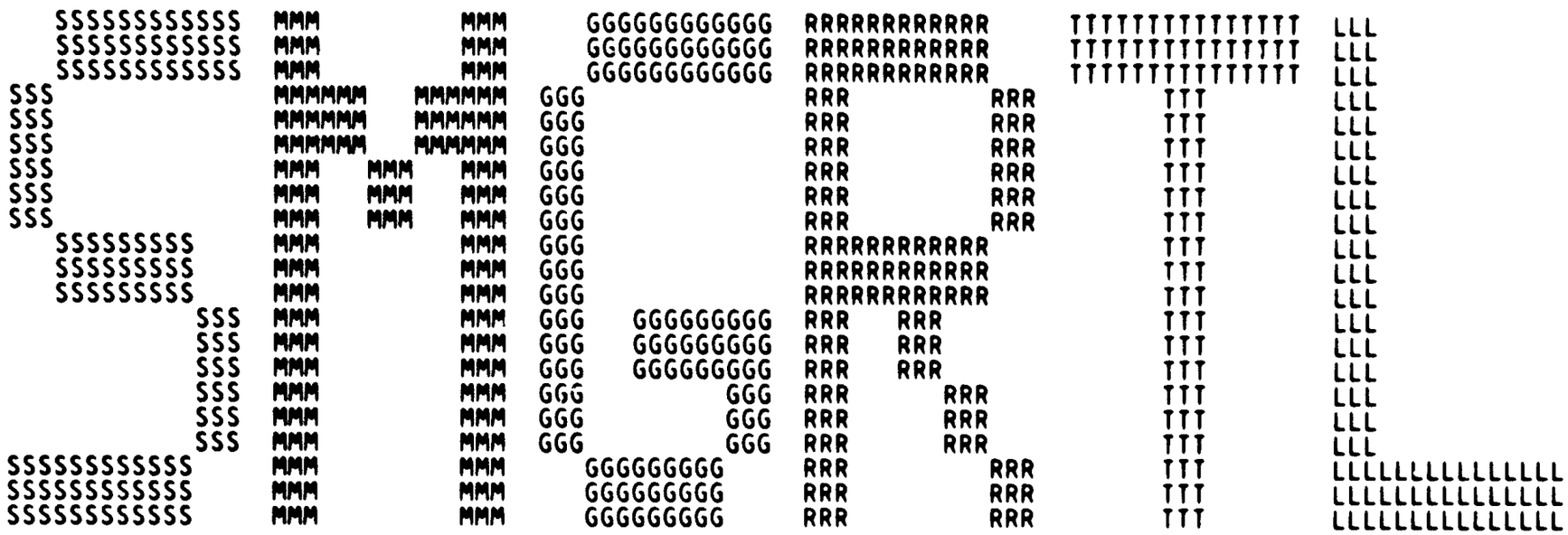

_$2

Val

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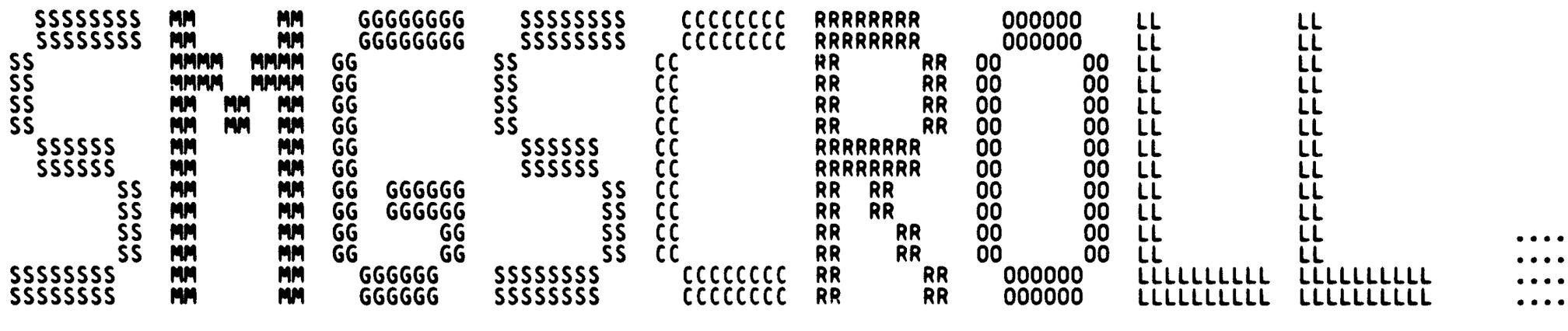
FILEID**SMGSCROLL



```
;     1          0001  0 %TITLE 'SMG$$SCROLL_AREA - Virtual Display -- Scroll rectangular area'
;     2          0002  0 MODULE SMG$$SCROLL_AREA (
;     3          0003  0                 IDENT = '1-005' ! File: SMGSCROLL.B32 Edit: RKR1005
;     4          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                                  *
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;    23          0023  1 !*                                                                           *
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;    25          0025  1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                  *
;    26          0026  1 !*                                                                           *
;    27          0027  1 !*                                                                           *
;    28          0028  1 !*****************************************************************************
;    29          0029  1 !
;    30          0030  1
;    31          0031  1 !++
;    32          0032  1 ! FACILITY:     Screen Management
;    33          0033  1 !
;    34          0034  1 ! ABSTRACT:
;    35          0035  1 !       The procedures in this module update and maintain the contents
;    36          0036  1 ! of the in-memory representations of the virtual displays.  The data
;    37          0037  1 ! areas themselves are allocated/deallocated, pasted/upasted, etc.
;    38          0038  1 ! by the procedures in module SMG$DISPLAY_LINKS.  Output from these
;    39          0039  1 ! virtual displays is handled by procedures in SMG$DISPLAY_OUTPUT.
;    40          0040  1 ! The module SMG$DISPLAY_INPUT contains the routines that support
;    41          0041  1 ! input operations on displays.
;    42          0042  1 !
;    43          0043  1 !
;    44          0044  1 !
;    45          0045  1 ! ENVIRONMENT:  User mode, Shared library routines.
;    46          0046  1 !
;    47          0047  1 ! AUTHOR: P. Levesque, CREATION DATE: 14-Apr-1983
;    48          0048  1 !
;    49          0049  1 ! MODIFIED BY:
;    50          0050  1 !
;    51          0051  1 ! 1-001 - Original.  PLL 14-Apr-1983
;    52          0052  1 ! 1-002 - Fix to right scroll.  Changed a GEQ to GTR to allow scroll
;    53          0053  1 !         from next to last column.  PLL 27-Jul-1983
;    54          0054  1 ! 1-003 - STAN 31-Aug-1983, scroll line characteristics vector.
;    55          0055  1 ! 1-004 - A number of changes to fix bugs and improve performance.
;    56          0056  1 !         Move $SMG$LINEAR computations outside of loop and accomplish
;    57          0057  1 !         equivalent variable updates via addition or subtraction within loop.
```

```
;    58          0058  1 !          Fix some bounds checks that were accessing the wrong variable.
;    59          0059  1 !          RKR 26-Jan-1984.
;    60          0060  1 ! 1-005 - Fix to change its functionality to scroll the contents of the
;    61          0061  1 !          scrolling rectange within the confines of the scrolling rectange,
;    62          0062  1 !          rather than scrolling the rectangle to other parts of the virtual
;    63          0063  1 !          display.
;    64          0064  1 !          RKR 2-Feb-1984
;    65          0065  1 !--
;    66          0066  1
```

```
;    68          0067  1 %SBTTL 'Declarations'
;    69          0068  1 !
;    70          0069  1 ! SWITCHES:
;    71          0070  1 !
;    72          0071  1
;    73          0072  1 !
;    74          0073  1 ! LINKAGES:
;    75          0074  1 !
;    76          0075  1 !       NONE
;    77          0076  1 !
;    78          0077  1 ! TABLE OF CONTENTS:
;    79          0078  1 !
