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LLL               BBB          BBB  RRR      RRR
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LLLLLLLLLLLLLLLL  BBBBBBBBBBBBB     RRR         RRR
LLLLLLLLLLLLLLLL  BBBBBBBBBBBBB     RRR         RRR
LLLLLLLLLLLLLLLL  BBBBBBBBBBBBB     RRR         RRR
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FILEID**PUTCACHE

LBR
V04

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;

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PPPPPPPP    UU      UU  TTTTTTTTTT    CCCCCCCC    AAAAAA      CCCCCCCC  HH      HH  EEEEEEEEEE
PPPPPPPP    UU      UU  TTTTTTTTTT    CCCCCCCC    AAAAAA      CCCCCCCC  HH      HH  EEEEEEEEEE
PP      PP  UU      UU      TT      CC          AA      AA  CC          HH      HH  EE
PP      PP  UU      UU      TT      CC          AA      AA  CC          HH      HH  EE
PP      PP  UU      UU      TT      CC          AA      AA  CC          HH      HH  EE
PP      PP  UU      UU      TT      CC          AA      AA  CC          HH      HH  EE
PPPPPPPP    UU      UU      TT      CC          AA      AA  CC          HHHHHHHHHH  EEEEEEEE
PPPPPPPP    UU      UU      TT      CC          AA      AA  CC          HHHHHHHHHH  EEEEEEEE
PP          UU      UU      TT      CC          AAAAAAAAAA  CC          HH      HH  EE
PP          UU      UU      TT      CC          AAAAAAAAAA  CC          HH      HH  EE
PP          UU      UU      TT      CC          AA      AA  CC          HH      HH  EE                  ....
PP          UU      UU      TT      CC          AA      AA  CC          HH      HH  EE                  ....
PP          UUUUUUUUUU      TT        CCCCCCCC  AA      AA    CCCCCCCC  HH      HH  EEEEEEEEEE          ....
PP          UUUUUUUUUU      TT        CCCCCCCC  AA      AA    CCCCCCCC  HH      HH  EEEEEEEEEE          ....

LL              IIIIII      SSSSSSSS
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LLLLLLLLLL      IIIIII    SSSSSSSS
LLLLLLLLLL      IIIIII    SSSSSSSS
```

```
0 MODULE LBR_PUTCACHE (                    . General library procedure routines
0                 LANGUAGE (BLISS32),
0                 IDENT = 'V04-000'
0                 ) =
1 BEGIN
1
1 !
1 !****************************************************************************
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1 !*                                                                          *
1 !****************************************************************************
1
1 !++
1 !
1 ! FACILITY:  Library access procedures
1 !
1 ! ABSTRACT:
1 !
1 !       The VAX/VMS librarian procedures implement a standard access method
1 !       to libraries through a shared, common procedure set.
1 !
1 ! ENVIRONMENT:
1 !
1 !       VAX native, user mode.
1 !
1 !--
1 !
1 !
1 ! AUTHOR:  Bob Grosso                      23-Jan-1981
1 !
1 ! MODIFIED BY:
1 !
1 !       V03-001 JWT0067         Jim Teague              24-Nov-1982
1 !               Make LBR clean up after itself more thoroughly.
1 !
1 !--
```

```
;    56          0055  1 LIBRARY
;    57          0056  1         'SYS$LIBRARY:STARLET.L32';      ! System macros
;    58          0057  1 REQUIRE
;    59          0058  1         'PREFIX';                ! Librarian general definitions
;    60          0197  1 REQUIRE
;    61          0198  1         'LBRDEF';                ! Librarian structure definitions
;    62          0789  1
;    63          0790  1 EXTERNAL LITERAL
;    64          0791  1     lbr$_badparam,
;    65          0792  1     lbr$_writeerr,
;    66          0793  1     lbr$_normal;
;    67          0794  1
;    68          0795  1 EXTERNAL
;    69          0796  1     lbr$gl_rmsstv,           ! Returns STV on RMS errors
;    70          0797  1     lbr$gl_control: REF BBLOCK; ! Pointer to current control block
;    71          0798  1
;    72          0799  1 EXTERNAL ROUTINE
;    73          0800  1     check_lock : JSB_0,      ! Check if index is locked.
;    74          0801  1     dealloc_mem : JSB_2,     ! To return cache.
;    75          0802  1     get_mem : JSB_2,         ! To allocate empty_cache_buffer
;    76          0803  1     empty_cache,             ! To empty cache when library read only
;    77          0804  1     write_block : JSB_2,     ! To write out block of highest VBN
;    78          0805  1     lookup_cache : JSB_2,    ! To find block of highest VBN
;    79          0806  1     validate_ctl : JSB_1;    ! To validate the control index for lbr$flush
;    80          0807  1
;    81          0808  1 FORWARD ROUTINE
;    82          0809  1     write_n_blocks,          ! Write empty cache buffer
;    83          0810  1     flush_cache,             ! Write out and deallocate cache
;    84          0811  1     dealloc_cache,           ! Deallocate hash table and cache
;    85          0812  1     test_write;              ! Write out highest VBN in cache to ensure
;    86          0813  1                              !   sufficient disk space.
;    87          0814  1
```


; R

;

