
7                         [13]:       $SMG$GET_TERM_DATA(CR_GRAPHIC);
8                         [OTHERWISE]:      $SMG$GET_TERM_DATA(TRUNCATION_ICON) ! Error characte
8
7                         TES;
7
7                         IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
8                           THEN  BEGIN
8                                 STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
8                                                  .PBCB[PBCB_A_CAP_BUFFER]);
8                                 IF NOT .STATUS THEN RETURN .STATUS
8                                 END
8                           ELSE  BEGIN
8                                 STATUS=SMG$$OUTPUT(PBCB,1,UPLIT BYTE('*'));
8                                 IF NOT .STATUS THEN RETURN .STATUS
7                                 END;
7
7                         END
7                    ELSE BEGIN
7                         BIND COUNT=.BORDER_VECTOR[.CHAR] : BYTE,
7                              STRING=COUNT+1;
7                         STATUS=SMG$$OUTPUT(PBCB,.COUNT,STRING);
7                         IF NOT .STATUS THEN RETURN .STATUS
7                         END
5                  END;
5
5
5           END     ! Complex border
5      ELSE BEGIN   ! Simple border
5
5           !+
5           ! Copy the input string to the output string.
5           !-
5
5           STATUS=LIB$SCOPY_DXDX(TEXT_DESC,TRANSLATED_TEXT_DESC);
5           IF NOT .STATUS THEN RETURN .STATUS;
5
5           !+
5           ! Change the characters as per the border vector.
5           !-
5
5           INCR I FROM 0 TO .TRANSLATED_TEXT_DESC[DSC$W_LENGTH]-1 DO
6                  BEGIN
6                  LOCAL CHAR;
6                  BIND    BUF = .TRANSLATED_TEXT_DESC[DSC$A_POINTER]
6                          : VECTOR[,BYTE];
6                  BIND    BORDER_VECTOR = PBCB[PBCB_R_BORDER_VECTOR]
6                          : VECTOR[16];
6                  !+
6                  ! If the character is larger than 15, then
```

```
        ! the high-order nibble is a special
        ! user-graphic character.  We could allow
        ! for up to 15 characters here, things
        ! like CR_GRAPHIC, etc., but for now
        ! we only allow code 6 to mean truncation-icon.
        ! Other codes represent the error character.
        !-
        CHAR=.BUF[.I];
        IF .CHAR GEQU 16
          THEN  BEGIN
                CHAR=.CHAR/16;

                !+
                ! The following code is ridiculous.
                ! We should really have a control_vector in the PBCB
                ! so that these characters will be gotton just once.
                ! However, we had no chance to do this before final code freeze.
                !-

                SELECTONE .CHAR OF

                SET

                [6]:        $SMG$GET_TERM_DATA(TRUNCATION_ICON);
                [9]:        $SMG$GET_TERM_DATA(HT_GRAPHIC);
                [10]:       $SMG$GET_TERM_DATA(LF_GRAPHIC);
                [11]:       $SMG$GET_TERM_DATA(VT_GRAPHIC);
                [12]:       $SMG$GET_TERM_DATA(FF_GRAPHIC);
                [13]:       $SMG$GET_TERM_DATA(CR_GRAPHIC);
                [OTHERWISE]:        $SMG$GET_TERM_DATA(TRUNCATION_ICON) ! Error characte

                TES;

                IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
                  THEN  BEGIN
                        BIND CHAR=.PBCB[PBCB_A_CAP_BUFFER] : BYTE;
                        BUF[.I]=.CHAR
                        END
                  ELSE  BEGIN
                        BUF[.I]=%C'*'
                        END;

                END
          ELSE  BUF[.I]=.BORDER_VECTOR[.CHAR]
        END;

!+
! Output the translated characters.
! We do not free the dynamic string at this time
! as an optimization.  We are sure to need that
! space later.
!-

STATUS=SMG$$OUTPUT(PBCB,
                   .TRANSLATED_TEXT_DESC[DSC$W_LENGTH],
                   .TRANSLATED_TEXT_DESC[DSC$A_POINTER]);
IF NOT .STATUS THEN RETURN .STATUS;
```

```
; 3032          3267  5
; 3033          3268  4                         END;     ! Simple border
; 3034          3269  4
; 3035          3270  4                 !+
; 3036          3271  4                 ! Get and output the suffix string to reset attributes to normal.
; 3037          3272  4                 !-
; 3038          3273  4
; 3039          3274  4                 IF .TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT]
; 3040          3275  5                   THEN  BEGIN
; 3041          3276  5                         $SMG$GET_TERM_DATA(END_LINE_DRAWING_CHAR);
; 3042          3277  5
; 3043          3278  5                         IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 3044          3279  6                           THEN  BEGIN
; 3045          3280  6                                 STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 3046          3281  6                                                         .PBCB[PBCB_A_CAP_BUFFER]);
; 3047          3282  6                                 IF NOT .STATUS THEN RETURN .STATUS;
; 3048          3283  5                                 END;
; 3049          3284  4                         END;
; 3050          3285  4
; 3051          3286  4                 END     ! handling border element
; 3052          3287  4           ELSE  BEGIN   ! handling normal text
; 3053          3288  4                 STATUS=SMG$$OUTPUT(PBCB,.TEXT_LEN,.TEXT_ADR);
; 3054          3289  4                 IF NOT .STATUS THEN RETURN .STATUS;
; 3055          3290  3                 END;    ! handling normal text
; 3056          3291  3
; 3057          3292  3           !+
; 3058          3293  3           ! Get and output the suffix string to reset attributes to normal.
; 3059          3294  3           ! We used to assume that END_BOLD brings back normal attributes.
; 3060          3295  3           ! Now we rely on BEGIN_NORMAL_RENDITION.
;001 STAN1046   3296  3           ! Only reset to normal if we had changed to some other rendition.
;002 STAN1046   3297  3           !-
;003 STAN1046   3298  3
;004 STAN1046   3299  4           IF .RENDITION_CHANGED AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 3064-3        3300  4             THEN  BEGIN
; 3065          3301  4
; 3066        L 3302  4                   %IF %DECLARED( SMG$K_BEGIN_NORMAL_RENDITION )
; 3067          3303  4                   %THEN
; 3068          3304  4                         $SMG$GET_TERM_DATA(BEGIN_NORMAL_RENDITION);
; 3069        U 3305  4                   %ELSE
; 3070        U 3306  4                         $SMG$GET_TERM_DATA(END_BOLD);
; 3071          3307  4                   %FI
; 3072          3308  4
; 3073          3309  4                 IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 3074          3310  5                   THEN  BEGIN
; 3075          3311  5                         STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 3076          3312  5                                                 .PBCB[PBCB_A_CAP_BUFFER]);
; 3077          3313  5                         IF NOT .STATUS THEN RETURN .STATUS;
; 3078          3314  4                         END;
; 3079          3315  3                 END;
; 3080          3316  3
; 3081          3317  3           IF .FLAGS[ATTR_V_REND_GRAPHIC]
; 3082          3318  4           AND (.TT2[TT2$V_AVO] OR NOT .TT2[TT2$V_ANSICRT])
; 3083          3319  4             THEN  BEGIN
; 3084          3320  4                   $SMG$GET_TERM_DATA(END_LINE_DRAWING_CHAR);
; 3085          3321  4
; 3086          3322  4                 IF .PBCB[PBCB_L_CAP_LENGTH] NEQ 0
; 3087          3323  5                   THEN  BEGIN
; 3088          3324 5                      STATUS=SMG$$OUTPUT(PBCB,.PBCB[PBCB_L_CAP_LENGTH],
; 3089          3325 5                                               .PBCB[PBCB_A_CAP_BUFFER]);
; 3090          3326 5                      IF NOT .STATUS THEN RETURN .STATUS
; 3091          3327 4                      END;
; 3092          3328 3                 END;
; 3093          3329 3
; 3094          3330 3            END     ! output text and renditions
; 3095          3331 3      ELSE  BEGIN   ! output text only
; 3096          3332 3
; 3097          3333 3            STATUS=SMG$$OUTPUT(PBCB,.TEXT_LEN,.TEXT_ADR);
; 3098          3334 3            IF NOT .STATUS THEN RETURN .STATUS
; 3099          3335 3
; 3100          3336 2            END;    ! output text only
; 3101          3337 2
; 3102          3338 2  RETURN SS$_NORMAL
; 3103          3339 2
; 3104          3340 1  END;      ! routine SMG$$PUT_SCREEN


                                                    .PSECT  _SMG$DATA,NOEXE,  PIC,2

                              0000  00044 TRANSLATED_TEXT_DESC:
                                                    .WORD   0                                 ;
                             02  0E  00046          .BYTE   14, 2                             ;
                          00000000  00048           .LONG   0                                 ;

                                                    .PSECT  _SMG$CODE,NOWRT,  SHR,  PIC,2

                                2A  0170A P.AAE:    .ASCII  \*\                               ;

