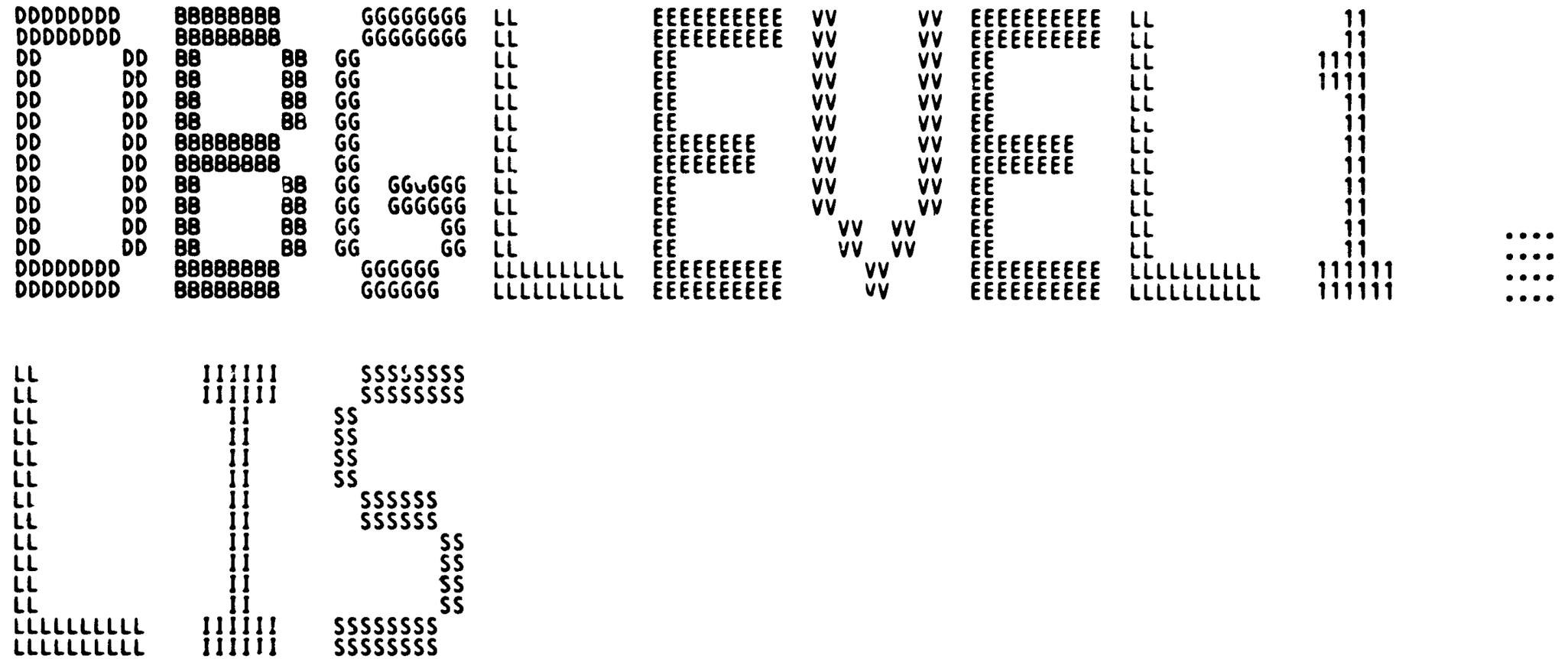
```
DDDDDDDDDDD     EEEEEEEEEEEEEEE  BBBBBBBBBBB      UUU         UUU     GGGGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUU         UUU     GGGGGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB     UUU         UUU     GGGGGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEEEEEEEEEE      BBBBBBBBBBBB     UUU         UUU GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG   GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG   GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG   GGGGGGGGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG         GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG         GGG
DDD         DDD EEE              BBB         BBB  UUU         UUU GGG         GGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB      UUUUUUUUUUUUUUUUU     GGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB      UUUUUUUUUUUUUUUUU     GGGGGGGGG
DDDDDDDDDDDD    EEEEEEEEEEEEEEE  BBBBBBBBBBBB      UUUUUUUUUUUUUUUUU     GGGGGGGGG
```

FILEID**DBGLEVEL1



```
;     1          0001  C MODULE DBGLEVEL1 (IDENT = 'V04-000') =
;     2          0002  1 BEGIN
;     3          0003  1 !++
;     4          0004  1 !*****************************************************************************
;     5          0005  1 !*                                                                           *
;     6          0006  1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                 *
;     7          0007  1 !*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.                   *
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;    12          0012  1 !*  INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR  ANY  OTHER   *
;    13          0013  1 !*  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY   *
;    14          0014  1 !*  OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF  THE  SOFTWARE IS  HEREBY   *
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;    16          0016  1 !*                                                                           *
;    17          0017  1 !*  THE INFORMATION IN THIS SOFTWARE IS  SUBJECT TO CHANGE WITHOUT NOTICE   *
;    18          0018  1 !*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIC'TAL EQUIPMENT   *
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;    20          0020  1 !*                                                                           *
;    21          0021  1 !*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE  OR  RELIABILITY OF ITS   *
;    22          0022  1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                  *
;    23          0023  1 !*                                                                           *
;    24          0024  1 !*                                                                           *
;    25          0025  1 !*****************************************************************************
;    26          0026  1 !--
;    27          0027  1
;    28          0028  1 !++
;    29          0029  1 ! FACILITY:     DEBUG (DBG)
;    30          0030  1 !
;    31          0031  1 ! ABSTRACT:
;    32          0032  1 !       This module contains all the miscellaneous routines left over from
;    33          0033  1 !       the early days of the debugger. That is, the debugger was mostly
;    34          0034  1 !       rewritten in 1982-1983 but after the rewrite there were still
;    35          0035  1 !       a handful of routines in different modules that were still used.
;    36          0036  1 !       These routines have all been lumped together in this one module.
;    37          0037  1 !
;    38          0038  1 ! Version:      4.0
;    39          0039  1 !
;    40          0040  1 ! History:
;    41          0041  1 !       Created by:
;    42          0042  1 !               R. Title , May 1983
;    43          0043  1 !
;    44          0044  1
;    45          0045  1 ! Require files:
;    46          0046  1 !
;    47          0047  1 REQUIRE 'SRC$:DBGPROLOG.REQ';
;    48          0181  1 LIBRARY 'LIB$:DBGGEN.L32';
;    49          0182  1
;    50          0183  1 ! Table of contents:
;    51          0184  1 !
;    52          0185  1 FORWARD ROUTINE
;    53          0186  1         dbg$end_of_cmd : NOVALUE,       ! END OF COMMAND PROCESSING ROUTINE
;    54          0187  1         dbg$end_of_line : NOVALUE,      ! end of line processing routine
;    55          0188  1         dbg$write_mem,                  ! WRITES data TO MEMORY
;    56          0189  1         dbg$set_context: NOVALUE,       ! ROUTINE TO INITIALIZE CONTEXT BITS
;    57          0190  1         dbg$init_debug : NOVALUE,       ! ROUTINE TO INITIALIZE DEBUG UNDER STARLET
```

```
;    58          0191  1          dbg$cis_connecticf : NOVALUE,    ! Places icf into input stream
;    59          0192  1          dbg$cis_remove : NOVALUE,        ! Remove a link from the cis
;    60          0193  1          dbg$cis_add : NOVALUE,           ! Add a link to the cis
;    61          0194  1          dbg$ins_opcodes: NOVALUE,
;    62          0195  1          dbg$conv_r_50,                   ! SPECIAL-PURPOSE RAD50 CONVERSION ROUTINE.
;    63          0196  1          dbg$out_regname,                 ! Match and symbolize register names
;    64          0197  1          dbg$reg_match,                   ! MATCHES A STRING TO A REGISTER NAME
;    65          0198  1          dbg$digit_scan,                  ! scan string for valid numeric
;    66          0199  1          dbg$output_psl      : NOVALUE,   ! ROUTINE TO OUTPUT PSL IN SPECIAL FORMAT
;    67          0200  1          dbg$map_to_reg_addr,             ! Tries to map input address to an address
;    68          0201  1                                           ! in the reg area in user_runframe
;    69          0202  1          dbg$exact_map_to_reg,            ! Tries to map input address to the address
;    70          0203  1                                           ! of a reg in user_runframe
;    71          0204  1          DBG$LANGUAGE,                    ! Produce name of given language.
;    72          0205  1          DBG$SET_LANG;                    ! Changes the DEBUG syntax
;    73          0206  1
;    74          0207  1  ! Externals
;    75          0208  1  !
;    76          0209  1  EXTERNAL ROUTINE
;    77          0210  1          dbg$ins_decode,                                  ! ROUTINE TO OUTPUT MEMORY AS
;    78          0211  1                                                           !  SYMBOLIC INSTRUCTIONS.
;    79          0212  1          dbg$ins_encode,                                  ! routine to encode a symbolic instruction
;    80          0213  1          dbg$newline : NOVALUE,                           ! ACTUALLY DO TERMINAL I/O.
;    81          0214  1          dbg$pop_tempmem: NOVALUE,                        ! Pop a temporary memory pool
;    82          0215  1          dbg$push_tempmem,                                ! Create a new temporary memory pool
;    83          0216  1          dbg$sta_getsourcemod,                            ! looks up module rst pointer
;    84          0217  1                                                           ! given the RST pointer
;    85          0218  1          dbg$src_type_lnum_source : NOVALUE,              ! types a range of source line nums
;    86          0219  1          dbg$src_type_pc_source : NOVALUE,                ! types source for a range
;    87          0220  1                                                           ! of PCs.
;    88          0221  1          dbg$def_pr_entry,                                ! Procedure entry code
;    89          0222  1          dbg$get_tempmem,                                 ! allocate temporary memory
;    90          0223  1          dbg$ncis_add,                                    ! add a CIS to the cis chain
;    91          0224  1
;    92          0225  1          DBG$CANCEL_LOC_VAL: NOVALUE,    ! Cancels '.' and '\'
;    93          0226  1          dbg$check_prot,                                  ! CHECKS THE PROTECTION OF A PAGE
;    94          0227  1          DBG$EVENT_INITIALIZATION : NOVALUE,              ! Initialize event structures
;    95          0228  1          dbg$fao_out: NOVALUE,
;    96          0229  1          DBG$FLUSHBUF: NOVALUE,                           ! Flush the print buffer
;    97          0230  1          dbg$get_memory,                                  ! Allocate permanent memory
;    98          0231  1          dbg$init_define: NOVALUE,                        ! Initializes define settings
;    99          0232  1          dbg$init_memory: NOVALUE,                        ! Initialize the free memory pool
;   100          0233  1          dbg$init_modes,                                  ! INITIALIZES MODES
;   101          0234  1          dbg$init_search: NOVALUE,                        ! Initializes search settings
;   102          0235  1          DBG$NCANCEL_LOC_AND_VAL : NOVALUE,               ! Cancels '.' and '\'
;   103          0236  1          DBG$NCHANGE_TO_NEW : NOVALUE,   ! Switch to new debugger
;   104          0237  1          dbg$ncis_remove,
;   105          0238  1          dbg$nget_trans_radix,                            ! Translate radix
;   106          0239  1          DBG$PARSER_SET_LANGUAGE : NOVALUE,               ! Set up parse table for new language
;   107          0240  1          dbg$print : NOVALUE,                             ! FORMATTED BUFFERED OUTPUT.
;   108          0241  1          DBG$PRINT_CONTROL,                               ! Set print control functions
;   109          0242  1          dbg$read_access,                                 ! verify access to memory
;   110          0243  1          dbg$redo_prot,                                   ! RESETS THE PROTECTION OF A PAGE TO READ ONLY
;   111          0244  1          dbg$rel_memory : NOVALUE,                        ! Release memory
;   112          0245  1          DBG$REL_TEMPMEM: NOVALUE,                        ! Release all temporary memory
;   113          0246  1          DBG$RST_TEMP_RELEASE: NOVALUE,                   ! Release temporary RST entries
;   114          0247  1          dbg$set_define_def: NOVALUE,                     ! Initializes DEFINE data struc
```

```
;  115     0248  1          dbg$set_define_lvl: NOVALUE,              ! Sets define level back
;  116     0249  1          DBG$SET_MOD_DEF,                          ! initializes mode settings
;  117     0250  1          dbg$set_mod_lvl,                          ! SETS MODE pointer
;  118     0251  1          dbg$set_out_def : NOVALUE,                ! Initializes OUTPUT config.
;  119     0252  1          DBG$SET_SEARCH_DEF : NOVALUE,    ! inititialize search settings
;  120     0253  1          dbg$set_search_lvl: NOVALUE,              ! Sets search level back
;  121     0254  1          DBG$SET_STP_DEF,                          ! initializes step settings
;  122     0255  1          dbg$sta_setcontext : NOVALUE,             ! Sets registers context
;  123     0256  1          dbg$sta_symname : NOVALUE,                ! Get symbol's name
;  124     0257  1          for$cnv_in_defg,                          ! converts a floating or real
;  125     0258  1          smg$create_key_table,                     ! /Initialize data structures
;  126     0259  1          smg$create_virtual_keyboard,              ! \   used for keypad input.
;  127     0260  1          sys$trnlog,                               ! Translate logical name
;  128     0261  1          dbg$sta_symvalue : NOVALUE,
;  129     0262  1          dbg$free_mem_left,                        ! Longwords remaining in free storage.
;  130     0263  1          dbg$nmake_arg_vect,
;  131     0264  1          dbg$nout_info,
;  132     0265  1          for$cnv_out_i,                            ! Converts integer to ascii string.
;  133     0266  1          dbg$npathdesc_to_cs     : NOVALUE,        ! Get full name of data item
;  134     0267  1          lib$get_ef,                               ! Get event flag
;  135     0268  1          lib$free_ef;                              ! Free event flag
;  136     0269  1
;  137     0270  1 EXTERNAL
;  138     0271  1          dbg$gb_set_break_flag: BYTE,              ! Flag set to true when parsing
;  139     0272  1                                                    !    a SET BREAK command.
;  140     0273  1          dbg$gb_radix: VECTOR[3,BYTE],             ! Radix settings
;  141     0274  1          dbg$gl_context: BITVECTOR,                  CONTEXT WORD
;  142     0275  1          dbg$gl_developer: BITVECTOR,                Developer flags
;  143     0276  1          dbg$gl_ind_com_file: REF VECTOR[,BYTE     ! Points to counted string with
;  144     0277  1                                                    !    indirect command file name
;  145     0278  1          dbg$gl_inpfab: BLOCK [, BYTE],            ! FAB FOR 'INPUT'
;  146     0279  1          dbg$gl_inprab: BLOCK [, BYTE],            ! RAB FOR 'INPUT'
;  147     0280  1          dbg$gl_outpfab: BLOCK [, BYTE],           ! FAB FOR 'OUTPUT'
;  148     0281  1          dbg$gl_outprab: BLOCK [, BYTE],           ! RAB FOR 'OUTPUT'
;  149     0282  1          dbg$gl_symhead,                           ! LIST HEAD FOR SYMBOL TABLE
;  150     0283  1          dbg$gl_global_define_ptr,                 ! Head of DEFINE list for
;  151     0284  1                                                    !    globally defined symbols
;  152     0285  1          dbg$gl_local_define_ptr,                  ! Head of DEFINE list for
;  153     0286  1                                                    !    locally defined symbols
;  154     0287  1          dbg$gl_lis_ptr,
;  155     0288  1          dbg$gl_key_table_id,                      ! Used for DEFINE/KEY
;  156     0289  1          dbg$gl_keyboard_id,                       ! Used for DEFINE/KEY
;  157     0290  1          dbg$gb_keypad_input: BYTE,                ! TRUE if we are trying to do
;  158     0291  1                                                    !    keypad input.
;  159     0292  1          dbg$src_term_width,                       ! Terminal set width
;  160     0293  1          dbg$gb_exc_bre_flag: BYTE,                ! TRUE during an exception break
;  161     0294  1          dbg$gb_go_arg_flag: BYTE,                 ! TRUE if there is an argument
;  162     0295  1                                                    !    to GO.
;  163     0296  1          dbg$gl_help_input                         ! Pointer to HELP input
;  164     0297  1          dbg$gb_search_ptr: REF VECTOR[,BYTE],     ! Pointer to search structure
;  165     0298  1          dbg$gb_mod_ptr: REF VECTOR [,BYTE],       ! Pointer to the mode structure
;  166     0299  1          dbg$gb_set_module_flag: BYTE,             ! TRUE during SET MODULE command.
;  167     0300  1          dbg$gb_resignal: BYTE,                    ! FLAG FOR RESIGNALING EXCEPTIONS
;  168     0301  1          dbg$gb_take_cmd: BYTE,                    ! FLAG WHICH SAYS CONTINUE TO ACCEPT COMMANDS
;  169     0302  1          dbg$gw_loclngth: word,                    ! Length field of command override type
;  170     0303  1          dbg$gl_dimenlst : VECTOR,                 ! FORTRAN dimension list
;  171     0304  1          dbg$gl_nest_level,                        ! Nesting level of subscripts
```

```
;  172     0305  1          dbg$gl_nest_stack: VECTOR,                ! Stack of saved subscripts
;  173     0306  1          dbg$gl_search_verb,                       ! Head of command execution tree
;  174     0307  1                                                    !    for SEARCH
;  175     0308  1          dbg$gl_set_source,
;  176     0309  1          dbg$gl_set_source2,
;  177     0310  1          dbg$gl_current_primary,                   ! The primary being processed
;  178     0311  1          dbg$gl_list: VECTOR,                      ! LIST FOR EXPRESSIONS
;  179     0312  1          dbg$gl_loctyp,                            ! command override type.
;  180     0313  1          dbg$gl_dflttyp,                           ! type given in SET TYPE.
;  181     0314  1          dbg$gl_gbltyp,                            ! type given in SET TYPE/OVERRIDE.
;  182     0315  1          dbg$gl_stk : semantic_stack,              ! semantic stack for tokens etc.
;  183     0316  1          DBG$GB_STP_PTR :    REF EVENT$STEPPING_DESCRIPTOR, ! POINTER TO CURRENT STEP TYPE
;  184     0317  1          dbg$gl_step_num,                          ! number of steps to take in single step mode
;  185     0318  1          dbg$pseudo_prog,                          ! Used for DEBUG's CALL command.
;  186     0319  1          dbg$gl_logfab : BLOCK [,BYTE],            ! FAB for LOG file
;  187     0320  1          dbg$gl_cishead : REF cis$link,            ! Head of command input stream
;  188     0321  1          dbg$gl_modrstptr2,                        ! Holds module pointer during
;  189     0322  1                                                    ! TYPE command.
;  190     0323  1          dbg$gl_module,                            ! Hold module pointer during
;  191     0324  1                                                    ! SET SOURCE/MODULE= command.
;  192     0325  1          dbg$gl_dirlist,                           ! Holds pointer to directory
;  193     0326  1                                                    ! list during
;  194     0327  1                                                    ! SET SOURCE dir-list
;  195     0328  1                                                    ! command.
;  196     0329  1          dbg$src_left_margin,                      ! left margin for source display
;  197     0330  1          dbg$src_right_margin,                     ! right margin for source display
;  198     0331  1          dbg$gv_control  : dbg$control_flags,      ! DEBUG control bits
;  199     0332  1          dbg$gw_gbllngth : WORD,                   ! OVERRIDE LENGTH
;  200     0333  1          dbg$gl_next_loc,                          ! NEXT location TO DISPLAY
;  201     0334  1          dbg$gb_language : BYTE,                   ! LANGUAGE INDEX
;  202     0335  1          dbg$reg_values : VECTOR,                  ! Context regs save area
;  203     0336  1          dbg$runframe : BLOCK [, BYTE],            ! current run frame
;  204     0337  1          dbg$src_next_modrstptr,                   ! module pointer used by
;  205     0338  1                                                    ! dbg$type_cmd.
;  206     0339  1          dbg$src_next_lnum,                        ! Contains next line num to
;  207     0340  1                                                    ! typed if no line num is
;  208     0341  1                                                    ! specified in the TYPE
;  209     0342  1                                                    ! command.
;  210     0343  1          dbg$src_next_stmt,                        ! as above with stmt num
;  211     0344  1          DBG$GL_GET_LEX,                           ! Holds name of current get lex routine
;  212     0345  1          DBG$GL_PARTBPTR : VECTOR,                 ! List of parse table addresses
;  213     0346  1          DBG$GL_REDUC_RT,                          ! Name of action routine for a syntax
;  214     0347  1          dbg$gb_def_out : VECTOR [,BYTE],          ! Current OUTPUT configuration
;  215     0348  1          dbg$gw_dfltleng : WORD,                   ! The length specified in a SET TYPE statement.
;  216     0349  1          rst$start_addr: REF rst$entry,            ! Pointer to the module chain (MC).
;  217     0350  1          dbg$gl_asci_len,                          ! Length of ascii string.
;  218     0351  1          dbg$gb_loc_type: BYTE,                    ! TYPE OF LAST LOCATION EXAMINED
;  219     0352  1          dbg$gl_csp_ptr,                           ! pointer to current scope
;  220     0353  1          dbg$gl_last_loc,                          ! CURRENT LOCATION
;  221     0354  1          dbg$gl_last_val;                          ! CURRENT VALUE
;  222     0355  1
;  223     0356  1  ! Link symbol saying whether we are linking a debugger to run on a
;  224     0357  1  ! version 3B system.
;  225     0358  1  !
;  226     0359  1  EXTERNAL LITERAL
;  227     0360  1          dbg$gl_3b_system: WEAK;
```

```
;  229          0361  1 GLOBAL ROUTINE DBG$NCOB_PATHDESC_TO_CS(pathname,name_string) : NOVALUE =
;  230          0362  2     BEGIN
;  231          0363  2     MAP pathname        : REF pth$pathname;
;  232          0364  2
;  233          0365  2     LOCAL
;  234          0366  2         name_vector     : REF VECTOR[,LONG],
;  235          0367  2         name_count,
;  236          0368  2         top_name        : REF VECTOR[,BYTE],
;  237          0369  2         sub_name        : REF VECTOR[,BYTE],
;  238          0370  2         pointer,length;
;  239          0371  2
;  240          0372  2     name_vector = pathname[pth$a_pathvector];
;  241          0373  2     name_vector = name_vector[.pathname[pth$b_pathcnt]];
;  242          0374  2     name_count  = .pathname[pth$b_totcnt] - .pathname[pth$b_pathcnt];
;  243          0375  2     pathname[pth$b_totcnt]   = .pathname[pth$b_pathcnt];
;  244          0376  2     dbg$npathdesc_to_cs(.pathname,top_name);
;  245          0377  2     length = .(.top_name)<0,8,0>;
;  246          0378  2     DECR index FROM .name_count-1 TO 0 DO
;  247          0379  3         BEGIN
;  248          0380  3         sub_name = .name_vector[.index];
;  249          0381  3         IF .(.sub_name)<0,8,0> GTR 0 THEN length=.length+.(.sub_name)<0,8,0>+4;
;  250          0382  2         END;
;  251          0383  2     .name_string = pointer = dbg$get_tempmem((.length/%UPVAL)+1);
;  252          0384  2     ch$wchar_a(.length,pointer);
;  253          0385  2     DECR index FROM .name_count-1 TO 0 DO
;  254          0386  3         BEGIN
;  255          0387  3         sub_name = .name_vector[.index];
;  256          0388  3         IF .(.sub_name)<0,8,0> GTR 0
;  257          0389  3         THEN
;  258          0390  4             BEGIN
;  259          0391  4             ch$move(.(.sub_name)<0,8,0>,sub_name[1],.pointer);
;  260          0392  4             pointer = .pointer + .(.sub_name)<0,8,0>;
;  261          0393  4             ch$move(4,UPLIT BYTE(' of '),.pointer);
;  262          0394  4             pointer = .pointer + 4;
;  263          0395  3             END;
;  264          0396  2         END;
;  265          0397  2     ch$move(.(.top_name)<0,8,0>,top_name[1],.pointer);
;  266          0398  1     END;                    ! end of routine dbg$ncob_pathdesc_to_cs


                                                    .TITLE  DBGLEVEL1
                                                    .IDENT  \V04-000\

                                                    .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                            20  66  6F  20  00000 P.AAA:  .ASCII  \ of \                                    ;

                                                    .EXTRN  DBG$INS_DECODE, DBG$INS_ENCODE
                                                    .EXTRN  DBG$NEWLINE, DBG$POP_TEMPMEM
                                                    .EXTRN  DBG$PUSH_TEMPMEM
                                                    .EXTRN  DBG$STA_GETSOURCEMOD
                                                    .EXTRN  DBG$SRC_TYPE_LNUM_SOURCE
                                                    .EXTRN  DBG$SRC_TYPE_PC_SOURCE
                                                    .EXTRN  DBG$DEF_PR_ENTRY
                                                    .EXTRN  DBG$GET_TEMPMEM
                                                    .EXTRN  DBG$NCIS_ADD, DBG$CANCEL_LOC_VAL
                                                    .EXTRN  DBG$CHECK_PROT, DBG$EVENT_INITIALIZATION
```

```
.EXTRN  DBG$FAO_OUT, DBG$FLUSHBUF
.EXTRN  DBG$GET_MEMORY, DBG$INIT_DEFINE
.EXTRN  DBG$INIT_MEMORY
.EXTRN  DBG$INIT_MODES, DBG$INIT_SEARCH
.EXTRN  DBG$NCANCEL_LOC_AND_VAL
.EXTRN  DBG$NCHANGE_TO_NEW
.EXTRN  DBG$NCIS_REMOVE
.EXTRN  DBG$NGET_TRANS_RADIX
.EXTRN  DBG$PARSER_SET_LANGUAGE
.EXTRN  DBG$PRINT, DBG$PRINT_CONTROL
.EXTRN  DBG$READ_ACCESS
.EXTRN  DBG$REDO_PROT, DBG$REL_MEMORY
.EXTRN  DBG$REL_TEMPMEM
.EXTRN  DBG$RST_TEMP_RELEASE
.EXTRN  DBG$SET_DEFINE_DEF
.EXTRN  DBG$SET_DEFINE_LVL
.EXTRN  DBG$SET_MOD_DEF
.EXTRN  DBG$SET_MOD_LVL
.EXTRN  DBG$SET_OUT_DEF
.EXTRN  DBG$SET_SEARCH_DEF
.EXTRN  DBG$SET_SEARCH_LVL
.EXTRN  DBG$SET_STP_DEF
.EXTRN  DBG$STA_SETCONTEXT
.EXTRN  DBG$STA_SYMNAME
.EXTRN  FOR$CNV_IN_DEFG
.EXTRN  SMG$CREATE_KEY_TABLE
.EXTRN  SMG$CREATE_VIRTUAL_KEYBOARD
.EXTRN  SYS$TRNLOG, DBG$STA_SYMVALUE
.EXTRN  DBG$FREE_MEM_LEFT
.EXTRN  DBG$NMAKE_ARG_VECT
.EXTRN  DBG$NOUT_INFO, FOR$CNV_OUT_I
.EXTRN  DBG$NPATHDESC_TO_CS
.EXTRN  LIB$GET_EF, LIB$FREE_EF
.EXTRN  DBG$GB_SET_BREAK_FLAG
.EXTRN  DBG$GB_RADIX, DBG$GL_CONTEXT
.EXTRN  DBG$GL_DEVELOPER
.EXTRN  DBG$GL_IND_COM_FILE
.EXTRN  DBG$GL_INPFAB, DBG$GL_INPRAB
.EXTRN  DBG$GL_OUTPFAB, DBG$GL_OUTPRAB
.EXTRN  DBG$GL_SYMHEAD, DBG$GL_GLOBAL_DEFINE_PTR
.EXTRN  DBG$GL_LOCAL_DEFINE_PTR
.EXTRN  DBG$GL_LIS_PTR, DBG$GL_KEY_TABLE_ID
.EXTRN  DBG$GL_KEYBOARD_ID
.EXTRN  DBG$GB_KEYPAD_INPUT
.EXTRN  DBG$SRC_TERM_WIDTH
.EXTRN  DBG$GB_EXC_BRE_FLAG
.EXTRN  DBG$GB_GO_ARG_FLAG
.EXTRN  DBG$GL_HELP_INPUT
.EXTRN  DBG$GB_SEARCH_PTR
.EXTRN  DBG$GB_MOD_PTR, DBG$GB_SET_MODULE_FLAG
.EXTRN  DBG$GB_RESIGNAL
.EXTRN  DBG$GB_TAKE_CMD
.EXTRN  DBG$GW_LOCLNGTH
.EXTRN  DBG$GL_DIMENLST
.EXTRN  DBG$GL_NEST_LEVEL
.EXTRN  DBG$GL_NEST_STACK
.EXTRN  DBG$GL_SEARCH_VERB
```

```
                                .EXTRN  DBG$GL_SET_SOURCE
                                .EXTRN  DBG$GL_SET_SOURCE2
                                .EXTRN  DBG$GL_CURRENT_PRIMARY
                                .EXTRN  DBG$GL_LIST, DBG$GL_LOCTYP
                                .EXTRN  DBG$GL_DFLTTYP, DBG$GL_GBLTYP
                                .EXTRN  DBG$GL_STK, DBG$GB_STP_PTR
                                .EXTRN  DBG$GL_STEP_NUM
                                .EXTRN  DBG$PSEUDO_PROG
                                .EXTRN  DBG$GL_LOGFAB, DBG$GL_CISHEAD
                                .EXTRN  DBG$GL_MODRSTPTR2
                                .EXTRN  DBG$GL_MODULE, DBG$GL_DIRLIST
                                .EXTRN  DBG$SRC_LEFT_MARGIN
                                .EXTRN  DBG$SRC_RIGHT_MARGIN
                                .EXTRN  DBG$GV_CONTROL, DBG$GW_GBLLNGTH
                                .EXTRN  DBG$GL_NEXT_LOC
                                .EXTRN  DBG$GB_LANGUAGE
                                .EXTRN  DBG$REG_VALUES, DBG$RUNFRAME
                                .EXTRN  DBG$SRC_NEXT_MODRSTPTR
                                .EXTRN  DBG$SRC_NEXT_LNUM
                                .EXTRN  DBG$SRC_NEXT_STMT
                                .EXTRN  DBG$GL_GET_LEX, DBG$GL_PARTBPTR
                                .EXTRN  DBG$GL_REDOC_RT
                                .EXTRN  DBG$GB_DEF_OUT, DBG$GW_DFLTLENG
                                .EXTRN  RST$START_ADDR, DBG$GL_ASCI_LEN
                                .EXTRN  DBG$GB_LOC_TYPE
                                .EXTRN  DBG$GL_CSP_PTR, DBG$GL_LAST_LOC
                                .EXTRN  DBG$GL_LAST_VAL
                                .WEAK   DBG$GL_3B_SYSTEM

                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                        07FC 00000      .ENTRY  DBG$NCOB_PATHDESC_TO_CS, Save R2,R3,R4,R5,- ; 0361
                                                R6,R7,R8,R9,R10
                     5E         04  C2 00002      SUBL2   #4, SP                          ;
                     51     04  AC  D0 00005      MOVL    PATHNAME, R1                    ; 0372
                     57     08  A1  9E 00009      MOVAB   8(R1), NAME_VECTOR              ;
                     50     01  A1  9A 0000D      MOVZBL  1(R1), R0                       ; 0373
                     57       6740  DE 00011      MOVAL   (NAME_VECTOR)[R0], NAME_VECTOR  ;
                     56         61  9A 00015      MOVZBL  (R1), NAME_COUNT                ; 0374
                     56         50  C2 00018      SUBL2   R0, NAME_COUNT                  ;
                     61         50  90 0001B      MOVB    R0, (R1)                        ; 0375
                            4002 8F  BB 0001E      PUSHR   #^M<R1,SP>                      ; 0376
00000000G            00         02  FB 00022      CALLS   #2, DBG$NPATHDESC_TO_CS         ;
                     5A         6E  D0 00029      MOVL    TOP_NAME, R10                   ; 0377
                     52         6A  9A 0002C      MOVZBL  (R10), LENGTH                   ;
                     50         56  D0 0002F      MOVL    NAME_COUNT, INDEX               ; 0380
                                0E  11 00032      BRB     2$                              ;
                     59       6740  D0 00034 1$:  MOVL    (NAME_VECTOR)[INDEX], SUB_NAME  ;
                     51         69  9A 00038      MOVZBL  (SUB_NAME), R1                  ; 0381
                                05  15 0003B      BLEQ    2$                              ;
                     52     04 A142  9E 0003D      MOVAB   4(R1)[LENGTH], LENGTH           ;
                     EF         50  F4 00042 2$:  SOBGEQ  INDEX, 1$                       ; 0378
50                   52         04  C7 00045      DIVL3   #4, LENGTH, R0                  ; 0383
                     01         A0  9F 00049      PUSHAB  1(R0)                           ;
00000000G            00         01  FB 0004C      CALLS   #1, DBG$GET_TEMPMEM             ;
                     58         50  D0 00053      MOVL    R0, POINTER                     ;
                   08   BC       58  D0 00056      MOVL    POINTER, @NAME_STRING           ;
```

```
                                88              52  90 0005A          MOVB    LENGTH, (POINTER)+                      ; 0384
                                                1D  11 0005D          BRB     4$                                      ; 0385
                                59            6746  D0 0005F 3$:      MOVL    (NAME_VECTOR)[INDEX], SUB_NAME          ; 0387
                                               69  95 00063          TSTB    (SUB_NAME)                              ; 0388
                                               15  13 00065          BEQL    4$                                      ;
                                50             69  9A 00067          MOVZBL  (SUB_NAME), R0                          ; 0391
                    68      01  A9             50  28 0006A          MOVC3   R0, @(SUB_NAME), (POINTER)              ;
                                50             69  9A 0006F          MOVZBL  (SUB_NAME), R0                          ; 0392
                                58             50  C0 00072          ADDL2   R0, POINTER                             ;
                                88 00000000'   EF  D0 00075          MOVL    P.AAA, (POINTER)+                       ; 0393
                                E0             56  F4 0007C 4$:      SOBGEQ  INDEX, 3$                               ; 0385
                                50             6A  9A 0007F          MOVZBL  (R10), R0                               ; 0397
                    68      01  AA             50  28 00082          MOVC3   R0, 1(R10), (POINTER)                   ;
                                                   04 00087          RET                                             ; 0398

; Routine Size:  136 bytes,    Routine Base:  DBG$CODE + 0000
```

```
;  268          0399  1 GLOBAL ROUTINE DBG$END_OF_CMD : NOVALUE =
;  269          0400  1 !++
;  270          0401  1 ! FUNCTIONAL DESCRIPTION:
;  271          0402  1 !       Resets all DEBUG context that is exclusive to a single
;  272          0403  1 !       DEBUG command. This includes resetting default
;  273          0404  1 !       modes from single line overrides back to the actual default
;  274          0405  1 !       modes and resetting a large number of context bits.
