

```
SSSSSSSSSSSSS  MMM      MMM      GGGGGGGGGGGG  RRRRRRRRRRRR  TTTTTTTTTTTTTT  LLL
SSSSSSSSSSSSS  MMM      MMM      GGGGGGGGGGGG  RRRRRRRRRRRR  TTTTTTTTTTTTTT  LLL
SSSSSSSSSSSSS  MMM      MMM      GGGGGGGGGGGG  RRRRRRRRRRRR  TTTTTTTTTTTTTT  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      GGG            RRR      RRR      TTT      LLL
SSS            MMM      MMM      GGG            RRR      RRR      TTT      LLL
SSS            MMM      MMM      GGG            RRR      RRR      TTT      LLL
SSS            MMM      MMM      GGG            RRR      RRR      TTT      LLL
SSSSSSSSSSS    MMM      MMM      GGG            RRRRRRRRRRRR  TTT      LLL
SSSSSSSSSSS    MMM      MMM      GGG            RRRRRRRRRRRR  TTT      LLL
SSSSSSSSSSS    MMM      MMM      GGG            RRRRRRRRRRRR  TTT      LLL
SSS            SSS      MMM      GGG      GGGGGGGGGG  RRR      RRR      TTT      LLL
SSS            SSS      MMM      GGG      GGGGGGGGGG  RRR      RRR      TTT      LLL
SSS            SSS      MMM      GGG      GGGGGGGGGG  RRR      RRR      TTT      LLL
SSS            SSS      MMM      GGG      GGG      GGG  RRR      RRR      TTT      LLL
SSS            SSS      MMM      GGG      GGG      GGG  RRR      RRR      TTT      LLL
SSS            SSS      MMM      GGG      GGG      GGG  RRR      RRR      TTT      LLL
SSS            SSS      MMM      GGG      GGG      GGG  RRR      RRR      TTT      LLL
SSSSSSSSSSSSS  MMM      MMM      GGGGGGGGGG  RRR      RRR      TTT      LLLLLLLLLLLLLLLL
SSSSSSSSSSSSS  MMM      MMM      GGGGGGGGGG  RRR      RRR      TTT      LLLLLLLLLLLLLLLL
SSSSSSSSSSSSS  MMM      MMM      GGGGGGGGGG  RRR      RRR      TTT      LLLLLLLLLLLLLLLL
```

[illegible]



```

0001 0 %TITLE 'SMG$$$SCROLL_AREA - Virtual Display -- Scroll rectangular area'
0002 0 MODULE SMG$$$SCROLL_AREA (
0003 0 IDENT = '1-005' ! File: SMGSCROLL.B32 Edit: RKR1005
0004 0 ) =
0005 1 BEGIN
0006 1
0007 1 *****
0008 1 *
0009 1 * COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0026 1 *
0027 1 *
0028 1 *****
0029 1
0030 1
0031 1 ++
0032 1 FACILITY:      Screen Management
0033 1
0034 1 ABSTRACT:
0035 1 The procedures in this module update and maintain the contents
0036 1 of the in-memory representations of the virtual displays. The data
0037 1 areas themselves are allocated/deallocated, pasted/upasted, etc.
0038 1 by the procedures in module SMG$DISPLAY_LINKS. Output from these
0039 1 virtual displays is handled by procedures in SMG$DISPLAY_OUTPUT.
0040 1 The module SMG$DISPLAY_INPUT contains the routines that support
0041 1 input operations on displays.
0042 1
0043 1
0044 1
0045 1 ENVIRONMENT: User mode, Shared library routines.
0046 1
0047 1 AUTHOR: P. Levesque, CREATION DATE: 14-Apr-1983
0048 1
0049 1 MODIFIED BY:
0050 1
0051 1 1-001 - Original. PLL 14-Apr-1983
0052 1 1-002 - Fix to right scroll. Changed a GEQ to GTR to allow scroll
0053 1 from next to last column. PLL 27-Jul-1983
0054 1 1-003 - STAN 31-Aug-1983, scroll line characteristics vector.
0055 1 1-004 - A number of changes to fix bugs and improve performance.
0056 1 Move $SMG$LINEAR computations outside of loop and accomplish
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 rectangle within the confines of the scrolling rectangle,  
: 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 SMGS_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 |      SSS_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 |  -

```

SMG\$\$\$SCROLL\_AREA SMG\$\$\$SCROLL\_AREA - Virtual Display -- Scroll re M 15  
1-005 SMG\$\$\$SCROLL\_AREA - Scroll rectangular area 16-Sep-1984 01:14:29  
14-Sep-1984 13:10:02

