K 6

```
FFFFFFFFFFFFFFF     000000000     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFFFFFFFFFFFFFF     000000000     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFFFFFFFFFFFFFF     000000000     RRRRRRRRRRRR     RRRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFF              000         000  RRR         RRR  RRR         RRR        TTT        LLL
FFFFFFFFFFFF     000         000  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFFFFFFFFFFF     000         000  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFFFFFFFFFFF     000         000  RRRRRRRRRRRR     RRRRRRRRRRRR           TTT        LLL
FFF              000         000  RRR   RRR        RRR   RRR              TTT        LLL
FFF              000         000  RRR   RRR        RRR   RRR              TTT        LLL
FFF              000         000  RRR   RRR        RRR   RRR              TTT        LLL
FFF              000         000  RRR      RRR     RRR      RRR           TTT        LLL
FFF              000         000  RRR      RRR     RRR      RRR           TTT        LLL
FFF              000         000  RRR      RRR     RRR      RRR           TTT        LLL
FFF                 000000000     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
FFF                 000000000     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
FFF                 000000000     RRR         RRR  RRR         RRR        TTT        LLLLLLLLLLLLLLL
```

FILEID**FORFMTCP

```
FFFFFFFFFF    000000    RRRRRRRR    FFFFFFFFFF  MM      MM  TTTTTTTTTT    CCCCCCCC  PPPPPPPP
FFFFFFFFFF    000000    RRRRRRRR    FFFFFFFFFF  MM      MM  TTTTTTTTTT    CCCCCCCC  PPPPPPPP
FF          00      00  RR      RR  FF          MMMM  MMMM      TT      CC          PP      PP
FF          00      00  RR      RR  FF          MMMM  MMMM      TT      CC          PP      PP
FF          00      00  RR      RR  FF          MM  MM  MM      TT      CC          PP      PP
FF          00      00  RR      RR  FF          MM  MM  MM      TT      CC          PP      PP
FFFFFFFF    00      00  RRRRRRRR    FFFFFFFF    MM      MM      TT      CC          PPPPPPPP
FFFFFFFF    00      00  RRRRRRRR    FFFFFFFF    MM      MM      TT      CC          PPPPPPPP
FF          00      00  RR  RR      FF          MM      MM      TT      CC          PP
FF          00      00  RR  RR      FF          MM      MM      TT      CC          PP
FF          00      00  RR    RR    FF          MM      MM      TT      CC          PP              ....
FF          00      00  RR    RR    FF          MM      MM      TT      CC          PP              ....
FF            000000    RR      RR  FF          MM      MM      TT        CCCCCCCC  PP              ....
FF            000000    RR      RR  FF          MM      MM      TT        CCCCCCCC  PP              ....


LL            IIIIII      SSSSSSSS
LL            IIIIII      SSSSSSSS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II      SS
LL              II        SSSSSS
LL              II        SSSSSS
LL              II              SS
LL              II              SS
LL              II              SS
LL              II              SS
LLLLLLLLLL    IIIIII    SSSSSSSS
LLLLLLLLLL    IIIIII    SSSSSSSS
```

```
0 MODULE FOR$$FMTCP (%TITLE'FORTRAN OBJECT TIME FORMAT COMPILER'
0                       IDENT = '2-006'         ! File: FORFMTCP.B32  Edit: SBL2006
0                       ) =
1 BEGIN
1 !****************************************************************************
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1 !*                                                                          *
1 !****************************************************************************
1 !
1
1 !++
1 ! FACILITY: FORTRAN SUPPORT LIBRARY
1 !
1 ! ABSTRACT:
1 !
1 !       This module is the run-time FORTRAN format compiler, FOR$$FMT_COMPIL.
1 !       It translates a format into the same form that the FORTRAN
1 !       compiler does.  This module is adapted from the equivalent
1 !       compiler module, therefore changes in this module should be
1 !       evaluated to see if the compiler should be changed, and vice versa.
1 !
1 ! ENVIRONMENT: User access mode; AST re-entrant
1 !
1 ! AUTHOR: Peter Yuo, CREATION DATE: 07-June-77
1 !
1 ! MODIFIED BY:
1 !
1 !         Joel Clinkenbeard (FORTRAN IV-PLUS)
1 !         Steven B. Lionel (Run-Time Library)
1 !         Version 2  15-May-1979
1 !
1 ! EDIT HISTORY:
1 !
1 ! 2-001 - Update to level of Version 2.0 FORTRAN compiler, including
1 !         FORTRAN-77 format codes.  SBL 15-May-1979
1 ! 2-002 - X is now the same as TR.  SBL 2-Aug-1979
1 ! 2-003 - Eliminate an extraneous RETURN expression.  JBS 06-SEP-1979
1 ! 2-004 - Allow sequences such as ",,", ",)" without error.  SBL 18-Dec-1979
1 ! 2-005 - Allow null characters in quoted literals and Hollerith literals.
```

```
:    58          0058   1 !             SPR 11-44210 SBL 1-March-1982
:    59          0059   1 ! 2-006 - Allow W value to be zero; new extension for V4.  Use prologue file.
:    60          0060   1 !             SBL 26-Apr-1983
:    61          0061   1 !--
:    62          0062   1
```

```
   1 !
   1 ! PROLOGUE FILE:
   1 !
   1
   1 REQUIRE 'RTLIN:FORPROLOG';                          ! FORTRAN definitions
   1
   1 !
   1 ! LINKAGES:
   1 !
   1
   1 LINKAGE
   1     CALL_G3 = CALL : GLOBAL (SAVVAL = 11, SAVTYP = 10, PTR = 9);
   1
   1 !
   1 ! TABLE OF CONTENTS:
   1 !
   1
   1 FORWARD ROUTINE
   1     FOR$$FMT_COMPIL : NOVALUE,
   1     REDUCE : NOVALUE CALL_G3,
   1     DEFER : NOVALUE CALL_G3,
   1     UNDEFER : NOVALUE CALL_G3,
   1     NZERO : NOVALUE CALL_G3,
   1     NSAVE : NOVALUE CALL_G3,
   1     PUTBYT : NOVALUE CALL_G3,
   1     BYTSIZ;
   1
   1 !
   1 ! MACROS:
   1 !
   1
   1 MACRO
M  1     ERROR (ERR_SYM) =
M  1         (FOR$$SIGNAL_STO (FOR$K_SYNERRFOR);
   1         RETURN (0)) %,
M  1     EXT_REG =
M  1         EXTERNAL REGISTER
M  1             SAVVAL: REF VECTOR[,LONG],
M  1             SAVTYP: REF VECTOR[,LONG],
   1             PTR: REF VECTOR[,LONG] %,
M  1     GC =
M  1
   1         CH$RCHAR_A (FORMAT_PTR) %,
M  1     GNB =
M  1
M  1         BEGIN
M  1         FORMAT_PTR = CH$FIND_NOT_CH (K_MAX_LENGTH, .FORMAT_PTR, %C' ') ;
M  1         IF CH$FAIL (.FORMAT_PTR)
M  1         THEN
M  1             ERROR (ERRFMTCHAR);
M  1         BEGIN
M  1         LOCAL
M  1             C;
M  1         C = CH$RCHAR_A (FORMAT_PTR);
M  1         IF (.C GEQU %C'a') AND (.C LEQU %C'z')
M  1         THEN
M  1             .C - (%C'a' - %C'A')
```

```
;  121      M 0185  1           ELSE
;  122      M 0186  1               .C
;  123      M 0187  1           END
;  124        0188  1           END %;
;  125        0189  1
;  126        0190  1 !
;  127        0191  1 ! EXTERNAL REFERENCES:
;  128        0192  1 !
;  129        0193  1
;  130        0194  1 EXTERNAL ROUTINE
;  131        0195  1     FOR$$GET_VM,                            ! Get dynamic virtual memory
;  132        0196  1     FOR$$FREE_VM : NOVALUE,                 ! Free dynamic virtual memory
;  133        0197  1     FOR$$SIGNAL_STO : NOVALUE;              ! signal-stop FOR$_abcmnoxyz, given
;  134        0198  1
;  135        0199  1                                             ! (short) Fortran error number (FOR$K_abcmnoxyz)
;  136        0200  1                                             ! as a parameter
;  137        0201  1 !
;  138        0202  1 ! OWN STORAGE:
;  139        0203  1 !
;  140        0204  1 !       NONE
;  141        0205  1 !
;  142        0206  1 ! EQUATED SYMBOLS:
;  143        0207  1 !
;  144        0208  1
;  145        0209  1 LITERAL
;  146        0210  1     TRUE = 1,
;  147        0211  1     K_FMT_BUF_INIT = 256,                   ! initial length (bytes) of format buffer
;  148        0212  1     K_MAX_LENGTH = 65535,                   ! max. length of input character array
;  149        0213  1
;  150        0214  1     !+
;  151        0215  1     ! Define offsets into LOCAL VECTOR pointed to by GLOBAL register PTR
;  152        0216  1     !-
;  153        0217  1
;  154        0218  1     L_FDEFER = 0,                           ! format code for deffered item
;  155        0219  1     L_FCOUNT = 1,                           ! count of W, D, for deferred item
;  156        0220  1     L_PHASE = 2,                            ! index to SAVVAL and SAVTYP
;  157        0221  1     L_NEST = 3,                             ! parenthesis nest level
;  158        0222  1     L_SIGN = 4,                             ! non-zero if minus sign seen
;  159        0223  1     L_NVAL = 5,                             ! value of numberic item
;  160        0224  1     L_TYPE = 6,                             ! type of numeric item
;  161        0225  1     L_NCHAR = 7,                            ! character index within FMT_BUF
;  162        0226  1     A_FMT_BUF_BEG = 8,                      ! pointer to beginning of compiled output
;  163        0227  1     L_CPRIME = 9,                           ! previous character
;  164        0228  1     L_FMT_BUF_SIZ = 10,                ! current size (bytes) of dynamically allocated format buffer
;  165        0229  1
;  166        0230  1     !+
;  167        0231  1     ! Define size constants for the LOCAL structures
;  168        0232  1     !-
;  169        0233  1
;  170        0234  1     K_PTR_SIZ = 11,                         ! No. of local variables pointed to by PTR
;  171        0235  1     K_SAVVAL_SIZ = 4,                       ! No. of longwords in SAVVAL
;  172        0236  1     K_SAVTYP_SIZ = 4,                       ! No. of longwords in SAVTYP
;  173        0237  1     K_PTR_OFFSET = K_SAVVAL_SIZ + K_SAVTYP_SIZ, ! Offset into local storage
;  174        0238  1                                             ! of PTR
;  175        0239  1     K_LOCAL_SIZ = K_PTR_OFFSET + K_PTR_SIZ;   ! Total size of LOCAL storage (longwords)
;  176        0240  1
;  177        0241  1 BIND
;  178      0242  1      ! CHARACTER CLASS TABLE
;  179      0243  1      !
;  180      0244  1      K_CLASS_TAB_MAX = 132,                          ! MAX. LEGAL CHARACTER (OUTSIDE OF STRING CONSTANT)
;  181      0245  1      CLASS = UPLIT BYTE(
;  182      0246  1               1,  0,  0,  0,  0,  0,  0,  0,      ! 000
;  183      0247  1               0,  0,  0,  0,  0,  0,  0,  0,      ! 010
;  184      0248  1               0,  0,  0,  0,  0,  0,  0,  0,      ! 020
;  185      0249  1               0,  0,  0,  0,  0,  0,  0,  0,      . 030
;  186      0250  1               0,  0,  0,  0,  9,  0,  0, 13,      ! 040
;  187      0251  1               6,  7,  0,  3, 11,  2, 12,  8,      ! 050
;  188      0252  1               5,  5,  5,  5,  5,  5,  5,  5,      ! 060
;  189      0253  1               5,  5, 10,  0,  4,  0,  0,  0,      . 070
;  190      0254  1               0, 14, 15,  0, 16, 17, 18, 19,      ! 100
;  191      0255  1              20, 21,  0,  0, 22,  0,  0, 23,      . 110
;  192      0256  1              24, 25,  0, 26, 27,  0,  0,  0,      ! 120
;  193      0257  1          28, 0, 29) : VECTOR [, BYTE];            ! 130
;  194      0258  1
;  195      0259  1  BIND
;  196      0260  1      ! FORMAT CODES
;  197      0261  1      !