                                                    .EXTRN  LIB$SCOPY_DXDX

                              0FFC  00000           .ENTRY  SMG$$PUT_SCREEN, Save R2,R3,R4,R5,R6,R7,R8,-; 2901
                                                            R9,R10,R11                        ;
                  5B      0000V  CF  9E 00002       MOVAB   SMG$$OUTPUT, R11                  ;
                  5A 00000000'   EF  9E 00007       MOVAB   TRANSLATED_TEXT_DESC, R10         ;
                  59 00000000G   00  9E 0000E       MOVAB   SMG$GET_TERM_DATA, R9             ;
                  5E             18  C2 00015       SUBL2   #24, SP                           ;
                  52         04  AC  D0 00018       MOVL    P_PBCB, R2                        ; 2963
 08        00D0   C2             03  E1 0001C       BBC     #3, 208(R2), 1$                   ; 2986
                  50 00000000G   8F  D0 00022       MOVL    #SMG$_WILUSERMS, R0               ; 2987
                                 04  00029          RET                                       ;
                  06             6C  91 0002A 1$:   CMPB    (AP), #6                          ; 2993
                                 03  1E 0002D       BGEQU   2$                                ;
                          05EA   31  0002F          BRW     102$                              ;
                  54         60  A2  9E 00032 2$:   MOVAB   96(R2), R4                        ; 2996
                                 57  D4 00036       CLRL    RENDITION_CHANGED                 ; 3003
 54          18   AC             04  E1 00038       BBC     #4, FLAGS, 6$                     ; 3012
 04               64             1B  E0 0003D       BBS     #27, (R4), 3$                     ; 3013
                  4C         03  A4  E8 00041       BLBS    3(R4), 6$                         ;
                          00FC   C2  D5 00045 3$:   TSTL    252(R2)                           ; 3015
                                 09  12 00049       BNEQ    4$                                ;
                  53       0108  C2  9E 0004B       MOVAB   264(R2), R3                       ;
                                 63  D4 00050       CLRL    (R3)                              ;
                                 28  11 00052       BRB     5$                                ;
                             0C  AE  D4 00054 4$:   CLRL    INPUT_ARGS                        ;
```

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                               0C  AE  9F 00057       PUSHAB  INPUT_ARGS                       :
                             0104  C2  DD 0005A       PUSHL   260(R2)                          :
                    53       0108  C2  9E 0005E       MOVAB   264(R2), R3                      :
                                   53  DD 00063       PUSHL   R3                               :
                             0100  C2  9F 00065       PUSHAB  256(R2)                          :
             10     AE       01BE  8F  3C 00069       MOVZWL  #446, 16(SP)                     :
                               10  AE  9F 0006F       PUSHAB  16(SP)                           :
                             00FC  C2  9F 00072       PUSHAB  252(R2)                          :
                    69             06  FB 00076       CALLS   #6, SMG$GET_TERM_DATA            :
                    55             50  E9 00079       BLBC    STATUS, 9$                       :
                                   63  D5 0007C 5$:   TSTL    (R3)                             : 3017
                                   11  13 0007E       BEQL    6$                               :
                             0104  C2  DD 00080       PUSHL   260(R2)                          : 3020
                                   63  DD 00084       PUSHL   (R3)                             : 3019
                                   52  DD 00086       PUSHL   R2                               :
                    6B             03  FB 00088       CALLS   #3, SMG$$OUTPUT                  :
                    56             50  D0 0008B       MOVL    R0, STATUS                       :
                    55             56  E9 0008E       BLBC    STATUS, 11$                      : 3021
                    57         18  AC  E9 00091 6$:   BLBC    FLAGS, 12$                       : 3029
       04           64             1B  E0 00095       BBS     #27, (R4), 7$                    : 3030
                    4F         03  A4  E8 00099       BLBS    3(R4), 12$                       :
                             00FC  C2  D5 0009D 7$:   TSTL    252(R2)                          : 3032
                                   09  12 000A1       BNEQ    8$                               :
                    53       0108  C2  9E 000A3       MOVAB   264(R2), R3                      :
                                   63  D4 000A8       CLRL    (R3)                             :
                                   28  11 000AA       BRB     10$                              :
                               0C  AE  D4 000AC 8$:   CLRL    INPUT_ARGS                       :
                               0C  AE  9F 000AF       PUSHAB  INPUT_ARGS                       :
                             0104  C2  DD 000B2       PUSHL   260(R2)                          :
                    53       0108  C2  9E 000B6       MOVAB   264(R2), R3                      :
                                   53  DD 000BB       PUSHL   R3                               :
                             0100  C2  9F 000BD       PUSHAB  256(R2)                          :
             10     AE       01BB  8F  3C 000C1       MOVZWL  #443, 16(SP)                     :
                               10  AE  9F 000C7       PUSHAB  16(SP)                           :
                             00FC  C2  9F 000CA       PUSHAB  252(R2)                          :
                    69             06  FB 000CE       CALLS   #6, SMG$GET_TERM_DATA            :
                    59             50  E9 000D1 9$:   BLBC    STATUS, 15$                      :
                                   63  D5 000D4 10$:  TSTL    (R3)                             : 3034
                                   14  13 000D6       BEQL    12$                              :
                             0104  C2  DD 000D8       PUSHL   260(R2)                          : 3037
                                   63  DD 000DC       PUSHL   (R3)                             : 3036
                                   52  DD 000DE       PUSHL   R2                               :
                    6B             03  FB 000E0       CALLS   #3, SMG$$OUTPUT                  :
                    56             50  D0 000E3       MOVL    R0, STATUS                       :
                    59             56  E9 000E6 11$:  BLBC    STATUS, 17$                      : 3038
                    57             01  D0 000E9       MOVL    #1, RENDITION_CHANGED            : 3039
       57    18     AC             02  E1 000EC 12$:  BBC     #2, FLAGS, 18$                   : 3043
       04           64             1B  E0 000F1       BBS     #27, (R4), 13$                   : 3044
                    4F         03  A4  E8 000F5       BLBS    3(R4), 18$                       :
                             00FC  C2  D5 000F9 13$:  TSTL    252(R2)                          : 3046
                                   09  12 000FD       BNEQ    14$                              :
                    53       0108  C2  9E 000FF       MOVAB   264(R2), R3                      :
                                   63  D4 00104       CLRL    (R3)                             :
                                   28  11 00106       BRB     16$                              :
                               0C  AE  D4 00108 14$:  CLRL    INPUT_ARGS                       :
                               0C  AE  9F 0010B       PUSHAB  INPUT_ARGS                       :
                             0104  C2  DD 0010E       PUSHL   260(R2)                          :
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                  53    0108   C2  9E 00112        MOVAB    264(R2), R3                :
                                53  DD 00117        PUSHL    R3                         :
                        0100   C2  9F 00119        PUSHAB   256(R2)                    :
            10    AE    01BA   8F  3C 0011D        MOVZWL   #442, 16(SP)               :
                          10   AE  9F 00123        PUSHAB   16(SP)                     :
                        00FC   C2  9F 00126        PUSHAB   252(R2)                    :
                  69           06  FB 0012A        CALLS    #6, SMG$GET_TERM_DATA      :
                  59           50  E9 0012D 15$:   BLBC     STATUS, 21$                :
                               63  D5 00130 16$:   TSTL     (R3)                       : 3048
                               14  13 00132        BEQL     18$                        :
                        0104   C2  DD 00134        PUSHL    260(R2)                    : 3051
                               63  DD 00138        PUSHL    (R3)                       : 3050
                               52  DD 0013A        PUSHL    R2                         :
                  6B           03  FB 0013C        CALLS    #3, SMG$$OUTPUT            :
                  56           50  D0 0013F        MOVL     R0, STATUS                 :
                  59           56  E9 00142 17$:   BLBC     STATUS, 23$                : 3052
                  57           01  D0 00145        MOVL     #1, RENDITION_CHANGED      : 3053
      57    18    AC           01  E1 00148 18$:   BBC      #1, FLAGS, 24$             : 3057
      04          64           1B  E0 0014D        BBS      #27, (R4), 19$             : 3058
                  4F      03   A4  E8 00151        BLBS     3(R4), 24$                 :
                        00FC   C2  D5 00155 19$:   TSTL     252(R2)                    : 3060
                               09  12 00159        BNEQ     20$                        :
                  53    0108   C2  9E 0015B        MOVAB    264(R2), R3                :
                               63  D4 00160        CLRL     (R3)                       :
                               28  11 00162        BRB      22$                        :
                          0C   AE  D4 00164 20$:   CLRL     INPUT_ARGS                 :
                          0C   AE  9F 00167        PUSHAB   INPUT_ARGS                 :
                        0104   C2  DD 0016A        PUSHL    260(R2)                    :
                  53    0108   C2  9E 0016E        MOVAB    264(R2), R3                :
                               53  DD 00173        PUSHL    R3                         :
                        0100   C2  9F 00175        PUSHAB   256(R2)                    :
            10    AE    01BF   8F  3C 00179        MOVZWL   #447, 16(SP)               :
                          10   AE  9F 0017F        PUSHAB   16(SP)                     :
                        00FC   C2  9F 00182        PUSHAB   252(R2)                    :
                  69           06  FB 00186        CALLS    #6, SMG$GET_TERM_DATA      :
                  59           50  E9 00189 21$:   BLBC     STATUS, 27$                :
                               63  D5 0018C 22$:   TSTL     (R3)                       : 3062
                               14  13 0018E        BEQL     24$                        :
                        0104   C2  DD 00190        PUSHL    260(R2)                    : 3065
                               63  DD 00194        PUSHL    (R3)                       : 3064
                               52  DD 00196        PUSHL    R2                         :
                  6B           03  FB 00198        CALLS    #3, SMG$$OUTPUT            :
                  56           50  D0 0019B        MOVL     R0, STATUS                 :
                  59           56  E9 0019E 23$:   BLBC     STATUS, 29$                : 3066
                  57           01  D0 001A1        MOVL     #1, RENDITION_CHANGED      : 3067
      57    18    AC           03  E1 001A4 24$:   BBC      #3, FLAGS, 30$             : 3071
      04          64           1B  E0 001A9        BBS      #27, (R4), 25$             : 3072
                  4F      03   A4  E8 001AD        BLBS     3(R4), 30$                 :
                        00FC   C2  D5 001B1 25$:   TSTL     252(R2)                    : 3074
                               09  12 001B5        BNEQ     26$                        :
                  53    0108   C2  9E 001B7        MOVAB    264(R2), R3                :
                               63  D4 001BC        CLRL     (R3)                       :
                               28  11 001BE        BRB      28$                        :
                          0C   AE  D4 001C0 26$:   CLRL     INPUT_ARGS                 :
                          0C   AE  9F 001C3        PUSHAB   INPUT_ARGS                 :
                        0104   C2  DD 001C6        PUSHL    260(R2)                    :
                  53    0108   C2  9E 001CA        MOVAB    264(R2), R3                :
```

