```
FFFFFFFFFFFFFFF        111              111           AAAAAAAAA
FFFFFFFFFFFFFFF        111              111           AAAAAAAAA
FFFFFFFFFFFFFFF        111              111           AAAAAAAAA
FFF                 111111           111111        AAA         AAA
FFF                 111111           111111        AAA         AAA
FFF                 111111           111111        AAA         AAA
FFF                    111              111        AAA         AAA
FFF                    111              111        AAA         AAA
FFF                    111              111        AAA         AAA
FFFFFFFFFFFF           111              111        AAA         AAA
FFFFFFFFFFFF           111              111        AAA         AAA
FFFFFFFFFFFF           111              111        AAA         AAA
FFF                    111              111        AAAAAAAAAAAAAAA
FFF                    111              111        AAAAAAAAAAAAAAA
FFF                    111              111        AAAAAAAAAAAAAAA
FFF                    111              111        AAA         AAA
FFF                    111              111        AAA         AAA
FFF                    111              111        AAA         AAA
FFF                 111111111        111111111     AAA         AAA
FFF                 111111111        111111111     AAA         AAA
FFF                 111111111        111111111     AAA         AAA
```

```
**FILE**ID**MAPVBN                                   H  3
```

```
MM      MM    AAAAAA    PPPPPPPP    VV      VV  BBBBBBBB    NN      NN
MM      MM    AAAAAA    PPPPPPPP    VV      VV  BBBBBBBB    NN      NN
MMMM  MMMM  AA      AA  PP      PP  VV      VV  BB      BB  NN      NN
MMMM  MMMM  AA      AA  PP      PP  VV      VV  BB      BB  NN      NN
MM  MM  MM  AA      AA  PP      PP  VV      VV  BB      BB  NNNN    NN
MM  MM  MM  AA      AA  PP      PP  VV      VV  BB      BB  NNNN    NN
MM      MM  AA      AA  PPPPPPPP    VV      VV  BBBBBBBB    NN  NN  NN
MM      MM  AA      AA  PPPPPPPP    VV      VV  BBBBBBBB    NN  NN  NN
MM      MM  AAAAAAAAAA  PP          VV      VV  BB      BB  NN    NNNN
MM      MM  AAAAAAAAAA  PP          VV      VV  BB      BB  NN    NNNN
MM      MM  AA      AA  PP            VV  VV    BB      BB  NN      NN      ....
MM      MM  AA      AA  PP            VV  VV    BB      BB  NN      NN      ....
MM      MM  AA      AA  PP              VV      BBBBBBBB    NN      NN      ....
MM      MM  AA      AA  PP              VV      BBBBBBBB    NN      NN      ....

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

```
0 MODULE MAPVBN (
0                    LANGUAGE (BLISS32),
0                    IDENT = 'V04-000'
0                    ) =
1 BEGIN
1
1 !
1 !****************************************************************************
1 !*                                                                          *
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1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                 *
1 !*                                                                          *
1 !*                                                                          *
1 !****************************************************************************
1
1 !++
1 !
1 ! FACILITY:  F11ACP Structure Level 1
1 !
1 ! ABSTRACT:
1 !
1 !       This routine maps the specified virtual blocks to their
1 !       corresponding logical blocks using the supplied window.
1 !       The window is turned if necessary.
1 !
1 ! ENVIRONMENT:
1 !
1 !       STARLET operating system, including privileged system services
1 !       and internal exec routines.
1 !
1 !--
1 !
1 !
1 ! AUTHOR:  Andrew C. Goldstein,  CREATION DATE:  3-Mar-1977  12:20
1 !
1 ! MODIFIED BY:
1 !
1 !       V02-002 LMP0005         L. Mark Pilant,         29-Dec-1981  15:20
1 !               Add support for Cathedral windows.
1 !
1 !       V02-001 ACG0229         Andrew C. Goldstein,    22-Dec-1981  19:44
1 !               Move updating of PMS$GL_TURN from TURN_WINDOW
```