;  198      0262  1      TOPLVL = 1,                                 ! Format reversion point
;  199      0263  1      LPAREN = 2,                                 ! Left parenthesis
;  200      0264  1      RPAREN = 3,                                 ! Right parenthesis
;  201      0265  1      ENDFMT = 4,                                 ! End of format
;  202      0266  1      SLASH = 5,                                  ! Slash
;  203      0267  1      DOLLAR = 6,                                 ! Dollar sign
;  204      0268  1      COLON = 7,                                  ! Colon
;  205      0269  1      SCODE = 9,                                  ! S
;  206      0270  1      SPCODE = 10,                                ! SP
;  207      0271  1      SSCODE = 11,                                ! SS
;  208      0272  1      PCODE = 12,                                 ! P
;  209      0273  1      TCODE = 13,                                 ! T
;  210      0274  1      XCODE = 14,                                 ! X
;  211      0275  1      HCODE = 15,                                 ! H or quote
;  212      0276  1      BNCODE = 16,                                ! BN
;  213      0277  1      BZCODE = 17,                                ! BZ
;  214      0278  1      TLCODE = 18,                                ! TL
;  215      0279  1      TRCODE = 19,                                ! TR
;  216      0280  1      QCODE = 20,                                 ! Q
;  217      0281  1      ACODE = 21,                                 ! A
;  218      0282  1      LCODE = 22,                                 ! L
;  219      0283  1      OCODE = 23,                                 ! O
;  220      0284  1      ICODE = 24,                                 ! I
;  221      0285  1      ZCODE = 25,                                 ! Z
;  222      0286  1      FCODE = 30,                                 ! F
;  223      0287  1      ECODE = 31,                                 ! E
;  224      0288  1      GCODE = 32,                                 ! G
;  225      0289  1      DCODE = 33,                                 ! D
;  226      0290  1      IOZOFFSET = 3,                              ! Offset for Iw.m,Ow.m,Zw.m
;  227      0291  1      EGOFFSET = 3,                               ! Offset for E,G with Ee exponent
;  228      0292  1      OFFSET = 20;                                ! Offset to default A...D codes
;  229      0293  1
```

```
1 GLOBAL ROUTINE FOR$$FMT_COMPIL (                 ! RUN-TIME FORMAT COMPILER
1         FORMAT,                                  ! Address of the source format statement
1         ALLOCATED_LEN,                           ! Length of the encoded format
1         ALLOCATED_ADR                            ! Address of the encoded format
1     ) : NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Process the format statement.  If there is any illegal
1 !       character encounted, calls error routine and return.
1 !       Otherwise, it will process each format code one at a time
1 !       and output compiled encoding whenever all the information
1 !       has been gathered.
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       FORMAT.rbu.ra           Address of the source format statment text
1 !       ALLOCATED_LEN.ww.r      Address of a word containing the length of the
1 !                               compiled format encoding fori the source
1 !                               format statement
1 !       ALLOCATED_ADR.wa.r      Address of a longword containing the
1 !                               address of the compiled format encoding for
1 !                               the source format statement
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       NONE
1 !
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       FMTDAT array
1 !
1 ! ROUTINE VALUE:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
1 !
1 !--
1
2     BEGIN
2
2     MAP
2         ALLOCATED_LEN : REF VECTOR [1, WORD],
2         ALLOCATED_ADR : REF VECTOR [1, LONG];
2
2     GLOBAL REGISTER
2         SAVVAL = 11 : REF VECTOR [K_SAVVAL_SIZ],         ! pointer to value N, W, D
2         SAVTYP = 10 : REF VECTOR [K_SAVTYP_SIZ],         ! pointer to type of N, W, D
2         PTR = 9 : REF VECTOR [K_PTR_SIZ];        ! pointer to rest of LOCAL array
2
2     LOCAL
2         CHAR,                                    ! LAST CHARACTER FROM SOURCE
```

```
2          FORMAT_PTR,                              ! Address of last character from source
2          FMTDAT : VECTOR [K_LOCAL_SIZ];           ! impure data for format processing
2
2 !+
2 ! Bind names to LOCAL storage for this routine only.  Calls to other routines
2 ! access these locations using .PTR[L_name].
2 !-
2
2      BIND
2          FDEFER = FMTDAT [K_PTR_OFFSET + L_FDEFER],       ! FORMAT CODE FOR DEFERRED ITEM
2          FCOUNT = FMTDAT [K_PTR_OFFSET + L_FCOUNT],       ! COUNT OF W, D FOR DEFERRED ITEM
2          PHASE = FMTDAT [K_PTR_OFFSET + L_PHASE],         ! INDEX TO SAVVAL AND SAVTYP
2          NEST = FMTDAT [K_PTR_OFFSET + L_NEST],   ! PARENTHESIS NEST LEVEL
2          SIGN = FMTDAT [K_PTR_OFFSET + L_SIGN],   ! -1 if neg, 1 if pos, 0 if no sign
2          NVAL = FMTDAT [K_PTR_OFFSET + L_NVAL],   ! VALUE OF NUMERIC ITEM
2          TYPE = FMTDAT [K_PTR_OFFSET + L_TYPE],   ! TYPE OF NUMERIC ITEM
2          ! -1 = VARIABLE FORMAT EXPRESSION
2          !  0 = NOT PRESENT
2          ! +1 = CONSTANT
2          NCHAR = FMTDAT [K_PTR_OFFSET + L_NCHAR],         ! CHARACTER INDEX WITHIN FMT_BUF
2          FMT_BUF_BEG = FMTDAT [K_PTR_OFFSET + A_FMT_BUF_BEG],
2                                                   ! POINTER TO BEGINING OF COMPILED OUTPUT FORMAT BUFFER
2          CPRIME = FMTDAT [K_PTR_OFFSET + L_CPRIME],       ! PREVIOUS CHARACTER
2          FMT_BUF_SIZ = FMTDAT [K_PTR_OFFSET + L_FMT_BUF_SIZ];
2
2                                                   ! CURRENT ALLOCATION FOR DYNAMICALLY ALLOCATED FORMAT BUFFER
2
2      !+
2      ! Setup GLOBAL registers to be passed to other routines
2      !-
2
2      SAVVAL = FMTDAT [0];                         ! Set pointer to value of N, W, D parameters
2      SAVTYP = FMTDAT [K_SAVVAL_SIZ];              ! Set pointer to type of N, W, D parameters
2      PTR = FMTDAT [K_PTR_OFFSET];                 ! Set pointer to remainder of local storage
2      ! ACTUALLY PROCESS THE FORMAT SPECIFICATION
2      ! Clear LOCAL storage, and allocate initial format buffer
2      !
2      FILL_VAL (0, K_LOCAL_SIZ, FMTDAT);
2      FMT_BUF_BEG = FOR$$GET_VM (K_FMT_BUF_INIT);
2      FMT_BUF_SIZ = K_FMT_BUF_INIT;
2      CPRIME = '(';
2      FORMAT_PTR = CH$PTR (.FORMAT);
2      FORMAT_PTR = CH$FIND_NOT_CH (K_MAX_LENGTH, .FORMAT_PTR, %C' ');
2
2      IF CH$FAIL (.FORMAT_PTR) OR CH$RCHAR_A (FORMAT_PTR) NEQ %C'('
2      THEN
3          ERROR (ERRMISSDLM)
2      ELSE
3          BEGIN
3
3          WHILE 1 DO
4              BEGIN
4              CHAR = GNB;                          ! Get next non-blank
4
4              IF .CHAR GTRU K_CLASS_TAB_MAX THEN ERROR (ERRFMTCHAR);
4
4              CASE .CLASS [.CHAR] FROM 0 TO 29 OF
```

```
:  345          0408  4                  SET
:  346          0409  4
:  347          0410  4                  [0] :
:  348          0411  4                      ! 0 - INVALID CHARACTER
:  349          0412  4                      !
:  350          0413  4                      ERROR (ERRFMTCHAR);
:  351          0414  4
:  352          0415  4                  [1] :
:  353          0416  4                      ! 1 - NULL CHARACTER
:  354          0417  4                      !
:  355          0418  4                      ERROR (ERRFMTRPAR);
:  356          0419  4
:  357          0420  4                  [2] :
:  358          0421  4                      ! 2 - MINUS SIGN
:  359          0422  4                      !
:  360          0423  5                      BEGIN
:  361          0424  5
:  362          0425  5                      IF .SIGN NEQ 0 OR .TYPE NEQ 0 THEN ERROR (ERRFMTCHAR);
:  363          0426  5
:  364          0427  5                      SIGN = -1;
:  365          0428  4                      END;
:  366          0429  4
:  367          0430  4                  [3] :
:  368          0431  4                      ! 3 - PLUS SIGN
:  369          0432  4                      !
:  370          0433  5                      BEGIN
:  371          0434  5
:  372          0435  5                      IF .SIGN NEQ 0 OR .TYPE NEQ 0 THEN ERROR (ERRFMTCHAR);
:  373          0436  5
:  374          0437  5                      SIGN = 1;
:  375          0438  4                      END;
:  376          0439  4
:  377          0440  4                  [4] :
:  378          0441  4                      ! 4 - LEFT ANGLE BRACKET
:  379          0442  4                      !
:  380          0443  4                      ERROR (ERRFMTCHAR);
:  381          0444  4
:  382          0445  4                  [5] :
:  383          0446  4                      ! 5 - DIGIT
:  384          0447  4                      !
:  385          0448  5                      BEGIN
:  386          0449  5                      TYPE = 1;
:  387          0450  5                      NVAL = .NVAL*10 + .CHAR - '0';
:  388          0451  4                      END;
:  389          0452  4
:  390          0453  4                  [6] :
:  391          0454  4                      ! 6 - LEFT PARENTHESIS
:  392          0455  4                      !
:  393          0456  5                      BEGIN
:  394          0457  5                      NZERO ();
:  395          0458  5                      NSAVE ();
:  396          0459  5
:  397          0460  5                      IF .NEST EQL 0 THEN PUTBYT (TOPLVL);
:  398          0461  5
:  399          0462  5                      IF (NEST = .NEST + 1) GTR 8 THEN ERROR (ERRFMTNEST);
:  400          0463  5
:  401          0464  5                      REDUCE (LPAREN);
```

```
;  402          0465  4                          END;
;  403          0466  4
;  404          0467  4                  [7] :
;  405          0468  4                      ! 7 - RIGHT PARENTHESIS
;  406          0469  4                      !
;  407          0470  5                      BEGIN
;  408          0471  5
;  409          0472  5                      !+
;  410          0473  5                      ! When the VAX-11 FORTRAN compiler sees the sequence ",)",
;  411          0474  5                      ! it issues a warning message and otherwise ignores the
;  412          0475  5                      ! extra delimiter.  A deliberate decision was made for
;  413          0476  5                      ! release 2 to ignore this occurrence entirely in the
;  414          0477  5                      ! run-time format compiler.