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                                     53 DD 001CF        PUSHL   R3                                         :
                               0100  C2 9F 001D1        PUSHAB  256(R2)                                    :
                  10    AE     01C0  8F 3C 001D5        MOVZWL  #448, 16(SP)                               :
                                 10  AE 9F 001DB        PUSHAB  16(SP)                                     :
                               00FC  C2 9F 001DE        PUSHAB  252(R2)                                    :
                        69           06 FB 001E2        CALLS   #6, SMG$GET_TERM_DATA                      :
                        66           50 E9 001E5 27$:   BLBC    STATUS, 34$                                :
                                     63 D5 001E8 28$:   TSTL    (R3)                                       : 3076
                                     14 13 001EA        BEQL    30$                                        :
                               0104  C2 DD 001EC        PUSHL   260(R2)                                    : 3079
                                     63 DD 001F0        PUSHL   (R3)                                       : 3078
                                     52 DD 001F2        PUSHL   R2                                         :
                        6B           03 FB 001F4        CALLS   #3, SMG$$OUTPUT                            :
                        56           50 D0 001F7        MOVL    R0, STATUS                                 :
                        67           56 E9 001FA 29$:   BLBC    STATUS, 36$                                : 3080
                        57           01 D0 001FD        MOVL    #1, RENDITION_CHANGED                      : 3081
                                 18  AC 95 00200 30$:   TSTB    FLAGS                                      : 3090
                                     08 19 00203        BLSS    31$                                        :
        03        18    AC           06 E0 00205        RBS     #6, FLAGS, 31$                             :
                                   0359 31 0020A        BRW     89$                                        :
                  10    AE       08  AC 7D 0020D 31$:   MOVQ    TEXT_LEN, TEXT_DESC                        : 3106
        04              64           1B E0 00212        BBS     #27, (R4), 32$                             : 3113
                        50       03  A4 E8 00216        BLBS    3(R4), 37$                                 :
                               00FC  C2 D5 0021A 32$:   TSTL    252(R2)                                    : 3115
                                     09 12 0021E        BNEQ    33$                                        :
                        53     0108  C2 9E 00220        MOVAB   264(R2), R3                                :
                                     63 D4 00225        CLRL    (R3)                                       :
                                     29 11 00227        BRB     35$                                        :
                                 04  AE D4 00229 33$:   CLRL    INPUT_ARGS                                 :
                                 04  AE 9F 0022C        PUSHAB  INPUT_ARGS                                 :
                               0104  C2 DD 0022F        PUSHL   260(R2)                                    :
                        53     0108  C2 9E 00233        MOVAB   264(R2), R3                                :
                                     53 DD 00238        PUSHL   R3                                         :
                               0100  C2 9F 0023A        PUSHAB  256(R2)                                    :
                  10    AE     01BE  8F 3C 0023E        MOVZWL  #446, 16(SP)                               :
                                 10  AE 9F 00244        PUSHAB  16(SP)                                     :
                               00FC  C2 9F 00247        PUSHAB  252(R2)                                    :
                        69           06 FB 0024B        CALLS   #6, SMG$GET_TERM_DATA                      :
                        01           50 E8 0024E 34$:   BLBS    STATUS, 35$                                :
                                        04 00251        RET                                                :
                                     63 D5 00252 35$:   TSTL    (R3)                                       : 3117
                                     14 13 00254        BEQL    37$                                        :
                               0104  C2 DD 00256        PUSHL   260(R2)                                    : 3120
                                     63 DD 0025A        PUSHL   (R3)                                       : 3119
                                     52 DD 0025C        PUSHL   R2                                         :
                        6B           03 FB 0025E        CALLS   #3, SMG$$OUTPUT                            :
                        56           50 D0 00261        MOVL    R0, STATUS                                 :
                        03           56 E8 00264 36$:   BLBS    STATUS, 37$                                : 3121
                                   03C1 31 00267        BRW     104$                                       :
        03      00D1    C2           01 E0 0026A 37$:   BBS     #1, 209(R2), 38$                           : 3131
                                   014A 31 00270        BRW     60$                                        :
                        55           6A 3C 00273 38$:   MOVZWL  TRANSLATED_TEXT_DESC, R5                   : 3134
                        53           01 CE 00276        MNEGL   #1, I                                      :
                                   0137 31 00279        BRW     58$                                        :
                        50       04 BA43 9A 0027C 39$:  MOVZBL  @TRANSLATED_TEXT_DESC+4[I], CHAR           : 3141
                        10           50 D1 00281        CMPL    CHAR, #16                                  : 3142
                                     03 1E 00284        BGEQU   40$                                        :
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                              0113  31 00286        BRW      56$                    :
             50                 10  C6 00289 40$:   DIVL2    #16, CHAR              : 3144
             06                 50  D1 0028C        CMPL     CHAR, #6               : 3156
                                09  12 0028F        BNEQ     41$                    :
                     00FC       C2  D5 00291        TSTL     252(R2)                :
                                7B  13 00295        BEQL     45$                    :
                              00C5  31 00297        BRW      52$                    :
             09                 50  D1 0029A 41$:   CMPL     CHAR, #9               : 3157
                                20  12 0029D        BNEQ     42$                    :
                     00FC       C2  D5 0029F        TSTL     252(R2)                :
                                6D  13 002A3        BEQL     45$                    :
                       04       AE  D4 002A5        CLRL     INPUT_ARGS             :
                       04       AE  9F 002A8        PUSHAB   INPUT_ARGS             :
                     0104       C2  DD 002AB        PUSHL    260(R2)                :
                     0108       C2  9F 002AF        PUSHAB   264(R2)                :
                     0100       C2  9F 002B3        PUSHAB   256(R2)                :
        10   AE      024C       8F  3C 002B7        MOVZWL   #588, 16(SP)           :
                                6D  11 002BD        BRB      46$                    :
             0A                 50  D1 0C2BF 42$:   CMPL     CHAR, #10              : 3158
                                20  12 002C2        BNEQ     43$                    :
                     00FC       C2  D5 002C4        TSTL     252(R2)                :
                                6D  13 002C8        BEQL     48$                    :
                       04       AE  D4 002CA        CLRL     INPUT_ARGS             :
                       04       AE  9F 002CD        PUSHAB   INPUT_ARGS             :
                     0104       C2  DD 002D0        PUSHL    260(R2)                :
                     0108       C2  9F 002D4        PUSHAB   264(R2)                :
                     0100       C2  9F 002D8        PUSHAB   256(R2)                :
        10   AE      024B       8F  3C 002DC        MOVZWL   #587, 16(SP)           :
                                6D  11 002E2        BRB      49$                    :
             0B                 50  D1 002E4 43$:   CMPL     CHAR, #11              : 3159
                                20  12 002E7        BNEQ     44$                    :
                     00FC       C2  D5 002E9        TSTL     252(R2)                :
                                6A  13 002ED        BEQL     51$                    :
                       04       AE  D4 002EF        CLRL     INPUT_ARGS             :
                       04       AE  9F 002F2        PUSHAB   INPUT_ARGS             :
                     0104       C2  DD 002F5        PUSHL    260(R2)                :
                     0108       C2  9F 002F9        PUSHAB   264(R2)                :
                     0100       C2  9F 002FD        PUSHAB   256(R2)                :
        10   AE      024D       8F  3C 00301        MOVZWL   #589, 16(SP)           :
                                6E  11 00307        BRB      53$                    :
             0C                 50  D1 00309 44$:   CMPL     CHAR, #12              : 3160
                                20  12 0030C        BNEQ     47$                    :
                     00FC       C2  D5 0030E        TSTL     252(R2)                :
                                45  13 00312 45$:   BEQL     51$                    :
                       04       AE  D4 00314        CLRL     INPUT_ARGS             :
                       04       AE  9F 00317        PUSHAB   INPUT_ARGS             :
                     0104       C2  DD 0031A        PUSHL    260(R2)                :
                     0108       C2  9F 0031E        PUSHAB   264(R2)                :
                     0100       C2  9F 00322        PUSHAB   256(R2)                :
        10   AE      024A       8F  3C 00326        MOVZWL   #586, 16(SP)           :
                                49  11 0032C 46$:   BRB      53$                    :
             0D                 50  D1 0032E 47$:   CMPL     CHAR, #13              : 3161
                                20  12 00331        BNEQ     50$                    :
                     00FC       C2  D5 00333        TSTL     252(R2)                :
                                20  13 00337 48$:   BEQL     51$                    :
                       04       AE  D4 00339        CLRL     INPUT_ARGS             :
                       04       AE  9F 0033C        PUSHAB   INPUT_ARGS             :
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                                 0104    C2   DD 0033F            PUSHL   260(R2)                          :
                                 0108    C2   9F 00343            PUSHAB  264(R2)                          :
                                 0100    C2   9F 00347            PUSHAB  256(R2)                          :
                    10   AE      0249    8F   3C 0034B            MOVZWL  #585, 16(SP)                     :
                                         24   11 00351 49$:       BRB     53$                              :
                                 00FC    C2   D5 00353 50$:       TSTL    252(R2)                          : 3162
                                         06   12 00357            BNEQ    52$                              :
                                 0108    C2   D4 00359 51$:       CLRL    264(R2)                          :
                                         26   11 0035D            BRB     54$                              :
                                   04    AE   D4 0035F 52$:       CLRL    INPUT_ARGS                       :
                                   04    AE   9F 00362            PUSHAB  INPUT_ARGS                       :
                                 0104    C2   DD 00365            PUSHL   260(R2)                          :
                                 0108    C2   9F 00369            PUSHAB  264(R2)                          :
                                 0100    C2   9F 0036D            PUSHAB  256(R2)                          :
                    10   AE      024E    8F   3C 00371            MOVZWL  #590, 16(SP)                     :
                                   10    AE   9F 00377 53$:       PUSHAB  16(SP)                           :
                                 00FC    C2   9F 0037A            PUSHAB  252(R2)                          :
                         69              06   FB 0037E            CALLS   #6, SMG$GET_TERM_DATA            :
                         01              50   E8 00381            BLBS    STATUS, 54$                      :
                                              04 00384            RET                                      :
                         50      0108    C2   D0 00385 54$:       MOVL    264(R2), R0                      : 3166
                                         08   13 0038A            BEQL    55$                              :
                                 0104    C2   DD 0038C            PUSHL   260(R2)                          : 3169
                                         50   DD 00390            PUSHL   R0                               : 3168
                                         14   11 00392            BRB     57$                              :
                                 FC67    CF   9F 00394 55$:       PUSHAB  P.AAE                            : 3173
                                         01   DD 00398            PUSHL   #1                               :
                                         0C   11 0039A            BRB     57$                              :
                         50      010C  C240   D0 0039C 56$:       MOVL    268(R2)[CHAR], R0                : 3179
                                   01    A0   9F 003A2            PUSHAB  1(R0)                            : 3181
                         7E              60   9A 003A5            MOVZBL  (R0), -(SP)                      :
                                         52   DD 003A8 57$:       PUSHL   R2                               :
                         6B              03   FB 003AA            CALLS   #3, SMG$$OUTPUT                  :
                         56              50   D0 003AD            MOVL    R0, STATUS                       :
                         19              56   E9 003B0            BLBC    STATUS, 61$                      : 3182
                03       53              55   F2 003B3 58$:       AOBLSS  R5, I, 59$                       : 3142
                                       0161   31 003B7            BRW     84$                              : 3131
                                       FEBF   31 003BA 59$:       BRW     39$                              : 3142
                                         5A   DD 003BD 60$:       PUSHL   R10                              : 3194
                             14          AE   9F 003BF            PUSHAB  TEXT_DESC                        :
          00000000G      00              02   FB 003C2            CALLS   #2, LIB$SCOPY_DXDX               :
                         56              50   D0 003C9            MOVL    R0, STATUS                       :
                         03              56   E8 003CC 61$:       BLBS    STATUS, 62$                      : 3195
                                       0259   31 003CF            BRW     104$                             :
                         58              6A   3C 003D2 62$:       MOVZWL  TRANSLATED_TEXT_DESC, R8         : 3201
                         55              01   CE 003D5            MNEGL   #1, I                            :
                                       0126   31 003D8            BRW     81$                              :
                         53        04    AA   D0 003DB 63$:       MOVL    TRANSLATED_TEXT_DESC+4, R3       : 3204
                         50            6543   9A 003DF            MOVZBL  (I)[R3], CHAR                    : 3217
                         10              50   D1 003E3            CMPL    CHAR, #16                        : 3218
                                         03   1E 003E6            BGEQU   64$                              :
                                       010F   31 003E8            BRW     80$                              :
                         50              10   C6 003EB 64$:       DIVL2   #16, CHAR                        : 3220
                         06              50   D1 003EE            CMPL    CHAR, #6                         : 3233
                                         09   12 003F1            BNEQ    65$                              :
                                 00FC    C2   D5 003F3            TSTL    252(R2)                          :
                                         7B   13 003F7            BEQL    69$                              :
```

