```
MMM         MMM  TTTTTTTTTTTTTTT  HHH         HHH  RRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
MMM         MMM  TTTTTTTTTTTTTTT  HHH         HHH  RRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
MMM         MMM  TTTTTTTTTTTTTTT  HHH         HHH  RRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
MMMMMM   MMMMMM        TTT        HHH         HHH  RRR         RRR         TTT        LLL
MMMMMM   MMMMMM        TTT        HHH         HHH  RRR         RRR         TTT        LLL
MMMMMM   MMMMMM        TTT        HHH         HHH  RRR         RRR         TTT        LLL
MMM   MMM   MMM        TTT        HHH         HHH  RRR         RRR         TTT        LLL
MMM   MMM   MMM        TTT        HHH         HHH  RRR         RRR         TTT        LLL
MMM   MMM   MMM        TTT        HHH         HHH  RRR         RRR         TTT        LLL
MMM         MMM        TTT        HHHHHHHHHHHHHHH  RRRRRRRRRRR           TTT        LLL
MMM         MMM        TTT        HHHHHHHHHHHHHHH  RRRRRRRRRRR           TTT        LLL
MMM         MMM        TTT        HHHHHHHHHHHHHHH  RRRRRRRRRRR           TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR   RRR             TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR   RRR             TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR   RRR             TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR      RRR          TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR      RRR          TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR      RRR          TTT        LLL
MMM         MMM        TTT        HHH         HHH  RRR         RRR       TTT        LLLLLLLLLLLLLLL
MMM         MMM        TTT        HHH         HHH  RRR         RRR       TTT        LLLLLLLLLLLLLLL
MMM         MMM        TTT        HHH         HHH  RRR         RRR       TTT        LLLLLLLLLLLLLLL
```

```
MM      MM  TTTTTTTTTT  HH      HH  HH      HH    IIIIII    NN      NN  TTTTTTTTTT
MM      MM  TTTTTTTTTT  HH      HH  HH      HH    IIIIII    NN      NN  TTTTTTTTTT
MMMM  MMMM      TT      HH      HH  HH      HH      II      NN      NN      TT
MMMM  MMMM      TT      HH      HH  HH      HH      II      NN      NN      TT
MM  MM  MM      TT      HH      HH  HH      HH      II      NNNN    NN      TT
MM  MM  MM      TT      HH      HH  HH      HH      II      NNNN    NN      TT
MM      MM      TT      HHHHHHHHHH  HHHHHHHHHH      II      NN  NN  NN      TT
MM      MM      TT      HHHHHHHHHH  HHHHHHHHHH      II      NN  NN  NN      TT
MM      MM      TT      HH      HH  HH      HH      II      NN    NNNN      TT
MM      MM      TT      HH      HH  HH      HH      II      NN    NNNN      TT
MM      MM      TT      HH      HH  HH      HH      II      NN      NN      TT        ....
MM      MM      TT      HH      HH  HH      HH      II      NN      NN      TT        ....
MM      MM      TT      HH      HH  HH      HH    IIIIII    NN      NN      TT        ....
MM      MM      TT      HH      HH  HH      HH    IIIIII    NN      NN      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

```
0000          .TITLE  MTH$HINT - FLOATING TRUNCATION
0000          .IDENT  /1-005/          ; File: MTHHINT.MAR     EDIT: JAW1005
0000
0000  ;
0000  ;*****************************************************************************
0000  ;*                                                                           *
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0000  ;*                                                                           *
0000  ;*                                                                           *
0000  ;*****************************************************************************
0000  ;
0000  ;
0000  ; FACILITY: MATH LIBRARY
0000  ;++
0000  ; ABSTRACT:
0000  ;       This module contains routine MTH$HINT:
0000  ;       Return truncated H floating argument.
0000  ;
0000  ;
0000  ;--
0000  ;
0000  ; VERSION: 1
0000  ;
0000  ; HISTORY:
0000  ;
0000  ; AUTHOR:
0000  ;       Steven B. Lionel, 18-Jan-79: Version 1
0000  ;
0000  ; MODIFIED BY:
0000  ;
0000  ;
0000  ;
```