```
;    89          0815  1 ROUTINE  flush_cache ( flush_data, writestatus, continue_on_err ) =
;    90          0816  1 !+++
;    91          0817  1 !
;    92          0818  1 !       This routine writes out to the library either all the data blocks
;    93          0819  1 !       or all the index blocks.  The emptying of the cache starts with
;    94          0820  1 !       the first bucket and proceeds by emptying a bucket at a time.  If
;    95          0821  1 !       a block has been modified then those VBN's in the cache which are
;    96          0822  1 !       sequentially adjacent to it are also copied to the empty_cache_buffer.
;    97          0823  1 !       The next VBN in sequential order will be found in the next bucket, so
;    98          0824  1 !       the search will continue along the buckets until the buffer fills or
;    99          0825  1 !       the next VBN is not found in the next bucket, at which point the
;   100          0826  1 !       buffer will be written out to the library.
;   101          0827  1 !       Before any blocks are written, the block with the largest VBN is
;   102          0828  1 !       written out to ensure that there is room on the storage device to
;   103          0829  1 !       update the library.
;   104          0830  1 !
;   105          0831  1 ! Inputs
;   106          0832  1 !
;   107          0833  1 !       flush_data =    lbr$c_flushdata if data blocks are to be flushed,
;   108          0834  1 !                       lbr$c_flushall if index blocks are to be flushed.
;   109          0835  1 !
;   110          0836  1 !       writestatus =   If writestatus indicates an error then no more
;   111          0837  1 !                       blocks will be written.  If writestatus = true,
;   112          0838  1 !                       then the cache will continue to be deallocated.
;   113          0839  1 !
;   114          0840  1 !       continue_on_err =
;   115          0841  1 !                       If true, then continue to deallocate cache after
;   116          0842  1 !                       a buffer write error has occurred, else exit.
;   117          0843  1 !
;   118          0844  1 ! Routine value
;   119          0845  1 !
;   120          0846  1 !       success or status from write.
;   121          0847  1 !---
;   122          0848  2 BEGIN
;   123          0849  2
;   124          0850  2 !+++
;   125          0851  2 ! body of ROUTINE flush_cache
;   126          0852  2 !---
;   127          0853  2
;   128          0854  2 BIND
;   129          0855  2     context = .lbr$gl_control [lbr$l_ctxptr] : BBLOCK,
;   130          0856  2     cache = .context [ctx$l_cache] : VECTOR;
;   131          0857  2
;   132          0858  2 LITERAL
;   133          0859  2     first_bucket = 0,                       !Offset of first entry in hash table
;   134          0860  2     last_bucket = lbr$c_hashsize/4 - 1; !Offset of last entry in hash table
;   135          0861  2
;   136          0862  2 LOCAL
;   137          0863  2     flushbuf : BBLOCK [lbr$c_flshbfsiz * lbr$c_pagesize],
;   138          0864  2                                             ! buffer when called by lbr$flush
;   139          0865  2     putcachebuf : REF BBLOCK,               ! point to either flushbuf which is on stack
;   140          0866  2                                             !  or buffer allocated from virtual memory.
;   141          0867  2     putbufsiz,                              ! Size of the buffer being used
;   142          0868  2     bufstatus,                              ! allocation status for vm buffer
;   143          0869  2     status;
;   144          0870  2
;   145          0871  2
```

```
;  146     0872  2 !+++
;  147     0873  2 ! Descend through hash table a bucket at a time.
;  148     0874  2 ! For each entry in a bucket, check it's vbn and then search the next bucket
;  149     0875  2 ! for the next vbn in sequence.
;  150     0876  2 ! If found, store in buffer so all consecutive vbn's can be written with one QIO.
;  151     0877  2 ! Keep getting consecutive vbn's until buffer full or next in sequence not found.
;  152     0878  2 ! A count is kept of the number of virtual blocks copied to the buffer, and
;  153     0879  2 ! the location in the buffer of the last vb that was modified is recorded so
;  154     0880  2 ! that trailing unmodified blocks are not written out.
;  155     0881  2 !---
;  156     0882  2 !
;  157     0883  2 !     If a buffer cannot be allocated from virtual memory then use the buffer
;  158     0884  2 !     on the stack.
;  159     0885  2 !
;  160     0886  2 putbufsiz = lbr$c_putbufsiz;
;  161     0887  3 IF NOT (bufstatus = get_mem (lbr$c_putbufsiz * lbr$c_pagesize, putcachebuf))
;  162     0888  2 THEN
;  163     0889  3     BEGIN
;  164     0890  3     putbufsiz = lbr$c_flshbfsiz;
;  165     0891  3     putcachebuf = flushbuf;
;  166     0892  2     END;
;  167     0893  2 INCR bucket FROM first_bucket TO last_bucket DO ! for every bucket in hash table
;  168     0894  3     BEGIN
;  169     0895  3     LOCAL
;  170     0896  3         entry : REF BBLOCK,       ! Each bucket contains the head of a linked
;  171     0897  3                                   !   list of cache entries.
;  172     0898  3         last_entry : REF BBLOCK,  ! Backward link in bucket's linked list
;  173     0899  3         nxtcache_entry,           ! Next cache entry in the linked list.
;  174     0900  3         targvbn,                  ! The virtual block number of the first block
;  175     0901  3                                   !   in the empty_cache_buffer.
;  176     0902  3         bufblkcnt,                ! Count of the blocks written into the
;  177     0903  3                                   !   putcachebuf buffer.
;  178     0904  3         lstmodblkloc,             ! The count of the last vbn in the putcachebuf
;  179     0905  3                                   !   which had the modified bit set. The buffer
;  180     0906  3                                   !   contents will be written out up to the
;  181     0907  3                                   !   last modified block.
;  182     0908  3         next_vbn,                 ! The next vbn in sequence after the one just
;  183     0909  3                                   !   copied to the putcachebuf.
;  184     0910  3         next_bucket;              ! Record location of the hash table bucket
;  185     0911  3                                   !   being searched.
;  186     0912  3
;  187     0913  3     last_entry = cache[.bucket] ;       ! back link in hash bucket linked list
;  188     0914  3     entry = .cache [.bucket];           ! first hash list entry
;  189     0915  3     !
;  190     0916  3     !    Loop for each entry in the bucket unless there has been a write error
;  191     0917  3     !    and continue_on_err is false
;  192     0918  3     !
;  193     0919  3     WHILE ((.entry NEQ 0) AND (.writestatus OR .continue_on_err) )DO
;  194     0920  4         BEGIN
;  195     0921  4         nxtcache_entry = .entry [cache$l_link]; ! remember the next entry in bucket
;  196     0922  4         IF .entry [cache$v_data] EQL .flush_data
;  197     0923  4         THEN
;  198     0924  5             BEGIN
;  199     0925  5             IF .entry [cache$v_dirty]   ! if the page has been modified
;  200     0926  5             THEN
;  201     0927  6                 BEGIN
;  202     0928  6                 IF .writestatus
```

