```
LLL                 IIIIIIIII     BBBBBBBBBBBB     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
LLL                 IIIIIIIII     BBBBBBBBBBBB     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
LLL                 IIIIIIIII     BBBBBBBBBBBB     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
LLL                    III        BBB         BBB  RRR         RRR        TTT        LLL
LLL                    III        BBB         BBB  RRR         RRR        TTT        LLL
LLL                    III        BBB         BBB  RRR         RRR        TTT        LLL
LLL                    III        BBB         BBB  RRR         RRR        TTT        LLL
LLL                    III        BBB         BBB  RRR         RRR        TTT        LLL
LLL                    III        BBB         BBB  RRR         RRR        TTT        LLL
LLL                    III        BBBBBBBBBBBB     RRRRRRRRRRRR           TTT        LLL
LLL                    III        BBBBBBBBBBBB     RRRRRRRRRRRR           TTT        LLL
LLL                    III        BBBBBBBBBBBB     RRRRRRRRRRRR           TTT        LLL
LLL                    III        BBB         BBB  RRR   RRR              TTT        LLL
LLL                    III        BBB         BBB  RRR   RRR              TTT        LLL
LLL                    III        BBB         BBB  RRR   RRR              TTT        LLL
LLL                    III        BBB         BBB  RRR      RRR           TTT        LLL
LLL                    III        BBB         BBB  RRR      RRR           TTT        LLL
LLL                    III        BBB         BBB  RRR      RRR           TTT        LLL
LLLLLLLLLLLLLLL     IIIIIIIII     BBBBBBBBBBBB     RRR         RRR        TTT        LLLLLLLLLLLLLLL
LLLLLLLLLLLLLLL     IIIIIIIII     BBBBBBBBBBBB     RRR         RRR        TTT        LLLLLLLLLLLLLLL
LLLLLLLLLLLLLLL     IIIIIIIII     BBBBBBBBBBBB     RRR         RRR        TTT        LLLLLLLLLLLLLLL
```

FILEID**LIBINITIA

```
LL             IIIIII    BBBBBBBB     IIIIII    NN      NN    IIIIII    TTTTTTTTTT    IIIIII      AAAAAA
LL             IIIIII    BBBBBBBB     IIIIII    NN      NN    IIIIII    TTTTTTTTTT    IIIIII      AAAAAA
LL               II      BB      BB     II      NN      NN      II          TT          II      AA      AA
LL               II      BB      BB     II      NN      NN      II          TT          II      AA      AA
LL               II      BB      BB     II      NNNN    NN      II          TT          II      AA      AA
LL               II      BB      BB     II      NNNN    NN      II          TT          II      AA      AA
LL               II      BBBBBBBB       II      NN  NN  NN      II          TT          II      AA      AA
LL               II      BBBBBBBB       II      NN  NN  NN      II          TT          II      AA      AA
LL               II      BB      BB     II      NN    NNNN      II          TT          II      AAAAAAAAAA
LL               II      BB      BB     II      NN    NNNN      II          TT          II      AAAAAAAAAA
LL               II      BB      BB     II      NN      NN      II          TT          II      AA      AA      ....
LL               II      BB      BB     II      NN      NN      II          TT          II      AA      AA      ....
LLLLLLLLLL     IIIIII    BBBBBBBB     IIIIII    NN      NN    IIIIII        TT        IIIIII    AA      AA      ....
LLLLLLLLLL     IIIIII    BBBBBBBB     IIIIII    NN      NN    IIIIII        TT        IIIIII    AA      AA      ....

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
```

