```
BBBBBBBBBBBB        AAAAAAAAA        CCCCCCCCCCC  KKK         KKK  UUU          UUU  PPPPPPPPPPPP
BBBBBBBBBBBB        AAAAAAAAA        CCCCCCCCCCC  KKK         KKK  UUU          UUU  PPPPPPPPPPPP
BBBBBBBBBBBB        AAAAAAAAA        CCCCCCCCCCC  KKK         KKK  UUU          UUU  PPPPPPPPPPPP
BBB         BBB  AAA         AAA  CCC            KKK         KKK  UUU          UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC            KKK         KKK  UUU          UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC            KKK         KKK  UUU          UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC            KKK       KKK    UUU          UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC            KKK       KKK    UUU          UUU  PPP         PPP
BBB         BBB  AAA         AAA  CCC            KKK       KKK    UUU          UUU  PPP         PPP
BBBBBBBBBBBB     AAA         AAA  CCC            KKKKKKKKK        UUU          UUU  PPPPPPPPPPPP
BBBBBBBBBBBB     AAA         AAA  CCC            KKKKKKKKK        UUU          UUU  PPPPPPPPPPPP
BBBBBBBBBBBB     AAA         AAA  CCC            KKKKKKKKK        UUU          UUU  PPPPPPPPPPPP
BBB         BBB  AAAAAAAAAAAAAAA  CCC            KKK       KKK    UUU          UUU  PPP
BBB         BBB  AAAAAAAAAAAAAAA  CCC            KKK       KKK    UUU          UUU  PPP
BBB         BBB  AAAAAAAAAAAAAAA  CCC            KKK       KKK    UUU          UUU  PPP
BBB         BBB  AAA         AAA  CCC            KKK          KKK  UUU          UUU  PPP
BBB         BBB  AAA         AAA  CCC            KKK          KKK  UUU          UUU  PPP
BBB         BBB  AAA         AAA  CCC            KKK          KKK  UUU          UUU  PPP
BBBBBBBBBBBB     AAA         AAA     CCCCCCCCCCC  KKK          KKK  UUUUUUUUUUUUUUUU  PPP
BBBBBBBBBBBB     AAA         AAA     CCCCCCCCCCC  KKK          KKK  UUUUUUUUUUUUUUUU  PPP
```

```
BBBBBBBB    UU      UU  FFFFFFFFFF  FFFFFFFFFF  EEEEEEEEEE  RRRRRRRR      SSSSSSSS
BBBBBBBB    UU      UU  FFFFFFFFFF  FFFFFFFFFF  EEEEEEEEEE  RRRRRRRR      SSSSSSSS
BB      BB  UU      UU  FF          FF          EE          RR      RR  SS
BB      BB  UU      UU  FF          FF          EE          RR      RR  SS
BB      BB  UU      UU  FF          FF          EE          RR      RR  SS
BB      BB  UU      UU  FF          FF          EE          RR      RR  SS
BBBBBBBB    UU      UU  FFFFFFFF    FFFFFFFF    EEEEEEEE    RRRRRRRR      SSSSSS
BBBBBBBB    UU      UU  FFFFFFFF    FFFFFFFF    EEEEEEEE    RRRRRRRR      SSSSSS
BB      BB  UU      UU  FF          FF          EE          RR  RR              SS
BB      BB  UU      UU  FF          FF          EE          RR  RR              SS
BB      BB  UU      UU  FF          FF          EE          RR    RR            SS      ....
BB      BB  UU      UU  FF          FF          EE          RR    RR            SS      ....
BBBBBBBB    UUUUUUUUUU  FF          FF          EEEEEEEEEE  RR      RR  SSSSSSSS        ....
BBBBBBBB    UUUUUUUUUU  FF          FF          EEEEEEEEEE  RR      RR  SSSSSSSS        ....

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

```
;     1        0001  0 MODULE BUFFERS (%TITLE  'Buffer Manager'
;     2        0002  0                 IDENT = 'V04-000'
;     3        0003  0                 ) =
;     4        0004  1 BEGIN
;     5        0005  1
;     6        0006  1 !
;     7        0007  1 !**********************************************************************
;     8        0008  1 !*                                                                    *
;     9        0009  1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                          *
;    10        0010  1 !*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.           *
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;    19        0019  1 !*                                                                    *
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;    21        0021  1 !*  AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT *
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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:
;    33        0033  1 !       Backup/Restore
;    34        0034  1 !
;    35        0035  1 ! ABSTRACT:
;    36        0036  1 !
;    37        0037  1 !       This module contains the routines that manage the I/O buffer
;    38        0038  1 !       pool.
;    39        0039  1 !
;    40        0040  1 ! ENVIRONMENT:
;    41        0041  1 !
;    42        0042  1 !       VAX/VMS User Mode
;    43        0043  1 !
;    44        0044  1 !--
;    45        0045  1 !
;    46        0046  1 ! AUTHOR:  Andrew C. Goldstein, CREATION DATE:  9-Sep-1980  22:20
;    47        0047  1 !
;    48        0048  1 ! MODIFIED BY:
;    49        0049  1 !
;    50        0050  1 !       V03-002 ACG0332         Andrew C. Goldstein,    2-May-1983  13:38
;    51        0051  1 !               Remove .B32 from BACKDEF require file
;    52        0052  1 !
;    53        0053  1 !       V03-001 ACG0313         Andrew C. Goldstein,    12-Feb-1983  16:02
;    54        0054  1 !               Add routine subtitles
;    55        0055  1 !
;    56        0056  1 !       V02-003 MLJ0054         Martin L. Jack, 22-Nov-1981  21:43
;    57        0057  1 !               Integrate GET_VM and FREE_VM jacket routines.
```