;  415          0478  5                      !-
;  416          0479  5 !                    IF .CPRIME EQL ',' THEN ERROR (ERRFMXTCOM);
;  417          0480  5
;  418          0481  5                      UNDEFER ();
;  419          0482  5
;  420          0483  5                      IF (NEST = .NEST - 1) LSS 0 THEN EXITLOOP;
;  421          0484  5
;  422          0485  5                      PUTBYT (RPAREN);
;  423          0486  4                      END;
;  424          0487  4
;  425          0488  4                  [8] :
;  426          0489  4                      ! 8 - SLASH
;  427          0490  4                      !
;  428          0491  5                      BEGIN
;  429          0492  5                      UNDEFER ();
;  430          0493  5                      PUTBYT (SLASH);
;  431          0494  4                      END;
;  432          0495  4
;  433          0496  4                  [9] :
;  434          0497  4                      ! 9 - DOLLAR SIGN
;  435          0498  4                      !
;  436          0499  5                      BEGIN
;  437          0500  5                      UNDEFER ();
;  438          0501  5                      PUTBYT (DOLLAR);
;  439          0502  4                      END;
;  440          0503  4
;  441          0504  4                  [10] :
;  442          0505  4                      ! 10 - COLON
;  443          0506  4                      !
;  444          0507  5                      BEGIN
;  445          0508  5                      UNDEFER ();
;  446          0509  5                      PUTBYT (COLON);
;  447          0510  4                      END;
;  448          0511  4
;  449          0512  4                  [11] :
;  450          0513  4                      ! 11 - COMMA
;  451          0514  4                      !
;  452          0515  5                      BEGIN
;  453          0516  5
;  454          0517  5                      !+
;  455          0518  5                      ! The sequence ",," or "(," is ignored here.  See comment
;  456          0519  5                      ! under RIGHT PARENTHESIS.
;  457          0520  5                      !-
;  458          0521  5 !                    IF .CPRIME EQL ',' OR .CPRIME EQL '(' THEN ERROR (ERRFMXTCOM);
5
5              UNDEFER ();
4              END;
4
4          [12] :
4              ! 12 - DECIMAL POINT
4              !
5              BEGIN
5
5              IF .TYPE EQL 0 THEN ERROR (ERRFMTNUMB);
5
5              IF .SIGN NEQ 0 THEN ERROR (ERRFMTRNGE);
5
5              IF .FCOUNT LSS 2 OR .FHASE NEQ 1 THEN ERROR (ERRFMTCHAR);
5
5              NSAVE ();
4              END;
4
4          [13] :
4              ! 13 - QUOTE
4              !
5              BEGIN
5
5              LOCAL
5                  P;
5
5              UNDEFER ();
5              P = .FORMAT_PTR;
5
5              DO
6                  BEGIN
6
6                  DO
7                      BEGIN
7                      CHAR = GC;          ! Get next character
7                      NVAL = .NVAL + 1;
7                      END
6                  WHILE .CHAR NEQ '''';
6
6                  CHAR = GC;
6                  END
5              WHILE .CHAR EQL '''';
5
5              FORMAT_PTR = .P;
5
5              IF (NVAL = P = .NVAL - 1) EQL 0 THEN ERROR (ERRZLSTR);
5
5              TYPE = 1;
5              PHASE = 1;
5              NSAVE ();
5              REDUCE (HCODE);
5
5              DECR I FROM .P TO 1 DO
6                  BEGIN
6
6                  IF (CHAR = GC) EQL '''' THEN GC;
6
```

```
;  516      0579  6                                 PUTBYT (.CHAR);
;  517      0580  5                                 END;
;  518      0581  5
;  519      0582  5                             CHAR = GC;
;  520      0583  4                             END;
;  521      0584  4
;  522      0585  4                         [14] :
;  523      0586  4                             ! 14 - LETTER A
;  524      0587  4                             !
;  525      0588  4                             DEFER (ACODE, 1);
;  526      0589  4
;  527      0590  4                         [15] :
;  528      0591  4                             ! 15 - Letter B
;  529      0592  4                             !
;  530      0593  5                             BEGIN
;  531      0594  5                             UNDEFER ();
;  532      0595  5
;  533      0596  5                             SELECTONE (CHAR = GNB) OF
;  534      0597  5                                 SET
;  535      0598  5
;  536      0599  5                                 ['N'] :
;  537      0600  5                                     PUTBYT (BNCODE);
;  538      0601  5
;  539      0602  5                                 ['Z'] :
;  540      0603  5                                     PUTBYT (BZCODE);
;  541      0604  5
;  542      0605  5                                 [OTHERWISE] :
;  543      0606  6                                     BEGIN
;  544      0607  6                                     ERROR (ERRFMTCHAR);
;  545      0608  5                                     END;
;  546      0609  5                                 TES;
;  547      0610  5
;  548      0611  4                             END;
;  549      0612  4
;  550      0613  4                         [16] :
;  551      0614  4                             ! 16 - LETTER D
;  552      0615  4                             !
;  553      0616  4                             DEFER (DCODE, 2);
;  554      0617  4
;  555      0618  4                         [17] :
;  556      0619  4                             ! 17 - LETTER E
;  557      0620  4                             !
;  558      0621  4
;  559      0622  4                             !+
;  560      0623  4                             ! If the third parameter of an edit type that allows four
;  561      0624  4                             ! parameters has been seen, then E is an exponent marker,
;  562      0625  4                             ! otherwise an edit specifier.
;  563      0626  4                             !-
;  564      0627  4
;  565      0628  4                             IF .PHASE EQL 2 AND .FCOUNT EQL 3 THEN NSAVE () ELSE DEFER (ECODE, 3);
;  566      0629  4
;  567      0630  4                         [18] :
;  568      0631  4                             ! 18 - LETTER F
;  569      0632  4                             !
;  570      0633  4                             DEFER (FCODE, 2);
;  571      0634  4
;  572      0635  4                         [19] :
```

```
;  573         0636  4                  ! 19 - LETTER G
;  574         0637  4                  !
;  575         0638  4                  DEFER (GCODE, 3);
;  576         0639  4
;  577         0640  4              [20] :
;  578         0641  4                  ! 20 - LETTER H
;  579         0642  4                  !
;  580         0643  5                  BEGIN
;  581         0644  5
;  582         0645  5                  LOCAL
;  583         0646  5                      P;
;  584         0647  5
;  585         0648  5                  NZERO ();
;  586         0649  5
;  587         0650  5                  IF .TYPE LSS 0 THEN ERROR (ERRFMTCHAR);
;  588         0651  5
;  589         0652  5                  IF .TYPE EQL 0 THEN (NVAL = 1; TYPE = 1);
;  590         0653  5
;  591         0654  5                  IF (P = .NVAL) EQL 0 THEN ERROR (ERRZLSTR);
;  592         0655  5
;  593         0656  5                  PHASE = 1;
;  594         0657  5                  NSAVE ();
;  595         0658  5                  REDUCE (HCODE);
;  596         0659  5
;  597         0660  5                  DECR I FROM .P TO 1 DO
;  598         0661  6                      BEGIN
;  599         0662  6
;  600         0663  6                      CHAR = GC;
;  601         0664  6
;  602         0665  6                      PUTBYT (.CHAR);
;  603         0666  5                      END;
;  604         0667  5
;  605         0668  5                  CHAR = 0;
;  606         0669  4                  END;
;  607         0670  4
;  608         0671  4              [21] :
;  609         0672  4                  ! 21 - LETTER I
;  610         0673  4                  !
;  611         0674  4                  DEFER (ICODE, 2);
;  612         0675  4
;  613         0676  4              [22] :
;  614         0677  4                  ! 22 - LETTER L
;  615         0678  4                  !
;  616         0679  4                  DEFER (LCODE, 1);
;  617         0680  4
;  618         0681  4              [23] :
;  619         0682  4                  ! 23 - LETTER O
;  620         0683  4                  !
;  621         0684  4                  DEFER (OCODE, 2);
;  622         0685  4
;  623         0686  4              [24] :
;  624         0687  4                  ! 24 - LETTER P
;  625         0688  4                  !
;  626         0689  5                  BEGIN
;  627         0690  5                  NZERO ();
;  628         0691  5
;  629         0692  5                  IF .TYPE EQL 0
; 630       0693  5                 THEN
; 631       0694  6                     BEGIN
; 632       0695  6
; 633       0696  6                     IF .SIGN NEQ 0 THEN ERROR (ERRFMTNUMB);
; 634       0697  6
; 635       0698  5                     END;
; 636       0699  5
; 637       0700  5                 IF .SIGN LSS 0 THEN NVAL = -.NVAL;
; 638       0701  5
; 639       0702  5                 SIGN = 0;
; 640       0703  5                 PHASE = 1;
; 641       0704  5                 NSAVE ();
; 642       0705  5                 REDUCE (PCODE);
; 643       0706  4                 END;
; 644       0707  4
; 645       0708  4             [25] :
; 646       0709  4                 ! 25 - LETTER Q
; 647       0710  4                 !
; 648       0711  5                 BEGIN
; 649       0712  5                 UNDEFER ();
; 650       0713  5                 PUTBYT (QCODE);
; 651       0714  4                 END;
; 652       0715  4
; 653       0716  4             [26] :
; 654       0717  4                 ! 26 - Letter S
; 655       0718  4                 !
; 656       0719  5                 BEGIN
; 657       0720  5                 UNDEFER ();
; 658       0721  5
; 659       0722  5                 SELECTONE (CHAR = GNB) OF
; 660       0723  5                     SET
; 661       0724  5
; 662       0725  5                     ['P'] :
; 663       0726  5                         PUTBYT (SPCODE);
; 664       0727  5
; 665       0728  5                     ['S'] :
; 666       0729  5                         PUTBYT (SSCODE);
; 667       0730  5
; 668       0731  5                     [OTHERWISE] :
; 669       0732  6                         BEGIN
; 670       0733  6                         PUTBYT (SCODE);
; 671       0734  6                         FORMAT_PTR = .FORMAT_PTR - 1;
; 672       0735  6                         CHAR = 'S';
; 673       0736  5                         END;
; 674       0737  5                     TES;
; 675       0738  5
; 676       0739  4                 END;
; 677       0740  4
; 678       0741  4             [27] :
; 679       0742  4                 ! 27 - LETTER T
; 680       0743  4                 !
; 681       0744  5                 BEGIN
; 682       0745  5                 UNDEFER ();
; 683       0746  5
; 684       0747  5                 SELECTONE (CHAR = GNB) OF
; 685       0748  5                     SET
; 686       0749  5
```

```
5                                 ['L'] :
5                                     DEFER (TLCODE, 1);
5
5                                 ['R'] :
5                                     DEFER (TRCODE, 1);
5
5                                 [OTHERWISE] :
6                                     BEGIN
6                                     DEFER (TCODE, 1);
6                                     FORMAT_PTR = .FORMAT_PTR - 1;
6                                     CHAR = 'T';
5                                     END;
5                             TES;
5
4                         END;
4
4                     [28] :
4                         ! 28 - LETTER X
4                         !
5                         BEGIN
5                         NZERO ();
5
5                         IF .TYPE EQL 0
5                         THEN
6                             BEGIN
6                             TYPE = 1;
6                             NVAL = 1;
5                             END;
5
5                         PHASE = 1;
5                         NSAVE ();
5                         REDUCE (TRCODE);            ! X is same as TR
5                                                     ! Old X is no longer used.
4                         END;
4
4                     [29] :
4                         ! 29 - LETTER Z
4                         !
4                         DEFER (ZCODE, 2)
4                     TES;
4
4                 CPRIME = .CHAR;
3                 END;
3
3             !+
3             ! Put end of format code.
3             ! Then return size and location of format buffer.
