



```

000000  TTTTTTTTT  SSSSSSSS  CCCCCCCC  VV  VV  TTTTTTTTT  TTTTTTTTT  IIIIII  LL
000000  TTTTTTTTT  SSSSSSSS  CCCCCCCC  VV  VV  TTTTTTTTT  TTTTTTTTT  IIIIII  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SSSSSS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SSSSSS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
00 00  TT  SS  CC  VV  VV  TT  TT  III  LL
000000  SSSSSSSS  CCCCCCCC  VV  VV  TT  TT  IIIIII  LL
000000  SSSSSSSS  CCCCCCCC  VV  VV  TT  TT  IIIIII  LL

```

```

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
LLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLL  IIIIII  SSSSSSSS

```

(2)	53	HISTORY	: Detailed Current Edit History
(3)	71	DECLARATIONS	
(4)	106	OTSSCVT_TU_L	: convert text (unsigned) to longword
(5)	176	OTSSCVT_TI_L	: convert text (integer) to longword

```

0000 1 .TITLE OTSSCVTTIL ; Convert text (integer) to longword
0000 2 .IDENT /1-009/ ; File: OTSCVTTIL.MAR Edit: SBL1009
0000 3
0000 4
0000 5 *****
0000 6 *
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0000 24 *
0000 25 *
0000 26 *****
0000 27
0000 28
0000 29
0000 30 FACILITY: Language independent support library
0000 31 +-
0000 32 ABSTRACT:
0000 33
0000 34 OTSSCVT_TI_L converts a text representation of a decimal value to
0000 35 an internal binary form. It replaces FORSCNV_IN_I.
0000 36
0000 37 OTSSCVT_TU_L converts a text representation of an unsigned decimal value
0000 38 to internal binary form.
0000 39 --
0000 40
0000 41 VERSION: 1
0000 42
0000 43 HISTORY:
0000 44
0000 45 AUTHOR:
0000 46 Steven B. Lionel, 21-Feb-1979: Version 1
0000 47
0000 48 MODIFIED BY:
0000 49
0000 50
0000 51

```

```
0000 53      .SBTTL HISTORY          ; Detailed Current Edit History
0000 54
0000 55
0000 56      ; Edit History for Version 1 of OTSSCVT_TI_L
0000 57      ;
0000 58      ; 1-001 - Adapted from FOR$CNV_IN_I version 1-009. SBL 21-Feb-79
0000 59      ; 1-002 - Added V_SKIPTABS. SBL 11-JUL-1979
0000 60      ; 1-003 - Fix bug in overflow test. SBL 12-July-1979
0000 61      ; 1-004 - Make V_SKIPTABS bit 4 to conform with floating. SBL 30-Aug-1979
0000 62      ; 1-005 - Fix bug in tab skipping. Add standard module headers.
0000 63      ; SBL 11-Sept-1979
0000 64      ; 1-006 - Do correct thing if value size is incorrect. SBL 25-Feb-1980
0000 65      ; 1-007 - REALLY do correct thing if value size is incorrect. Previous code
0000 66      ; went into infinite loop. SBL 5-Jan-1981
0000 67      ; 1-008 - Give error if character value greater than 127 found.
0000 68      ; SPR 11-52485 SBL 29-Dec-1982
0000 69      ; 1-009 - Add OTSSCVT_TU_L. SBL 27-Apr-1983
```

```

0000 7      .SBTTL DECLARATIONS
0000 72    :
0000 73    : INCLUDE FILES:
0000 74    :
0000 75    :
0000 76    :
0000 77    : EXTERNAL SYMBOLS:
0000 78    :
0000 79    :     .DSABL  GBL
0000 80    :     .EXTRN  OTSS_INPCONERR
0000 81    :
0000 82    :
0000 83    : MACROS:
0000 84    :
0000 85    :
0000 86    :
0000 87    : PSECT DECLARATIONS:
0000 88    :
0000 89    :
00000000 90    .PSECT  _OTSS$CODE      PIC, SHR, LONG, EXE, NOWRT
0000 91    :
0000 92    :
0000 93    :
0000 94    : EQUATED SYMBOLS:
0000 95    :
0000 96    :
0000007C 0000 97    REGMASK          = ^M<R2, R3, R4, R5, R6>
0000001F 0000 98    V_NEGATIVE       = 31          ; 31th bit position of flag register
0000001E 0000 99    V_UNSIGNED      = 30          ; indicates OTSS$CVT_TU_L
0000 100   :
0000 101   :
0000 102   : OWN STORAGE:
0000 103   :
0000 104   :