```
;    58          0058  1 !
;    59          0059  1 !       V02-002 MLJ0036         Martin L. Jack, 28-Aug-1981  17:27
;    60          0060  1 !               Initialize RWSV_HOLD_LIST.
;    61          0061  1 !
;    62          0062  1 !       V02-001 MLJ0010         Martin L. Jack, 25-Mar-1981  15:17
;    63          0063  1 !               Reorganize global storage.  Clean up signals.
;    64          0064  1 !
;    65          0065  1 !**
;    66          0066  1
;    67          0067  1
;    68          0068  1 LIBRARY 'SYS$LIBRARY:STARLET';
;    69          0069  1 REQUIRE 'SRC$:COMMON';
;    70          1175  1 REQUIRE 'LIB$:BACKDEF';
;    71          1625  1
;    72          1626  1
;    73          1627  1 EXTERNAL LITERAL
;    74          1628  1         BACKUP$_ALLOCMEM;
;    75          1629  1
;    76          1630  1
;    77          1631  1 G$DEFINE();                       ! Define global common area
```

```
;    79          1632  1 %SBTTL 'INIT_BUFFERS - initialize the buffer pool'
;    80          1633  1 GLOBAL ROUTINE INIT_BUFFERS (COUNT, SIZE) : NOVALUE =
;    81          1634  1
;    82          1635  1 !++
;    83          1636  1 !
;    84          1637  1 ! FUNCTIONAL DESCRIPTION:
;    85          1638  1 !
;    86          1639  1 !       This routine initializes the I/O buffer pool.
;    87          1640  1 !
;    88          1641  1 ! CALLING SEQUENCE:
;    89          1642  1 !       INIT_BUFFERS (COUNT, SIZE)
;    90          1643  1 !
;    91          1644  1 ! INPUT PARAMETERS:
;    92          1645  1 !       COUNT: number of buffers to allocate
;    93          1646  1 !       SIZE: size in bytes of each buffer
;    94          1647  1 !
;    95          1648  1 ! IMPLICIT INPUTS:
;    96          1649  1 !       NONE
;    97          1650  1 !
;    98          1651  1 ! OUTPUT PARAMETERS:
;    99          1652  1 !       NONE
;   100          1653  1 !
;   101          1654  1 ! IMPLICIT OUTPUTS:
;   102          1655  1 !       NONE
;   103          1656  1 !
;   104          1657  1 ! ROUTINE VALUE:
;   105          1658  1 !       NONE
;   106          1659  1 !
;   107          1660  1 ! SIDE EFFECTS:
;   108          1661  1 !       NONE
;   109          1662  1 !
;   110          1663  1 !--
;   111          1664  1
;   112          1665  2 BEGIN
;   113          1666  2
;   114          1667  2 BUILTIN
;   115          1668  2         INSQUE;
;   116          1669  2
;   117          1670  2 LOCAL
;   118          1671  2         STATUS,                         ! general status return
;   119          1672  2         X               : REF BBLOCK;   ! storage being allocated
;   120          1673  2
;   121          1674  2 EXTERNAL ROUTINE
;   122          1675  2         GET_ZERO_VM;
;   123          1676  2
;   124          1677  2 ! Initialize the queue headers.
;   125          1678  2 !
;   126          1679  2
;   127          1680  2 FREE_LIST[0] = FREE_LIST[0];
;   128          1681  2 FREE_LIST[1] = FREE_LIST[0];
;   129          1682  2 INPUT_WAIT[0] = INPUT_WAIT[0];
;   130          1683  2 INPUT_WAIT[1] = INPUT_WAIT[0];
;   131          1684  2 REREAD_WAIT[0] = REREAD_WAIT[0];
;   132          1685  2 REREAD_WAIT[1] = REREAD_WAIT[0];
;   133          1686  2 OUTPUT_WAIT[0] = OUTPUT_WAIT[0];
;   134          1687  2 OUTPUT_WAIT[1] = OUTPUT_WAIT[0];
;   135          1688  2 RWSV_HOLD_LIST[0] = RWSV_HOLD_LIST[0];
```

