



```

BBBBBBBB      AAAAAA      SSSSSSSS      IIIIII      NN      NN      IIIIII      GGGGGGGG      SSSSSSSS      BBBBBBBB
BBBBBBBB      AAAAAA      SSSSSSSS      IIIIII      NN      NN      IIIIII      GGGGGGGG      SSSSSSSS      BBBBBBBB
BB      BB      AA      AA      SS      II      NN      NN      II      GG      SS      BB      BB
BB      BB      AA      AA      SS      II      NN      NN      II      GG      SS      BB      BB
BB      BB      AA      AA      SS      II      NNNN      NN      II      GG      SS      BB      BB
BBBBBBBB      AA      AA      SSSSSS      II      NN      NN      NN      II      GG      SSSSSS      BBBBBBBB
BBBBBBBB      AA      AA      SSSSSS      II      NN      NN      NN      II      GG      SSSSSS      BBBBBBBB
BB      BB      AAAAAAAAAA      SS      II      NN      NNNN      NN      II      GG      GGGGGG      SS      BB      BB
BB      BB      AAAAAAAAAA      SS      II      NN      NNNN      NN      II      GG      GGGGGG      SS      BB      BB
BB      BB      AA      AA      SS      II      NN      NN      NN      II      GG      GG      SS      BB      BB
BB      BB      AA      AA      SS      II      NN      NN      NN      II      GG      GG      SS      BB      BB
BBBBBBBB      AA      AA      SSSSSSSS      IIIIII      NN      NN      IIIIII      GGGGGG      SSSSSSSS      BBBBBBBB
BBBBBBBB      AA      AA      SSSSSSSS      IIIIII      NN      NN      IIIIII      GGGGGG      SSSSSSSS      BBBBBBBB

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....  
....  
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....

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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

```

```

1 0001 0 MODULE BASSINIT_GOSUB (
2 0002 0 IDENT = '1-003'
3 0003 0 ) =
4 0004 1 BEGIN
5 0005 1
6 0006 1 *****
7 0007 1 *
8 0008 1 * COPYRIGHT (c) 1978, 1980, 1982, 1984 BY *
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25 0025 1 *
26 0026 1 *
27 0027 1 *****
28 0028 1
29 0029 1
30 0030 1
31 0031 1 **
32 0032 1 FACILITY: BASIC-PLUS-2 Frame Support
33 0033 1
34 0034 1 ABSTRACT:
35 0035 1
36 0036 1 These routines set up and tear down frames for BASIC-PLUS-2.
37 0037 1 Frames are used for main routines, external functions,
38 0038 1 external subroutines, internal functions (both DEFs and DEF*s)
39 0039 1 internal subroutines (GOSUBs) and condition handlers.
40 0040 1
41 0041 1 ENVIRONMENT: VAX-11 user mode
42 0042 1
43 0043 1 AUTHOR: John Sauter, CREATION DATE: 10-Oct-78
44 0044 1
45 0045 1 MODIFIED BY:
46 0046 1
47 0047 1 1-001 - Original.
48 0048 1 1-002 - Change BASS prefix to BASS for stack frame names. JBS 08-FEB-1979
49 0049 1 1-003 - Set the IV bit in the PSW if called for. JBS 11-SEP-1979
50 0050 1 --
51 0051 1
52 0052 1
53 0053 1 <BLF/PAGE>
    
```

```

: 55 0054 1 |
: 56 0055 1 | SWITCHES:
: 57 0056 1 |
: 58 0057 1 |
: 59 0058 1 | SWITCHES ADDRESSING_MODE (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
: 60 0059 1 |
: 61 0060 1 |
: 62 0061 1 | LINKAGES:
: 63 0062 1 |
: 64 0063 1 |
: 65 0064 1 | LINKAGE
: 66 0065 1 |     BASSGOSUB_LINK = CALL (STANDARD) :
: 67 0066 1 |     GLOBAL (BSFSA_MAJOR_STG = 11, BSFSA_MINOR_STG = 10, BSFSA_TEMP_STG = 9),
: 68 0067 1 |
: 69 0068 1 |     BASSGOSUB_JSB = JSB :
: 70 0069 1 |     GLOBAL (BSFSA_MAJOR_STG = 11, BSFSA_MINOR_STG = 10, BSFSA_TEMP_STG = 9) !
: 71 0070 1 |     NOTUSED (8, 7, 6, 5, 4, 3, 2)
: 72 0071 1 |     NOPRESERVE (1, 0);
: 73 0072 1 |
: 74 0073 1 |
: 75 0074 1 | TABLE OF CONTENTS:
: 76 0075 1 |
: 77 0076 1 |
: 78 0077 1 | FORWARD ROUTINE
: 79 0078 1 |     BASSINIT_GOSUB : BASSGOSUB_LINK NOVALUE; ! start GOSUB
: 80 0079 1 |
: 81 0080 1 |
: 82 0081 1 | INCLUDE FILES:
: 83 0082 1 |
: 84 0083 1 |
: 85 0084 1 | REQUIRE 'RTLIN:RTLPSECT'; ! macros for defing psects
: 86 0179 1 |
: 87 0180 1 | REQUIRE 'RTLIN:BASFRAME'; ! Define frame structure
: 88 0383 1 |
: 89 0384 1 | LIBRARY 'RTLSTARLE'; ! System symbols
: 90 0385 1 |
: 91 0386 1 |
: 92 0387 1 | MACROS:
: 93 0388 1 |
: 94 0389 1 |     NONE
: 95 0390 1 |
: 96 0391 1 | EQUATED SYMBOLS:
: 97 0392 1 |
: 98 0393 1 |     NONE
: 99 0394 1 |
: 100 0395 1 | PSECTS:
: 101 0396 1 |
: 102 0397 1 | DECLARE_PSECTS (BAS); ! declare psects for BASS facility
: 103 0398 1 |
: 104 0399 1 | OWN STORAGE:
: 105 0400 1 |
: 106 0401 1 |     NONE
: 107 0402 1 |
: 108 0403 1 | EXTERNAL REFERENCES:
: 109 0404 1 |
: 110 0405 1 |
: 111 0406 1 | EXTERNAL ROUTINE