```

```

0000 106      .SBTTL OTSSCVT_TU_L      ; convert text (unsigned) to longword
0000 107
0000 108      :++
0000 109
0000 110      : FUNCTIONAL DESCRIPTION:
0000 111
0000 112      OTSSCVT_TU_L converts an ASCII string containing a text
0000 113      representation of an unsigned decimal number to internal binary form.
0000 114
0000 115
0000 116      The text representation converted is:
0000 117      <0 or more blanks>
0000 118      <0 or more ASCII digits from '0' through '9'>
0000 119      <end of string>
0000 120
0000 121      Notes:
0000 122      1. If caller flag V_SKIPBLANKS is clear, then spaces are
0000 123      equivalent to '0'. If set, spaces are ignored.
0000 124      2. If caller flag V_SKIPTABS is clear, then tab characters
0000 125      are illegal. If set, tabs are ignored.
0000 126
0000 127      CALLING SEQUENCE:
0000 128
0000 129      status.wlc.v = OTSSCVT_TU_L (in_str.rt.dx, value.wx.r
0000 130      [, value_size.rt.v [, caller_flags.rlu.v]])
0000 131
0000 132      INPUT PARAMETERS:
0000 133
00000004 0000 134      in_str = 4                ; Input string by descriptor
0000000C 0000 135      value_size = 12           ; Size of value in bytes
00000010 0000 136                                     ; Must be 1, 2 or 4.
00000000 0000 137      caller_flags = 16        ; Caller flags by value
00000000 0000 138      V_SKIPBLANKS = 0         ; If set, blanks are ignored.
0000 139                                     ; Else they are treated as
0000 140                                     ; zeroes.
00000004 0000 141      V_SKIPTABS = 4           ; If set, tabs are ignored.
0000 142                                     ; Else they are invalid.
0000 143
0000 144      IMPLICIT INPUTS:
0000 145
0000 146      NONE
0000 147
0000 148      OUTPUT PARAMETERS:
0000 149
00000008 0000 150      value = 8                ; Output value by reference
0000 151
0000 152      IMPLICIT OUTPUTS:
0000 153
0000 154      NONE
0000 155
0000 156      COMPLETION CODES:
0000 157
0000 158      $$$ NORMAL - Successful completion
0000 159      OTSS_INPCONERR - There was an invalid character in the input
0000 160      string. the value overflowed the range allowed,
0000 161      or value_size was invalid. The result "value" is
0000 162      set to zero, unless value_size is invalid, in which
    
```

```

                                case "value" is unpredictable.
                                :
0000 163 :
00C0 164 :
0000 165 : SIDE EFFECTS:
0000 166 :
0000 167 : NONE
0000 168 :
0000 169 :--
0000 170 :
04 56 007C 0000 171 .ENTRY OTSSCVT_TU_L, REGMASK
      56 D4 0002 172 CLR R6 ; Clear flags mask
      1E E3 0004 173 BBS #V_UNSIGNED, R6, COMMON_ENTRY ; Set UNSIGNED and join common code
      0008 174