```
;  136          1689  2 RWSV_HOLD_LIST[1] = RWSV_HOLD_LIST[0];
;  137          1690  2
;  138          1691  2 ! Allocate a BCB and buffer of the requested size, and link them into
;  139          1692  2 ! the free list. Repeat for the specified number.
;  140          1693  2 !
;  141          1694  2
;  142          1695  2 COM_BUFF_COUNT = .COUNT;
;  143          1696  2 DECR J FROM .COUNT TO 1
;  144          1697  2 DO
;  145          1698  3     BEGIN
;  146          1699  3     X = GET_ZERO_VM (BCB_LENGTH);
;  147          1700  3     X[BCB_STATE] = BCB_S_IDLE;
;  148          1701  3     X[BCB_SIZE] = .SIZE;
;  149          1702  3     INSQUE (.X, .FREE_LIST[1]);
;  150          1703  2     END;
;  151          1704  2
;  152          1705  2
;  153          1706  2 X = .FREE_LIST[0];
;  154          1707  2 DECR J FROM .COUNT TO 1
;  155          1708  2 DO
;  156          1709  3     BEGIN
;  157          1710  3     LOCAL
;  158          1711  3         RETADR:         VECTOR[2];
;  159          1712  3
;  160          1713  3     STATUS = $EXPREG(PAGCNT=(.SIZE+511)/512, RETADR=RETADR);
;  161          1714  3     IF NOT .STATUS THEN SIGNAL (BACKUP$_ALLOCMEM, 0, .STATUS);
;  162          1715  3     X[BCB_BUFFER] = .RETADR[0];
;  163          1716  3     X = .X[BCB_FLINK];
;  164          1717  2     END;
;  165          1718  2
;  166          1719  1 END;                                   ! End of routine INIT_BUFFERS


                               .TITLE  BUFFERS Buffer Manager
                               .IDENT  \V04-000\

                               .PSECT  COMMON,NOEXE,  OVR,2

00000 GLOBAL_BASE:
                               .BLKB   0
00000 FREE_LIST:
                               .BLKB   8
00008 INPUT_WAIT:
                               .BLKB   8
00010 REREAD_WAIT:
                               .BLKB   8
00018 OUTPUT_WAIT:
                               .BLKB   8
00020 JPI_UIC:.BLKB   4
00024 JPI_USERNAME:
                               .BLKB   12
00030 JPI_DATE:
                               .BLKB   8
00038 JPI_NODE_DESC:
                               .BLKB   8
00040 JPI_CURPRIV:
                               .BLKB   8
```

```
00048 SYI_VERSION:
                .BLKB   4
0004C SYI_SID:.BLKB   4
00050 RWSV_HOLD_LIST:
                .BLKB   8
00058 RWSV_CRC16:
                .BLKB   64
00098 RWSV_AUTODIN:
                .BLKB   64
000D8 RWSV_FILESET_ID:
                .BLKB   8
000E0 RWSV_VOLUME_ID:
                .BLKB   12
000EC RWSV_VOL_NUMBER:
                .BLKB   2
000EE RWSV_SEG_NUMBER:
                .BLKB   2
000F0 RWSV_FILE_NUMBER:
                .BLKB   4
000F4 RWSV_SAVE_QUAL:
                .BLKB   4
000F8 RWSV_SAVE_FAB:
                .BLKB   4
000FC RWSV_CHAN:
                .BLKB   4
00100 RWSV_XOR_BCB:
                .BLKB   4
00104 RWSV_IN_SEQ:
                .BLKB   4
00108 RWSV_IN_SEQ_0:
                .BLKB   4
0010C RWSV_IN_XOR_SEQ:
                .BLKB   4
00110 RWSV_IN_XOR_RFA:
                .BLKB   6
00116 RWSV_LOOKAHEAD:
                .BLKB   1
00117 RWSV_XORSIZE:
                .BLKB   1
00118 RWSV_IN_GROUP_SIZE:
                .BLKB   4
0011C RWSV_IN_ERRORS:
                .BLKB   2
0011E RWSV_IN_XORUSE:
                .BLKB   2
00120 RWSV_IN_ORGERR:
                .BLKB   8
00128 RWSV_IN_VBN:
                .BLKB   4
0012C RWSV_IN_VBN_0:
                .BLKB   4
00130 RWSV_ALLOC:
                .BLKB   4
00134 RWSV_EOF:
                .BLKB   4
00138 RWSV_OUT_SEQ:
                .BLKB   4
```

```
0013C RWSV_OUT_VBN:
                .BLKB   4
00140 RWSV_OUT_BLOCK_COUNT:
                .BLKB   4
00144 RWSV_OUT_ERRORS:
                .BLKB   2
00146 RWSV_SEQ_ERRORS:
                .BLKB   2
00148 RWSV_OUT_GROUP_COUNT:
                .BLKB   1
00149 RWSV_PADDING:
                .BLKB   3
0014C QUAL:     .BLKB   112
001BC COM_SSNAME:
                .BLKB   8
001C4 COM_VALID_TYPES:
                .BLKB   2
001C6 COM_FLAGS:
                .BLKB   2
001C8 COM_PADDING:
                .BLKB   1
001C9 COM_BUFF_COUNT:
                .BLKB   1
001CA COM_I_SETCOUNT:
                .BLKB   1
001CB COM_O_SETCOUNT:
                .BLKB   1
001CC COM_I_STRUCNAME:
                .BLKB   12
001D8 COM_O_STRUCNAME:
                .BLKB   12
001E4 COM_O_BSRDATE:
                .BLKB   8
001EC ALT_SSNAME:
                .BLKB   32
0020C INPUT_FUNC:
                .BLKB   1
0020D INPUT_RTYPE:
                .BLKB   1
0020E OUTPUT_FUNC:
                .BLKB   1
0020F FAST_STRUCLEV:
                .BLKB   1
00210 INPUT_BEG:
                .BLKB   0
00210 INPUT_CHAN:
                .BLKB   4
00214 INPUT_FLAGS:
                .BLKB   2
00216 INPUT_PADDING:
                .BLKB   2
00218 INPUT_FAB:
                .BLKB   4
0021C INPUT_NAM:
                .BLKB   4
00220 INPUT_BCB:
                .BLKB   4
```