;    80          0079  1
;    81          0080  1 FORWARD ROUTINE
;    82          0081  1
;    83          0082  1     SMG$$SCROLL_AREA;                   ! Scroll a rectangular area
;    84          0083  1
;    85          0084  1 !
;    86          0085  1 ! INCLUDE FILES
;    87          0086  1 !
;    88          0087  1
;    89          0088  1 REQUIRE 'RTLIN:SMGPROLOG';              ! defines psects, macros, tcb,
;    90          0166  1                                         !  wcb, & terminal symbols
;    91          0167  1
;    92          0168  1 !
;    93          0169  1 ! EXTERNAL REFERENCES
;    94          0170  1 !
;    95          0171  1 EXTERNAL LITERAL
;    96          0172  1         SMG$_INVARG;
;    97          0173  1
;    98          0174  1 !<BLF/PAGE>
```

```
;  100          0175  1 %SBTTL 'SMG$$SCROLL_AREA - Scroll rectangular area'
;  101          0176  1 GLOBAL ROUTINE SMG$$SCROLL_AREA (
;  102          0177  1                                  DCB : REF BLOCK [,BYTE],
;  103          0178  1                                  START_ROW,
;  104          0179  1                                  START_COL,
;  105          0180  1                                  HEIGHT,
;  106          0181  1                                  WIDTH,
;  107          0182  1                                  DIRECTION,
;  108          0183  1                                  COUNT
;  109          0184  1                                  ) =
;  110          0185  1 !++
;  111          0186  1 ! FUNCTIONAL DESCRIPTION:
;  112          0187  1 !
;  113          0188  1 !       This routine is the heart of all routines which open up a
;  114          0189  1 !       space in the virtual display.  Data within the specified scrolling
;  115          0190  1 !       rectangle is scrolled in the specified direction by the number of
;  116          0191  1 !       units requested.
;  117          0192  1 !
;  118          0193  1 ! CALLING SEQUENCE:
;  119          0194  1 !
;  120          0195  1 !       ret_status.wlc.v = SMG$$SCROLL_AREA (
;  121          0196  1 !                                  DCB.mab.r,
;  122          0197  1 !                                  START_ROW.rl.v,
;  123          0198  1 !                                  START_COL.rl.v,
;  124          0199  1 !                                  HEIGHT.rl.v,
;  125          0200  1 !                                  WIDTH.rl.v,
;  126          0201  1 !                                  DIRECTION.rl.v,
;  127          0202  1 !                                  COUNT.rl.v
;  128          0203  1 !
;  129          0204  1 ! FORMAL PARAMETERS:
;  130          0205  1 !
;  131          0206  1 !       DCB.mab.r       Address of virtual display control block.
;  132          0207  1 !                       Various fields from within in this block are
;  133          0208  1 !                       are interrogated and/or updated.
;  134          0209  1 !
;  135          0210  1 !       START_ROW.rl.v  Row in display where move should begin
;  136          0211  1 !
;  137          0212  1 !       START_COL.rl.v  Column in display where move should begin
;  138          0213  1 !
;  139          0214  1 !       HEIGHT.rl.v     Height of rectangular area
;  140          0215  1 !
;  141          0216  1 !       WIDTH.rl.v      Width of rectangular area
;  142          0217  1 !
;  143          0218  1 !       DIRECTION.rl.v  Direction of move, one of the following:
;  144          0219  1 !
;  145          0220  1 !                               SMG$M_UP
;  146          0221  1 !                               SMG$M_DOWN
;  147          0222  1 !                               SMG$M_RIGHT
;  148          0223  1 !                               SMG$M_LEFT
;  149          0224  1 !
;  150          0225  1 !       COUNT.rl.v      Number of character positions to move
;  151          0226  1 !
;  152          0227  1 ! IMPLICIT INPUTS:
;  153          0228  1 !
;  154          0229  1 !       NONE
;  155          0230  1 !
;  156          0231  1 ! IMPLICIT OUTPUTS:
```

```
;  157     0232  1 !
;  158     0233  1 !       NONE
;  159     0234  1 !
;  160     0235  1 ! COMPLETION STATUS:
;  161     0236  1 !
;  162     0237  1 !       SS$_NORMAL      Normal successful completion
;  163     0238  1 !
;  164     0239  1 ! SIDE EFFECTS:
;  165     0240  1 !
;  166     0241  1 !       NONE
;  167     0242  1 !--
;  168     0243  1
;  169     0244  2     BEGIN
;  170     0245  2
;  171     0246  2     LOCAL
;  172     0247  2         ONE_LINE,                   ! number of bytes between a given column in
;  173     0248  2                                     ! on line of the virtual display and the same
;  174     0249  2                                     ! column in the next line.  Obviously, this is
;  175     0250  2                                     ! is equal to the number of columns in the
;  176     0251  2                                     ! virtual display
;  177     0252  2
;  178     0253  2         LOCAL_HEIGHT,               ! working height
;  179     0254  2         LOCAL_WIDTH,                ! working width
;  180     0255  2         SOURCE,                     ! start position of move (byte offset)
;  181     0256  2         DEST,                       ! destination of move (byte offset)
;  182     0257  2         LCV      : REF VECTOR [,BYTE], ! addr of line characteristics vector
;  183     0258  2         TEXT_BUF : REF VECTOR [,BYTE], ! addr of text buffer
;  184     0259  2         ATTR_BUF : REF VECTOR [,BYTE], ! addr of attr buffer
;  185     0260  2         CHAR_BUF : REF VECTOR [,BYTE], ! addr of char set buffer
;  186     0261  2         BOTTOM_LINE;                ! Last line in scrolling rectangle
;  187     0262  2
;  188     0263  2     ONE_LINE = .DCB [DCB_W_NO_COLS];
;  189     0264  2
;  190     0265  2 !+
;  191     0266  2 ! The entire display may be shuffled or a subset may be shuffled.  Ignore
;  192     0267  2 ! requests to define a scrolling area that extends outside the display.
;  193     0268  2 ! The assumption is that START_ROW and START_COL are within the virtual
;  194     0269  2 ! display.  Code below makes sure resulting rectangle we deal with as the
;  195     0270  2 ! scrolling rectangle is entirely within the virtual display.
;  196     0271  2 !-
;  197     0272  2
;  198     0273  2     LOCAL_HEIGHT = .HEIGHT;
;  199     0274  2     LOCAL_WIDTH = .WIDTH;
;  200     0275  2
;  201     0276  2     IF (.START_ROW + .HEIGHT - 1) GTR .DCB [DCB_W_NO_ROWS]
;  202     0277  2     THEN
;  203     0278  2         LOCAL_HEIGHT = .DCB [DCB_W_NO_ROWS] - .START_ROW +1;
;  204     0279  2
;  205     0280  2     IF (.START_COL + .WIDTH - 1) GTR .ONE_LINE
;  206     0281  2     THEN
;  207     0282  2         LOCAL_WIDTH = .ONE_LINE - .START_COL +1;
;  208     0283  2
;  209     0284  2     BOTTOM_LINE = .START_ROW + .LOCAL_HEIGHT -1;
;  210     0285  2
;  211     0286  2 !+
;  212     0287  2 ! Get addresses of DCB buffers.
;  213     0288  2 !-
```

```
;  214          0289  2
;  215          0290  2     TEXT_BUF = .DCB [DCB_A_TEXT_BUF];
;  216          0291  2     ATTR_BUF = .DCB [DCB_A_ATTR_BUF];
;  217          0292  2     CHAR_BUF = .DCB [DCB_A_CHAR_SET_BUF];
;  218          0293  2     LCV      = .DCB [DCB_A_LINE_CHAR];
;  219          0294  2
;  220          0295  2 !+
;  221          0296  2 ! In case WIDTH is less than the entire line, the move is performed
;  222          0297  2 ! line by line.  For upward moves, the low numbered lines are moved
;  223          0298  2 ! first.  For downward moves, high numbered lines are moved first.
