


```

LL      IIIIII  BBBB8888  IIIIII  NN      NN  SSSSSSSS  QQQQQQ  HH      HH  IIIIII
LL      IIIIII  BBBB8888  IIIIII  NN      NN  SSSSSSSS  QQQQQQ  HH      HH  IIIIII
LL      II      BB      BB  II      II  NN      NN  SS      SS  QQ      QQ  HH      HH  II
LL      II      BB      BB  II      II  NN      NN  SS      SS  QQ      QQ  HH      HH  II
LL      II      BB      BB  II      II  NNNN   NN  SS      SS  QQ      QQ  HH      HH  II
LL      II      BB      BB  II      II  NNNN   NN  SS      SS  QQ      QQ  HH      HH  II
LL      II      BBBB8888  II      II  NN      NN  SSSSSS  QQ      QQ  HHHHHHHHHH  II
LL      II      BBBB8888  II      II  NN      NN  SSSSSS  QQ      QQ  HHHHHHHHHH  II
LL      II      BB      BB  II      II  NN      NN  SS      SS  QQ  QQ  QQ  HH      HH  II
LL      II      BB      BB  II      II  NN      NN  SS      SS  QQ  QQ  QQ  HH      HH  II
LL      II      BB      BB  II      II  NN      NN  SS      SS  QQ  QQ  QQ  HH      HH  II
LL      II      BB      BB  II      II  NN      NN  SS      SS  QQ  QQ  QQ  HH      HH  II
LLLLLLLLLLLL  IIIIII  BBBB8888  IIIIII  NN      NN  SSSSSSSS  QQQQ  QQ  HH      HH  IIIIII
LLLLLLLLLLLL  IIIIII  BBBB8888  IIIIII  NN      NN  SSSSSSSS  QQQQ  QQ  HH      HH  IIIIII

```

```

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
LLLLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLLLL  IIIIII  SSSSSSSS