```
00224 INPUT_QUAL:
                .BLKB   4
00228 INPUT_BAD:
                .BLKB   4
0022C INPUT_BLOCK:
                .BLKB   4
00230 INPUT_MAXBLOCK:
                .BLKB   4
00234 INPUT_MEDIA_ID:
                .BLKB   4
00238 INPUT_NAMEDESC:
                .BLKB   8
00240 INPUT_STATBLK:
                .BLKB   8
00248 INPUT_HDR_BEG:
                .BLKB   0
00248 INPUT_CREDATE:
                .BLKB   8
00250 INPUT_REVDATE:
                .BLKB   8
00258 INPUT_EXPDATE:
                .BLKB   8
00260 INPUT_BAKDATE:
                .BLKB   8
00268 INPUT_FILEOWNER:
                .BLKB   4
0026C INPUT_FILECHAR:
                .BLKB   4
00270 INPUT_RECATTR:
                .BLKB   32
00290 INPUT_HDR_END:
                .BLKB   0
00290 INPUT_END:
                .BLKB   0
00290 INPUT_PROC_LIST:
                .BLKB   4
00294 INPUT_PLACEMENT:
                .BLKB   8
0029C INPUT_VBN_LIST:
                .BLKB   8
002A4 INPUT_PLACE_LEN:
                .BLKB   2
002A6 INPUT_PADDING_2:
                .BLKB   2
002A8 OUTPUT_BEG:
                .BLKB   0
002A8 OUTPUT_CHAN:
                .BLKB   4
002AC OUTPUT_FLAGS:
                .BLKB   2
002AE OUTPUT_PADDING:
                .BLKB   2
002B0 OUTPUT_FAB:
                .BLKB   4
002B4 OUTPUT_NAM:
                .BLKB   4
002B8 OUTPUT_BCB:
```

```
                        .BLKB   4
002BC OUTPUT_QUAL:
                        .BLKB   4
002C0 OUTPUT_BAD:
                        .BLKB   4
002C4 OUTPUT_BLOCK:
                        .BLKB   4
002C8 OUTPUT_MAXBLOCK:
                        .BLKB   4
002CC OUTPUT_DEVGEOM:
                        .BLKB   8
002D4 OUTPUT_ATTBUF:
                        .BLKB   144
00364 OUTPUT_END:
                        .BLKB   0
00364 LIST_TOTFILES:
                        .BLKB   4
00368 LIST_TOTSIZE:
                        .BLKB   4
0036C VERIFY_FAB:
                        .BLKB   4
00370 VERIFY_USE_COUNT:
                        .BLKB   4
00374 VERIFY_QUAL:
                        .BLKB   4
00378 COMPARE_BCB:
                        .BLKB   4
0037C FAST_BUFFER:
                        .BLKB   4
00380 FAST_BUFFER_SIZE:
                        .BLKB   4
00384 FAST_RVN:
                        .BLKB   1
00385 FAST_PADDING:
                        .BLKB   1
00386 DIR_VERLIMIT:
                        .BLKB   2
00388 FAST_VOL_BEG:
                        .BLKB   0
00388 FAST_IMAP_SIZE:
                        .BLKB   4
0038C FAST_IMAP:
                        .BLKB   4
00390 FAST_HDR_OFFSET:
                        .BLKB   4
00394 FAST_BOOT_LBN:
                        .BLKB   4
00398 FAST_VOL_END:
                        .BLKB   0
00398 JOUR_BUFFER:
                        .BLKB   4
0039C JOUR_DIR:
                        .BLKB   4
003A0 JOUR_HIBLK:
                        .BLKB   4
003A4 JOUR_EFBLK:
                        .BLKB   4
```

```
003A8 JOUR_INBLK:
                .BLKB   4
003AC JOUR_FFBYTE:
                .BLKB   2
003AE JOUR_INBYTE:
                .BLKB   2
003B0 JOUR_STRUCT_LEV:
                .BLKB   2
003B2 JOUR_COUNT:
                .BLKB   1
003B3 JOUR_REVERSE:
                .BLKB   1
003B4 JOUR_EXSZ:
                .BLKB   2
003B6 JOUR_PADDING:
                .BLKB   2
003B8 CHKPT_HIGH_SP:
                .BLKB   4
003BC CHKPT_LOW_SP:
                .BLKB   4
003C0 CHKPT_STACK:
                .BLKB   4
003C4 CHKPT_VARS:
                .BLKB   4
003C8 CHKPT_STATUS:
                .BLKB   4
003CC DIR_BEG:.BLKB     0
003CC DIR_CHAN:
                .BLKB   4
003D0 DIR_NAM:.BLKB     4
003D4 DIR_DEV_DESC:
                .BLKB   4
003D8 DIR_SEL_DIR:
                .BLKB   8
003E0 DIR_SEL_NTV:
                .BLKB   8
003E8 DIR_STRUCLEV:
                .BLKB   1
003E9 DIR_LEVELS:
                .BLKB   1
003EA DIR_FLAGS:
                .BLKB   1
003EB DIR_STATUS:
                .BLKB   1
003EC DIR_STRING:
                .BLKB   320
0052C DIR_STACK:
                .BLKB   612
00790 DIR_SP: .BLKB     4
00794 DIR_SEL_LATEST:
                .BLKB   4
00798 DIR_END:.BLKB     0
00798 DIR_SCANLIMIT:
                .BLKB   36
007BC INPUT_MTL:
                .BLKB   4
007C0 OUTPUT_MTL:
```