```
;  203     0929  6          THEN
;  204     0930  6              !
;  205     0931  6              ! As long as there haven't been any write errors then keep
;  206     0932  6              ! copying blocks to buffer and writing buffer to library.
;  207     0933  6              !
;  208     0934  7              BEGIN
;  209     0935  7              targvbn     = .entry [cache$l_vbn]; ! vbn of first block in empty cache buffer.
;  210     0936  7              CH$MOVE (lbr$c_pagesize, CH$PTR(.entry[cache$l_address]),
;  211     0937  7                  CH$PTR( .putcachebuf ));
;  212     0938  7              bufblkcnt = 1;                ! record the number of pages and modified
;  213     0939  7              lstmodblkloc = 1;             !    pages copied to the buffer
;  214     0940  7              next_vbn = .entry[cache$l_vbn] + 1; ! the virtual block number of the page
;  215     0941  7                                            !     following the last copied to buffer
;  216     0942  7              !
;  217     0943  7              !     if the next vbn is in the cache it will be in one of
;  218     0944  7              !     the entries in the next bucket. Check for end of hash
;  219     0945  7              !     table and loop around.
;  220     0946  7              !
;  221     0947  7              IF .bucket LSS last_bucket
;  222     0948  7              THEN next_bucket = .bucket + 1
;  223     0949  7              ELSE next_bucket = 0;
;  224     0950  7
;  225     0951  7              !
;  226     0952  7              !     Keep looping until the buffer is filled or the
;  227     0953  7              !     consecutive VBN is not found.
;  228     0954  7              !
;  229     0955  7              WHILE ( (.bufblkcnt LSS .putbufsiz) AND (.next_vbn NEQ 0) ) DO
;  230     0956  8                  BEGIN
;  231     0957  8                  LOCAL
;  232     0958  8                      nxtbucket_entry : REF BBLOCK,              ! forward link in chain of cache ent
;  233     0959  8                      last_bucket_entry : REF BBLOCK,            ! rear link
;  234     0960  8                      nxtvbn_entry : REF BBLOCK;          ! the cache entry of the vbn being sought.
;  235     0961  8                  nxtbucket_entry = .cache[.next_bucket]; ! retain forward link.
;  236     0962  8                  last_bucket_entry = cache[.next_bucket];       ! retain backward link.
;  237     0963  8                  nxtvbn_entry = 0;                   ! mark the next sequential
;  238     0964  8                                                      ! vbn as unfound.
;  239     0965  8                  !
;  240     0966  8                  !     While there are entries in the bucket and the VBN being sought
;  241     0967  8                  !     has not been found and the search has not gone beyond where the vbn
;  242     0968  8                  !     would be, keep looping through the entries in the bucket.
;  243     0969  8                  !     Also give up search if block was found but is of wrong type; data/index.
;  244     0970  8                  !
;  245     0971  8                  WHILE ((.nxtbucket_entry NEQ 0) AND (.nxtvbn_entry EQL 0)) DO
;  246     0972  9                      BEGIN
;  247     0973  9                      IF .nxtbucket_entry[cache$l_vbn] GTR .next_vbn
;  248     0974  9                      THEN
;  249     0975 10                          BEGIN
;  250     0976 10                          last_bucket_entry = .nxtbucket_entry;
;  251     0977 10                          nxtbucket_entry = .nxtbucket_entry[cache$l_link];
;  252     0978 10                          END
;  253     0979  9                      ELSE
;  254     0980 10                          BEGIN
;  255     0981 10                          IF .nxtbucket_entry[cache$l_vbn] EQL .next_vbn
;  256     0982 10                          THEN
;  257     0983 11                              BEGIN
;  258     0984 11                              IF .nxtbucket_entry[cache$v_data] EQL .flush_data
;  259     0985 11                              THEN
```

```
;  260          0986 12                        BEGIN
;  261          0987 12                        !
;  262          0988 12                        !    Next VBN found so unlink and mark it found
;  263          0989 12                        last_bucket_entry[cache$l_link] = .nxtbucket_entry[cache$l_link];
;  264          0990 12                        nxtvbn_entry = .nxtbucket_entry; ! record the unlinked cache entry
;  265          0991 12                                                         ! which contains the VBN searched f
;  266          0992 12                        END
;  267          0993 11                    ELSE nxtbucket_entry = 0 ! Was found but was wrong type.
;  268          0994 11                    END
;  269          0995 10                ELSE                     ! the next VBN is not in cache
;  270          0996 10                    nxtbucket_entry = 0;         ! End search
;  271          0997  9                END;
;  272          0998  8            END;        ! WHILE searching for next vbn
;  273          0999  8
;  274          1000  8        IF .nxtvbn_entry EQL 0  ! the next VBN was not found
;  275          1001  8        THEN next_vbn = 0
;  276          1002  8        ELSE
;  277          1003  8            !
;  278          1004  8            !   The next VBN was found, copy it into buffer if it was
;  279          1005  8            !   modified.  If not modified, copy it in unless it would
;  280          1006  8            !   be the last in the buffer.
;  281          1007  8            !
;  282          1008  9            BEGIN
;  283          1009 10            IF ( (.nxtvbn_entry[cache$v_dirty]) OR
;  284          1010 10                 (.bufblkcnt + 1  NEQ .putbufsiz) )
;  285          1011  9            THEN
;  286          1012 10                BEGIN
;  287          1013 10                CH$MOVE (lbr$c_pagesize,
;  288          1014 10                    CH$PTR (.nxtvbn_entry[cache$l_address]),
;  289          1015 10                    CH$PTR ( .putcachebuf + .bufblkcnt*lbr$c_pagesize ) );
;  290          1016 10                bufblkcnt = .bufblkcnt + 1;
;  291          1017 10                IF .nxtvbn_entry[cache$v_dirty] THEN lstmodblkloc = .bufblkcnt;
;  292          1018 10                !
;  293          1019 10                !    When setting next bucket for continued search of sequential
;  294          1020 10                !    vbn's check to see if it should loop around end of hash table.
;  295          1021 10                !
;  296          1022 10                IF .next_bucket LSS last_bucket
;  297          1023 10                THEN next_bucket = .next_bucket + 1
;  298          1024 10                ELSE next_bucket = 0;
;  299          1025 10
;  300          1026 10                next_vbn = .next_vbn + 1;
;  301          1027 10                END
;  302          1028 10
;  303          1029  9            ELSE
;  304          1030  9                !
;  305          1031  9                !   page was not modified and would be last in buffer so don't
;  306          1032  9                !   bother with it.
;  307          1033  9                !
;  308          1034  9                next_vbn = 0;
;  309          1035  9            !
;  310          1036  9            !    deallocate block and then the hash bucket entry
;  311          1037  9            !
;  312          1038  9            dealloc_mem (lbr$c_pagesize, .nxtvbn_entry[cache$l_address]);
;  313          1039  9            dealloc_mem (cache$c_length, .nxtvbn_entry);
;  314          1040  8            END;        ! else the vbn was found
;  315          1041  7        END;    ! WHILE still filling buffer and finding the next VBN to go in it.
;  316          1042  7    writestatus = write_n_blocks ( .putcachebuf, .targvbn, .lstmodblkloc );
```