;  224          0299  2 ! For sideways moves, low numbered lines will be shifted first.
;  225          0300  2 !-
;  226          0301  2
;  227          0302  2     CASE .DIRECTION FROM SMG$M_UP TO SMG$M_LEFT OF
;  228          0303  2     SET
```

```
;  230     0304  2     [SMG$M_UP]:
;  231     0305  3         BEGIN
;  232     0306  3         LOCAL
;  233     0307  3             DEST_LINE_NO;
;  234     0308  3
;  235     0309  3         DEST_LINE_NO = .START_ROW - .COUNT;                  ! Dest. row number
;  236     0310  3         DEST = $SMG$LINEAR (.DEST_LINE_NO, .START_COL);      ! Dest. byte offset
;  237     0311  3         SOURCE = $SMG$LINEAR (.START_ROW, .START_COL);       ! Source byte offset
;  238     0312  3
;  239     0313  3         INCR CURR_LINE FROM .START_ROW  ! From 1st line of scroll rectangle to
;  240     0314  3                        TO .BOTTOM_LINE  ! last line of scroll rectangle
;  241     0315  3         DO
;  242     0316  4             BEGIN                       ! incr loop
;  243     0317  4             IF .DEST_LINE_NO GEQ .START_ROW                  ! If within scrolling
;  244     0318  4             THEN                                             ! rectangle
;  245     0319  5                 BEGIN                   ! perform moves
;  246     0320  5                 !+
;  247     0321  5                 ! Move text, attributes, alt. char set and line characteristics
;  248     0322  5                 !-
;  249     0323  5                 $SMG$SHUFFLE (.LOCAL_WIDTH, .SOURCE, .DEST);
;  250     0324  5                 LCV [.DEST_LINE_NO] = .LCV [.CURR_LINE];
;  251     0325  4                 END;                    ! perform moves
;  252     0326  4
;  253     0327  4             DEST_LINE_NO = .DEST_LINE_NO +1;          ! 1 line downward
;  254     0328  4             DEST = .DEST + .ONE_LINE;!    ! Offset 1 line downward
;  255     0329  4             SOURCE = .SOURCE + .ONE_LINE; ! Offset 1 line downward
;  256     0330  3             END;                        ! incr loop
;  257     0331  3
;  258     0332  3         !+
;  259     0333  3         ! Up to COUNT number of lines may have been opened up.  Blank fill them.
;  260     0334  3         !-
;  261     0335  3
;  262     0336  3         SOURCE = $SMG$LINEAR ( .BOTTOM_LINE, .START_COL); ! Byte offset
;  263     0337  3
;  264     0338  3         INCR COUNTER FROM 1 TO .COUNT
;  265     0339  3         DO
;  266     0340  4             BEGIN       ! check for clearing needed
;  267     0341  4             IF .BOTTOM_LINE GEQ .START_ROW       ! If still within
;  268     0342  4             THEN                                 ! rectangle
;  269     0343  5                 BEGIN   ! clear
;  270     0344  5                 $SMG$BLANK_FILL_DCB (.LOCAL_WIDTH, .SOURCE);
;  271     0345  5                 LCV [.BOTTOM_LINE] = 0;
;  272     0346  4                 END;    ! clear
;  273     0347  4
;  274     0348  4             SOURCE = .SOURCE - .ONE_LINE;                ! Up 1 line's worth
;  275     0349  4             BOTTOM_LINE = .BOTTOM_LINE - 1;              ! Up 1 line
;  276     0350  3             END;        ! check for clearing needed
;  277     0351  3
;  278     0352  2         END;                                ! end of upward shuffle
```

```
;  280          0353  2
;  281          0354  2      [SMG$M_DOWN]:
;  282          0355  3          BEGIN
;  283          0356  3          LOCAL
;  284          0357  3              DEST_LINE_NO;
;  285          0358  3
;  286          0359  3          DEST_LINE_NO = .BOTTOM_LINE + .COUNT;           ! Dest line number
;  287          0360  3          DEST = $SMG$LINEAR ( .DEST_LINE_NO, .START_COL); ! Dest byte offset
;  288          0361  3          SOURCE = $SMG$LINEAR ( .BOTTOM_LINE, .START_COL);! Source byte offset
;  289          0362  3
;  290          0363  3          DECR CURR_LINE FROM .BOTTOM_LINE        ! From bottom line of scroll
;  291          0364  3                         TO .START_ROW            ! rectangle to top line
;  292          0365  3          DO
;  293          0366  4              BEGIN
;  294          0367  4              IF .DEST_LINE_NO LEQ .BOTTOM_LINE   ! If still within
;  295          0368  4              THEN                                ! rectangle
;  296          0369  5                  BEGIN                   ! perform moves
;  297          0370  5                  !+
;  298          0371  5                  ! Move text, attributes, alt. char. set and line charactistics
;  299          0372  5                  !-
;  300          0373  5                  $SMG$SHUFFLE (.LOCAL_WIDTH, .SOURCE, .DEST);
;  301          0374  5                  LCV [.DEST_LINE_NO] = .LCV [.CURR_LINE];
;  302          0375  4                  END;                    ! perform moves
;  303          0376  4
;  304          0377  4              DEST_LINE_NO = .DEST_LINE_NO - 1;       ! 1 line up
;  305          0378  4              DEST = .DEST - .ONE_LINE;               ! Offset up 1 line's work
;  306          0379  4              SOURCE = .SOURCE - .ONE_LINE;           ! Source offset
;  307          0380  3              END;                            ! end of decr loop
;  308          0381  3
;  309          0382  3          !+
;  310          0383  3          ! Up to COUNT number of lines may have been opened up.  Blank fill them.
;  311          0384  3          !-
;  312          0385  3
;  313          0386  3          SOURCE = $SMG$LINEAR (.START_ROW, .START_COL);      ! line offset
;  314          0387  3          DEST_LINE_NO = .START_ROW;                          ! line number
;  315          0388  3          INCR COUNTER FROM 1 TO .COUNT
;  316          0389  3          DO
;  317          0390  4              BEGIN       ! Check need to clear
;  318          0391  4              IF .DEST_LINE_NO LEQ .BOTTOM_LINE   ! If still within
;  319          0392  4              THEN                                ! rectangle
;  320          0393  5                  BEGIN   ! Clear
;  321          0394  5                  $SMG$BLANK_FILL_DCB (.LOCAL_WIDTH, .SOURCE);
;  322          0395  5                  LCV [.DEST_LINE_NO] = 0;
;  323          0396  4                  END;    ! Clear
;  324          0397  4
;  325          0398  4              SOURCE = .SOURCE + .ONE_LINE;               ! Down 1 line's worth
;  326          0399  4              DEST_LINE_NO = .DEST_LINE_NO + 1;           ! Down 1 line
;  327          0400  3              END;        ! Check need to clear
;  328          0401  2          END;                                ! end of downward shuffle
```

```
;  330          0402  2
;  331          0403  2      [SMG$M_RIGHT]:
;  332          0404  3          BEGIN
;  333          0405  3          LOCAL
;  334          0406  3              RIGHT_COL_OF_RECT,
;  335          0407  3              DEST_COL_NO;
;  336          0408  3
;  337          0409  3          RIGHT_COL_OF_RECT = .START_COL + .LOCAL_WIDTH -1;
;  338          0410  3          DEST_COL_NO = .START_COL + .COUNT;              ! First col of dest.
;  339          0411  3          SOURCE = $SMG$LINEAR ( .START_ROW, .START_COL); ! Byte offset for source
;  340          0412  3          DEST   = $SMG$LINEAR ( .START_ROW, .DEST_COL_NO);! Byte offset for dest.
;  341          0413  3          IF .COUNT GTR .LOCAL_WIDTH
;  342          0414  3          THEN
;  343          0415  4              BEGIN       ! Off of right of rectangle
;  344          0416  4              !+
;  345          0417  4              ! Starting destination column maps outside of rectangle.  Just need
;  346          0418  4              ! to clear source through last column of rectangle.