```

BASSINIT\_GOSUB  
1-003

: 112 0407 1  
: 113 0408 1  
: 114 0409 1

BASS\$SIGNAL : NOVALUE,  
BASS\$HANDLER;

K 3  
16-Sep-1984 00:36:39 VAX-11 Bliss-32 V4.0-742  
14-Sep-1984 11:55:07 [BASRTL.SRC]BASINIGSB.B32;1

! signals error  
! handles signals

```

: 116 0410 1 GLOBAL ROUTINE BASSINIT_GOSUB (           ! start GOSUB
: 117 0411 1   NEW_PC                               ! place to start
: 118 0412 1   ) : BASSGOSUB_LINK NOVALUE =
: 119 0413 1
: 120 0414 1   ++
: 121 0415 1   FUNCTIONAL DESCRIPTION:
: 122 0416 1
: 123 0417 1       Set up a frame for a BASIC-PLUS-2 GOSUB. The frame is allocated
: 124 0418 1       on the stack. R11, R10 and R9 are not touched.
: 125 0419 1
: 126 0420 1   FORMAL PARAMETERS:
: 127 0421 1
: 128 0422 1       NEW_PC.ra.v      PC of the GOSUB target line.
: 129 0423 1
: 130 0424 1   IMPLICIT INPUTS:
: 131 0425 1
: 132 0426 1       NONE
: 133 0427 1
: 134 0428 1   IMPLICIT OUTPUTS:
: 135 0429 1
: 136 0430 1       NONE
: 137 0431 1
: 138 0432 1   ROUTINE VALUE:
: 139 0433 1
: 140 0434 1       NONE
: 141 0435 1
: 142 0436 1   COMPLETION CODES:
: 143 0437 1
: 144 0438 1       NONE
: 145 0439 1
: 146 0440 1   SIDE EFFECTS:
: 147 0441 1
: 148 0442 1       Leaves lots of things on the stack for use by the compiled
: 149 0443 1       BASIC-PLUS-2 code. These things will be removed by
: 150 0444 1       BASSEND_GSB_RB.
: 151 0445 1
: 152 0446 1   --
: 153 0447 1
: 154 0448 2   BEGIN
: 155 0449 2   ++
: 156 0450 2   The following external registers are nearly passed through to
: 157 0451 2   the compiled code.
: 158 0452 2   -
: 159 0453 2
: 160 0454 2   EXTERNAL REGISTER
: 161 0455 2       BSFSA_MAJOR_STG,
: 162 0456 2       BSFSA_MINOR_STG,
: 163 0457 2       BSFSA_TEMP_STG;
: 164 0458 2
: 165 0459 2   BUILTIN
: 166 0460 2       FP,
: 167 0461 2       SP,
: 168 0462 2       BISPSW;
: 169 0463 2
: 170 0464 2   ++
: 171 0465 2   Define local variables as registers. We cannot have any stack
: 172 0466 2   locals since we manipulate the stack pointer in this routine.