;  275          0406  1 !
;  276          0407  1 !       This routine also releases all temporary memory allocated in the
;  277          0408  1 !       course of processing the command, and it releases all unreferenced
;  278          0409  1 !       RST entries on the Temporary RST Entry List.
;  279          0410  1 !
;  280          0411  1 ! FORMAL PARAMETERS:
;  28.          0412  1 !       none
;  282          0413  1 !
;  283          0414  1 ! IMPLICIT INPUTS:
;  284          0415  1 !       none
;  285          0416  1 !
;  286          0417  1 ! IMPLICIT OUTPUTS:
;  287          0418  1 !       The default modes, step-modes, and context bits are established.
;  288          0419  1 !       Some global storage is re-initialized and all excess storage is released.
;  289          0420  1 !
;  290          0421  1 ! ROUTINE VALUE:
;  291          0422  1 !       novalue
;  292          0423  1 !
;  293          0424  1 ! SIDE EFFECTS:
;  294          0425  1 !       none
;  295          0426  1 !--
;  296          0427  1
;  297          0428  2     BEGIN
;  298          0429  2
;  299          0430  2         !+
;  300          0431  2         ! Set the exit flag to true so that if an error occurs during
;  301          0432  2         ! the processing of this routine, that error is perceived
;  302          0433  2         ! as fatal. This routine guarantees the internal consistency
;  303          0434  2         ! of DEBUG, and must succeed or give up.
;  304          0435  2         !-
;  305          0436  2         dbg$gv_control[dbg$v_control_exit] = TRUE;
;  306          0437  2
;  307          0438  2         ! Clear the ALLOCATE flag. This is set during SET MODULE/ALLOCATE
;  308          0439  2         ! to allow the allocation of additional memory.
;  309          0440  2         !
;  310          0441  2         dbg$gv_control[dbg$v_control_allocate] = FALSE;
;  311          0442  2
;  312          0443  2         ! Reset the Print control for DBG$PRINT.  And flush out the print
;  313          0444  2         ! buffer.
;  314          0445  2         !
;  315          0446  2         DBG$PRINT_CONTROL(DBG$K_PRT_RESET);
;  316          0447  2         DBG$FLUSHBUF();
;  317          0448  2
;  318          0449  2         ! Reset mode level to user default level
;  319          0450  2         !
;  320          0451  2         dbg$init_modes (override_mode, user_def_mode);
;  321          0452  2         dbg$set_mod_lvl (user_def_mode);
;  322          0453  2
;  323          0454  2         ! Reset search settings back to user default level
;  324          0455  2         !
```

```
;  325     0456  2          dbg$init_search (override_search, user_def_search);
;  326     0457  2          dbg$set_search_lvl (user_def_search);
;  327     0458  2
;  328     0459  2          ! Reset define settings back to user default level
;  329     0460  2          !
;  330     0461  2          dbg$init_define (override_define, user_def_define);
;  331     0462  2          dbg$set_define_lvl (user_def_define);
;  332     0463  2
;  333     0464  2          dbg$set_context ();
;  334     0465  2
;  335     0466  2          DBG$REL_TEMPMEM();
;  336     0467  2          DBG$RST_TEMP_RELEASE();
;  337     0468  2          dbg$gl_list [0] = 0;            ! Zero out the locations that hold breakpoint setting data.
;  338     0469  2          dbg$gl_list [1] = 0;
;  339     0470  2          dbg$gl_list [2] = 0;
;  340     0471  2          dbg$gl_lis_ptr  = 0;            ! Zero current ptr to command arg list
;  341     0472  2          dbg$gl_asci_len = .dbg$gb_mod_ptr[mode_length]; ! Initialize ascii length
;  342     0473  2          dbg$gl_loctyp = -1;             ! Zero command override type.
;  343     0474  2          dbg$gw_loclngth= 0;             ! And its associated length.
;  344     0475  2
;  345     0476  2          dbg$gl_module = 0;              ! Zero out global used to hold
;  346     0477  2                                          ! module pointer during
;  347     0478  2                                          ! SET SOURCE/MODULE= command.
;  348     0479  2          dbg$gl_modrstptr2 = 0;          ! Zero out global used to hold
;  349     0480  2                                          ! module pointer during
;  350     0481  2                                          ! TYPE command.
;  351     0482  2          dbg$gl_set_source = 0;
;  352     0483  2          dbg$gl_set_source2 = 0;
;  353     0484  2          dbg$gl_current_primary = 0;     ! Clear the current primary cause there isn't one anymore
;  354     0485  2          dbg$gb_set_module_flag = FALSE; ! This flag is TRUE during a SET MODULE
;  355     0486  2                                          !    command.
;  356     0487  2          zerocor (dbg$gl_dimenlst, 10);  ! Zero storage to hold array dimensions.
;  357     0488  2          zerocor (dbg$gl_nest_stack, 25);! Zero storage to hold array dimensions
;  358     0489  2                                          !    during nested subscript evaluation
;  359     0490  2          dbg$gl_nest_level = 0;          ! Nesting level of subscript expressions
;  360     0491  2                                          !    set back to zero.
;  361     0492  2          dbg$gb_set_break_flag = FALSE;  ! Initialize a flag saying whether we
;  362     0493  2                                          ! are in the middle of processing a
;  363     0494  2                                          ! SET BREAK command. This is used in
;  364     0495  2                                          ! DBGPARSER to resolve ambiguities
;  365     0496  2                                          ! involving SET BREAK . DO (command).
;  366     0497  2                                          ! This flag gets set to TRUE in DBGEVENT
;  367     0498  2                                          ! when we discover we are indeed
;  368     0499  2                                          ! processing a SET BREAK command.
;  369     0500  2
;  370     0501  2          dbg$sta_setcontext (0);         ! Set default register context
;  371     0502  2
;  372     0503  2                                          ! Now cancel exit flag since all went well.
;  373     0504  2          dbg$gv_control[dbg$v_control_exit] = FALSE;
;  374     0505  1      END;


                         007C 00000          .ENTRY  DBG$END_OF_CMD, Save R2,R3,R4,R5,R6          ; 0399
      56 00000000G   00  9E 00002          MOVAB   DBG$GV_CONTROL, R6                           ;
```

```
                 66          10  88 00009         BISB2   #16, DBG$GV_CONTROL                     ; 0436
                 66    80    8F  8A 0000C         BICB2   #128, DBG$GV_CONTROL                    ; 0441
                             05  DD 00010         PUSHL   #5                                      ; 0446
00000000G  00                01  FB 00012         CALLS   #1, DBG$PRINT_CONTROL
00000000G  00                00  FB 00019         CALLS   #0, DBG$FLUSHBUF                        ; 0447
                             01  DD 00020         PUSHL   #1                                      ; 0451
                             02  DD 00022         PUSHL   #2
00000000G  00                02  FB 00024         CALLS   #2, DBG$INIT_MODES
                             01  DD 0002B         PUSHL   #1                                      ; 0452
00000000G  00                01  FB 0002D         CALLS   #1, DBG$SET_MOD_LVL
                             01  DD 00034         PUSHL   #1                                      ; 0456
                             02  DD 00036         PUSHL   #2
00000000G  00                02  FB 00038         CALLS   #2, DBG$INIT_SEARCH
                             01  DD 0003F         PUSHL   #1                                      ; 0457
00000000G  00                01  FB 00041         CALLS   #1, DBG$SET_SEARCH_LVL
                             01  DD 00048         PUSHL   #1                                      ; 0461
                             02  DD 0004A         PUSHL   #2
00000000G  00                02  FB 0004C         CALLS   #2, DBG$INIT_DEFINE
                             01  DD 00053         PUSHL   #1                                      ; 0462
00000000G  00                01  FB 00055         CALLS   #1, DBG$SET_DEFINE_LVL
    0000V  CF                00  FB 0005C         CALLS   #0, DBG$SET_CONTEXT                     ; 0464
00000000G  00                00  FB 00061         CALLS   #0, DBG$REL_TEMPMEM                     ; 0466
00000000G  00                00  FB 00068         CALLS   #0, DBG$RST_TEMP_RELEASE                ; 0467
             00000000G       00  7C 0006F         CLRQ    DBG$GL_LIST                             ; 0468
             00000000G       00  D4 00075         CLRL    DBG$GL_LIST+8                           ; 0470
             00000000G       00  D4 0007B         CLRL    DBG$GL_LIS_PTR                          ; 0471
                 50  00000000G  00  D0 00081         MOVL    DBG$GB_MOD_PTR, R0                      ; 0472
00000000G  00          01        A0  9A 00088         MOVZBL  1(R0), DBG$GL_ASCI_LEN
00000000G  00                    01  CE 00090         MNEGL   #1, DBG$GL_LOCTYP                       ; 0473
             00000000G       00  B4 00097         CLRW    DBG$GW_LOCLNGTH                         ; 0474
             00000000G       00  D4 0009D         CLRL    DBG$GL_MODULE                           ; 0476
             00000000G       00  D4 000A3         CLRL    DBG$GL_MODRSTPTR2                       ; 0479
             00000000G       00  D4 000A9         CLRL    DBG$GL_SET_SOURCE                       ; 0482
             00000000G       00  D4 000AF         CLRL    DBG$GL_SET_SOURCE2                      ; 0483
             00000000G       00  D4 000B5         CLRL    DBG$GL_CURRENT_PRIMARY                  ; 0484
             00000000G       00  94 000BB         CLRB    DBG$GB_SET_MODULE_FLAG                  ; 0485
         28                  00      6E           00  2C 000C1         MOVC5   #0, (SP), #0, #40, DBG$GL_DIMENLST      ; 0487
                                         00000000G  00     000C6
     0064  8F                00      6E           00  2C 000CB         MOVC5   #0, (SP), #0, #100, DBG$GL_NEST_STACK   ; 0488
                                         00000000G  00     000D2
                                         00000000G  00  D4 000D7         CLRL    DBG$GL_NEST_LEVEL                       ; 0490
                                         00000000G  00  94 000DD         CLRB    DBG$GB_SET_BREAK_FLAG                   ; 0492
                                                    7E  D4 000E3         CLRL    -(SP)                                   ; 0501
                             00000000G  00          01  FB 000E5         CALLS   #1, DBG$STA_SETCONTEXT
                                        66          10  8A 000EC         BICB2   #16, DBG$GV_CONTROL                     ; 0504
                                                    04  000EF         RET                                             ; 0505

; Routine Size:  240 bytes,    Routine Base:  DBG$CODE + 0088
```

```
;  376          0506  1 GLOBAL ROUTINE dbg$end_of_line : NOVALUE =
;  377          0507  1 !++
;  378          0508  1 ! FUNCTIONAL DESCRIPTION:
;  379          0509  1 !       Calls dbg$end_of_cmd to reset all single command context.
;  380          0510  1 !       Then frees the storage that was allocated to hold the command
;  381          0511  1 !       line. The top link of the command input stream is removed, but
;  382          0512  1 !       only if it is of type "buffer".
;  383          0513  1 !
;  384          0514  1 ! FORMAL PARAMETERS:
;  385          0515  1 !       none
;  386          0516  1 !
;  387          0517  1 ! IMPLICIT INPUTS:
;  388          0518  1 !       The head of the command argument list.
;  389          0519  1 !
;  390          0520  1 ! IMPLICIT OUTPUTS:
;  391          0521  1 !       none
;  392          0522  1 !
;  393          0523  1 ! ROUTINE VALUE:
;  394          0524  1 !       none
;  395          0525  1 !
;  396          0526  1 ! SIDE EFFECTS:
;  397          0527  1 !       Defaults are reestablished. Storage for input line is freed.
;  398          0528  1 !       A link may be removed from the command argument list.
;  399          0529  1 !--
;  400          0530  2     BEGIN
;  401          0531  2     LOCAL
;  402          0532  2         type;
;  403          0533  2
;  404          0534  2         dbg$end_of_cmd ();              ! Perform end of command cleanup
;  405          0535  2         dbg$gv_control[dbg$v_control_exit] = TRUE;      ! Set the exit flag to return to CLI on errors
;  406          0536  2
;  407          0537  2         ! We only want to remove the top link of the cis if that link is a
;  408          0538  2         ! buffer of some flavor. If the top link is of type cis_rab, it has
;  409          0539  2         ! just been put there by an @... command and not yet read from.
;  410          0540  2
;  411          0541  2         type = .dbg$gl_cishead [cis$b_input_type];
;  412          0542  2         IF .type EQL cis_inpbuf
;  413          0543  2         OR .type EQL cis_acbuf
;  414          0544  2         OR .type EQL cis_while
;  415          0545  2         OR .type EQL cis_repeat
;  416          0546  2         OR .type EQL cis_if
;  417          0547  2         THEN
;  418          0548  2                 dbg$cis_remove();
;  419          0549  2
;  420          0550  2         dbg$gv_control[dbg$v_control_exit] = FALSE;     ! Reset exit flag.
;  421          0551  2
;  422          0552  1     END;


                                0004 00000          .ENTRY  DBG$END_OF_LINE, Save R2                        ; 0506
        52 00000000G    00    9E 00002          MOVAB   DBG$GV_CONTROL, R2                              ;
FF02    CF              00    FB 00009          CALLS   #0, DBG$END_OF_CMD                              ; 0534
        62              10    88 0000E          BISB2   #16, DBG$GV_CONTROL                             ; 0535
        50 00000000G    00    D0 00011          MOVL    DBG$GL_CISHEAD, R0                              ; 0541
```

```
                    50       02    A0  9A 00018          MOVZBL  2(R0), TYPE                                    ;
                    02             50  D1 0001C          CMPL    TYPE, #2                                      ; 0542
                                   14  13 0001F          BEQL    1$                                            ;
                    03             50  D1 00021          CMPL    TYPE, #3                                      ; 0543
                                   0F  13 00024          BEQL    1$                                            ;
                    05             50  D1 00026          CMPL    TYPE, #5                                      ; 0544
                                   0A  13 00029          BEQL    1$                                            ;
                    04             50  D1 0002B          CMPL    TYPE, #4                                      ; 0545
                                   05  13 0002E          BEQL    1$                                            ;
                    06             50  D1 00030          CMPL    TYPE, #6                                      ; 0546
                                   05  12 00033          BNEQ    2$                                            ;
                0000V  CF          00  FB 00035 1$:      CALLS   #0, DBG$CIS_REMOVE                            ; 0548
                    62             10  8A 0003A 2$:      BICB2   #16, DBG$GV_CONTROL                           ; 0550
                                       04 0003D          RET                                                   ; 0552

; Routine Size:  62 bytes,    Routine Base:  DBG$CODE + 0178

;  423          0553  1
```

```
;  425          0554  1 GLOBAL ROUTINE dbg$write_mem (dest_address, src_address, length) =
;  426          0555  1 !++
;  427          0556  1 ! FUNCTIONAL DESCRIPTION:
;  428          0557  1 !       Writes a sequence of values (bytes) to memory in
;  429          0558  1 !       the user program.  The destination, source, and
;  430          0559  1 !       number of bytes to write are all passed as parameters.
;  431          0560  1 !
;  432          0561  1 !       THE PROTECTION OF THE FIRST BYTE TO BE WRITTEN AND THE LAST
;  433          0562  1 !       BYTE TO BE WRITTEN ARE BOTH CHECKED. THE STATUS OF BOTH PAGES
;  434          0563  1 !       (THEY MAY BE THE SAME PAGE) IS SAVED. THEN THE VALUE IS WRITTEN
;  435          0564  1 !       TO THE ADDRESS (THE PAGE PROTECTION IS CHANGED DURING THE
;  436          0565  1 !       CHECKING OPERATION).
;  437          0566  1 !
;  438          0567  1 !       THEN, IF THE PROTECTION WAS CHANGED IN EITHER CASE, THE
;  439          0568  1 !       PROTECTION IS REESTABLISHED. IF EVERYTHING WAS SUCCESSFUL,
;  440          0569  1 !       THE ROUTINE RETURNS TRUE. OTHERWISE, IT RETURNS FALSE.
;  441          0570  1 !
;  442          0571  1 ! Formal Parameters:
;  443          0572  1 !       dest_address    - THE ADDRESS OF THE LOCATION TO BE CHANGED
;  444          0573  1 !       src_address     - The address of where the bytes are stored.
;  445          0574  1 !       length          - The number of bytes to be written.
;  446          0575  1 !
;  447          0576  1 ! IMPLICIT INPUTS:
;  448          0577  1 !       None.
;  449          0578  1 !
;  450          0579  1 ! IMPLICIT OUTPUTS:
;  451          0580  1 !       THE PAGE PROTECTION MAY BE MOMENTARILY ALTERED, THEN REINSTALLED.
;  452          0581  1 !
;  453          0582  1 ! ROUTINE VALUE:
;  454          0583  1 !       TRUE OR FALSE
;  455          0584  1 !
;  456          0585  1 ! SIDE EFFECTS:
;  457          0586  1 !       THE VALUE IS WRITTEN TO MEMORY
;  458          0587  1 !--
;  459          0588  2         BEGIN
;  460          0589  2
;  461          0590  2         MAP
;  462          0591  2                 dest_address    : REF VECTOR[,BYTE],
;  463          0592  2                 src_address     : REF VECTOR[,BYTE];
;  464          0593  2
;  465          0594  2         LOCAL
;  466          0595  2                 prot_status_1,
;  467          0596  2                 protection_1: BYTE,
;  468          0597  2                 prot_status_2,
;  469          0598  2                 protection_2: BYTE;
;  470          0599  2
;  471          0600  3         IF ((prot_status_1 = dbg$check_prot (.dest_address, protection_1)) NEQ 0)
;  472          0601  3                 AND ((prot_status_2 = dbg$check_prot (.dest_address + .length - 1, protection_2)) NEQ 0)
;  473          0602  2         THEN
;  474          0603  3                 BEGIN
;  475          0604  3
;  476          0605  3                 !++
;  477          0606  3                 ! PROTECTION HAS EITHER BEEN ALTERED SUCCESSFULLY, OR IT
;  478          0607  3                 ! DID NOT NEED TO BE ALTERED. NOW WRITE THE VALUE INTO THE
;  479          0608  3                 ! ADDRESS.
;  480          0609  3                 !--
;  481          0610  3
```

```
;  482          0611  3              CH$MOVE (.length, src_address [0], dest_address [0]);
;  483          0612  3
;  484          0613  3              !++
;  485          0614  3              ! IF EITHER OF THE PROTECTION STATUSES SAY RESET THE PROTECTION
;  486          0615  3              ! (TO READ ONLY), THEN RESET THE PROTECTION ON THAT PAGE.
;  487          0616  3              !--
;  488          0617  3
;  489          0618  3              IF .prot_status_1 EQL dbg$k_reset_prt
;  490          0619  3              THEN
;  491          0620  4                      BEGIN
;  492          0621  4                      dbg$redo_prot (.dest_address, protection_1);
;  493          0622  3                      END;
;  494          0623  3
;  495          0624  3              IF .prot_status_2 EQL dbg$k_reset_prt
;  496          0625  3              THEN
;  497          0626  4                      BEGIN
;  498          0627  4                      dbg$redo_prot (.dest_address + .length - 1, protection_2);
;  499          0628  3                      END;
;  500          0629  3
;  501          0630  3              RETURN TRUE                     ! User program updated correctly
;  502          0631  3              END
;  503          0632  2          ELSE
;  504          0633  2              RETURN FALSE
;  505          0634  2
;  506          0635  1          END;


                                07FC 00000          .ENTRY  DBG$WRITE_MEM, Save R2,R3,R4,R5,R6,R7,R8,-      ; 0554
                                                            R9,R10
                      5A 00000000G  00  9E 00002    MOVAB   DBG$CHECK_PROT, R10                             ;
                      59 00000000G  00  9E 00009    MOVAB   DBG$REDO_PROT, R9                               ;
                      5E            08  C2 00010    SUBL2   #8, SP                                          ;
                                    5E  DD 00013    PUSHL   SP                                              ; 0600
                      56        04  AC  D0 00015    MOVL    DEST_ADDRESS, R6                                ;
                                    56  DD 00019    PUSHL   R6                                              ;
                      6A            02  FB 0001B    CALLS   #2, DBG$CHECK_PROT                              ;
                      58            50  D0 0001E    MOVL    R0, PROT_STATUS_1                               ;
                                    3C  13 00021    BEQL    3$                                              ;
                                04  AE  9F 00023    PUSHAB  PROTECTION_2                                    ; 0601
50                      56        0C  AC  C1 00026    ADDL3   LENGTH, R6, R0                              ;
                                FF  A0  9F 0002B    PUSHAB  -1(R0)                                          ;
                      6A            02  FB 0002E    CALLS   #2, DBG$CHECK_PROT                              ;
                      57            50  D0 00031    MOVL    R0, PROT_STATUS_2                               ;
                                    29  13 00034    BEQL    3$                                              ;
66          08        BC        0C  AC  28 00036    MOVC3   LENGTH, @SRC_ADDRESS, (R6)                      ; 0611
                      02            58  D1 0003C    CMPL    PROT_STATUS_1, #2                               ; 0618
                                    07  12 0003F    BNEQ    1$                                              ;
                            4040    8F  BB 00041    PUSHR   #^M<R6,SP>                                      ; 0621
                      69            02  FB 00045    CALLS   #2, DBG$REDO_PROT                               ;
                      02            57  D1 00048 1$:    CMPL    PROT_STATUS_2, #2                           ; 0624
                                    0E  12 0004B    BNEQ    2$                                              ;
                                04  AE  9F 0004D    PUSHAB  PROTECTION_2                                    ; 0627
50                      56        0C  AC  C1 00050    ADDL3   LENGTH, R6, R0                              ;
                                FF  A0  9F 00055    PUSHAB  -1(R0)                                          ;
```

```
                69              02  FB 00058          CALLS   #2, DBG$REDO_PROT                ;
                50              01  D0 0005B 2$:      MOVL    #1, R0                          ; 0633
                                04  0005E             RET                                     ;
                                50  D4 0005F 3$:      CLRL    R0                              ;
                                04  00061             RET                                     ; 0635

; Routine Size:  98 bytes,    Routine Base:  DBG$CODE + 01B6
```

```
;  508          0636  1 GLOBAL ROUTINE dbg$set_context : NOVALUE =
;  509          0637  1
;  510          0638  1 !++
;  511          0639  1 ! FUNCTIONAL DESCRIPTION:
;  512          0640  1 !       initializes context bits that are necessary for command
;  513          0641  1 !       processing. These bits are valid only during the processing
;  514          0642  1 !       of a single command. They are all reset after each command.