;  347          0419  4              !-
;  348          0420  4              INCR CURR_LINE FROM .START_ROW      ! From 1st line of rectangle to
;  349          0421  4                             TO   .BOTTOM_LINE    ! last line of rectangle
;  350          0422  4              DO
;  351          0423  5                  BEGIN   ! Incr loop
;  352          0424  5                  $SMG$BLANK_FILL_DCB ( .LOCAL_WIDTH, .SOURCE);
;  353          0425  5                  SOURCE = .SOURCE + .ONE_LINE;
;  354          0426  4                  END;    ! Incr loop
;  355          0427  4              END         ! Off of right of rectangle
;  356          0428  4
;  357          0429  3          ELSE
;  358          0430  3
;  359          0431  4              BEGIN       ! Dest. at least partially within rectangle
;  360          0432  4              !+
;  361          0433  4              ! Some movement of source text is needed.
;  362          0434  4              !-
;  363          0435  4              LOCAL
;  364          0436  4                  COLS_TO_MOVE,   ! # bytes to move
;  365          0437  4                  COLS_TO_CLEAR;  ! # bytes to clear
;  366          0438  4
;  367          0439  4              COLS_TO_MOVE = .RIGHT_COL_OF_RECT - .DEST_COL_NO +1;
;  368          0440  4              COLS_TO_CLEAR = .DEST_COL_NO - .START_COL;
;  369          0441  4
;  370          0442  4              INCR CURR_LINE FROM .START_ROW      ! From 1st line of rect to
;  371          0443  4                             TO   .BOTTOM_LINE    ! last line
;  372          0444  4              DO
;  373          0445  5                  BEGIN   ! Incr loop
;  374          0446  5                  !+
;  375          0447  5                  ! Move text, attributes, and alternate char. set to dest.
;  376          0448  5                  ! Clear source area vacated.
;  377          0449  5                  !-
;  378          0450  5                  $SMG$SHUFFLE ( .COLS_TO_MOVE, .SOURCE, .DEST);
;  379          0451  5                  $SMG$BLANK_FILL_DCB ( .COLS_TO_CLEAR, .SOURCE);
;  380          0452  5                  SOURCE = .SOURCE + .ONE_LINE; ! 1 line's worth down
;  381          0453  5                  DEST   = .DEST   + .ONE_LINE; ! 1 line's worth down
;  382          0454  4                  END;    ! Incr loop
;  383          0455  3              END;        ! Dest. at least partially within rectangle
;  384          0456  2          END;                            ! end of right shuffle
```

```
;  386          0457  2
;  387          0458  2      [SMG$M_LEFT]:
;  388          0459  3          BEGIN
;  389          0460  3          LOCAL
;  390          0461  3              RIGHT_COL_OF_RECT,
;  391          0462  3              DEST_COL_NO;
;  392          0463  3
;  393          0464  3          DEST_COL_NO = .START_COL - .COUNT;               ! First col of dest.
;  394          0465  3          RIGHT_COL_OF_RECT = .START_COL + .LOCAL_WIDTH -1;  ! Last col of rect.
;  395          0466  3          IF .COUNT GTR .LOCAL_WIDTH
;  396          0467  3          THEN
;  397          0468  4              BEGIN       ! Off off left of rectangle
;  398          0469  4              !+
;  399          047C  4              ! Starting destination column maps outside of rectangle.  Just need
;  400          0471  4              ! to clear source from 1st column of rectangle to last
;  401          0472  4              ! column of rectangle.
;  402          0473  4              !-
;  403          0474  4
;  404          0475  4              SOURCE = $SMG$LINEAR ( .START_ROW,.START_COL);
;  405          0476  4
;  406          0477  4              INCR CURR_LINE FROM .START_ROW      ! From 1st line of rectangle to
;  407          0478  4                             TO   .BOTTOM_LINE    ! last line of rectangle
;  408          0479  4              DO
;  409          0480  5                  BEGIN   ! Incr loop
;  410          0481  5                  $SMG$BLANK_FILL_DCB ( .LOCAL_WIDTH, .SOURCE);
;  411          0482  5                  SOURCE = .SOURCE + .ONE_LINE;
;  412          0483  4                  END;    ! Incr loop
;  413          0484  4              END         ! Off of left of rectangle
;  414          0485  4
;  415          0486  3          ELSE
;  416          0487  3
;  417          0488  4              BEGIN       ! Dest. at least partially within rectangle
;  418          0489  4              !+
;  419          0490  4              ! Some movement of source text is needed.
;  420          0491  4              !-
;  421          0492  4              LOCAL
;  422          0493  4                  START_OF_MOVE,  ! 1st column to move
;  423          0494  4                  COLS_TO_CLEAR,  ! # bytes to clear after movement
;  424          0495  4                  START_OF_CLEAR, ! byte offset for start of clear operation
;  425          0496  4                  COLS_TO_MOVE;   ! # bytes to move
;  426          0497  4
;  427          0498  4              COLS_TO_MOVE = .LOCAL_WIDTH - .COUNT;
;  428          0499  4              START_OF_MOVE = .RIGHT_COL_OF_RECT - .COLS_TO_MOVE +1;
;  429          0500  4              SOURCE = $SMG$LINEAR ( .START_ROW, .START_OF_MOVE);
;  430          0501  4
;  431          0502  4              COLS_TO_CLEAR = .LOCAL_WIDTH - .COLS_TO_MOVE;
;  432        P 0503  4              START_OF_CLEAR = $SMG$LINEAR (.START_ROW,
;  433          0504  4                                            .START_COL + .COLS_TO_MOVE);
;  434          0505  4
;  435          0506  4              DEST   = $SMG$LINEAR ( .START_ROW, .START_COL);
;  436          0507  4
;  437          0508  4              INCR CURR_LINE FROM .START_ROW      ! From 1st line of rect to
;  438          0509  4                             TO   .BOTTOM_LINE    ! last line
;  439          0510  4              DO
;  440          0511  5                  BEGIN   ! Incr loop
;  441          0512  5                  !+
;  442          0513  5                  ! Move text, attributes, and alternate char. set to dest.
```

```
;  443          0514  5                  ! Clear source area vacated.
