```
LLL                   IIIIIIIII   NNN        NNN KKK        KKK EEEEEEEEEEEEEEE   RRRRRRRRRRR
LLL                   IIIIIIIII   NNN        NNN KKK        KKK EEEEEEEEEEEEEEE   RRRRRRRRRRR
LLL                   IIIIIIIII   NNN        NNN KKK        KKK EEEEEEEEEEEEEEE   RRRRRRRRRRR
LLL                      III      NNN        NNN KKK        KKK EEE               RRR        RRR
LLL                      III      NNN        NNN KKK        KKK EEE               RRR        RRR
LLL                      III      NNN        NNN KKK        KKK EEE               RRR        RRR
LLL                      III      NNNNNN     NNN KKK      KKK   EEE               RRR        RRR
LLL                      III      NNNNNN     NNN KKK    KKK     EEE               RRR        RRR
LLL                      III      NNNNNN     NNN KKK  KKK       EEE               RRR        RRR
LLL                      III      NNN  NNN   NNN KKKKKKKK       EEEEEEEEEEE        RRRRRRRRRRR
LLL                      III      NNN   NNN  NNN KKKKKKKK       EEEEEEEEEEE        RRRRRRRRRRR
LLL                      III      NNN    NNN NNN KKKKKKKK       EEEEEEEEEEE        RRRRRRRRRRR
LLL                      III      NNN     NNNNNN KKK  KKK       EEE               RRR  RRR
LLL                      III      NNN     NNNNNN KKK   KKK      EEE               RRR   RRR
LLL                      III      NNN      NNNNN KKK    KKK     EEE               RRR    RRR
LLL                      III      NNN        NNN KKK      KKK   EEE               RRR     RRR
LLL                      III      NNN        NNN KKK        KKK EEE               RRR      RRR
LLL                      III      NNN        NNN KKK        KKK EEE               RRR       RRR
LLLLLLLLLLLLLLL       IIIIIIIII   NNN        NNN KKK        KKK EEEEEEEEEEEEEEE   RRR        RRR
LLLLLLLLLLLLLLL       IIIIIIIII   NNN        NNN KKK        KKK EEEEEEEEEEEEEEE   RRR        RRR
LLLLLLLLLLLLLLL       IIIIIIIII   NNN        NNN KKK        KKK EEEEEEEEEEEEEEE   RRR        RRR
```

```
LL          NN       NN  KK      KK  EEEEEEEEEE  LL            AAAAAA      PPPPPPPP          SSSSSSSS  TTTTTTTTTT
LL          NN       NN  KK      KK  EEEEEEEEEE  LL            AAAAAA      PPPPPPPP          SSSSSSSS  TTTTTTTTTT
LL          NN       NN  KK    KK    EE          LL         AA      AA    PP      PP    SS                TT
LL          NN       NN  KK  KK      EE          LL         AA      AA    PP      PP    SS                TT
LL          NNNN     NN  KK  KK      EE          LL         AA      AA    PP      PP    SS                TT
LL          NNNN     NN  KK KK       EE          LL         AA      AA    PP      PP    SS                TT
LL          NN NN    NN  KKKKK       EEEEEEE     LL         AA      AA    PPPPPPPP        SSSSSS          TT
LL          NN  NN   NN  KKKKK       EEEEEEE     LL         AA      AA    PPPPPPPP        SSSSSS          TT
LL          NN   NNNN    KK    KK    EE          LL         AAAAAAAAAA    PP                      SS      TT
LL          NN    NNNN   KK    KK    EE          LL         AA      AA    PP                      SS      TT
LL          NN       NN  KK      KK  EE          LL         AA      AA    PP                      SS      TT
LL          NN       NN  KK      KK  EE          LL         AA      AA    PP                      SS      TT    ....
LLLLLLLLLL  NN       NN  KK      KK  EEEEEEEEEE  LLLLLLLLLL  AA      AA    PP              SSSSSSSS        TT    ....
LLLLLLLLLL  NN       NN  KK      KK  EEEEEEEEEE  LLLLLLLLLL  AA      AA    PP              SSSSSSSS        TT    ....


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

; R