```
                        00C5   31 003F9          BRW     76$                                       ;
              09          5C   D1 003FC  65$:    CMPL    CHAR, #9                                  ; 3234
                          20   12 003FF          BNEQ    66$                                       ;
                  00FC    C2   D5 00401          TSTL    252(R2)                                   ;
                          6D   13 00405          BEQL    69$                                       ;
                    04    AE   D4 00407          CLRL    INPUT_ARGS                                ;
                    04    AE   9F 0040A          PUSHAB  INPUT_ARGS                                ;
                  0104    C2   DD 0040D          PUSHL   260(R2)                                   ;
                  0108    C2   9F 00411          PUSHAB  264(R2)                                   ;
                  0100    C2   9F 00415          PUSHAB  256(R2)                                   ;
       10     AE  024C    8F   3C 00419          MOVZWL  #588, 16(SP)                              ;
                          6D   11 0041F          BRB     70$                                       ;
              0A          50   D1 00421  66$:    CMPL    CHAR, #10                                 ; 3235
                          20   12 00424          BNEQ    67$                                       ;
                  00FC    C2   D5 00426          TSTL    252(R2)                                   ;
                          6D   13 0042A          BEQL    72$                                       ;
                    04    AE   D4 0042C          CLRL    INPUT_ARGS                                ;
                    04    AE   9F 0042F          PUSHAB  INPUT_ARGS                                ;
                  0104    C2   DD 00432          PUSHL   260(R2)                                   ;
                  0108    C2   9F 00436          PUSHAB  264(R2)                                   ;
                  0100    C2   9F 0043A          PUSHAB  256(R2)                                   ;
       10     AE  024B    8F   3C 0043E          MOVZWL  #587, 16(SP)                              ;
                          6D   11 00444          BRB     73$                                       ;
              0B          50   D1 00446  67$:    CMPL    CHAR, #11                                 ; 3236
                          20   12 00449          BNEQ    68$                                       ;
                  00FC    C2   D5 0044B          TSTL    252(R2)                                   ;
                          6A   13 0044F          BEQL    75$                                       ;
                    04    AE   D4 00451          CLRL    INPUT_ARGS                                ;
                    04    AE   9F 00454          PUSHAB  INPUT_ARGS                                ;
                  0104    C2   DD 00457          PUSHL   260(R2)                                   ;
                  0108    C2   9F 0045B          PUSHAB  264(R2)                                   ;
                  0100    C2   9F 0045F          PUSHAB  256(R2)                                   ;
       10     AE  024D    8F   3C 00463          MOVZWL  #589, 16(SP)                              ;
                          6E   11 00469          BRB     77$                                       ;
              0C          50   D1 0046B  68$:    CMPL    CHAR, #12                                 ; 3237
                          20   12 0046E          BNEQ    71$                                       ;
                  00FC    C2   D5 00470          TSTL    252(R2)                                   ;
                          45   13 00474  69$:    BEQL    75$                                       ;
                    04    AE   D4 00476          CLRL    INPUT_ARGS                                ;
                    04    AE   9F 00479          PUSHAB  INPUT_ARGS                                ;
                  0104    C2   DD 0047C          PUSHL   260(R2)                                   ;
                  0108    C2   9F 00480          PUSHAB  264(R2)                                   ;
                  0100    C2   9F 00484          PUSHAB  256(R2)                                   ;
       10     AE  024A    8F   3C 00488          MOVZWL  #586, 16(SP)                              ;
                          49   11 0048E  70$:    BRB     77$                                       ;
              0D          50   D1 00490  71$:    CMPL    CHAR, #13                                 ; 3238
                          20   12 00493          BNEQ    74$                                       ;
                  00FC    C2   D5 00495          TSTL    252(R2)                                   ;
                          20   13 00499  72$:    BEQL    75$                                       ;
                    04    AE   D4 0049B          CLRL    INPUT_ARGS                                ;
                    04    AE   9F 0049E          PUSHAB  INPUT_ARGS                                ;
                  0104    C2   DD 004A1          PUSHL   260(R2)                                   ;
                  0108    C2   9F 004A5          PUSHAB  264(R2)                                   ;
                  0100    C2   9F 004A9          PUSHAB  256(R2)                                   ;
       10     AE  0249    8F   3C 004AD          MOVZWL  #585, 16(SP)                              ;
                          24   11 004B3  73$:    BRB     77$                                       ;
                  00FC    C2   D5 004B5  74$:    TSTL    252(R2)                                   ; 3239
```

