


```

BBBBBBBB      AAAAAA      SSSSSSSS      PPPPPPPP      000000      WW      WW      RRRRRRRR      DDDDDDDD
BBBBBBBB      AAAAAA      SSSSSSSS      PPPPPPPP      000000      WW      WW      RRRRRRRR      DDDDDDDD
BB      BB      AA      AA      SS      PP      PP      00      00      WW      WW      RR      RR      DD      DD
BB      BB      AA      AA      SS      PP      PP      00      00      WW      WW      RR      RR      DD      DD
BB      BB      AA      AA      SS      PP      PP      00      00      WW      WW      RR      RR      DD      DD
BB      BB      AA      AA      SS      PP      PP      00      00      WW      WW      RR      RR      DD      DD
BBBBBBBB      AA      AA      SSSSSS      PPPPPPPP      00      00      WW      WW      RRRRRRRR      DD      DD
BBBBBBBB      AA      AA      SSSSSS      PPPPPPPP      00      00      WW      WW      RRRRRRRR      DD      DD
BB      BB      AAAAAAAAAA      SS      PP      00      00      WW      WW      RR      RR      DD      DD
BB      BB      AAAAAAAAAA      SS      PP      00      00      WW      WW      RR      RR      DD      DD
BB      BB      AA      AA      SS      PP      00      00      WWW      WWW      RR      RR      DD      DD
BB      BB      AA      AA      SS      PP      00      00      WWW      WWW      RR      RR      DD      DD
BBBBBBBB      AA      AA      SSSSSSSS      PP      000000      WW      WW      RR      RR      DDDDDDDD      .....
BBBBBBBB      AA      AA      SSSSSSSS      PP      000000      WW      WW      RR      RR      DDDDDDDD      .....