```
0000      1              .TITLE  LNK_ELAPSTIMS
0000      2              .IDENT  'V04-000'
0000      3
0000      4      ;
0000      5      ;********************************************************************
0000      6      ;*                                                                  *
0000      7      ;*   COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                        *
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0000     23      ;*   SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.         *
0000     24      ;*                                                                  *
0000     25      ;*                                                                  *
0000     26      ;********************************************************************
0000     27      ;
0000     28
0000     29      ;++
0000     30      ; FACILITY:     LINKER
0000     31      ;
0000     32      ; ABSTRACT:     COMPUTE AN ELAPSED TIME FROM TWO ABSOLUTE TIMES
0000     33      ;
0000     34      ;
0000     35      ; ENVIRONMENT:
0000     36      ;
0000     37      ; AUTHOR:       T.J. PORTER, CREATION DATE: 27-JUN-77
0000     38      ;
0000     39      ; MODIFIED BY:
0000     40      ;
0000     41      ;       V02-001 BLS0035        Benn Schreiber        19-Jan-1981
0000     42      ;               Change to longword displacement
0000     43      ;--
```

```
                        0000      45              .SBTTL   DECLARATIONS
                        0000      46 ;
                        0000      47 ; INCLUDE FILES:
                        0000      48 ;
                        0000      49
                        0000      50 ;
                        0000      51 ; MACROS:
                        0000      52 ;
                        0000      53
                        0000      54 ;
                        0000      55 ; EQUATED SYMBOLS:
                        0000      56 ;
            00000004    0000      57 TIMEADDR1 = 4                    ; FIRST ARGUMENT IS TIME 1 ADDRESS
            00000008    0000      58 TIMEADDR2 = 8                    ; SECOND IS ADDRESS OF TIME 2
                        0000      59 ;
                        0000      60 ; OWN STORAGE:
                        0000      61 ;
            00000000    0000      62          .PSECT   $OWN$,NOEXE,QUAD
                        0000      63 ELAPSED:
00000000 00000000       0000      64          .QUAD    0                    ; THE COMPUTED ELAPSED TIME
                        0008      65
```

; F

```
0008    67            .SBTTL  LNK$CALCELAPS
0008    68  ;++
0008    69  ; FUNCTIONAL DESCRIPTION:
0008    70  ;
0008    71  ;       THIS ROUTINE IS CALLED TO CALCULATE THE ELAPSED TIME BETWEEN TWO
0008    72  ;       ABSOLUTE TIME VALUES. THE ADDRESS OF THE RESULT IS RETURNED AS THE VALUE OF
0008    73  ;       THE ELAPSED TIME IS IN THE "DELTA TIME" FORMAT OF THE SYSTEM AND
0008    74  ;       IS THEREFORE SUITABLE FOR DISPLAYING THROUGH SYSTEM SERVICES
0008    75  ;       SUCH AS FAO %T.
0008    76  ;
0008    77  ; CALLING SEQUENCE:
0008    78  ;
0008    79  ;       LNK$CALCELAPS(TIMEADDR1,TIMEADDR2)
0008    80  ;
0008    81  ;       WHERE:  TIMEADDR1 = ADDRESS OF A QUADWORD CONTAINING THE
0008    82  ;                           START TIME
0008    83  ;               TIMEADDR2 = ADDRESS OF A QUADWORD CONTAINING THE
0008    84  ;                           END TIME.
0008    85  ;
0008    86  ;
0008    87  ; INPUT PARAMETERS:
0008    88  ;
0008    89  ;       AS ABOVE
0008    90  ;
0008    91  ; IMPLICIT INPUTS:
0008    92  ;
0008    93  ;       NONE
0008    94  ;
0008    95  ; OUTPUT PARAMETERS:
0008    96  ;
0008    97  ;       THE ROUTINE HAS AS ITS VALUE (I.E. CONTENT RETURNED IN R0)
0008    98  ;       THE ADDRESS OF AN OWN QUADWORD CONTAINING THE VALUE
0008    99  ;                       TIME1 - TIME2
0008   100  ;       WHICH IS (PRESUMABLY) NEGATIVE.
0008   101  ;
0008   102  ;
0008   103  ; IMPLICIT OUTPUTS:
0008   104  ;
0008   105  ;       NONE
0008   106  ;
0008   107  ; COMPLETION CODES:
0008   108  ;
0008   109  ;       NONE
0008   110  ;
0008   111  ; SIDE EFFECTS:
0008   112  ;
0008   113  ;       NONE
0008   114  ;
0008   115  ;--
0008   116
00000000   117            .PSECT  $CODE$,NOWRT,LONG
0000       118  LNK$CALCELAPS::
       0000   0000   119            .WORD   0
50 00000000'EF  9E  0002  120            MOVAB   L^ELAPSED,R0            ; GET ADDRESS OF QUADWORD TO RECEIVE RESULT
   51  08 AC  D0  0009  121            MOVL    TIMEADDR2(AP),R1        ; GET ADDRESS OF TIME 2
   60  04 BC  7D  000D  122            MOVQ    @TIMEADDR1(AP),(R0)     ; INITIALIZE RESULT WITH TIME 1
       60  81  C2  0011  123            SUBL    (R1)+,(R0)             ; SUBTRACT LOW ORDER HALF OF
```