```
;    58         0058   1 !
;    59         0059   1 !        V02-000 ACG0167          Andrew C. Goldstein,    7-May-1980  18:51
;    60         0060   1 !                Previous revision history moved to F11A.REV
;    61         0061   1 !**
;    62         0062   1
;    63         0063   1
;    64         0064   1 LIBRARY 'SYS$LIBRARY:LIB.L32';
;    65         0065   1 REQUIRE 'SRC$:FCPDEF.B32';
```

```
1 GLOBAL ROUTINE MAP_VBN (VBN, WINDOW, BLOCK_COUNT, UNMAPPED_BLOCKS) =
1
1 !++
1 !
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       This routine maps the specified virtual blocks to their
1 !       corresponding logical blocks using the supplied window.
1 !       the window is turned if necessary.
1 !
1 ! CALLING SEQUENCE:
1 !       MAP_VBN (ARG1, ARG2, ARG3, ARG4)
1 !
1 ! INPUT PARAMETERS:
1 !       ARG1: desired VBN
1 !       ARG2: address of window to use
1 !       ARG3: number of blocks to map
1 !               if not present, 1
1 !
1 ! IMPLICIT INPUTS:
1 !       NONE
1 !
1 ! OUTPUT PARAMETERS:
1 !       ARG4: if present, addres to store number of unmapped blocks
1 !
1 ! IMPLICIT OUTPUTS:
1 !       NONE
1 !
1 ! ROUTINE VALUE:
1 !       starting LBN or -1 if no map
1 !
1 ! SIDE EFFECTS:
1 !       window may be turned, header may be read
1 !
1 !--
1
2 BEGIN
2
2 MAP
2       WINDOW          : REF BBLOCK;
2
2 LOCAL
2       COUNT,                          ! number of blocks to map
2       UNMAPPED,                       ! address to store unmapped block count
2       DUMMY,                          ! place for above by default
2       FCB             : REF BBLOCK,   ! address of FCB of file
2       HEADER          : REF BBLOCK,   ! address of file header
2       LBN;                            ! resulting LBN of map
2
2 EXTERNAL
2       PMS$GL_TURN     : ADDRESSING_MODE (GENERAL);
2                                       ! system count of window turns
2
2 EXTERNAL ROUTINE
2       MAP_WINDOW,                     ! scan window map
2       READ_HEADER,                    ! read file header
2       TURN_WINDOW,                    ! turn window
```