```
                                06  12 004B9          BNEQ    76$
                          0108  C2  D4 004BB  75$:    CLRL    264(R2)
                                25  11 004BF          BRB     78$
                            04  AE  D4 004C1  76$:    CLRL    INPUT_ARGS
                            04  AE  9F 004C4          PUSHAB  INPUT_ARGS
                          0104  C2  DD 004C7          PUSHL   260(R2)
                          0108  C2  9F 004CB          PUSHAB  264(R2)
                          0100  C2  9F 004CF          PUSHAB  256(R2)
             10     AE    024E  8F  3C 004D3          MOVZWL  #590, 16(SP)
                            10  AE  9F 004D9  77$:    PUSHAB  16(SP)
                          00FC  C2  9F 004DC          PUSHAB  252(R2)
                    69          06  FB 004E0          CALLS   #6, SMG$GET_TERM_DATA
                    71          50  E9 004E3          BLBC    STATUS, 87$
                          0108  C2  D5 004E6  78$:    TSTL    264(R2)                               ; 3243
                                08  13 004EA          BEQL    79$
                  6543    0104  D2  90 004EC          MOVB    @260(R2), (I)[R3]                     ; 3246
                                0D  11 004F2          BRB     81$
                  6543          2A  90 004F4  79$:    MOVB    #42, (I)[R3]                          ; 3249
                                07  11 004F8          BRB     81$                                   ; 3218
                  6543    010C C240  F6 004FA  80$:    CVTLB   268(R2)[CHAR], (I)[R3]                ; 3253
       02           55          58  F2 00501  81$:    AOBLSS  R8, I, 82$                            ; 3218
                                03  11 00505          BRB     83$
                              FED1  31 00507  82$:    BRW     63$
                            04  AA  DD 0050A  83$:    PUSHL   TRANSLATED_TEXT_DESC+4                ; 3265
                    7E          6A  3C 0050D          MOVZWL  TRANSLATED_TEXT_DESC, -(SP)           ; 3264
                                52  DD 00510          PUSHL   R2                                    ; 3263
                    6B          03  FB 00512          CALLS   #3, SMG$$OUTPUT
                    56          50  D0 00515          MOVL    R0, STATUS
                    57          56  E9 00518          BLBC    STATUS, 91$                           ; 3266
       04           64          1B  E0 0051B  84$:    BBS     #27, (R4), 85$                        ; 3274
                    52      03  A4  E8 0051F          BLBS    3(R4), 92$
                          00FC  C2  D5 00523  85$:    TSTL    252(R2)                               ; 3276
                                09  12 00527          BNEQ    86$
                    53    0108  C2  9E 00529          MOVAB   264(R2), R3
                                63  D4 0052E          CLRL    (R3)
                                28  11 00530          BRB     88$
                            04  AE  D4 00532  86$:    CLRL    INPUT_ARGS
                            04  AE  9F 00535          PUSHAB  INPUT_ARGS
                          0104  C2  DD 00538          PUSHL   260(R2)
                    53    0108  C2  9E 0053C          MOVAB   264(R2), R3
                                53  DD 00541          PUSHL   R3
                          0100  C2  9F 00543          PUSHAB  256(R2)
             10     AE    01D5  8F  3C 00547          MOVZWL  #469, 16(SP)
                            10  AE  9F 0054D          PUSHAB  16(SP)
                          00FC  C2  9F 00550          PUSHAB  252(R2)
                    69          06  FB 00554          CALLS   #6, SMG$GET_TERM_DATA
                    5A          50  E9 00557  87$:    BLBC    STATUS, 95$
                                63  D5 0055A  88$:    TSTL    (R3)                                  ; 3278
                                17  13 0055C          BEQL    92$
                          0104  C2  DD 0055E          PUSHL   260(R2)                               ; 3281
                                63  DD 00562          PUSHL   (R3)                                  ; 3280
                                04  11 00564          BRB     90$
                    7E      08  AC  7D 00566  89$:    MOVQ    TEXT_LEN, -(SP)                       ; 3288
                                52  DD 0056A  90$:    PUSHL   R2
                    6B          03  FB 0056C          CALLS   #3, SMG$$OUTPUT
                    56          50  D0 0056F          MOVL    R0, STATUS
                    54          56  E9 00572  91$:    BLBC    STATUS, 97$                           ; 3289
```

```
          54          57 E9 00575 92$:  BLBC    RENDITION_CHANGED, 98$          ; 3299
04        64          1B E0 00578       BBS     #27, (R4), 93$                  ;
          4C    03    A4 E8 0057C       BLBS    3(R4), 98$                      ;
              COFC    C2 D5 00580 93$·  TSTL    252(R2)                         ; 3304
                      09 12 00584       BNEQ    94$                             ;
          53  0108    C2 9E 00586       MOVAB   264(R2), R3                     ;
                      63 D4 0058B       CLRL    (R3)                            ;
                      28 11 0058D       BRB     96$                             ;
                0C    AE D4 0058F 94$:  CLRL    INPUT_ARGS                      ;
                0C    AE 9F 00592       PUSHAB  INPUT_ARGS                      ;
              0104    C2 DD 00595       PUSHL   260(R2)                         ;
          53  0108    C2 9E 00599       MOVAB   264(R2), R3                     ;
                      53 DD 0059E       PUSHL   R3                              ;
              0100    C2 9F 005A0       PUSHAB  256(R2)                         ;
      10  AE  0253    8F 3C 005A4       MOVZWL  #595, 16(SP)                    ;
                10    AE 9F 005AA       PUSHAB  16(SP)                          ;
              00FC    C2 9F 005AD       PUSHAB  252(R2)                         ;
          69          06 FB 005B1       CALLS   #6, SMG$GET_TERM_DATA           ;
          7B          50 E9 005B4 95$:  BLBC    STATUS, 106$                    ;
                      63 D5 005B7 96$:  TSTL    (R3)                            ; 3309
                      11 13 005B9       BEQL    98$                             ;
              0104    C2 DD 005BB       PUSHL   260(R2)                         ; 3312
                      63 DD 005BF       PUSHL   (R3)                            ; 3311
                      52 DD 005C1       PUSHL   R2                              ;
          6B          03 FB 005C3       CALLS   #3, SMG$$OUTPUT                 ;
          56          50 D0 005C6       MOVL    R0, STATUS                      ;
          5F          56 E9 005C9 97$:  BLBC    STATUS, 104$                    ; 3313
5E    18  AC          04 E1 005CC 98$:  BBC     #4, FLAGS, 105$                 ; 3317
04        64          1B E0 005D1       BBS     #27, (R4), 99$                  ; 3318
          56    03    A4 E8 005D5       BLBS    3(R4), 105$                     ;
              00FC    C2 D5 005D9 99$:  TSTL    252(R2)                         ; 3320
                      09 12 005DD       BNEQ    100$                            ;
          53  0108    C2 9E 005DF       MOVAB   264(R2), R3                     ;
                      63 D4 005E4       CLRL    (R3)                            ;
                      28 11 005E6       BRB     101$                            ;
                0C    AE D4 005E8 100$: CLRL    INPUT_ARGS                      ;
                0C    AE 9F 005EB       PUSHAB  INPUT_ARGS                      ;
              0104    C2 DD 005EE       PUSHL   260(R2)                         ;
          53  0108    C2 9E 005F2       MOVAB   264(R2), R3                     ;
                      53 DC 005F7       PUSHL   R3                              ;
              0100    C2 9F 005F9       PUSHAB  256(R2)                         ;
      10  AE  01D5    8F 3C 005FD       MOVZWL  #469, 16(SP)                    ;
                10    AE 9F 00603       PUSHAB  16(SP)                          ;
              00FC    C2 9F 00606       PUSHAB  252(R2)                         ;
          69          06 FB 0060A       CALLS   #6, SMG$GET_TERM_DATA           ;
          22          50 E9 0060D       BLBC    STATUS, 106$                    ;
                      63 D5 00610 101$: TSTL    (R3)                            ; 3322
                      1B 13 00612       BEQL    105$                            ;
              0104    C2 DD 00614       PUSHL   260(R2)                         ; 3325
                      63 DD 00618       PUSHL   (R3)                            ; 3324
                      04 11 0061A       BRB     103$                            ;
          7E    08    AC 7D 0061C 102$: MOVQ    TEXT_LEN, -(SP)                 ; 3333
                      52 DD 00620 103$: PUSHL   R2                              ;
          6B          03 FB 00622       CALLS   #3, SMG$$OUTPUT                 ;
          56          50 D0 00625       MOVL    R0, STATUS                      ;
          04          56 E8 00628       BLBS    STATUS, 105$                    ; 3334
          50          56 D0 0062B 104$: MOVL    STATUS, R0                      ;
```

```
                                     04 0062E        RET                                                           ;
                      50         01  D0 0062F 105$:  MOVL     #1, R0                                                 ; 3338
                                     04 00632 106$:  RET                                                           ; 3340

; Routine Size:  1587 bytes,    Routine Base:  _SMG$CODE + 170B
```

```
1 %SBTTL 'SMG$$AUTOB_OUTPUT - Autobended entry for output to screen'
1 GLOBAL ROUTINE SMG$$AUTOB_OUTPUT (PB_ID,TEXT_LEN,TEXT_ADR) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !
1 ! CALLING SEQUENCE:
1 !
i !      ret_status.wlc.v = SMG$$AUTOB_OUTPUT(
1 !                                   PB_ID.rl.v,
1 !                                   TEXT_LEN.rl.v,
1 !                                   TEXT_ADR.rt.r)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !      PB_ID.rl.v              Pasteboard id
1 !
1 !      TEXT_LEN.rl.v           Number of characters in text string
1 !
1 !      TEXT_ADR.rt.r           Address of start of text string
1 !                              The text may contain escape sequences.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !      None
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !      None
1 !
1 ! COMPLETION STATUS:
1 !
1 !      SS$_NORMAL      Normal successful completion
1 !
1 ! SIDE EFFECTS:
1 !
1 !      The following may occur as a result of calling SMG$$OUTPUT:
1 !      Output may occur.
1 !      If buffering is enabled, buffers may fill and/or dump.
1 !--
```