```
;  317          1043  7                    !
;  318          1044  7                    !    If there has been a write error then exit if flush_cache
;  319          1045  7                    !    was called to flush the cache, else it was called to deallocate
;  320          1046  7                    !    the cache, so keep on deallocating without writing.
;  321          1047  7                    !
;  322          1048  7                    IF NOT .writestatus AND NOT .continue_on_err
;  323          1049  7                    THEN
;  324          1050  8                        BEGIN
;  325          1051  8                        ! ** Note **  those blocks in buffer are lost
;  326          1052  8                        IF .bufstatus
;  327          1053  8                        THEN dealloc_mem (.putbufsiz * lbr$c_pagesize, .putcachebuf);
;  328          1054  8                        RETURN .writestatus;
;  329          1055  7                        END;
;  330          1056  6                    END;                ! IF writestatus (if only deallocating and not writing)
;  331          1057  5                END;            ! If the first was modified
;  332          1058  5                last_entry[cache$l_link] = .entry[cache$l_link]; ! unlink
;  333          1059  5                !
;  334          1060  5                !    deallocate block and then the hash bucket entry
;  335          1061  5                !
;  336          1062  5                dealloc_mem (lbr$c_pagesize, .entry[cache$l_address]);
;  337          1063  5                dealloc_mem (cache$c_length, .entry);
;  338          1064  5                END             ! If the block type was correct
;  339          1065  4            ELSE    ! the block type was incorrect so hop over it.
;  340          1066  4                last_entry = .entry;
;  341          1067  4
;  342          1068  4            entry = .nxtcache_entry;
;  343          1069  4            END     ! WHILE covering all entries in the bucket
;  344          1070  2        END;        ! DO the whole hash table
;  345          1071  2
;  346          1072  2 IF .bufstatus THEN dealloc_mem (.putbufsiz * lbr$c_pagesize, .putcachebuf);
;  347          1073  2 RETURN .writestatus;
;  348          1074  1 END;    ! flush_cache


                                                .TITLE  LBR_PUTCACHE
                                                .IDENT  \V04-000\

                                                .EXTRN  LBR$_BADPARAM, LBR$_WRITEERR
                                                .EXTRN  LBR$_NORMAL, LBR$GL_RMSSTV
                                                .EXTRN  LBR$GL_CONTROL, CHECK_LOCK
                                                .EXTRN  DEALLOC_MEM, GET_MEM
                                                .EXTRN  EMPTY_CACHE, WRITE_BLOCK
                                                .EXTRN  LOOKUP_CACHE, VALIDATE_CTL

                                                .PSECT  $CODE$,NOWRT,2

                                    0FFC 00000 FLUSH_CACHE:
                                                .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11            ; 0815
                                5E      FDE0    CE  9E 00002        MOVAB   -544(SP), SP                    ;
                                50      0000G   CF  D0 00007        MOVL    LBR$GL_CONTROL, R0              ; 0855
                                5A        0E    A0  D0 0000C        MOVL    14(R0), R10                     ;
                             04 AE              1E  D0 00010        MOVL    #30, PUTBUFSIZ                  ; 0886
                                51        1C    AE  9E 00014        MOVAB   PUTCACHEBUF, R1                 ; 0887
                                50      3C00    8F  3C 00018        MOVZWL  #15360, R0                      ;
                                          0000G 30  0001D           BSBW    GET_MEM                         ;
                                6E              50  D0 00020        MOVL    R0, BUFSTATUS                   ;
                                09              6E  E8 00023        BLBS    BUFSTATUS, 1$                   ;
```

```
                          04   AE              01  D0 00026          MOVL    #1, PUTBUFSIZ                                ; 0890
                          1C   AE        20    AE  9E 0002A          MOVAB   FLUSHBUF, PUTCACHEBUF                        ; 0891
                                               57  D4 0002F 1$:      CLRL    BUCKET                                       ; 0922
                          10   AE        08  BA47  DE 00031 2$:      MOVAL   @8(R10)[BUCKET], LAST_ENTRY                  ; 0913
                               5B        08  BA47  D0 00037          MOVL    @8(R10)[BUCKET], ENTRY                       ; 0914
                                               03  12 0003C 3$:      BNEQ    5$                                           ; 0919
                                             0137  31 0003E 4$:      BRW     30$                                          ;
                               04        08    AC  E8 00041 5$:      BLBS    WRITESTATUS, 6$                              ;
                               F5        0C    AC  E9 00045          BLBC    CONTINUE_ON_ERR, 4$                          ;
                          18   AE              6B  D0 00049 6$:      MOVL    (ENTRY), NXTCACHE_ENTRY                      ; 0921
    04   AC       0C   AB      01              01  ED 0004D          CMPZV   #1, #1, 12(ENTRY), FLUSH_DATA                ; 0922
                                               03  13 00054          BEQL    7$                                           ;
                                             0114  31 00056          BRW     28$                                          ;
                               03        0C    AB  E8 00059 7$:      BLBS    12(ENTRY), 9$                                ; 0925
                                             00F2  31 0005D 8$:      BRW     27$                                          ;
                               F9        08    AC  E9 00060 9$:      BLBC    WRITESTATUS, 8$                              ; 0928
                          14   AE        04    AB  D0 00064          MOVL    4(ENTRY), TARGVBN                            ; 0935
              1C   BE     08   BB      0200    8F  28 00069          MOVC3   #512, @8(ENTRY), @PUTCACHEBUF                ; 0937
                               58              01  D0 00071          MOVL    #1, BUFBLKCNT                                ; 0938
                          0C   AE              01  D0 00074          MOVL    #1, LSTMODBLKLOC                             ; 0939
              08   AE     04   AB              01  C1 00078          ADDL3   #1, 4(ENTRY), NEXT_VBN                       ; 0940
                    0000007F   8F              57  D1 0007E          CMPL    BUCKET, #127                                 ; 0947
                                               06  18 00085          BGEQ    10$                                          ;
                               56        01    A7  9E 00087          MOVAB   1(R7), NEXT_BUCKET                           ; 0948
                                               02  11 0008B          BRB     11$                                          ;
                                               56  D4 0008D 10$:     CLRL    NEXT_BUCKET                                  ; 0949
                          04   AE              58  D1 0008F 11$:     CMPL    BUFBLKCNT, PUTBUFSIZ                         ; 0955
                                               03  19 00093          BLSS    13$                                          ;
                                             009B  31 00095 12$:     BRW     26$                                          ;
                                         08    AE  D5 00098 13$:     TSTL    NEXT_VBN                                     ;
                                               F8  13 0009B          BEQL    12$                                          ;
                               50        08  BA46  D0 0009D          MOVL    @8(R10)[NEXT_BUCKET], NXTBUCKET_ENTRY        ; 0961
                               51        08  BA46  DE 000A2          MOVAL   @8(R10)[NEXT_BUCKET], LAST_BUCKET_ENTRY      ; 0962
                                               59  D4 000A7          CLRL    NXTVBN_ENTRY                                 ; 0963
                                               50  D5 000A9 14$:     TSTL    NXTBUCKET_ENTRY                              ; 0971
                                               2A  13 000AB          BEQL    17$                                          ;
                                               59  D5 000AD          TSTL    NXTVBN_ENTRY                                 ;
                                               26  12 000AF          BNEQ    17$                                          ;
                          08   AE        04    A0  D1 000B1          CMPL    4(NXTBUCKET_ENTRY), NEXT_VBN                 ; 0973
                                               08  15 000B6          BLEQ    15$                                          ;
                               51              50  D0 000B8          MOVL    NXTBUCKET_ENTRY, LAST_BUCKET_ENTRY           ; 0976
                               50              60  D0 000BB          MOVL    (NXTBUCKET_ENTRY), NXTBUCKET_ENTRY           ; 0977
                                               E9  11 000BE          BRB     14$                                          ; 0973
                                               11  12 000C0 15$:     BNEQ    16$                                          ; 0981
    04   AC       0C   A0      01              01  ED 000C2          CMPZV   #1, #1, 12(NXTBUCKET_ENTRY), FLUSH_DATA      ; 0984
                                               08  12 000C9          BNEQ    16$                                          ;
                               61              60  D0 000CB          MOVL    (NXTBUCKET_ENTRY), (LAST_BUCKET_ENTRY)       ; 0989
                               59              50  D0 000CE          MOVL    NXTBUCKET_ENTRY, NXTVBN_ENTRY                ; 0990
                                               D6  11 000D1          BRB     14$                                          ; 0983
                                               50  D4 000D3 16$:     CLRL    NXTBUCKET_ENTRY                              ; 0996
                                               D2  11 000D5          BRB     14$                                          ; 0971
                                               59  D5 000D7 17$:     TSTL    NXTVBN_ENTRY                                 ; 1000
                                               05  12 000D9          BNEQ    19$                                          ;
                                         08    AE  D4 000DB          CLRL    NEXT_VBN                                     ; 1001
                                               AF  11 000DE 18$:     BRB     11$                                          ;
                               0A        0C    A9  E8 000E0 19$:     BLBS    12(NXTVBN_ENTRY), 20$                        ; 1009
                               50        01    A8  9E 000E4          MOVAB   1(R8), R0                                    ; 1010
```