VAX-11 Bliss-32 V4.0-742  
[SMGRTL.SRC]SMGSCROLL.B32;1

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```

: 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      !+
: 222      0297  2      In case WIDTH is less than the entire line, the move is performed
: 223      0298  2      line by line. For upward moves, the low numbered lines are moved
: 224      0299  2      first. For downward moves, high numbered lines are moved 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 BEGIN
232 0306 LOCAL
233 0307 DEST_LINE_NO;
234 0308
235 0309 DEST_LINE_NO = .START_ROW - .COUNT; ! Dest. row number
236 0310 DEST = $SMG$LINEAR (.DEST_LINE_NO, .START_COL); ! Dest. byte offset
237 0311 SOURCE = $SMG$LINEAR (.START_ROW, .START_COL); ! Source byte offset
238 0312
239 0313 INCR CURR_LINE FROM .START_ROW ! From 1st line of scroll rectangle to
240 0314 TO .BOTTOM_LINE ! last line of scroll rectangle
241 0315 DO
242 0316 BEGIN ! incr loop
243 0317 IF .DEST_LINE_NO GEQ .START_ROW ! If within scrolling
244 0318 THEN ! rectangle
245 0319 BEGIN ! perform moves
246 0320 +
247 0321 ! Move text, attributes, alt. char set and line characteristics
248 0322 -
249 0323 $SMG$SHUFFLE (.LOCAL_WIDTH, .SOURCE, .DEST);
250 0324 LCV [.DEST_LINE_NO] = .LCV [.CURR_LINE];
251 0325 END; ! perform moves
252 0326
253 0327 DEST_LINE_NO = .DEST_LINE_NO + 1; ! 1 line downward
254 0328 DEST = .DEST + .ONE_LINE; ! Offset 1 line downward
255 0329 SOURCE = .SOURCE + .ONE_LINE; ! Offset 1 line downward
256 0330 END; ! incr loop
257 0331
258 0332 !+
259 0333 ! Up to COUNT number of lines may have been opened up. Blank fill them.
260 0334 !-
261 0335
262 0336 SOURCE = $SMG$LINEAR (.BOTTOM_LINE, .START_COL); ! Byte offset
263 0337
264 0338 INCR COUNTER FROM 1 TO .COUNT
265 0339 DO
266 0340 BEGIN ! check for clearing needed
267 0341 IF .BOTTOM_LINE GEQ .START_ROW ! If still within
268 0342 THEN ! rectangle
269 0343 BEGIN ! clear
270 0344 $SMG$BLANK_FILL DCB (.LOCAL_WIDTH, .SOURCE);
271 0345 LCV [.BOTTOM_LINE] = 0;
272 0346 END; ! clear
273 0347
274 0348 SOURCE = .SOURCE - .ONE_LINE; ! Up 1 line's worth
275 0349 BOTTOM_LINE = .BOTTOM_LINE - 1; ! Up 1 line
276 0350 END; ! check for clearing needed
277 0351
278 0352 END; ! end of upward shuffle

```



SMG\$\$\$SCROLL\_AREA  
1-005

SMG\$\$\$SCROLL\_AREA - Virtual Display -- Scroll re  
SMG\$\$\$SCROLL\_AREA - Scroll rectangular area

B 16  
16-Sep-1984 01:14:29  
14-Sep-1984 13:10:02

VAX-11 Bliss-32 V4.0-742  
[SMGRTL.SRC]SMGSCROLL.B32;1

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```
280 0353 2
281 0354 2
282 0355 2
283 0356 2
284 0357 2
285 0358 2
286 0359 2
287 0360 2
288 0361 2
289 0362 2
290 0363 2
291 0364 2
292 0365 2
293 0366 4
294 0367 4
295 0368 4
296 0369 5
297 0370 5
298 0371 5
299 0372 5
300 0373 5
301 0374 5
302 0375 4
303 0376 4
304 0377 4
305 0378 4
306 0379 4
307 0380 3
308 0381 3
309 0382 3
310 0383 3
311 0384 3
312 0385 3
313 0386 3
314 0387 3
315 0388 3
316 0389 3
317 0390 4
318 0391 4
319 0392 4
320 0393 5
321 0394 5
322 0395 5
323 0396 4
324 0397 4
325 0398 4
326 0399 4
327 0400 3
328 0401 2

[SMG$M DOWN]:
BEGIN
LOCAL
DEST_LINE_NO;

DEST_LINE_NO = .BOTTOM_LINE + .COUNT;      ! Dest line number
DEST = $SMG$LINEAR ( .DEST_LINE_NO, .START_COL); ! Dest byte offset
SOURCE = $SMG$LINEAR ( .BOTTOM_LINE, .START_COL); ! Source byte offset

DECR CURR_LINE FROM .BOTTOM_LINE      ! From bottom line of scroll
TO .START_ROW                        ! rectangle to top line
DO
BEGIN
IF .DEST_LINE_NO LEQ .BOTTOM_LINE      ! If still within
THEN                                     ! rectangle
BEGIN                                     ! perform moves
+
! Move text, attributes, alt. char. set and line characteristics
-
$SMG$SHUFFLE ( .LOCAL_WIDTH, .SOURCE, .DEST);
LCV [ .DEST_LINE_NO ] = .LCV [ .CURR_LINE ];
END;                                     ! perform moves

DEST_LINE_NO = .DEST_LINE_NO - 1;      ! 1 line up
DEST = .DEST - .ONE_LINE;              ! Offset up 1 line's work
SOURCE = .SOURCE - .ONE_LINE;          ! Source offset
END;                                     ! end of decr loop

!+
! Up to COUNT number of lines may have been opened up. Blank fill them.
!-

SOURCE = $SMG$LINEAR ( .START_ROW, .START_COL);      ! line offset
DEST_LINE_NO = .START_ROW;                          ! line number
INCR COUNTER FROM 1 TO .COUNT
DO
BEGIN          ! Check need to clear
IF .DEST_LINE_NO LEQ .BOTTOM_LINE      ! If still within
THEN                                             ! rectangle
BEGIN          ! Clear
$SMG$BLANK_FILL_DCB ( .LOCAL_WIDTH, .SOURCE );
LCV [ .DEST_LINE_NO ] = 0;
END;          ! Clear

SOURCE = .SOURCE + .ONE_LINE;              ! Down 1 line's worth
DEST_LINE_NO = .DEST_LINE_NO + 1;          ! Down 1 line
END;          ! Check need to clear
END;          ! end of downward shuffle
```



```

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