```
; 3147      3381  2 BEGIN
; 3148      3382  2
; 3149      3383  2 LOCAL
; 3150      3384  2
; 3151      3385  2         PBCB;
; 3152      3386  2
; 3153      3387  2 $SMG$GET_PBCB(.PB_ID,PBCB);
; 3154      3388  2
; 3155      3389  2 RETURN SMG$$OUTPUT(.PBCB,.TEXT_LEN,.TEXT_ADR)
; 3156      3390  2
; 3157      3391  1 END;                                      ! end of routine SMG$$AUTOB_OUTPUT



                                             0000 00000          .ENTRY  SMG$$AUTOB_OUTPUT, Save nothing                  ; 3342
                    50         04       BC   D0 00002            MOVL    @PB_ID, R0                                       ; 3387
                                        11   19 00006            BLSS    1$                                               ;
             00000000G  00              50   D1 00008            CMPL    R0, PBD_L_COUNT                                  ;
                                        08   14 0000F            BGTR    1$                                               ;
          08 00000000G  00              50   E0 00011            BBS     R0, PBD_V_PB_AVAIL, 2$                           ;
                    50 00000000G        8F   D0 00019 1$:        MOVL    #SMG$_INVPAS_ID, R0                              ;
                                        04      00020            RET                                                      ;
                    50 00000000G0040         D0 00021 2$:        MOVL    PBD_A_PBCB[R0], PBCB                             ;
                    7E         08       AC   7D 00029            MOVQ    TEXT_LEN, -(SP)                                  ; 3389
                                        50   DD 0002D            PUSHL   PBCB                                             ;
                 0000V  CF              03   FB 0002F            CALLS   #3, SMG$$OUTPUT                                  ;
                                        04      00034            RET                                                      ; 3391

; Routine Size:  53 bytes,    Routine Base:  _SMG$CODE + 1D3E
; 3159          3392  1 %SBTTL 'SMG$$OUTPUT - Output to screen'
; 3160          3393  1 GLOBAL ROUTINE SMG$$OUTPUT (P_PBCB,TEXT_LEN,TEXT_ADR) =
; 3161          3394  1 !++
; 3162          3395  1 ! FUNCTIONAL DESCRIPTION:
; 3163          3396  1 !
; 3164          3397  1 !
; 3165          3398  1 ! CALLING SEQUENCE:
; 3166          3399  1 !
; 3167          3400  1 !       ret_status.wlc.v = SMG$$OUTPUT(
; 3168          3401  1 !                                                       P_PBCB.rab.r,
; 3169          3402  1 !                                                       TEXT_LEN.rl.v,
; 3170          3403  1 !                                                       TEXT_ADR.rt.r)
; 3171          3404  1 !
; 3172          3405  1 ! FORMAL PARAMETERS:
; 3173          3406  1 !
; 3174          3407  1 !       P_PBCB.rab.r            Address of pasteboard control block.
; 3175          3408  1 !
; 3176          3409  1 !       TEXT_LEN.rl.v           Number of characters in text string
; 3177          3410  1 !
; 3178          3411  1 !       TEXT_ADR.rt.r           Address of start of text string
; 3179          3412  1 !                               The text may contain escape sequences.
; 3180          3413  1 !
; 3181          3414  1 ! IMPLICIT INPUTS:
; 3182          3415  1 !
; 3183          3416  1 !       Contents of PBCB.
; 3184          3417  1 !
; 3185          3418  1 ! IMPLICIT OUTPUTS:
; 3186          3419  1 !
; 3187          3420  1 !       PBCB[PBCB_W_OUTPUT_BUFLEN]      may change if buffering is enabled.
; 3188          3421  1 !
; 3189          3422  1 ! COMPLETION STATUS:
; 3190          3423  1 !
; 3191          3424  1 !       SS$_NORMAL      Normal successful completion
; 3192          3425  1 !
; 3193          3426  1 ! SIDE EFFECTS:
; 3194          3427  1 !
; 3195          3428  1 !       Output may occur.
; 3196          3429  1 !       If buffering is enabled, buffers may fill and/or dump.
; 3197          3430  1 !--
; 3199          3431  2 BEGIN
; 3200          3432  2
; 3201          3433  2 BIND
; 3202          3434  2
; 3203          3435  2         PBCB    = .P_PBCB        : $PBCB_DECL,  ! pasteboard control block
; 3204          3436  2         TEXT    = .TEXT_ADR      : VECTOR[,BYTE],! string to be output
; 3205          3437  2         BUFLEN  =  PBCB[PBCB_W_OUTPUT_BUFLEN]   : WORD, ! number of chars in buffer
; 3206          3438  2         BUFSIZ  =  PBCB[PBCB_W_OUTPUT_BUFSIZ]   : WORD, ! size of buffer
; 3207          3439  2         BUFFER  = .PBCB[PBCB_A_OUTPUT_BUFFER]   : VECTOR[,BYTE];        ! Output buffer
; 3208          3440  2
; 3209          3441  2 LOCAL
; 3210          3442  2
; 3211          3443  2         STATUS;
```

```
2 !+
2 ! Do nothing if the output is being controlled by RMS.
2 !-
2
2 IF .PBCB[PBCB_V_RMS]
2   THEN  RETURN  SMG$_WILUSERMS;
2
2 !+
2 ! If buffering is enabled, and the new string won't fit in the buffer,
2 ! then we must output the buffer now.
2 ! If it will fit, then just put it in the buffer.
2 ! Do not break up the string since we do not want to output
2 ! a partial escape sequence.
2 !-
2
2 IF .PBCB[PBCB_V_BUF_ENABLED]
3   THEN  BEGIN   ! buffering is enabled
3
3         !+
3         ! See if the string will fit in the buffer.
3         !-
3
3         IF .TEXT_LEN+.BUFLEN GTRU .BUFSIZ
4           THEN  BEGIN   ! No - Dump buffer
4                 STATUS=OUTPUT(PBCB,.BUFLEN,BUFFER);
4                 IF NOT .STATUS THEN RETURN .STATUS;
4                 BUFLEN=0
4                 END     ! No - Dump buffer
4           ELSE  BEGIN   ! Yes - append to buffer
4
4                 !+
4                 ! Copy the text into the buffer,
4                 ! update BUFLEN which keeps track of
4                 ! how much data is in the buffer,
4                 ! and then return.
4                 !-
4
4                 CH$MOVE(.TEXT_LEN,TEXT,BUFFER[.BUFLEN]);
4                 BUFLEN=.BUFLEN+.TEXT_LEN;
4                 RETURN  SS$_NORMAL
4
3                 END;    ! Yes - append to buffer
3
3         !+
3         ! We reach here if the string would not fit in the buffer.
3         ! The buffer has been dumped.
3         ! Put the new string into the buffer.
3         ! If it will not fit, we output it in chunks.
3         ! We output as many full buffer chunks as we can.
3         ! When we are all done, we are left with a string
3         ! smaller than one buffer's worth, which we then
3         ! put into our output buffer.
3         !-
3
3         INCR I FROM 0 BY .BUFSIZ DO
3                 IF .I+.BUFSIZ LEQU .TEXT_LEN
4                   THEN  BEGIN   ! output next part of string
```

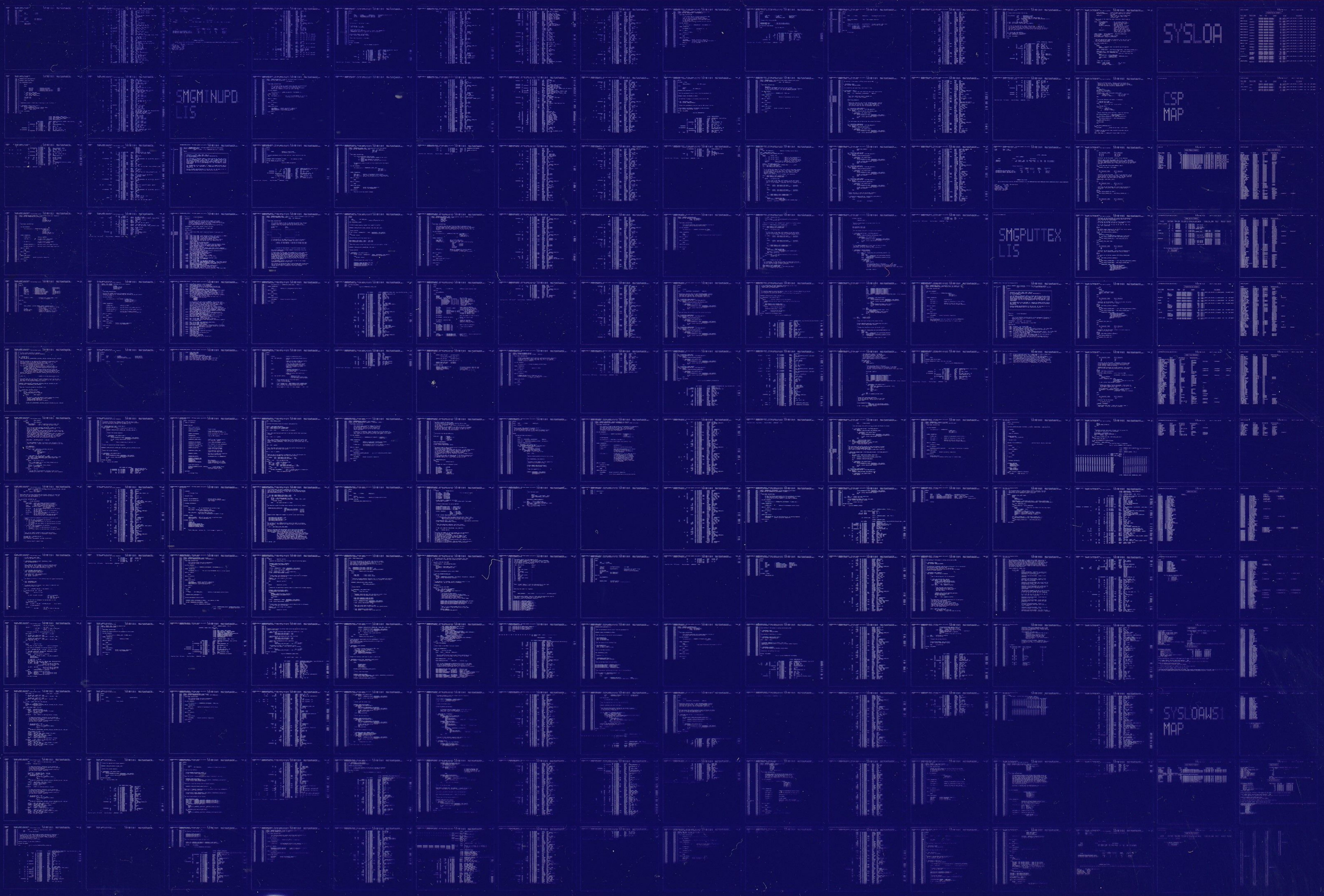
```
; 3270          3501 4                      STATUS=OUTPUT(PBCB,.BUFSIZ,TEXT[.I]);
; 3271          3502 4                      IF NOT .STATUS THEN RETURN .STATUS
; 3272          3503 4                      END     ! output next part of string
; 3273          3504 4                ELSE  BEGIN   ! buffer final part of string
; 3274          3505 4                      BUFLEN=.TEXT_LEN-.I;                    ! could be 0
; 3275          3506 4                      CH$MOVE(.BUFLEN,TEXT[.I],BUFFER);
; 3276          3507 4                      EXITLOOP
; 3277          3508 4                      END     ! buffer final part of string
; 3278          3509 4
; 3279          3510 3          END     ! buffering is enabled
; 3280          3511 3    ELSE  BEGIN   ! no buffering
; 3281          3512 3
; 3282          3513 3          !+
; 3283          3514 3          ! Output the string directly.
; 3284          3515 3          !-
; 3285          3516 3
; 3286          3517 3          STATUS=OUTPUT(PBCB,.TEXT_LEN,TEXT);
; 3287          3518 3          IF NOT .STATUS THEN RETURN .STATUS
; 3288          3519 3
; 3289          3520 2          END;    ! no buffering
; 3290          3521 2
; 3291          3522 2 RETURN   SS$_NORMAL
; 3292          3523 2
; 3293          3524 1 END;



