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000000      TTTTTTTT      SSSSSSSS      CCCCCCCC      VV      VV      TTTTTTTTTT      RRRRRRRR      HH      HH      PPPPPPPP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
00          TT          SS          CC          VV      VV      TT          RR          HH      HH      PP          PP
000000      TT          SSSSSSSS      CCCCCCCC      VV      VV      TT          RR          HH      HH      PP          PP
000000      TT          SSSSSSSS      CCCCCCCC      VV      VV      TT          RR          HH      HH      PP          PP
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LL          IIIIIIII      SSSSSSSS
LL          IIIIIIII      SSSSSSSS
LL          II          SS          SS          SSSSSS
LL          II          SS          SS          SSSSSS
LL          II          SS          SS          SSSSSS
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LL          II          SS          SS          SSSSSS
LL          II          SS          SS          SSSSSS
LL          II          SS          SS          SSSSSS
LL          II          SS          SS          SSSSSS
LLLLLLLLLLL IIIIIIII      SSSSSSSS
LLLLLLLLLLL IIIIIIII      SSSSSSSS

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(2)	49	HISTORY	: Detailed Current Edit History
(3)	63	DECLARATIONS	
(4)	101	OTSSCVTRHP_R9	


```

0000 1      .TITLE  OTSSCVTRHP_R9  Convert Rounded H Floating to Packed
0000 2      .IDENT  /1-006/          ; File: OTSCVTRHP.MAR Edit: MDL1006
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ABSTRACT:
This module contains the routine that converts H floating
numbers to packed with rounding.

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VERSION: 1

HISTORY:

AUTHOR:
Pamela Levesque, 21-Jan-1982

MODIFIED BY:

OTSSCVTRHP_R9
1-006

Convert Rounded H Floating to Packed K 5
HISTORY ; Detailed Current Edit History 16-SEP-1984 00:28:00 VAX/VMS Macro V04-00 Page 2
6-SEP-1984 11:13:30 [LIBRTL.SRC]OTSCVTRHP.MAR;1 (2)

```
0000 49 .SBTTL HISTORY ; Detailed Current Edit History
0000 50
0000 51
0000 52 : Edit History for Version 1 of OTSCVTRHP
0000 53 :
0000 54 : 1-001 - Original. PLL 21-Jan-1982
0000 55 : 1-002 - Call h floating conversion routine. PLL 2-Mar-1982
0000 56 : 1-003 - Expect a 2 digit exponent from the conversion routine. PLL 8-Mar-1982
0000 57 : 1-004 - determine the number of digits in the exponent on the fly.
0000 58 : MDL 9-Apr-1984
0000 59 : 1-005 - Make sure result will not overflow destination after calculating
0000 60 : longword exponent. DG 9-Apr-1984
0000 61 : 1-006 - complete edit 1-004. MDL 12-Apr-1984
```

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0000 63      .SBTTL  DECLARATIONS
0000 64
0000 65 :
0000 66 : INCLUDE FILES:
0000 67 :
0000 68      $DSCDEF
0000 69
0000 70 :
0000 71 : EXTERNAL SYMBOLS:
0000 72
0000 73      .DSABL  GBL          ; Prevent undeclared symbols from being
0000 74                                ; automatically global
0000 75
0000 76      .EXTRN  OTSS$CNVOUT_H ; E-format conversion
0000 77      .EXTRN  LIB$STOP      ; Error halt
0000 78      .EXTRN  OTSS$_FATINTERR ; Fatal internal error code
0000 79 :
0000 80
0000 81 :
0000 82 : MACROS:
0000 83 :     NONE
0000 84 :
0000 85
0000 86 :
0000 87 : PSECT DECLARATIONS:
0000 88      .PSECT  _OTSS$CODE    PIC, SHR, LONG, EXE, NOWRT,-
0000 89                                USR, CON, REL, LCL, RD
0000 90
0000 91 :
0000 92 : EQUATED SYMBOLS:
0000 93 :     NONE
0000 94 :
0000 95
0000 96 :
0000 97 : OWN STORAGE:
0000 98 :     NONE
0000 99 :