```
                    04    AE              50  D1 000E8          CMPL    R0, PUTBUFSIZ                                   ;
                                          2B  13 000EC          BEQL    24$                                             ;
                    50                    58  09 78 000EE 20$:  ASHL    #9, BUFBLKCNT, R0                               ; 1015
                1C BE40     08    B9      0200  8F 28 000F2     MOVC3   #512, @8(NXTVBN_ENTRY), @PUTCACHEBUF[R0]
                                          58  D6 000FB          INCL    BUFBLKCNT                                       ; 1016
                                    04    0C  A9 E9 000FD       BLBC    12(NXTVBN_ENTRY), 21$                           ; 1017
                                    0C    AE  58  D0 00101      MOVL    BUFBLKCNT, LSTMODBLKLOC
                              0000007F    8F  56  D1 00105 21$: CMPL    NEXT_BUCKET, #127                               ; 1022
                                          04  18 00010C         BGEQ    22$
                                          56  D6 0010E          INCL    NEXT_BUCKET                                     ; 1023
                                          02  11 00110          BRB     23$
                                          56  D4 00112 22$:     CLRL    NEXT_BUCKET                                     ; 1024
                                    08    AE  D6 00114 23$:     INCL    NEXT_VBN                                        ; 1026
                                          03  11 00117          BRB     25$                                             ; 1009
                                    08    AE  D4 00119 24$:     CLRL    NEXT_VBN                                        ; 1034
                                    51    08  A9 D0 0011C 25$:  MOVL    8(NXTVBN_ENTRY), R1                             ; 1038
                                    50  0200  8F 3C 00120       MOVZWL  #512, R0
                                        0000G 30 00125          BSBW    DEALLOC_MEM
                                    51        59 D0 00128       MOVL    NXTVBN_ENTRY, R1                                ; 1039
                                    50        0E D0 0012B       MOVL    #14, R0
                                        0000G 30 0012E          BSBW    DEALLOC_MEM
                                              AB 11 00131       BRB     18$                                             ; 0955
                                    0C    AE  DD 00133 26$:     PUSHL   LSTMODBLKLOC                                    ; 1042
                                    18    AE  DD 00136          PUSHL   TARGVBN
                                    24    AE  DD 00139          PUSHL   PUTCACHEBUF
                              0000V     CF    03 FB 0013C       CALLS   #3, WRITE_N_BLOCKS
                                08    AC        50 D0 00141     MOVL    R0, WRITESTATUS
                                    09  08    AC  E8 00145      BLBS    WRITESTATUS, 27$                                ; 1048
                                    05  0C    AC  E8 00149      BLBS    CONTINUE_ON_ERR, 27$
                                    35        6E  E8 0014D      BLBS    BUFSTATUS, 31$                                  ; 1052
                                              3F  11 00150      BRB     32$                                             ; 1054
                                10  BE        6B  D0 00152 27$: MOVL    (ENTRY), @LAST_ENTRY                            ; 1058
                                    51    08    AB  D0 00156    MOVL    8(ENTRY), R1                                    ; 1062
                                    50  0200    8F  3C 0015A    MOVZWL  #512, R0
                                        0000G   30  0015F       BSBW    DEALLOC_MEM
                                    51          5B  D0 00162    MOVL    ENTRY, R1                                       ; 1063
                                    50          0E  D0 00165    MOVL    #14, R0
                                            0000G   30 00168    BSBW    DEALLOC_MEM
                                                04  11 0016B   BRB     29$                                             ; 0922
                                10  AE          5B  D0 0016D 28$: MOVL    ENTRY, LAST_ENTRY                           ; 1066
                                    5B    18    AE  D0 00171 29$: MOVL    NXTCACHE_ENTRY, ENTRY                       ; 1068
                                            FEC4    31 00175    BRW     3$                                              ; 0919
                    FEAF        57          01  0000007F  8F  F1 00178 30$: ACBL    #127, #1, BUCKET, 2$
                                0C              6E  E9 00182    BLBC    BUFSTATUS, 32$                                  ; 1072
                                50  04    AE        09  78 00185 31$: ASHL    #9, PUTBUFSIZ, R0
                                    51    1C    AE  D0 0018A    MOVL    PUTCACHEBUF, R1
                                            0000G   30 0018E    BSBW    DEALLOC_MEM
                                    50        08    AC  D0 00191 32$: MOVL    WRITESTATUS, R0                             ; 1073
                                                      04 00195  RET                                                     ; 1074