```



```

: 386      0457 2
: 387      0458
: 388      0459 [SMG$M LEFT]:
: 389      0460 BEGIN
: 390      0461 LOCAL
: 391      0462 RIGHT_COL_OF_RECT,
: 392      0463 DEST_COL_NO;
: 393      0464 DEST_COL_NO = .START_COL - .COUNT; ! First col of dest.
: 394      0465 RIGHT_COL_OF_RECT = .START_COL + .LOCAL_WIDTH - 1; ! Last col of rect.
: 395      0466 IF .COUNT > .LOCAL_WIDTH
: 396      0467 THEN
: 397      0468 BEGIN ! Off of left of rectangle
: 398      0469 +
: 399      0470 ! Starting destination column maps outside of rectangle. Just need
: 400      0471 ! to clear source from 1st column of rectangle to last
: 401      0472 ! column of rectangle.
: 402      0473 -
: 403      0474
: 404      0475 SOURCE = $MSG$LINEAR ( .START_ROW, .START_COL);
: 405      0476
: 406      0477 INCR CURR_LINE FROM .START_ROW ! From 1st line of rectangle to
: 407      0478 TO .BOTTOM_LINE ! last line of rectangle
: 408      0479 DO
: 409      0480 BEGIN ! Incr loop
: 410      0481 $MSG$BLANK_FILL DCB ( .LOCAL_WIDTH, .SOURCE);
: 411      0482 SOURCE = .SOURCE + .ONE_LINE;
: 412      0483 END; ! Incr loop
: 413      0484 END ! Off of left of rectangle
: 414      0485
: 415      0486 ELSE
: 416      0487
: 417      0488 BEGIN ! Dest. at least partially within rectangle
: 418      0489 +
: 419      0490 ! Some movement of source text is needed.
: 420      0491 -
: 421      0492 LOCAL
: 422      0493 START_OF_MOVE, ! 1st column to move
: 423      0494 COLS_TO_CLEAR, ! # bytes to clear after movement
: 424      0495 START_OF_CLEAR, ! byte offset for start of clear operation
: 425      0496 COLS_TO_MOVE; ! # bytes to move
: 426      0497
: 427      0498 COLS_TO_MOVE = .LOCAL_WIDTH - .COUNT;
: 428      0499 START_OF_MOVE = .RIGHT_COL_OF_RECT - .COLS_TO_MOVE + 1;
: 429      0500 SOURCE = $MSG$LINEAR ( .START_ROW, .START_OF_MOVE);
: 430      0501
: 431      0502 COLS_TO_CLEAR = .LOCAL_WIDTH - .COLS_TO_MOVE;
: 432      0503 START_OF_CLEAR = $MSG$LINEAR ( .START_ROW,
: 433      0504 .START_COL + .COLS_TO_MOVE);
: 434      0505
: 435      0506 DEST = $MSG$LINEAR ( .START_ROW, .START_COL);
: 436      0507
: 437      0508 INCR CURR_LINE FROM .START_ROW ! From 1st line of rect to
: 438      0509 TO .BOTTOM_LINE ! last line
: 439      0510 DO
: 440      0511 BEGIN ! Incr loop
: 441      0512 +
: 442      0513 ! 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 7 .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 5      END; ! Incr loop
: 451      0522 4      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
.IDENT \1-005\ play -- Scroll re
.EXTRN SMG$_INVARG
.PSECT _SMG$CODE,NOWRT, SHR, PIC,2
.ENTRY SMG$$$SCROLL_AREA, Save R2,R3,R4,R5,R6,R7,- : 0176
      R8,R9,R10,RT1
      SUBL2 #48, SP
      ADDL3 #6, DCB, R0 : 0263
      MOVZWL (R0), 28(SP)
      MOVL 28(SP), ONE_LINE
      MOVL HEIGHT, LOCAL_HEIGHT : 0273
      MOVL WIDTH, LOCAL_WIDTH : 0274
      ADDL3 HEIGHT, START_ROW, R11 : 0276
      DECL R11
      ADDL3 #2, DCB, R1
      CMPZV #0, #16, (R1), R11
      BGEQ 1$ : 0278
      ADDL3 #2, DCB, R2
      MOVZWL (R2), R1
      SUBL2 START_ROW, R1
      MOVAB 1(R1), LOCAL_HEIGHT : 0280
      ADDL3 WIDTH, START_COL, R1
      DECL R1
      CMPL R1, ONE_LINE
      BLEQ 2$
      SUBL3 START_COL, ONE_LINE, R1 : 0282
      MOVAB 1(R1), LOCAL_WIDTH : 0284
      MOVL START_ROW, RT
      MOVAB -1(LOCAL_HEIGHT)[R1], BOTTOM_LINE : 0290
      ADDL3 #16, DCB, R0
      MOVL (R0), 40(SP)
      ADDL3 #20, DCB, R0 : 0291