```

(2) 50
(3) 87

DECLARATIONS
LIB\$INSQHI - Insert Entry into Queue Head

```
0000 1 .TITLE LIB$INSQHI - Insert Entry into Queue at Head, Interlocked
0000 2 .IDENT /1-002/ ; File: LIB$INSQHI.MAR Edit:DGP1002
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: General Utility Library
0000 31
0000 32 : ABSTRACT:
0000 33
0000 34 : One of four procedures which give higher level languages access
0000 35 : to the interlocked, self-relative queue instructions on the
0000 36 : VAX-11/780 and all future machines. This library procedure permits
0000 37 : the high level language user to have access to the INSQHI instruction.
0000 38
0000 39 : ENVIRONMENT: User Mode, AST Reentrant
0000 40
0000 41 :--
0000 42 : AUTHOR: R. E. Johnston, CREATION DATE: 03-Dec-79
0000 43
0000 44 : MODIFIED BY:
0000 45
0000 46 : 1-001 - Original. REJ 03-Dec-79
0000 47 : 1-002 - Retry count is off by one. DGP 14-Aug-1981
0000 48 :--
```

```
0000 50      .SBTTL  DECLARATIONS
0000 51      :
0000 52      : INCLUDE FILES:
0000 53      :
0000 54      :
0000 55      :
0000 56      : EXTERNAL DECLARATIONS:
0000 57      :
0000 58      .DSABL  GBL                ; Disable automatic generation
0000 59      :                               ; of .EXTRN
0000 60      .EXTRN  SSS NORMAL          ; Normal successful completion
0000 61      .EXTRN  LIB$ SECINTFAI      ; Secondary Interlock still
0000 62      :                               ; locked after retry-cnt retrys
0000 63      .EXTRN  LIB$ ONEENTQUE      ; Successful Completion but
0000 64      :                               ; only one entry is now
0000 65      :                               ; contained in queue
0000 66      :
0000 67      : MACROS:
0000 68      :
0000 69      :
0000 70      :
0000 71      : EQUATED SYMBOLS:
0000 72      :
0000000A 0000 73      DEF_RETRY_CNT = 10 ; Default retry count for
0000 74      :                               ; Secondary Interlock fails
0000 75      :
0000 76      : OWN STORAGE:
0000 77      :
0000 78      :
0000 79      :
0000 80      : PSECT DECLARATIONS:
0000 81      :
00000000 0000 82      .PSECT _LIB$CODE PIC, SHR, LONG, EXE, NOWRT
0000 83      :
0000 84      :
0000 85      :
```

```
0000 87 .SBTTL LIB$INSQHI - Insert Entry into Queue Head
0000 88 :++
0000 89 : FUNCTIONAL DESCRIPTION:
0000 90 :
0000 91 :
0000 92 : One of four procedures which give higher level languages access
0000 93 : to the interlocked, self-relative queue instructions on the
0000 94 : VAX-11/780 and all future machines. This library procedure permits
0000 95 : the high level language user to have access to the INSQHI instruction.
0000 96 : With this procedure the user may insert a queue entry at the head of a
0000 97 : user specified queue.
0000 98 :
0000 99 : If the entry is successfully added to the head of the queue and the
0000 100 : queue contains more than one entry, a successful completion status is
0000 101 : returned. If the entry is added to the head of the queue and no other
0000 102 : entries are in the queue, the execution is successful but a unique
0000 103 : status value is returned indicating that the queue now contains one
0000 104 : entry (LIB$_ONEENTQUE).
0000 105 :
0000 106 : These queue instructions are synchronized across all processors
0000 107 : through the use of a secondary interlock. The user may specify a
0000 108 : secondary interlock retry count. (The default retry count is 10.)
0000 109 : If the secondary interlock remains locked through retry-count retrys,
0000 110 : a secondary interlock status is returned to the user (LIB$_SECINTFAI)
0000 111 : and the entry is NOT successfully added to the head of the queue.
0000 112 :
0000 113 : CALLING SEQUENCE:
0000 114 :
0000 115 : ret-status.wlc.v = LIB$INSQHI (entry.ml.ra, header.mq.r[, retry-cnt.rlu.r])
0000 116 :
0000 117 :
0000 118 : INPUT PARAMETERS:
0000 119 :
00000004 0000 120 : ENTRY = 4 ; Address of queue entry to be inserted
00000008 0000 121 : HEADER = 8 ; Address of queue header
0000000C 0000 122 : RETRY_CNT = 12 ; Address of retry count
0000 123 :
0000 124 : IMPLICIT INPUTS:
0000 125 :
0000 126 : NONE
0000 127 :
0000 128 : OUTPUT PARAMETERS:
0000 129 :
0000 130 : NONE
0000 131 :
0000 132 : IMPLICIT OUTPUTS:
0000 133 :
0000 134 : NONE
0000 135 :
0000 136 : FUNCTION VALUE:
0000 137 :
0000 138 : SSS_NORMAL - Entry added to head of queue, queue contains more
0000 139 : than one entry.
0000 140 : LIB$_ONEENTQUE - Successful completion of instruction (INSQHI).
0000 141 : Entry added to head of queue, but queue was empty.
0000 142 : LIB$_SECINTFAI - Secondary Interlock failed, queue is not modified.
0000 143 :
```

```

0000 144 : SIDE EFFECTS:
0000 145 :
0000 146 :     SSS_ROPRAND - reserved operand fault for:
0000 147 :     1.) either the entry or the header is at an address
0000 148 :         that is not quad word aligned.
0000 149 :     2.) address of header equals address of entry.
0000 150 :
0000 151 :--
0000 152 :
0000 153 : .ENTRY LIB$INSQHI , ^M< > ; Entry point
50 0A D0 0002 154 :
03 6C 91 0005 155 :     MOVL #DEF_RETRY_CNT, R0 ; R0 = Default retry count of 10
04 1F 0008 156 :     CMPB (AP), #<RETRY_CNT/4> ; Check for optional retry cnt operand
50 0C BC D0 000A 157 :     BLSSU 20$ ; Branch if default count to be used
08 BC 04 BC 5C 000E 158 :     MOVL @RETRY_CNT(AP), R0 ; R0 = User specified retry count
08 1B 0013 159 20$:
50 00000000'8F D0 0015 160 :     INSQHI @ENTRY(AP), @HEADER(AP) ; Do the instruction (INSQHI)
001C 161 :     BLEQU 30$ ; Branch if Z = 1 (One entry in queue)
001C 162 : ; or C = 1 (Secondary Interlock fail)
001C 163 :     MOVL #SS$_NORMAL, R0 ; Normal status - Entry added to head
04 001C 164 : ; of queue and more than one entry is
001D 165 : ; now in queue
50 00000000'8F D0 001D 166 30$:
001F 167 :     RET ; Successful return to user
0026 168 :     BCS 40$ ; Branch if Secondary Interlock fail
04 0026 170 :     MOVL #LIB$_ONEENTQUE, R0 ; Assume exactly one entry now in queue
0027 171 :     RET ; Entry successfully entered into queue
0027 172 40$:
50 00000000'8F D0 0027 173 :     SOBGEQ R0, 20$ ; Loop until retry count is exhausted
002A 174 :     MOVL #LIB$_SECINTFAI, R0 ; Retry count is exhausted
0031 175 : ; Secondary Interlock fail status
04 0031 176 :     RET ; Unsuccessful return to user
0032 177 :     .END