; Routine Size:  406 bytes,    Routine Base:  $CODE$ + 0000

;  349          1075  1
```

```
;  351          1076  1 ROUTINE test_write =
;  352          1077  1 !+++
;  353          1078  1 !
;  354          1079  1 !       Write out the largest VBN in the cache to ensure that there will
;  355          1080  1 !       be sufficient space to write the library.
;  356          1081  1 !       Return the status of the write.
;  357          1082  1 !
;  358          1083  1 !---
;  359          1084  2 BEGIN
;  360          1085  2 BIND
;  361          1086  2     context = .lbr$gl_control [lbr$l_ctxptr] : BBLOCK,
;  362          1087  2     largest_vbn = context [ctx$l_hivbn];
;  363          1088  2 LOCAL
;  364          1089  2     cache_entry : REF BBLOCK,
;  365          1090  2     status;
;  366          1091  2
;  367          1092  2 IF .context[ctx$v_ronly]
;  368          1093  2 THEN RETURN lbr$_normal
;  369          1094  2 ELSE
;  370          1095  3     BEGIN
;  371          1096  3     !
;  372          1097  3     !  If largest_vbn is 0 then no blocks were modified
;  373          1098  3     !
;  374          1099  3     IF .largest_vbn EQL 0 THEN RETURN lbr$_normal;
;  375          1100  3     perform ( lookup_cache (.largest_vbn, cache_entry) );
;  376          1101  3     status = write_block (.cache_entry[cache$l_address], .largest_vbn);
;  377          1102  3     IF .status
;  378          1103  3     THEN RETURN write_block (.lbr$gl_control [lbr$l_oldhdrptr], 1)
;  379          1104  3     ELSE RETURN lbr$_writeerr;
;  380          1105  2     END;
;  381          1106  1 END;     ! ROUTINE test_write


                        0FFC 00000 TEST_WRITE:
                                   .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11          ; 1076
5E                   04  C2 00002          SUBL2   #4, SP
50         0000G     CF  D0 00005          MOVL    LBR$GL_CONTROL, R0                    ; 1086
50           0E      A0  D0 0000A          MOVL    14(R0), R0
             04      A0  95 0000E          TSTB    4(R0)                                 ; 1092
                     06  19 00011          BLSS    1$
53           46      A0  D0 00013          MOVL    70(R0), R3                            ; 1099
                     08  12 00017          BNEQ    2$
50 00000000G         8F  D0 00019 1$:      MOVL    #LBR$_NORMAL, R0
                         04 00020          RET
51                   6E  9E 00021 2$:      MOVAB   CACHE_ENTRY, R1                       ; 1100
50                   53  D0 00024          MOVL    R3, R0
                   0000G 30 00027          BSBW    LOOKUP_CACHE
27                   50  E9 0002A          BLBC    STATUS, 4$
52                   6E  D0 0002D          MOVL    CACHE_ENTRY, R2                       ; 1101
51                   53  D0 00030          MOVL    R3, R1
50           08      A2  D0 00033          MOVL    8(R2), R0
                   0000G 30 00037          BSBW    WRITE_BLOCK
10                   50  E9 0003A          BLBC    STATUS, 3$                            ; 1102
52         0000G     CF  D0 0003D          MOVL    LBR$GL_CONTROL, R2                    ; 1103
```

```
                51              01  D0 00042          MOVL    #1, R1                                          ;
                50        1A    A2  D0 00045          MOVL    26(R2), R0                                      ;
                            0000G 30 00049          BSBW    WRITE_BLOCK                                     ;
                                  04 0004C          RET                                                     ; 1104
                50 00000000G  8F  D0 0004D 3$:      MOVL    #LBR$_WRITEERR, R0                              ;
                                  04 00054 4$:      RET                                                     ; 1106

; Routine Size:  85 bytes,    Routine Base:  $CODE$ + 0196

;  382          1107  1
```

```
;  384          1108  1 ROUTINE write_n_blocks ( addr, targetvbn, nblocks ) =
;  385          1109  2 BEGIN
;  386          1110  2
;  387          1111  2 !---
;  388          1112  2 !
;  389          1113  2 !       This routine writes out #[nblocks] blocks from the flush_cache_buffer
;  390          1114  2 !       in memory to the library file at the specified  block number.
;  391          1115  2 !
;  392          1116  2 ! Inputs:
;  393          1117  2 !
;  394          1118  2 !       addr = address of buffer to write from
;  395          1119  2 !       targetvbn = first disk block number in library file to write to
;  396          1120  2 !       nblocks = number of blocks in buffer to write out
;  397          1121  2 !
;  398          1122  2 ! Outputs:
;  399          1123  2 !
;  400          1124  2 !       Return write status.
;  401          1125  2 !---
;  402          1126  2
;  403          1127  2 BIND
;  404          1128  2     context = .lbr$gl_control [lbr$l_ctxptr]: BBLOCK,
;  405          1129  2     rab   = .context [ctx$l_recrab]: BBLOCK;
;  406          1130  2
;  407          1131  2 LOCAL
;  408          1132  2     status;
;  409          1133  2
;  410          1134  2 rab [rab$l_bkt] = .targetvbn;           ! Set block number to write
;  411          1135  2 rab [rab$l_rbf] = .addr;        !Set address of buffer for write
;  412          1136  2 rab [rab$w_rsz] = lbr$c_pagesize * .nblocks;    !And its length
;  413          1137  2 status = $QWRITE (RAB=rab);      !Write the record
;  414          1138  2 IF NOT .status
;  415          1139  2 THEN
;  416          1140  3     BEGIN
;  417          1141  3     lbr$gl_rmsstv = .rab [rab$l_stv]; ! Record error code.
;  418          1142  3     RETURN lbr$_writeerr;
;  419          1143  3     END
;  420          1144  2 ELSE RETURN lbr$_normal;
;  421          1145  2
;  422          1146  1 END;


                                                        .EXTRN  SYS$WRITE

                                        0004 00000 WRITE_N_BLOCKS:
                                                        .WORD   Save R2                                 ;  1108
                            50      0000G   CF   D0 00002      MOVL    LBR$GL_CONTROL, R0              ;  1128
                            50        0E    A0   D0 00007      MOVL    14(R0), R0                      ;
                            52        0C    A0   D0 0000B      MOVL    12(R0), R2                      ;  1129
                    38      A2        08    AC   D0 0000F      MOVL    TARGETVBN, 56(R2)               ;  1134
                    28      A2        04    AC   D0 00014      MOVL    ADDR, 40(R2)                    ;  1135
            22      A2        0C    AC     0200   8F   A5 00019      MULW3   #512, NBLOCKS, 34(R2)           ;  1136
                                                   52   DD 00021      PUSHL   R2                              ;  1137
                00000000G   00                     01   FB 00023      CALLS   #1, SYS$WRITE                   ;
                            0E                     50   E8 0002A      BLBS    STATUS, 1$                      ;  1138
                    0000G   CF        0C    A2   D0 0002D      MOVL    12(R2), LBR$GL_RMSSTV           ;  1141
                            50 00000000G    8F   D0 00033      MOVL    #LBR$_WRITEERR, R0              ;  1144
```

```
                                        04 0003A          RET                                    ;
                   50 00000000G   8F    D0 0003B 1$:      MOVL    #LBR$_NORMAL, R0               ;
                                        04 00042          RET                                    ; 1146