```

```

OFFC 00000
50      04      5E      30      C2      00002
      1C      AC      06      C1      00005
      AE      60      3C      0000A
      59      1C      AE      D0      0000E
      50      10      AC      D0      00012
      57      14      AC      D0      00016
5B      08      AC      10      AC      C1      0001A
      AC      5B      D7      00020
      51      04      AC      02      C1      00022
      61      10      00      ED      00027
      10      18      0002C
      52      04      AC      02      C1      0002E
      51      62      3C      00033
      51      08      AC      C2      00036
      50      01      A1      9E      0003A
      51      0C      AC      14      AC      C1      0003E 1$:
      AC      51      D7      00044
      59      51      D1      00046
      09      15      00049
      51      59      0C      AC      C3      0004B
      57      01      A1      9E      00050
      51      08      AC      D0      00054 2$:
      5A      FF      A041      9E      00058
      50      04      AC      10      C1      0005D
      28      AE      60      D0      00062
      50      04      AC      14      C1      00066

```



|      |      |           |          |      |       |       |       |        |                                     |  |      |
|------|------|-----------|----------|------|-------|-------|-------|--------|-------------------------------------|--|------|
|      | 24   | AE        |          | 60   | D0    | 0006B |       | MOVL   | (R0), 36(SP)                        |  |      |
|      | 0C   | AE        | 24       | AE   | 7D    | 0006F |       | MOVQ   | 36(SP), ATTR_BUF                    |  | 0292 |
| 50   | 04   | AC        |          | 18   | C1    | 00074 |       | ADDL3  | #24, DCB, R0                        |  |      |
|      | 20   | AE        |          | 60   | D0    | 00079 |       | MOVL   | (R0), 32(SP)                        |  |      |
|      | 08   | AE        | 20       | AE   | D0    | 0007D |       | MOVL   | 32(SP), CHAR_BUF                    |  | 0293 |
| 50   | 04   | AC        | 0000004C | 8F   | C1    | 00082 |       | ADDL3  | #76, DCB, R0                        |  |      |
|      | 18   | AE        |          | 60   | D0    | 0008B |       | MOVL   | (R0), LCV                           |  | 0302 |
| 01F0 | 07   | 01        | 18       | AC   | CF    | 0008F |       | CASEL  | DIRECTION, #1, #7                   |  |      |
| 0302 | 0010 | 00FF      |          | 0018 |       | 00094 | 3\$:  | .WORD  | 5\$-3\$,-                           |  |      |
|      | 0010 | 0010      |          | 0010 |       | 0009C |       |        | 14\$-3\$,-                          |  |      |
|      |      |           |          |      |       |       |       |        | 4\$-3\$,-                           |  |      |
|      |      |           |          |      |       |       |       |        | 23\$-3\$,-                          |  |      |
|      |      |           |          |      |       |       |       |        | 4\$-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 |
|      | 50   |           | 1C       | AE   | C4    | 000C8 |       | MULL2  | 28(SP), R11                         |  |      |
| 14   | 50   | 0C        |          | 01   | C3    | 000CC |       | SUBL3  | #1, START_COL, R0                   |  |      |
|      | AE   | 5B        |          | 50   | C1    | 000D1 |       | ADDL3  | R0, R11, SOURCE                     |  |      |
|      | 5B   | 08        |          | 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\$                                 |  | 0323 |
|      |      |           | 10       | BE46 | 9F    | 000E3 |       | PUSHAB | @TEXT BUF[R6]                       |  |      |
| 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)+       |  | 0324 |
|      |      | 50        | 18       | AE   | D0    | 00112 | 7\$:  | MOVL   | LCV, R0                             |  |      |
|      |      | 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   |      | 5B        |          | 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                         |  |      |
| 14   | 50   | 0C        |          | 01   | C3    | 00134 |       | SUBL3  | #1, START_COL, R0                   |  |      |
|      | 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\$                                |  |      |