```
                                                        .BLKB   4
                                007C4 CURRENT_MTL:
                                                        .BLKB   4
                                007C8 CURRENT_VCB:
                                                        .BLKB   4
                                007CC CURRENT_WCB:
                                                        .BLKB   4
                                007D0 ACL_FIB_DESCR:
                                                        .BLKB   8
                                007D8 ACL_FIB:.BLKB     64
                                00818 ACL_LENGTH:
                                                        .BLKB   4
                                0081C ACL_BUFFER:
                                                        .BLKB   4
                                00820 CRYP_IN_CONTEXT:
                                                        .BLKB   4
                                00824 CRYP_OU_CONTEXT:
                                                        .BLKB   4
                                00828 CRYP_DA_CONTEXT:
                                                        .BLKB   4
                                0082C CRYP_DATA_ENCIV:
                                                        .BLKB   8
                                00834 CRYP_DATA_CODE:
                                                        .BLKB   4
                                00838 CRYP_DATA_KEY:
                                                        .BLKB   8
                                00840 CRYP_DATA_IV:
                                                        .BLKB   8
                                00848 CRYP_DATA_CKSM:
                                                        .BLKB   4

                                                        .EXTRN  BACKUP$_ALLOCMEM
                                                        .EXTRN  GET_ZERO_VM, SYS$EXPREG

                                                        .PSECT  CODE,NOWRT,2

                                007C 00000              .ENTRY  INIT_BUFFERS, Save R2,R3,R4,R5,R6                       ; 1633
                     56 00000000'   EF  9E 00002        MOVAB   FREE_LIST, R6                                           ;
                     5E             08  C2 00009        SUBL2   #8, SP                                                  ;
                     66             66  9E 0000C        MOVAB   FREE_LIST, FREE_LIST                                    ; 1680
                04   A6             66  9E 0000F        MOVAB   FREE_LIST, FREE_LIST+4                                  ; 1681
                08   A6        08   A6  9E 00013        MOVAB   INPUT_WAIT, INPUT_WAIT                                  ; 1682
                0C   A6        08   A6  9E 00018        MOVAB   INPUT_WAIT, INPUT_WAIT+4                                ; 1683
                10   A6        10   A6  9E 0001D        MOVAB   REREAD_WAIT, REREAD_WAIT                                ; 1684
                14   A6        10   A6  9E 00022        MOVAB   REREAD_WAIT, REREAD_WAIT+4                              ; 1685
                18   A6        18   A6  9E 00027        MOVAB   OUTPUT_WAIT, OUTPUT_WAIT                                ; 1686
                1C   A6        18   A6  9E 0002C        MOVAB   OUTPUT_WAIT, OUTPUT_WAIT+4                              ; 1687
                50   A6        50   A6  9E 00031        MOVAB   RWSV_HOLD_LIST, RWSV_HOLD_LIST                          ; 1688
                54   A6        50   A6  9E 00036        MOVAB   RWSV_HOLD_LIST, RWSV_HOLD_LIST+4                        ; 1689
              01C9   C6        04   AC  90 0003B        MOVB    COUNT, COM_BUFF_COUNT                                   ; 1695
          53    04   AC             01  C1 00041        ADDL3   #1, COUNT, J                                            ; 1696
                                    18  11 00046        BRB     2$                                                      ;
                                    28  DD 00048 1$:     PUSHL   #40                                                     ; 1699
          00000000G   00            01  FB 0004A        CALLS   #1, GET_ZERO_VM                                         ;
                     52             50  D0 00051        MOVL    R0, X                                                   ;
                             0A     A2  94 00054        CLRB    10(X)                                                   ; 1700
                08   A2        08   AC  B0 00057        MOVW    SIZE, 8(X)                                              ; 1701
```

```
                         04   B6              62  0E 0005C          INSQUE  (X), @FREE_LIST+4                ; 1702
                              E5              53  F5 00060 2$:      SOBGTR  J, 1$                           ; 1696
                              52              66  D0 00063          MOVL    FREE_LIST, X                    ; 1706
                53       08   AC 000001FF     8F  C1 00066          ADDL3   #511, SIZE, R3                  ; 1713
                              53 00000200     8F  C6 0006F          DIVL2   #512, R3                        ;
                54       04   AC              01  C1 00076          ADDL3   #1, COUNT, J                    ;
                                              2C  11 0007B          BRB     5$                              ;
                                              7E  7C 0007D 3$:      CLRQ    -(SP)                           ;
                                                  08  AE 9F 0007F   PUSHAB  RETADR                         ;
                                              53  DD 00082          PUSHL   R3                              ;
                00000000G     00              04  FB 00084          CALLS   #4, SYS$EXPREG                  ;
                              55              50  D0 0008B          MOVL    R0, STATUS                      ;
                              11              55  E8 0008E          BLBS    STATUS, 4$                      ; 1714
                                              55  DD 00091          PUSHL   STATUS                          ;
                                              7E  D4 00093          CLRL    -(SP)                           ;
                                   00000000G  8F  DD 00095          PUSHL   #BACKUP$_ALLOCMEM               ;
                00000000G     00              03  FB 0009B          CALLS   #3, LIB$SIGNAL                  ;
                         0C   A2              6E  D0 000A2 4$:      MOVL    RETADR, 12(X)                   ; 1715
                              52              62  D0 000A6          MOVL    (X), X                          ; 1716
                              D1              54  F5 000A9 5$:      SOBGTR  J, 3$                           ; 1707
                                                  04 000AC          RET                                     ; 1719