```
       04 A0  61  09  0014  124        SBWC    (R1),4(R0)         ; TIME 2 THEN HIGH ORDER HALF WITH CARRY
                  04  0018  125        RET                        ; FROM CORRESPONDING HALVES OF TIME 1
                      0019  126        .END
```

LNK_ELAPSTIMS   15-SEP-1984 23:55:28 VAX/VMS Macro V04-00   Page 5   **F
Symbol table   5-SEP-1984 01:42:33 [LINKER.SRC]LNKELAPST.MAR;1   (3)

```
ELAPSED              00000000 R    01
LNK$CALCELAPS        00000000 RG   02
TIMEADDR1          = 00000004
TIMEADDR2          = 00000008
```

```
                              +-----------------+
                              ! Psect synopsis !
                              +-----------------+
```

PSECT name	Allocation	PSECT No.	Attributes									
. ABS .	00000000 (0.)	00 (0.)	NOPIC	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT NOVEC BYTE
OWN	00000008 (8.)	01 (1.)	NOPIC	USR	CON	REL	LCL	NOSHR	NOEXE	RD	WRT NOVEC QUAD
$CODE$	00000019 (25.)	02 (2.)	NOPIC	USR	CON	REL	LCL	NOSHR	EXE	RD	NOWRT NOVEC LONG

```
                         +--------------------------+
                         ! Performance indicators !
                         +--------------------------+
```

Phase	Page faults	CPU Time	Elapsed Time
Initialization	33	00:00:00.06	00:00:01.11
Command processing	103	00:00:00.50	00:00:02.81
Pass 1	67	00:00:00.35	00:00:01.49
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	38	00:00:00.32	00:00:01.62
Symbol table output	2	00:00:00.01	00:00:00.02
Psect synopsis output	1	00:00:00.02	00:00:00.06
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	246	00:00:01.28	00:00:07.17

The working set limit was 900 pages.
1255 bytes (3 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 4 non-local and 0 local symbols.
126 source lines were read in Pass 1, producing 13 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/LIS=LIS$:LNKELAPST/OBJ=OBJ$:LNKELAPST MSRC$:LNKELAPST/UPDATE=(ENH$:LNKELAPST)

LNKDYNMEM
LIS

LNKMAPRTN
LIS

LNKMSG
LIS

LNKELAPST
LIS

LNKIMGOUT
LIS

LNKDATBAS
LIS

LNKGETCMD
LIS

LNKINI
LIS

LNKERROUT
LIS