| PC | Op | Op2 | Op3 | Op4 | Op5 | Op6 | Op7 | Op8 | Op9 | Op10 | Op11 | Op12 | Op13 | Op14 | Op15 | Op16 | Op17 | Op18 | Op19 | Op20 | Op21 | Op22 | Op23 | Op24 | Op25 | Op26 | Op27 | Op28 | Op29 | Op30 | Op31 | Op32 | Op33 | Op34 | Op35 | Op36 | Op37 | Op38 | Op39 | Op40 | Op41 | Op42 | Op43 | Op44 | Op45 | Op46 | Op47 | Op48 | Op49 | Op50 | Op51 | Op52 | Op53 | Op54 | Op55 | Op56 | Op57 | Op58 | Op59 | Op60 | Op61 | Op62 | Op63 | Op64 | Op65 | Op66 | Op67 | Op68 | Op69 | Op70 | Op71 | Op72 | Op73 | Op74 | Op75 | Op76 | Op77 | Op78 | Op79 | Op80 | Op81 | Op82 | Op83 | Op84 | Op85 | Op86 | Op87 | Op88 | Op89 | Op90 | Op91 | Op92 | Op93 | Op94 | Op95 | Op96 | Op97 | Op98 | Op99 | Op100 | Op101 | Op102 | Op103 | Op104 | Op105 | Op106 | Op107 | Op108 | Op109 | Op110 | Op111 | Op112 | Op113 | Op114 | Op115 | Op116 | Op117 | Op118 | Op119 | Op120 | Op121 | Op122 | Op123 | Op124 | Op125 | Op126 | Op127 | Op128 | Op129 | Op130 | Op131 | Op132 | Op133 | Op134 | Op135 | Op136 | Op137 | Op138 | Op139 | Op140 | Op141 | Op142 | Op143 | Op144 | Op145 | Op146 | Op147 | Op148 | Op149 | Op150 | Op151 | Op152 | Op153 | Op154 | Op155 | Op156 | Op157 | Op158 | Op159 | Op160 | Op161 | Op162 | Op163 | Op164 | Op165 | Op166 | Op167 | Op168 | Op169 | Op170 | Op171 | Op172 | Op173 | Op174 | Op175 | Op176 | Op177 | Op178 | Op179 | Op180 | Op181 | Op182 | Op183 | Op184 | Op185 | Op186 | Op187 | Op188 | Op189 | Op190 | Op191 | Op192 | Op193 | Op194 | Op195 | Op196 | Op197 | Op198 | Op199 | Op200 | Op201 | Op202 | Op203 | Op204 | Op205 | Op206 | Op207 | Op208 | Op209 | Op210 | Op211 | Op212 | Op213 | Op214 | Op215 | Op216 | Op217 | Op218 | Op219 | Op220 | Op221 | Op222 | Op223 | Op224 | Op225 | Op226 | Op227 | Op228 | Op229 | Op230 | Op231 | Op232 | Op233 | Op234 | Op235 | Op236 | Op237 | Op238 | Op239 | Op240 | Op241 | Op242 | Op243 | Op244 | Op245 | Op246 | Op247 | Op248 | Op249 | Op250 | Op251 | Op252 | Op253 | Op254 | Op255 | Op256 | Op257 | Op258 | Op259 | Op260 | Op261 | Op262 | Op263 | Op264 | Op265 | Op266 | Op267 | Op268 | Op269 | Op270 | Op271 | Op272 | Op273 | Op274 | Op275 | Op276 | Op277 | Op278 | Op279 | Op280 | Op281 | Op282 | Op283 | Op284 | Op285 | Op286 | Op287 | Op288 | Op289 | Op290 | Op291 | Op292 | Op293 | Op294 | Op295 | Op296 | Op297 | Op298 | Op299 | Op300 | Op301 | Op302 | Op303 | Op304 | Op305 | Op306 | Op307 | Op308 | Op309 | Op310 | Op311 | Op312 | Op313 | Op314 | Op315 | Op316 | Op317 | Op318 | Op319 | Op320 | Op321 | Op322 | Op323 | Op324 | Op325 | Op326 | Op327 | Op328 | Op329 | Op330 | Op331 | Op332 | Op333 | Op334 | Op335 | Op336 | Op337 | Op338 | Op339 | Op340 | Op341 | Op342 | Op343 | Op344 | Op345 | Op346 | Op347 | Op348 | Op349 | Op350 | Op351 | Op352 | Op353 | Op354 | Op355 | Op356 | Op357 | Op358 | Op359 | Op360 | Op361 | Op362 | Op363 | Op364 | Op365 | Op366 | Op367 | Op368 | Op369 | Op370 | Op371 | Op372 | Op373 | Op374 | Op375 | Op376 | Op377 | Op378 | Op379 | Op380 | Op381 | Op382 | Op383 | Op384 | Op385 | Op386 | Op387 | Op388 | Op389 | Op390 | Op391 | Op392 | Op393 | Op394 | Op395 | Op396 | Op397 | Op398 | Op399 | Op400 | Op401 | Op402 | Op403 | Op404 | Op405 | Op406 | Op407 | Op408 | Op409 | Op410 | Op411 | Op412 | Op413 | Op414 | Op415 | Op416 | Op417 | Op418 | Op419 |
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|