                                          0FFC 00000          .ENTRY  SMG$$OUTPUT, Save R2,R3,R4,R5,R6,R7,R8,R9,- ; 3393
                                                                      R10,R11                                      ;
                    5E              04   C2 00002             SUBL2   #4, SP                                       ;
                    57        04    AC   D0 00005             MOVL    P_PBCB, R7                                   ; 3435
                    58        72    A7   9E 00009             MOVAB   114(R7), R8                                  ; 3437
                    59        6C    A7   D0 0000D             MOVL    108(R7), R9                                  ; 3439
       08   00D0    C7              03   E1 00011             BBC     #3, 208(R7), 1$                              ; 3448
                    50 00000000G    8F   D0 00017             MOVL    #SMG$_WILUSERMS, R0                          ; 3449
                                         04 0001E             RET                                                  ;
                    5A        08    AC   D0 0001F  1$:        MOVL    TEXT_LEN, R10                                ; 3466
                    69        0C    A7   E9 00023             BLBC    12(R7), 7$                                   ; 3459
                    52              68   3C 00027             MOVZWL  (R8), R2                                     ; 3466
       50           5A              52   C1 0002A             ADDL3   R2, R10, R0                                  ;
                    6E        70    A7   3C 0002E             MOVZWL  112(R7), (SP)                                ;
                    6E              50   D1 00032             CMPL    R0, (SP)                                     ;
                                    15   1B 00035             BLEQU   2$                                           ;
                            0204    8F   BB 00037             PUSHR   #^M<R2,R9>                                   ; 3468
                                    57   DD 0003B             PUSHL   R7                                           ;
            0000V   CF              03   FB 0003D             CALLS   #3, OUTPUT                                   ;
                    5B              50   D0 00042             MOVL    R0, STATUS                                   ;
                    5A              5B   E9 00045             BLBC    STATUS, 8$                                   ; 3469
                                    68   B4 00048             CLRW    (R8)                                         ; 3470
                                    0B   11 0004A             BRB     3$                                           ;
     6249     0C    BC              5A   28 0004C  2$:        MOVC3   R10, @TEXT_ADR, (R2)[R9]                     ; 3481
                    68              5A   A0 00052             ADDW2   R10, (R8)                                    ; 3482
                                    4F   11 00055             BRB     9$                                           ; 3483
                                    56   D4 00057  3$:        CLRL    I                                            ; 3498
       50           56              6E   C1 00059  4$:        ADDL3   (SP), I, R0                                  ; 3499
```

```
                                 5A            50  D1 0005D          CMPL    R0, R10                                 ;
                                               16  1A 00060          BGTRU   5$                                      ;
                                      0C BC46  9F 00062              PUSHAB  @TEXT_ADR[I]                            ; 3501
                                      04       AE  DD 00066          PUSHL   4(SP)                                   ;
                                               57  DD 00069          PUSHL   R7                                      ;
                          0000V  CF            03  FB 0006B          CALLS   #3, OUTPUT                              ;
                                 5B            50  D0 00070          MOVL    R0, STATUS                              ;
                                 0E            5B  E8 00073          BLBS    STATUS, 6$                              ; 3502
                                               2A  11 00076          BRB     8$                                      ;
                     68          5A            56  A3 00078 5$:      SUBW3   I, R10, (R8)                            ; 3505
                     69     0C BC46            68  28 0007C          MOVC3   (R8), @TEXT_ADR[I], (R9)                ; 3506
                                               22  11 00082          BRB     9$                                      ; 3504
        FFCB         56          6E 7FFFFFFF   8F  F1 00084 6$:      ACBL    #2147483647, (SP), I, 4$                ; 3499
                                               16  11 0008E          BRB     9$                                      ; 3498
                                      0C       AC  DD 00090 7$:      PUSHL   TEXT_ADR                                ; 3517
                                    0480       8F  BB 00093          PUSHR   #^M<R7,R10>                             ;
                          0000V  CF            03  FB 00097          CALLS   #3, OUTPUT                              ;
                                 5B            50  D0 0009C          MOVL    R0, STATUS                              ;
                                 04            5B  E8 0009F          BLBS    STATUS, 9$                              ; 3518
                                 50            5B  D0 000A2 8$:      MOVL    STATUS, R0                              ;
                                                   04 000A5          RET                                             ;
                                 50            01  D0 000A6 9$:      MOVL    #1, R0                                  ; 3522
                                                   04 000A9          RET                                             ; 3524

; Routine Size:  170 bytes,    Routine Base:  _SMG$CODE + 1D73
```

```
1 %SBTTL 'OUTPUT - Low level output'
1 ROUTINE OUTPUT(P_PBCB,TEXT_LEN,TEXT_ADR) =
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Handles low level output by issuing a QIO or calling RMS.
1 !       No buffering occurs here.
1 !       If CTRL/O was encountered, then we invalidate our knowledge
1 !       of the screen.
1 !
1 ! CALLING SEQUENCE:
1 !
1 !       ret_status.wlc.v = OUTPUT(
1 !                                   P_PBCB.rab.r,
1 !                                   TEXT_LEN.rl.v,
1 !                                   TEXT_ADR.rt.r)
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       P_PBCB.rab.r                Address of pasteboard control block.
1 !
1 !       TEXT_LEN.rl.v               Number of characters in text string
1 !
1 !       TEXT_ADR.rt.r               Address of start of text string
1 !                                   The text may contain escape sequences.
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       Contents of PBCB.
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       NONE
1 !
1 ! COMPLETION STATUS:
1 !
1 !       SS$_NORMAL      Normal successful completion
1 !       SS$_xyz         errors from QIO
1 !       SS$_xyz         errors from $ASSIGN
1 !       RMS$_xyz        errors from RMS (STS value only)
1 !
1 ! SIDE EFFECTS:
1 !
1 !       NONE
1 !--
```