;  444          0515  5                  !-
;  445          0516  5                  $SMG$SHUFFLE ( .COLS_TO_MOVE, .SOURCE, .DEST);
;  446          0517  5                  $SMG$BLANK_FILL_DCB ( .COLS_TO_CLEAR, .START_OF_CLEAR);
;  447          0518  5                  START_OF_CLEAR = .START_OF_CLEAR + .ONE_LINE;
;  448          0519  5                  SOURCE = .SOURCE + .ONE_LINE; ! 1 line's worth down
;  449          0520  5                  DEST   = .DEST   + .ONE_LINE; ! 1 line's worth down
;  450          0521  4                  END;    ! Incr loop
;  451          0522  3              END;        ! Dest. at least partially within rectangle
;  452          0523  2          END;                            ! end of left shuffle
;  453          0524  2
;  454          0525  2
;  455          0526  2      [INRANGE, OUTRANGE]:
;  456          0527  2          RETURN SMG$_INVARG;             ! should never get here
;  457          0528  2
;  458          0529  2      TES;
;  459          0530  2
;  460          0531  2      RETURN (SS$_NORMAL);
;  461          0532  1      END;                        ! End of routine SMG$$SCROLL_AREA


                                                                .TITLE  SMG$$SCROLL_AREA SMG$$SCROLL_AREA - Virtual Dis
;                                                                       play -- Scroll re
                                                                .IDENT  \1-005\

                                                                .EXTRN  SMG$_INVARG

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

                                                    0FFC 00000          .ENTRY  SMG$$SCROLL_AREA, Save R2,R3,R4,R5,R6,R7,-  ; 0176
                                                                                R8,R9,R10,R11
                                                5E          30  C2 00002        SUBL2   #48, SP
                                        50      04  AC          06  C1 00005    ADDL3   #6, DCB, R0                         ; 0263
                                                1C  AE          60  3C 0000A    MOVZWL  (R0), 28(SP)
                                                59  1C  AE      D0  0000E        MOVL    28(SP), ONE_LINE
                                                50  10  AC      D0  00012        MOVL    HEIGHT, LOCAL_HEIGHT                ; 0273
                                                57  14  AC      D0  00016        MOVL    WIDTH, LOCAL_WIDTH                  ; 0274
                                        5B      08  AC  10  AC  C1  0001A        ADDL3   HEIGHT, START_ROW, R11              ; 0276
                                                                5B  D7  00020    DECL    R11
                                        51      04  AC          02  C1  00022    ADDL3   #2, DCB, R1
                                5B      61          10          00  ED  00027    CMPZV   #0, #16, (R1), R11
                                                                10  18  0002C    BGEQ    1$
                                        52      04  AC          02  C1  0002E    ADDL3   #2, DCB, R2                        ; 0278
                                                51              62  3C  00033    MOVZWL  (R2), R1
                                                51  08  AC      C2  00036        SUBL2   START_ROW, R1
                                                50  01  A1      9E  0003A        MOVAB   1(R1), LOCAL_HEIGHT
                                        51      0C  AC  14  AC  C1  0003E 1$:    ADDL3   WIDTH, START_COL, R1                ; 0280
                                                                51  D7  00044    DECL    R1
                                                59              51  D1  00046    CMPL    R1, ONE_LINE
                                                                09  15  00049    BLEQ    2$
                                        51          59  0C  AC  C3  0004B        SUBL3   START_COL, ONE_LINE, R1              ; 0282
                                                57  01  A1      9E  00050        MOVAB   1(R1), LOCAL_WIDTH
                                                51  08  AC      D0  00054 2$:    MOVL    START_ROW, R1                       ; 0284
                                                5A  FF  A041    9E  00058        MOVAB   -1(LOCAL_HEIGHT)[R1], BOTTOM_LINE
                                        50      04  AC          10  C1  0005D    ADDL3   #16, DCB, R0                        ; 0290
                                                28  AE          60  D0  00062    MOVL    (R0), 40(SP)
                                        50      04  AC          14  C1  00066    ADDL3   #20, DCB, R0                        ; 0291
```

```
                                24   AE              60   D0 0006B          MOVL    (R0), 36(SP)                                    ;
                                0C   AE        24    AE   7D 0006F          MOVQ    36(SP), ATTR_BUF                                ;
                          50    04   AC              18   C1 00074          ADDL3   #24, DCB, R0                                    ; 0292
                                20   AE              60   D0 00079          MOVL    (R0), 32(SP)                                    ;
                                08   AE        20    AE   D0 0007D          MOVL    32(SP), CHAR_BUF                                ;
                          50    04   AC 0000004C    8F   C1 00082          ADDL3   #76, DCB, R0                                    ; 0293
                                18   AE              60   D0 0008B          MOVL    (R0), LCV                                       ;
                          07              01        18   AC CF 0008F          CASEL   DIRECTION, #1, #7                               ; 0302
                01F0            0010          00FF          0018      00094 3$:     .WORD   5$-3$,-                                 ;
                0302            0010          0010          0010      0009C         14$-3$,-                                        ;
                                                                                    4$-3$,-                                         ;
                                                                                    23$-3$,-                                        ;
                                                                                    4$-3$,-                                         ;
                                                                                    4$-3$,-                                         ;
                                                                                    4$-3$,-                                         ;
                                                                                    33$-3$                                          ;
                                50 00000000G    8F   D0 000A4 4$:     MOVL    #SMG$_INVARG, R0                                ; 0527
                                                     04 000AB         RET                                                     ;
                          58    08   AC        1C   AC   C3 000AC 5$:     SUBL3   COUNT, START_ROW, DEST_LINE_NO                  ; 0309
                                50   FF   A8        9E 000B2         MOVAB   -1(R8), R0                                      ; 0310
                                50   1C   AE        C4 000B6         MULL2   28(SP), R0                                      ;
                          51    0C   AC              01   C3 000BA          SUBL3   #1, START_COL, R1                               ;
                          56    50                    51   C1 000BF          ADDL3   R1, R0, DEST                                    ;
                          5B    08   AC              01   C3 000C3          SUBL3   #1, START_ROW, R11                              ; 0311
                                5B   1C   AE        C4 000C8         MULL2   28(SP), R11                                     ;
                          50    0C   AC              01   C3 000CC          SUBL3   #1, START_COL, R0                               ;
                    14    AE          5B              50   C1 000D1          ADDL3   R0, R11, SOURCE                                 ;
                          5B    08   AC              01   C3 000D6          SUBL3   #1, START_ROW, CURR_LINE                        ; 0313
                                                     4B   11 000DB          BRB     9$                                              ;
                                08   AC              58   D1 000DD 6$:     CMPL    DEST_LINE_NO, START_ROW                         ; 0317
                                                     3C   19 000E1          BLSS    8$                                              ;
                                               10 BE46    9F 000E3          PUSHAB  @TEXT_BUF[R6]                                   ; 0323
                          7E    18   AE        14    AE   C1 000E7          ADDL3   TEXT_BUF, SOURCE, -(SP)                         ;
                          9E               9E             57   28 000ED          MOVC3   LOCAL_WIDTH, @(SP)+, @(SP)+             ;
                                               0C BE46    9F 000F1          PUSHAB  @ATTR_BUF[R6]                                   ;
                          7E    18   AE        10    AE   C1 000F5          ADDL3   ATTR_BUF, SOURCE, -(SP)                         ;
                          9E               9E             57   28 000FB          MOVC3   LOCAL_WIDTH, @(SP)+, @(SP)+             ;
                                               08    AE   D5 000FF          TSTL    CHAR_BUF                                        ;
                                                     0E   13 00102          BEQL    7$                                              ;
                                               08 BE46    9F 00104          PUSHAB  @CHAR_BUF[R6]                                   ;
                          7E    18   AE        0C    AE   C1 00108          ADDL3   CHAR_BUF, SOURCE, -(SP)                         ;
                          9E               9E             57   28 0010E          MOVC3   LOCAL_WIDTH, @(SP)+, @(SP)+             ;
                                50             18    AE   D0 00112 7$:     MOVL    LCV, R0                                         ; 0324