```



```
0000 101 .SBTTL OTSS$CVTRHP_R9
0000 102
0000 103 :++
0000 104 : FUNCTIONAL DESCRIPTION:
0000 105 :
0000 106 : Converts an h floating number to packed with rounding.
0000 107 :
0000 108 : CALLING SEQUENCE:
0000 109 :
0000 110 : JSB OTSS$CVTRHP_R9 (scale.rl.v, src.rh.r, dstlen.rl.v, dst.wp.r)
0000 111 :
0000 112 : Arguments are passed in R6, R7, R8 and R9.
0000 113 :
0000 114 : INPUT PARAMETERS:
0000 115 :
0000 116 : SCALE.rl.v The power of ten by which the internal
0000 117 : representation of the source must be
0000 118 : multiplied to scale the same as the
0000 119 : internal representation of the dest.
0000 120 : SRC.rh.r The number to be converted
0000 121 : DSTLEN.rl.v The number of digits in the destination
0000 122 :
0000 123 : IMPLICIT INPUTS:
0000 124 :
0000 125 : All of the trap bits in the PSL are assumed off.
0000 126 :
0000 127 : OUTPUT PARAMETERS:
0000 128 :
0000 129 : DST.wp.r The place to store the converted number
0000 130 :
0000 131 : IMPLICIT OUTPUTS:
0000 132 :
0000 133 : NONE
0000 134 :
0000 135 : FUNCTION VALUE:
0000 136 :
0000 137 : 1 = SUCCESS, 0 = FAILURE
0000 138 :
0000 139 : SIDE EFFECTS:
0000 140 :
0000 141 : Destroys registers R0 through R9.
0000 142 :
0000 143 :--
0000 144 :
0000 145 :
0000 146 OTSS$CVTRHP_R9::
0000 147 SUBL2 #56,SP ; Allocate temp space
6E 38 00 5E 38 C2 0003 148 MOVC5 #0,(SP),#^A'',#56,(SP) ; Clear temp space
6E 6E 67 70FD 0009 149 MOVH (R7),(SP) ; Get input number
0000 150 :
0000 151 : Make a descriptor for the temporary string.
0000 152 :
0000 153 : PUSHAB 16(SP) ; Address = space reserved
7E 10 AE 9F 00CD 154 MOVB #DSC$K_CLASS_S,-(SP) ; Class = static
7E 01 90 0010 155 MOVB #DSC$K_DTYPE_T,-(SP) ; Data type = ASCII string
7E 0E 90 0013 156 MOVW #38,-(SP) ; Length in bytes
7E 26 B0 0016 157 ;
0019
```

```
0019 158 : Call OTSSCNVOUT.
0019 159 :
0019 160 : PUSHL #31 : Digits in fraction
001B 161 : PUSHAB 4(SP) : Output string descriptor
001E 162 : PUSHAB 16(SP) : Number to convert
0021 163 : CALLS #3,G^OTSSCNVOUT_H : Call conversion routine
0028 164 : BLBC R0,20$ : Should never fail
002B 165 :
002B 166 : Determine the number of digits in the exponent.
002B 167 :
002B 168 :
002B 169 : LOCC #^A'+',#34,28(SP) : find beginning of exponent (sign byte)
0030 170 : BNEQ 5$ : look for sign byte (+)
0032 171 : LOCC #^A'-',#34,28(SP) : branch if we found it
0037 172 : BEQL 20$ : look for sign byte (-)
0039 173 : : branch to error if we didn't find it
0039 174 5$: MOVL R1,8(SP) : save location of sign byte
003D 175 : : (contained in R1 after above LOCC)
003D 176 :
003D 177 : LOCC #^A'',#5,@B^8(SP) : look for NUL (end of string)
0042 178 : SUBL3 8(SP),R1,12(SP) : determine number of digits by subtracting
0048 179 : : location of beginning of exponent from
0048 180 : : location of end of exponent, and save it
0048 181 : DECL 12(SP) : adjust for sign byte
004B 182 : : at this point, 12(SP) = length of exponent
004B 183 :
004B 184 : Convert the exponent and correct for scale factor.
004B 185 :
004B 186 : CVTSP 12(SP),@B^8(SP),12(SP),(SP) : Make packed exponent
0053 187 : CVTPL 12(SP),(SP),R0 : Make longword exponent
0058 188 :
0058 189 : : Here must check that the result will not overflow
0058 190 : : the destination. The destination length (total number of
0058 191 : : digits) minus the scale factor will give the number of digits
0058 192 : : to the left of the decimal point. If that number is greater than
0058 193 : : the longword exponent, then the result WILL overflow the dest.
0058 194 :
0058 195 : SUBL3 R6,R8,R4 : Determine num of digits on left
005C 196 : CMPL R0,R4 : Compare with longword exponent
005F 197 : BGTR 15$ : Branch if overflowed
0061 198 :
0061 199 : MOVAB -30(R6)[R0],R6 : Correct for fraction size and scale
0066 200 :
0066 201 : Convert the fraction to packed.
0066 202 :
0066 203 :
0066 204 : MOVAB 24(SP),26(SP) : Move sign over "."
006B 205 : CVTSP #30,26(SP),#30,(SP) : Make packed fraction
0071 206 : ASHP R6,#30,(SP),#5,R8,(R9) : Scale to destination
0078 207 : : (also clears R0)
0078 208 : BVS 10$ : Branch if overflowed
007A 209 : INCL R0 : Indicate success, R0 = 1
007C 210 : ADDL2 #64,SP : Delete stack temps
0083 211 :
0084 212 10$: CLRL R0 : Indicate failure, R0 = 0
0084 213 15$: ADDL2 #64,SP : Delete stack temps
0086 214 : RSB
```