```
; 3341          3570  2 BEGIN
; 3342          3571  2
; 3343          3572  2 BIND
; 3344          3573  2
; 3345          3574  2         PBCB    = .P_PBCB        : $PBCB_DECL;   ! pasteboard control block
; 3346          3575  2
; 3347          3576  2 LOCAL
; 3348          3577  2
; 3349          3578  2         QIO_IOSB                 : VECTOR[4],
; 3350          3579  2         STATUS;
; 3351          3580  2
; 3352          3581  2 !+
; 3353          3582  2 ! Do nothing if the output is being controlled by RMS.
; 3354          3583  2 !-
; 3355          3584  2
; 3356          3585  2 IF .PBCB[PBCB_V_RMS]
; 3357          3586  2   THEN  RETURN  SMG$_WILUSERMS;
; 3358          3587  2
; 3359          3588  2 !+
; 3360          3589  2 ! Null strings succeed no matter what.
; 3361          3590  2 !-
; 3362          3591  2
; 3363          3592  2 IF .TEXT_LEN EQL 0
; 3364          3593  2   THEN  RETURN  SS$_NORMAL;
; 3365          3594  2
; 3366          3595  2 !+
; 3367          3596  2 ! Normally, we use QIOs to talk to this terminal.
; 3368          3597  2 ! See if a channel has been assigned yet.
; 3369          3598  2 ! If not, assign a channel now.
; 3370          3599  2 !-
; 3371          3600  2
; 3372          3601  2 IF .PBCB[PBCB_W_CHAN] EQL 0
; 3373          3602  3   THEN  BEGIN   ! assigning channel
; 3374          3603  3
; 3375          3604  3         ! *** Perhaps this code should be moved to SMG$CREATE_PASTEBOARD.
; 3376          3605  3
; 3377          3606  3         LOCAL   NAME_DESC        : VECTOR[2];    ! Fixed length descriptor
; 3378          3607  3
; 3379          3608  3         !+
; 3380          3609  3         ! Create a fixed length descriptor for our device name string
; 3381          3610  3         ! for use by $ASSIGN.
; 3382          3611  3         !-
; 3383          3612  3
; 3384          3613  3         NAME_DESC[0]=.PBCB[PBCB_W_DEVNAM_LEN];
; 3385          3614  3         NAME_DESC[1]= PBCB[PBCB_T_DEVNAM];
; 3386          3615  3
; 3387          3616  3         !+
; 3388          3617  3         ! Assign the channel.
; 3389          3618  3         ! Put the resulting channel number in PBCB[PBCB_W_CHAN].
; 3390          3619  3         !-
; 3391          3620  3
; 3392        P 3621  3         STATUS=$ASSIGN( DEVNAM  = NAME_DESC,
; 3393          3622  3                         CHAN    = PBCB[PBCB_W_CHAN]);
; 3394          3623  3         IF NOT .STATUS THEN RETURN .STATUS
; 3395          3624  3
; 3396          3625  2         END;    ! assigning channel
; 3397          3626  2
; 3398            3627  2 !+
; 3399            3628  2 ! Issue a QIO to output the string.
; 3400            3629  2 !-
; 3401            3630  2
; 3402          P 3631  2 STATUS=$QIOW(    CHAN     = .PBCB[PBCB_W_CHAN],
; 3403          P 3632  2                  EFN      = .PBCB[PBCB_B_EFN],
; 3404          P 3633  2                  FUNC     =  IO$ WRITEVBLK OR IO$M NOFORMAT OR
; 3405          P 3634  2                      (IF .PBCB[PBCB V_UNSOLICIT] THEN IO$M_ENABLMBX ELSE 0),
; 3406          P 3635  2                  IOSB     = QIO IOSB,
; 3407          P 3636  2                  P1       = .TEXT_ADR,
; 3408            3637  2                  P2       = .TEXT_LEN);
; 3409            3638  2 IF NOT .STATUS THEN RETURN .STATUS;
; 3410            3639  2 IF NOT .QIO_IOSB[0] THEN RETURN .QIO_IOSB[0];
; 3411            3640  2
; 3412            3641  2 !+
; 3413            3642  2 ! If the I/O was aborted by CTRL/O, then we have no idea how far
; 3414            3643  2 ! the I/O got and so our knowledge of the screen is invalid.
; 3415            3644  2 ! We therefore invalidate our screen buffer by setting the CONTROLO bit.
; 3416            3645  2 ! (We can't just invalidate the screen buffer here because our caller
; 3417            3646  2 ! may set that buffer.)
; 3418            3647  2 !-
; 3419            3648  2
; 3420            3649  2 IF .STATUS EQL SS$_CONTROLO
; 3421            3650  2 OR .QIO_IOSB[0] EQL SS$_CONTROLO
; 3422            3651  2   THEN  PBCB[PBCB_V_CONTROLO]=1;
; 3423            3652  2
; 3424            3653  2 RETURN  SS$_NORMAL
; 3425            3654  2
; 3426            3655  1 END;



                                                              .EXTRN  SYS$ASSIGN, SYS$QIOW

                                           000C 00000 OUTPUT: .WORD   Save R2,R3                                  ; 3526
                    5E              18  C2 00002              SUBL2   #24, SP                                     ;
                    52        04    AC  D0 00005              MOVL    P PBCB, R2                                  ; 3574
                    53      00D0    C2  9E 00009              MOVAB   208(R2), R3                                 ; 3585
         08         63              03  E1 0000E              BBC     #3, (R3), 1$                                ;
                    50 00000000G    8F  D0 00012              MOVL    #SMG$_WILUSERMS, R0                         ; 3586
                                        04 00019              RET                                                 ;
                              08    AC  D5 0001A 1$:          TSTL    TEXT_LEN                                    ; 3592
                                    75  13 0001D              BEQL    7$                                          ;
                              64    A2  B5 0001F              TSTW    100(R2)                                     ; 3601
                                    1B  12 00022              BNEQ    2$                                          ;
                    6E        12    A2  3C 00024              MOVZWL  18(R2), NAME_DESC                           ; 3613
              04    AE        18    A2  9E 00028              MOVAB   24(R2), NAME_DESC+4                         ; 3614
                                    7E  7C 0002D              CLRQ    -(SP)                                       ; 3622
                              64    A2  9F 0002F              PUSHAB  100(R2)                                     ;
                              0C    AE  9F 00032              PUSHAB  NAME DESC                                   ;
          00000000G 00              04  FB 00035              CALLS   #4, SYS$ASSIGN                              ;
                    58              50  E9 0003C              BLBC    STATUS, 8$                                  ; 3623
                                    7E  7C 0003F 2$:          CLRQ    -(SP)                                       ; 3637
                                    7E  7C 00041              CLRQ    -(SP)                                       ;
                              08    AC  DD 00043              PUSHL   TEXT_LEN                                    ;
                              0C    AC  DD 00046              PUSHL   TEXT_ADR                                    ;
                                    7E  7C 00049              CLRQ    -(SP)                                       ;
                                    28   AE   9F 0004B          PUSHAB  QIO_IOSB                                          ;
                  06         63         01   E1 0004E          BBC     #1, (R3), 3$                                      ;
                             51     80   8F   9A 00052          MOVZBL  #128, R1                                          ;
                                         02   11 00056          BRB     4$                                                ;
                                         51   D4 00058 3$:      CLRL    R1                                                ;
                  7E         51 00000130 8F   C9 0005A 4$:      BISL3   #304, R1, -(SP)                                   ;
                             7E     64   A2   3C 00062          MOVZWL  100(R2), -(SP)                                    ;
                             7E     66   A2   9A 00066          MOVZBL  102(R2), -(SP)                                    ;
                   00000000G 00          0C   FB 0006A          CALLS   #12, SYS$QIOW                                     ;
                             23          50   E9 00071          BLBC    STATUS, 8$                                        ; 3638
                             05     08   AE   E8 00074          BLBS    QIO_IOSB, 5$                                      ; 3639
                             50     08   AE   D0 00078          MOVL    QIO_IOSB, R0                                      ;
                                         04 0007C          RET                                                            ;
                   00000609  8F          50   D1 0007D 5$:      CMPL    STATUS, #1545                                     ; 3649
                                         0A   13 00084          BEQL    6$                                                ;
                   00000609  8F     08   AE   D1 00086          CMPL    QIO_IOSB, #1545                                   ; 3650
                                         04   12 0008E          BNEQ    7$                                                ;
                             63     40   8F   88 00090 6$:      BISB2   #64, (R3)                                         ; 3651
                             50          01   D0 00094 7$:      MOVL    #1, R0                                            ; 3653
                                              04 00097 8$:      RET                                                       ; 3655

; Routine Size:  152 bytes,    Routine Base:  _SMG$CODE + 1E1D
; 3428          3656  1 END
; 3429          3657  0 ELUDOM



                                                                        .EXTRN  LIB$SIGNAL

;                                     PSECT SUMMARY
;
;     Name                       Bytes                          Attributes
;
;  _SMG$DATA                          76  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,  PIC,ALIGN(2)
;  _SMG$CODE                        7861  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(2)




;                                Library Statistics
;
;                                               -------- Symbols --------          Pages          Processing
;     File                                      Total    Loaded   Percent          Mapped         Time
;
;  _$255$DUA18:[SYSLIB]STARLET.L32;1             9776       135         1            581            00:01.0
;  _$255$DUA18:[SMGRTL.OBJ]RTLLIB.L32;1            36         0         0              8            00:00.1
;  _$255$DUA18:[SMGRTL.OBJ]SMGLIB.L32;1           469        78        16             38            00:00.4





;                                     COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS$:SMGMINUPD/OBJ=OBJ$:SMGMINUPD MSRC$:SMGMINUPD/UPDATE=(BUG$:SMGMINUPD
;       )

; Size:           7751 code + 186 data bytes
; Run Time:          03:13.0
; Elapsed Time:      04:10.2
; Lines/CPU Min:      1136
; Lexemes/CPU-Min: 19480
; Memory Used:  700 pages
; Compilation Complete
```

0447 AH-EF71A-SE
VAX/VMS V4.1 SRC LST MCRF UPD



SYSLOA

SMGMINUPD
LIS

CSP
MAP

SMGPUTTEX
LIS

SYSLOAWSI
MAP