```
0000      .SBTTL  HISTORY          ; Detailed Current Edit History
0000
0000
0000  ; Edit History for Version 1 of MTH$HINT
0000  ;
0000  ; 1-001 - Original.  SBL 18-Jan-79
0000  ; 1-002 - Add a JSB entry point.  JBS 16-AUG-1979
0000  ; 1-003 - Change JSB entry to _R8 to reflect code to disable IV.
0000  ;         SBL 26-Sept-1979
0000  ; 1-004 - Changed RET in JSB routine to RSB.  11-FEB-81
0000  ; 1-005 - Mask all bits except IV when restoring PSW.  JAW 14-Jul-1981
0000  ;
```

```
0000          .SBTTL  DECLARATIONS

;
; INCLUDE FILES:
;       NONE
;

;
; EXTERNAL SYMBOLS:
;       NONE
;

;
; MACROS:
;
        $PSLDEF                         ; PSL macros
;

;
; PSECT DECLARATIONS:
00000000        .PSECT  _MTH$CODE       PIC, SHR, LONG, EXE, NOWRT

;
; EQUATED SYMBOLS:
;       NONE
;

;
; OWN STORAGE:
;       NONE
;
```

```
                                  0000    .SBTTL  MTH$HINT        H to H truncation
                                  0000
                                  0000 ;++
                                  0000 ; FUNCTIONAL DESCRIPTION:
                                  0000 ;
                                  0000 ;       Returns the argument with all zeroes to the right of the decimal
                                  0000 ;       point.
                                  0000 ;
                                  0000 ;       Because the result can not be expressed in 64 bits, it is
                                  0000 ;       returned as the first argument with the input parameter
                                  0000 ;       displaced to the second argument, in accordance with
                                  0000 ;       the system standard.
                                  0000 ;
                                  0000 ; CALLING SEQUENCE:
                                  0000 ;
                                  0000 ;       CALL MTH$HINT (truncation.wh.r, arg.rh.r)
                                  0000 ;
                                  0000 ; INPUT PARAMETERS:
                                  0000 ;
                                  0000 ;       The input argument is a H floating-point value
                                  0000 ;       and is call-by-reference.
                                  0000 ;
                                  0000 ; IMPLICIT INPUTS:
                                  0000 ;
                                  0000 ;       NONE
                                  0000 ;
                                  0000 ; OUTPUT PARAMETERS:
                                  0000 ;
                                  0000 ;       The output argument is an H floating-point value
                                  0000 ;       and is returned by reference.
                                  0000 ;
                                  0000 ; IMPLICIT OUTPUTS:
                                  0000 ;
                                  0000 ;       NONE
                                  0000 ;
                                  0000 ; COMPLETION CODES:
                                  0000 ;
                                  0000 ;       NONE
                                  0000 ;
                                  0000 ; SIDE EFFECTS:
                                  0000 ;
                                  0000 ;       Reserved Operand exception can occur.
                                  0000 ;
                                  0000 ;--
                          0000    0000        .ENTRY  MTH$HINT,       ^M<>
04 BC   08   00   08 BC 74FD      0002        EMODH   @8(AP), #0, #1, @4(AP), @4(AP)
                  04 BC           000A
                                  000C                                        ; first arg gets fraction
  04 BC   08 BC   04 BC 63FD      000C        SUBH3   @4(AP), @8(AP), @4(AP)  ; @4(AP) = integer_part(arg)
                       04         0014        RET
```