;  515          0643  1 !
;  516          0644  1 ! CALLING SEQUENCE:
;  517          0645  1 !       dbg$set_context ()
;  518          0646  1 !
;  519          0647  1 ! INPUTS:
;  520          0648  1 !       none
;  521          0649  1 !
;  522          0650  1 ! IMPLICIT INPUTS:
;  523          0651  1 !       the names of the context bits that are to be turned off
;  524          0652  1 !
;  525          0653  1 ! OUTPUTS:
;  526          0654  1 !       none
;  527          0655  1 !
;  528          0656  1 ! IMPLICIT OUTPUTS:
;  529          0657  1 !       none
;  530          0658  1 !
;  531          0659  1 ! ROUTINE VALUE:
;  532          0660  1 !       novalue
;  533          0661  1 !
;  534          0662  1 ! SIDE EFFECTS:
;  535          0663  1 !       the context bits are set to false
;  536          0664  1 !--
;  537          0665  1
;  538          0666  2         BEGIN
;  539          0667  2         dbg$gl_context [dbg$k_all]       = FALSE;
;  540          0668  2         dbg$gl_context [dbg$k_all_break] = FALSE;
;  541          0669  2         dbg$gl_context [dbg$k_all_trace] = FALSE;
;  542          0670  2         dbg$gl_context [dbg$k_all_watch] = FALSE;
;  543          0671  2         dbg$gl_context [dbg$k_break]     = FALSE;
;  544          0672  2         dbg$gl_context [dbg$k_cancel]    = FALSE;
;  545          0673  2         dbg$gl_context [dbg$k_examine]   = FALSE;
;  546          0674  2         dbg$gl_context [dbg$k_language]  = FALSE;
;  547          0675  2         dbg$gl_context [dbg$k_mode]      = FALSE;
;  548          0676  2         dbg$gl_context [dbg$k_module]    = FALSE;
;  549          0677  2         dbg$gl_context [dbg$k_override]  = FALSE;
;  550          0678  2         dbg$gl_context [dbg$k_resignal]  = FALSE;
;  551          0679  2         dbg$gl_context [dbg$k_scope]     = FALSE;
;  552          0680  2         dbg$gl_context [dbg$k_search]    = FALSE;
;  553          0681  2         dbg$gl_context [dbg$k_set_break] = FALSE;
;  554          0682  2         dbg$gl_context [dbg$k_step]      = FALSE;
;  555          0683  2         dbg$gl_context [dbg$k_trce_call] = FALSE;
;  556          0684  2         dbg$gl_context [dbg$k_trace]     = FALSE;
;  557          0685  2         dbg$gl_context [dbg$k_traceback] = FALSE;
;  558          0686  2         dbg$gl_context [dbg$k_watch]     = FALSE;
;  559          0687  2         dbg$gl_context [dbg$k_trce_brch] = FALSE;
;  560          0688  2         dbg$gl_context [dbg$k_thread]    = FALSE;
;  561          0689  2         dbg$gl_context [dbg$k_output]    = FALSE;
;  562          0690  2         dbg$gl_context [dbg$k_log]       = FALSE;
;  563          0691  2         dbg$gl_context [dbg$k_source]    = FALSE;
;  564          0692  2         dbg$gl_context [dbg$k_margins]   = FALSE;
```

```
;  565          0693  2        dbg$gl_context [dbg$k_maxfiles]  = FALSE;
;  566          0694  1        END;


                                        0000 00000        .ENTRY  DBG$SET_CONTEXT, Save nothing                   ; 0636
00000000G  00          1B          00    00  F0 00002        INSV    #0, #0, #27, DBG$GL_CONTEXT                     ; 0693
                                        04 0000B        RET                                                     ; 0694

; Routine Size:  12 bytes,    Routine Base:  DBG$CODE + 0218
```

```
;  568          0695  1 GLOBAL ROUTINE DBG$INIT_DEBUG: NOVALUE =
;  569          0696  1 !
;  570          0697  1 ! FUNCTION
;  571          0698  1 !       This routine drives the DEBUG initialization when DEBUG first comes up.
;  572          0699  1 !
;  573          0700  1 ! INPUTS
;  574          0701  1 !       NONE
;  575          0702  1 !
;  576          0703  1 ! OUTPUTS
;  577          0704  1 !       NONE
;  578          0705  1 !
;  579          0706  1
;  580          0707  2     BEGIN
;  581          0708  2
;  582          0709  2     BIND
;  583          0710  2         DBG_INPUT_DEVICE        = UPLIT BYTE (%ASCII 'DBG$INPUT'),
;  584          0711  2         DBG_INP_DEV_SIZE        = %CHARCOUNT (%ASCII 'DBG$INPUT'),
;  585          0712  2         DBG_OUTPUT_DEVICE       = UPLIT BYTE (%ASCII 'DBG$OUTPUT'),
;  586          0713  2         DBG_OUT_DEV_SIZE        = %CHARCOUNT (%ASCII 'DBG$OUTPUT'),
;  587          0714  2
;  588          0715  2         SYS_INPUT_DEVICE        = UPLIT BYTE (%ASCII 'SYS$INPUT'),
;  589          0716  2         SYS_INP_DEV_SIZE        = %CHARCOUNT (%ASCII 'SYS$INPUT'),
;  590          0717  2         SYS_OUTPUT_DEVICE       = UPLIT BYTE (%ASCII 'SYS$OUTPUT'),
;  591          0718  2         SYS_OUT_DEV_SIZE        = %CHARCOUNT (%ASCII 'SYS$OUTPUT');
;  592          0719  2
;  593          0720  2     LOCAL
;  594          0721  2         DEF_RADIX,                          ! Default radix
;  595          0722  2         DEVCHAR: REF BLOCK[,BYTE],          ! Device characteristics field
;  596          0723  2         DUMMY: VECTOR[2],                   ! Output area for $TRNLOG
;  597          0724  2         DUMMY_BUFFER: VECTOR[256,BYTE],     ! ""
;  598          0725  2         EVNT_FLAG,
;  599          0726  2         FILESPEC: DBG$STG_DESC,             ! String descriptor
;  600          0727  2         HEADER: REF DEFINE$HEADER,          ! Header block for define
;  601          0728  2                                             !     symbol table.
;  602          0729  2         ITEM: BLOCK[6, LONG],               ! Item list for $GETSYI
;  603          0730  2         LEN,
;  604          0731  2         OPEN_STATUS,                        ! Save the failing status from $OPEN
;  605          0732  2                                             !     DBG$INPUT
;  606          0733  2         OUTPUT_STATUS,                      ! Save the failing status from $CREATE
;  607          0734  2                                             !     DBG$OUTPUT
;  608          0735  2         SDBGINIT_STGDESC: BLOCK[8,BYTE],    ! String descriptor
;  609          0736  2         SDBGINIT_STG: VECTOR [9, BYTE],     ! String in string descriptor
;  610          0737  2         STATUS,
;  611          0738  2         STATUS1,
;  612          0739  2         VERSION_BUFFER: VECTOR[8, BYTE];
;  613          0740  2
;  614          0741  2
;  615          0742  2
;  616          0743  2     ! Initialize an area of free storage.  This must be done first since many
;  617          0744  2     ! of the things below will call the memory allocation routines.
;  618          0745  2     !
;  619          0746  2     DBG$INIT_MEMORY();
;  620          0747  2
;  621          0748  2
;  622          0749  2     ! Initialize the bit that says whether we are on a V4 system.
;  623          0750  2     ! We call the system service $GETSYI to find out this information.
;  624          0751  2     !
```

```
;  625          0752  2      ! Note - the code to call GETSYI is commented out because this
;  626          0753  2      ! turned out to be unreliable (could get back a variety of things,
;  627          0754  2      ! such as "V3.5"  "X3.5", "X29T", "X4.0", "V4.0"). We are instead
;  628          0755  2      ! just using a link-time symbol (see below).
;  629          0756  2      !
;  630          0757  2      ! ITEM[0,0,16,0] = 8;
;  631          0758  2      ! ITEM[0,16,16,0] = SYI$_VERSION;
;  632          0759  2      ! ITEM[1,0,32,0] = VERSION_BUFFER;
;  633          0760  2      ! ITEM[2,0,32,0] = LEN;
;  634          0761  2      ! CH$FILL(0, 12, ITEM[3, A_]);
;  635          0762  2      ! STATUS = LIB$GET_EF(EVNT_FLAG);
;  636          0763  2      ! IF NOT .STATUS THEN EVNT_FLAG = 0;
;  637          0764  2      ! STATUS = $GETSYI(EFN=.EVNT_FLAG, ITMLST=ITEM);
;  638          0765  2      ! IF .STATUS
;  639          0766  2      ! THEN
;  640          0767  2      !
;  641          0768  2      !     Version 3 systems will return "V3.x" in VERSION_BUFFER.
;  642          0769  2      !
;  643          0770  2      !     DBG$GV_CONTROL[DBG$V_CONTROL_VERSION_4] = NOT
;  644          0771  2      !         ((.VERSION_BUFFER[0] EQL 'V') AND (.VERSION_BUFFER[1] EQL '3'))
;  645          0772  2      !
;  646          0773  2      ! ELSE
;  647          0774  2      !
;  648          0775  2      !     $GETSYI failed. Make a guess that we are a 3B system.
;  649          0776  2      !
;  650          0777  2      !     DBG$GV_CONTROL[DBG$V_CONTROL_VERSION_4] = 1;
;  651          0778  2      !
;  652          0779  2      ! LIB$FREE_EF(EVNT_FLAG);
;  653          0780  2      !
;  654          0781  2      !
;  655          0782  2      ! Initialize the bit that says whether we are on a 3B system.
;  656          0783  2      ! We rely on a link-time symbol DBG$GL_3B_SYSTEM.
;  657          0784  2      !
;  658          0785  2      DBG$GV_CONTROL[DBG$V_CONTROL_VERSION_4] = DBG$GL_3B_SYSTEM;
;  659          0786  2      !
;  660          0787  2      !
;  661          0788  2      ! Initialize the global which says whether we are trying to do
;  662          0789  2      ! keypad input.
;  663          0790  2      !
;  664          0791  2      DBG$GB_KEYPAD_INPUT = .DBG$GV_CONTROL[DBG$V_CONTROL_VERSION_4];
;  665          0792  2      !
;  666          0793  2      !
;  667          0794  2      ! Open the input device for reading.  If the OPENs and CONNECTs cannot be
;  668          0795  2      ! done successfully for logical devices 'DBG$INPUT' and 'DBG$OUTPUT', then
;  669          0796  2      ! try 'SYS$INPUT' and 'SYS$OUTPUT'.  If these fail, signal an error.  This
;  670          0797  2      ! causes a return to the command line interpreter in the operating system.
;  671          0798  2      !
;  672          0799  2      DBG$GL_INPFAB [FAB$L_FNA] = DBG_INPUT_DEVICE;
;  673          0800  2      DBG$GL_INPFAB [FAB$B_FNS] = DBG_INP_DEV_SIZE;
;  674          0801  2      OPEN_STATUS = $OPEN (FAB = DBG$GL_INPFAB);
;  675          0802  2      IF NOT .OPEN_STATUS
;  676          0803  2      THEN
;  677          0804  3          BEGIN
;  678          0805  3          DBG$GL_INPFAB [FAB$L_FNA] = SYS_INPUT_DEVICE;
;  679          0806  3          DBG$GL_INPFAB [FAB$B_FNS] = SYS_INP_DEV_SIZE;
;  680          0807  3          STATUS = $OPEN (FAB = DBG$GL_INPFAB);
;  681          0808  3          IF NOT .STATUS THEN $EXIT(CODE = .STATUS OR FATAL_BIT);
```

```
;  682          0809  2          END;
;  683          0810  2
;  684          0811  2
;  685          0812  2      ! Connect the input file.
;  686          0813  2      !
;  687          0814  2      DBG$GL_INPRAB[RAB$L_FAB] = DBG$GL_INPFAB;
;  688          0815  2      STATUS = $CONNECT(RAB = DBG$GL_INPRAB);
;  689          0816  2      IF NOT .STATUS THEN $EXIT(CODE = .STATUS OR FATAL_BIT);
;  690          0817  2
;  691          0818  2
;  692          0819  2      ! CREATE and OPEN the output file.
;  693          0820  2      !
;  694          0821  2      DBG$GL_OUTPFAB [FAB$L_FNA] = DBG_OUTPUT_DEVICE;
;  695          0822  2      DBG$GL_OUTPFAB [FAB$B_FNS] = DBG_OUT_DEV_SIZE;
;  696          0823  2      OUTPUT_STATUS = $CREATE (FAB = DBG$GL_OUTPFAB);
;  697          0824  2      IF NOT .OUTPUT_STATUS
;  698          0825  2      THEN
;  699          0826  3          BEGIN
;  700          0827  3          DBG$GL_OUTPFAB [FAB$L_FNA] = SYS_OUTPUT_DEVICE;
;  701          0828  3          DBG$GL_OUTPFAB [FAB$B_FNS] = SYS_OUT_DEV_SIZE;
;  702          0829  3          STATUS = $CREATE (FAB = DBG$GL_OUTPFAB);
;  703          0830  3          IF NOT .STATUS THEN $EXIT(CODE = .STATUS OR FATAL_BIT);
;  704          0831  2          END;
;  705          0832  2
;  706          0833  2
;  707          0834  2      ! CONNECT the output file.
;  708          0835  2      !
;  709          0836  2      DBG$GL_OUTPRAB[RAB$L_FAB] = DBG$GL_OUTPFAB;
;  710          0837  2      STATUS = $CONNECT(RAB = DBG$GL_OUTPRAB);
;  711          0838  2      IF NOT .STATUS THEN $EXIT(CODE = .STATUS OR FATAL_BIT);
;  712          0839  2
;  713          0840  2
;  714          0841  2      ! We need to delay this message output till SYS$INPUT, SYS$OUTPUT are
;  715          0842  2      ! established. Otherwise, DBG$PUTMSG in DBG$FINAL_HANDL does not know
;  716          0843  2      ! where to output the message.
;  717          0844  2      !
;  718          0845  2      IF NOT .OPEN_STATUS THEN SIGNAL(DBG$_UNAOPEDBGI, 0, .OPEN_STATUS);
;  719          0846  2      IF NOT .OUTPUT_STATUS THEN SIGNAL(DBG$_UNACREDBGO, 0, .OUTPUT_STATUS);
;  720          0847  2
;  721          0848  2
;  722          0849  2      ! Get the terminal width.
;  723          0850  2      !
;  724          0851  2      DEVCHAR = DBG$GL_OUTPFAB[FAB$L_DEV];
;  725          0852  2      IF .DEVCHAR[DEV$V_TRM]
;  726          0853  2      THEN
;  727          0854  3          BEGIN
;  728          0855  3          LOCAL
;  729          0856  3              DEV_DESC: VECTOR[2,LONG],
;  730          0857  3              INFO_4: VECTOR[4,LONG],
;  731          0858  3              RETURN_LENGTH;
;  732          0859  3
;  733          0860  3          DEV_DESC[0] = %X'010E0000' OR .DBG$GL_OUTPFAB [FAB$B_FNS];
;  734          0861  3          DEV_DESC[1] = .DBG$GL_OUTPFAB [FAB$L_FNA];
;  735          0862  3          INFO_4[0] = DVI$_DEVBUFSIZ^16 OR 4;
;  736          0863  3          INFO_4[1] = DBG$SRC_TERM_WIDTH;
;  737          0864  3          INFO_4[2] = RETURN_LENGTH;
;  738          0865  3          INFO_4[3] = 0;
```

```
;  739          0866  3          STATUS = $GETDVI(DEVNAM=DEV_DESC, ITMLST=INFO_4);
;  740          0867  3          IF NOT .STATUS THEN SIGNAL(.STATUS);
;  741          0868  3          END
;  742          0869  3
;  743          0870  2      ELSE
;  744          0871  2          DBG$SRC_TERM_WIDTH = 80;
;  745          0872  2
;  746          0873  2
;  747          0874  2      ! Set the flag that says resignal all exceptions from the user
;  748          0875  2      ! program except for user-set breakpoints and tracepoints.
;  749          0876  2      !
;  750          0877  2      DBG$GB_RESIGNAL = TRUE;
;  751          0878  2
;  752          0879  2
;  753          0880  2      ! Initialize the define settings.
;  754          0881  2      !
;  755          0882  2      DBG$SET_DEFINE_DEF();
;  756          0883  2
;  757          0884  2
;  758          0885  2      ! Initialize the DEFINE symbol table by allocating space for
;  759          0886  2      ! the header blocks, and initializing the fields to be zero.
;  760          0887  2      ! Note that this must be done before DBG$SET_LANG.
;  761          0888  2      !
;  762          0889  2      HEADER = DBG$GET_MEMORY (DBG$K_DEFINE_HEADER_SIZE_W);
;  763          0890  2      HEADER [DEF$A_NEXT_LINK] = 0;
;  764          0891  2      HEADER [DEF$A_PREV_LINK] = 0;
;  765          0892  2      HEADER [DEF$A_DEFINE_LIST] = 0;
;  766          0893  2      DBG$GL_GLOBAL_DEFINE_PTR = .HEADER;
;  767          0894  2      HEADER = DBG$GET_MEMORY (DBG$K_DEFINE_HEADER_SIZE_W);
;  768          0895  2      HEADER [DEF$A_NEXT_LINK] = 0;
;  769          0896  2      HEADER [DEF$A_PREV_LINK] = 0;
;  770          0897  2      HEADER [DEF$A_DEFINE_LIST] = 0;
;  771          0898  2      DBG$GL_LOCAL_DEFINE_PTR = .HEADER;
;  772          0899  2
;  773          0900  2
;  774          0901  2      ! Set the default language, namely MACRO.
;  775          0902  2      !
;  776          0903  2      DBG$SET_LANG(0,DBG$K_MACRO);
;  777          0904  2
;  778          0905  2
;  779          0906  2      ! Set all the single command context bits to FALSE.  These bits refer to
;  780          0907  2      ! context that is valid only during a single command, not across multiple
;  781          0908  2      ! commands.
;  782          0909  2      !
;  783          0910  2      DBG$SET_CONTEXT ();
;  784          0911  2
;  785          0912  2
;  786          0913  2      ! Initialize the new eventpoint data structures.
;  787          0914  2      !
;  788          0915  2      DBG$EVENT_INITIALIZATION ();
;  789          0916  2
;  790          0917  2
;  791          0918  2      ! Initialize the Command Input Stream to DBG$INPUT
;  792          0919  2      !
;  793          0920  2      DBG$GL_CISHEAD = DBG$GET_MEMORY ((CIS_ELEMENTS+3)/%UPVAL);
;  794          0921  2      DBG$GL_CISHEAD[CIS$A_NEXT_LINK] = 0;
;  795          0922  2      DBG$GL_CISHEAD[CIS$B_INPUT_TYPE] = CIS_DBG$INPUT;
```

```
;  796          0923  2      DBG$GL_CISHEAD[CIS$A_INPUT_PTR] = DBG$GL_INPRAB;
;  797          0924  2
;  798          0925  2
;  799          0926  2      ! Initialize the OUTPUT configuration
;  800          0927  2      !
;  801          0928  2      DBG$SET_OUT_DEF();
;  802          0929  2
;  803          0930  2
;  804          0931  2      ! Note - processing initialization files must be done last.  If there was
;  805          0932  2      ! an initialization file, add it to the command input stream. For DEBUG,
;  806          0933  2      ! the initialization file is specified by the logical name DBG$INIT, and
;  807          0934  2      ! for SUPERDEBUG, it is specified by the logical name SDBG$INIT.
;  808          0935  2      !
;  809          0936  2      DUMMY[0] = %X'010E0000'+256;
;  810          0937  2      DUMMY[1] = DUMMY_BUFFER;
;  811          0938  2
;  812          0939  2
;  813          0940  2      ! We need to allocate space for the file name and copy 'DBG$INIT' or
;  814          0941  2      ! 'SDBG$INIT' into this space.  The reason for this is that DBG$CIS_REMOVE
;  815          0942  2      ! will free up the space.  Also, fill in the string descriptor to
;  816          0943  2      ! be used in SYS$TRNLOG.  Note - do NOT replace this with a %ASCID
;  817          0944  2      ! declaration.  %ASCID causes the code to be non-shareable and thus
;  818          0945  2      ! degrades performance.
;  819          0946  2      !
;  820          0947  2      DBG$GL_IND_COM_FILE = DBG$GET_MEMORY (3);
;  821          0948  2      SDBGINIT_STGDESC [DSC$B_CLASS] = DSC$K_CLASS_S;
;  822          0949  2      SDBGINIT_STGDESC [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  823          0950  2      SDBGINIT_STGDESC [DSC$A_POINTER] = SDBGINIT_STG;
;  824          0951  2      IF .DBG$GV_CONTROL[DBG$V_CONTROL_SDBG]
;  825          0952  2      THEN
;  826          0953  3          BEGIN
;  827          0954  3          SDBGINIT_STGDESC [DSC$W_LENGTH] = 9;
;  828          0955  3          CH$MOVE(9, UPLIT BYTE(%ASCII 'SDBG$INIT'), SDBGINIT_STG);
;  829          0956  3          STATUS = SYS$TRNLOG(SDBGINIT_STGDESC, 0, DUMMY, 0, 0, 0);
;  830          0957  3          IF .STATUS EQL SS$_NORMAL
;  831          0958  3          THEN
;  832          0959  4              BEGIN
;  833          0960  4              DBG$GL_IND_COM_FILE[0] = 9;
;  834          0961  4              CH$MOVE(9, UPLIT BYTE(%ASCII 'SDBG$INIT'), DBG$GL_IND_COM_FILE[1]);
;  835          0962  4              DBG$CIS_CONNECTICF(FALSE);
;  836          0963  3              END;
;  837          0964  3
;  838          0965  3          END
;  839          0966  3
;  840          0967  2      ELSE
;  841          0968  3          BEGIN
;  842          0969  3          SDBGINIT_STGDESC [DSC$W_LENGTH] = 8;
;  843          0970  3          CH$MOVE(8, UPLIT BYTE(%ASCII 'DBG$INIT'), SDBGINIT_STG);
;  844          0971  3          STATUS = SYS$TRNLOG(SDBGINIT_STGDESC, 0, DUMMY, 0, 0, 0);
;  845          0972  3          IF .STATUS EQL SS$_NORMAL
;  846          0973  3          THEN
;  847          0974  4              BEGIN
;  848          0975  4              DBG$GL_IND_COM_FILE[0] = 8;
;  849          0976  4              CH$MOVE(8, UPLIT BYTE(%ASCII 'DBG$INIT'), DBG$GL_IND_COM_FILE[1]);
;  850          0977  4              DBG$CIS_CONNECTICF(FALSE);
;  851          0978  3              END;
;  852          0979  3
```

```
;  853          0980  2          END;
;  854          0981  2
;  855          0982  2
;  856          0983  2      ! Initialization is complete and successful.  Output the DEBUG header
;  857          0984  2      ! message with the version number and return.
;  858          0985  2      !