                                51             18    AE   D0 00116          MOVL    LCV, R1                                         ;
                                     6840                6B41   90 0011A          MOVB    (CURR_LINE)[R1], (DEST_LINE_NO)[R0]     ;
                                                          58   D6 0011F 8$:     INCL    DEST_LINE_NO                                    ; 0327
                                56                        59   C0 00121          ADDL2   ONE_LINE, DEST                          ; 0328
                                14   AE                   59   C0 00124          ADDL2   ONE_LINE, SOURCE                        ; 0329
                          B1                              5A   F3 00128 9$:     AOBLEQ  BOTTOM_LINE, CURR_LINE, 6$              ; 0313
                                5B             FF    AA   9E 0012C          MOVAB   -1(R10), R11                            ; 0336
                                5B             1C    AE   C4 00130          MULL2   28(SP), R11                             ;
                          50    0C   AC                   01   C3 00134          SUBL3   #1, START_COL, R0                       ;
                    14    AE          5B                   50   C1 00139          ADDL3   R0, R11, SOURCE                         ;
                                                     2C    AE   D4 0013E          CLRL    COUNTER                                 ; 0338
                                                           47   11 00141          BRB     13$                                     ;
                                08   AC                   5A   D1 00143 10$:     CMPL    BOTTOM_LINE, START_ROW                  ; 0341
                                                           3B   19 00147          BLSS    12$                                     ;
```

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                                                50        28    AE  D0 00149          MOVL    40(SP), TEXT_BUF                                ; 0344
                                                58        24    AE  D0 0014D          MOVL    36(SP), ATTR_BUF                                ;
                                                5B        20    AE  D0 00151          MOVL    32(SP), CHAR_BUF                                ;
                57              20                        6E        00  2C 00155      MOVC5   #0, (SP), #32, LOCAL_WIDTH, @SOURCE-            ;
                                                                 14 BE40    0015A              [TEXT_BUF]                                      ;
                        1C      AE      04      AC                2E  C1 0015D      ADDL3   #46, DCB, 28(SP)                                ;
                57      1C      BE              6E                00  2C 00163      MOVC5   #0, (SP), @28(SP), LOCAL_WIDTH, @SOURCE-        ;
                                                                 14 BE48    00169              [ATTR_BUF]                                      ;
                                                                    5B  D5 0016C      TSTL    CHAR_BUF                                        ;
                                                                    0D  13 0016E      BEQL    11$                                             ;
                                20      04      AC                30  C1 00170      ADDL3   #48, DCB, R8                                    ;
                57              68              6E                00  2C 00175      MOVC5   #0, (SP), (R8), LOCAL_WIDTH, @SOURCE-           ;
                                                                 14 BE4B    0017A              [CHAR_BUF]                                      ;
                                                50        18    AE  D0 0017D 11$:     MOVL    LCV, R0                                         ; 0345
                                                              6A40  94 00181          CLRB    (BOTTOM_LINE)[R0]                               ;
                                        14      AE                59  C2 00184 12$:     SUBL2   ONE_LINE, SOURCE                        ; 0348
                                                                  5A  D7 00188          DECL    BOTTOM_LINE                             ; 0349
                                B3      2C      AE        1C      AC  F3 0018A 13$:     AOBLEQ  COUNT, COUNTER, 10$                     ; 0338
                                                              0329  31 00190          BRW     43$                                             ; 0302
                                58              5A        1C      AC  C1 00193 14$:     ADDL3   COUNT, BOTTOM_LINE, DEST_LINE_NO        ; 0359
                                                50        FF      A8  9E 00198          MOVAB   -1(R8), R0                              ; 0360
                                                50        1C      AE  C4 0019C          MULL2   28(SP), R0                              ;
                                51      0C      AC                01  C3 001A0      SUBL3   #1, START_COL, R1                               ;
                                56              50                51  C1 001A5      ADDL3   R1, R0, DEST                                    ;
                                                5B        FF      AA  9E 001A9          MOVAB   -1(R10), R11                            ; 0361
                                                5B        1C      AE  C4 001AD          MULL2   28(SP), R11                             ;
                                50      0C      AC                01  C3 001B1      SUBL3   #1, START_COL, R0                               ;
                        14      AE              5B                50  C1 001B6      ADDL3   R0, R11, SOURCE                                 ;
                                                5B                5A  D0 001BB      MOVL    BOTTOM_LINE, CURR_LINE                  ; 0363
                                                                  4C  11 001BE      BRB     18$                                             ;
                                                5A                58  D1 001C0 15$:     CMPL    DEST_LINE_NO, BOTTOM_LINE               ; 0367
                                                                  3C  14 001C3          BGTR    17$                                             ;
                                                             10 BE46  9F 001C5          PUSHAB  @TEXT_BUF[R6]                           ; 0373
                        7E      18      AE              14    AE  C1 001C9      ADDL3   TEXT_BUF, SOURCE, -(SP)                         ;
                        9E              9E                    57  28 001CF      MOVC3   LOCAL_WIDTH, @(SP)+, @(SP)+                     ;
                                                             0C BE46  9F 001D3          PUSHAB  @ATTR_BUF[R6]                           ;
                        7E      18      AE              10    AE  C1 001D7      ADDL3   ATTR_BUF, SOURCE, -(SP)                         ;
                        9E              9E                    57  28 001DD      MOVC3   LOCAL_WIDTH, @(SP)+, @(SP)+                     ;
                                                             08    AE  D5 001E1      TSTL    CHAR_BUF                                        ;
                                                                   0E  13 001E4      BEQL    16$                                             ;
                                                             08 BE46  9F 001E6          PUSHAB  @CHAR_BUF[R6]                           ;
                        7E      18      AE              0C    AE  C1 001EA      ADDL3   CHAR_BUF, SOURCE, -(SP)                         ;
                        9E              9E                    57  28 001F0      MOVC3   LOCAL_WIDTH, @(SP)+, @(SP)+                     ;
                                                50        18    AE  D0 001F4 16$:     MOVL    LCV, R0                                 ; 0374
                                                51        18    AE  D0 001F8          MOVL    LCV, R1                                 ;
                                              6840                6B41  90 001FC      MOVB    (CURR_LINE)[R1], (DEST_LINE_NO)[R0]             ;
                                                                    58  D7 00201 17$:     DECL    DEST_LINE_NO                            ; 0377
                                                56                  59  C2 00203          SUBL2   ONE_LINE, DEST                          ; 0378
                                        14      AE                  59  C2 00206          SUBL2   ONE_LINE, SOURCE                        ; 0379
                                                                    5B  D7 0020A          DECL    CURR_LINE                               ; 0363
                                        08      AC                  5B  D1 0020C 18$:     CMPL    CURR_LINE, START_ROW                    ;
                                                                    AE  18 00210          BGEQ    15$                                             ;
                        5B              08      AC                  01  C3 00212      SUBL3   #1, START_ROW, R11                              ; 0386
                                                5B        1C        AE  C4 00217          MULL2   28(SP), R11                             ;
                        50              0C      AC                  01  C3 0021B      SUBL3   #1, START_COL, R0                               ;
                14      AE              5B                          50  C1 00220      ADDL3   R0, R11, SOURCE                                 ;
                                                58        08        AC  D0 00225          MOVL    START_ROW, DEST_LINE_NO                 ; 0387
```

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                                                2C    AE  D4 00229          CLRL    COUNTER                                          ; 0388
                                                  4E  11 0022C           BRB     22$
                                        5A          58  D1 0022E 19$:      CMPL    DEST_LINE_NO, BOTTOM_LINE                        ; 0391