; Routine Size:  67 bytes,    Routine Base:  $CODE$ + 01EB

;   423          1147  1
```

LBR
V04

; R

```
;  425          1148  1 GLOBAL ROUTINE dealloc_cache =
;  426          1149  2 BEGIN
;  427          1150  2
;  428          1151  2 !+++
;  429          1152  2 !
;  430          1153  2 ! Flush out the cache, writing blocks to library file and
;  431          1154  2 ! returning virtual memory.  Then deallocate the hash table.
;  432          1155  2 ! First write out the block of the highest VBN to ensure sufficient disk
;  433          1156  2 ! space.  Then write out data blocks then index blocks.  If a write error
;  434          1157  2 ! occurs, continue deallocating the cache but quit writing the blocks out
;  435          1158  2 ! to the library file.
;  436          1159  2 !
;  437          1160  2 !---
;  438          1161  2
;  439          1162  2 BIND
;  440          1163  2     context = .lbr$gl_control [lbr$l_ctxptr] : BBLOCK;
;  441          1164  2
;  442          1165  2 LOCAL
;  443          1166  2     status;
;  444          1167  2
;  445          1168  2 LITERAL
;  446          1169  2     continue  = true;    ! if flush_cache encounters a write error
;  447          1170  2                          ! quit writing but continue to deallocate cache.
;  448          1171  2 !
;  449          1172  2 !     If the library has been opened read only then just empty the
;  450          1173  2 !     cache, otherwise use flush_cache which does more error checking
;  451          1174  2 !     and writes out data blocks before the index blocks.
;  452          1175  2 !
;  453          1176  2 IF .context[ctx$v_ronly]
;  454          1177  2 THEN
;  455          1178  2     status = empty_cache ()
;  456          1179  2 ELSE
;  457          1180  3     BEGIN
;  458          1181  3     !
;  459          1182  3     !     Write out the block in the cache with the largest VBN to
;  460          1183  3     !     ensure sufficient disk space before flushing the cache.
;  461          1184  3     !
;  462          1185  3     status = test_write ();
;  463          1186  3
;  464          1187  3     status = flush_cache( lbr$c_flushdata, .status, continue);
;  465          1188  3     status = flush_cache( lbr$c_flushall, .status, continue);
;  466          1189  3     dealloc_mem ( lbr$c_hashsize, .context [ctx$l_cache] );
;  467          1190  3     context [ctx$l_cache] = 0;
;  468          1191  2     END;
;  469          1192  2
;  470          1193  2 !
;  471          1194  2 !     If an error hasn't occurred, and cache header entry common allocation
;  472          1195  2 !     block is not empty then deallocate it.
;  473          1196  2 !
;  474          1197  3 IF (.status) AND (.context [ctx$l_chdallsiz] NEQ 0)
;  475          1198  2 THEN
;  476          1199  3     BEGIN
;  477          1200  3     dealloc_mem ( .context [ctx$l_chdallsiz], .context [ctx$l_chdalladr] );
;  478          1201  2     END;
;  479          1202  2
;  480          1203  2 RETURN .status;
;  481          1204  1 END;
```

```
                            0FFC 00000          .ENTRY  DEALLOC_CACHE, Save R2,R3,R4,R5,R6,R7,R8,-   ; 1148
                                                        R9,R10,R11                                   ;
            50      0000G CF  D0 00002          MOVL    LBR$GL_CONTROL, R0                           ; 1163
            52         0E A0  D0 00007          MOVL    14(R0), R2                                   ;
                       04 A2  95 0000B          TSTB    4(R2)                                        ; 1176
                          0A  18 0000E          BGEQ    1$                                           ;
      0000G CF            00  FB 00010          CALLS   #0, EMPTY_CACHE                              ; 1178
            53            50  D0 00015          MOVL    R0, STATUS                                   ;
                          33  11 00018          BRB     2$                                           ;
       FF49 CF            00  FB 0001A 1$:      CALLS   #0, TEST_WRITE                               ; 1185
            53            50  D0 0001F          MOVL    R0, STATUS                                   ;
                          01  DD 00022          PUSHL   #1                                           ; 1187
                          53  DD 00024          PUSHL   STATUS                                       ;
                          01  DD 00026          PUSHL   #1                                           ;
       FDA5 CF            03  FB 00028          CALLS   #3, FLUSH_CACHE                              ;
            53            50  D0 0002D          MOVL    R0, STATUS                                   ;
                          01  DD 00030          PUSHL   #1                                           ; 1188
                          53  DD 00032          PUSHL   STATUS                                       ;
                          7E  D4 00034          CLRL    -(SP)                                        ;
       FD97 CF            03  FB 00036          CALLS   #3, FLUSH_CACHE                              ;
            53            50  D0 0003B          MOVL    R0, STATUS                                   ;
            51         08 A2  D0 0003E          MOVL    8(R2), R1                                    ; 1189
            50       0200 8F  3C 00042          MOVZWL  #512, R0                                     ;
                       0000G  30 00047          BSBW    DEALLOC_MEM                                  ;
                       08 A2  D4 0004A          CLRL    8(R2)                                        ; 1190
            0C            53  E9 0004D 2$:      BLBC    STATUS, 3$                                   ; 1197
                       4A A2  D5 00050          TSTL    74(R2)                                       ;
                          07  13 00053          BEQL    3$                                           ;
            50         4A A2  7D 00055          MOVQ    74(R2), R0                                   ; 1200
                       0000G  30 00059          BSBW    DEALLOC_MEM                                  ;
            50            53  D0 0005C 3$:      MOVL    STATUS, R0                                   ; 1203
                              04 0005F          RET                                                  ; 1204