3             !-
3
3             PUTBYT (ENDFMT);
3             ALLOCATED_LEN [0] = .FMT_BUF_SIZ;
3             ALLOCATED_ADR [0] = .FMT_BUF_BEG;
2             END;
2
1         END;
```

```
                                                                          .TITLE  FOR$$FMTCP FORTRAN OBJECT TIME FORMAT COMPILER
                                                                          .IDENT  \2-006\

                                                                          .PSECT  _FOR$CODE,NOWRT,  SHR,  PIC,2

00  00  00  00  00  00  00  00  00  00  00  00  00  00  01  00000 P.AAA:  .BYTE   1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, - ;
00  00  00  00  00  00  00  00  00  00  00  00  00  00  00  0000F                 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, - ;
0B  03  00  07  06  0D  00  00  09  00  00  00  00  00  00  0001E                 0, 0, 0, 0, 0, 0, 0, 0, 9, 0, 0, 13, 6, -  ;
00  0A  05  05  05  05  05  05  05  05  05  05  08  0C  02  0002D                 7, 0, 3, 11, 2, 12, 8, 5, 5, 5, 5, 5, 5, - ;
00  15  14  13  12  11  10  00  0F  0E  00  00  00  00  04  0003C                 5, 5, 5, 5  10, 0, 4, 0, 0, 0, 0, 14, 15, - ;
00  1C  00  00  00  1B  1A  00  19  18  17  00  00  16  00  0004B                 0, 16, 17, 18, 19, 20, 21, 0, 0, 22, 0, -  ;
                                                            1D  0005A                 0, 23, 24, 25, 0, 26, 27, 0, 0, 0, 28, 0, - ;
                                                                                  29                                           ;

                                                                  K_CLASS_TAB_MAX=    132
                                                                  CLASS=              P.AAA
                                                                  TOPLVL=             1
                                                                  LPAREN=             2
                                                                  RPAREN=             3
                                                                  ENDFMT=             4
                                                                  SLASH=              5
                                                                  DOLLAR=             6
                                                                  COLON=              7
                                                                  SCODE=              9
                                                                  SPCODE=             10
                                                                  SSCODE=             11
                                                                  PCODE=              12
                                                                  TCODE=              13
                                                                  XCODE=              14
                                                                  HCODE=              15
                                                                  BNCODE=             16
                                                                  BZCODE=             17
                                                                  TLCODE=             18
                                                                  TRCODE=             19
                                                                  QCODE=              20
                                                                  ACODE=              21
                                                                  LCODE=              22
                                                                  OCODE=              23
                                                                  ICODE=              24
                                                                  ZCODE=              25
                                                                  FCODE=              30
                                                                  ECODE=              31
                                                                  GCODE=              32
                                                                  DCODE=              33
                                                                  IOZOFFSET=          3
                                                                  EGOFFSET=           3
                                                                  OFFSET=             20
                                                                          .EXTRN  FOR$$GET_VM, FOR$$FREE_VM
                                                                          .EXTRN  FOR$$SIGNAL_STO

                                                       0FFC 00000         .ENTRY  FOR$$FMT_COMPIL, Save R2,R3,R4,R5,R6,R7,R8,-; 0294
                                                                                  R9,R10,R11                                  ;
                                       58      0000V  CF   9E 00002         MOVAB   PUTBYT, R8                                  ;
                                       57      0000V  CF   9E 00007         MOVAB   NSAVE, R7                                   ;
                                       56      0000V  CF   9E 0000C         MOVAB   UNDEFER, R6                                 ;
                                       5E         B4  AE   9E 00011         MOVAB   -76(SP), SP                                 ;
                                       5B             6E   9E 00015         MOVAB   FMTDAT, SAVVAL                              ; 0382
```

```
                                    5A      10   AE  9E 00018          MOVAB    FMTDAT+16, SAVTYP                  ; 0383
                                    59      20   AE  9E 0001C          MOVAB    FMTDAT+32, PTR                     ; 0384
   004C   8F           00           6E           00  2C 00020          MOVC5    #0, (SP), #0, #76, FMTDAT          ; 0388
                                                 6E     00027                                                      ;
                                    7E    0100   8F  3C 00028          MOVZWL   #256, -(SP)                        ; 0389
                          00000000G 00           01  FB 0002D          CALLS    #1, FOR$$GET_VM                    ;
                                 40 AE           50  D0 00034          MOVL     R0, FMT_BUF_BEG                    ;
                                 48 AE    0100   8F  3C 00038          MOVZWL   #256, FMT_BUF_SIZ                  ; 0390
                                 44 AE           28  D0 0003E          MOVL     #40, CPRIME                        ; 0391
                                    54      04   AC  D0 00042          MOVL     FORMAT, FORMAT_PTR                 ; 0392
                       64     FFFF  8F           20  3B 00046          SKPC     #32, #65535, (FORMAT_PTR)          ; 0393
                                                 02  12 0004C          BNEQ     1$                                 ;
                                                 51  D4 0004E          CLRL     R1                                 ;
                                    54           51  D0 00050 1$:      MOVL     R1, FORMAT_PTR                     ;
                                                 7E  13 00053          BEQL     6$                                 ; 0395
                                    50           84  9A 00055          MOVZBL   (FORMAT_PTR)+, R0                  ;
                                    28           50  91 00058          CMPB     R0, #40                            ;
                                                 76  12 0005B          BNEQ     6$                                 ;
                       64     FFFF  8F           20  3B 0005D 2$:      SKPC     #32, #65535, (FORMAT_PTR)          ; 0403
                                                 02  12 00063          BNEQ     3$                                 ;
                                                 51  D4 00065          CLRL     R1                                 ;
                                    54           51  D0 00067 3$:      MOVL     R1, FORMAT_PTR                     ;
                                                 67  13 0006A          BEQL     6$                                 ;
                                    50           84  9A 0006C          MOVZBL   (FORMAT_PTR)+, C                   ;
                          00000061  8F           50  D1 0006F          CMPL     C, #97                             ;
                                                 0C  1F 00076          BLSSU    4$                                 ;
                          0000007A  8F           50  D1 00078          CMPL     C, #122                            ;
                                                 03  1A 0007F          BGTRU    4$                                 ;
                                    50           20  C2 00081          SUBL2    #32, R0                            ;
                                    52           50  D0 00084 4$:      MOVL     C, CHAR                            ;
                          00000084  8F           52  D1 00087          CMPL     CHAR, #132                         ; 0405
                                                 43  1A 0008E          BGTRU    6$                                 ;
                       1D           00    FF10 CF42  8F 00090          CASEB    CLASS[CHAR], #0, #29               ; 0407
       004F            003F       0290         0290     00097 5$:      .WORD    66$-5$,-                           ;
       0095            0070       005F         0290     0009F                   66$-5$,-                           ;
       00BA            00B2       00AB         00A4     000A7                   7$-5$,-                            ;
       0135            012F       00DB         00BF     000AF                   8$-5$,-                            ;
       01A0            019A       0183         017D     000B7                   66$-5$,-                           ;
       01F1            01EB       01E5         01A6     000BF                   9$-5$,-                            ;
       027E            0227       0220         01F8     000C7                   10$-5$,-                           ;
                                  0306         02E4     000CF                   12$-5$,-                           ;
                                                                                14$-5$,-                           ;
                                                                                15$-5$,-                           ;
                                                                                16$-5$,-                           ;
                                                                                18$-5$,-                           ;
                                                                                20$-5$,-                           ;
                                                                                23$-5$,-                           ;
                                                                                29$-5$,-                           ;
                                                                                30$-5$,-                           ;
                                                                                35$-5$,-                           ;
                                                                                36$-5$,-                           ;
                                                                                40$-5$,-                           ;
                                                                                41$-5$,-                           ;
                                                                                43$-5$,-                           ;
                                                                                50$-5$,-                           ;
                                                                                51$-5$,-                           ;
                                                                                52$-5$,-                           ;
```

```
                                                          54$-5$,-                          :
                                                          57$-5$,-                          :
                                                          58$-5$,-                          :
                                                          64$-5$,-                          :
                                                          72$-5$,-                          :
                                                          75$-5$                            :
                               0251  31 000D3 6$:   BRW     66$                             : 0413
                        30       AE  D5 000D6 7$:   TSTL    SIGN                            : 0425
                                 F8  12 000D9       BNEQ    6$                              :
                        38       AE  D5 000DB       TSTL    TYPE                            :
                                 F3  12 000DE       BNEQ    6$                              :
                30      AE       01  CE 000E0       MNEGL   #1, SIGN                        : 0427
                                 6E  11 000E4       BRB     19$                             : 0407
                        30       AE  D5 000E6 8$:   TSTL    SIGN                            : 0435
                                 E8  12 000E9       BNEQ    6$                              :
                        38       AE  D5 000EB       TSTL    TYPE                            :
                                 E3  12 000EE       BNEQ    6$                              :
                30      AE       01  D0 000F0       MOVL    #1, SIGN                        : 0437
                                 5E  11 000F4       BRB     19$                             : 0407
                38      AE       01  D0 000F6 9$:   MOVL    #1, TYPE                        : 0449
        50      34      AE       0A  C5 000FA       MULL3   #10, NVAL, R0                   : 0450
                34      AE  D0 A240  9E 000FF       MOVAB   -48(CHAR)[R0], NVAL             :
                                 4D  11 00105       BRB     19$                             : 0407
             0000V      CF       00  FB 00107 10$:  CALLS   #0, NZERO                       : 0457
                        67       00  FB 0010C       CALLS   #0, NSAVE                       : 0458
                        2C       AE  D5 0010F       TSTL    NEST                            : 0460
                                 05  12 00112       BNEQ    11$                             :
                                 01  DD 00114       PUSHL   #1                              :
                        68       01  FB 00116       CALLS   #1, PUTBYT                      :
        50      2C      AE       01  C1 00119 11$:  ADDL3   #1, NEST, R0                    : 0462
                2C      AE       50  D0 0011E       MOVL    R0, NEST                        :
                        08       50  D1 00122       CMPL    R0, #8                          :
                                 AC  14 00125       BGTR    6$                              :
                                 02  DD 00127       PUSHL   #2                              : 0464
                               026A  31 00129       BRW     74$                             :
                        66       00  FB 0012C 12$:  CALLS   #0, UNDEFER                     : 0481
                        2C       AE  D7 0012F       DECL    NEST                            : 0483
                                 03  18 00132       BGEQ    13$                             :