; Routine Size:  173 bytes,    Routine Base:  CODE + 0000
```

```
;  168          1720  1 %SBTTL 'WAIT - wait for I/O completion on buffer'
;  169          1721  1 GLOBAL ROUTINE WAIT (BCB) : NOVALUE =
;  170          1722  1
;  171          1723  1 !++
;  172          1724  1 !
;  173          1725  1 ! FUNCTIONAL DESCRIPTION:
;  174          1726  1 !
;  175          1727  1 !       This routine waits for I/O completion on the specified
;  176          1728  1 !       buffer control block.
;  177          1729  1 !
;  178          1730  1 ! CALLING SEQUENCE:
;  179          1731  1 !       WAIT (BCB)
;  180          1732  1 !
;  181          1733  1 ! INPUT PARAMETERS:
;  182          1734  1 !       BCB: address of buffer control block to wait on
;  183          1735  1 !
;  184          1736  1 ! IMPLICIT INPUTS:
;  185          1737  1 !       NONE
;  186          1738  1 !
;  187          1739  1 ! OUTPUT PARAMETERS:
;  188          1740  1 !       NONE
;  189          1741  1 !
;  190          1742  1 ! IMPLICIT OUTPUTS:
;  191          1743  1 !       NONE
;  192          1744  1 !
;  193          1745  1 ! ROUTINE VALUE:
;  194          1746  1 !       NONE
;  195          1747  1 !
;  196          1748  1 ! SIDE EFFECTS:
;  197          1749  1 !       NONE
;  198          1750  1 !
;  199          1751  1 !--
;  200          1752  1
;  201          1753  2 BEGIN
;  202          1754  2
;  203          1755  2 MAP
;  204          1756  2         BCB             : REF BBLOCK;   ! BCB arg
;  205          1757  2
;  206          1758  2 BIND
;  207          1759  2         VALID_STATE     = UPLIT BYTE (1^BCB_S_READ
;  208          1760  2                                     +1^BCB_S_REREAD
;  209          1761  2                                     +1^BCB_S_WRITE)
;  210          1762  2                         : BITVECTOR;
;  211          1763  2
;  212          1764  2 ! Check the buffer state - it must have I/O pending.
;  213          1765  2 !
;  214          1766  2
;  215          1767  2 IF .BCB[BCB_STATE] GEQU 8
;  216          1768  2 OR NOT .VALID_STATE[.BCB[BCB_STATE]]
;  217          1769  2 THEN BUG_CHECK (WAITIDLEBCB, 'Attempted wait on idle buffer');
;  218          1770  2
;  219          1771  2 ! Clear the event flag, check the I/O status, and then wait if I/O
;  220          1772  2 ! is still pending.
;  221          1773  2 !
;  222          1774  2
;  223          1775  2 WHILE TRUE
;  224          1776  2 DO
```

```
;  225          1777  3     BEGIN
;  226          1778  3     $CLREF (EFN = .BCB[BCB_STATE]);
;  227          1779  3     IF .BCB[BCB_IO_STATUS] NEQ 0 THEN EXITLOOP;
;  228          1780  3     $WAITFR (EFN = .BCB[BCB_STATE]);
;  229          1781  2     END;
;  230          1782  2 BCB[BCB_STATE] = BCB_S_DATA;
;  231          1783  2
;  232          1784  2 ! If a completion action routine is specified, call it.
;  233          1785  2 !
;  234          1786  2
;  235          1787  2 IF NOT .BCB[BCB_IO_STATUS]
;  236          1788  2 AND .BCB[BCB_FAIL_ACT] NEQ 0
;  237          1789  2 THEN (.BCB[BCB_FAIL_ACT]) (.BCB);
;  238          1790  2
;  239          1791  2 IF .BCB[BCB_IO_STATUS]
;  240          1792  2 AND .BCB[BCB_SUCC_ACT] NEQ 0
;  241          1793  2 THEN (.BCB[BCB_SUCC_ACT]) (.BCB);
;  242          1794  2
;  243          1795  1 END;                                   ! End of routine WAIT


                                16  000AD P.AAA:  .BYTE   22                                      ;

                                    VALID_STATE=        P.AAA
                                                .EXTRN  BACKUP$_WAITIDLEBCB
                                                .EXTRN  SYS$CLREF, SYS$WAITFR