; Routine Size:  96 bytes,    Routine Base:  $CODE$ + 022E


;  482          1205  1
```

```
;  484          1206  1 GLOBAL ROUTINE lbr$flush ( ctl_index, blktyp_to_flush ) =
;  485          1207  2 BEGIN
;  486          1208  2
;  487          1209  2 !+++
;  488          1210  2 !
;  489          1211  2 ! FUNCTIONAL DESCRIPTION
;  490          1212  2 !
;  491          1213  2 !       This routine empties the cache of all data blocks or of all
;  492          1214  2 !       data and index blocks, and deallocates the virtual memory.
;  493          1215  2 !       If a write error is encountered then it quits both writing
;  494          1216  2 !       the cache to the library, and deallocating the cache.
;  495          1217  2 !
;  496          1218  2 ! CALLING SEQUENCE
;  497          1219  2 !
;  498          1220  2 !       status = lbr$flush ( ctl_index, blktyp_to_flush )
;  499          1221  2 !
;  500          1222  2 ! INPUT PARAMETERS
;  501          1223  2 !
;  502          1224  2 !       ctl_index:
;  503          1225  2 !               address of control table index.
;  504          1226  2 !
;  505          1227  2 !       blktyp_to_flush:
;  506          1228  2 !               If blktyp_to_flush  = lbr$c_flushdata then write out
;  507          1229  2 !               data blocks from cache and return virtual memory.
;  508          1230  2 !               If blktyp_to_flush  = lbr$c_flushall then write out
;  509          1231  2 !               data blocks and index blocks to library file and
;  510          1232  2 !               deallocate the virtual memory.
;  511          1233  2 !
;  512          1234  2 ! IMPLICIT OUTPUTS
;  513          1235  2 !
;  514          1236  2 !       All the blocks of the type specified are emptied from the
;  515          1237  2 !       virtual memory cache and written to the library.
;  516          1238  2 !
;  517          1239  2 ! RETURN VALUE
;  518          1240  2 !
;  519          1241  2 !       lbr$_normal     Success code
;  520          1242  2 !       lbr$_badparam   Block type other than lbr$c_flushall or lbr$c_flushdata
;  521          1243  2 !                       requested.
;  522          1244  2 !       lbr$_writeerr   Write error during writing out of cache
;  523          1245  2 !---
;  524          1246  2
;  525          1247  2 LOCAL
;  526          1248  2     blocktype,          ! flag to signal whether data blocks or both
;  527          1249  2                         !   data and index blocks should be flushed.
;  528          1250  2     status;
;  529          1251  2
;  530          1252  2 LITERAL
;  531          1253  2     continue = false;
;  532          1254  2
;  533          1255  2 BUILTIN
;  534          1256  2     NULLPARAMETER;
;  535          1257  2
;  536          1258  2 perform (validate_ctl (..ctl_index));
;  537          1259  2 perform( check_lock() );        ! check that index is not locked
;  538          1260  2
;  539          1261  2 IF NULLPARAMETER(1)
;  540          1262  2     THEN blocktype = lbr$c_flushall
```

```
;  541        1263  2      ELSE blocktype = .blktyp_to_flush;
;  542        1264  3  IF ( (.blocktype NEQ lbr$c_flushdata) AND (.blocktype NEQ lbr$c_flushall) )
;  543        1265  2  THEN RETURN lbr$_badparam;
;  544        1266  2
;  545        1267  2  !
;  546        1268  2  !     Write out the block in the cache with the largest VBN to
;  547        1269  2  !     ensure sufficient disk space before flushing the cache.
;  548        1270  2  !
;  549        1271  2  status = test_write ();
;  550        1272  2
;  551        1273  2  IF .status
;  552        1274  2  THEN status = flush_cache( lbr$c_flushdata, .status, continue);
;  553        1275  2  IF .blocktype EQL lbr$c_flushall
;  554        1276  2  THEN
;  555        1277  2      IF .status
;  556        1278  2      THEN status = flush_cache( lbr$c_flushall, .status, continue);
;  557        1279  2  RETURN .status;
;  558        1280  1  END;


                              0FFC 00000          .ENTRY  LBR$FLUSH, Save R2,R3,R4,R5,R6,R7,R8,R9,-   ; 1206
                                                          R10,R11                                     ;
                  50      04    BC  D0 00002      MOVL    @CTL_INDEX, R0                              ; 1258
                           0000G 30 00006         BSBW    VALIDATE_CTL                                ;
                  4D        50  E9 00009          BLBC    STATUS, 6$                                  ;
                           0000G 30 0000C         BSBW    CHECK_LOCK                                  ; 1259
                  47        50  E9 0000F          BLBC    STATUS, 6$                                  ;
                            6C  95 00012          TSTB    (AP)                                        ; 1261
                            05  13 00014          BEQL    1$                                          ;
                          04    AC  D5 00016      TSTL    4(AP)                                       ;
                            04  12 00019          BNEQ    2$                                          ;
                            52  D4 0001B 1$:      CLRL    BLOCKTYPE                                   ; 1262
                            04  11 0001D          BRB     3$                                          ;
                  52      08    AC  D0 0001F 2$:  MOVL    BLKTYP_TO_FLUSH, BLOCKTYPE                  ; 1263
                  01            52  D1 00023 3$:  CMPL    BLOCKTYPE, #1                               ; 1264
                            0C  13 00026          BEQL    4$                                          ;
                            52  D5 00028          TSTL    BLOCKTYPE                                   ;
                            08  13 0002A          BEQL    4$                                          ;
                  50 00000000G  8F  D0 0002C      MOVL    #LBR$_BADPARAM, R0                          ; 1265
                                04 00033          RET                                                 ;
          FECF    CF            00  FB 00034 4$:  CALLS   #0, TEST_WRITE                              ; 1271
          0B                    50  E9 00039      BLBC    STATUS, 5$                                  ; 1273
                                7E  D4 0003C      CLRL    -(SP)                                       ; 1274
                                50  DD 0003E      PUSHL   STATUS                                      ;
                                01  DD 00040      PUSHL   #1                                          ;
          FD2B    CF            03  FB 00042      CALLS   #3, FLUSH_CACHE                             ;
                                52  D5 00047 5$:  TSTL    BLOCKTYPE                                   ; 1275
                                0E  12 00049      BNEQ    6$                                          ;
          0B                    50  E9 0004B      BLBC    STATUS, 6$                                  ; 1277
                                7E  D4 0004E      CLRL    -(SP)                                       ; 1278
                                50  DD 00050      PUSHL   STATUS                                      ;
                                7E  D4 00052      CLRL    -(SP)                                       ;
          FD19    CF            03  FB 00054      CALLS   #3, FLUSH_CACHE                             ;
                                04 00059 6$:      RET                                                 ; 1280
```

```
; Routine Size:  90 bytes,    Routine Base:  $CODE$ + 028E

;  559          1281  1
;  560          1282  1 END ! module PUTCACHE
;  561          1283  0 ELUDOM


;                                  PSECT SUMMARY
;
;      Name                      Bytes                          Attributes
;
;  $CODE$                         744  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        21         0       581         00:01.0


;                                       COMMAND QUALIFIERS

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

; Size:          744 code + 0 data bytes
; Run Time:        00:21.3
; Elapsed Time:    00:46.8
; Lines/CPU Min:    3612
; Lexemes/CPU-Min: 25869
; Memory Used:  203 pages
; Compilation Complete
```

TRANSFER
LIS

DATABASE
LIS

PUTCACHE
LIS

LIBRAR

PREFIX
REQ

LIBRARIAN
MAP

CROSS
LIS

SUBS
LIS

FILEIO
LIS

PADLBR
LIS

COMPRESS
LIS

EXTRACT
LIS

LIB
MDL

DELETE
LIS