                                                    43  14 00231           BGTR    21$
                                        50      28  AE  D0 00233           MOVL    40(SP), TEXT_BUF                                 ; 0394
                                        5B      24  AE  D0 00237           MOVL    36(SP), ATTR_BUF
                                    1C      AE  20  AE  D0 0023B           MOVL    32(SP), CHAR_BUF
                57          20          6E      00  2C 00240           MOVC5   #0, (SP), #32, LOCAL_WIDTH, @SOURCE-
                                                14 BE40    00245                   [TEXT_BUF]
                        04  AE      04  AC          2E  C1 00248           ADDL3   #46, DCB, 4(SP)
                57      04  BE          6E      00  2C 0024E           MOVC5   #0, (SP), @4(SP), LOCAL_WIDTH, @SOURCE-
                                                14 BE4B    00254                   [ATTR_BUF]
                                                1C  AE  D5 00257           TSTL    CHAR_BUF
                                                  13  13 0025A           BEQL    20$
                                        5B      1C  AE  D0 0025C           MOVL    CHAR_BUF, R11
                        04  AE      04  AC          30  C1 00260           ADDL3   #48, DCB, 4(SP)
                57      04  BE          6E      00  2C 00266           MOVC5   #0, (SP), @4(SP), LOCAL_WIDTH, @SOURCE[R11]
                                                14 BE4B    0026C
                                        50      18  AE  D0 0026F 20$:      MOVL    LCV, R0                                          ; 0395
                                              6840  94 00273           CLRB    (DEST_LINE_NO)[R0]
                                    14  AE          59  C0 00276 21$:      ADDL2   ONE_LINE, SOURCE                                 ; 0398
                                                  58  D6 0027A           INCL    DEST_LINE_NO                                     ; 0399
                        AC      2C  AE      1C  AC  F3 0027C 22$:      AOBLEQ  COUNT, COUNTER, 19$                              ; 0388
                                                  78  11 00282           BRB     27$                                              ; 0302
                                        50      0C  AC  D0 00284 23$:      MOVL    START_COL, R0                                    ; 0409
                                        58      FF A740  9E 00288          MOVAB   -1(LOCAL_WIDTH)[R0], RIGHT_COL_OF_RECT
                        51      0C  AC      1C  AC  C1 0028D           ADDL3   COUNT, START_COL, DEST_COL_NO                    ; 0410
                        5B      08  AC          01  C3 00293           SUBL3   #1, START_ROW, R11                               ; 0411
                                        5B      1C  AE  C4 00298           MULL2   28(SP), R11
                        50      0C  AC          01  C3 0029C           SUBL3   #1, START_COL, R0
                    14  AE          5B          50  C1 002A1           ADDL3   R0, R11, SOURCE
                                        56      FF A14B  9E 002A6          MOVAB   -1(DEST_COL_NO)[R11], DEST                       ; 0412
                                        57      1C  AC  D1 002AB           CMPL    COUNT, LOCAL_WIDTH                               ; 0413
                                                  4E  15 002AF           BLEQ    28$
                            5B      08  AC          01  C3 002B1           SUBL3   #1, START_ROW, CURR_LINE                         ; 0420
                                                  40  11 002B6           BRB     26$
                                        50      28  AE  D0 002B8 24$:      MOVL    40(SP), TEXT_BUF                                 ; 0424
                                        58      24  AE  D0 002BC           MOVL    36(SP), ATTR_BUF
                                    2C      AE  20  AE  D0 002C0           MOVL    32(SP), CHAR_BUF
                57          20          6E      00  2C 002C5           MOVC5   #0, (SP), #32, LOCAL_WIDTH, @SOURCE-
                                                14 BE40    002CA                   [TEXT_BUF]
                        18  AE      04  AC          2E  C1 002CD           ADDL3   #46, DCB, 24(SP)
                57      18  BE          6E      00  2C 002D3           MOVC5   #0, (SP), @24(SP), LOCAL_WIDTH, @SOURCE-
                                                14 BE48    002D9                   [ATTR_BUF]
                                                2C  AE  D5 002DC           TSTL    CHAR_BUF
                                                  13  13 002DF           BEQL    25$
                                        58      2C  AE  D0 002E1           MOVL    CHAR_BUF, R8
                        18  AE      04  AC          30  C1 002E5           ADDL3   #48, DCB, 24(SP)
                57      18  BE          6E      00  2C 002EB           MOVC5   #0, (SP), @24(SP), LOCAL_WIDTH, @SOURCE[R8]
                                                14 BE48    002F1
                                    14  AE          59  C0 002F4 25$:      ADDL2   ONE_LINE, SOURCE                                 ; 0425
                            BC          5B          5A  F3 002F8 26$:      AOBLEQ  BOTTOM_LINE, CURR_LINE, 24$                      ; 0420
                                              01BD  31 002FC 27$:      BRW     43$                                              ; 0413
                                        58          51  C2 002FF 28$:      SUBL2   DEST_COL_NO, R8                                  ; 0439
                                                    58  D6 00302           INCL    COLS_TO_MOVE
                        2C  AE          51      0C  AC  C3 00304           SUBL3   START_COL, DEST_COL_NO, COLS_TO_CLEAR            ; 0440
                            5B      08  AC          01  C3 0030A           SUBL3   #1, START_ROW, CURR_LINE                         ; 0451
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                                                    7D  11 0030F             BRB     32$                                                     ;
                                                10 BE46  9F 00311 29$:      PUSHAB  @TEXT_BUF[R6]                                           ; 0450
                    7E      18  AE                14  AE  C1 00315         ADDL3   TEXT_BUF, SOURCE, -(SP)                                 ;
                    9E          9E                    58  28 0031B         MOVC3   COLS_TO_MOVE, @(SP)+, @(SP)+                            ;
                                                0C BE46  9F 0031F         PUSHAB  @ATTR_BUF[R6]                                           ;
                    7E      18  AE                10  AE  C1 00323         ADDL3   ATTR_BUF, SOURCE, -(SP)                                 ;
                    9E          9E                    58  28 00329         MOVC3   COLS_TO_MOVE, @(SP)+, @(SP)+                            ;
                                                    08  AE  D5 0032D         TSTL    CHAR_BUF                                                ;
                                                    0E  13 00330             BEQL    30$                                                     ;
                                                08 BE46  9F 00332         PUSHAB  @CHAR_BUF[R6]                                           ;
                    7E      18  AE                0C  AE  C1 00336         ADDL3   CHAR_BUF, SOURCE, -(SP)                                 ;
                    9E          9E                    58  28 0033C         MOVC3   COLS_TO_MOVE, @(SP)+, @(SP)+                            ;
                                50                  28  AE  D0 00340 30$:    MOVL    40(SP), TEXT_BUF                                        ; 0451
                            18  AE                  24  AE  D0 00344         MOVL    36(SP), ATTR_BUF                                        ;
                            1C  AE                  20  AE  D0 00349         MOVL    32(SP), CHAR_BUF                                        ;
    2C  AE              20          6E                    00  2C 0034E         MOVC5   #0, (SP), #32, COLS_TO_CLEAR, @SOURCE-                  |
                                                14 BE40      00354                     [TEXT_BUF]                                            |
                04  AE      14  AE                  18  AE  C1 00357         ADDL3   ATTR_BUF, SOURCE, 4(SP)                                 |
                    6E      04  AC                      2E  C1 0035E         ADDL3   #46, DCB, (SP)                                          |
    2C  AE      00  BE          6E                    00  2C 00363         MOVC5   #0, (SP), @0(SP), COLS_TO_CLEAR, @4(SP)                 |
                                                    04  BE      0036A                                                                       |
                                                    1C  AE  D5 0036C         TSTL    CHAR_BUF                                                |
                                                    16  13 0036F             BEQL    31$                                                     |
                18  AE      14  AE                  1C  AE  C1 00371         ADDL3   CHAR_BUF, SOURCE, 24(SP)                                |
                    04  AE      04  AC                  30  C1 00378         ADDL3   #48, DCB, 4(SP)                                         |
    2C  AE      04  BE          6E                    00  2C 0037E         MOVC5   #0, (SP), @4(SP), COLS_TO_CLEAR, @24(SP)                |
                                                    18  BE      00385                                                                       |
                            14  AE                      59  C0 00387 31$:    ADDL2   ONE_LINE, SOURCE                                        ; 0452
                                56                      59  C0 0038B         ADDL2   ONE_LINE, DEST                                          ; 0453
    FF7D                5B          01                  5A  F1 0038E 32$:    ACBL    BOTTOM_LINE, #1, CURR_LINE, 29$                         ; 0442