```
;   124          0437  2          REMAP_FILE;                     . remap the file completely
;   125          0438  2
;   126          0439  2
;   127          0440  2  ! Check the VBN for legality - i.e., non-zero and within the file size
;   128          0441  2  ! given in the FCB.
;   129          0442  2  !
;   130          0443  2
;   131          0444  2  FCB = .WINDOW[WCB$L_FCB];
;   132          0445  2  IF .VBN EQL 0 OR .VBN GTRU .FCB[FCB$L_FILESIZE]
;   133          0446  2  THEN RETURN -1;
;   134          0447  2
;   135          0448  2  ! If the file is multi-header, scan the extension FCB's for the one
;   136          0449  2  ! containing the desired VBN. The right FCB is identified by noting that
;   137          0450  2  ! there are no more, or that the start VBN of the next one is greater than
;   138          0451  2  ! the desired VBN.
;   139          0452  2  !
;   140          0453  2
;   141          0454  2  UNTIL
;   142          0455  3      (IF .FCB[FCB$L_EXFCB] EQL 0 THEN 1
;   143          0456  3       ELSE .BBLOCK [.FCB[FCB$L_EXFCB], FCB$L_STVBN] GTRU .VBN
;   144          0457  3      )
;   145          0458  2  DO FCB = .FCB[FCB$L_EXFCB];
;   146          0459  2
;   147          0460  2  ! Default the optional arguments.
;   148          0461  2  !
;   149          0462  2
;   150          0463  3  COUNT = (IF ACTUALCOUNT GEQ 3
;   151          0464  3          THEN .BLOCK_COUNT
;   152          0465  3          ELSE 1
;   153          0466  2          );
;   154          0467  3  UNMAPPED = (IF ACTUALCOUNT GEQ 4
;   155          0468  3          THEN .UNMAPPED_BLOCKS
;   156          0469  3          ELSE DUMMY
;   157          0470  2          );
;   158          0471  2
;   159          0472  2  ! If an extension was done on a file which was has Cathedral windows, it is
;   160          0473  2  ! necessary to remap the file to correctly map the extended portion of the
;   161          0474  2  ! file.
;   162          0475  2  !
;   163          0476  2
;   164          0477  2  IF .WINDOW[WCB$V_CATHEDRAL] AND NOT .WINDOW[WCB$V_COMPLETE]
;   165          0478  2  THEN REMAP_FILE ();
;   166          0479  2
;   167          0480  2  ! Attempt to map the transfer with the existing window. If the map fails
;   168          0481  2  ! completely, turn the window and try once more. When any blocks map,
;   169          0482  2  ! return the relevant data.
;   170          0483  2  !
;   171          0484  2
;   172          0485  2  DECR I FROM 2 TO 1 DO
;   173          0486  3      BEGIN
;   174          0487  3
;   175          0488  3      LBN = KERNEL_CALL (MAP_WINDOW, .VBN, .WINDOW, .COUNT, .UNMAPPED);
;   176          0489  3      IF .LBN NEQ -1 THEN EXITLOOP;
;   177          0490  3
;   178          0491  3      HEADER = READ_HEADER (0, .FCB);
;   179          0492  3      KERNEL_CALL (TURN_WINDOW, .WINDOW, .HEADER, .VBN, .FCB[FCB$L_STVBN]);
;   180          0493  3      PMS$GL_TURN = .PMS$GL_TURN + 1;     ! count window turn in PMS data base
;  181          0494  3
;  182          0495  2      END;
;  183          0496  2
;  184          0497  2  RETURN .LBN;
;  185          0498  2
;  186          0499  1  END;                                     ! end of routine MAP_VBN


                                                                      .TITLE  MAPVBN
                                                                      .IDENT  \V04-000\

                                                                      .EXTRN  PMS$GL_TURN, MAP_WINDOW
                                                                      .EXTRN  READ_HEADER, TURN_WINDOW
                                                                      .EXTRN  REMAP_FILE, SYS$CMKRNL