OTSS\$CVTRHP_R9
1-006

Convert Rounded H Floating to Packed^{B 6}
OTSS\$CVTRHP_R9

16-SEP-1984 00:28:00 VAX/VMS Macro V04-00
6-SEP-1984 11:13:30 [LIBRTL.SRC]OTSCVTRHP.MAR;1

Page 6
(4)

```
00000000'8F DD 008E 215 ;  
00000000'GF 01 FB 008E 216 ; Come here on failure of OTSS$CNVOUT. This should never happen.  
008E 217 ;  
0094 218 20$: PUSHL #OTSS$FATINTERR ; OTS fatal error message  
009B 219 CALLS #1,G^CIB$STOP ; Signal and don't return  
009B 220 ;  
009B 221 .END
```

OTSSCVTRHP_R9
Symbol table

Convert Rounded H Floating to Packed⁶

16-SEP-1984 00:28:00 VAX/VMS Macro V04-00 Page 7
6-SEP-1984 11:13:30 [LIBRTL.SRC]OTSCVTRHP.MAR;1 (4)

DSC\$K_CLASS_S
DSC\$K_DTYPE_T
LIB\$STOP
OTSSCNVOUT_H
OTSSCVTRHP_R9
OTSS_FATINTERR

= 00000001
= 0000000E
***** X 00
***** X 00
00000000 RG 02
***** 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
\$ABSS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
_OTSSCODE	0000009B (155.)	02 (2.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

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

Phase	Page faults	CPU Time	Elapsed Time
Initialization	32	00:00:00.03	00:00:01.01
Command processing	129	00:00:00.31	00:00:01.82
Pass 1	132	00:00:01.24	00:00:05.98
Symbol table sort	0	00:00:00.11	00:00:00.71
Pass 2	57	00:00:00.36	00:00:01.97
Symbol table output	2	00:00:00.01	00:00:00.20
Psect synopsis output	3	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	357	00:00:02.08	00:00:11.71

The working set limit was 1050 pages.
9083 bytes (18 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 135 non-local and 4 local symbols.
221 source lines were read in Pass 1, producing 10 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

190 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

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

0212 AH-BT13A-SE
VAX/VMS V4.0

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