;  859          0986  2      IF .DBG$GV_CONTROL[DBG$V_CONTROL_SDBG]
;  860          0987  2      THEN
;  861          0988  2          $FAO_TT_OUT('!/  VAX SUPERDEBUG Version 4.0-8!/')
;  862          0989  2
;  863          0990  2      ELSE
;  864          0991  2          $FAO_TT_OUT('!/  VAX DEBUG Version 4.0-8!/');
;  865          0992  2
;  866          0993  2      RETURN;
;  867          0994  1      END;


                                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                     54  55  50  4E  49  24  47  42  44  00004 P.AAB:  .ASCII  \DBG$INPUT\                    ;
                  54 55  50  54  55  4F  24  47  42  44  0000D P.AAC:  .ASCII  \DBG$OUTPUT\                   ;
                     54  55  50  4E  49  24  53  59  53  00017 P.AAD:  .ASCII  \SYS$INPUT\                    ;
                  54 55  50  54  55  4F  24  53  59  53  00020 P.AAE:  .ASCII  \SYS$OUTPUT\                   ;
                     54  49  4E  49  24  47  42  44  53  0002A P.AAF:  .ASCII  \SDBG$INIT\                    ;
                     54  49  4E  49  24  47  42  44  53  00033 P.AAG:  .ASCII  \SDBG$INIT\                    ;
                         54  49  4E  49  24  47  42  44  0003C P.AAH:  .ASCII  \DBG$INIT\                     ;
                         54  49  4E  49  24  47  42  44  00044 P.AAI:  .ASCII  \DBG$INIT\                     ;
                                                 22  0004C P.AAJ:  .BYTE   34                               ;
45  44  52  45  50  55  53  20  58  41  56  20  09  2F  21  0004D          .ASCII  \!/\<9>\ VAX SUPERDEBUG Version 4.0-8!/\  ;
30  2E  34  20  6E  6F  69  73  72  65  56  20  47  55  42  0005C
                                      2F  21  38  2D  0006B
                                                 1D  0006F P.AAK:  .BYTE   29                               ;
56  20  47  55  42  45  44  20  58  41  56  20  09  2F  21  00070          .ASCII  \!/\<9>\ VAX DEBUG Version 4.0-8!/\   ;
    2F  21  38  2D  30  2E  34  20  6E  6F  69  73  72  65  0007F


                                                DBG_INPUT_DEVICE=   P.AAB
                                                DBG_INP_DEV_SIZE=   9
                                                DBG_OUTPUT_DEVICE=  P.AAC
                                                DBG_OUT_DEV_SIZE=   10
                                                SYS_INPUT_DEVICE=   P.AAD
                                                SYS_INP_DEV_SIZE=   9
                                                SYS_OUTPUT_DEVICE=  P.AAE
                                                SYS_OUT_DEV_SIZE=   10
                                                        .EXTRN  SYS$OPEN, SYS$EXIT
                                                        .EXTRN  SYS$CONNECT, SYS$CREATE
                                                        .EXTRN  SYS$GETDVI

                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                          0FFC 00000    .ENTRY  DBG$INIT_DEBUG, Save R2,R3,R4,R5,R6,R7,R8,- ; 0695
                                                                R9,R10,R11                                  ;
                                5B 00000000G   00  9E 00002    MOVAB   SYS$EXIT, R11                       ;
                                5A 00000000G   00  9E 00009    MOVAB   DBG$GV_CONTROL, R10                 ;
                                59 00000000G   00  9E 00010    MOVAB   DBG$GL_INPFAB, R9                   ;
                                58 00000000G   00  9E 00017    MOVAB   DBG$GL_OUTPFAB+44, R8               ;
                                57 00000000'   EF  9E 0001E    MOVAB   DBG_INPUT_DEVICE, R7                ;
```

```
                                5E      FE9C     CE   9E 00025          MOVAB   -356(SP), SP                                                    ;
                        00000000G 00             00   FB 0002A          CALLS   #0, DBG$INIT_MEMORY                                             ; 0746
                  01    AA              01       04 00000000G 8F   F0 00031          INSV    #DBG$GL_3B_SYSTEM, #4, #1, DBG$GV_CONTROL+1   ; 0785
                  50    01    AA                 01             04   EF 0003B          EXTZV   #4, #1, DBG$GV_CONTROL+1, R0                    ; 0791
                        00000000G 00             50   90 00041          MOVB    R0, DBG$GB_KEYPAD_INPUT                                 ;
                                2C      A9       67   9E 00048          MOVAB   DBG_INPUT_DEVICE, DBG$GL_INPFAB+44                      ; 0799
                                34      A9       09   90 0004C          MOVB    #9, DBG$GL_INPFAB+52                                    ; 0800
                                                 59   DD 00050          PUSHL   R9                                                      ; 0801
                        00000000G 00             01   FB 00052          CALLS   #1, SYS$OPEN                                            ;
                                53               50   D0 00059          MOVL    R0, OPEN_STATUS                                         ;
                                1F               53   E8 0005C          BLBS    OPEN_STATUS, 1$                                         ; 0802
                                2C      A9       13  A7   9E 0005F          MOVAB   SYS_INPUT_DEVICE, DBG$GL_INPFAB+44                      ; 0805
                                34      A9       09   90 00064          MOVB    #9, DBG$GL_INPFAB+52                                    ; 0806
                                                 59   DD 00068          PUSHL   R9                                                      ; 0807
                        00000000G 00             01   FB 0006A          CALLS   #1, SYS$OPEN                                            ;
                                56               50   D0 00071          MOVL    R0, STATUS                                              ;
                                07               56   E8 00074          BLBS    STATUS, 1$                                              ; 0808
                          7E            56       04   C9 00077          BISL3   #4, STATUS, -(SP)                                       ;
                                6B               01   FB 0007B          CALLS   #1, SYS$EXIT                                            ;
                        00000000G 00             69   9E 0007E 1$:      MOVAB   DBG$GL_INPFAB, DBG$GL_INPRAB+60                         ; 0814
                                  00000000G      00   9F 00085          PUSHAB  DBG$GL_INPRAB                                           ; 0815
                        00000000G 00             01   FB 0008B          CALLS   #1, SYS$CONNECT                                         ;
                                56               50   D0 00092          MOVL    R0, STATUS                                              ;
                                07               56   E8 00095          BLBS    STATUS, 2$                                              ; 0816
                          7E            56       04   C9 00098          BISL3   #4, STATUS, -(SP)                                       ;
                                6B               01   FB 0009C          CALLS   #1, SYS$EXIT                                            ;
                                68      09       A7   9E 0009F 2$:      MOVAB   DBG_OUTPUT_DEVICE, DBG$GL_OUTPFAB+44                    ; 0821
                          08    A8               0A   90 000A3          MOVB    #10, DBG$GL_OUTPFAB+52                                  ; 0822
                                D4               A8   9F 000A7          PUSHAB  DBG$GL_OUTPFAB                                          ; 0823
                        00000000G 00             01   FB 000AA          CALLS   #1, SYS$CREATE                                          ;
                                52               50   D0 000B1          MOVL    R0, OUTPUT_STATUS                                       ;
                                1F               52   E8 000B4          BLBS    OUTPUT_STATUS, 3$                                       ; 0824
                                68      1C       A7   9E 000B7          MOVAB   SYS_OUTPUT_DEVICE, DBG$GL_OUTPFAB+44                    ; 0827
                          08    A8               0A   90 000BB          MOVB    #10, DBG$GL_OUTPFAB+52                                  ; 0828
                                D4               A8   9F 000BF          PUSHAB  DBG$GL_OUTPFAB                                          ; 0829
                  00000000G     00               01   FB 000C2          CALLS   #1, SYS$CREATE                                          ;
                                56               50   D0 000C9          MOVL    R0, STATUS                                              ;
                                07               56   E8 000CC          BLBS    STATUS, 3$                                              ; 0830
                          7E            56       04   C9 000CF          BISL3   #4, STATUS, -(SP)                                       ;
                                6B               01   FB 000D3          CALLS   #1, SYS$EXIT                                            ;
                  00000000G     00       D4      A8   9E 000D6 3$:      MOVAB   DBG$GL_OUTPFAB, DBG$GL_OUTPRAB+60                       ; 0836
                                  00000000G      00   9F 000DE          PUSHAB  DBG$GL_OUTPRAB                                          ; 0837
                  00000000G     00               01   FB 000E4          CALLS   #1, SYS$CONNECT                                         ;
                                56               50   D0 000EB          MOVL    R0, STATUS                                              ;
                                07               56   E8 000EE          BLBS    STATUS, 4$                                              ; 0838
                          7E            56       04   C9 000F1          BISL3   #4, STATUS, -(SP)                                       ;
                                6B               01   FB 000F5          CALLS   #1, SYS$EXIT                                            ;
                                11               53   E8 000F8 4$:      BLBS    OPEN_STATUS, 5$                                         ; 0845
                                                 53   DD 000FB          PUSHL   OPEN_STATUS                                             ;
                                                 7E   D4 000FD          CLRL    -(SP)                                                   ;
                                  00028FDB       8F   DD 000FF          PUSHL   #167899                                                 ;
                  00000000G     00               03   FB 00105          CALLS   #3, LIB$SIGNAL                                          ;
                                11               52   E8 0010C 5$:      BLBS    OUTPUT_STATUS, 6$                                       ; 0846
                                                 52   DD 0010F          PUSHL   OUTPUT_STATUS                                           ;
                                                 7E   D4 00111          CLRL    -(SP)                                                   ;
                                  00028FE3       8F   DD 00113          PUSHL   #167907                                                 ;
                  00000000G     00               03   FB 00119          CALLS   #3, LIB$SIGNAL                                          ;
```

```
                        50      14  A8  9E 00120 6$:     MOVAB   DBG$GL_OUTPFAB+64, DEVCHAR                      ; 0851
              4C        60          02  E1 00124         BBC     #2, (DEVCHAR), 7$                               ; 0852
                        50      08  A8  9A 00128         MOVZBL  DBG$GL_OUTPFAB+52, R0                           ; 0860
          14  AE        50 010E0000 8F  C9 0012C         BISL3   #17694720, R0, DEV_DESC
                  18    AE          68  D0 00135         MOVL    DBG$GL_OUTPFAB+44, DEV_DESC+4                   ; 0861
                  04    AE 00080004 8F  D0 00139         MOVL    #524292, INFO_4                                 ; 0862
                  08    AE 00000000G 00 9E 00141         MOVAB   DBG$SRC_TERM_WIDTH, INFO_4+4                    ; 0863
                  0C    AE          6E  9E 00149         MOVAB   RETURN_LENGTH, INFO_4+8                         ; 0864
                        10  AE      D4  0014D            CLRL    INFO_4+12                                       ; 0865
                            7E      7C  00150            CLRQ    -(SP)                                           ; 0866
                            7E      7C  00152            CLRQ    -(SP)
                        14  AE      9F  00154            PUSHAB  INFO_4
                        28  AE      9F  00157            PUSHAB  DEV_DESC
                            7E      7C  0015A            CLRQ    -(SP)
                00000000G   00          08  FB 0015C     CALLS   #8, SYS$GETDVI
                            56          50  D0 00163     MOVL    R0, STATUS
                            13          56  E8 00166     BLBS    STATUS, 8$                                      ; 0867
                                        56  DD 00169     PUSHL   STATUS
                00000000G   00          01  FB 0016B     CALLS   #1, LIB$SIGNAL
                                        08  11 00172     BRB     8$                                              ; 0852
                00000000G   00      50  8F  9A 00174 7$:     MOVZBL  #80, DBG$SRC_TERM_WIDTH                     ; 0871
                00000000G   00          01  90 0017C 8$:     MOVB    #1, DBG$GB_RESIGNAL                         ; 0877
                00000000G   00          00  FB 00183        CALLS   #0, DBG$SET_DEFINE_DEF                      ; 0882
                                        03  DD 0018A        PUSHL   #3                                          ; 0889
                00000000G   00          01  FB 0018C        CALLS   #1, DBG$GET_MEMORY
                                        60  7C 00193        CLRQ    (HEADER)                                    ; 0890
                                    08  A0  D4 00195        CLRL    8(HEADER)                                   ; 0892
                00000000G   00          50  D0 00198        MOVL    HEADER, DBG$GL_GLOBAL_DEFINE_PTR            ; 0893
                                        03  DD 0019F        PUSHL   #3                                          ; 0894
                00000000G   00          01  FB 001A1        CALLS   #1, DBG$GET_MEMORY
                                        60  7C 001A8        CLRQ    (HEADER)                                    ; 0895
                                    08  A0  D4 001AA        CLRL    8(HEADER)                                   ; 0897
                00000000G   00          50  D0 001AD        MOVL    HEADER, DBG$GL_LOCAL_DEFINE_PTR             ; 0898
                                        7E  7C 001B4        CLRQ    -(SP)                                       ; 0903
                    0000V   CF          02  FB 001B6        CALLS   #2, DBG$SET_LANG
                    FE34    CF          00  FB 001BB        CALLS   #0, DBG$SET_CONTEXT                         ; 0910
                00000000G   00          00  FB 001C0        CALLS   #0, DBG$EVENT_INITIALIZATION                ; 0915
                                        0E  DD 001C7        PUSHL   #14                                         ; 0920
                00000000G   00          01  FB 001C9        CALLS   #1, DBG$GET_MEMORY
                00000000G   00          50  D0 001D0        MOVL    R0, DBG$GL_CISHEAD
                                    08  A0  D4 001D7        CLRL    8(R0)                                       ; 0921
                                    02  A0  94 001DA        CLRB    2(R0)                                       ; 0922
                        04  A0 00000000G  00  9E 001DD     MOVAB   DBG$GL_INPRAB, 4(R0)                        ; 0923
                00000000G   00          00  FB 001E5        CALLS   #0, DBG$SET_OUT_DEF                         ; 0928
                        F8  AD 010E0100 8F  D0 001EC        MOVL    #17694976, DUMMY                            ; 0936
                        FC  AD      5C  AE  9E 001F4        MOVAB   DUMMY_BUFFER, DUMMY+4                       ; 0937
                                        03  DD 001F9        PUSHL   #3                                          ; 0947
                00000000G   00          01  FB 001FB        CALLS   #1, DBG$GET_MEMORY
                00000000G   00          50  D0 00202        MOVL    R0, DBG$GL_IND_COM_FILE
                        32  AE      010E 8F  B0 00209        MOVW    #270, SDBGINIT_STGDESC+2                    ; 0949
                        34  AE       24  AE  9E 0020F        MOVAB   SDBGINIT_STG, SDBGINIT_STGDESC+4            ; 0950
              37                    6A  01  E1 00214        BBC     #1, DBG$GV_CONTROL, 9$                      ; 0951
                        30  AE          09  B0 00218        MOVW    #9, SDBGINIT_STGDESC                        ; 0954
          24  AE        26  A7          09  28 0021C        MOVC3   #9, P.AAF, SDBGINIT_STG                     ; 0955
                                        7E  7C 00222        CLRQ    -(SP)                                       ; 0956
                                        7E  D4 00224        CLRL    -(SP)
                                    F8  AD  9F  00226        PUSHAB  DUMMY
```

```
                                                 7E  D4 00229          CLRL    -(SP)                                          ;
                                              44 AE  9F 0022B          PUSHAB  SDBGINIT_STGDESC                               ;
                                 00000000G    00 06  FB 0022E          CALLS   #6, SYS$TRNLOG                                 ;
                                              56 50  D0 00235          MOVL    R0, STATUS                                     ;
                                              01 56  D1 00238          CMPL    STATUS, #1                                     ; 0957
                                                 4E  12 0023B          BNEQ    11$                                            ;
                                 50 00000000G    00  D0 0023D          MOVL    DBG$GL_IND_COM_FILE, R0                        ; 0960
                                              60 09  90 00244          MOVB    #9, (R0)                                       ;
                01  A0       2F  A7           09  28 00247          MOVC3   #9, P.AAG, 1(R0)                               ; 0961
                                                 35  11 0024D          BRB     10$                                            ; 0962
                            30  AE           08  B0 0024F 9$:        MOVW    #8, SDBGINIT_STGDESC                           ; 0969
                24  AE      38  A7           08  28 00253          MOVC3   #8, P.AAH, SDBGINIT_STG                        ; 0970
                                                 7E  7C 00259          CLRQ    -(SP)                                          ; 0971
                                                 7E  D4 0025B          CLRL    -(SP)                                          ;
                                              F8 AD  9F 0025D          PUSHAB  DUMMY                                          ;
                                                 7E  D4 00260          CLRL    -(SP)                                          ;
                                              44 AE  9F 00262          PUSHAB  SDBGINIT_STGDESC                               ;
                                 00000000G    00 06  FB 00265          CALLS   #6, SYS$TRNLOG                                 ;
                                              56 50  D0 0026C          MOVL    R0, STATUS                                     ;
                                              01 56  D1 0026F          CMPL    STATUS, #1                                     ; 0972
                                                 17  12 00272          BNEQ    11$                                            ;
                                 50 00000000G    00  D0 00274          MOVL    DBG$GL_IND_COM_FILE, R0                        ; 0975
                                              60 08  90 0027B          MOVB    #8, (R0)                                       ;
                01  A0       40  A7           08  28 0027E          MOVC3   #8, P.AAI, 1(R0)                               ; 0976
                                                 7E  D4 00284 10$:       CLRL    -(SP)                                          ; 0977
                            0000V   CF           01  FB 00286          CALLS   #1, DBG$CIS_CONNECTICF                         ;
                    05              6A           01  E1 0028B 11$:       BBC     #1, DBG$GV_CONTROL, 12$                        ; 0986
                                              48 A7  9F 0028F          PUSHAB  P.AAJ                                          ; 0988
                                                 03  11 00292          BRB     13$                                            ;
                                              6B A7  9F 00294 12$:       PUSHAB  P.AAK                                          ; 0991
                                 00000000G    00  01  FB 00297 13$:       CALLS   #1, DBG$FAO_OUT                                ;
                                                     04 0029E          RET                                                    ; 0994

; Routine Size:  671 bytes,    Routine Base:  DBG$CODE + 0224
```

```
;  869          0995  1 GLOBAL ROUTINE dbg$ins_opcodes (user_pc_value) : NOVALUE =
;  870          0996  2 BEGIN
;  871          0997  2 0
;  872          0998  1 END;


                                                0000 00000         .ENTRY  DBG$INS_OPCODES, Save nothing                ; 0995
                                                  04 00002         RET                                                  ; 0998

; Routine Size:  3 bytes,    Routine Base:  DBG$CODE + 04C3
```

```
;  874     0999  1 GLOBAL ROUTINE dbg$conv_r_50( OPWORD, DST_PTR ) =
;  875     1000  1 !++
;  876     1001  1 ! FUNCTIONAL DESCRIPTION:
;  877     1002  1 !       THIS ROUTINE IS A SPECIAL-PURPOSE RAD50-TO-ASCII CONVERSION
;  878     1003  1 !       ROUTINE.  IT TAKES A LONGWORD CONTAINING 2 RAD50 WORDS,
;  879     1004  1 !       CONVERTS THEM TO A 6-character STRING, AND 'STUFFS' THESE
;  880     1005  1 !       characters INTO THE BYTE VECTOR WE ARE PASSED A POINTER TO.
;  881     1006  1 !
;  882     1007  1 ! WARNING:
;  883     1008  1 !       THE REST OF THE CODE WHICH INTERFACES TO THIS USES THE
;  884     1009  1 !       LITERAL 'OP_CH_SIZE' TO REFER TO THIS 6-character STRING,
;  885     1010  1 !       BUT THIS SIZE IS IMPLICIT IN THE CODE HERE.  IF THIS
;  886     1011  1 !       CODE IS CHANGED, THE LITERAL MUST ALSO BE CHANGED.  JUST
;  887     1012  1 !       CHANGING THE LITERAL IS NOT ENOUGH.
;  888     1013  1 !
;  889     1014  1 ! CALLING SEQUENCE:
;  890     1015  1 !       dbg$conv_r_50 ( LONGWORD, BYTE_POINTER );
;  891     1016  1 !
;  892     1017  1 ! INPUTS:
;  893     1018  1 !       OPWORD  - THE LONGWORD WHICH CONTAINS THE 6 RAD50 characters.
;  894     1019  1 !                 - THIS WORD COMES FROM THE OP_NAME FIELD OF THE
;  895     1020  1 !                   dbg$GB_OPINFO DATA VECTOR.
;  896     1021  1 !       DST_PTR - ANY BYTE ADDRESS INTO WHICH THIS ROUTINE WILL
;  897     1022  1 !                   STUFF THE 6 ASCII characters OBTAINED FROM OPWORD.
;  898     1023  1 !
;  899     1024  1 ! IMPLICIT INPUTS:
;  900     1025  1 !       OP_CH_SIZE - FROM VAXOPS.REQ, WHICH MUST BE 6 TO MATCH THIS CODE.
;  901     1026  1 !
;  902     1027  1 ! OUTPUTS:
;  903     1028  1 !       NONE.
;  904     1029  1 !
;  905     1030  1 ! IMPLICIT OUTPUTS:
;  906     1031  1 !       THE 6 ASCII chars ARE STUFFED BACK INTO THE USER-SUPPLIED
;  907     1032  1 !       STRING.
;  908     1033  1 !
;  909     1034  1 ! ROUTINE VALUE:
;  910     1035  1 !       The number of non-blank characters stuffed into
;  911     1036  1 !       the output string.
;  912     1037  1 !
;  913     1038  1 ! SIDE EFFECTS:
;  914     1039  1 !       SEE IMPLICIT OUTPUTS.
;  915     1040  1 !--
;  916     1041  1
;  917     1042  2     BEGIN
;  918     1043  2
;  919     1044  2     MAP
;  920     1045  2         DST_PTR : REF VECTOR[,BYTE];     ! WHERE TO STUFF THE chars.
;  921     1046  2
;  922     1047  2     LOCAL
;  923     1048  2         non_blanks,
;  924     1049  2         J,          ! INDEX.
;  925     1050  2         W,          ! THE LONGWORD.
;  926     1051  2         PTR : REF VECTOR[,BYTE];
;  927     1052  2
;  928     1053  2     BIND
;  929     1054  2         DIVTAB = UPLIT(1, %O'50', %O'3100') : VECTOR;
;  930     1055  2
```

```
;  931          1056  2          ! JUST EXTRACT EACH OF THE TWO WORDS, CONVERT THEM,
;  932          1057  2          ! AND STUFF BACK THE RESTULS.
;  933          1058  2
;  934          1059  2          PTR = .DST_PTR;
;  935          1060  2          non_blanks = 0;
;  936          1061  2
;  937          1062  2          INCR K FROM 0 TO 16 BY 16
;  938          1063  2              DO
;  939          1064  3              BEGIN ! DO THE CONVERSION ON BOTH WORDS SEPARATELY.
;  940          1065  3
;  941          1066  3              W = .OPWORD<.K,16>;
;  942          1067  3
;  943          1068  3              DECR I FROM 2 TO 0 DO
;  944          1069  4                  BEGIN
;  945          1070  4                  J = .W/.DIVTAB[.I]; W = .W - .J*.DIVTAB[.I];
;  946          1071  4                  IF .J NEQ 0
;  947          1072  4                  THEN
;  948          1073  5                      BEGIN
;  949          1074  5                      IF .J NEQ %O'33'
;  950          1075  5                      THEN
;  951          1076  6                          BEGIN
;  952          1077  6                          IF .J LSS %O'33' THEN J = .J + %O'56';
;  953          1078  6                          J = .J + %O'11';
;  954          1079  5                          END;
;  955          1080  5                      J = .J + %O'11';
;  956          1081  5                      END
;  957          1082  4                  ELSE
;  958          1083  4                      J = %O'40';
;  959          1084  4
;  960          1085  4                  ! AT THIS POINT, A SINGLE char IS IN BYTE 0 OF J.
;  961          1086  4                  ! Stuff the character back and tally up the
;  962          1087  4                  ! number of non-blank ones.
;  963          1088  4
;  964          1089  5                  IF( ((.PTR)<0,8> = .J) NEQ %O'40' )
;  965          1090  4                  then
;  966          1091  4                          non_blanks = .non_blanks +1;
;  967          1092  4
;  968          1093  4                  PTR = .PTR + 1;
;  969          1094  3                  END;
;  970          1095  3
;  971          1096  2              END;
;  972          1097  2              ! END OF K LOOP.
;  973          1098  2
;  974          1099  2          !Return the number of non-blank characters
;  975          1100  2          ! we stuffed back.
;  976          1101  2
;  977          1102  2          RETURN(.non_blanks);
;  978          1103  1          END; ! OF conv_r_50 ROUTINE.


                                                    .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                             0008D          .BLKB   3
                00000640  00000028  00000001  00090 P.AAL:  .LONG   1, 40, 1600                    ;

                                                  DIVTAL-           P.AAL
```

```
                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                        .ENTRY  DBG$CONV_R_50, Save R2,R3,R4,R5,R6,R7   ; 0999
                                                        MOVAB   DIVTAB, R7                              ;
                                                        MOVL    DST_PTR, PTR                            ; 1059
                                                        CLRL    NON_BLANKS                              ; 1060
                                                        CLRL    K                                       ; 1062
                                                1$:     EXTZV   K, #16, OPWORD, W                       ; 1066
                                                        MOVL    #2, I                                   ; 1068
                                                2$:     DIVL3   DIVTAB[I], W, J                         ; 1070
                                                        MULL3   DIVTAB[I], J, R2                        ;
                                                        SUBL2   R2, W                                   ;
                                                        TSTL    J                                       ; 1071
                                                        BEQL    5$                                      ;
                                                        CMPL    J, #27                                  ; 1074
                                                        BEQL    4$                                      ;
                                                        BGEQ    3$                                      ; 1077
                                                        ADDL2   #46, J                                  ;
                                                3$:     ADDL2   #9, J                                   ; 1078
                                                4$:     ADDL2   #9, J                                   ; 1080
                                                        BRB     6$                                      ; 1071
                                                5$:     MOVL    #32, J                                  ; 1083
                                                6$:     MOVB    J, (PTR)                                ; 1089
                                                        CMPL    J, #32                                  ;
                                                        BEQL    7$                                      ;
                                                        INCL    NON_BLANKS                              ; 1091
                                                7$:     INCL    PTR                                     ; 1093
                                                        SOBGEQ  I, 2$                                   ; 1068
                                                        ACBL    #16, #16, K, 1$                         ; 1062
                                                        MOVL    NON_BLANKS, R0                          ; 1102
                                                        RET                                             ; 1103

; Routine Size:  89 bytes,    Routine Base:  DBG$CODE + 04C6
```

```
;  980          1104  1 global routine dbg$octal_valtostg_cvt(value, count) =
;  981          1105  1
;  982          1106  1 ! ++
;  983          1107  1 ! Functional Description:
;  984          1108  1 !       Convert a value to an ascii string. The string, when
;  985          1109  1 !       printed, displays the octal representation of the value.
;  986          1110  1 !
;  987          1111  1 ! Inputs
;  988          1112  1 !       value - the actual value we are to convert.
;  989          1113  1 !       count - the number of characters in the result string.
;  990          1114  1 !
;  991          1115  1 ! Routine Value
;  992          1116  1 !       A pointer to a counted string.
;  993          1117  1 ! Side effects
;  994          1118  1 !       Allocates space for the result. This should be
;  995          1119  1 !       freed by the caller when he is finished with it.
;  996          1120  1 ! --
;  997          1121  1
;  998          1122  2     begin
;  999          1123  2
; 1000          1124  2     own
; 1001          1125  2         result_ptr : ref vector[,byte],
; 1002          1126  2
; 1003          1127  2         tran_table : vector[8,byte]
; 1004          1128  2                      initial( byte( %ascii '01234567'));
; 1005          1129  2
; 1006          1130  2     ! allocate space for the string.
; 1007          1131  2     result_ptr = dbg$get_memory(((1+.count)/%upval)+1);
; 1008          1132  2
; 1009          1133  2     if .result_ptr eql 0 then signal(dbg$_nofree)
; 1010          1134  2     else
; 1011          1135  2
; 1012          1136  2         ! fill in result string from right to left.
; 1013          1137  2         decr i from .count to 1 do
; 1014          1138  3             begin
; 1015          1139  3             result_ptr[.i] = .tran_table[.value mod 8];
; 1016          1140  3             value = .value / 8
; 1017          1141  2             end;
; 1018          1142  2
; 1019          1143  2     ! fill in the count.
; 1020          1144  2     result_ptr[0] = .count;
; 1021          1145  2
; 1022          1146  2     .result_ptr
; 1023          1147  2
; 1024          1148  1     end; ! of dbg$octal_valtostg_cvt


                                                        .PSECT  DBG$OWN,NOEXE,  PIC,2

                                                00000 RESULT_PTR:
                                                        .BLKB   4
                        37  36  35  34  33  32  31  30   00004 TRAN_TABLE:
                                                        .ASCII  \01234567\                              ;
```

```
                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                 000C 00000     .ENTRY  DBG$OCTAL_VALTOSTG_CVT, Save R2,R3      ; 1104
                                      53 00000000'  EF   9E 00002     MOVAB   RESULT_PTR, R3
                          50      08  AC             01   C1 00009     ADDL3   #1, COUNT, R0                   ; 1131
                                      50             04   C6 0000E     DIVL2   #4, R0
                                             01      A0   9F 00011     PUSHAB  1(R0)
                              00000000G   00         01   FB 00014     CALLS   #1, DBG$GET_MEMORY
                                      63             50   D0 0001B     MOVL    R0, RESULT_PTR
                                      52             63   D0 0001E     MOVL    RESULT_PTR, R2              ; 1133
                                                     0F   12 00021     BNEQ    1$
                                   00028332          8F   DD 00023     PUSHL   #164658
                              00000000G   00         01   FB 00029     CALLS   #1, LIB$SIGNAL
                                                     1F   11 00030     BRB     4$
                          51      08  AC             01   C1 00032 1$:  ADDL3   #1, COUNT, I                 ; 1137
                                                     15   11 00037     BRB     3$
                  7E      00      04  AC             01   7A 00039 2$:  EMUL    #1, VALUE, #0, -(SP)        ; 1139
                  50      50          8E             08   7B 0003F     EDIV    #8, (SP)+, R0, R0
                                  6142          04 A340  90 00044     MOVB    TRAN_TABLE[R0], (I)[R2]
                                      04  AC             08   C6 0004A     DIVL2   #8, VALUE                   ; 1140
                                      E8             51   F5 0004E 3$:  SOBGTR  I, 2$
                                      00  B3      08  AC  90 00051 4$:  MOVB    COUNT, @RESULT_PTR          ; 1144
                                      50             63   D0 00056     MOVL    RESULT_PTR, R0              ; 1148
                                                     04   00059     RET

; Routine Size:  90 bytes,    Routine Base:  DBG$CODE + 051F

; 1025          1149  1
```

```
; 1027          1150  1 global routine dbg$decimal_valtostg_cvt(in_value_ptr,len) =
; 1028          1151  1 !++
; 1029          1152  1 ! Functional description:
; 1030          1153  1 !       Converts a value to an ascii string to be printed.
; 1031          1154  1 ! Inputs
; 1032          1155  1 !       in_value_ptr -  points to the place in memory where the
; 1033          1156  1 !                       value is stored.
; 1034          1157  1 !       len          -  length in bytes of the value
; 1035          1158  1 ! Routine value
; 1036          1159  1 !       A pointer to a counted string with the result.
; 1037          1160  1 !       Storage for the result string is allocated dynamically
; 1038          1161  1 !       by calling dbg$get_memory.
; 1039          1162  1 ! Side effects
; 1040          1163  1 !       Allocates space for the result. This should be
; 1041          1164  1 !       released by the caller.
; 1042          1165  1 !--
; 1043          1166  2     begin
; 1044          1167  2     map
; 1045          1168  2         in_value_ptr : ref bitvector [] ;
; 1046          1169  2
; 1047          1170  2     local
; 1048          1171  2         value_copy : bitvector[128],
; 1049          1172  2         value_ptr : ref bitvector[],
; 1050          1173  2         sign_flag,
; 1051          1174  2         string : ref vector[,byte],
; 1052          1175  2         power_of_two,
; 1053          1176  2         new_string : ref vector[,byte],
; 1054          1177  2         new_power_of_two;
; 1055          1178  2
; 1056          1179  2
; 1057          1180  2                         ! define extended precision add routine which
; 1058          1181  2                         ! operates on counted ascii strings.
; 1059          1182  2                         routine addc(a,b) =
; 1060          1183  3                             begin
; 1061          1184  3                             map a : ref vector [,byte],
; 1062          1185  3                                 b : ref vector [,byte];
; 1063          1186  3                             local
; 1064          1187  3                                 temp,
; 1065          1188  3                                 m,
; 1066          1189  3                                 n,
; 1067          1190  3                                 carry,
; 1068          1191  3                                 result : ref vector [,byte];
; 1069          1192  3                             own ctable : vector[20,byte]
; 1070          1193  3                                 initial(byte('01234567890123456789'));
; 1071          1194  3                             ! n is size of larger argument
; 1072          1195  3                             n = (if .a[0] gtr .b[0] then .a[0] else .b[0]);
; 1073          1196  3                             ! m is size of smaller argument.
; 1074          1197  3                             m = (if .a[0] gtr .b[0] then .b[0] else .a[0]);
; 1075          1198  3                             ! dbg$get_memory takes longword sizes.