| SMG\$\$\$SCROLL_AREA |    | SMG\$\$\$SCROLL_AREA - Virtual Display -- Scroll re |    | H 16                 |      | 16-Sep-1984 01:14:29        |       | VAX-11 Bliss-32 V4.0-742 |                                             | Page 14                      |      |
|----------------------|----|-----------------------------------------------------|----|----------------------|------|-----------------------------|-------|--------------------------|---------------------------------------------|------------------------------|------|
| 1-005                |    | SMG\$\$\$SCROLL_AREA - Scroll rectangular area      |    | 14-Sep-1984 13:10:02 |      | [SMGRTL.SRC]SMGSCROLL.B32;1 |       | (7)                      |                                             |                              |      |
|                      |    |                                                     |    | 2C                   | AE   | D4                          | 00229 | CLRL                     | COUNTER                                     |                              | 0388 |
|                      |    |                                                     |    |                      | 4E   | 11                          | 0022C | BRB                      | 22\$                                        |                              |      |
|                      |    | 5A                                                  |    |                      | 58   | D1                          | 0022E | 19\$:                    | CMP                                         | 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                                                  |    | 20                   | AE   | D0                          | 0023B | MOVL                     | 32(SP), CHAR_BUF                            |                              |      |
| 57                   |    | 20                                                  |    |                      | 00   | 2C                          | 00240 | MOVC5                    | #0, (SP), #32, LOCAL_WIDTH, @SOURCE-        |                              |      |
|                      |    |                                                     |    | 14                   | BE   | 40                          | 00245 |                          | [TEXT_BUF]                                  |                              |      |
|                      | 04 | AE                                                  |    |                      | 2E   | C1                          | 00248 | ADDL3                    | #46, DCB, 4(SP)                             |                              |      |
| 57                   | 04 | BE                                                  |    | 04                   | 00   | 2C                          | 0024E | MOVC5                    | #0, (SP), @4(SP), LOCAL_WIDTH, @SOURCE-     |                              |      |
|                      |    |                                                     |    | 14                   | BE   | 4B                          | 00254 |                          | [ATTR_BUF]                                  |                              |      |
|                      |    |                                                     |    | 1C                   | AE   | D5                          | 00257 | TSTL                     | CHAR_BUF                                    |                              |      |
|                      |    |                                                     |    |                      | 13   | 13                          | 0025A | BEQL                     | 20\$                                        |                              |      |
|                      |    | 5B                                                  |    | 1C                   | AE   | D0                          | 0025C | MOVL                     | CHAR_BUF, R11                               |                              |      |
| 57                   | 04 | AE                                                  |    | 04                   | 30   | C1                          | 00260 | ADDL3                    | #48, DCB, 4(SP)                             |                              |      |
|                      | 04 | BE                                                  |    |                      | 00   | 2C                          | 00266 | MOVC5                    | #0, (SP), @4(SP), LOCAL_WIDTH, @SOURCE[R11] |                              |      |
|                      |    |                                                     |    | 14                   | BE   | 4B                          | 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    | 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                                                  |    | 1C                   | AC   | C1                          | 0028D | ADDL3                    | COUNT, START_COL, DEST_COL_NO               |                              | 0410 |
|                      |    | 5B                                                  |    | 08                   | 01   | C3                          | 00293 | SUBL3                    | #1, START_ROW, R11                          |                              | 0411 |
|                      |    |                                                     |    | 1C                   | AE   | C4                          | 00298 | MULL2                    | 28(SP), R11                                 |                              |      |
|                      |    | 50                                                  |    |                      | 01   | C3                          | 0029C | SUBL3                    | #1, START_COL, R0                           |                              |      |
|                      | 14 | AE                                                  |    |                      | 50   | C1                          | 002A1 | ADDL3                    | R0, R11, SOURCE                             |                              |      |
|                      |    |                                                     |    |                      | 56   | A14B                        | 9E    | 002A6                    | MOVAB                                       | -1(DEST_COL_NO)[R11], DEST   | 0412 |
|                      |    |                                                     |    | 1C                   | AC   | D1                          | 002AB | CMP                      | COUNT, LOCAL_WIDTH                          |                              | 0413 |
|                      |    |                                                     |    |                      | 4E   | 15                          | 002AF | BLEQ                     | 28\$                                        |                              |      |
|                      |    | 5B                                                  |    | 08                   | 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                            |                              |      |
| 57                   |    | 20                                                  |    | 2C                   | AE   | D0                          | 002C0 | MOVL                     | 32(SP), CHAR_BUF                            |                              |      |
|                      |    |                                                     |    |                      | 00   | 2C                          | 002C5 | MOVC5                    | #0, (SP), #32, LOCAL_WIDTH, @SOURCE-        |                              |      |
|                      |    |                                                     |    | 14                   | BE   | 40                          | 002CA |                          | [TEXT_BUF]                                  |                              |      |
|                      |    |                                                     |    |                      | 2E   | C1                          | 002CD | ADDL3                    | #46, DCB, 24(SP)                            |                              |      |
| 57                   | 18 | AE                                                  |    | 04                   | 00   | 2C                          | 002D3 | MOVC5                    | #0, (SP), @24(SP), LOCAL_WIDTH, @SOURCE-    |                              |      |
|                      | 18 | BE                                                  |    |                      | 14   | BE                          | 48    |                          | [ATTR_BUF]                                  |                              |      |
|                      |    |                                                     |    | 2C                   | AE   | D5                          | 002DC | TSTL                     | CHAR_BUF                                    |                              |      |
|                      |    |                                                     |    |                      | 13   | 13                          | 002DF | BEQL                     | 25\$                                        |                              |      |
|                      |    | 58                                                  |    | 2C                   | AE   | D0                          | 002E1 | MOVL                     | CHAR_BUF, R8                                |                              |      |
| 57                   | 18 | AE                                                  |    | 04                   | 30   | C1                          | 002E5 | ADDL3                    | #48, DCB, 24(SP)                            |                              |      |
|                      | 18 | BE                                                  |    |                      | 00   | 2C                          | 002EB | MOVC5                    | #0, (SP), @24(SP), LOCAL_WIDTH, @SOURCE[R8] |                              |      |
|                      |    |                                                     |    | 14                   | BE   | 48                          | 002F1 |                          |                                             |                              |      |
|                      |    |                                                     |    |                      | 59   | C0                          | 002F4 | 25\$:                    | ADDL2                                       | ONE_LINE, SOURCE             | 0425 |
|                      |    | BC                                                  |    | 14                   | 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                                                  |    | 0C                   | AC   | C3                          | 00304 | SUBL3                    | START_COL, DEST_COL_NO, COLS_TO_CLEAR       |                              | 0440 |
|                      |    | 5B                                                  |    | 08                   | 01   | C3                          | 0030A | SUBL3                    | #1, START_ROW, CURR_LINE                    |                              | 0451 |