```

```

173 0467 2 :-
174 0468 2
175 0469 2 REGISTER
176 0470 2 FMP : REF BLOCK [0, BYTE] FIELD (BSF$FCD) ; ! pointer to FCD
177 0471 2 PREV_FMP : REF BLOCK [0, BYTE] FIELD (BSF$FCD); ! points to previous frame
178 0472 2
179 0473 2 +
180 0474 2 Allocate frame control data.
181 0475 2 -
182 0476 2 FMP = .FP;
183 0477 2 SP = .FMP - BSF$K_LENFCDSB;
184 0478 2 +
185 0479 2 Initialize the parts of the fcd relevant to a gosub.
186 0480 2 -
187 0481 2 FMP [BSF$A_MARK] = 0;
188 0482 2 FMP [BSF$A_BASE_SP] = .SP;
189 0483 2 FMP [BSF$A_BASE_R11] = .BSF$A_MAJOR_STG;
190 0484 2 FMP [BSF$A_BASE_R10] = .BSF$A_MINOR_STG;
191 0485 2 FMP [BSF$A_BASE_R9] = .BSF$A_TEMP_STG;
192 0486 2 +
193 0487 2 The "PROCEDURE ID" is the address of the start of the GOSUB.
194 0488 2 -
195 0489 2 FMP [BSF$A_PROC_ID] = .NEW_PC;
196 0490 2 +
197 0491 2 Copy the frame flags from the previous frame. The previous
198 0492 2 frame had better be a basic frame.
199 0493 2 -
200 0494 2 PREV_FMP = .FMP [BSF$A_SAVED_FP];
201 0495 2 FMP [BSF$W_FCD_FLAGS] = .PREV_FMP [BSF$W_FCD_FLAGS];
202 0496 2 +
203 0497 2 Mark this as a "GOSUB" frame. Such frames are removed very easily
204 0498 2 when, for example, returning from a condition handler. This is
205 0499 2 because GOSUB has no lexical scope, and so we cannot enforce
206 0500 2 well-structured programming practices which involve it.
207 0501 2 -
208 0502 2 FMP [BSF$B_PROC_CODE] = BSF$K_PROC_GOSB;
209 0503 2 +
210 0504 2 Set the frame length field.
211 0505 2 -
212 0506 2 FMP [BSF$B_LEN_FCD] = BSF$K_LENFCDSB;
213 0507 2 +
214 0508 2 Set the integer overflow interrupt enable bit in the PSW if the parent
215 0509 2 frame has it set.
216 0510 2 -
217 0511 2
218 0512 2 IF ((.FMP [BSF$W_FCD_FLAGS] AND BSF$M_FCD_IV) NEQ 0) THEN BISPSW (%REF (PSW$M_IV));
219 0513 2
220 0514 2 +
221 0515 2 Set up the handler address to mark this as a BASIC frame and for
222 0516 2 VAX/VMS CHF.
223 0517 2 -
224 0518 2
225 0519 2 FMP [BSF$A_HANDLER] = BASSHANDLER;
226 0520 2 +
227 0521 2 Branch to the compiled code. This code will call BASS$END_GSB_R8
228 0522 2 rather than returning.
229 0523 2 -

```

```

: 230      0524 2   BAS$GOSUB_JSB (.NEW_PC);
: 231      0525 1   END;

```

! of BASS\$INIT\_GOSUB

```

                                0000 00000
                                5D  D0 00002
                                5E      EO  A0  9E 00005
                                FC      A0  D4 00009
                                F8  A0      5E  D0 0000C
                                FO  A0      5A  7D 00010
                                EC  A0      59  D0 00014
                                E8  A0      04  AC  D0 00018
                                S1      0C  A0  D0 0001D
                                E6  A0      E6  A1  B0 00021
                                E4  A0      0620 8F  B0 00026
                                E6  A0      0B  E1 0002C
                                60 00000000G 20  B8 00031
                                04      00  9E 00033 1$:
                                BC      16 0003A
                                04 0003D

```

```

.TITLE BASS$INIT_GOSUB
.IDENT \1-003\
.EXTRN BASS$$SIGNAL, BASS$HANDLER
.PSECT _BASS$CODE, NOWRT, SHR, PIC, 2
.ENTRY BASS$INIT_GOSUB, Save nothing
MOVL FP, FMP
MOVAB -32(R0), SP
CLRL -4(FMP)
MOVL SP, -8(FMP)
MOVQ BSF$A_MINOR_STG, -16(FMP)
MOVL BSF$A_TEMP_STG, -20(FMP)
MOVL NEW_PC, -24(FMP)
MOVL 12(FMP), PREV_FMP
MOVW -26(PREV_FMP), -26(FMP)
MOVW #1568, -28(FMP)
BBC #11, -26(FMP), 1$
BISPSW #32
MOVAB BASS$HANDLER, (FMP)
JSB @NEW_PC
RET
: 0410
: 0476
: 0477
: 0481
: 0482
: 0484
: 0485
: 0489
: 0494
: 0495
: 0506
: 0512
: 0519
: 0524
: 0525

```

: Routine Size: 62 bytes, Routine Base: \_BASS\$CODE + 0000

```

: 232      0526 1
: 233      0527 1 END
: 234      0528 1
: 235      0529 0 ELUDOM

```

PSECT SUMMARY

Name	Bytes	Attributes
_BASS\$CODE	62	NOVEC, NOWRT, RD, EXE, SHR, LCL, REL, CON, PIC, ALIGN(2)

Library Statistics

File	Total	Symbols Loaded	Percent	Pages Mapped	Processing Time
_\$255\$DUA28:[SYSLIB]STARLET.L32;1	9776	1	0	581	00:01.1



COMMAND QUALIFIERS

BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS\$:BASINIGSB/OBJ=OBJ\$:BASINIGSB MSRCS\$:BASINIGSB/UPDATE=(ENH\$:BASINIGSB)

: Size: 62 code + 0 data bytes  
: Run Time: 00:05.5  
: Elapsed Time: 00:12.0  
: Lines/CPU Min: 5813  
: Lexemes/CPU-Min: 19758  
: Memory Used: 59 pages  
: Compilation Complete