; 1076          1199  3                             result = dbg$get_memory((2+.n)/4+1);
; 1077          1200  3                             carry = 0;
; 1078          1201  3                             decr i from .n to 1+.n-.m do
; 1079          1202  4                                 begin
; 1080          1203  4                                 result[.i+1] = .ctable[temp =
; 1081          1204  5                                     (.carry+
; 1082          1205  6                                         (if .a[0] gtr .b[0]
; 1083          1206  6                                         then .a[.i] +
```

```
; 1084          1207  6                       .b[.i-(.n-.m)]
; 1085          1208  6                   else .b[.i] +
; 1086          1209  6                       .a[.i-(.n-.m)])
; 1087          1210  4                       - 2*%C'0')];
; 1088          1211  4               carry = .temp geq 10;
; 1089          1212  3               end;
; 1090          1213  3           decr i from .n-.m to 1 do
; 1091          1214  4               begin
; 1092          1215  4               result[.i+1] = .ctable[temp=
; 1093          1216  5                       (.carry+
; 1094          1217  6                       (if .a[0] gtr .b[0]
; 1095          1218  6                       then .a[.i]
; 1096          1219  5                       else .b[.i]) -
; 1097          1220  4                       %C'0')];
; 1098          1221  4               carry = .temp geq 10;
; 1099          1222  3               end;
; 1100          1223  3           if .carry eql 1 then
; 1101          1224  4               begin
; 1102          1225  4               result[0] = .n+1;
; 1103          1226  4               result[1] = %C'1';
; 1104          1227  4               end
; 1105          1228  3           else
; 1106          1229  4               begin
; 1107          1230  4               result[0] = .n;
; 1108          1231  4               ch$move(.n,
; 1109          1232  4                   result[2],result[1]);
; 1110          1233  3               end;
; 1111          1234  3           .result
; 1112          1235  2           end; ! addc


                                                .PSECT  DBG$OWN,NOEXE,  PIC,2

34 33 32 31 30 39 38 37 36 35 34 33 32 31 30 0000C CTABLE: .ASCII  \01234567890123456789\                    ;
                              39 38 37 36 35 0001B                                                          ;


                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                    07FC 00000 ADDC:    .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10             ; 1182
                              5A 00000000'  EF  9E 00002        MOVAB   CTABLE, R10                         ;
                                    58  D4 00009        CLRL    R8                                        ; 1195
                        08    BC      04  BC  91 0000B        CMPB    @A, @B                              ;
                                          08  1B 00010        BLEQU   1$                                  ;
                                          58  D6 00012        INCL    R8                                  ;
                              52      04  BC  9A 00014        MOVZBL  @A, N                               ;
                                          04  11 00018        BRB     2$                                  ;
                              52      08  BC  9A 0001A 1$:     MOVZBL  @B, N                               ;
                              06          58  E9 0001E 2$:     BLBC    R8, 3$                              ; 1197
                              54      08  BC  9A 00021        MOVZBL  @B, M                               ;
                                          04  11 00025        BRB     4$                                  ;
                              54      04  BC  9A 00027 3$:     MOVZBL  @A, M                               ;
                              50      02  A2  9E 0002B 4$:     MOVAB   2(R2), R0                           ; 1199
                              50          04  C6 0002F        DIVL2   #4, R0                              ;
                                      01  A0  9F 00032        PUSHAB  1(R0)                               ;
```

```
                00000000G   00          01  FB 00035          CALLS   #1, DBG$GET_MEMORY                    ;
                            56          50  D0 0003C          MOVL    R0, RESULT                          ;
                                        53  D4 0003F          CLRL    CARRY                               ; 1200
                        50              54  C3 00041          SUBL3   M, N, R0                            ; 1201
                            57      01  A0  9E 00045          MOVAB   1(R0), R7                           ;
                        55              54  C3 00049          SUBL3   M, N, R5                            ; 1207
                            50          52  D0 0004D          MOVL    N, I                                ;
                                        39  11 00050          BRB     9$                                  ;
                        51              55  C3 00052  5$:     SUBL3   R5, I, R1                           ;
                            0C          58  E9 00056          BLBC    R8, 6$                              ;
                            59  04 BC40  9A 00059          MOVZBL  @A[I], R9                           ;
                            51  08 BC41  9A 0005E          MOVZBL  @B[R1], R1                          ;
                                    0A  11 00063          BRB     7$                                  ;
                            59  08 BC40  9A 00065  6$:     MOVZBL  @B[I], R9                           ; 1209
                            51  04 BC41  9A 0006A          MOVZBL  @A[R1], R1                          ;
                            51      59  C0 0006F  7$:     ADDL2   R9, R1                              ;
                            54  A0 A143  9E 00072          MOVAB   -96(R1)[CARRY], TEMP                ; 1204
                    01 A046             6A44  90 00077          MOVB    CTABLE[TEMP], 1(I)[RESULT]          ; 1203
                                        51  D4 0007D          CLRL    R1                                  ; 1211
                        0A              54  D1 0007F          CMPL    TEMP, #10                           ;
                                        02  19 00082          BLSS    8$                                  ;
                                        51  D6 00084          INCL    R1                                  ;
                            53          51  D0 00086  8$:     MOVL    R1, CARRY                           ;
                                        50  D7 00089          DECL    I                                   ; 1201
                            57          50  D1 0008B  9$:     CMPL    I, R7                               ;
                                        C2  18 0008E          BGEQ    5$                                  ;
                        50          01  A5  9E 00090          MOVAB   1(R5), I                            ; 1213
                                        26  11 00094          BRB     14$                                 ;
                            07          58  E9 00096  10$:    BLBC    R8, 11$                             ; 1217
                            51  04 BC40  9A 00099          MOVZBL  @A[I], R1                           ; 1218
                                        05  11 0009E          BRB     12$                                 ;
                            51  08 BC40  9A 000A0  11$:     MOVZBL  @B[I], R1                           ; 1219
                            54  D0 A143  9E 000A5  12$:     MOVAB   -48(R1)[CARRY], TEMP                ; 1216
                    01 A046             6A44  90 000AA          MOVB    CTABLE[TEMP], 1(I)[RESULT]          ; 1215
                                        51  D4 000B0          CLRL    R1                                  ; 1221
                        0A              54  D1 000B2          CMPL    TEMP, #10                           ;
                                        02  19 000B5          BLSS    13$                                 ;
                                        51  D6 000B7          INCL    R1                                  ;
                            53          51  D0 000B9  13$:     MOVL    R1, CARRY                           ;
                            D7          50  F5 000BC  14$:     SOBGTR  I, 10$                              ; 1213
                            01          53  D1 000BF          CMPL    CARRY, #1                           ; 1223
                                        0A  12 000C2          BNEQ    15$                                 ;
                    66                  52  01  81 000C4          ADDB3   #1, N, (RESULT)                     ; 1225
                            01      A6      31  90 000C8          MOVB    #49, 1(RESULT)                      ; 1226
                                        09  11 000CC          BRB     16$                                 ; 1223
                            66          52  90 000CE  15$:     MOVB    N, (RESULT)                         ; 1230
                01      A6      02  A6      52  28 000D1          MOVC3   N, 2(RESULT), 1(RESULT)             ; 1232
                            50          56  D0 000D7  16$:     MOVL    RESULT, R0                          ; 1235
                                            04 000DA          RET                                         ;

; Routine Size:  219 bytes,    Routine Base:  DBG$CODE + 0579

; 1113          1236  2
; 1114          1237  2                     ! Copy the value to be examined into a local variable
; 1115          1238  2                     !
; 1116          1239  2                     value_ptr = value_copy;
```

```
;  1117          1240  2          ch$move (16, .in_value_ptr, .value_ptr);
;  1118          1241  2
;  1119          1242  2          ! now build up print string representing the
;  1120          1243  2          ! octaword integer.
;  1121          1244  2          string = dbg$get_memory(1);
;  1122          1245  2          power_of_two = dbg$get_memory(1);
;  1123          1246  2          (.string) = %ASCII'0';
;  1124          1247  2          (.power_of_two) = %ASCII'1';
;  1125          1248  2          sign_flag = 0;
;  1126          1249  2          IF .value_ptr[8*.len-1] EQL 1
;  1127          1250  2          THEN ! sign bit set.
;  1128          1251  3              BEGIN
;  1129          1252  3              sign_flag = 1;
;  1130          1253  3              ! negate number.
;  1131          1254  3              incr i from 0 to .len/4-1 do
;  1132          1255  3                  (.value_ptr+4*.i) =
;  1133          1256  3                      NOT .(.value_ptr+4*.i);
;  1134          1257  2              END;
;  1135          1258  2          incr i from 0 to (8*.len)-2 do
;  1136          1259  3              begin
;  1137          1260  3              ! look at the ith bit of the integer.
;  1138          1261  3              IF .value_ptr[.i] EQL 1
;  1139          1262  3              THEN
;  1140          1263  4                  BEGIN
;  1141          1264  4                  ! if the bit is set, must add in the
;  1142          1265  4                  ! appropriate power of two.
;  1143          1266  4                  new_string = addc(.string,.power_of_two);
;  1144          1267  4                  dbg$rel_memory(.string);
;  1145          1268  4                  string = .new_string;
;  1146          1269  3                  END;
;  1147          1270  3              new_power_of_two = addc(
;  1148          1271  3                  .power_of_two,.power_of_two);
;  1149          1272  3              dbg$rel_memory(.power_of_two);
;  1150          1273  3              power_of_two = .new_power_of_two;
;  1151          1274  2              end; ! loop
;  1152          1275  2          IF .sign_flag EQL 1
;  1153          1276  2          THEN
;  1154          1277  3              BEGIN
;  1155          1278  3              ! un-complement number
;  1156          1279  3              ! (we complemented earlier)
;  1157          1280  3              incr i from 0 to .len/4-1 do
;  1158          1281  3                  (.value_ptr+4*.i) =
;  1159          1282  3                      NOT .(.value_ptr+4*.i);
;  1160          1283  3              ! add 1 (we complemented earlier)
;  1161          1284  3              new_string = addc(.string,
;  1162          1285  3                  UPLIT BYTE(%ASCIC '1'));
;  1163          1286  3              ! append minus sign.
;  1164          1287  3              string = dbg$get_memory(1+(2+.new_string[0])/4);
;  1165          1288  3              string[0] = 1+.new_string[0];
;  1166          1289  3              string[1] = %C'-';
;  1167          1290  3              ch$move(.new_string[0],new_string[1],string[2]);
;  1168          1291  3              dbg$rel_memory(.new_string);
;  1169          1292  2              END;
;  1170          1293  2      dbg$rel_memory(.power_of_two);
;  1171          1294  2      .string
;  1172          1295  1      end; ! of dbg$decimal_valtostg_cvt
```

```
                                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                                        31  01  0009C P.AAM:  .ASCII  <1>\1\                                  ;


                                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                            0FFC 00000          .ENTRY  DBG$DECIMAL_VALTOSTG_CVT, Save R2,R3,R4,R5,-; 1150
                                                                                        R6,R7,R8,R9,R10,R11
                                                    5B 00000000G    00  9E 00002     MOVAB   DBG$REL_MEMORY, R11
                                                    5E              10  C2 00009     SUBL2   #16, SP
                                                    57              6E  9E 0000C     MOVAB   VALUE_COPY, VALUE_PTR                  ; 1239
                                            67      04      BC      10  28 0000F     MOVC3   #16, @IN_VALUE_PTR, (VALUE_PTR)        ; 1240
                                                                    01  DD 00014     PUSHL   #1                                     ; 1244
                                                00000000G   00      01  FB 00016     CALLS   #1, DBG$GET_MEMORY
                                                    56              50  D0 0001D     MOVL    R0, STRING
                                                                    01  DD 00020     PUSHL   #1                                     ; 1245
                                                00000000G   00      01  FB 00022     CALLS   #1, DBG$GET_MEMORY
                                                    59              50  D0 00029     MOVL    R0, POWER_OF_TWO
                                                    66      3001    8F  3C 0002C     MOVZWL  #12289, (STRING)                       ; 1246
                                                    69      3101    8F  3C 00031     MOVZWL  #12545, (POWER_OF_TWO)                 ; 1247
                                                                    55  D4 00036     CLRL    SIGN_FLAG                              ; 1248
                                                    53      08      AC  D0 00038     MOVL    LEN, R3                                ; 1249
                                            50      53              03  78 0003C     ASHL    #3, R3, R0
                                                                    50  D7 00040     DECL    R0
                                        51  67      01              50  EF 00042     EXTZV   R0, #1, (VALUE_PTR), R1
                                                    01              51  D1 00047     CMPL    R1, #1
                                                                    15  12 0004A     BNEQ    3$
                                                    55              01  D0 0004C     MOVL    #1, SIGN_FLAG                          ; 1252
                                            54      53              04  C7 0004F     DIVL3   #4, R3, R4                             ; 1254
                                                    50              01  CE 00053     MNEGL   #1, I
                                                                    05  11 00056     BRB     2$
                                                6740                6740  D2 00058 1$:  MCOML   (VALUE_PTR)[I], (VALUE_PTR)[I]        ; 1256
                                            F7  50              54  F2 0005D 2$:  AOBLSS  R4, I, 1$                             ; 1255
                                            54  53              03  78 00061 3$:  ASHL    #3, R3, R4                             ; 1258
                                                54              02  C2 00065     SUBL2   #2, R4
                                                52              01  CE 00068     MNEGL   #1, I
                                                                    32  11 0006B     BRB     6$
                                        50  67      01              52  EF 0006D 4$:  EXTZV   I, #1, (VALUE_PTR), R0                ; 1261
                                                    01              50  D1 00072     CMPL    R0, #1
                                                                    14  12 00075     BNEQ    5$
                                                            0240    8F  BB 00077     PUSHR   #^M<R6,R9>                             ; 1266
                                                FEA5    CF          02  FB 0007B     CALLS   #2, ADDC
                                                    58              50  D0 00080     MOVL    R0, NEW_STRING
                                                                    56  DD 00083     PUSHL   STRING                                 ; 1267
                                                    6B              01  FB 00085     CALLS   #1, DBG$REL_MEMORY
                                                    56              58  D0 00088     MOVL    NEW_STRING, STRING                     ; 1268
                                                                    59  DD 0008B 5$:  PUSHL   POWER_OF_TWO                           ; 1271
                                                                    59  DD 0008D     PUSHL   POWER_OF_TWO
                                                FE91    CF          02  FB 0008F     CALLS   #2, ADDC
                                                    5A              50  D0 00094     MOVL    R0, NEW_POWER_OF_TWO
                                                                    59  DD 00097     PUSHL   POWER_OF_TWO                           ; 1272
                                                    6B              01  FB 00099     CALLS   #1, DBG$REL_MEMORY
                                                    59              5A  D0 0009C     MOVL    NEW_POWER_OF_TWO, POWER_OF_TWO         ; 1273
```

```
                    CA              52              54  F3 0009F 6$:    AOBLEQ  R4, I, 4$                          ; 1258
                                    01              55  D1 000A3        CMPL    SIGN_FLAG, #1                       ; 1275
                                                    4D  12 000A6        BNEQ    9$                                  ;
                                    53              04  C6 000A8        DIVL2   #4, R3                              ; 1280
                                    50              01  CE 000AB        MNEGL   #1, I                               ;
                                                    05  11 000AE        BRB     8$                                  ;
                                6740            6740  D2 000B0 7$:    MCOML   (VALUE_PTR)[I], (VALUE_PTR)[I]      ; 1282
                    F7              50              53  F2 000B5 8$:    AOBLSS  R3, I, 7$                           ; 1281
                                        00000000'   EF  9F 000B9        PUSHAB  P.AAM                               ; 1285
                                                    56  DD 000BF        PUSHL   STRING                              ; 1284
                            FE5F    CF              02  FB 000C1        CALLS   #2, ADDC                            ;
                                    58              50  D0 000C6        MOVL    R0, NEW_STRING                      ;
                                    50              68  9A 000C9        MOVZBL  (NEW_STRING), R0                    ; 1287
                                    50              02  C0 000CC        ADDL2   #2, R0                              ;
                                    50              04  C6 000CF        DIVL2   #4, R0                              ;
                                                01  A0  9F 000D2        PUSHAB  1(R0)                               ;
                        00000000G   00              01  FB 000D5        CALLS   #1, DBG$GET_MEMORY                  ;
                                    56              50  D0 000DC        MOVL    R0, STRING                          ;
                    66              68              01  81 000DF        ADDB3   #1, (NEW_STRING), (STRING)          ; 1288
                                01  A6              2D  90 000E3        MOVB    #45, 1(STRING)                      ; 1289
                                    50              68  9A 000E7        MOVZBL  (NEW_STRING), R0                    ; 1290
                02  A6          01  A8              50  28 000EA        MOVC3   R0, T(NEW_STRING), 2(STRING)        ;
                                    58              DD  000F0        PUSHL   NEW_STRING                          ; 1291
                                6B                  01  FB 000F2        CALLS   #1, DBG$REL_MEMORY                  ;
                                                    59  DD 000F5 9$:    PUSHL   POWER_OF_TWO                        ; 1293
                                6B                  01  FB 000F7        CALLS   #1, DBG$REL_MEMORY                  ;
                                    50              56  D0 000FA        MOVL    STRING, R0                          ; 1295
                                                    04  000FD          RET                                         ;

; Routine Size:  254 bytes,    Routine Base:  DBG$CODE + 0654
```

```
;  1174          1296  1 ! THE REGISTER TABLE HOLDS ONE ENTRY PER REGISTER. EACH ENTRY IS MADE
;  1175          1297  1 ! UP OF ONE LONGWORD. THE FIRST BYTE HOLDS THE CHARACTER COUNT OF
;  1176          1298  1 ! THE REGISTER NAME. THE SECOND THROUGH FOURTH BYTES HOLD THE REGISTER
;  1177          1299  1 ! NAME STRING. A SAMPLE ENTRY FOLLOWS:
;  1178          1300  1 !
;  1179          1301  1 !       ------------------------------------------------
;  1180          1302  1 !       !            !     0     !     R     !     2     !
;  1181          1303  1 !       !------------------------------------------------!
;  1182          1304  1 !--
;  1183          1305  1
;  1184          1306  1 MACRO
;  1185        M 1307  1         register_entry (string) =
;  1186          1308  1                 %CHARCOUNT (STRING), %ASCII STRING, REP 3 - %CHARCOUNT (STRING) OF BYTE (0)%;
;  1187          1309  1
;  1188          1310  1 BIND
;  1189          1311  1         register_table = UPLIT BYTE (
;  1190          1312  1
;  1191          1313  1                 register_entry ('R0'),
;  1192          1314  1                 register_entry ('R1'),
;  1193          1315  1                 register_entry ('R2'),
;  1194          1316  1                 register_entry ('R3'),
;  1195          1317  1                 register_entry ('R4'),
;  1196          1318  1                 register_entry ('R5'),
;  1197          1319  1                 register_entry ('R6'),
;  1198          1320  1                 register_entry ('R7'),
;  1199          1321  1                 register_entry ('R8'),
;  1200          1322  1                 register_entry ('R9'),
;  1201          1323  1                 register_entry ('R10'),
;  1202          1324  1                 register_entry ('R11'),
;  1203          1325  1                 register_entry ('AP'),
;  1204          1326  1                 register_entry ('FP'),
;  1205          1327  1                 register_entry ('SP'),
;  1206          1328  1                 register_entry ('PC'),
;  1207          1329  1                 register_entry ('PSL'));
;  1208          1330  1
;  1209          1331  1         BLOCK [, LONG];
;  1210          1332  1
;  1211          1333  1 !++
;  1212          1334  1 ! THESE FIELD DEFINITIONS CONTROL ACCESS TO THE REGISTER TABLE
;  1213          1335  1 !--
;  1214          1336  1 MACRO
;  1215          1337  1         REG_NAME        =8, 24, 0%,
;  1216          1338  1         ctd_reg_name    =0, 24, 0%,
;  1217          1339  1         REG_CH_CNT      =0, 8, 0%;
;  1218          1340  1
;  1219          1341  1 !++
;  1220          1342  1 ! COMMON ASCII COUNTED STRINGS USED IN FAO CALLS.
;  1221          1343  1 !--
;  1222          1344  1
;  1223          1345  1 BIND
;  1224          1346  1         cs_ascii        = UPLIT ( %ASCIC '!AD'),
;  1225          1347  1         colon_tab_stg   = UPLIT ( %ASCIC ':  ');
;  1226          1348  1
;  1227          1349  1 !++
;  1228          1350  1 ! The following macros translate addresses to register offsets and
;  1229          1351  1 ! vice versa.
;  1230          1352  1 !--
```

```
;  1231          1353  1          MACRO
;  1232        M 1354  1                this_is_reg (location) =
;  1233        M 1355  1                        (((location) GEQA dbg$runframe [dbg$l_user_r0]) AND
;  1234          1356  1                                ((location) LEQA dbg$runframe [dbg$l_user_psl]))%,
;  1235          1357  1
;  1236        M 1358  1                reg_offset (location) =
;  1237          1359  1                        (location - dbg$runframe [dbg$l_user_regs]) / %UPVAL%;
```

```
;  1239     1360  1 GLOBAL ROUTINE dbg$out_regname( address ) =
;  1240     1361  1 !++
;  1241     1362  1 ! Functional Description
;  1242     1363  1 !
;  1243     1364  1 !       Given an address, see if it falls within the current
;  1244     1365  1 !  runframe in such a way as one could say that this address
;  1245     1366  1 !  corresponds to one of the general registers.  If this is
;  1246     1367  1 !  not the case, we return FALSE.  Otherwise we output the
;  1247     1368  1 !  name of the indicated register and return TRUE.
;  1248     1369  1 !
;  1249     1370  1 ! Formal Parameters:
;  1250     1371  1 !
;  1251     1372  1 !       address -the address which we are trying to symbolize
;  1252     1373  1 ! Implicit Inputs:
;  1253     1374  1 !
;  1254     1375  1 !       The format and use of the register table
;  1255     1376  1 !  which is local to this module.
;  1256     1377  1 !
;  1257     1378  1 ! Return Value
;  1258     1379  1 !       TRUE or FALSE.  See above.
;  1259     1380  1 !
;  1260     1381  1 ! Side Effects:
;  1261     1382  1 !
;  1262     1383  1 !       We may output a register name to the output buffer.
;  1263     1384  1 !
;  1264     1385  1 !--
;  1265     1386  2 BEGIN
;  1266     1387  2         BIND
;  1267     1388  2                 register_vector = dbg$runframe [ DBG$L_USER_REGS ] : VECTOR;
;  1268     1389  2         LOCAL
;  1269     1390  2                 reg_index;
;  1270     1391  2
;  1271     1392  3         IF( NOT this_is_reg(.address) )
;  1272     1393  2         then
;  1273     1394  2                 return(false);
;  1274     1395  2
;  1275     1396  2         reg_index = reg_offset(.address);
;  1276     1397  2
;  1277     1398  2         ! Check that the address EXACTLY matches one which
;  1278     1399  2         ! we currently bind to a register name.
;  1279     1400  2
;  1280     1401  3         IF( register_vector[.reg_index] NEQA .address )
;  1281     1402  2         then
;  1282     1403  2                 return(FALSE);
;  1283     1404  2
;  1284     1405  2         ! An exact match has been found.
;  1285     1406  2         ! Output the register name and return
;  1286     1407  2         ! a success status.
;  1287     1408  2
;  1288     1409  2         dbg$print( UPLIT( %ASCIC '!AC' ),
;  1289     1410  2                 register_table[.reg_index, ctd_reg_name ]);
;  1290     1411  2
;  1291     1412  2         return(TRUE);
;  1292     1413  1 END;
```

```
                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                 02  0009E P.AAN:  .BYTE   2
     30          52  0009F          .ASCII  \R0\
                 00  000A1          .BYTE   0
                 02  000A2          .BYTE   2
     31          52  000A3          .ASCII  \R1\
                 00  000A5          .BYTE   0
                 02  000A6          .BYTE   2
     32          52  000A7          .ASCII  \R2\
                 00  000A9          .BYTE   0
                 02  000AA          .BYTE   2
     33          52  000AB          .ASCII  \R3\
                 00  000AD          .BYTE   0
                 02  000AE          .BYTE   2
     34          52  000AF          .ASCII  \R4\
                 00  000B1          .BYTE   0
                 02  000B2          .BYTE   2
     35          52  000B3          .ASCII  \R5\
                 00  000B5          .BYTE   0
                 02  000B6          .BYTE   2
     36          52  000B7          .ASCII  \R6\
                 00  000B9          .BYTE   0
                 02  000BA          .BYTE   2
     37          52  000BB          .ASCII  \R7\
                 00  000BD          .BYTE   0
                 02  000BE          .BYTE   2
     38          52  000BF          .ASCII  \R8\
                 00  000C1          .BYTE   0
                 02  000C2          .BYTE   2
     39          52  000C3          .ASCII  \R9\
                 00  000C5          .BYTE   0
                 03  000C6          .BYTE   3
          30     31  52  000C7      .ASCII  \R10\
                 03  000CA          .BYTE   3
          31     31  52  000CB      .ASCII  \R11\
                 02  000CE          .BYTE   2
                50  41  000CF       .ASCII  \AP\
                 00  000D1          .BYTE   0
                 02  000D2          .BYTE   2
                50  46  000D3       .ASCII  \FP\
                 00  000D5          .BYTE   0
                 02  000D6          .BYTE   2
                50  53  000D7       .ASCII  \SP\
                 00  000D9          .BYTE   0
                 02  000DA          .BYTE   2
                43  50  000DB       .ASCII  \PC\
                 00  000DD          .BYTE   0
                 03  000DE          .BYTE   3
          4C     53  50  000DF      .ASCII  \PSL\
                 000E2              .BLKB   2
     44  41  21  03  000E4 P.AAO:    .ASCII  <3>\!AD\
     20  20  3A  03  000E8 P.AAP:    .ASCII  <3>\:  \
     43  41  21  03  000EC P.AAQ:    .ASCII  <3>\!AC\

                                REGISTER_TABLE=     P.AAN
                                CS_ASCII=           P.AAO
```

```
                                                COLON_TAB_STG=      P.AAP

                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                                    0004 00000          .ENTRY  DBG$OUT_REGNAME, Save R2                ; 1360
                          52 00000000G   00   9E 00002          MOVAB   DBG$RUNFRAME+4, R2
                          50             62   9E 00009          MOVAB   DBG$RUNFRAME+4, R0                      ; 1392
                          50       04    AC   D1 0000C          CMPL    ADDRESS, R0
                                         37   1F 00010          BLSSU   1$
                          50       40    A2   9E 00012          MOVAB   DBG$RUNFRAME+68, R0
                          50       04    AC   D1 00016          CMPL    ADDRESS, R0
                                         2D   1A 0001A          BGTRU   1$
                          50             62   9E 0001C          MOVAB   DBG$RUNFRAME+4, R0                      ; 1396
                    50       04    AC         50   C3 0001F     SUBL3   R0, ADDRESS, R0
                          50             04   C6 00024          DIVL2   #4, REG_INDEX
                          51         6240   DE 00027          MOVAL   REGISTER_VECTOR[REG_INDEX], R1          ; 1401
                       04    AC           51   D1 0002B          CMPL    R1, ADDRESS
                                         18   12 0002F          BNEQ    1$
                             00000000'EF40   DF 00031          PUSHAL  REGISTER_TABLE[REG_INDEX]               ; 1410
                             00000000'   EF   9F 00038          PUSHAB  P.AAQ                                   ; 1409
                00000000G    00           02   FB 0003E          CALLS   #2, DBG$PRINT                           ; 1410
                          50             01   D0 00045          MOVL    #1, R0                                  ; 1412
                                             04 00048          RET
                                         50   D4 00049 1$:      CLRL    R0                                      ; 1413
                                             04 0004B          RET

; Routine Size:  76 bytes,    Routine Base:  DBG$CODE + 0752
```

```
;  1294          1414  1 GLOBAL ROUTINE dbg$reg_match (string_desc) =
;  1295          1415  1 !++
;  1296          1416  1 ! Functional description:
;  1297          1417  1 !       Compares a string described by the string descriptor passed
;  1298          1418  1 !       as the routine formal to each of the names of the machine
;  1299          1419  1 !       registers. If the string matches a register name, return the
;  1300          1420  1 !       number of the register (0-16, where 16 is the PSL). Otherwise,
;  1301          1421  1 !       return a -1.
;  1302          1422  1 !
;  1303          1423  1 ! Inputs:
;  1304          1424  1 !       string_desc     - string descriptor to symbol string
;  1305          1425  1 !
;  1306          1426  1 ! Implicit inputs:
;  1307          1427  1 !       the VAX machine register table
;  1308          1428  1 !
;  1309          1429  1 ! Implicit outputs:
;  1310          1430  1 !       none
;  1311          1431  1 !