                                                                      .PSECT  $CODE$,NOWRT,2

                                          07FC 00000                  .ENTRY  MAP_VBN, Save R2,R3,R4,R5,R6,R7,R8,R9,R10   ; 0380
                   5A 00000000G  9F   9E 00002                  MOVAB   @#SYS$CMKRNL, R10                          ;
                   5E            04   C2 00009                  SUBL2   #4, SP                                     ;
                   52       08   AC   D0 0000C                  MOVL    WINDOW, R2                                 ; 0444
                   53       18   A2   D0 00010                  MOVL    24(R2), FCB                                ;
                   55       04   AC   D0 00014                  MOVL    VBN, R5                                    ; 0445
                                 06   13 00018                  BEQL    1$                                         ;
              38   A3            55   D1 0001A                  CMPL    R5, 56(FCB)                                ;
                                 04   1B 0001E                  BLEQU   2$                                         ;
                   50            01   CE 00020  1$:             MNEGL   #1, R0                                     ; 0446
                                      04 00023                  RET                                                ;
                   50       0C   A3   D0 00024  2$:             MOVL    12(FCB), R0                                ; 0455
                                 0B   13 00028                  BEQL    3$                                         ;
                   55       2C   A0   D1 0002A                  CMPL    44(R0), R5                                 ; 0456
                                 05   1A 0002E                  BGTRU   3$                                         ;
                   53            50   D0 00030                  MOVL    R0, FCB                                    ; 0458
                                 EF   11 00033                  BRB     2$                                         ;
                   03            6C   91 00035  3$:             CMPB    (AP), #3                                   ; 0463
                                 06   1F 00038                  BLSSU   4$                                         ;
                   58       0C   AC   D0 0003A                  MOVL    BLOCK_COUNT, COUNT                         ; 0464
                                 03   11 0003E                  BRB     5$                                         ;
                   58            01   D0 00040  4$:             MOVL    #1, COUNT                                  ; 0463
                   04            6C   91 00043  5$:             CMPB    (AP), #4                                   ; 0467
                                 06   1F 00046                  BLSSU   6$                                         ;
                   57       10   AC   D0 00048                  MOVL    UNMAPPED_BLOCKS, UNMAPPED                  ; 0468
                                 03   11 0004C                  BRB     7$                                         ;
                   57            6E   9E 0004E  6$:             MOVAB   DUMMY, UNMAPPED                            ; 0467
       0A       0B A2            06   E1 00051  7$:             BBC     #6, 11(R2), 8$                             ; 0477
       05       0B A2            05   E0 0u056                  BBS     #5, 11(R2), 8$                             ;
             0000G CF            00   FB 0005B                  CALLS   #0, REMAP_FILE                             ; 0478
                   54            02   D0 00060  8$:             MOVL    #2, I                                      ; 0492
                                 57   DD 00063  9$:             PUSHL   UNMAPPED                                   ; 0488
                          0104   8F   BB C0065                  PUSHR   #^M<R2,R8>                                 ;
                                 55   DD 00069                  PUSHL   R5                                         ;
                                 04   DD 0006B                  PUSHL   #4                                         ;
                                 5E   DD 0006D                  PUSHL   SP                                         ;
                         0000G   CF   9F 0006F                  PUSHAB  MAP_WINDOW                                 ;
                   6A            07   FB 00073                  CALLS   #7, SYS$CMKRNL                             ;
                   56            50   D0 00076                  MOVL    R0, LBN                                    ;
         FFFFFFFF  8F            56   D1 00079                  CMPL    LBN, #-1                                   ; 0489
```

```
                                    29  12 00080          BNEQ    10$                                   ;
                                    53  DD 00082          PUSHL   FCB                                   ; 0491
                                    7E  D4 00084          CLRL    -(SP)                                 ;
                   0000G  CF        02  FB 00086          CALLS   #2, READ_HEADER                       ;
                          59        50  D0 0008B          MOVL    R0, HEADER                            ;
                               2C   A3  DD 0008E          PUSHL   44(FCB)                               ; 0492
                                    55  DD 00091          PUSHL   R5                                    ;
                             0204   8F  BB 00093          PUSHR   #^M<R2,R9>                            ;
                                    04  DD 00097          PUSHL   #4                                    ;
                                    5E  DD 00099          PUSHL   SP                                    ;
                            0000G   CF  9F 0009B          PUSHAB  TURN_WINDOW                           ;
                          6A        07  FB 0009F          CALLS   #7, SYS$CMKRNL                        ;
                       00000000G    00  D6 000A2          INCL    PMS$GL_TURN                           ; 0493
                          B8        54  F5 000A8          SOBGTR  I, 9$                                 ; 0485
                          50        56  D0 000AB 10$:     MOVL    LBN, R0                               ; 0497
                                        04 000AE          RET                                           ; 0499

; Routine Size:  175 bytes,    Routine Base:  $CODE$ + 0000


;  187          0500  1
;  188          0501  1 END
;  189          0502  0 ELUDOM




;                                          PSECT SUMMARY
;
;       Name                          Bytes                          Attributes
;
;  $CODE$                                  175  NOVEC,NOWRT,  RD ,  EXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)



;                                 Library Statistics
;
;                                                 -------- Symbols --------       Pages        Processing
;       File                                      Total     Loaded   Percent      Mapped       Time
;
;  _$255$DUA28:[SYSLIB]LIB.L32;1                  18619          7         0      1000           00:01.9




;                                          COMMAND QUALIFIERS

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

; Size:         175 code + 0 data bytes
; Run Time:        00:07.4
; Elapsed Time:    00:24.2
; Lines/CPU Min:    4048
; Lexemes/CPU-Min: 12870
; Memory Used:  99 pages
; Compilation Complete
```

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