Table of contents

```
0000     1          .TITLE  LIB$INITIALIZE          ; Library initialization dispatcher
0000     2          .IDENT  /1-004/                 ; File: LIBINITIA.MAR  Edit: SBL1004
0000     3
0000     4 ;
0000     5 ;*****************************************************************************
0000     6 ;*                                                                           *
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0000    24 ;*                                                                           *
0000    25 ;*                                                                           *
0000    26 ;*****************************************************************************
0000    27 ;
0000    28 ;++
0000    29 ; FACILITY: RUN-TIME UTILITY PROCEDURE LIBRARY
0000    30 ;
0000    31 ; ENVIRONMENT:  User mode - not re-entrant.  Called only once
0000    32 ;               per image activation.
0000    33 ;
0000    34 ;
0000    35 ; ABSTRACT:
0000    36 ;
0000    37 ;       LIB$INITIALIZE is a software architecture procedure
0000    38 ;       which permits any library or user modular procedure to specify an initializa
0000    39 ;       to be called before the main program is called.
0000    40 ;       The initialization procedure can perform any once per-image
0000    41 ;       activation initialization which cannot be performed by the usual
0000    42 ;       compile-time and link-time static data initialization.
0000    43 ;
0000    44 ;--
0000    45 ;
0000    46 ; VERSION: 0
0000    47 ;
0000    48 ; HISTORY:
0000    49 ;
0000    50 ; AUTHOR:
0000    51 ;       Thomas N. Hastings, 6-Aug-77: Version 0
0000    52 ;
0000    53 ; MODIFIED BY:
0000    54 ;
0000    55 ;
```

```
0000     57          .SBTTL  HISTORY         ; Detailed Current Edit History
0000     58
0000     59
0000     60 ; Edit History for Version 0
0000     61 ;
0000     62
0000     63 ; 0-01  - initial version TNH 12-SEP-77
0000     64 ; 0-4   - Declare PSECT LIB$CODE SHR.  TNH 19-Dec-77
0000     65 ; 00-05 - Return after main prog., using OWN storage.  TNH 6-Jan-78.
0000     66 ; 00-08 - Change PSECT to LIB$CODE NOSHR.  JMT 25-Jan-78
0000     67 ; 00-09 - Declare PSECT GBL.  TNH 10-Jun-78
0000     68 ; 00-10 - .PSECT LIB$DATA NOPIC.  TNH 28-June-78
0000     69 ; 1-001 - Update version number and copyright notice.  JBS 16-NOV-78
0000     70 ; 1-002 - Remove $SFDEF macro - not needed.  JBS 16-DEC-78
0000     71 ; 1-003 - Add "_" to certain PSECT directives.  (Don't change those
0000     72 ;          documented in release 1.)  JBS 21-DEC-78
0000     73 ; 1-004 - Zero the "Environment Pointer" (R1) before calling
0000     74 ;          initialization routines.  This insures that routines
0000     75 ;          written in PASCAL, PL/I, etc. will work correctly.
0000     76 ;          SBL 7-April-1980
```

```
                                        .SBTTL  DECLARATIONS

                                ;
                                ; INCLUDE FILES:
                                ;
                                ;
                                ; EXTERNAL SYMBOLS:
                                ;
                                        .DSABL  GBL                     ; Force .EXTRN declarations for externals
                                ;
                                ; MACROS:
                                ;

                                ;
                                ; PSECT DECLARATIONS:
                                ;
00000000                                .PSECT  LIB$INITIALIZDZ NOPIC,USR,CON,REL,GBL,NOSHR,NOEXE,RD,NOWRT,LONG
                        0000    INIT_TABLE_BEG:                         ; First entry in table
00000000                                .PSECT  LIB$INITIALIZD_ NOPIC,USR,CON,REL,GBL,NOSHR,NOEXE,RD,NOWRT,LONG
                                                                        ; Contribution from OTS$STARTUP
00000000                                .PSECT  LIB$INITIALIZE  NOPIC,USR,CON,REL,GBL,NOSHR,NOEXE,RD,NOWRT,LONG
                                                                        ; Contributions from rest of library and use
00000000                                .PSECT  LIB$INITIALIZE$ NOPIC,USR,CON,REL,GBL,NOSHR,NOEXE,RD,NOWRT,LONG
                        0000    INIT_TABLE_END:
00000000                0000            .LONG   0                       ; End of startup list
                        0004                                            ; The code for this module
                                ;
                                ; EQUATED SYMBOLS:
                                ;
                                ;
                                ; OWN STORAGE:
                                ;

00000000                                .PSECT  _LIB$DATA       PIC,USR,CON,REL,LCL,NOSHR,NOEXE,RD,WRT

                        0000    DISP_PTR:                               ; OWN variable containing
00000004                0000            .BLKL   1                       ; pointer to initialization dispatch table
                        0004    SAV_START_ADR:                          ; OWN variable to save original
00000008                0004            .BLKL   1                       ; value of START_ADR_ADR arg list entry
0000000C                0008    SAV_AP: .BLKL   1                       ; saved value of AP when called
                        000C                                            ; needed to find original arg list
                        000C                                            ; on co-routine call back.

00000000                                .PSECT  _LIB$CODE_NOSHR PIC,USR,CON,REL,LCL,SHR,EXE,RD,NOWRT
```

```
                     0000   124          .SBTTL  LIB$INITIALIZE - Library initialization procedure dispatcher
                     0000   125
                     0000   126 ;++
                     0000   127 ; FUNCTIONAL DESCRIPTION:
                     0000   128 ;
                     0000   129 ;       LIB$INITIALIZE is a library procedure for initializing
                     0000   130 ;       library and user procedures at run-time which cannot
                     0000   131 ;       be done statically at compile-time or link-time.
                     0000   132 ;       LIB$INITIALIZE is called before the main program
                     0000   133 ;       if the GLOBAL symbol LIB$INITIALIZE is defined.  User procedures
                     0000   134 ;       and library procedures need only declare LIB$INITIALIZE
                     0000   135 ;       as an EXTERNAL (the compiler generates EXTERNAL OTS$LINKAGE
                     0000   136 ;       which generates the EXTERNAL LIB$INITIALIZE).
                     0000   137 ;       LIB$INITIALIZE calls every entrypoint contributed to
                     0000   138 ;       PSECT LIB$INITIALIZE.
                     0000   139 ;       Note:  this procedure is not re-entrant.  It can only be called
                     0000   140 ;       once per image activation as currently coded.   If multiple
                     0000   141 ;       main programs exist in an image, all but the first should be called
                     0000   142 ;       directly, rather than calling through the image startup list
                     0000   143 ;       setup by the linker.
                     0000   144 ;
                     0000   145 ; CALLING SEQUENCE:
                     0000   146 ;
                     0000   147 ;       Status.wlc.v = LIB$INITIALIZE (start_adr_adr.ma.r, cli_co_rout.flc.r, ...)
                     0000   148
                     0000   149 ;
                     0000   150 ; INPUT PARAMETERS:
                     0000   151 ;
 00000004            0000   152          START_ADR_ADR = 4                ; Adr. of the entry