```



```

0008 176      .SBTTL OTSSCVT_TI_L      ; convert text (integer) to longword
0008 177
0008 178      :++
0008 179      :
0008 180      : FUNCTIONAL DESCRIPTION:
0008 181      :
0008 182      : OTSSCVT_TI_L converts an ASCII string containing a text
0008 183      : representation of a decimal number to internal binary form.
0008 184      :
0008 185      : This routine supports FORTRAN I input format conversion as well
0008 186      : as similar types for other languages.
0008 187      :
0008 188      : The text representation converted is:
0008 189      :     <0 or more blanks>
0008 190      :     <'+' , '-' or nothing>
0008 191      :     <0 or more ASCII digits from '0' through '9'>
0008 192      :     <end of string>
0008 193      :
0008 194      : Notes:
0008 195      : 1. If caller flag V_SKIPBLANKS is clear, then spaces are
0008 196      :    equivalent to '0'. If set, spaces are ignored.
0008 197      : 2. If caller flag V_SKIPTABS is clear, then tab characters
0008 198      :    are illegal. If set, tabs are ignored.
0008 199      :
0008 200      : CALLING SEQUENCE:
0008 201      :
0008 202      :     status.wlc.v = OTSSCVT_TI_L (in_str.rt.dx, value.wx.r
0008 203      :                               [, value_size.rt.v [, caller_flags.rlu.v]])
0008 204      :
0008 205      : INPUT PARAMETERS:
0008 206      :
00000004 0008 207      :     in_str = 4      ; Input string by descriptor
0000000C 0008 208      :     value_size = 12 ; Size of value in bytes
0008 209      :                   ; Must be 1, 2 or 4.
00000010 0008 210      :     caller_flags = 16 ; Caller flags by value
00000000 0008 211      :     V_SKIPBLANKS = 0  ; If set, blanks are ignored.
0008 212      :                   ; Else they are treated as
0008 213      :                   ; zeroes.
00000004 0008 214      :     V_SKIPTABS = 4   ; If set, tabs are ignored.
0008 215      :                   ; Else they are invalid.
0008 216      :
0008 217      : IMPLICIT INPUTS:
0008 218      :
0008 219      :     NONE
0008 220      :
0008 221      : OUTPUT PARAMETERS:
00000008 0008 222      :
0008 223      :     value = 8      ; Output value by reference
0008 224      :
0008 225      : IMPLICIT OUTPUTS:
0008 226      :
0008 227      :     NONE
0008 228      :
0008 229      : COMPLETION CODES:
0008 230      :
0008 231      :     SSS_NORMAL - Successful completion
0008 232      :     OTSS_INPCONERR - There was an invalid character in the input
    
```

OT  
Sy  
ER  
EX  
FA  
FO  
IN  
OT  
TR  
VA  
VA  
  
PS  
--  
:  
-C  
  
Ph  
--  
In  
Co  
Pa  
Sy  
Pa  
Sy  
Ps  
Cr  
As  
  
Th  
26  
Th  
21  
0  
  
Ma  
--  
-3  
0  
Th  
MA

```

0008 233 : string, the value overflowed the range allowed,
0008 234 : or value_size was invalid. The result "value" is
0008 235 : set to zero, unless value_size is invalid, in which
0008 236 : case "value" is unpredictable.
0008 237 :
0008 238 : SIDE EFFECTS:
0008 239 :
0008 240 : NONE
0008 241 :
0008 242 :--
0008 243 :
0008 244 FOR$CNV_IN I:: ; for compatibility
007C 0008 245 .ENTRY OTSSCVT_TI_L, REGMASK
000A 246
56 D4 000A 247 CLRL R6 ; clear flags
000C 248 COMMON_ENTRY:
50 04 BC 7D 000C 249 MOVQ @in_str(AP), R0 ; R0 = width of the input string
0010 250 ; R1 = address of the input string
0010 251 CLRQ R4 ; R4/R5 = ACC = 0
04 6C 91 0012 252 CMPB (AP), #<caller_flags/4> ; Optional argument present?
04 04 19 0015 253 BLSS 5$ ; No
56 10 AC 90 0017 254 MOVB caller_flags(AP), R6 ; Yes, move it
001B 255
001B 256
001B 257 :+
001B 258 : Find the first non-blank character. Process the sign, if present,
001B 259 : and if we are not doing unsigned conversion.
001B 260 :-
61 50 20 3B 001B 261 5$: SKPC #^A/ /, R0, (R1) ; skip blanks
001F 262 ; R0 = #CHAR REMAINING
001F 263 ; R1 = POINTER_TO_INPUT
001F 264 ; Z bit is set if R0 = 0
001F 265 ; branch to DONE if no non-blank
0B 56 61 13 001F 266 BEQL DONE ; ignoring tabs?
09 04 E1 0021 267 BBC #V_SKIPTABS, R6, 7$ ; Yes, is it a tab?
09 61 91 0025 268 CMPB (RT), #^X09 ; If not, continue
0028 269 BNEQ 7$ ; Bump pointer
002A 270 INCL R1 ; Decrement counter
002C 271 DECL R0 ; Look for more.
002E 272 BRB 5$
12 56 1E E0 0030 273 7$: BBS #V_UNSIGNED, R6, DIGIT_LOOP ; If unsigned, skip sign test
20 61 91 0034 274 CMPB (RT), #^A/-/ ; is the current char a "-" sign?
04 12 0037 275 BNEQ 10$ ; no, branch to 10$
05 56 1F E3 0039 276 BBBS #V_NEGATIVE, R6, DECIMAL ; set negative flag and continue
003D 277
003D 278
2B 61 91 003D 279 10$: CMPB (R1), #^A/+/ ; is current char a "+" sign?
04 12 0040 280 BNEQ DIGIT_LOOP ; no, branch to check if it is a digit
0042 281
0042 282 :+
0042 283 : skip over "-" or "+" sign
0042 284 :-
0042 285
0042 286 DECIMAL:
50 D7 0042 287 DECL R0 ; R0 = #CHAR REMAINING
51 D6 0044 288 INCL R1 ; R1 = POINTER_TO_INPUT