                               0276  31 00134       BRW     78$                             :
                                 03  DD 00137 13$:  PUSHL   #3                              : 0485
                                 13  11 00139       BRB     17$                             :
                        66       00  FB 0013B 14$:  CALLS   #0, UNDEFER                     : 0492
                                 05  DD 0013E       PUSHL   #5                              : 0493
                                 0C  11 00140       BRB     17$                             :
                        66       00  FB 00142 15$:  CALLS   #0, UNDEFER                     : 0500
                                 06  DD 00145       PUSHL   #6                              : 0501
                                 05  11 00147       BRB     17$                             :
                        66       00  FB 00149 16$:  CALLS   #0, UNDEFER                     : 0508
                                 07  DD 0014C       PUSHL   #7                              : 0509
                               01B2  31 0014E 17$:  BRW     62$                             :
                        66       00  FB 00151 18$:  CALLS   #0, UNDEFER                     : 0523
                                 6E  11 00154 19$:  BRB     28$                             : 0407
                        38       AE  D5 00156 20$:  TSTL    TYPE                            : 0531
                                 0B  13 00159       BEQL    21$                             :
                        30       AE  D5 0015B       TSTL    SIGN                            : 0533
                                 06  12 0015E       BNEQ    21$                             :
                02      24       AE  D1 00160       CMPL    FCOUNT, #2                      : 0535
```

```
                                  03  18 00164          BGEQ    22$                                ;
                                01BE  31 00166 21$:     BRW     66$                                ;
                01       28       AE  D1 00169 22$:     CMPL    PHASE, #1                          ;
                                  F7  12 0016D          BNEQ    21$                                ;
                                00B4  31 0016F          BRW     37$                                ;
                66                00  FB 00172 23$:     CALLS   #0, UNDEFER                        ; 0548
                53                54  D0 00175          MOVL    FORMAT_PTR, P                      ; 0549
                52                84  9A 00178 24$:     MOVZBL  (FORMAT_PTR)+, CHAR                ; 0556
                         34       AE  D6 0017B          INCL    NVAL                               ; 0557
                27                52  D1 0017E          CMPL    CHAR, #39                          ; 0559
                                  F5  12 00181          BNEQ    24$                                ;
                52                84  9A 00183          MOVZBL  (FORMAT_PTR)+, CHAR                ; 0561
                27                52  D1 00186          CMPL    CHAR, #39                          ; 0563
                                  ED  13 00189          BEQL    24$                                ;
                54                53  D0 0018B          MOVL    P, FORMAT_PTR                      ; 0565
53          34  AE                01  C3 0018E          SUBL3   #1, NVAL, P                        ; 0567
            34  AE                53  D0 00193          MOVL    P, NVAL                            ;
                                  CD  13 00197          BEQL    21$                                ;
            38  AE                01  D0 00199          MOVL    #1, TYPE                           ; 0569
            28  AE                01  D0 0019D          MOVL    #1, PHASE                          ; 0570
                67                00  FB 001A1          CALLS   #0, NSAVE                          ; 0571
                                  0F  DD 001A4          PUSHL   #15                                ; 0572
         0000V  CF                01  FB 001A6          CALLS   #1, REDUCE                         ;
                                  53  D6 001AB          INCL    I                                  ; 0574
                                  0F  11 001AD          BRB     27$                                ;
                52                84  9A 001AF 25$:     MOVZBL  (FORMAT_PTR)+, CHAR                ; 0577
                27                52  D1 001B2          CMPL    CHAR, #39                          ;
                                  02  12 001B5          BNEQ    26$                                ;
                                  54  D6 001B7          INCL    FORMAT_PTR                         ;
                                  52  DD 001B9 26$:     PUSHL   CHAR                               ; 0579
                68                01  FB 001BB          CALLS   #1, PUTBYT                         ;
                EE                53  F5 001BE 27$:     SOBGTR  I, 25$                             ; 0574
                52                84  9A 001C1          MOVZBL  (FORMAT_PTR)+, CHAR                ; 0582
                                  63  11 001C4 28$:     BRB     38$                                ; 0407
                                  01  DD 001C6 29$:     PUSHL   #1                                 ; 0588
                                  15  DD 001C8          PUSHL   #21                                ;
                                  6F  11 001CA          BRB     42$                                ;
                66                00  FB 001CC 30$:     CALLS   #0, UNDEFER                        ; 0594
64        FFFF  8F                20  3B 001CF          SKPC    #32, #65535, (FORMAT_PTR)          ; 0596
                                  02  12 001D5          BNEQ    31$                                ;
                                  51  D4 001D7          CLRL    R1                                 ;
                54                51  D0 001D9 31$:     MOVL    R1, FORMAT_PTR                     ;
                                  69  13 001DC          BEQL    44$                                ;
                50                84  9A 001DE          MOVZBL  (FORMAT_PTR)+, C                   ;
      00000061  8F                50  D1 001E1          CMPL    C, #97                             ;
                                  0C  1F 001E8          BLSSU   32$                                ;
      0000007A  8F                50  D1 001FA          CMPL    C, #122                            ;
                                  03  1A 001F1          BGTRU   32$                                ;
                50                20  C2 001F3          SUBL2   #32, R0                            ;
                52                50  D0 001F6 32$:     MOVL    C, CHAR                            ;
      0000004E  8F                52  D1 001F9          CMPL    CHAR, #78                          ; 0599
                                  04  12 00200          BNEQ    33$                                ;
                                  10  DD 00202          PUSHL   #16                                ; 0600
                                  0B  11 00204          BRB     34$                                ;
      0000005A  8F                52  D1 00206 33$:     CMPL    CHAR, #90                          ; 0602
                                  38  12 0020D          BNEQ    44$                                ;
                                  11  DD 0020F          PUSHL   #17                                ; 0605
```

```
                          00EF  31 00211 34$:    BRW     62$                                  ;
                            02  DD 00214 35$:    PUSHL   #2                                   ; 0616
                            21  DD 00216         PUSHL   #33                                  ;
                            72  11 00218         BRB     53$                                  ;
           02         28    AE  D1 0021A 36$:    CMPL    PHASE, #2                            ; 0628
                            0B  12 0021E         BNEQ    39$                                  ;
           03         24    AE  D1 00220         CMPL    FCOUNT, #3                           ;
                            05  12 00224         BNEQ    39$                                  ;
           67               00  FB 00226 37$:    CALLS   #0, NSAVE                            ;
                            4E  11 00229 38$:    BRB     49$                                  ;
                            03  DD 0022B 39$:    PUSHL   #3                                   ;
                            1F  DD 0022D         PUSHL   #31                                  ;
                            5B  11 0022F         BRB     53$                                  ;
                            02  DD 00231 40$:    PUSHL   #2                                   ; 0633
                            1E  DD 00233         PUSHL   #30                                  ;
                            55  11 00235         BRB     53$                                  ;
                            03  DD 00237 41$:    PUSHL   #3                                   ; 0638      ; R
                            20  DD 00239         PUSHL   #32                                  ;
                            4F  11 0023B 42$:    BRB     53$                                  ;
   0000V   CF               00  FB 0023D 43$:    CALLS   #0, NZERO                            ; 0648
                      38    AE  D5 00242         TSTL    TYPE                                 ; 0650
                            03  18 00245         BGEQ    45$                                  ;
                          00DD  31 00247 44$:    BRW     66$                                  ;
                            08  12 0024A 45$:    BNEQ    46$                                  ; 0652
      34   AE               01  D0 0024C         MOVL    #1, NVAL                             ;
      38   AE               01  D0 00250         MOVL    #1, TYPE                             ;
           53         34    AE  D0 00254 46$:    MOVL    NVAL, P                              ; 0654
                            ED  13 00258         BEQL    44$                                  ;
      28   AE               01  D0 0025A         MOVL    #1, PHASE                            ; 0656
           67               00  FB 0025E         CALLS   #0, NSAVE                            ; 0657
                            0F  DD 00261         PUSHL   #15                                  ; 0658
   0000V   CF               01  FB 00263         CALLS   #1, REDUCE                           ;
                            53  D6 00268         INCL    I                                    ; 0660
                            08  11 0026A         BRB     48$                                  ;
           52               84  9A 0026C 47$:    MOVZBL  (FORMAT_PTR)+, CHAR                  ; 0663
                            52  DD 0026F         PUSHL   CHAR                                 ; 0665
           68               01  FB 00271         CALLS   #1, PUTBYT                           ;
           F5               53  F5 00274 48$:    SOBGTR  I, 47$                               ; 0660
                            52  D4 00277         CLRL    CHAR                                 ; 0668
                          012A  31 00279 49$:    BRW     77$                                  ; 0407
                            02  DD 0027C 50$:    PUSHL   #2                                   ; 0674
                            18  DD 0027E         PUSHL   #24                                  ;
                            0A  11 00280         BRB     53$                                  ;
                            01  DD 00282 51$:    PUSHL   #1                                   ; 0679
                            16  DD 00284         PUSHL   #22                                  ;
                            04  11 00286         BRB     53$                                  ;
                            02  DD 00288 52$:    PUSHL   #2                                   ; 0684
                            17  DD 0028A         PUSHL   #23                                  ;
                          0112  31 0028C 53$:    BRW     76$                                  ;
   0000V   CF               00  FB 0028F 54$:    CALLS   #0, NZERO                            ; 0690
                      38    AE  D5 00294         TSTL    TYPE                                 ; 0692
                            05  12 00297         BNEQ    55$                                  ;
                      30    AE  D5 00299         TSTL    SIGN                                 ; 0696
                            A9  12 0029C         BNEQ    44$                                  ;
                      30    AE  D5 0029E 55$:    TSTL    SIGN                                 ; 0700
                            05  18 002A1         BGEQ    56$                                  ;
      34   AE         34    AE  CE 002A3         MNEGL   NVAL, NVAL                           ;
```

```
                                 30   AE  D4 002A8 56$:    CLRL    SIGN                                 ; 0702
                  28   AE             01  D0 002AB         MOVL    #1, PHASE                            ; 0703
                       67             00  FB 002AF         CALLS   #0, NSAVE                            ; 0704
                                      0C  DD 002B2         PUSHL   #12                                  ; 0705
                                    00DF  31 002B4         BRW     74$                                  ;
                       66             00  FB 002B7 57$:    CALLS   #0, UNDEFER                          ; 0712
                                      14  DD 002BA         PUSHL   #20                                  ; 0713
                                      45  11 002BC         BRB     62$                                  ;
                       66             00  FB 002BE 58$:    CALLS   #0, UNDEFER                          ; 0720
          64     FFFF  8F             20  3B 002C1         SKPC    #32, #65535, (FORMAT_PTR)            ; 0722
                                      02  12 002C7         BNEQ    59$                                  ;
                                      51  D4 002C9         CLRL    R1                                   ;
                       54             51  D0 002CB 59$:    MOVL    R1, FORMAT_PTR                       ;
                                      57  13 002CE         BEQL    66$                                  ;
                       50             84  9A 002D0         MOVZBL  (FORMAT_PTR)+, C                     ;
            00000061   8F             50  D1 002D3         CMPL    C, #97                               ;
                                      0C  1F 002DA         BLSSU   60$                                  ;
            0000007A   8F             50  D1 002DC         CMPL    C, #122                              ;
                                      03  1A 002E3         BGTRU   60$                                  ;
                       50             20  C2 002E5         SUBL2   #32, R0                              ;
                       52             50  D0 002E8 60$:    MOVL    C, CHAR                              ;
            00000050   8F             52  D1 002EB         CMPL    CHAR, #80                            ; 0725
                                      04  12 002F2         BNEQ    61$                                  ;
                                      0A  DD 002F4         PUSHL   #10                                  ; 0726
                                      0B  11 002F6         BRB     62$                                  ;