                     0000   153                                          ; in the image startup vector
                     0000   154                                          ; which is used to perform the call.
                     0000   155
                     0000   156 ;
                     0000   157 ; IMPLICIT INPUTS:
                     0000   158 ;       NONE
                     0000   159 ;
                     0000   160 ; OUTPUT PARAMETERS:
                     0000   161 ;       NONE
                     0000   162 ;
                     0000   163 ; IMPLICIT OUTPUTS:
                     0000   164 ;       NONE
                     0000   165 ;
                     0000   166 ; COMPLETION CODES:
                     0000   167 ;
                     0000   168 ;       The completion code returned from the main program.
                     0000   169 ;
                     0000   170 ; SIDE EFFECTS:
                     0000   171 ;       Violates VAX-11 Procedure Calling standard by modifying arg list entry START
                     0000   172 ;       Increments it by 4 to point to main program starting address.
                     0000   173 ;       This violation is acceptable, since LIB$INITIALIZE only called
                     0000   174 ;       by CLI and debugger.
                     0000   175 ;--
                     0000   176
                     0000   177
                     0000   178
```

```
                        4000  0000          .ENTRY  LIB$INITIALIZE, ^M<IV>   ; entry point and entry mask
                              0002                                           ; enable integer overflow
      00000008'EF       5C  D0  0002        MOVL    AP, SAV_AP               ; save AP for co-routine restore
    00000004'EF    04 AC  D0  0009          MOVL    START_ADR_ADR(AP), -     ; save pointer to startup list in OWN
                              0011                  SAV_START_ADR            ; storage (SAV_START_ADR)
          04 AC    53'AF  DE  0011          MOVAL   B^CO_ROUT, -             ; change arg list entry in case
                              0016                  START_ADR_ADR(AP)        ; an initialization procedure is called.
 00000000'EF  00000000'EF  DE  0016         MOVAL   INIT_TABLE_BEG, -        ; initialize OWN storage (DISP_PTR)
                              0021                  DISP_PTR                 ; to first address of user/library
                              0021
                              0021   ;+
                              0021   ; Loop to scan table of user and library initialization procedure
                              0021   ; starting addresses in PSECT LIB$INITIALIZDZ, LIB$INITIALIZD_,
                              0021   ; LIB$INITIALIZE, and LIB$INITIALIZE$
                              0021   ;-
                              0021
        50   00000000'FF  D0  0021   LOOP:  MOVL    @DISP_PTR, R0            ; R0 = next user/library initialization
                              0028                                           ; procedure address
                   16   13  0028            BEQL    CALL_MAIN                ; zero means end of list
                   51   D4  002A            CLRL    R1                       ; Clear environment pointer
              60   6C   FA  002C            CALLG   (AP), (R0)               ; call next user/library init proc.
          00000000'FF   D5  002F            TSTL    @DISP_PTR                ; test if dispatch address is zero
                   1B   13  0035            BEQL    RET                      ; if yes, this must be return from
                              0037                                           ; user initialization proc. which had
                              0037                                           ; done co-routine call-back.
                              0037                                           ; There fore this is return from main
                              0037                                           ; program, so return to caller (of LIB$INI[
                              0037                                           ; caller or initializtion procedure)
                              0037                                           ; may loop thru here for each init proc whic
                              0037
                              0037   ;+
                              0037   ; Here from co-routine call-back from an initialization routine
                              0037   ;-
                              0037
                              0037   DISPATCH_CONT:                          ; continue dispatching to initialization pro
      00000000'EF    04   C0  0037          ADDL    #4, DISP_PTR             ; step dispatch pointer to next
                              003E                                           ; init. proc. address
                   E1   11  003E            BRB     LOOP                     ; loop
                              0040
                              0040   ;+
                              0040   ; Here when entire initialization list has been scanned
                              0040   ; Call main program
                              0040   ;-
                              0040
                              0040   CALL_MAIN:                              ; here to call main program
 04 AC  00000004'EF    04   C1  0040        ADDL3   #4, SAV_START_ADR, -     ; Restore initial argument and step
                              0049                  START_ADR_ADR(AP)        ; to next longword in image startup vector.
             50    04 BC  D0  0049          MOVL    @START_ADR_ADR(AP), R0   ; R0 = next start address (main program)
                   51   D4  004D            CLRL    R1                       ; Clear environment pointer
              60   6C   FA  004F            CALLG   (AP), (R0)               ; call main program or main procedure
                   04  0052          RET:   RET                              ; R0 = status returned by main program
```

```
                                0053    232
                                0053    233 ;+
                                0053    234 ; Co-routine - may be called by library or user initialization procedure.
                                0053    235 ; Set AP to value it had when LIB$INITIALIZE originally called.
                                0053    236 ; This lets LIB$INITIALIZE re-use the same argument list
                                0053    237 ;-
                                0053    238
                                0053    239 CO_ROUT:
                         4000   0053    240         .WORD   ^M<IV>                  ; no registers used.
            5C  00000008'EF      D0   0055    241         MOVL    SAV_AP, AP              ; restore AP to original arg list
                                0058    242                                         ; when LIB$INITIALIZE was called.
                           D9    11   005C    243         BRB     DISPATCH_CONT           ; go continue dispatch loop
                                005E    244
                                005E    245         .END                            ; End of module LIB$INITIALIZE
```

```
CALL_MAIN           00000040 R      06
CO_ROUT             00000053 R      06
DISPATCH_CONT       00000037 R      06
DISP_PTR            00000000 R      05
INIT_TABLE_BEG      00000000 R      01
INIT_TABLE_END      00000000 R      04
LIB$INITIALIZE      00000000 RG     06
LOOP                00000021 R      06
RET                 00000052 R      06
SAV_AP              00000008 R      05
SAV_START_ADR       00000004 R      05
START_ADR_ADR   =   00000004
```