```

```

0046 290 :+
0046 291 : Loop to collect digits, treat blanks as zeroes, until the string is exhausted
0046 292 : then branch to DONE
0046 293 :-
0046 294
0046 295 DIGIT_LOOP:
50 07 0046 296     DECL    R0                ; R0 = #CHAR REMAINING
38 19 0048 297     BLSS    DONE          ; branch to DONE if the string is exhausted
004A 298
004A 299 :+
004A 300 : Get next character, converting blanks into zeroes unless V_SKIPBLANKS set.
004A 301 :-
004A 302
53 81 9A 004A 303     MOVZBL  (R1)+, R3          ; get current char and adjust POINTER_TO_INP
20 53 91 004D 304     CMPB    R3, #^A/ /      ; compare char with blank
0E 56 04 E1 0050 305     BEQL    10$,                ; possibly ignore or set to 0
09 53 91 0056 307     CMPB    R3, #^X09      ; Tab?
EB 13 0059 308     BEQL    DIGIT_LOOP      ; Yes, ignore it
07 11 005B 309     BRB     CHECK_DIGIT      ; Continue
E5 56 00 E0 005D 310 10$: BBS     #V_SKIPBLANKS, R6, DIGIT_LOOP ; ignore if V_SKIPBLANKS set
53 30 D0 C061 311     MOVL    #^X/0/, R3      ; convert blank into zero
0064 312
0064 313 :+
0064 314 : Check if current char is a legal digit, accumulate it in ACC if yes and
0064 315 : then branch to DIGIT_LOOP if no overflow. Otherwise fall into ERROR.
0064 316 :-
0064 317
0064 318 CHECK_DIGIT:
53 30 C2 0064 319     SUBL    #^A/0/, R3          ; R3 = ASCII(current_char) - ASCII('0')
OE 19 0067 320     BLSS    ERROR          ; Error if less than '0'
09 53 D1 0069 321     CMPL    R3, #9          ; Is it greater than '9'?
09 14 006C 322     BGTR    ERROR          ; If so, error
54 53 54 0A 7A 006E 323     EMUL    #10, R4, R3, R4      ; #10 = radix
0073 324     ; R4 = LP(ACC), only LP(ACC) will be used in
0073 325     ; since R5 (=HP(ACC)) must be zero
0073 326     ; R3 = current digit
0073 327     ; R4/R5 = ACC = ACC * radix + current_digit
55 05 0073 328     TSTL    R5          ; compare R5 with 0, since a non-zero value
0075 329     ; in HP(ACC) means overflow
CF 13 0075 330     BEQL    DIGIT_LOOP      ; if no overflow branch back to get more
0077 331     ; character. Otherwise fall into ERROR