            00000053   8F             52  D1 002F8 61$:    CMPL    CHAR, #83                            ; 0728
                                      07  12 002FF         BNEQ    63$                                  ;
                                      0B  DD 00301         PUSHL   #11                                  ; 0729
                       68             01  FB 00303 62$:    CALLS   #1, PUTBYT                           ;
                                      71  11 00306         BRB     71$                                  ;
                                      09  DD 00308 63$:    PUSHL   #9                                   ; 0733
                       68             01  FB 0030A         CALLS   #1, PUTBYT                           ;
                                      54  D7 0030D         DECL    FORMAT_PTR                           ; 0734
                       52        53   8F  9A 0030F         MOVZBL  #83, CHAR                            ; 0735
                                      64  11 00313         BRB     71$                                  ; 0407
                       66             00  FB 00315 64$:    CALLS   #0, UNDEFER                          ; 0745
          64     FFFF  8F             20  3B 00318         SKPC    #32, #65535, (FORMAT_PTR)            ; 0747
                                      02  12 0031E         BNEQ    65$                                  ;
                                      51  D4 00320         CLRL    R1                                   ;
                       54             51  D0 00322 65$:    MOVL    R1, FORMAT_PTR                       ;
                                      0A  12 00325         BNEQ    67$                                  ;
                                      3E  DD 00327 66$:    PUSHL   #62                                  ;
            00000000G  00             01  FB 00329         CALLS   #1, FOR$$SIGNAL_STO                  ;
                                          04 00330         RET                                          ;
                       50             84  9A 00331 67$:    MOVZBL  (FORMAT_PTR)+, C                     ;
            00000061   8F             50  D1 00334         CMPL    C, #97                               ;
                                      0C  1F 0033B         BLSSU   68$                                  ;
            0000007A   8F             50  D1 0033D         CMPL    C, #122                              ;
                                      03  1A 00344         BGTRU   68$                                  ;
                       50             20  C2 00346         SUBL2   #32, R0                              ;
                       52             50  D0 00349 68$:    MOVL    C, CHAR                              ;
            0000004C   8F             52  D1 0034C         CMPL    CHAR, #76                            ; 0750
                                      06  12 00353         BNEQ    69$                                  ;
                                      01  DD 00355         PUSHL   #1                                   ; 0751
                                      12  DD 00357         PUSHL   #18                                  ;
                                      46  11 00359         BRB     76$                                  ;
            00000052   8F             52  D1 0035B 69$:    CMPL    CHAR, #82                            ; 0753
```

```
                                                      06  12 00362         BNEQ    70$                                        ;
                                                      01  DD 00364         PUSHL   #1                                         ; 0754
                                                      13  DD 00366         PUSHL   #19                                        ;
                                                      37  11 00368         BRB     76$                                        ;
                                                      01  DD 0036A 70$:    PUSHL   #1                                         ; 0758
                                                      0D  DD 0036C         PUSHL   #13                                        ;
                                0000V   CF            02  FB 0036E         CALLS   #2, DEFER                                  ;
                                                      54  D7 00373         DECL    FORMAT_PTR                                 ; 0759
                                        52       54   8F  9A 00375         MOVZBL  #84, CHAR                                  ; 0760
                                                      2B  11 00379 71$:    BRB     77$                                        ; 0407
                                0000V   CF            00  FB 0037B 72$:    CALLS   #0, NZERO                                  ; 0770
                                                 38   AE  D5 00380         TSTL    TYPE                                       ; 0772
                                                      08  12 00383         BNEQ    73$                                        ;
                                   38   AE            01  D0 00385         MOVL    #1, TYPE                                   ; 0775
                                   34   AE            01  D0 00389         MOVL    #1, NVAL                                   ; 0776
                                   28   AE            01  D0 0038D 73$:    MOVL    #1, PHASE                                  ; 0779
                                        67            00  FB 00391         CALLS   #0, NSAVE                                  ; 0780
                                                      13  DD 00394         PUSHL   #19                                        ; 0781
                                0000V   CF            01  FB 00396 74$:    CALLS   #1, REDUCE                                 ;
                                                      09  11 0039B         BRB     77$                                        ; 0407
                                                      02  DD 0039D 75$:    PUSHL   #2                                         ; 0788
                                                      19  DD 0039F         PUSHL   #25                                        ;
                                0000V   CF            02  FB 003A1 76$:    CALLS   #2, DEFER                                  ;
                                   44   AE            52  D0 003A6 77$:    MOVL    CHAR, CPRIME                               ; 0791
                                                    FCB0  31 003AA         BRW     2$                                         ; 0401
                                                      04  DD 003AD 78$:    PUSHL   #4                                         ; 0799
                                        68            01  FB 003AF         CALLS   #1, PUTBYT                                 ;
                                   08   BC       48   AE  B0 003B2         MOVW    FMT_BUF_SIZ, @ALLOCATED_LEN                ; 0800
                                   0C   BC       40   AE  D0 003B7         MOVL    FMT_BUF_BEG, @ALLOCATED_ADR                ; 0801
                                                          04 003BC         RET                                                ; 0804

; Routine Size:  957 bytes,    Routine Base:  _FOR$CODE + 005B


;  742          0805  1
;  744          0806  1 ROUTINE REDUCE (C) : CALL_G3 NOVALUE =
;  745          0807  1
;  746          0808  1 !++
;  747          0809  1 ! FUNCTIONAL DESCRIPTION:
;  748          0810  1 !
;  749          0811  1 !       Output the compiled text corresponding to the format item
;  750          0812  1 !       just scanned
;  751          0813  1 !
;  752          0814  1 ! FORMAL PARAMETERS:
;  753          0815  1 !
;  754          0816  1 !       C       - format code
;  755          0817  1 !
;  756          0818  1 ! IMPLICIT INPUTS:
;  757          0819  1 !
;  758          0820  1 !       FMTDAT array
;  759          0821  1 !
;  760          0822  1 !
;  761          0823  1 ! IMPLICIT OUTPUTS:
;  762          0824  1 !
;  763          0825  1 !       Compiled text output through argument
;  764          0826  1 !       Reinitialization for another format item (per format code related
;  765          0827  1 !       FMTDAT array updated)
;  766          0828  1 !
;  767          0829  1 ! ROUTINE VALUE:
;  768          0830  1 !
;  769          0831  1 !       NONE
;  770          0832  1 !
;  771          0833  1 ! SIDE EFFECTS:
;  772          0834  1 !
;  773          0835  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
;  774          0836  1 !
;  775          0837  1 !--
;  776          0838  1
;  777          0839  2     BEGIN
;  778          0840  2     EXT_REG;                                        ! Declare external registers
;  779          0841  2
;  780          0842  2     MACRO
;  781        M 0843  2         ALLBITS =
;  782          0844  2 0,0,32,0%,                                          ! WHOLE WORD
;  783        M 0845  2         RSBITS =
;  784          0846  2 0,0,2,0%,                                           ! REP COUNT SIZE
;  785        M 0847  2         SBIT =
;  786          0848  2 0,2,1,0%,                                           ! W FIELD SIZE
;  787        M 0849  2         XBIT =
;  788          0850  2 0,7,1,0%;                                           ! REPETITION COUNT EXISTS
;  789          0851  2
;  790          0852  2     MACRO
;  791          0853  2         ! Macro to pack flags for table FMT_PRM_LIMITS
;  792          0854  2         !
;  793        M 0855  2         FLAGBITS (F0, F1, F2, F3, F4, F5, F6, F7) =
;  794        M 0256  2
;  795        M 0857  2             (F0) OR (F1)^1 OR (F2)^2 OR (F3)^3 OR
;  796          0858  2             (F4)^4 OR (F5)^5 OR (F6)^6 OR (F7)^7 %,
;  797          0859  2         ! Field definitions for table FMT_PRM_LIMITS
;  798          0860  2         !
;  799        M 0861  2         FDFLTOK =
;  800          0862  2 0,1,0%,                                             ! Allows defaults if no parameters follow
```

```
M 2          FMIN2 =
  2 1,1,0%,                                                ! Does not allow W without D
M 2          F1OR2 =
  2 2,1,0%,                                                ! Allows W or W.M
M 2          F2OR3 =
  2 3,1,0%,                                                ! Allows E type exponent
M 2          F1EXACT =
  2 4,1,0%,                                                ! Must have exactly one parameter
  2 ! Macro to allow abbreviated reference to table FMT_PRM_LIMITS
  2          !
M 2          FMT_CHECK (P0, S0, E0) =
  2              .FMT_PRM_LIMITS[.C - TCODE, (P0), (S0), (E0)] %;
  2
  2      BIND
  2          ! Table of default options for parameters after a format edit
  2          ! specifier.  Each row corresponds to an edit type.
  2          ! The bits are defined above.  Edit specifiers not in the table
  2          ! (S, SS, SP, P, '(' ) do not allow following parameters.
  2          !
  2          FMT_PRM_LIMITS = UPLIT BYTE(
  2              FLAGBITS(0,  0,  0,  0,  1,  0,  0,  0),     ! TCODE
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! XCODE
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! HCODE
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! BNCODE
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! BZCODE
  2              FLAGBITS(0,  0,  0,  0,  1,  0,  0,  0),     ! TLCODE
  2              FLAGBITS(0,  0,  0,  0,  1,  0,  0,  0),     ! TRCODE
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! QCODE
  2              FLAGBITS(1,  0,  0,  0,  0,  0,  0,  0),     ! ACODE
  2              FLAGBITS(1,  0,  0,  0,  0,  0,  0,  0),     ! LCODE
  2              FLAGBITS(1,  0,  1,  0,  0,  0,  0,  0),     ! OCODE
  2              FLAGBITS(1,  0,  1,  0,  0,  0,  0,  0),     ! ICODE
  2              FLAGBITS(1,  0,  1,  0,  0,  0,  0,  0),     ! ZCODE
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! --
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! --
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! --
  2              FLAGBITS(0,  0,  0,  0,  0,  0,  0,  0),     ! --
  2              FLAGBITS(1,  1,  0,  0,  0,  0,  0,  0),     ! FCODE
  2              FLAGBITS(1,  1,  0,  1,  0,  0,  0,  0),     ! ECODE
  2              FLAGBITS(1,  1,  0,  1,  0,  0,  0,  0),     ! GCODE
  2              FLAGBITS(1,  1,  0,  1,  0,  0,  0,  0)      ! DCODE
  2              ) : BLOCK [, BYTE];
  2
  2      LOCAL
  2          FC : BLOCK [1],                               ! Format code with modifications
  2          VFEM : BLOCK [1],                             ! VFE mask byte
  2          VFEB;                                         ! Mask bit to or in to VFEM
  2
  2      ! If C is zero, there is nothing to reduce
  2      !
  2
  2      IF (FC = .C) NEQ 0
  2      THEN
  3          BEGIN
  3          ! Check whether this is a code which might have to be adjusted for
  3          ! a variab.e number of parameters
  3          !
```

```
;  858          0920  3
;  859          0921  3               IF .C GEQ .CODE
;  860          0922  3               THEN
;  861          0923  4                   BEGIN
;  862          0924  4                   ! The following block-IF checks for parameter consistency and calculates
;  863          0925  4                   ! the correct format code for formats which allow variable numbers of
;  864          0926  4                   ! parameters.
;  865          0927  4                   !
;  866          0928  4
;  867          0929  4                   IF .SAVTYP [1] EQL 0
;  868          0930  4                   THEN
;  869          0931  4                   ! No parameters are present.  If allowed, adjust format codes to
;  870          0932  4                   ! indicate that defaults are being taken; otherwise, error.
;  871          0933  4                   !
;  872          0934  5                       BEGIN
;  873          0935  5
;  874          0936  5                       IF FMT_CHECK (FDFLTOK)
;  875          0937  5                       THEN
;  876          0938  6                           BEGIN
;  877          0939  6                           FC = .FC + OFFSET;
;  878          0940  6                           SAVTYP [2] = SAVTYP [3] = 0;
;  879          0941  6                           END
;  880          0942  5                       ELSE
;  881          0943  5
;  882          0944  6                           IF FMT_CHECK (F1EXACT) THEN ERROR (ERRFMTNUMB)
;  883          0945  6
;  884          0946  5                       END
;  885          0947  4                   ELSE
;  886          0948  4
;  887          0949  4                       IF .SAVTYP [2] EQL 0
;  888          0950  4                       THEN
;  889          0951  4                       ! W field with no D field.  This is an error for floating point
;  890          0952  4                       ! edit types
;  891          0953  4                       !
;  892          0954  5                           BEGIN
;  893          0955  5
;  894          0956  5                           IF FMT_CHECK (FMIN2)
;  895          0957  5                           THEN
;  896          0958  6                               BEGIN
;  897          0959  6                               ERROR (ERRFMTNUMB);
;  898          0960  6                               END
;  899          0961  6
;  900          0962  5                           END
;  901          0963  4                       ELSE
;  902          0964  4
;  903          0965  4                           IF .SAVTYP [3] EQL 0
;  904          0966  4                           THEN
;  905          0967  4                           ! W and D present, but not E.  Check if this is W.M type and
;  906          0968  4                           ! adjust format code if so.