;  1312          1432  1 ! Routine value:
;  1313          1433  1 !       The register number 0 - 16 if a match is found.
;  1314          1434  1 !       -1 if no match is found.
;  1315          1435  1 !
;  1316          1436  1 ! Side effects:
;  1317          1437  1 !       none
;  1318          1438  1 !--
;  1319          1439  1
;  1320          1440  2         BEGIN
;  1321          1441  2
;  1322          1442  2         MAP
;  1323          1443  2                 string_desc : REF BLOCK [, BYTE];
;  1324          1444  2
;  1325          1445  2
;  1326          1446  2
;  1327          1447  2         INCR index from 0 to register_count-1 DO
;  1328          1448  3             BEGIN
;  1329          1449  3             IF ch$eql (.string_desc[dsc$w_length], ch$ptr(.string_desc [dsc$a_pointer]),
;  1330          1450  3                        .register_table[.index, reg_ch_cnt],
;  1331          1451  3                        ch$ptr(register_table[.index, reg_name]))
;  1332          1452  3             THEN
;  1333          1453  3                 RETURN .index;
;  1334          1454  2             END;
;  1335          1455  2
;  1336          1456  2         RETURN (-1);
;  1337          1457  2
;  1338          1458  1         END;


                                    003C 00000          .ENTRY  DBG$REG_MATCH, Save R2,R3,R4,R5                 ; 1414
                              55    04   AC   D0 00002          MOVL    STRING_DESC, R5                         ; 1449
                                         54   D4 00006          CLRL    INDEX                                   ;
                           00000000'EF  44   DF 00008 1$:       PUSHAL  REGISTER_TABLE[INDEX]                   ; 1450
                              50        9E   9A 0000F          MOVZBL  @(SP)+, R0                              ;
                           00000000'EF  44   DF 00012          PUSHAL  REGISTER_TABLE+1[INDEX]                 ; 1451
                50            00   04   B5   04   BC   2D 00019          CMPC5   @STRING_DESC, @4(R5), #0, R0, @(SP)+    ;
```

```
                                 9E     00020
                                 04  12 00021          BNEQ    2$                                          ;
                          50     54  D0 00023          MOVL    INDEX, R0                                   ; 1453
                                 04  C4 00026          RET                                                 ;
                       DD 54     10  F3 00027 2$:      AOBLEQ  #16, INDEX, 1$                              ; 1447
                          50     01  CE 0002B          MNEGL   #1, R0                                      ; 1456
                                 04  04 0002E          RET                                                 ; 1458

; Routine Size:  47 bytes,    Routine Base:  DBG$CODE + 079E
```

```
;  1340          1459  1 GLOBAL ROUTINE dbg$output_psl (value) : NOVALUE =
;  1341          1460  1 !++
;  1342          1461  1 ! FUNCTIONAL DESCRIPTION:
;  1343          1462  1 !       Formats and outputs two lines of specially
;  1344          1463  1 !       formatted data contained in the PSL. The fields shown are
;  1345          1464  1 !
;  1346          1465  1 !               CMP     - compatibility mode
;  1347          1466  1 !               TP      - trace trap pending
;  1348          1467  1 !               FPD     - first part done
;  1349          1468  1 !               IS      - interrupt stack
;  1350          1469  1 !               CURMOD  - current access mode
;  1351          1470  1 !               PRVMOD  - previous access mode
;  1352          1471  1 !               IPL     - interrupt priority level
;  1353          1472  1 !               DV      - decimal overflow trap enable
;  1354          1473  1 !               FU      - floating underflow trap enable
;  1355          1474  1 !               IV      - integer overflow trap enable
;  1356          1475  1 !               T       - trace trap
;  1357          1476  1 !               N       - condition code
;  1358          1477  1 !               Z       - condition code
;  1359          1478  1 !               V       - condition code
;  1360          1479  1 !               C       - condition code
;  1361          1480  1 !
;  1362          1481  1 ! CALLING SEQUENCE:
;  1363          1482  1 !       dbg$output_psl ()
;  1364          1483  1 !
;  1365          1484  1 ! INPUTS:
;  1366          1485  1 !       value   -The current contents of the PSL
;  1367          1486  1 !
;  1368          1487  1 ! IMPLICIT INPUTS:
;  1369          1488  1 !       NONE
;  1370          1489  1 !
;  1371          1490  1 ! OUTPUTS:
;  1372          1491  1 !       NONE
;  1373          1492  1 !
;  1374          1493  1 ! IMPLICIT OUTPUTS:
;  1375          1494  1 !       NONE
;  1376          1495  1 !
;  1377          1496  1 ! ROUTINE value:
;  1378          1497  1 !       NOVALUE
;  1379          1498  1 !
;  1380          1499  1 ! SIDE EFFECTS:
;  1381          1500  1 !       Two lines are output to the output device.
;  1382          1501  1 !--
;  1383          1502  1
;  1384          1503  2 BEGIN
;  1385          1504  2         MAP
;  1386          1505  2                 value: BLOCK;
;  1387          1506  2         MACRO
;  1388          1507  2                 position_field  = 0, 8, 1%,
;  1389          1508  2                 size_field      = 8, 8, 1%,
;  1390          1509  2                 mode_field      = 16, 4, 1%,
;  1391          1510  2                 blanks_field    = 20, 4, 1%,
;  1392          1511  2                 width_field     = 24, 8, 1%,
;  1393          1512  2
;  1394        M 1513  2                 psl_field (name, position, size, mode, width, leading_blanks) =
;  1395          1514  2                         position, size, mode OR (leading_blanks ^ 4), width%;
;  1396          1515  2
```

```
;  1397          1516  2          LITERAL
;  1398          1517  2                  decimal         = 0,
;  1399          1518  2                  max_psl_field   = 15;
;  1400          1519  2
;  1401          1520  2          BIND
;  1402          1521  2                  psl_table = UPLIT BYTE (
;  1403          1522  2
;  1404          1523  2                  psl_field (CMP, 31, 1, 0, 1, 1),
;  1405          1524  2                  psl_field (TP, 30, 1, 0, 1, 3),
;  1406          1525  2                  psl_field (FPD, 27, 1, 0, 1, 2),
;  1407          1526  2                  psl_field (IS, 26, 1, 0, 1, 3),
;  1408          1527  2                  psl_field (CURMOD, 24, 2, 1, 4, 2),
;  1409          1528  2                  psl_field (PRVMOD, 22, 2, 1, 4, 3),
;  1410          1529  2                  psl_field (IPL, 16, 5, 0, 2, 3),
;  1411          1530  2                  psl_field (DV, 7, 1, 0, 1, 2),
;  1412          1531  2                  psl_field (FU, 6, 1, 0, 1, 2),
;  1413          1532  2                  psl_field (IV, 5, 1, 0, 1, 2),
;  1414          1533  2                  psl_field (T, 4, 1, 0, 1, 1),
;  1415          1534  2                  psl_field (N, 3, 1, 0, 1, 1),
;  1416          1535  2                  psl_field (Z, 2, 1, 0, 1, 1),
;  1417          1536  2                  psl_field (V, 1, 1, 0, 1, 1),
;  1418          1537  2                  psl_field (C, 0, 1, 0, 1, 1))
;  1419          1538  2
;  1420          1539  2                  : BLOCK,
;  1421          1540  2
;  1422          1541  2                  hex_number      = UPLIT BYTE (%ASCIC '!AD!#XB'),
;  1423          1542  2                  stg_desc        = UPLIT BYTE (%ASCIC '!AD!AD'),
;  1424          1543  2                  blanks          = UPLIT BYTE (%ASCII '    '),
;  1425          1544  2
;  1426          1545  2                  priv_modes      = UPLIT BYTE (
;  1427          1546  2
;  1428          1547  2                  %ASCII 'KERN',
;  1429          1548  2                  %ASCII 'EXEC',
;  1430          1549  2                  %ASCII 'SUPR',
;  1431          1550  2                  %ASCII 'USER')
;  1432          1551  2
;  1433          1552  2                  : VECTOR;
;  1434          1553  2
;  1435          1554  2          ! Write out the standard title which describes the PSL fields.
;  1436          1555  2
;  1437          1556  2          dbg$print( UPLIT (%ASCIC '!_CMP TP FPD IS CURMOD PRVMOD IPL DV FU IV T N Z V C'));
;  1438          1557  2          dbg$newline();
;  1439          1558  2          dbg$print (UPLIT (%ASCIC '! '));
;  1440          1559  2          INCR count FROM 0 TO max_psl_field - 1 DO
;  1441          1560  2                  IF .psl_table [.count, mode_field] EQL decimal
;  1442          1561  2                  THEN
;  1443          1562  3                          BEGIN
;  1444          1563  3                          dbg$print (hex_number,
;  1445          1564  3                                  .psl_table [.count, blanks_field], blanks,
;  1446          1565  3                                  .psl_table [.count, width_field],
;  1447          1566  3                                  .value [0, .psl_table [.count, position_field],
;  1448          1567  3                                  .psl_table [.count, size_field], 0]);
;  1449          1568  3                          END
;  1450          1569  2                  ELSE
;  1451          1570  3                          BEGIN
;  1452          1571  3                          dbg$print (stg_desc,
;  1453          1572  3                                  .psl_table [.count, blanks_field], blanks,
```

```
;  1454          1573  3                                .psl_table [.count, width_field],
;  1455          1574  3                               priv_modes [.value [0, .psl_table [.count, position_field],
;  1456          1575  3                                           .psl_table [.count, size_field], 0]]);
;  1457          1576  2                           END;
;  1458          1577  1 END;


                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

30  01  1A  01  20  01  1B  01  30  01  1E  01  10  01  1F  000F0 P.AAR:  .BYTE   31, 1, 16, 1, 30, 1, 48, 1, 27, 1, 32, 1, -  ;
01  07  02  30  05  10  04  31  02  16  04  21  02  18  01  000FF                 26, 1, 48, 1, 24, 2, 33, 4, 22, 2, 49, 4, -  ;
03  01  10  01  04  01  20  01  05  01  20  01  06  01  20  0010E                 16, 5, 48, 2, 7, 1, 32, 1, 6, 1, 32, 1, -    ;
01  10  01  00  01  10  01  01  01  10  01  02  01  10  01  0011D                 5, 1, 32, 1, 4, 1, 16, 1, 3, 1, 16, 1, 2, -  ;
                                                                                  1, 16, 1, 1, 1, 16, 1, 0, 1, 16, 1           ;
                          42  58  23  21  44  41  21  07  0012C P.AAS:  .ASCII  <7>\!AD!#xB\                                 ;
                              44  41  21  44  41  21  06  00134 P.AAT:  .ASCII  <6>\!AD!AD\                                   ;
                                          20  20  20  20  0013B P.AAU:  .ASCII  \    \                                       ;
                                          4E  52  45  4B  0013F P.AAV:  .ASCII  \KERN\                                       ;
                                          43  45  58  45  00143         .ASCII  \EXEC\                                      ;
                                          52  50  55  53  00147         .ASCII  \SUPR\                                      ;
                                          52  45  53  55  0014B         .ASCII  \USER\                                      ;
                                                          0014F         .BLKB   1                                           ;
49  20  44  50  46  20  50  54  20  50  4D  43  5F  21  34  00150 P.AAW:  .ASCII  \4!_CMP TP FPD IS CURMOD PRVMOD IPL DV FU\  ;
44  4F  4D  56  52  50  20  44  4F  4D  52  55  43  20  53  0015F                                                             ;
                        55  46  20  56  44  20  4C  50  49  20  0016E                                                       ;
00  00  43  20  56  20  5A  20  4E  20  54  20  56  49  20  00178         .ASCII  \ IV T N Z V C\<0><0><0>                     ;
                                                  00  00187                                                                 ;
                                          00  5F  21  02  00188 P.AAX:  .ASCII  <2>\!_\<0>                                  ;

                                                        PSL_TABLE=          P.AAR
                                                        HEX_NUMBER=         P.AAS
                                                        STG_DESC=           P.AAT
                                                        BLANKS=             P.AAU
                                                        PRIV_MODES=         P.AAV


                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                              003C 00000        .ENTRY  DBG$OUTPUT_PSL, Save R2,R3,R4,R5                    ; 1459
                          55 00000000G    00  9E 00002        MOVAB   DBG$PRINT, R5                                       ;
                          54 00000000'    EF  9E 00009        MOVAB   BLANKS, R4                                          ;
                                  15      A4  9F 00010        PUSHAB  P.AAW                                               ; 1556
                          65              01  FB 00013        CALLS   #1, DBG$PRINT                                       ;
                 00000000G  00            00  FB 00016        CALLS   #0, DBG$NEWLINE                                     ; 1557
                                  4D      A4  9F 0001D        PUSHAB  P.AAX                                               ; 1558
                          65              01  FB 00020        CALLS   #1, DBG$PRINT                                       ;
                                          52  D4 00023        CLRL    COUNT                                               ; 1559
                          53      B5 A442 DE  00025 1$:       MOVAL   PSL_TABLE[COUNT], R3                                ; 1560
                          51              63  98 0002A        CVTBL   (R3), R1                                            ; 1567
50      04  AC      01  A3              51  EF 0002D        EXTZV   R1, 1(R3), VALUE, R0                                ;
                      0F      02  A3      93  00034        BITB    2(R3), #15                                          ; 1560
                                  12      12  00038        BNEQ    2$                                                  ;
                                          50  DD 0003A        PUSHL   R0                                                  ; 1566
                          7E      03  A3  98  0003C        CVTBL   3(R3), -(SP)                                        ; 1565
                                          54  DD 00040        PUSHL   R4                                                  ; 1563
7E          63              04          14  EE 00042        EXTV    #20, #4, (R3), -(SP)                                ; 1564
```

```
                                                F1    A4  9F 00047         PUSHAB  HEX_NUMBER                          ; 1563
                                                      12  11 0004A         BRB     3$                                  ;
                                                04 A440   DF 0004C 2$:      PUSHAL  PRIV_MODES[R0]                      ; 1575
                                             7E 03    A3  98 00050         CVTBL   3(R3), -(SP)                        ;
                                                      54  DD 00054         PUSHL   R4                                  ; 1571
                   7E           63           04          14  EE 00056     EXTV    #20, #4, (R3), -(SP)                ; 1575
                                                F9    A4  9F 0005B         PUSHAB  STG_DESC                            ; 1571
                                             65       05  FB 0005E 3$:     CALLS   #5, DBG$PRINT                       ; 1575
                                CO           52       0E  F3 00061         AOBLEQ  #14, COUNT, 1$                      ; 1560
                                                          04 00065         RET                                         ; 1577

; Routine Size:  102 bytes,    Routine Base:  DBG$CODE + 07CD
```

```
;  1460          1578  1 GLOBAL ROUTINE dbg$digit_scan(a,l,nd)=
;  1461          1579  1 !++
;  1462          1580  1 ! FUNCTIONAL DESCRIPTION:
;  1463          1581  1 !
;  1464          1582  1 !       This routine will scan the string pointed to by 'a' with
;  1465          1583  1 !       length 'l' to determine if it is a valid digit string.
;  1466          1584  1 !       it will also build a new descriptor for the input
;  1467          1585  1 !
;  1468          1586  1 ! INPUTS:
;  1469          1587  1 !
;  1470          1588  1 !       a - address of string
;  1471          1589  1 !       l - length of string
;  1472          1590  1 !       nd - pointer to new descriptor
;  1473          1591  1 !
;  1474          1592  1 ! IMPLICIT INPUTS:
;  1475          1593  1 !
;  1476          1594  1 ! OUTPUTS:
;  1477          1595  1 !       none
;  1478          1596  1 !
;  1479          1597  1 ! IMPLICIT OUTPUTS:
;  1480          1598  1 !
;  1481          1599  1 ! ROUTINE VALUE:
;  1482          1600  1 !       1 - a valid digit string
;  1483          1601  1 !       3 - a valid digit string beginning with a sign   + or -
;  1484          1602  1 !       0 - not a valid digit string
;  1485          1603  1 !
;  1486          1604  1 ! SIDE EFFECTS:
;  1487          1605  1 !
;  1488          1606  1 !--
;  1489          1607  2 BEGIN
;  1490          1608  2 builtin cvtsp,cvtpl;
;  1491          1609  2 MAP  a : ref vector[,byte],nd : ref block[,byte];
;  1492          1610  2 LOCAL s,i,dp,dpp,ep,esn,p : vector [40,byte],ln,f,nwl;
;  1493          1611  2 BIND max_packed_size = uplit(31);
;  1494          1612  2
;  1495          1613  2 ! Quick fix for a problem: this routine was returning "true" on the
;  1496          1614  2 ! string "e".
;  1497          1615  2 !
;  1498          1616  3 IF .L EQL 1 AND (.A[0] EQL 'E' OR .A[0] EQL 'e')
;  1499          1617  2 THEN
;  1500          1618  2     RETURN 0;
;  1501          1619  2
;  1502          1620  2     i = 0 ;
;  1503          1621  2     s = 1 ;
;  1504          1622  2     f = dp=ep=dpp=esn=0;
;  1505          1623  2 !
;  1506          1624  2 ! get possible trailing spaces
;  1507          1625  2     nwl = .l ;
;  1508          1626  2     WHILE .a[.nwl-1] EQL %c' '
;  1509          1627  2     DO
;  1510          1628  2         if (nwl = .nwl-1) leq 0 then return 0;
;  1511          1629  2 ! skip over possible leading spaces
;  1512          1630  2     WHILE .a[.i] eql %c' '
;  1513          1631  2         DO
;  1514          1632  3         BEGIN
;  1515          1633  3         INCR c from 0 to .nwl-1
;  1516          1634  3             DO
```

```
; 1517          1635  3                   a[.c] = .a[.c+1];
; 1518          1636  3          if (nwl = .nwl-1) leq 0 then return 0;
; 1519          1637  2          END;
; 1520          1638  2
; 1521          1639  2      nd[dsc$w_length] = .nd[dsc$w_length] - (.l-.nwl);
; 1522          1640  2
; 1523          1641  2      IF .a[.i] eql %C'+' OR .a[.i] eql %C'-'
; 1524          1642  2      THEN
; 1525          1643  3          BEGIN
; 1526          1644  3          s = 3 ;
; 1527          1645  3          i = .i + 1 ;
; 1528          1646  3          nd[dsc$b_dtype] = dsc$k_dtype_nl ;
; 1529          1647  3          END
; 1530          1648  2      ELSE
; 1531          1649  2          nd[dsc$b_dtype] = dsc$k_dtype_nro ;
; 1532          1650  2
; 1533          1651  2      INCR c from .i to .nwl-1
; 1534          1652  2      DO
; 1535          1653  3          BEGIN
; 1536          1654  3          if .a[.c] eql %c'.'
; 1537          1655  3          then
; 1538          1656  3              if .dp
; 1539          1657  3              then
; 1540          1658  3                  return 0
; 1541          1659  3              else
; 1542          1660  4                  begin
; 1543          1661  4                  dp = 1;
; 1544          1662  4                  dpp = .c;
; 1545          1663  4                  end
; 1546          1664  3          else
; 1547          1665  3              if .a[.c] eql %c'd' or .a[.c] eql %c'D' or
; 1548          1666  3                 .a[.c] eql %c'e' or .a[.c] eql %c'E'
; 1549          1667  3              then
; 1550          1668  3                  if .ep neq 0
; 1551          1669  3                  then
; 1552          1670  3                      return 0
; 1553          1671  3                  else
; 1554          1672  3                      ep = .c
; 1555          1673  3              else
; 1556          1674  3                  if .a[.c] eql %c'+' or .a[.c] eql %c'-'
; 1557          1675  3                  then
; 1558          1676  3                      if .esn neq 0 or .ep eql 0
; 1559          1677  3                      then
; 1560          1678  3                          return 0
; 1561          1679  3                      else
; 1562          1680  4                          esn =(if .a[.c] eql %c'+' then 1 else -1)
; 1563          1681  3                  else
; 1564          1682  4                      if not (.a[.c] geq %c'0' and .a[.c] leq %c'9')
; 1565          1683  3                      then
; 1566          1684  3                          return 0
; 1567          1685  2          END;
; 1568          1686  2
; 1569          1687  2  ! now construct scale factor for desc and redo the length
; 1570          1688  2
; 1571          1689  2
; 1572          1690  2      if .ep neq 0
; 1573          1691  2      then
```

```
;  1574          1692  3          begin
;  1575          1693  3          i =.nwl-.ep-1;
;  1576          1694  3          if .esn eql 0
;  1577          1695  3          then
;  1578          1696  4              begin
;  1579          1697  4              a[.ep] = %c'+';
;  1580          1698  4              cvtsp(i,a[.ep],max_packed_size,p[0]);
;  1581          1699  4              end
;  1582          1700  3          else
;  1583          1701  4              begin
;  1584          1702  4              i = .i -1 ;
;  1585          1703  4              cvtsp(i,a[.ep+1],max_packed_size,p[0]);
;  1586          1704  3              end;
;  1587          1705  3          cvtpl(max_packed_size,p[0],ln);
;  1588          1706  3          nd[dsc$b_scale] = .ln ;
;  1589          1707  3          nd[dsc$w_length] = .ep ;
;  1590          1708  3          nwl = .ep ;
;  1591          1709  2          end;
;  1592          1710  2
;  1593          1711  2
;  1594          1712  2      if .dp eql 0
;  1595          1713  2      then
;  1596          1714  2          0
;  1597          1715  2      else
;  1598          1716  3          begin
;  1599          1717  3          ln = (.nwl-.dpp-1);
;  1600          1718  3          nd[dsc$b_scale] = .nd[dsc$b_scale] - .ln ;
;  1601          1719  3          nd[dsc$w_length] = .nd[dsc$w_length] - 1 ;
;  1602          1720  3          ch$move(.ln,a[.dpp+1],p[0]);
;  1603          1721  3          ch$move(.ln,p[0],a[.dpp]);
;  1604          1722  2          end;
;  1605          1723  2      if .nd[dsc$b_dtype] eql dsc$k_dtype_nl
;  1606          1724  2      then
;  1607          1725  2          nd[dsc$w_length] = .nd[dsc$w_length] - 1;
;  1608          1726  2
;  1609          1727  2
;  1610          1728  2      return .s                       ! catch all return
;  1611          1729  1 END;              ! End of digit_scan


                                                    .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                .                       0000001F  0018C P.AAY:  .LONG   31                                      ;
                                                    MAX_PACKED_SIZE=    P.AAY

                                                    .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                            0FFC 00000          .ENTRY  DBG$DIGIT_SCAN, Save R2,R3,R4,R5,R6,R7,R8,- ; 1578
                                                                        R9,R10,R11
                                      5E            2C  C2 00002          SUBL2   #44, SP                         ;
                                      01      08    AC  D1 00005          CMPL    L, #1                           ; 1616
                                                    0E  12 00009          BNEQ    1$                              ;
                                45    8F      04    BC  91 0000B          CMPB    @A, #69                         ;
                                                    3E  13 00010          BEQL    6$                              ;
```

```
                65   8F        04    BC   91 00012          CMPB    @A, #101                                    ;
                                     37   13 00017          BEQL    6$                                          ;
                     6E             01   D0 00019 1$:      MOVL    #1, S                                       ; 1621
                                    53   7C 0001C          CLRQ    ESN                                         ; 1622
                                    59   7C 0001E          CLRQ    EP                                          ;
                                    5B   D4 00020          CLRL    DP                                          ;
                                    50   D4 00022          CLRL    F                                           ;
                     55        08    AC   D0 00024          MOVL    L, NWL                                      ; 1625
                     57        04    AC   D0 00028          MOVL    A, R7                                       ; 1626
                     20        FF A547   91 0002C 2$:      CMPB    -1(NWL)[R7], #32                            ;
                                    05   12 00031          BNEQ    3$                                          ;
                     F6             55   F5 00033          SOBGTR  NWL, 2$                                     ; 1628
                                    18   11 00036          BRB     6$                                          ;
                     20           6447   91 00038 3$:      CMPB    (I)[R7], #32                                ; 1630
                                    15   12 0003C          BNEQ    7$                                          ;
                     50             01   CE 0003E          MNEGL   #1, C                                       ; 1633
                                    06   11 00041          BRB     5$                                          ;
                   6047        01 A047   90 00043 4$:      MOVB    1(C)[R7], (C)[R7]                           ; 1635
          F6         50             55   F2 00049 5$:      AOBLSS  NWL, C, 4$                                  ;
                     E8             55   F5 0004D          SOBGTR  NWL, 3$                                     ; 1636
                                  0101   31 00050 6$:      BRW     25$                                         ;
                     58        0C    AC   D0 00053 7$:      MOVL    ND, R8                                      ; 1639
          50         55        08    AC   C3 00057          SUBL3   L, NWL, R0                                  ;
                     68             50   A0 0005C          ADDW2   R0, (R8)                                    ;
                     2B           6447   91 0005F          CMPB    (I)[R7], #43                                ; 1641
                                    06   13 00063          BEQL    8$                                          ;
                     2D           6447   91 00065          CMPB    (I)[R7], #45                                ;
                                    0B   12 00069          BNEQ    9$                                          ;
                     6E             03   D0 0006B 8$:      MOVL    #3, S                                       ; 1644
                                    54   D6 0006E          INCL    I                                           ; 1645
                02   A8             10   90 00070          MOVB    #16, 2(R8)                                  ; 1646
                                    04   11 00074          BRB     10$                                         ; 1641
                02   A8             13   90 00076 9$:      MOVB    #19, 2(R8)                                  ; 1649
                     50        FF   A4   9E 0007A 10$:     MOVAB   -1(R4), C                                   ; 1651
                                    64   11 0007E          BRB     19$                                         ;
                     51           6047   9A 00080 11$:     MOVZBL  (C)[R7], R1                                 ; 1654
                     2E             51   91 00084          CMPB    R1, #46                                     ;
                                    0B   12 00087          BNEQ    12$                                         ;
                     C4             5B   E8 00089          BLBS    DP, 6$                                      ; 1656
                     5B             01   D0 0008C          MOVL    #1, DP                                      ; 1661
                     5A             50   D0 0008F          MOVL    C, DPP                                      ; 1662
                                    50   11 00092          BRB     19$                                         ; 1656
                64   8F             51   91 00094 12$:     CMPB    R1, #100                                    ; 1665
                                    12   13 00098          BEQL    13$                                         ;
                44   8F             51   91 0009A          CMPB    R1, #68                                     ;
                                    0C   13 0009E          BEQL    13$                                         ;
                65   8F             51   91 000A0          CMPB    R1, #101                                    ; 1666
                                    06   13 000A4          BEQL    13$                                         ;
                45   8F             51   91 000A6          CMPB    R1, #69                                     ;
                                    09   12 000AA          BNEQ    14$                                         ;
                                    59   D5 000AC 13$:      TSTL    EP                                          ; 1668
                                    A0   12 000AE          BNEQ    6$                                          ;
                     59             50   D0 000B0          MOVL    C, EP                                       ; 1672
                                    2F   11 000B3          BRB     19$                                         ; 1668
                                    52   D4 000B5 14$:      CLRL    R2                                          ; 1674
                     2B             51   91 000B7          CMPB    R1, #43                                     ;
                                    04   12 000BA          BNEQ    15$                                         ;
```

```
                                          52  D6 000BC          INCL    R2                                        ;
                                          05  11 000BE          BRB     16$                                       ;
                                2D        51  91 000C0 15$:     CMPB    R1, #45                                   ;
                                          15  12 000C3          BNEQ    18$                                       ;
                                          53  D5 000C5 16$:     TSTL    ESN                                       ; 1676
                                          87  12 000C7          BNEQ    6$                                        ;
                                          59  D5 000C9          TSTL    EP                                        ;
                                          83  13 000CB          BEQL    6$                                        ;
                                05        52  E9 000CD          BLBC    R2, 17$                                   ; 1680
                                53        01  D0 000D0          MOVL    #1, ESN                                   ;
                                          0F  11 000D3          BRB     19$                                       ;
                                53        01  CE 000D5 17$:     MNEGL   #1, ESN                                   ;
                                          0A  11 000D8          BRB     19$                                       ; 1676
                                30        51  91 000DA 18$:     CMPB    R1, #48                                   ; 1682
                                          75  1F 000DD          BLSSU   25$                                       ;
                                39        51  91 000DF          CMPB    R1, #57                                   ;
                                          70  1A 000E2          BGTRU   25$                                       ;
                      98        50        55  F2 000E4 19$:     AOBLSS  NWL, C, 11$                               ; 1653
                                          59  D5 000E8          TSTL    EP                                        ; 1690
                                          3E  13 000EA          BEQL    22$                                       ;
                      56        55        59  C3 000EC          SUBL3   EP, NWL, R6                               ; 1693
                                54    FF  A6  9E 000F0          MOVAB   -1(R6), I                                 ;
                                          53  D5 000F4          TSTL    ESN                                       ; 1694
                                          11  12 000F6          BNEQ    20$                                       ;
                              6947        2B  90 000F8          MOVB    #43, (EP)[R7]                             ; 1697
     04   AE 00000000'  EF    6947        54  09 000FC          CVTSP   I, (EP)[R7], MAX_PACKED_SIZE, P           ; 1698
                                          0E  11 00107          BRB     21$                                       ; 1694
                                          54  D7 00109 20$:     DECL    I                                         ; 1702
     04   AE 00000000'  EF  01 A947       54  09 0010B          CVTSP   I, 1(EP)[R7], MAX_PACKED_SIZE, P          ; 1703
                        56  04   AE 00000000'  EF  36 00117 21$: CVTPL  MAX_PACKED_SIZE, P, LN                    ; 1705
                            08   A8       56  90 00120          MOVB    LN, 8(R8)                                 ; 1706
                                 68       59  B0 00124          MOVW    EP, (R8)                                  ; 1707
                                 55       59  D0 00127          MOVL    EP, NWL                                   ; 1708
                                          5B  D5 0012A 22$:     TSTL    DP                                        ; 1712
                                          1A  13 0012C          BEQL    23$                                       ;
                                 55       5A  C2 0012E          SUBL2   DPP, R5                                   ; 1717
                                 56   FF  A5  9E 00131          MOVAB   -1(R5), LN                                ;
                            08   A8       56  82 00135          SUBB2   LN, 8(R8)                                 ; 1718
                                          68  B7 00139          DECW    (R8)                                      ; 1719
                 04   AE    01 AA47       56  28 0013B          MOVC3   LN, 1(DPP)[R7], P                         ; 1720
                    6A47    04   AE       56  28 00142          MOVC3   LN, P, (DPP)[R7]                          ; 1721
                                 10   02  A8  91 00148 23$:     CMPB    2(R8), #16                                ; 1723
                                          02  12 0014C          BNEQ    24$                                       ;
                                          68  B7 0014E          DECW    (R8)                                      ; 1725
                                 50       6E  D0 00150 24$:     MOVL    S, R0                                     ; 1728
                                              04 00153          RET                                               ;
                                          50  D4 00154 25$:     CLRL    R0                                        ; 1729
                                              04 00156          RET                                               ;

; Routine Size:  343 bytes,    Routine Base:  DBG$CODE + 0833


; 1612          1730  1
```

```
;  1614          1731  1 GLOBAL ROUTINE DBG$MAP_TO_REG_ADDR (INPUT_ADDR, OUTPUT_ADDR) =
;  1615          1732  1
;  1616          1733  1 !++
;  1617          1734  1 ! FUNCTIONAL DESCRIPTION:
;  1618          1735  1 !