```

```

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

```

BASSPOWRD
Table of contents

; BASIC float ** double routine M 14

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DECLARATIONS
BASSPOWRD - BASIC float ** double

```
0000 1 .TITLE BAS$POWRD ; BASIC float ** double routine
0000 2 .IDENT /1-001/ ; File: BASPOWRD.MAR Edit:PLL1001
0000 3
0000 4
0000 5 :*****
0000 6 :*
0000 7 :* COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0000 24 :*
0000 25 :*
0000 26 :*****
0000 27 :
0000 28 :
0000 29 :++
0000 30 : FACILITY: Basic Support Library
0000 31 :
0000 32 : ABSTRACT:
0000 33 :
0000 34 : This module contains entry points to support exponentiation
0000 35 : (** or ^) in BASIC-PLUS-2 for FLOAT ** DOUBLE.
0000 36 :
0000 37 : ENVIRONMENT: User Mode, AST Reentrant
0000 38 :
0000 39 : --
0000 40 : AUTHOR: P. Levesque , CREATION DATE: 5-Oct-81
0000 41 :
0000 42 : MODIFIED BY:
0000 43 :
0000 44 : 1-001 - Original
```

```
0000 46      .SBTTL  DECLARATIONS
0000 47      :
0000 48      : INCLUDE FILES:
0000 49      :
0000 50      :
0000 51      :
0000 52      : EXTERNAL DECLARATIONS:
0000 53      :
0000 54      .DSABL  GBL                ; Prevent undeclared
0000 55      :                               ; symbols from being
0000 56      :                               ; automatically global.
0000 57      :
0000 58      .EXTRN  OTSSPOWRD          ; OTSS float ** double exponentiation
0000 59      .EXTRN  OTSSPOWRJ         ; OTSS float ** int exponentiation
0000 60      .EXTRN  BASSK_DIVBY_ZER    ; Divide by Zero
0000 61      .EXTRN  BASSK_ILLARGLOG   ; ILL argument in LOG
0000 62      .EXTRN  BASS$STOP         ; Error reporting routine
0000 63      :
0000 64      :
0000 65      : MACROS:
0000 66      :
0000 67      :
0000 68      :
0000 69      : EQUATED SYMBOLS:
0000 70      :
0000 71      :
0000 72      :
0000 73      : OWN STORAGE:
0000 74      :
0000 75      :
0000 76      :
0000 77      : PSECT DECLARATIONS:
0000 78      :
00000000 79      .PSECT _BASS$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 80      EXE, RD, NOWRT, LONG
0000 81
```

```

0000 83 .SBTTL BASS$POWRD - BASIC float ** double
0000 84 : **
0000 85 : FUNCTIONAL DESCRIPTION:
0000 86 :
0000 87 : This routine takes BASE ** EXP, using the following table
0000 88 : for unusual cases:
0000 89 :
0000 90 : BASE > 0 Call OTSS$POWRD, normal case.
0000 91 : BASE = 0, EXP > 0 Return 0.0.
0000 92 : BASE = 0, EXP = 0 Return 1.0.
0000 93 : BASE = 0, EXP < 0 Error: divide by zero
0000 94 : BASE < 0, EXP even integer Call OTSS$POWRJ with -BASE
0000 95 : BASE < 0, EXP odd integer Call OTSS$POWRJ with -BASE, negate result
0000 96 : BASE < 0, EXP not integer Error: illegal argument in LOG.
0000 97 :
0000 98 : CALLING SEQUENCE:
0000 99 :
0000 100 : CALL result.wd.v = BASS$POWRD (base.rf.v, exponent.rd.v)
0000 101 :
0000 102 : INPUT PARAMETERS:
0000 103 :
00000004 0000 104 : base = 4
0000000C 0000 105 : exponent = 12
0000 106 :
0000 107 : IMPLICIT INPUTS:
0000 108 :
0000 109 : NONE
0000 110 :
0000 111 : OUTPUT PARAMETERS:
0000 112 :
0000 113 : NONE
0000 114 :
0000 115 : IMPLICIT OUTPUTS:
0000 116 :
0000 117 : NONE
0000 118 :
0000 119 : FUNCTION VALUE:
0000 120 : COMPLETION CODES:
0000 121 :
0000 122 : double result of exponentiation
0000 123 :
0000 124 : SIDE EFFECTS:
0000 125 :
0000 126 : Will signal Divide By Zero or Illegal argument in LOG if its
0000 127 : arguments are bad, and OTSS$POWRD and OTSS$POWRJ may also signal.
0000 128 :
0000 129 : --
0000 130 :
0000' 0000 131 BASS$POWRD:: .MASK OTSS$POWRD ; Entry point
0002 132 ; Since this routine uses no
0002 133 ; registers and usually transfers
0002 134 ; control to OTSS$POWRD, we copy
0002 135 ; its register save mask and then
0002 136 ; JMP past its save mask and only
0002 137 ; save the registers once
04 AC 53 0002 138 TSTF base(AP) ; Test base relationship to zero
06 15 0005 139 BLEQ 1$ ; If base leq 0, do case analysis

```



```

BAS$$STOP ***** X 00
BAS$K_DIVBY_ZER ***** X 00
BAS$K_ILLARGLOG ***** X 00
BAS$POWRD 00000000 RG 01
BASE = 00000004
EXPONENT = 0000000C
OT$$POWRD ***** X 00
OT$$POWRJ ***** 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			
._BAS\$CODE	00000056 (86.)	01 (1.)	PIC USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG			

 ! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	31	00:00:00.08	00:00:00.56
Command processing	116	00:00:00.45	00:00:02.12
Pass 1	71	00:00:00.50	00:00:01.25
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	47	00:00:00.38	00:00:00.85
Symbol table output	2	00:00:00.02	00:00:00.02
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	272	00:00:01.46	00:00:04.82

The working set limit was 900 pages.
 2216 bytes (5 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 6 local symbols.
 195 source lines were read in Pass 1, producing 8 object records in Pass 2.
 0 pages of virtual memory were used to define 0 macros.

 ! Macro library statistics !

Macro library name	Macros defined
._\$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\$:BASPOWRD/OBJ=OBJ\$:BASPOWRD MSRC\$:BASPOWRD/UPDATE=(ENH\$:BASPOWRD)

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LIS

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LIS

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