                                  000C 00000            .ENTRY  WAIT, Save R2,R3                  ; 1721
                        52      04   AC  D0 00002        MOVL    BCB, R2                           ; 1767
                        08      0A   A2  91 00006        CMPB    10(R2), #8                        ;
                                     09  1E 0000A        BGEQU   1$                                ;
                        50      0A   A2  9A 0000C        MOVZBL  10(R2), R0                        ; 1768
                0D          EB  AF       50  E0 00010    BBS     R0, VALID_STATE, 2$               ;
                            00000000G    8F  DD 00015 1$: PUSHL   #BACKUP$_WAITIDLEBCB              ; 1769
                00000000G   00           01  FB 00018    CALLS   #1, LIB$STOP                      ;
                            53      18   A2  9E 00022 2$: MOVAB   24(R2), R3                       ; 1779
                            7E      0A   A2  9A 00026 3$: MOVZBL  10(R2), -(SP)                    ; 1778
                00000000G   00           01  FB 0002A    CALLS   #1, SYS$CLREF                     ;
                                         63  B5 00031    TSTW    (R3)                              ; 1779
                                         0D  12 00033    BNEQ    4$                                ;
                            7E      0A   A2  9A 00035    MOVZBL  10(R2), -(SP)                     ; 1780
                00000000G   00           01  FB 00039    CALLS   #1, SYS$WAITFR                    ;
                                         E4  11 00040    BRB     3$                                ; 1775
                    0A      A2           03  90 00042 4$: MOVB    #3, 10(R2)                        ; 1782
                            0E           63  E8 00046    BLBS    (R3), 6$                          ; 1787
                                    24   A2  D5 00049    TSTL    36(R2)                            ; 1788
                                         06  13 0004C    BEQL    5$                                ;
                                         52  DD 0004E    PUSHL   R2                                ; 1789
                    24      B2           01  FB 00050    CALLS   #1, @36(R2)                       ;
                            0B           63  E9 00054 5$: BLBC    (R3), 7$                          ; 1791
                                    20   A2  D5 00057 6$: TSTL    32(R2)                            ; 1792
                                         06  13 0005A    BEQL    7$                                ;
                                         52  DD 0005C    PUSHL   R2                                ; 1793
                    20      B2           01  FB 0005E    CALLS   #1, @32(R2)                       ;
                                         04  00062 7$:    RET                                       ; 1795
```

; Routine Size: 99 bytes,   Routine Base: CODE + 00AE

```
;  245          1796  1 %SBTTL 'GET_BUFFER - allocate a buffer'
;  246          1797  1 GLOBAL ROUTINE GET_BUFFER =
;  247          1798  1
;  248          1799  1 !++
;  249          1800  1 !
;  250          1801  1 ! FUNCTIONAL DESCRIPTION:
;  251          1802  1 !
;  252          1803  1 !       This routine allocates a buffer from the buffer pool.
;  253          1804  1 !
;  254          1805  1 ! CALLING SEQUENCE:
;  255          1806  1 !       GET_BUFFER ()
;  256          1807  1 !
;  257          1808  1 ! INPUT PARAMETERS:
;  258          1809  1 !       NONE
;  259          1810  1 !
;  260          1811  1 ! IMPLICIT INPUTS:
;  261          1812  1 !       NONE
;  262          1813  1 !
;  263          1814  1 ! OUTPUT PARAMETERS:
;  264          1815  1 !       NONE
;  265          1816  1 !
;  266          1817  1 ! IMPLICIT OUTPUTS:
;  267          1818  1 !       NONE
;  268          1819  1 !
;  269          1820  1 ! ROUTINE VALUE:
;  270          1821  1 !       NONE
;  271          1822  1 !
;  272          1823  1 ! SIDE EFFECTS:
;  273          1824  1 !       NONE
;  274          1825  1 !
;  275          1826  1 !--
;  276          1827  1
;  277          1828  2 BEGIN
;  278          1829  2
;  279          1830  2 BUILTIN
;  280          1831  2         REMQUE;
;  281          1832  2
;  282          1833  2 LOCAL
;  283          1834  2         BCB             : REF BBLOCK;   ! buffer control block found
;  284          1835  2
;  285          1836  2 ! Grab the first buffer from the free list. If it is empty, wait for
;  286          1837  2 ! completion of a write and take it.
;  287          1838  2 !
;  288          1839  2
;  289          1840  2 IF REMQUE (.FREE_LIST[0], BCB)
;  290          1841  2 THEN
;  291          1842  3     BEGIN
;  292          1843  3     IF REMQUE (.OUTPUT_WAIT[0], BCB)
;  293          1844  3     THEN BUG_CHECK (BUFFERSLOST, 'All freeable buffers are lost');
;  294          1845  3     WAIT (.BCB);
;  295          1846  2     END;
;  296          1847  2
;  297          1848  2 BCB[BCB_RECORD] = .BCB[BCB_BUFFER] + BBH$K_LENGTH;
;  298          1849  2 BCB[BCB_STATE] = BCB_S_DATA;
;  299          1850  2 .BCB
;  300          1851  1 END;                                    ! End of routine GET_BUFFER
```