;  907          0969  4                           !
;  908          0970  5                               BEGIN
;  909          0971  5
;  910          0972  5                               IF FMT_CHECK (F1OR2) THEN FC = .FC + IOZOFFSET
;  911          0973  5
;  912          0974  5                               END
;  913          0975  4                           ELSE
;  914          0976  4                           ! W,D,E present.  If allowed, adjust format code, otherwise error.
;  915       0977  4                  !
;  916       0978  4
;  917       0979  4                      IF FMT_CHECK (F2OR3) THEN FC = .FC + EGOFFSET;
;  918       0980  4
;  919       0981  3          END;
;  920       0982  3
;  921       0983  3      IF .C EQL HCODE AND (.SAVVAL [1] LSS 0 OR .SAVTYP [1] LEQ 0) THEN ERROR (ERRHOLLCNT);
;  922       0984  3
;  923       0985  3      ! Compute the VFE-mask
;  924       0986  3      !
;  925       0987  3      VFEM [ALLBITS] = 0;
;  926       0988  3      ! Compute S and RS fields
;  927       0989  3      !
;  928       0990  3      ! If rep count is absent (SAVTYP[0] = 0), is a VFE, or is 1, then
;  929       0991  3      ! RSBIT = 0; otherwise it is the number of bytes necessary to
;  930       0992  3      ! represent the repetition count.
;  931       0993  3      !
;  932       0994  3
;  933       0995  3      IF .SAVTYP [0] LEQ 0 OR .SAVVAL [0] EQL 1
;  934       0996  3      THEN
;  935       0997  3          VFEM [RSBITS] = 0
;  936       0998  3      ELSE
;  937       0999  3          VFEM [RSBITS] = BYTSIZ (.SAVVAL [0]);
;  938       1000  3
;  939       1001  3      IF .C NEQ PCODE AND .SAVTYP [1] NEQ -1
;  940       1002  3      THEN
;  941       1003  3          VFEM [SBIT] = BYTSIZ (.SAVVAL [1]) - 1
;  942       1004  3      ELSE
;  943       1005  3          VFEM [SBIT] = 0;
;  944       1006  3
;  945       1007  3      VFEB = %O'200';
;  946       1008  3
;  947       1009  3      INCR I FROM 0 TO 3 DO
;  948       1010  4          BEGIN
;  949       1011  4
;  950       1012  4          IF .SAVTYP [.I] LSS 0 THEN VFEM = .VFEM OR .VFEB;
;  951       1013  4
;  952       1014  4          VFEB = .VFEB^(-1);
;  953       1015  3          END;
;  954       1016  3
;  955       1017  3      IF .VFEM [ALLBITS] NEQ 0 THEN FC [XBIT] = TRUE;
;  956       1018  3
;  957       1019  3      ! Output the code
;  958       1020  3      ! Also, check range of constant parameters
;  959       1021  3      !
;  960       1022  3      PUTBYT (.FC);
;  961       1023  3
;  962       1024  3      IF .VFEM [ALLBITS] NEQ 0 THEN PUTBYT (.VFEM [ALLBITS]);
;  963       1025  3
;  964       1026  3      INCR I FROM 0 TO 3 DO
;  965       1027  3
;  966       1028  3          CASE .SAVTYP [.I] FROM -1 TO 1 OF
;  967       1029  3              SET
;  968       1030  3              ! Case -1  Variable format expression
;  969       1031  3              !
;  970       1032  3
;  971       1033  3              [-1] :
    ERROR (ERRFMTCHAR);
! Case 0   Not present
!

[0] :
    0;
! Case +1  Constant
!

[1] :
    BEGIN

    CASE .I FROM 0 TO 3 OF
        SET
        ! 0 - Repetition factor
        !

        [0] :
            BEGIN

            IF .SAVVAL [0] LEQ 0 THEN ERROR (ERRFMTRNGE);

            IF .SAVVAL [0] NEQ 1
            THEN
                BEGIN
                PUTBYT (.SAVVAL [0]);

                IF .VFEM [RSBITS] EQL 2 THEN PUTBYT (.SAVVAL [0]/256);

                END;

            END;
        ! 1 - Width or scaling factor
        !

        [1] :
            BEGIN

            IF .C EQL PCODE
            THEN

                IF .SAVVAL [1] LSS -128 OR .SAVVAL [1] GTR 127
                THEN
                    ERROR (ERRFMTRNGE)
                ELSE
                    0

            ELSE

                IF .SAVVAL [1] LSS 0 THEN ERROR (ERRFMTRNGE);

            PUTBYT (.SAVVAL [1]);

            IF .VFEM [SBIT] NEQ 0 THEN PUTBYT (.SAVVAL [1]/256);

            END;
        ! 2 - Decimal field width
```

```
; 1029      1091  4                         !
; 1030      1092  4                         !
; 1031      1093  4                         [2] :
; 1032      1094  5                             BEGIN
; 1033      1095  5
; 1034      1096  5                             IF .SAVVAL [2] LSS 0 OR .SAVVAL [2] GTR 255 THEN ERROR (ERRFMTRNGE);
; 1035      1097  5
; 1036      1098  5                             PUTBYT (.SAVVAL [2]);
; 1037      1099  4                             END;
; 1038      1100  4                         ! 3 - Exponent field
; 1039      1101  4                         !
; 1040      1102  4
; 1041      1103  4                         [3] :
; 1042      1104  5                             BEGIN
; 1043      1105  5
; 1044      1106  5                             IF .SAVVAL [3] LSS 0 OR .SAVVAL [3] GTR 255 THEN ERROR (ERRFMTRNGE);
; 1045      1107  5
; 1046      1108  5                             PUTBYT (.SAVVAL [3]);
; 1047      1109  4                             END;
; 1048      1110  4                         TES;
; 1049      1111  4
; 1050      1112  4                     END
; 1051      1113  3                 TES;
; 1052      1114  3
; 1053      1115  2         END;
; 1054      1116  2
; 1055      1117  2     CH$FILL (0, %UPVAL*(K_PTR_OFFSET + L_NEST), SAVVAL [0]);    ! Zero to but not including NEST
; 1056      1118  1     END;


00  00  05  05  05  01  01  00  10  10  00  00  00  00  10  00418 P.AAB:  .BYTE   16, 0, 0, 0, 0, 16, 16, 0, 1, 1, 5, 5, 5, - ;
                                    0B  0B  0B  03  00  00  00427                 0, 0, 0, 0, 3, 11, 11, 11                     ;

                                                            FMT_PRM_LIMITS=     P.AAB


                                            007C 00000 REDUCE: .WORD   Save R2,R3,R4,R5,R6                                  ; 0806
                                56     0000V  CF  9E 00002         MOVAB   PUTBYT, R6                                           ;
                                55        04  AC  D0 00007         MOVL    C, R5                                                ; 0914
                                53            55  D0 0000B         MOVL    R5, FC                                               ;
                                              03  12 0000E         BNEQ    1$                                                   ;
                                            0168  31 00010         BRW     34$                                                  ;
                                0D            55  D1 00013 1$:     CMPL    R5, #13                                              ; 0921
                                              39  19 00016         BLSS    8$                                                   ;
                                52     C2 AF45    9E 00018         MOVAB   FMT PRM LIMITS-13[R5], R2                            ; 0936
                                          04  AA  D5 0001D         TSTL    4(SAVTYP)                                            ; 0929
                                              11  12 00020         BNEQ    3$                                                   ;
                                08            62  E9 00022         BLBC    (R2), 2$                                             ; 0936
                                53            14  C0 00025         ADDL2   #20, FC                                              ; 0939
                                          08  AA  7C 00028         CLRQ    8(SAVTYP)                                            ; 0940
                                              24  11 0002B         BRB     8$                                                   ; 0934
                    20          62            04  E1 0002D 2$:     BBC     #4, (R2), 8$                                         ; 0944
                                              09  11 00031         BRB     4$                                                   ;
                                          08  AA  D5 00033 3$:     TSTL    8(SAVTYP)                                            ; 0949
                                              07  12 00036         BNEQ    5$                                                   ;
                    15          62            01  E1 00038         BBC     #1, (R2), 8$                                         ; 0956
```

```
                                          0127 31 0003C  4$:  BRW     30$                                   ; 0959
                                      0C    AA D5 0003F  5$:  TSTL    12(SAVTYP)                            ; 0965
                                            06 12 00042       BNEQ    6$                                    ;
                   09          62           02 E1 00044       BBC     #2, (R2), 8$                          ; 0972
                                            04 11 00048       BRB     7$                                    ;
                   03          62           03 E1 0004A  6$:  BBC     #3, (R2), 8$                          ; 0979
                               53           03 C0 0004E  7$:  ADDL2   #3, FC                                ;
                               0F           55 D1 00051  8$:  CMPL    R5, #15                               ; 0983
                                            0A 12 00054       BNEQ    9$                                    ;
                                      04    AB D5 00056       TSTL    4(SAVVAL)                             ;
                                            E1 19 00059       BLSS    4$                                    ;
                                      04    AA D5 0005B       TSTL    4(SAVTYP)                             ;
                                            DC 15 0005E       BLEQ    4$                                    ;
                                            54 D4 00060  9$:  CLRL    VFEM                                  ; 0987
                                            6A D5 00062       TSTL    (SAVTYP)                              ; 0995
                                            05 15 00064       BLEQ    10$                                   ;
                               01           6B D1 00066       CMPL    (SAVVAL), #1                          ;
                                            05 12 00069       BNEQ    11$                                   ;
                               54           03 8A 0006B 10$:  BICB2   #3, VFEM                              ; 0997
                                            0C 11 0006E       BRB     12$                                   ;
                                            6B DD 00070 11$:  PUSHL   (SAVVAL)                              ; 0999
                         0000V CF           01 FB 00072       CALLS   #1, BYTSIZ                            ;
          54       02          00           50 F0 00077       INSV    R0, #0, #2, VFEM                      ;
                               0C           55 D1 0007C 12$:  CMPL    R5, #12                               ; 1001
                                            1D 13 0007F       BEQL    13$                                   ;
                      FFFFFFFF 8F     04    AA D1 00081       CMPL    4(SAVTYP), #-1                        ;
                                            13 13 00089       BEQL    13$                                   ;
                                      04    AB DD 0008B       PUSHL   4(SAVVAL)                             ; 1003
                         0000V CF           01 FB 0008E       CALLS   #1, BYTSIZ                            ;
                               51     FF    A0 9E 00093       MOVAB   -1(R0), R1                            ;
          54       01          02           51 F0 00097       INSV    R1, #2, #1, VFEM                      ;
                                            03 11 0009C       BRB     14$                                   ;
                               54           04 8A 0009E 13$:  BICB2   #4, VFEM                              ; 1005
                               51     80    8F 9A 000A1 14$:  MOVZBL  #128, VFEB                            ; 1007
                                            50 D4 000A5       CLRL    I                                     ; 1009
                                          6A40 D5 000A7 15$:  TSTL    (SAVTYP)[I]                           ; 1012
                                            03 18 000AA       BGEQ    16$                                   ;
                               54           51 C8 000AC       BISL2   VFEB, VFEM                            ;
                   51          51     FF    8F 78 000AF 16$:  ASHL    #-1, VFEB, VFEB                       ; 1014
                   EF          50           03 F3 000B4       AOBLEQ  #3, I, 15$                            ; 1009
                                            52 D4 000B8       CLRL    R2                                    ; 1017
                                            54 D5 000BA       TSTL    VFEM                                  ;
                                            06 13 000BC       BEQL    17$                                   ;
                                            52 D6 000BE       INCL    R2                                    ;
                               53     80    8F 88 000C0       BISB2   #128, FC                              ;
                                            53 DD 000C4 17$:  PUSHL   FC                                    ; 1022
                               66           01 FB 000C6       CALLS   #1, PUTBYT                            ;
                               05           52 E9 000C9       BLBC    R2, 18$                               ; 1024
                                            54 DD 000CC       PUSHL   VFEM                                  ;