```
                                0015          .SBTTL  MTH$HINT_R8     JSB entry point
                                0015
                                0015  ;++
                                0015  ; FUNCTIONAL DESCRIPTION:
                                0015  ;
                                0015  ;       Returns the argument with all zeroes to the right of the decimal
                                0015  ;       point.
                                0015  ;
                                0015  ; CALLING SEQUENCE:
                                0015  ;
                                0015  ;       truncation.wh.v = JSB MTH$HINT_R8 (arg.rh.v)
                                0015  ;
                                0015  ; INPUT PARAMETERS:
                                0015  ;
                                0015  ;       The input argument is a H floating-point value
                                0015  ;       and is call-by-value.
                                0015  ;
                                0015  ; IMPLICIT INPUTS:
                                0015  ;
                                0015  ;       NONE
                                0015  ;
                                0015  ; OUTPUT PARAMETERS:
                                0015  ;
                                0015  ;       The output argument is an H floating-point value
                                0015  ;       and is returned by value in registers R0-R3.
                                0015  ;
                                0015  ; IMPLICIT OUTPUTS:
                                0015  ;
                                0015  ;       NONE
                                0015  ;
                                0015  ; COMPLETION CODES:
                                0015  ;
                                0015  ;       NONE
                                0015  ;
                                0015  ; SIDE EFFECTS:
                                0015  ;
                                0015  ;       Reserved Operand exception can occur.
                                0015  ;
                                0015  ;--
                                0015  MTH$HINT_R8::                           ; Argument in R0-R3
                        58   DC 0015          MOVPSL  R8                      ; Save PSL
                        20   B9 0017          BICPSW  #PSL$M_IV               ; Clear IV
54   54   08   00   50 74FD 0019          EMODH   R0, #0, #1, R4, R4      ; R4-R7 gets fraction
          50   50   54 63FD 0020          SUBH3   R4, R0, R0              ; R0-R3 = integer part(arg)
          58   FFDF 8F   AA 0025          BICW    #^C<PSL$M_IV>, R8       ; Clear all but IV
                        58   B8 002A          BISPSW  R8                      ; Restore IV to previous state
                             05 002C          RSB
                                002D
                                002D          .END
```

```
MTH$HINT          00000000 RG    02
MTH$HINT_R8       00000015 RG    02
PSL$M_IV        = 00000020
```

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

PSECT name                      Allocation          PSECT No.  Attributes
----------                      ----------          ---------  ----------
.  ABS  .                       00000000  (    0.)  00 (  0.)  NOPIC   USR   CON   ABS   LCL NOSHR NOEXE NORD  NOWRT NOVEC BYTE
$ABS$                           00000000  (    0.)  01 (  1.)  NOPIC   USR   CON   ABS   LCL NOSHR   EXE   RD    WRT NOVEC BYTE
_MTH$CODE                       0000002D  (   45.)  02 (  2.)    PIC   USR   CON   REL   LCL   SHR   EXE   RD  NOWRT NOVEC LONG

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

Phase                     Page faults    CPU Time       Elapsed Time
-----                     -----------    --------       ------------
Initialization                     29    00:00:00.10    00:00:00.79
Command processing                118    00:00:00.50    00:00:02.74
Pass 1                            119    00:00:00.97    00:00:04.67
Symbol table sort                   0    00:00:00.02    00:00:00.02
Pass 2                             47    00:00:00.48    00:00:01.49
Symbol table output                 2    00:00:00.02    00:00:00.02
Psect synopsis output               2    00:00:00.02    00:00:00.16
Cross-reference output              0    00:00:00.00    00:00:00.00
Assembler run totals              319    00:00:02.13    00:00:09.95

The working set limit was 900 pages.
4109 bytes (9 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 41 non-local and 0 local symbols.
193 source lines were read in Pass 1, producing 13 object records in Pass 2.
8 pages of virtual memory were used to define 7 macros.

+---------------------------+
! Macro library statistics !
+---------------------------+

Macro library name                          Macros defined
------------------                          --------------
_$255$DUA28:[SYSLIB]STARLET.MLB;2                    4

98 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

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