[illegible]



|                      |  |                                                     |  |                      |  |                             |  |                          |  |         |  |
|----------------------|--|-----------------------------------------------------|--|----------------------|--|-----------------------------|--|--------------------------|--|---------|--|
| SMG\$\$\$SCROLL_AREA |  | SMG\$\$\$SCROLL_AREA - Virtual Display -- Scroll re |  | J 16                 |  | 16-Sep-1984 01:14:29        |  | VAX-11 Bliss-32 V4.0-742 |  | Page 16 |  |
| 1-005                |  | SMG\$\$\$SCROLL_AREA - Scroll rectangular area      |  | 14-Sep-1984 13:10:02 |  | [SMGRTL.SRC]SMGSCROLL.B32;1 |  |                          |  | (7)     |  |

  

|      |    |      |    |       |       |        |                                          |                                       |      |
|------|----|------|----|-------|-------|--------|------------------------------------------|---------------------------------------|------|
| BC   | 5B | 5A   | F3 | 00406 | 36\$: | AOBLEQ | BOTTOM_LINE, CURR_LINE, 34\$             | :                                     | 0477 |
| 18   | AE | 00AF | 31 | 0040A | 37\$: | BRW    | 43\$                                     | :                                     | 0466 |
|      | 5B | 1C   | AC | C3    | 0040D | SUBL3  | COUNT, LOCAL_WIDTH, COLS_TO_MOVE         | :                                     | 0498 |
|      |    | 18   | AE | C2    | 00413 | SUBL2  | COLS_TO_MOVE, R0                         | :                                     | 0499 |
|      |    | 1C   | AE | C5    | 00417 | MULL3  | 28(SP), R1, R11                          | :                                     | 0500 |
|      | 14 | 804B | 9E | 0041C |       | MOVAB  | (START_OF_MOVE)+[R11], SOURCE            | :                                     |      |
| 2C   | AE | 18   | AE | C3    | 00421 | SUBL3  | COLS_TO_MOVE, LOCAL_WIDTH, COLS_TO_CLEAR | :                                     | 0502 |
|      | 50 | 0C   | AC | C1    | 00427 | ADDL3  | START_COL, R11, R0                       | :                                     | 0504 |
|      | 51 |      | 01 | C3    | 0042C | SUBL3  | #1, COLS_TO_MOVE, R1                     | :                                     |      |
| 1C   | AE |      | 51 | C1    | 00431 | ADDL3  | R1, R0, START_OF_CLEAR                   | :                                     |      |
|      |    | FF   | A0 | 9E    | 00436 | MOVAB  | -1(R0), DEST                             | :                                     | 0506 |
|      | 5B |      | 01 | C3    | 0043A | SUBL3  | #1, START_ROW, CURR_LINE                 | :                                     | 0517 |
|      |    |      | 77 | 11    | 0043F | BRB    | 42\$                                     | :                                     |      |
|      |    |      | 10 | AE    | D0    | 00441  | 39\$:                                    | :                                     | 0516 |
|      |    |      | 10 | AE    | D0    | 00445  | MOVL                                     | TEXT_BUF, R7                          |      |
| 6647 | 14 | BE48 | 18 | AE    | 28    | 00449  | MOVL                                     | TEXT_BUF, R8                          |      |
|      |    |      | 0C | AE    | D0    | 00451  | MOVC3                                    | COLS_TO_MOVE, @SOURCE[R8], (DEST)[R7] |      |
|      |    |      | 0C | AE    | D0    | 00455  | MOVL                                     | ATTR_BUF, R7                          |      |
| 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\$                                     | :                                     |      |
|      |    |      | 08 | AE    | D0    | 00466  | MOVL                                     | CHAR_BUF, R7                          |      |
|      |    |      | 08 | AE    | D0    | 0046A  | MOVL                                     | CHAR_BUF, R8                          |      |