Psect synopsis

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
LIB$INITIALIZDZ	00000000 (0.)	01 (1.)	NOPIC USR CON REL GBL NOSHR NOEXE RD NOWRT NOVEC LONG
LIB$INITIALIZD_	00000000 (0.)	02 (2.)	NOPIC USR CON REL GBL NOSHR NOEXE RD NOWRT NOVEC LONG
LIB$INITIALIZE_	00000000 (0.)	03 (3.)	NOPIC USR CON REL GBL NOSHR NOEXE RD NOWRT NOVEC LONG
LIB$INITIALIZE$	00000004 (4.)	04 (4.)	NOPIC USR CON REL GBL NOSHR NOEXE RD NOWRT NOVEC LONG
_LIB$DATA	0000000C (12.)	05 (5.)	PIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC BYTE
_LIB$CODE_NOSHR	0000005E (94.)	06 (6.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC BYTE

Performance indicators

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.03	00:00:02.66
Command processing	109	00:00:00.30	00:00:03.67
Pass 1	67	00:00:00.35	00:00:02.97
Symbol table sort	0	00:00:00.00	00:00:00.01
Pass 2	59	00:00:00.28	00:00:01.36
Symbol table output	2	00:00:00.02	00:00:00.02
Psect synopsis output	4	00:00:00.01	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	272	00:00:01.00	00:00:10.71

```
The working set limit was 750 pages.
2647 byies (6 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 12 non-local and 0 local symbols.
245 source lines were read in Pass 1, producing 20 object records in Pass 2.
0 pages of virtual memory were used to define 0 macros.
```

Macro library statistics

Macro library name	Macros defined
_255DUA28:[SYSLIB]STARLET.MLB;2	0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS$:LIBINITIA/OBJ=OBJ$:LIBINITIA MSRC$:LIBINITIA/UPDATE=(ENH$:LIBINITIA)

LIBFLTUND
LIS

LIBGETSYI
LIS

LIBICHAR
LIS

LIBINITIA
LIS

LIBFIXUPF
LIS

LIBGETFOR
LIS

LIBGETINP
LIS

LIBINISHR
LIS

LIBGETDVI
LIS

LIBGETOPC
LIS

LIBFNDIMG
LIS

LIBGETMSG
LIS

LIBINDEX
LIS

LIBINSQHI
LIS

LIBGETJPI
LIS

LIBGETTAB
LIS