```

LIB\$INSQHI
Symbol table

DEF_RETRY_CNT = 0000000A
ENTRY = 00000004
HEADER = 00000008
LIB\$INSQHI 00000000 RG 01
LIB\$ONEENTQUE ***** X 00
LIB\$SECINTFAI ***** X 00
RETRY_CNT = 0000000C
SS\$NORMAL ***** X 00

! 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\$CODE	00000032 (50.)	01 (1.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	30	00:00:00.05	00:00:01.19
Command processing	109	00:00:00.34	00:00:03.47
Pass 1	72	00:00:00.26	00:00:03.41
Symbol table sort	0	00:00:00.01	00:00:00.01
Pass 2	46	00:00:00.23	00:00:01.27
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	2	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	263	00:00:00.92	00:00:09.38

The working set limit was 900 pages.
1848 bytes (4 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 8 non-local and 3 local symbols.
177 source lines were read in Pass 1, producing 11 object records in Pass 2.
0 pages of virtual memory were used to define 0 macros.

! Macro library statistics !

Macro library name Macros defined

_S255\$DUA28:[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\$:LIB\$INSQHI/OBJ=OBJ\$:LIB\$INSQHI MSRC\$:LIB\$INSQHI/UPDATE=(ENH\$:LIB\$INSQHI)

LI
Sy
BA
LI
PO
SI
SO
PS
L
Ph
In
Co
Pa
Sy
Pa
Sy
Ps
Cr
As
Th
11
Th
12
0
Ma
\$
0
Th
MA

0207 AH-BT13A-SE
VAX/VMS V4.0

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This figure displays a 10x10 grid of terminal window screenshots, each showing a different library list (LIBxxxx LIS) and its associated data. The windows are arranged in a grid, with the following titles visible:

- LIBFLUND LIS (Row 1, Column 3)
- LIBGETSYI LIS (Row 1, Column 7)
- LIBICHAR LIS (Row 1, Column 8)
- LIBINITIA LIS (Row 1, Column 9)
- LIBFIXUPF LIS (Row 2, Column 2)
- LIBGETFOR LIS (Row 3, Column 4)
- LIBGETINP LIS (Row 3, Column 5)
- LIBINISHR LIS (Row 4, Column 8)
- LIBGETDVI LIS (Row 4, Column 6)
- LIBGETOPC LIS (Row 4, Column 7)
- LIBBNDIMG LIS (Row 5, Column 3)
- LIBGETMSG LIS (Row 7, Column 5)
- LIBINDEX LIS (Row 7, Column 8)
- LIBINSQHI LIS (Row 8, Column 9)
- LIBGETJPT LIS (Row 9, Column 4)
- LIBGETTAB LIS (Row 9, Column 7)

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