| 6647 | 14 | BE48 | 18 | AE    | 28    | 0046E  | MOVC3                                    | COLS_TO_MOVE, @SOURCE[R8], (DEST)[R7] |      |
|      |    |      | 28 | AE    | D0    | 00476  | 40\$:                                    | :                                     | 0517 |
|      |    |      | 24 | AE    | D0    | 0047A  | MOVL                                     | 40(SP), TEXT_BUF                      |      |
|      |    |      | 20 | AE    | D0    | 0047E  | MOVL                                     | 36(SP), ATTR_BUF                      |      |
| 2C   | AE | 20   | 00 | 2C    | 00482 | MOVL   | 32(SP), CHAR_BUF                         |                                       |      |
|      |    |      | 1C | BE40  | 00488 | MOVC5  | #0, (SP), #32, COLS_TO_CLEAR, -          |                                       |      |
|      |    |      | 2E | C1    | 0048B | ADDL3  | @START_OF_CLEAR[TEXT_BUF]                |                                       |      |
| 2C   | AE | 04   | 00 | 2C    | 00491 | MOVC5  | #46, DCB, 4(SP)                          |                                       |      |
|      |    |      | 1C | BE47  | 00498 |        | #0, (SP), @4(SP), COLS_TO_CLEAR, -       |                                       |      |
|      |    |      | 58 | D5    | 0049B |        | @START_OF_CLEAR[ATTR_BUF]                |                                       |      |
|      |    |      | 0E | 13    | 0049D | TSTL   | CHAR_BUF                                 |                                       |      |
|      |    |      | 30 | C1    | 0049F | BEQL   | 41\$                                     | :                                     |      |
| 2C   | AE | 57   | 00 | 2C    | 004A4 | ADDL3  | #48, DCB, R7                             |                                       |      |
|      |    | 67   | 00 | 2C    | 004AA | MOVC5  | #0, (SP), (R7), COLS_TO_CLEAR, -         |                                       |      |
|      |    |      | 1C | BE48  | 004AD |        | @START_OF_CLEAR[CHAR_BUF]                |                                       |      |
|      |    |      | 59 | C0    | 004B1 | ADDL2  | ONE_LINE, START_OF_CLEAR                 | :                                     | 0518 |
|      |    |      | 59 | C0    | 004B5 | ADDL2  | ONE_LINE, SOURCE                         | :                                     | 0519 |
|      |    |      | 5A | F3    | 004B8 | ADDL2  | ONE_LINE, DEST                           | :                                     | 0520 |
|      | 85 |      | 01 | D0    | 004BC | AOBLEQ | BOTTOM_LINE, CURR_LINE, 39\$             | :                                     | 0508 |
|      |    |      | 04 | 004BF |       | MOVL   | #1, R0                                   | :                                     | 0531 |
|      |    |      |    |       |       | RET    |                                          | :                                     | 0532 |

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

; 462 0533 1 !<BLF/PAGE>



|                      |                                                     |      |                      |                             |         |
|----------------------|-----------------------------------------------------|------|----------------------|-----------------------------|---------|
| SMG\$\$\$SCROLL_AREA | SMG\$\$\$SCROLL_AREA - Virtual Display -- Scroll re | K 16 | 16-Sep-1984 01:14:29 | VAX-11 Bliss-32 V4.0-742    | Page 17 |
| 1-005                | SMG\$\$\$SCROLL_AREA - Scroll rectangular area      |      | 14-Sep-1984 13:10:02 | [SMGRTL.SRC]SMGSCROLL.B32;1 | (8)     |

```

: 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

| File                                   | -----<br>Total | Symbols<br>Loaded | -----<br>Percent | Pages<br>Mapped | Processing<br>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

```



0360

**DIGITAL  
CONFIDE**