                                                        74  11 00394         BRB     37$                                                     ; 0302
                    50      0C  AC                1C  AC  C3 00396 33$:    SUBL3   COUNT, START_COL, DEST_COL_NO                           ; 0464
                                51                  0C  AC  D0 0039C         MOVL    START_COL, R1                                           ; 0465
                                50                  FF A741  9E 003A0         MOVAB   -1(LOCAL_WIDTH)[R1], RIGHT_COL_OF_RECT                  ;
                    51      08  AC                      01  C3 003A5         SUBL3   #1, START_ROW, R1                                       ; 0475
                                57                  1C  AC  D1 003AA         CMPL    COUNT, LOCAL_WIDTH                                      ; 0466
                                                        5D  15 003AE         BLEQ    38$                                                     ;
                    5B              51              1C  AE  C5 003B0         MULL3   28(SP), R1, R11                                         ; 0475
                    52      0C  AC                      01  C3 003B5         SUBL3   #1, START_COL, R2                                       ;
                14  AE              5B                  52  C1 003BA         ADDL3   R2, R11, SOURCE                                         ;
                    5B      08  AC                      01  C3 003BF         SUBL3   #1, START_ROW, CURR_LINE                                ; 0477
                                                        40  11 003C4         BRB     36$                                                     ;
                                50                  28  AE  D0 003C6 34$:    MOVL    40(SP), TEXT_BUF                                        ; 0481
                                58                  24  AE  D0 003CA         MOVL    36(SP), ATTR_BUF                                        ;
                            2C  AE                  20  AE  D0 003CE         MOVL    32(SP), CHAR_BUF                                        ;
    57                  20          6E                    00  2C 003D3         MOVC5   #0, (SP), #32, LOCAL_WIDTH, @SOURCE-                    ;
                                                14 BE40      003D8                     [TEXT_BUF]                                            ;
                18  AE      04  AC                      2E  C1 003DB         ADDL3   #46, DCB, 24(SP)                                        ;
    57          18  BE          6E                    00  2C 003E1         MOVC5   #0, (SP), @24(SP), LOCAL_WIDTH, @SOURCE-                ;
                                                14 BE48      003E7                     [ATTR_BUF]                                            ;
                                                    2C  AE  D5 003EA         TSTL    CHAR_BUF                                                ;
                                                    13  13 003ED             BEQL    35$                                                     ;
                                58                  2C  AE  D0 003EF         MOVL    CHAR_BUF, R8                                            ;
                18  AE      04  AC                      30  C1 003F3         ADDL3   #48, DCB, 24(SP)                                        ;
    57          18  BE          6E                    00  2C 003F9         MOVC5   #0, (SP), @24(SP), LOCAL_WIDTH, @SOURCE[R8]             ;
                                                14 BE48      003FF                                                                           ;
                            14  AE                      59  C0 00402 35$:    ADDL2   ONE_LINE, SOURCE                                        ; 0482
```

```
                        BC              5B              5A  F3 00406 36$:    AOBLEQ  BOTTOM_LINE, CURR_LINE, 34$                  ; 0477
                                                    00AF  31 00409 37$:    BRW     43$                                            ; 0466
                    18  AE              57          1C  AC  C3 00410 38$:    SUBL3   COUNT, LOCAL_WIDTH, COLS_TO_MOVE               ; 0498
                                        50          18  AE  C2 00413         SUBL2   COLS_TO_MOVE, R0                               ; 0499
                        5B              51          1C  AE  C5 00417         MULL3   28(SP), R1, R11                                ; 0500
                                    14  AE              804B  9E 0041C         MOVAB   (START_OF_MOVE)+[R11], SOURCE
                    2C  AE              57          18  AE  C3 00421         SUBL3   COLS_TO_MOVE, LOCAL_WIDTH, COLS_TO_CLEAR       ; 0502
                        50              5B          0C  AC  C1 00427         ADDL3   START_COL, R11, R0                             ; 0504
                        51          18  AE              01  C3 0042C         SUBL3   #1, COLS_TO_MOVE, R1
                    1C  AE              50              51  C1 00431         ADDL3   R1, R0, START_OF_CLEAR
                                        56          FF  A0  9E 00436         MOVAB   -1(R0), DEST                                   ; 0506
                        5B          08  AC              01  C3 0043A         SUBL3   #1, START_ROW, CURR_LINE                       ; 0517
                                                        77  11 0043F         BRB     42$                                            ; 0516
                                        57          10  AE  D0 00441 39$:    MOVL    TEXT_BUF, R7                                   ; 0516
                                        58          10  AE  D0 00445         MOVL    TEXT_BUF, R8
                        6647        14  BE48        18  AE  28 00449         MOVC3   COLS_TO_MOVE, @SOURCE[R8], (DEST)[R7]
                                        57          0C  AE  D0 00451         MOVL    ATTR_BUF, R7
                                        58          0C  AE  D0 00455         MOVL    ATTR_BUF, R8
                        6647        14  BE48        18  AE  28 00459         MOVC3   COLS_TO_MOVE, @SOURCE[R8], (DEST)[R7]
                                                    08  AE  D5 00461         TSTL    CHAR_BUF
                                                        10  13 00464         BEQL    40$
                                        57          08  AE  D0 00466         MOVL    CHAR_BUF, R7
                                        58          08  AE  D0 0046A         MOVL    CHAR_BUF, R8
                        6647        14  BE48        18  AE  28 0046E         MOVC3   COLS_TO_MOVE, @SOURCE[R8], (DEST)[R7]
                                        50          28  AE  D0 00476 40$:    MOVL    40(SP), TEXT_BUF                               ; 0517
                                        57          24  AE  D0 0047A         MOVL    36(SP), ATTR_BUF
                                        58          20  AE  D0 0047E         MOVL    32(SP), CHAR_BUF
            2C  AE          20              6E              00  2C 00482         MOVC5   #0, (SP), #32, COLS_TO_CLEAR, -
                                                    1C  BE40    00488                 @START_OF_CLEAR[TEXT_BUF]
                    04  AE          04  AC              2E  C1 0048B         ADDL3   #46, DCB, 4(SP)
            2C  AE      04  BE              6E              00  2C 00491         MOVC5   #0, (SP), @4(SP), COLS_TO_CLEAR, -
                                                    1C  BE47    00498                 @START_OF_CLEAR[ATTR_BUF]
                                                    58  D5 0049B         TSTL    CHAR_BUF
                                                    0E  13 0049D         BEQL    41$
                        57          04  AC              30  C1 0049F         ADDL3   #48, DCB, R7
            2C  AE          67              6E              00  2C 004A4         MOVC5   #0, (SP), (R7), COLS_TO_CLEAR, -
                                                    1C  BE48    004AA                 @START_OF_CLEAR[CHAR_BUF]
                                    1C  AE              59  C0 004AD 41$:    ADDL2   ONE_LINE, START_OF_CLEAR                       ; 0518
                                    14  AE              59  C0 004B1         ADDL2   ONE_LINE, SOURCE                               ; 0519
                                        56              59  C0 004B5         ADDL2   ONE_LINE, DEST                                 ; 0520
                        85              5B              5A  F3 004B8 42$:    AOBLEQ  BOTTOM_LINE, CURR_LINE, 39$                    ; 0508
                                        50              01  D0 004BC 43$:    MOVL    #1, R0                                         ; 0531
                                                                04  004BF    RET                                                    ; 0532

; Routine Size:  1216 bytes,    Routine Base:  _SMG$CODE + 0000

;  462          0533  1 !<BLF/PAGE>
```

```
;  464          0534  1 END                       ! End of module SMG$$SCROLL_AREA
;  465          0535  1
;  466          0536  0 ELUDOM



;                                  PSECT SUMMARY
;
;       Name                      Bytes                         Attributes
;
;  _SMG$CODE                        1216  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(2)



;                               Library Statistics
;
;                                          -------- Symbols --------      Pages       Processing
;       File                               Total    Loaded   Percent      Mapped      Time
;
;  _$255$DUA28:[SYSLIB]STARLET.L32;1         9776         7         0         581       00:01.0
;  _$255$DUA28:[SMGRTL.OBJ]RTLLIB.L32;1        36         0         0           8       00:00.1
;  _$255$DUA28:[SMGRTL.OBJ]SMGLIB.L32;1       469        11         2          38       00:00.5



;                                     COMMAND QUALIFIERS

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

; Size:          1216 code + 0 data bytes
; Run Time:         00:23.8
; Elapsed Time:     01:06.0
; Lines/CPU Min:     1348
; Lexemes/CPU-Min: 14768
; Memory Used:  348 pages
; Compilation Complete
```

SMGNUMTAB
LIS

SMGMSGPTR
LIS

SMGSCROLL
LIS

SMGMISC
LIS

SMGMSGTXT
LIS

SMGPUTENC
LIS

SMGPUTTEX
LIS

SMGSIMTRM
LIS

SMGNUMPAR
LIS

SMGPRVINP
LIS