```

```

0077 333 :+
0077 334 : ERROR return
0077 335 :-
0077 336
50 0000000'8F D0 0077 337 ERROR: MOVL #OTSS_INPCONERR, R0 ; R0 = error return code
54 D4 007E 338 CLRL R4 ; zero result
21 11 0080 339 BRB EXIT ; exit with zero and error
0082 340
0082 341 :+
0082 342 : DONE
0082 343 :-
0082 344
12 50 01 D0 0082 345 DONE: MOVL #1, R0 ; return function value of SSS_NORMAL
56 1F E1 0085 346 BBC #V_NEGATIVE, R6, 10$ ; branch if "-" wasn't seen
80000000 8F 54 D1 0089 347 CMPL R4, #X80000000 ; is it 2**31?
11 13 0090 348 BEQL EXIT ; yes, already correct!
54 D5 0092 349 TSTL R4 ; test for overflow
E1 19 0094 350 BLSS ERROR ; if already negative, overflow
54 54 CE 0096 351 MNEGL R4, R4 ; answer is -R4
08 11 0099 352 BRB EXIT ; Store result
04 56 1E E0 009B 353 10$: BBS #V_UNSIGNED, R6, EXIT ; Skip overflow test if unsigned
54 D5 009F 354 TSTL R4 ; Overflow?
03 D4 19 00A1 355 BLSS ERROR ; If negative, yes
22 19 00A6 356 EXIT: CMPB (AP), #<value_size/4> ; Is arg present?
52 0C AC D0 00A8 357 BLSS 40$ ; If not, assume longword
04 52 D1 00AE 358 MOVL value_size(AP), R2 ; Get value size in R2
17 13 00B1 359 BEQL 40$ ; If zero, assume 4
02 52 D1 00B3 360 CMPL R2, #4 ; Is it a longword?
0A 13 00B6 361 BEQL 40$ ; Yes
15 1A 00B8 362 CMPL R2, #2 ; Word?
08 BC 54 F6 00BA 363 BEQL 20$ ; Yes
B7 1D 00BE 364 BGTRU BADSIZE ; Byte if LSS, bad otherwise
0C 11 00C0 365 CVTLB R4, @value(AP) ; Convert byte
08 BC 54 F7 00C2 366 BVS ERROR ; Overflow?
AF 1D 00C6 367 BRB 50$ ; No, exit
04 11 00C8 368 20$: CVTLW R4, @value(AP) ; Convert to word
08 BC 54 D0 00CA 369 BVS ERROR ; Overflow?
04 04 D0 00CE 370 BRB 50$ ; No, exit
00CF 371 40$: MOVL R4, @value(AP) ; Move longword
00CF 372 50$: RET
00CF 373
00CF 374 :+
00CF 375 : Come here when value_size is incorrect.
00CF 376 :-
00CF 377
50 0000000'8F D0 00CF 378 BADSIZE: MOVL #OTSS_INPCONERR, R0 ; Input conversion error
04 00D6 379 RET
00D7 380
00D7 381
00D7 382 .END

```

OTSSCVTTIL ; Convert text (integer) to longword G 10  
 Symbol table

```

BADSIZE      000000CF R    01
CALLER_FLAGS = 00000010
CHECK_DIGIT  00000064 R    01
COMMON_ENTRY 0000000C R    01
DECIMAC      00000042 R    01
DIGIT_LOOP   00000046 R    01
DONE         00000082 R    01
ERROR        00000077 R    01
EXIT         000000A3 R    01
FOR$CNV_IN_I 00000008 RG   01
IN_STR       = 00000004
OTSSCVT_TI_L 00000008 RG   01
OTSSCVT_TU_L 00000000 RG   01
OTSS_INPCORERR ***** X 00
REGMASK      = 0000007C
VALUE        = 00000008
VALUE_SIZE   = 0000000C
V_NEGATIVE   = 0000001F
V_SKIPBLANKS = 00000000
V_SKIPABS    = 00000004
V_UNSIGNED   = 0000001E
  
```

-----  
 ! Psect synopsis !  
 -----

PSECT name	Allocation	PSECT No.	Attributes
. ABS	00000000 ( 0.)	00 ( 0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
_OTSSCODE	000000D7 ( 215.)	01 ( 1.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

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

Phase	Page faults	CPU Time	Elapsed Time
Initialization	30	00:00:00.04	00:00:02.60
Command processing	107	00:00:00.32	00:00:02.57
Pass 1	75	00:00:00.52	00:00:02.71
Symbol table sort	0	00:00:00.01	00:00:00.01
Pass 2	74	00:00:00.46	00:00:02.43
Symbol table output	4	00:00:00.02	00:00:00.02
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	294	00:00:01.38	00:00:10.35

The working set limit was 1050 pages.  
 5207 bytes (11 pages) of virtual memory were used to buffer the intermediate code.  
 There were 10 pages of symbol table space allocated to hold 21 non-local and 8 local symbols.  
 382 source lines were read in Pass 1, producing 14 object records in Pass 2.  
 0 pages of virtual memory were used to define 0 macros.

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

<u>Macro library name</u>	<u>Macros defined</u>
_\$255\$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\$:OTSCVTTIL/OBJ=OBJ\$:OTSCVTTIL MSRC\$:OTSCVTTIL/UPDATE=(ENH\$:OTSCVTTIL)