;  1619          1736  1 !       This routine examines the input address to see if it corresponds to some
;  1620          1737  1 !       address in the dbg$reg_values register save area maintained by the
;  1621          1738  1 !       routines dbg$sta_setcontext and dbg$sta_setregisters routines. If the
;  1622          1739  1 !       address represents some address in the register value save area, then
;  1623          1740  1 !       the address is mapped to the corresponding address in the dbg$l_user_regs
;  1624          1741  1 !       register save area.
;  1625          1742  1 !
;  1626          1743  1 ! FORMAL PARAMETERS:
;  1627          1744  1 !
;  1628          1745  1 !       INPUT_ADDR      - A longword containing the address on which to attempt
;  1629          1746  1 !                         the mapping
;  1630          1747  1 !
;  1631          1748  1 !       OUTPUT_ADDR     - The address of a longword to contain the resulting mapped
;  1632          1749  1 !                         address
;  1633          1750  1 !
;  1634          1751  1 ! IMPLICIT INPUTS:
;  1635          1752  1 !
;  1636          1753  1 !       The address of the register context save area, dbg$reg_values, and the
;  1637          1754  1 !       address of the user runframe register save area, dbg$runframe [dbg$l_user_regs].
;  1638          1755  1 !
;  1639          1756  1 ! IMPLICIT OUTPUTS:
;  1640          1757  1 !
;  1641          1758  1 !       NONE
;  1642          1759  1 !
;  1643          1760  1 ! ROUTINE VALUE:
;  1644          1761  1 !
;  1645          1762  1 !       An unsigned integer longword completion code
;  1646          1763  1 !
;  1647          1764  1 ! COMPLETION CODES:
;  1648          1765  1 !
;  1649          1766  1 !       STS$K_SUCCESS   (1)     - Success. Input address mapped, and mapped address
;  1650          1767  1 !                                 returned.
;  1651          1768  1 !
;  1652          1769  1 !       STS$K_SEVERE    (4)     - Failure. No mapping.
;  1653          1770  1 !
;  1654          1771  1 ! SIDE EFFECTS:
;  1655          1772  1 !
;  1656          1773  1 !       NONE
;  1657          1774  1 !
;  1658          1775  1 !--
;  1659          1776  2     BEGIN
;  1660          1777  2
;  1661          1778  2     LOCAL
;  1662          1779  2         RUNFRAME_ADDRS_VECT     : REF VECTOR [,BYTE]; ! Runframe regs area
;  1663          1780  2
;  1664          1781  2     runframe_addrs_vect = dbg$runframe [dbg$l_user_regs];
;  1665          1782  2
;  1666          1783  2     ! Check to see if the input address falls in the register context save area.
;  1667          1784  2
;  1668          1785  2     IF .input_addr GEQA dbg$reg_values [0]
;  1669          1786  2                     AND
;  1670          1787  2        .input_addr LSSA dbg$reg_values [17] ! The register vector has only 17 longwords
```

```
;  1671          1788  2     THEN
;  1672          1789  3         BEGIN
;  1673          1790  3
;  1674          1791  3         ! Input_addr definitely coresponds to some address in the context area.
;  1675          1792  3         ! Map it to the user runframe.
;  1676          1793  3
;  1677          1794  3         .output_addr = runframe_addrs_vect [.input_addr - dbg$reg_values [0]];
;  1678          1795  3
;  1679          1796  3         RETURN sts$k_success;
;  1680          1797  3         END
;  1681          1798  2     ELSE
;  1682          1799  3         BEGIN
;  1683          1800  3
;  1684          1801  3         ! No match
;  1685          1802  3
;  1686          1803  3         RETURN sts$k_severe;
;  1687          1804  2         END;
;  1688          1805  1     END;                ! End of dbg$map_to_reg_addr



                                                0004 00000         .ENTRY  DBG$MAP_TO_REG_ADDR, Save R2                    ; 1731
                                    52 00000000G   00   9E 00002   MOVAB   DBG$REG_VALUES, R2                            ;
                                    51 00000000G   00   9E 00009   MOVAB   DBG$RUNFRAME+4, RUNFRAME_ADDRS_VECT          ; 1781
                                    50             62   9E 00010   MOVAB   DBG$REG_VALUES, R0                          ; 1785
                                    50        04   AC   D1 00013   CMPL    INPUT_ADDR, R0                              ;
                                                   1B   1F 00017   BLSSU   1$                                          ;
                                    50        44   A2   9E 00019   MOVAB   DBG$REG_VALUES+68, R0                       ; 1787
                                    50        04   AC   D1 0001D   CMPL    INPUT_ADDR, R0                              ;
                                                   11   1E 00021   BGEQU   1$                                          ;
                                    50             62   9E 00023   MOVAB   DBG$REG_VALUES, R0                          ; 1794
                                         50   04   AC             50   C3 00026   SUBL3   R0, INPUT_ADDR, R0                ;
                                08   BC             50             51   C1 0002B   ADDL3   RUNFRAME_ADDRS_VECT, R0, @OUTPUT_ADDR
                                                    50             01   D0 00030   MOVL    #1, R0                      ; 1799
                                                                  04   00033   RET                                     ;
                                                    50             04   D0 00034 1$:  MOVL    #4, R0                  ; 1803
                                                                  04   00037   RET                                     ; 1805

; Routine Size:  56 bytes,    Routine Base:  DBG$CODE + 098A

; 1689          1806  1
```

```
;1691     1807  1 GLOBAL ROUTINE DBG$EXACT_MAP_TO_REG (INPUT_ADDR, REG_ADDR) =
;1692     1808  1
;1693     1809  1 !++
;1694     1810  1 ! FUNCTIONAL DESCRIPTION:
;1695     1811  1 !
;1696     1812  1 !       This routine checks to see if the input address can be mapped to the
;1697     1813  1 !       exact starting address of one of the context register value save areas.
;1698     1814  1 !       If it can, then the address is mapped to the starting address of the
;1699     1815  1 !       corresponding runframe registers.
;1700     1816  1 !
;1701     1817  1 ! FORMAL PARAMETERS:
;1702     1818  1 !
;1703     1819  1 !       INPUT_ADDR      - A longword containing the address to be mapped
;1704     1820  1 !
;1705     1821  1 !       REG_ADDR        - The address of a longword to contain the address of
;1706     1822  1 !                         the mapped-to register
;1707     1823  1 !
;1708     1824  1 ! IMPLICIT INPUTS:
;1709     1825  1 !
;1710     1826  1 !       dbg$runframe [dbg$l_user_regs] - the beginning address of the runframe
;1711     1827  1 !                                        registers
;1712     1828  1 !
;1713     1829  1 ! IMPLICIT OUTPUTS:
;1714     1830  1 !
;1715     1831  1 !       NONE
;1716     1832  1 !
;1717     1833  1 ! ROUTINE VALUE:
;1718     1834  1 !
;1719     1835  1 !       An unsigned integer longword completion code
;1720     1836  1 !
;1721     1837  1 ! COMPLETION CODES:
;1722     1838  1 !
;1723     1839  1 !       STS$K_SUCCESS   (1)     - Success. Input address mapped to register address.
;1724     1840  1 !
;1725     1841  1 !       STS$K_SEVERE    (4)     - Failure. Input address not mapped.
;1726     1842  1 !
;1727     1843  1 ! SIDE EFFECTS:
;1728     1844  1 !
;1729     1845  1 !       NONE
;1730     1846  1 !
;1731     1847  1 !--
;1732     1848  2     BEGIN
;1733     1849  2
;1734     1850  2     LOCAL
;1735     1851  2         RUNFRAME_ADDRESS;                               ! Address within runframe
;1736     1852  2                                                         ! area
;1737     1853  2
;1738     1854  2     ! See if the input address maps to any place in the runframe regs
;1739     1855  2
;1740     1856  2     IF dbg$map_to_reg_addr (.input_addr, runframe_address)
;1741     1857  2     THEN
;1742     1858  3         BEGIN
;1743     1859  3
;1744     1860  3         ! See if the resulting mapped address corresponds exactly to a reg
;1745     1861  3         ! beginning address
;1746     1862  3
;1747     1863  3         IF ((.runframe_address - dbg$runframe [dbg$l_user_regs]) MOD 4) EQL 0
```

```
;  1748          1864  3          THEN
;  1749          1865  4              BEGIN
;  1750          1866  4
;  1751          1867  4              ! Exact match to runframe reg
;  1752          1868  4
;  1753          1869  4              .reg_addr = .runframe_address;
;  1754          1870  4              RETURN sts$k_success;
;  1755          1871  3              END;
;  1756          1872  2          END;
;  1757          1873  2
;  1758          1874  2      ! No match
;  1759          1875  2
;  1760          1876  2      RETURN sts$k_severe;
;  1761          1877  2
;  1762          1878  1      END;                    ! End of dbg$exact_map_to_reg


                                        0000 00000          .ENTRY  DBG$EXACT_MAP_TO_REG, Save nothing          ; 1807
                                5E      04   C2 00002          SUBL2   #4, SP                                      ;
                                        5E   DD 00005          PUSHL   SP                                          ; 1856
                                   04   AC   DD 00007          PUSHL   INPUT_ADDR                                  ;
                             BA    AF        02   FB 0000A     CALLS   #2, DBG$MAP_TO_REG_ADDR                     ;
                                   21        50   E9 0000E     BLBC    R0, 1$                                      ;
                                   50 00000000G  00   9E 00011     MOVAB   DBG$RUNFRAME+4, R0                      ; 1863
                        50         6E        50   C3 00018     SUBL3   R0, RUNFRAME_ADDRESS, R0                    ;
                7E      00         50        01   7A 0001C     EMUL    #1, R0, #0, -(SP)                           ;
                50      50         8E        04   7B 00021     EDIV    #4, (SP)+, R0, R0                           ;
                                             50   D5 00026     TSTL    R0                                          ;
                                             08   12 00028     BNEQ    1$                                          ;
                                08   BC        6E   D0 0002A     MOVL    RUNFRAME_ADDRESS, @REG_ADDR             ; 1869
                                     50        01   D0 0002E     MOVL    #1, R0                                  ; 1870
                                               04   00031     RET                                                 ;
                                     50        04   D0 00032 1$: MOVL    #4, R0                                  ; 1876
                                               04   00035     RET                                                 ; 1878

; Routine Size:  54 bytes,    Routine Base:  DBG$CODE + 09C2
```

```
;1764        1879  1 ! MACROS:
;1765        1880  1 !
;1766        1881  1 !
;1767        1882  1 ! The keyword_table is made of four-tuple entries,
;1768        1883  1 ! 1) the language index (0 - n),
;1769        1884  1 ! 2) the number of characters in the minimal abbreviation,
;1770        1885  1 ! 3) the number of characters in the language name,
;1771        1886  1 ! 4) the language name as an ASCII string.
;1772        1887  1 !
;1773        1888  1 ! Macro KEY_NAME formats table entries for the language name table.
;1774        1889  1 ! Each entry has three formals:
;1775        1890  1 ! 1) the ASCII string representing a language name,
;1776        1891  1 ! 2) the length of that ASCII string abbreviated,
;1777        1892  1 ! 3) the  language index for that language
;1778        1893  1 !
;1779        1894  1 MACRO
;1780      M 1895  1     KEY_NAME (KNAME, KABBREV, KEQUIV) =
;1781        1896  1                         KEQUIV, KABBREV, %CHARCOUNT (KNAME), %ASCII KNAME%;
;1782        1897  1
;1783        1898  1 BIND
;1784        1899  1     LANGUAGE_TABLE = UPLIT BYTE(
;1785        1900  1
;1786        1901  1         KEY_NAME ('MACRO',      2, DBG$K_MACRO),
;1787        1902  1         KEY_NAME ('FORTRAN',    2, DBG$K_FORTRAN),
;1788        1903  1         KEY_NAME ('BLISS',      2, DBG$K_BLISS),
;1789        1904  1         KEY_NAME ('COBOL',      2, DBG$K_COBOL),
;1790        1905  1         KEY_NAME ('BASIC',      2, DBG$K_BASIC),
;1791        1906  1         KEY_NAME ('PLI',        2, DBG$K_PLI),
;1792        1907  1         KEY_NAME ('PASCAL',     2, DBG$K_PASCAL),
;1793        1908  1         KEY_NAME ('C',          1, DBG$K_C),
;1794        1909  1         KEY_NAME ('RPG',        2, DBG$K_RPG),
;1795        1910  1         KEY_NAME ('ADA',        2, DBG$K_ADA),
;1796        1911  1         KEY_NAME ('UNKNOWN',    3, DBG$K_UNKNOWN),
;1797        1912  1
;1798        1913  1         0       ) : VECTOR [, BYTE];
```

```
;1800        1914  1 GLOBAL ROUTINE DBG$SET_LANG (LANG_STR_DESC, LANGUAGE_MODULE) =
;1801        1915  1 !
;1802        1916  1 ! FUNCTION
;1803        1917  1 !       This routine loads the pointers to the current parsing tables
;1804        1918  1 !       with those of the new language.
;1805        1919  1 !
;1806        1920  1 ! INPUTS
;1807        1921  1 !       LANG_STR_DESC   - no longer used (always 0). Eventually, this
;1808        1922  1 !                         parameter should be eliminated (requires
;1809        1923  1 !                         changing the 4 places this routine is called.)
;1810        1924  1 !       LANGUAGE_MODULE - If "lang_str_desc" is zero this parameter holds the
;1811        1925  1 !                         language number as defined in DBGLIB.REQ.
;1812        1926  1 !
;1813        1927  1 ! OUTPUTS
;1814        1928  1 !       The language index of the language to which DEBUG will be set is
;1815        1929  1 !                         returned as the routine value.
;1816        1930  1 !
;1817        1931  1
;1818        1932  2     BEGIN
;1819        1933  2     LOCAL
;1820        1934  2         DEF_RADIX;
;1821        1935  2
;1822        1936  2     ! Change language setting
;1823        1937  2     !
;1824        1938  2     DBG$GB_LANGUAGE = .LANGUAGE_MODULE;
;1825        1939  2     DBG$PARSER_SET_LANGUAGE (.DBG$GB_LANGUAGE);
;1826        1940  2     DBG$NCHANGE_TO_NEW ();
;1827        1941  2     DBG$SET_MOD_DEF ();
;1828        1942  2     DBG$SET_STP_DEF ();
;1829        1943  2     DBG$SET_SEARCH_DEF ();
;1830        1944  2
;1831        1945  2     ! Set up the default radix settings for this language.
;1832        1946  2     !
;1833        1947  2     def_radix = dbg$nget_trans_radix(dbg$k_default);
;1834        1948  2     dbg$gb_radix[dbg$b_radix_input] = .def_radix;
;1835        1949  2     dbg$gb_radix[dbg$b_radix_output] = .def_radix;
;1836        1950  2     dbg$gb_radix[dbg$b_radix_output_over] = dbg$k_default;
;1837        1951  2
;1838        1952  2     RETURN .LANGUAGE_MODULE;
;1839        1953  1     END;


                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                    05  02  00  00190 P.AAZ:   .BYTE   0, 2, 5                                    ;
                            4F  52  43  41  4D  00193           .ASCII  \MACRO\                                     ;
                                    07  02  01  00198           .BYTE   1, 2, 7                                     ;
                        4E  41  52  54  52  4F  46  0019B       .ASCII  \FORTRAN\                                   ;
                                    05  02  02  001A2           .BYTE   2, 2, 5                                     ;
                            53  53  49  4C  42  001A5           .ASCII  \BLISS\                                     ;
                                    05  02  03  001AA           .BYTE   3, 2, 5                                     ;
                            4C  4F  42  4F  43  001AD           .ASCII  \COBOL\                                     ;
                                    05  02  04  001B2           .BYTE   4, 2, 5                                     ;
                            43  49  53  41  42  001B5           .ASCII  \BASIC\                                     ;
                                    03  02  05  001BA           .BYTE   5, 2, 3                                     ;
                                        49  4C  50  001BD       .ASCII  \PLI\                                       ;
```

```
                                 06  02  06  001C0          .BYTE   6, 2, 6                                         ;
                              4C 41  43  53  41  50  001C3          .ASCII  \PASCAL\                                        ;
                                 01  01  07  001C9          .BYTE   7, 1, 1                                         ;
                                             43  001CC          .ASCII  \C\                                             ;
                                 03  02  08  001CD          .BYTE   8, 2, 3                                         ;
                                 47  50  52  001D0          .ASCII  \RPG\                                           ;
                                 03  02  09  001D3          .BYTE   9, 2, 3                                         ;
                                 41  44  41  001D6          .ASCII  \ADA\                                           ;
                                 07  03  0A  001D9          .BYTE   10, 3, 7                                        ;
                           4E 57 4F  4E  4B  4E  55  001DC          .ASCII  \UNKNOWN\                                       ;
                                             00  001E3          .BYTE   0                                               ;

                                                                LANGUAGE_TABLE=     P.AAZ

                                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                         000C 00000         .ENTRY  DBG$SET_LANG, Save R2,R3                        ; 1914
                              53 00000000G   00   9E 00002          MOVAB   DBG$GB_LANGUAGE, R3                             ;
                              52 00000000G   00   9E 00009          MOVAB   DBG$GB_RADIX, R2                                ;
                              63       08    AC   90 00010          MOVB    LANGUAGE_MODULE, DBG$GB_LANGUAGE        ; 1938
                              7E             63   9A 00014          MOVZBL  DBG$GB_LANGUAGE, -(SP)                  ; 1939
                    00000000G 00             01   FB 00017          CALLS   #1, DBG$PARSER_SET_LANGUAGE                     ;
                    00000000G 00             00   FB 0001E          CALLS   #0, DBG$NCHANGE_TO_NEW                  ; 1940
                    00000000G 00             00   FB 00025          CALLS   #0, DBG$SET_MOD_DEF                     ; 1941
                    00000000G 00             00   FB 0002C          CALLS   #0, DBG$SET_STP_DEF                     ; 1942
                    00000000G 00             00   FB 00033          CALLS   #0, DBG$SET_SEARCH_DEF                  ; 1943
                                             01   DD 0003A          PUSHL   #1                                      ; 1947
                    00000000G 00             01   FB 0003C          CALLS   #1, DBG$NGET_TRANS_RADIX                        ;
                              62             50   90 00043          MOVB    DEF_RADIX, DBG$GB_RADIX                 ; 1948
                           01 A2             50   90 00046          MOVB    DEF_RADIX, DBG$GB_RADIX+1               ; 1949
                           02 A2             01   90 0004A          MOVB    #1, DBG$GB_RADIX+2                      ; 1950
                              50       08    AC   D0 0004E          MOVL    LANGUAGE_MODULE, R0                     ; 1952
                                             04 00052          RET                                             ; 1953

; Routine Size:  83 bytes,    Routine Base:  DBG$CODE + 09F8
```

```
;  1841          1954  1 GLOBAL ROUTINE DBG$LANGUAGE (LANG_ENCODING) =
;  1842          1955  1 !
;  1843          1956  1 ! FUNCTION
;  1844          1957  1 !       Return a pointer to a counted string which is
;  1845          1958  1 !       the name of the given language.
;  1846          1959  1 !       This function exists simply to consolidate this nameing
;  1847          1960  1 !       translation into one place.
;  1848          1961  1 !
;  1849          1962  1 ! INPUTS
;  1850          1963  1 !       LANG_ENCODING   - The numeric encoding used internally to
;  1851          1964  1 !                         represent the language.  This is the same
;  1852          1965  1 !                         value that comes in the DST MODULE records for
;  1853          1966  1 !                         each language, and it is the same value that we
;  1854          1967  1 !                         store in DBG$GL_LANGUAGE.
;  1855          1968  1 !
;  1856          1969  1 ! OUTPUTS
;  1857          1970  1 !       A pointer to a counted string which names the indicated language
;  1858          1971  1 !                         is returned as the routine value.
;  1859          1972  1 !
;  1860          1973  1
;  1861          1974  2     BEGIN
;  1862          1975  2
;  1863          1976  2
;  1864          1977  2     ! Just return the desired pointer.
;  1865          1978  2     !
;  1866          1979  2     CASE .LANG_ENCODING FROM DBG$K_MACRO TO DBG$K_UNKNOWN OF
;  1867          1980  2         SET
;  1868          1981  2
;  1869          1982  2         [DBG$K_MACRO]:
;  1870          1983  2             RETURN UPLIT BYTE(%ASCIC 'MACRO');
;  1871          1984  2
;  1872          1985  2         [DBG$K_FORTRAN]:
;  1873          1986  2             RETURN UPLIT BYTE(%ASCIC 'FORTRAN');
;  1874          1987  2
;  1875          1988  2         [DBG$K_BLISS]:
;  1876          1989  2             RETURN UPLIT BYTE(%ASCIC 'BLISS');
;  1877          1990  2
;  1878          1991  2         [DBG$K_COBOL]:
;  1879          1992  2             RETURN UPLIT BYTE(%ASCIC 'COBOL');
;  1880          1993  2
;  1881          1994  2         [DBG$K_BASIC]:
;  1882          1995  2             RETURN UPLIT BYTE(%ASCIC 'BASIC');
;  1883          1996  2
;  1884          1997  2         [DBG$K_PLI]:
;  1885          1998  2             RETURN UPLIT BYTE(%ASCIC 'PLI');
;  1886          1999  2
;  1887          2000  2         [DBG$K_PASCAL]:
;  1888          2001  2             RETURN UPLIT BYTE(%ASCIC 'PASCAL');
;  1889          2002  2
;  1890          2003  2         [DBG$K_C]:
;  1891          2004  2             RETURN UPLIT BYTE(%ASCIC 'C');
;  1892          2005  2
;  1893          2006  2         [DBG$K_RPG]:
;  1894          2007  2             RETURN UPLIT BYTE(%ASCIC 'RPG');
;  1895          2008  2
;  1896          2009  2         [DBG$K_ADA]:
;  1897          2010  2             RETURN UPLIT BYTE(%ASCIC 'ADA');
```

```
;  1898          2011  2
;  1899          2012  2          [INRANGE, OUTRANGE]:
;  1900          2013  2              RETURN UPLIT BYTE(%ASCIC 'UNKNOWN');
;  1901          2014  2
;  1902          2015  2          TES;
;  1903          2016  2
;  1904          2017  1      END;


                                                        .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

                                        001E4 P.ABA:    .ASCII  <5>\MACRO\                      ;
                                        001EA P.ABB:    .ASCII  <7>\FORTRAN\                    ;
                                        001F2 P.ABC:    .ASCII  <5>\BLISS\                      ;
                                        001F8 P.ABD:    .ASCII  <5>\COBOL\                      ;
                                        001FE P.ABE:    .ASCII  <5>\BASIC\                      ;
                                        00204 P.ABF:    .ASCII  <3>\PLI\                        ;
                                        00208 P.ABG:    .ASCII  <6>\PASCAL\                     ;
                                        0020F P.ABH:    .ASCII  <1>\C\                          ;
                                        00211 P.ABI:    .ASCII  <3>\RPG\                        ;
                                        00215 P.ABJ:    .ASCII  <3>\ADA\                        ;
                                        00219 P.ABK:    .ASCII  <7>\UNKNOWN\                    ;


                                                        .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                0004 00000              .ENTRY  DBG$LANGUAGE, Save R2           ; 1954
                      52 00000000'  EF  9E 00002        MOVAB   P.ABK, R2                       ;
                      00        04  AC  CF 00009        CASEL   LANG_ENCODING, #0, #10          ; 2010
0029          0024          001F      001A  0000E 1$:   .WORD   3$-1$,-                        ;
003D          0038          0033      002E  00016                4$-1$,-                      ;
              0016          0047      0042  0001E                5$-1$,-                      ;
                                                                 6$-1$,-                      ;
                                                                 7$-1$,-                      ;
                                                                 8$-1$,-                      ;
                                                                 9$-1$,-                      ;
                                                                 10$-1$,-                     ;
                                                                 11$-1$,-                     ;
                                                                 12$-1$,-                     ;
                                                                 2$-1$                        ;
                      50            62  9E 00024 2$:    MOVAB   P.ABK, R0                       ; 2013
                                        04 00027        RET                                     ;
                      50        CB  A2  9E 00028 3$:    MOVAB   P.ABA, R0                       ; 1983
                                        04 0002C        RET                                     ; 2010
                      50        D1  A2  9E 0002D 4$:    MOVAB   P.ABB, R0                       ; 1986
                                        04 00031        RET                                     ; 2010
                      50        D9  A2  9E 00032 5$:    MOVAB   P.ABC, R0                       ; 1989
                                        04 00036        RET                                     ; 2010
                      50        DF  A2  9E 00037 6$:    MOVAB   P.ABD, R0                       ; 1992
                                        04 0003B        RET                                     ; 2010
                      50        E5  A2  9E 0003C 7$:    MOVAB   P.ABE, R0                       ; 1995
                                        04 00040        RET                                     ; 2010
                      50        EB  A2  9E 00041 8$:    MOVAB   P.ABF, R0                       ; 1998
                                        04 00045        RET                                     ; 2010
                      50        EF  A2  9E 00046 9$:    MOVAB   P.ABG, R0                       ; 2001
```

```
                                        04 0004A        RET                           ; 2010
                  50       F6    A2     9E 0004B 10$:   MOVAB   P.ABH, R0             ; 2004
                                        04 0004F        RET                           ; 2010
                  50       F8    A2     9E 00050 11$:   MOVAB   P.ABI, R0             ; 2007
                                        04 00054        RET                           ; 2010
                  50       FC    A2     9E 00055 12$:   MOVAB   P.ABJ, R0             ;
                                        04 00059        RET                           ; 2017

; Routine Size:  90 bytes,    Routine Base:  DBG$CODE + 0A4B


; 1905         2018  1
; 1906         2019  1 BIND
; 1907         2020  1        deficf_name     = UPLIT BYTE(%ASCII 'DEBUG.COM'),
; 1908         2021  1        deficf_size     = %CHARCOUNT(%ASCII 'DEBUG.COM');
; 1909         2022  1 MACRO
; 1910       M 2023  1        icf_message (prefix) =
; 1911       M 2024  1
; 1912       M 2025  1        BEGIN
; 1913       M 2026  1        BIND
; 1914       M 2027  1                enter_phrase = UPLIT BYTE(8, %ASCII 'entering'),
; 1915       M 2028  1                exit_phrase  = UPLIT BYTE(7, %ASCII 'exiting');
; 1916       M 2029  1
; 1917       M 2030  1        LOCAL
; 1918       M 2031  1                phrase;
; 1919       M 2032  1
; 1920       M 2033  1        IF prefix EQL 1
; 1921       M 2034  1        THEN
; 1922       M 2035  1                phrase = enter_phrase
; 1923       M 2036  1        ELSE
; 1924       M 2037  1                phrase = exit_phrase;
; 1925       M 2038  1
; 1926       M 2039  1
; 1927       M 2040  1        SIGNAL (dbg$_verifyicf, 3, .phrase, .fab_ptr[fab$b_fns], .fab_ptr[fab$l_fna]);  ! Info message
; 1928       M 2041  1
; 1929         2042  1        END % ;
```

```
;  1931          2043  1 GLOBAL ROUTINE DBG$CIS_CONNECTICF (SIGNAL_FLAG) : NOVALUE =
;  1932          2044  1
;  1933          2045  1 !++
;  1934          2046  1 ! FUNCTIONAL DESCRIPTION:
;  1935          2047  1 !