```
                                                                .EXTRN  BACKUP$_BUFFERSLOST

                                                     0004 00000         .ENTRY  GET_BUFFER, Save R2                             ; 1797
                                    52 00000000'  FF   0F 00002         REMQUE  @FREE_LIST, BCB                                 ; 1840
                                                  1D   1C 00009         BVC     2$                                              ;
                                    52 00000000'  FF   0F 0000B         REMQUE  @OUTPUT_WAIT, BCB                               ; 1843
                                                  0D   1C 00012         BVC     1$                                              ;
                                       00000000G  8F   DD 00014         PUSHL   #BACKUP$_BUFFERSLOST                            ; 1844
                          00000000G   00          01   FB 0001A         CALLS   #1, LIB$STOP                                    ;
                                                  52   DD 00021 1$:     PUSHL   BCB                                             ; 1845
                              FF75    CF          01   FB 00023         CALLS   #1, WAIT                                        ;
                    10    A2    0C    A2 00000100 8F   C1 00028 2$:     ADDL3   #256, 12(BCB), 16(BCB)                          ; 1848
                          0A    A2                03   90 00032         MOVB    #3, 10(BCB)                                     ; 1849
                                50                52   D0 00036         MOVL    BCB, R0                                         ; 1851
                                                  04   00039         RET                                                     ;

; Routine Size:  58 bytes,    Routine Base:  CODE + 0111
```

```
;  302          1852  1 %SBTTL 'FREE_BUFFER - free an I/O buffer'
;  303          1853  1 GLOBAL ROUTINE FREE_BUFFER (BCB) : NOVALUE =
;  304          1854  1
;  305          1855  1 !++
;  306          1856  1 !
;  307          1857  1 ! FUNCTIONAL DESCRIPTION:
;  308          1858  1 !
;  309          1859  1 !       This routine returns a buffer to the free list.
;  310          1860  1 !
;  311          1861  1 ! CALLING SEQUENCE:
;  312          1862  1 !       FREE_BUFFER (BCB)
;  313          1863  1 !
;  314          1864  1 ! INPUT PARAMETERS:
;  315          1865  1 !       BCB: address of buffer control block to be freed
;  316          1866  1 !
;  317          1867  1 ! IMPLICIT INPUTS:
;  318          1868  1 !       NONE
;  319          1869  1 !
;  320          1870  1 ! OUTPUT PARAMETERS:
;  321          1871  1 !       NONE
;  322          1872  1 !
;  323          1873  1 ! IMPLICIT OUTPUTS:
;  324          1874  1 !       NONE
;  325          1875  1 !
;  326          1876  1 ! ROUTINE VALUE:
;  327          1877  1 !       NONE
;  328          1878  1 !
;  329          1879  1 ! SIDE EFFECTS:
;  330          1880  1 !       NONE
;  331          1881  1 !
;  332          1882  1 !--
;  333          1883  1
;  334          1884  2 BEGIN
;  335          1885  2
;  336          1886  2 BUILTIN
;  337          1887  2         INSQUE;
;  338          1888  2
;  339          1889  2 MAP
;  340          1890  2         BCB             : REF BBLOCK;   ! BCB arg
;  341          1891  2
;  342          1892  2 ! Check the buffer state for validity and hang it onto the free list.
;  343          1893  2 !
;  344          1894  2
;  345          1895  2 IF .BCB[BCB_STATE] NEQ BCB_S_DATA
;  346          1896  2 THEN BUG_CHECK (FREEBADBUFF, 'Attempted to free busy (or free) buffer');
;  347          1897  2
;  348          1898  2 BCB[BCB_STATE] = BCB_S_IDLE;
;  349          1899  2 INSQUE (.BCB, .FREE_LIST[1]);
;  350          1900  2
;  351          1901  2
;  352          1902  1 END;                                    ! End of routine FREE_BUFFER


                                                .EXTRN  BACKUP$_FREEBADBUFF
                        0004 00000              .ENTRY  FREE_BUFFER, Save R2                    ; 1853
```

```
                          52       04   AC  D0 00002          MOVL    BCB, R2                          ; 1895
                          03       0A   A2  91 00006          CMPB    10(R2), #3                       ;
                                        0D  13 0000A          BEQL    1$                               ;
                              00000000G  8F  DD 0000C          PUSHL   #BACKUP$_FREEBADBUFF             ; 1896
                    00000000G  00        01  FB 00012          CALLS   #1, LIB$STOP                     ;
                                     0A   A2  94 00019 1$:     CLRB    10(R2)                           ; 1898
                    00000000'  FF        62  0E 0001C          INSQUE  (R2), @FREE_LIST+4               ; 1899
                                           04 00023          RET                                      ; 1902

; Routine Size:  36 bytes,    Routine Base:  CODE + 014B

;  353          1903  1
;  354          1904  1 END
;  355          1905  0 ELUDOM


                                                                .EXTRN  LIB$SIGNAL, LIB$STOP

;                                  PSECT SUMMARY
;
;       Name                      Bytes                          Attributes
;
;  COMMON                          2124  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  OVR,NOPIC,ALIGN(2)
;  CODE                             367  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]STARLET.L32;1       9776        10         0       581         00:01.0



;                                       COMMAND QUALIFIERS

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

; Size:         366 code + 2125 data bytes
; Run Time:        00:20.8
; Elapsed Time:    01:08.0
; Lines/CPU Min:    5497
; Lexemes/CPU-Min: 47538
; Memory Used:  255 pages
; Compilation Complete
```

BACKUPMSG
LIS

ANALYZE
LIS

BUFFERS
LIS

CREATEDIR
LIS

BADBLOCK
LIS

BACKUPCMD
LIS

COMMAND
LIS