;  1936          2048  1 !
;  1937          2049  1 ! FORMAL PARAMETERS:
;  1938          2050  1 !       SIGNAL_FLAG     - TRUE if called from normal command procesing and
;  1939          2051  1 !                         we should signal warning message on failure.
;  1940          2052  1 !                         FALSE if called from setting up DEBUG initialization
;  1941          2053  1 !                         file. In this case just signal informational.
;  1942          2054  1 !
;  1943          2055  1 ! IMPLICIT INPUTS:
;  1944          2056  1 !
;  1945          2057  1 !       NONE
;  1946          2058  1 !
;  1947          2059  1 ! IMPLICIT OUTPUTS:
;  1948          2060  1 !
;  1949          2061  1 !       NONE
;  1950          2062  1 !
;  1951          2063  1 ! ROUTINE VALUE:
;  1952          2064  1 !
;  1953          2065  1 !       An unsigned integer longword completion code
;  1954          2066  1 !
;  1955          2067  1 ! COMPLETION CODES:
;  1956          2068  1 !
;  1957          2069  1 !       NONE
;  1958          2070  1 !
;  1959          2071  1 ! SIDE EFFECTS:
;  1960          2072  1 !
;  1961          2073  1 !       NONE
;  1962          2074  1 !
;  1963          2075  1 !--
;  1964          2076  2     BEGIN
;  1965          2077  2
;  1966          2078  2         LOCAL
;  1967          2079  2                 dummy_mess_vect,
;  1968          2080  2                 status,                         ! Return status
;  1969          2081  2                 fab_ptr : REF $FAB_DECL,        ! ptr to allocated FAB storage
;  1970          2082  2                 rab_ptr : REF $RAB_DECL,        ! ptr to allocated RAB storage
;  1971          2083  2                 ind_com_filesp : REF VECTOR [,BYTE];    ! Filespec counted string
;  1972          2084  2
;  1973          2085  2         ind_com_filesp = .dbg$gl_ind_com_file;
;  1974          2086  2
;  1975          2087  2         ! Allocate FAB and RAB storage
;  1976          2088  2
;  1977          2089  2         fab_ptr = dbg$get_memory ((fab$c_bln + 3)/ %UPVAL);
;  1978          2090  2         rab_ptr = dbg$get_memory ((rab$c_bln + 3)/ %UPVAL);
;  1979          2091  2
;  1980          2092  2         ! Initialize the FAB and the RAB
;  1981          2093  2
;  1982        P 2094  2         $FAB_INIT (FAB=.fab_ptr, FAC=GET, FNA=.ind_com_filesp + 1, FNS=.ind_com_filesp[0],
;  1983          2095  2                    DNA=deficf_name, DNS=deficf_size);
;  1984          2096  2         $RAB_INIT (RAB=.rab_ptr, FAB=.fab_ptr);
;  1985          2097  2
;  1986          2098  2         ! Put them on the command input stream
;  1987          2099  2
```

```
;  1988          2100  2          dbg$cis_add (.rab_ptr, 0, cis_rab, 0, 0);
;  1989          2101  2
;  1990          2102  2          ! Set up the local define list for the command procedure.
;  1991          2103  2          !
;  1992          2104  2          IF NOT dbg$def_pr_entry (dummy_mess_vect)
;  1993          2105  2          THEN
;  1994          2106  2
;  1995          2107  2              ! Signal the error.
;  1996          2108  2              !
;  1997          2109  3              BEGIN
;  1998          2110  3              EXTERNAL ROUTINE
;  1999          2111  3                  lib$signal: ADDRESSING_MODE(GENERAL);
;  2000          2112  3              BUILTIN
;  2001          2113  3                  CALLG;
;  2002          2114  3              CALLG (.dummy_mess_vect, lib$signal);
;  2003          2115  2              END;
;  2004          2116  2
;  2005          2117  2          ! Open and connect the file
;  2006          2118  2          !
;  2007          2119  2          status = $OPEN (FAB=.fab_ptr);
;  2008          2120  2          IF NOT .status
;  2009          2121  2          THEN
;  2010          2122  3                  BEGIN
;  2011          2123  3
;  2012          2124  3
;  2013          2125  3                  LOCAL
;  2014          2126  3                          msg_desc : BLOCK [8,BYTE];
;  2015          2127  3
;  2016          2128  3                  msg_desc[dsc$w_length]  = .fab_ptr[fab$b_fns];
;  2017          2129  3                  msg_desc[dsc$a_pointer] = .fab_ptr[fab$l_fna];
;  2018          2130  3
;  2019          2131  3
;  2020          2132  3                  ! Flag link for removal so we won't try to read from it again
;  2021          2133  3                  !
;  2022          2134  3                  dbg$gl_cishead[cis$v_rem_flag] = 1;
;  2023          2135  3                  !
;  2024          2136  3                  IF .signal_flag
;  2025          2137  3                  THEN
;  2026          2138  3                      SIGNAL (shr$_openin + dbg_fac_code, 1, msg_desc,
;  2027          2139  3                          .fab_ptr[fab$l_sts], .fab_ptr[fab$l_stv])
;  2028          2140  3                  ELSE
;  2029          2141  4                      BEGIN
;  2030          2142  4                      SIGNAL (dbg$_unaopnini, 1, msg_desc,
;  2031          2143  4                          .fab_ptr[fab$l_sts], .fab_ptr[fab$l_stv]);
;  2032          2144  4                      RETURN;
;  2033          2145  3                      END;
;  2034          2146  2                  END;
;  2035          2147  2
;  2036          2148  2          ! Connect the RAB to the just opened FAB
;  2037          2149  2          !
;  2038          2150  2          status = $CONNECT (RAB=.rab_ptr);
;  2039          2151  2          IF NOT .status
;  2040          2152  2          THEN
;  2041          2153  3                  BEGIN
;  2042          2154  3                  LOCAL
;  2043          2155  3                          msg_desc : BLOCK [8,BYTE];
;  2044          2156  3
```

```
;  2045          2157  3                msg_desc[dsc$w_length]  = .fab_ptr[fab$b_fns];
;  2046          2158  3                msg_desc[dsc$a_pointer] = .fab_ptr[fab$l_fna];
;  2047          2159  3
;  2048          2160  3
;  2049          2161  3                ! Flag link for removal so we won't try to read from it again
;  2050          2162  3
;  2051          2163  3                dbg$gl_cishead[cis$v_rem_flag] = 1;
;  2052          2164  3
;  2053          2165  3                IF .signal_flag
;  2054          2166  3                THEN
;  2055          2167  3                    SIGNAL (shr$_openin + dbg_fac_code, 1, msg_desc,
;  2056          2168  3                        .fab_ptr[fab$l_sts], .fab_ptr[fab$l_stv])
;  2057          2169  3                ELSE
;  2058          2170  3                    SIGNAL (dbg$_unaopnini, 1, msg_desc,
;  2059          2171  3                        .fab_ptr[fab$l_sts], .fab_ptr[fab$l_stv]);
;  2060          2172  3
;  2061          2173  3
;  2062          2174  3                END;
;  2063          2175  3
;  2064          2176  2            IF .dbg$gb_def_out [out_verify]
;  2065          2177  2            THEN
;  2066          2178  2                icf_message(1);
;  2067          2179  2
;  2068          2180  2            RETURN;
;  2069          2181  2
;  2070          2182  1 END;                ! End of dbg$cis_connecticf


                                                .PSECT  DBG$PLIT,NOWRT,  SHR,  PIC,0

4D 4F 43 2E 47 55 42 45 44  00221 P.ABL:    .ASCII  \DEBUG.COM\                                     ;
                        08  0022A P.ABM:    .BYTE   8                                               ;
   67 6E 69 72 65 74 6E 65  0022B           .ASCII  \entering\                                      ;
                        07  00233 P.ABN:    .BYTE   7                                               ;
      67 6E 69 74 69 78 65  00234           .ASCII  \exiting\                                       ;

                                          DEFICF_NAME=      P.ABL
                                          DEFICF_SIZE=      9
                                          ENTER_PHRASE=     P.ABM
                                          EXIT_PHRASE=      P.ABN
                                                .EXTRN  LIB$SIGNAL

                                                .PSECT  DBG$CODE,NOWRT,  SHR,  PIC,0

                                 0FFC 00000             .ENTRY  DBG$CIS_CONNECTICF, Save R2,R3,R4,R5,R6,R7,-; 2043
                                                                R8,R9,R10,R11                           ;
                 5B 00000000G   00   9E 00002           MOVAB   DBG$GL_CISHEAD, R11                     ;
                 5A 00000000G   00   9E 00009           MOVAB   DBG$GET_MEMORY, R10                     ;
                 59 00000000G   00   9E 00010           MOVAB   LIB$SIGNAL, R9                          ;
                 5E             0C   C2 00017           SUBL2   #12, SP                                 ;
                 58 00000000G   00   D0 0001A           MOVL    DBG$GL_IND_COM_FILE, IND_COM_FILESP     ; 2085
                                14   DD 00021           PUSHL   #20                                     ; 2089
                 6A             01   FB 00023           CALLS   #1, DBG$GET_MEMORY                      ;
                 56             50   D0 00026           MOVL    R0, FAB_PTR                             ;
                                11   DD 00029           PUSHL   #17                                     ; 2090
                 6A             01   FB 0002B           CALLS   #1, DBG$GET_MEMORY                      ;
```

```
                                57              50  D0 0002E            MOVL    R0, RAB_PTR
    0050    8F          00      6E              00  2C 00031            MOVC5   #0, (SP), #0, #80, (FAB_PTR)                ;2095
                                                66     00038
                                66      5003    8F  B0 00039            MOVW    #20483, (FAB_PTR)
                          16    A6              02  90 0003E            MOVB    #2, 22(FAB_PTR)
                          1F    A6              02  90 00042            MOVB    #2, 31(FAB_PTR)
                          2C    A6        01    A8  9E 00046            MOVAB   1(R8), 44(FAB_PTR)
                          30    A6 00000000'    EF  9E 0004B            MOVAB   DEFICF_NAME, 48(FAB_PTR)
                          34    A6              68  90 00053            MOVB    (IND_COM_FILESP), 52(FAB_PTR)
                          35    A6              09  90 00057            MOVB    #9, 53(FAB_PTR)
    0044    8F          00      6E              00  2C 0005B            MOVC5   #0, (SP), #0, #68, (RAB_PTR)                ;2096
                                                67     00062
                                67      4401    8F  B0 00063            MOVW    #17409, (RAB_PTR)
                          3C    A7              56  D0 00068            MOVL    FAB_PTR, 60(RAB_PTR)
                                                7E  7C 0006C            CLRQ    -(SP)                                       ;2100
                                                01  DD 0006E            PUSHL   #1
                                                7E  D4 00070            CLRL    -(SP)
                                                57  DD 00072            PUSHL   RAB_PTR
                              0000V CF                  05  FB 00074            CALLS   #5, DBG$CIS_ADD
                                                5E  DD 00079            PUSHL   SP                                          ;2104
                      00000000G 00                  01  FB 0007B            CALLS   #1, DBG$DEF_PR_ENTRY
                                04                  50  E8 00082            BLBS    R0, 1$
                                69        00        BE  FA 00085            CALLG   @DUMMY_MESS_VECT, LIB$SIGNAL            ;2114
                                                56  DD 00089 1$:        PUSHL   FAB_PTR                                     ;2119
                      00000000G 00                  01  FB 0008B            CALLS   #1, SYS$OPEN
                                52                  50  D0 00092            MOVL    R0, STATUS
                                3A                  52  E8 00095            BLBS    STATUS, 3$                              ;2120
                          04    AE          34    A6  9B 00098            MOVZBW  52(FAB_PTR), MSG_DESC                       ;2128
                          08    AE          2C    A6  D0 0009D            MOVL    44(FAB_PTR), MSG_DESC+4                     ;2129
                                50                  6B  D0 000A2            MOVL    DBG$GL_CISHEAD, R0                      ;2134
                          12    A0                  01  88 000A5            BISB2   #1, 18(R0)
                                14          04    AC  E9 000A9            BLBC    SIGNAL_FLAG, 2$                         ;2136
                                7E          08    A6  7D 000AD            MOVQ    8(FAB_PTR), -(SP)                       ;2139
                                            0C    AE  9F 000B1            PUSHAB  MSG_DESC                                ;2138
                                                01  DD 000B4            PUSHL   #1
                                    00021098        8F  DD 000B6            PUSHL   #135320
                                69                  05  FB 000BC            CALLS   #5, LIB$SIGNAL
                                                11  11 000BF            BRB     3$
                                7E          08    A6  7D 000C1 2$:        MOVQ    8(FAB_PTR), -(SP)                       ;2143
                                            0C    AE  9F 000C5            PUSHAB  MSG_DESC                                ;2142
                                                01  DD 000C8            PUSHL   #1
                                    00028683        8F  DD 000CA            PUSHL   #165507
                                                66  11 000D0            BRB     7$
                                                57  DD 000D2 3$:        PUSHL   RAB_PTR                                 ;2150
                      00000000G 00                  01  FB 000D4            CALLS   #1, SYS$CONNECT
                                52                  50  D0 000DB            MOVL    R0, STATUS
                                38                  52  E8 000DE            BLBS    STATUS, 6$                              ;2151
                          04    AE          34    A6  9B 000E1            MOVZBW  52(FAB_PTR), MSG_DESC                       ;2157
                          08    AE          2C    A6  D0 000E6            MOVL    44(FAB_PTR), MSG_DESC+4                     ;2158
                                50                  6B  D0 000EB            MOVL    DBG$GL_CISHEAD, R0                      ;2163
                          12    A0                  01  88 000EE            BISB2   #1, 18(R0)
                                11          04    AC  E9 000F2            BLBC    SIGNAL_FLAG, 4$                         ;2165
                                7E          08    A6  7D 000F6            MOVQ    8(FAB_PTR), -(SP)                       ;2168
                                            0C    AE  9F 000FA            PUSHAB  MSG_DESC                                ;2167
                                                01  DD 000FD            PUSHL   #1
                                    00021098        8F  DD 000FF            PUSHL   #135320
                                                0F  11 00105            BRB     5$
```

```
                7E        08    A6  7D 00107 4$:     MOVQ    8(FAB_PTR), -(SP)                   ; 2171
                          0C    AE  9F 0010B          PUSHAB  MSG_DESC                            ; 2170
                          01    DD  0010E             PUSHL   #1                                  ;
                   00028683     8F  DD 00110          PUSHL   #165507                             ;
                69           05  FB 00116 5$:     CALLS   #5, LIB$SIGNAL                      ;
                1B 00000000G   00  E9 00119 6$:     BLBC    DBG$GB_DEF_OUT+2, 8$                ; 2176
                50 00000000'   EF  9E 00120         MOVAB   ENTER_PHRASE, PHRASE                ; 2178
                          2C    A6  DD 00127          PUSHL   44(FAB_PTR)                         ;
                7E        34    A6  9A 0012A          MOVZBL  52(FAB_PTR), -(SP)                  ;
                          50    DD  0012E             PUSHL   PHRASE                              ;
                          03    DD  00130             PUSHL   #3                                  ;
                   0002808B     8F  DD 00132          PUSHL   #163979                             ;
                69           05  FB 00138 7$:     CALLS   #5, LIB$SIGNAL                      ;
                                 04  0013B 8$:     RET                                         ; 2182

; Routine Size:  316 bytes,    Routine Base:  DBG$CODE + 0AA5
```

```
;  2072          2183  1 GLOBAL ROUTINE dbg$cis_remove (exit_flag) : NOVALUE =
;  2073          2184  1 !++
;  2074          2185  1 ! FUNCTIONAL DECSRIPTION:
;  2075          2186  1 !       Removes the top link from the command input stream and delete the
;  2076          2187  1 !       storage for it. If the link has additional dynamic storage related to
;  2077          2188  1 !       it, such as a FAB,RAB, input buffer etc., that storage is freed also.
;  2078          2189  1 !       Note - this routine now just calls the routine DBG$NCIS_REMOVE in
;  2079          2190  1 !       the module DBGNEXCTE.
;  2080          2191  1 !
;  2081          2192  1 ! FORMAL PARAMETERS:
;  2082          2193  1 !
;  2083          2194  1 !       exit_flag -     TRUE if called from EXIT command.
;  2084          2195  1 !
;  2085          2196  1 ! IMPLICIT INPUTS:
;  2086          2197  1 !       The head of the command input stream
;  2087          2198  1 !
;  2088          2199  1 ! IMPLICIT OUTPUTS:
;  2089          2200  1 !       None
;  2090          2201  1 !
;  2091          2202  1 ! ROUTINE VALUE:
;  2092          2203  1 !       None
;  2093          2204  1 !
;  2094          2205  1 ! SIDE EFFECTS:
;  2095          2206  1 !       The head of the command input stream is reset to what was the
;  2096          2207  1 !       "next" link before this routine was called. If SET OUTPUT VERIFY,
;  2097          2208  1 !       then a message is generated saying we are exiting the indirect
;  2098          2209  1 !       command file.
;  2099          2210  1 !--
;  2100          2211  1
;  2101          2212  2     BEGIN
;  2102          2213  2
;  2103          2214  2     LOCAL
;  2104          2215  2         message_vect;           ! Dummy message argument vector.
;  2105          2216  2
;  2106          2217  2     ! Call the 'new debugger' routine. This returns a condition code
;  2107          2218  2     ! of 'severe', together with an error message vector, if something
;  2108          2219  2     ! goes wrong.
;  2109          2220  2     !
;  2110          2221  2     IF NOT dbg$ncis_remove (.exit_flag, message_vect)
;  2111          2222  2     THEN
;  2112          2223  3         BEGIN
;  2113          2224  3         ! Set up to signal error.
;  2114          2225  3         !
;  2115          2226  3         EXTERNAL ROUTINE
;  2116          2227  3             lib$signal : ADDRESSING_MODE (GENERAL);
;  2117          2228  3         BUILTIN
;  2118          2229  3             callg;
;  2119          2230  3         callg (.message_vect, lib$signal);
;  2120          2231  2         END;
;  2121          2232  1     END;


                                0000 00000          .ENTRY  DBG$CIS_REMOVE, Save nothing                ; 2183
                     5E   04    C2 00002          SUBL2   #4, SP                                      ;
```

```
                                 5E  DD 00005          PUSHL   SP                                          ; 2221
                              04 AC  DD 00007          PUSHL   EXIT_FLAG                                   ;
                00000000G  00    02  FB 0000A          CALLS   #2, DBG$NCIS_REMOVE                         ;
                           08    50  E8 00011          BLBS    R0, 1$                                      ;
                00000000G  00 00 BE  FA 00014          CALLG   @MESSAGE_VECT, LIB$SIGNAL                   ; 2230
                                    04 0001C 1$:       RET                                                 ; 2232

; Routine Size:  29 bytes,    Routine Base:  DBG$CODE + 0BE1
```

```
;  2123          2233  1 GLOBAL ROUTINE dbg$cis_add (pointer, length, type,
;  2124          2234  1                             repeat_count, while_clause): NOVALUE =
;  2125          2235  1 !++
;  2126          2236  1 ! FUNCTIONAL DESCRIPTION:
;  2127          2237  1 !       Adds a link to the command input stream
;  2128          2238  1 !       Note - this routine now just calls the routine DBG$NCIS_ADD in
;  2129          2239  1 !       the module DBGNEXCTE.
;  2130          2240  1 !
;  2131          2241  1 ! FORMAL PARAMETERS:
;  2132          2242  1 !       pointer -       The address of either a buffer or a RAB to be placed
;  2133          2243  1 !                       in the dsc$a_pointer field of the new link.
;  2134          2244  1 !       length  -       The length of the above buffer. (0 for RAB)
;  2135          2245  1 !       type    -       The type of the link to be added
;  2136          2246  1 !       repeat_count -  For a link of type "doloop" [Created during processing
;  2137          2247  1 !                       of REPEAT N TIMES ( ... ) command], this represents the
;  2138          2248  1 !                       number of remaining iterations.
;  2139          2249  1 !       while_clause -  For a link of type "while", this points to a counted
;  2140          2250  1 !                       ascii string with the while clause.
;  2141          2251  1 !
;  2142          2252  1 ! IMPLICIT INPUTS:
;  2143          2253  1 !       The head of the command input stream
;  2144          2254  1 !
;  2145          2255  1 ! IMPLICIT OUTPUTS:
;  2146          2256  1 !       None
;  2147          2257  1 !
;  2148          2258  1 ! ROUTINE VALUE:
;  2149          2259  1 !       None
;  2150          2260  1 !
;  2151          2261  1 ! SIDE EFFECTS:
;  2152          2262  1 !       None
;  2153          2263  1 !--
;  2154          2264  1
;  2155          2265  2     BEGIN
;  2156          2266  2     LOCAL
;  2157          2267  2         message_vect;    ! Holds message argument vector.
;  2158          2268  2
;  2159          2269  2     ! DBG$NCIS_ADD will return 'success' (1) if all goes well.
;  2160          2270  2     !
;  2161          2271  2     IF NOT dbg$ncis_add (.pointer, .length, .type,
;  2162          2272  2                          .repeat_count, .while_clause, 0,
;  2163          2273  2                           message_vect)
;  2164          2274  2     THEN
;  2165          2275  3         BEGIN
;  2166          2276  3         ! Set up to signal error.
;  2167          2277  3         !
;  2168          2278  3         EXTERNAL ROUTINE
;  2169          2279  3             lib$signal : ADDRESSING_MODE (GENERAL);
;  2170          2280  3         BUILTIN
;  2171          2281  3             callg;
;  2172          2282  3         callg (.message_vect, lib$signal);
;  2173          2283  2         END;
;  2174          2284  1     END;
```

```
                                        0000 00000          .ENTRY  DBG$CIS_ADD, Save nothing                       ; 2233
                                  5E    04   C2 00002          SUBL2   #4, SP                                          ;
                                        5E   DD 00005          PUSHL   SP                                              ; 2271
                                        7E   D4 00007          CLRL    -(SP)                                           ;
                                  7E    10   AC 7D 00009          MOVQ    REPEAT_COUNT, -(SP)                         ; 2272
                                  7E    08   AC 7D 0000D          MOVQ    LENGTH, -(SP)                               ; 2271
                                        04   AC DD 00011          PUSHL   POINTER                                         ;
                00000000G         00        07   FB 00014          CALLS   #7, DBG$NCIS_ADD                            ;
                                  08        50   E8 0001B          BLBS    R0, 1$                                      ;
                00000000G         00   00   BE   FA 0001E          CALLG   @MESSAGE_VECT, LIB$SIGNAL                   ; 2282
                                             04 00026 1$:       RET                                                     ; 2284

; Routine Size:  39 bytes,    Routine Base:  DBG$CODE + 0BFE
```

```
;  2176          2285  1 MACRO
;  2177        M 2286  1         IF_SIGNAL (code)  =
;  2178        M 2287  1             IF .signal_flag NEQ 0
;  2179        M 2288  1             THEN
;  2180        M 2289  1                 BEGIN
;  2181        M 2290  1                     IF NOT
;  2182        M 2291  1                         ( IF %LENGTH GTR 1
;  2183        M 2292  1                           THEN dbg$nout_info (code, %REMAINING)
;  2184        M 2293  1                           ELSE dbg$nout_info (code))
;  2185        M 2294  1                     THEN
;  2186        M 2295  1                         BEGIN
;  2187        M 2296  1                             .signal_flag = (IF %LENGTH GTR 1
;  2188        M 2297  1                                             THEN
;  2189        M 2298  1                                                 dbg$nmake_arg_vect (code, %REMAINING)
;  2190        M 2299  1                                             ELSE
;  2191        M 2300  1                                                 dbg$nmake_arg_vect (code));
;  2192        M 2301  1                             RETURN sts$k_severe;
;  2193        M 2302  1                         END
;  2194        M 2303  1                 END
;  2195        M 2304  1             ELSE
;  2196        M 2305  1                 BEGIN
;  2197        M 2306  1                     IF %LENGTH GTR 1
;  2198        M 2307  1                     THEN
;  2199        M 2308  1                         SIGNAL (code, %REMAINING)
;  2200        M 2309  1                     ELSE
;  2201        M 2310  1                         SIGNAL (code)
;  2202          2311  1                 END %;
;  2203          2312  1
;  2204          2313  1 MACRO
;  2205        M 2314  1         SET_FLAG (param_num) =
;  2206        M 2315  1             LOCAL
;  2207        M 2316  1                 signal_flag;
;  2208        M 2317  1
;  2209        M 2318  1             signal_flag = (IF actualcount () GTR param_num
;  2210        M 2319  1                            THEN
;  2211        M 2320  1                                actualparameter (actualcount())
;  2212        M 2321  1                            ELSE
;  2213          2322  1                                0) %;
;  2214          2323  1
;  2215          2324  1 END
;  2216          2325  0 ELUDOM


                                                                .EXTRN  LIB$SIGNAL

;                                PSECT SUMMARY
;
;       Name                    Bytes                           Attributes
;
;  DBG$PLIT                       571  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(0)
;  DBG$CODE                      3109  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(0)
;  DBG$OWN                         32  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,  PIC,ALIGN(2)
```

```
;                              Library Statistics
;
;                                        --------- Symbols ---------      Pages       Processing
;       File                             Total     Loaded    Percent      Mapped      Time
;
;  _$255$DUA28:[SYSLIB]LIB.L32;1          18619       86          0        1000        00:01.9
;  _$255$DUA28:[DEBUG.OBJ]STRUCDEF.L32;1     32        0          0           7        00:00.1
;  _$255$DUA28:[DEBUG.OBJ]DBGLIB.L32;1     1545      124          8          97        00:01.9
;  _$255$DUA28:[DEBUG.OBJ]DSTRECRDS.L32;1
;                                           418       11          2          31        00:00.3
;  _$255$DUA28:[DEBUG.OBJ]DBGMSG.L32;1      386       36          9          22        00:00.3
;  _$255$DUA28:[DEBUG.OBJ]DBGGEN.L32;1      150       30         20          12        00:00.3
```

```
;                                  COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:DBGLEVEL1/OBJ=OBJ$:DBGLEVEL1 MSRC$:DBGLEVEL1/UPDATE=(ENH$:DBGLEVEL1)

; Size:         3109 code + 603 data bytes
; Run Time:       01:03.9
; Elapsed Time:   03:10.8
; Lines/CPU Min:   2181
; Lexemes/CPU-Min: 18423
; Memory Used:  304 pages
; Compilation Complete
```

DBGIFTHEN
LIS

DBGLANVEC
LIS

DBGLANGOP
LIS

DBGGEN
LIS

DBGLEVEL1
LIS

DBGLEVEL3
LIS

DBGLIB
LIS