                               66           01 FB 000CE       CALLS   #1, PUTBYT                            ;
                                            53 D4 000D1 18$:  CLRL    I                                     ; 1026
                   02 FFFFFFFF 8F         6A43 CF 000D3 19$:  CASEL   (SAVTYP)[I], #-1, #2                  ; 1028
                 0008        0099         008A    000DC 20$:  .WORD   30$-20$,-                             ;
                                                                      33$-20$,-                             ;
                                                                      21$-20$                               ;
                                            46 11 000E2       BRB     25$                                   ; 1034
                   03          00           53 CF 000E4 21$:  CASEL   I, #0, #3                             ; 1046
```

```
     006F         005E         0027          0008      000E8 22$:      .WORD    23$-22$,-                                       ;
                                                                                24$-22$,-                                       ;
                                                                                28$-22$,-                                       ;
                                                                                29$-22$                                         ;
                                               6B  D5 000F0 23$:      TSTL     (SAVVAL)                                        ; 1054
                                               72  15 000F2           BLEQ     30$                                             ;
                               01              6B  D1 000F4           CMPL     (SAVVAL), #1                                    ; 1056
                                               7C  13 000F7           BEQL     33$                                             ;
                                               6B  DD 000F9           PUSHL    (SAVVAL)                                        ; 1059
                               66              01  FB 000FB           CALLS    #1, PUTBYT                                      ;
       02           54         02              00  ED 000FE           CMPZV    #0, #2, VFEM, #2                                ; 1061
                                               70  12 00103           BNEQ     33$                                             ;
                    7E         6B 00000100     8F  C7 00105           DIVL3    #256, (SAVVAL), -(SP)                           ;
                                               63  11 0010D           BRB      32$                                             ;
                               0C              55  D1 0010F 24$:      CMPL     R5, #12                                         ; 1072
                                               18  12 00112           BNEQ     26$                                             ;
                               52         04   AB  D0 00114           MOVL     4(SAVVAL), R2                                   ; 1075
                       FFFFFF80  8F            52  D1 00118           CMPL     R2, #-128                                       ;
                                               45  19 0011F           BLSS     30$                                             ;
                       0000007F  8F            52  D1 00121           CMPL     R2, #127                                        ;
                                               08  15 00128           BLEQ     27$                                             ;
                                               3A  11 0012A 25$:      BRB      30$                                             ; 1077
                               52         04   AB  D0 0012C 26$:      MOVL     4(SAVVAL), R2                                   ; 1083
                                               34  19 00130           BLSS     30$                                             ;
                                               52  DD 00132 27$:      PUSHL    R2                                              ; 1085
                               66              01  FB 00134           CALLS    #1, PUTBYT                                      ;
                    3A         54              02  E1 00137           BBC      #2, VFEM, 33$                                   ; 1087
                    7E    04   AB 00000100     8F  C7 0013B           DIVL3    #256, 4(SAVVAL), -(SP)                          ;
                                               2C  11 00144           BRB      32$                                             ;
                               52         08   AB  D0 00146 28$:      MOVL     8(SAVVAL), R2                                   ; 1096
                                               1A  19 0014A           BLSS     30$                                             ;
                       000000FF  8F            52  D1 0014C           CMPL     R2, #255                                        ;
                                               11  14 00153           BGTR     30$                                             ;
                                               19  11 00155           BRB      31$                                             ; 1098
                               52         0C   AB  D0 00157 29$:      MOVL     12(SAVVAL), R2                                  ; 1106
                                               09  19 0015B           BLSS     30$                                             ;
                       000000FF  8F            52  D1 0015D           CMPL     R2, #255                                        ;
                                               0A  15 00164           BLEQ     31$                                             ;
                                               3E  DD 00166 30$:      PUSHL    #62                                             ;
                       00000000G  00           01  FB 00168           CALLS    #1, FOR$$SIGNAL_STO                             ;
                                                   04 0016F           RET                                                      ;
                                               52  DD 00170 31$:      PUSHL    R2                                              ; 1108
                               66              01  FB 00172 32$:      CALLS    #1, PUTBYT                                      ;
     FF58           53         01              03  F1 00175 33$:      ACBL     #3, #1, I, 19$                                  ; 1028
       2C           00         6E              00  2C 0017B 34$:      MOVC5    #0, (SP), #0, #44, (SAVVAL)                     ; 1117
                                               6B     00180                                                                    ;
                                                   04 00181           RET                                                      ; 1118

; Routine Size:  386 bytes,    Routine Base:  _FOR$CODE + 042D
; 1058          1119  1 ROUTINE DEFER (C, N) : CALL_G3 NOVALUE =
; 1059          1120  1
; 1060          1121  1 !++
; 1061          1122  1 ! FUNCTIONAL DESCRIPTION:
; 1062          1123  1 !
; 1063          1124  1 !       Cuase the reduction of the current format item to be deferred
; 1064          1125  1 !       until the W.D portion has been read
; 1065          1126  1 !
; 1066          1127  1 ! FORMAL PARAMETERS:
; 1067          1128  1 !
; 1068          1129  1 !       C       - format code
; 1069          1130  1 !       N       - number of parameters to follow (1 or 2)
; 1070          1131  1 !
; 1071          1132  1 ! IMPLICIT INPUTS:
; 1072          1133  1 !
; 1073          1134  1 !       FMTDAT array
; 1074          1135  1 !
; 1075          1136  1 !
; 1076          1137  1 ! IMPLICIT OUTPUTS:
; 1077          1138  1 !
; 1078          1139  1 !       repetition count, if any, saved in FMTDAT
; 1079          1140  1 !       format code and parameter count saved also in FMTDAT
; 1080          1141  1 !
; 1081          1142  1 ! ROUTINE VALUE:
; 1082          1143  1 !
; 1083          1144  1 !       NONE
; 1084          1145  1 !
; 1085          1146  1 ! SIDE EFFECTS:
; 1086          1147  1 !
; 1087          1148  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1088          1149  1 !
; 1089          1150  1 !--
; 1090          1151  1
; 1091          1152  2     BEGIN
; 1092          1153  2     EXT_REG;                                     ! Declare external registers
; 1093          1154  2     NZERO ();
; 1094          1155  2     NSAVE ();
; 1095          1156  2     PTR [L_FDEFER] = .C;
; 1096          1157  2     PTR [L_FCOUNT] = .N;
; 1097          1158  1     END;



                                         0000 00000 DEFER:   .WORD    Save nothing                          ; 1119
                0000V  CF           00   FB 00002            CALLS    #0, NZERO                             ; 1154
                0000V  CF           00   FB 00007            CALLS    #0, NSAVE                             ; 1155
                       69     04    AC   7D 0000C            MOVQ     C, (PTR)                              ; 1156
                                         04 00010            RET                                            ; 1158

; Routine Size:  17 bytes,    Routine Base:  _FOR$CODE + 05AF
; 1099          1159  1 ROUTINE UNDEFER : CALL_G3 NOVALUE =
; 1100          1160  1
; 1101          1161  1 !++
; 1102          1162  1 ! FUNCTIONAL DESCRIPTION:
; 1103          1163  1 !
; 1104          1164  1 !       Complete the reduction of a format item which was deferred
; 1105          1165  1 !
; 1106          1166  1 ! FORMAL PARAMETERS:
; 1107          1167  1 !
; 1108          1168  1 !
; 1109          1169  1 ! IMPLICIT INPUTS:
; 1110          1170  1 !
; 1111          1171  1 !       FMTDAT array
; 1112          1172  1 !
; 1113          1173  1 ! IMPLICIT OUTPUTS:
; 1114          1174  1 !
; 1115          1175  1 !       FMTDAT array
; 1116          1176  1 !
; 1117          1177  1 ! ROUTINE VALUE:
; 1118          1178  1 !
; 1119          1179  1 !       NONE
; 1120          1180  1 !
; 1121          1181  1 ! SIDE EFFECTS:
; 1122          1182  1 !
; 1123          1183  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1124          1184  1 !
; 1125          1185  1 !--
; 1126          1186  1
; 1127          1187  2     BEGIN
; 1128          1188  2     EXT_REG;                                ! Declare external registers
; 1129          1189  2
; 1130          1190  2     IF .PTR [L_FDEFER] NEQ 0
; 1131          1191  2     THEN
; 1132          1192  3         BEGIN
; 1133          1193  3         NSAVE ();
; 1134          1194  3         REDUCE (.PTR [L_FDEFER]);
; 1135          1195  3         END
; 1136          1196  2     ELSE
; 1137          1197  3         BEGIN
; 1138          1198  3
; 1139          1199  3         IF .PTR [L_TYPE] NEQ 0 THEN ERROR (ERRFMXTNUM);
; 1140          1200  3
; 1141          1201  3         IF .PTR [L_SIGN] NEQ 0 THEN ERROR (ERRFMTCHAR);
; 1142          1202  3
; 1143          1203  3         PTR [L_NVAL] = 0;
; 1144          1204  3         PTR [L_TYPE] = 0;
; 1145          1205  3         PTR [L_SIGN] = 0;
; 1146          1206  2         END;
; 1147          1207  2
; 1148          1208  1     END;



                                      0000 00000 UNDEFER:.WORD   Save nothing                              ; 1159
                                    69  D5 00002          TSTL    (PTR)                                     ; 1190
```

```
                                   0D  13 00004          BEQL    1$                                   ;
            0000V  CF              00  FB 00006          CALLS   #0, NSAVE                            ; 1193
                                   69  DD 0000B          PUSHL   (PTR)                                ; 1194
             FE5B  CF              01  FB 0000D          CALLS   #1, REDUCE                           ;
                                       04 00012          RET                                          ; 1190
                              18   A9  D5 00013 1$:      TSTL    24(PTR)                              ; 1199
                                   05  12 00016          BNEQ    2$                                   ;
                              10   A9  D5 00018          TSTL    16(PTR)                              ; 1201
                                   0A  13 0001B          BEQL    3$                                   ;
                                   3E  DD 0001D 2$:      PUSHL   #62                                  ;
         00000000G  00             01  FB 0001F          CALLS   #1, FOR$$SIGNAL_STO                  ;
                                       04 00026          RET                                          ;
                              14   A9  7C 00027 3$:      CLRQ    20(PTR)                              ; 1203
                              10   A9  D4 0002A          CLRL    16(PTR)                              ; 1205
                                       04 0002D          RET                                          ; 1208

; Routine Size:  46 bytes,    Routine Base:  _FOR$CODE + 05C0
; 1150          1209  1 ROUTINE NZERO : CALL_G3 NOVALUE =
; 1151          1210  1
; 1152          1211  1 !++
; 1153          1212  1 ! FUNCTIONAL DESCRIPTION:
; 1154          1213  1 !
; 1155          1214  1 !       Check context for a format item with has an optional leading
; 1156          1215  1 !       number field. If there is a deferred item, then a separator is
; 1157          1216  1 !       required, and we have an ambiguous case.  The leading numeric
; 1158          1217  1 !       will be attached to the preceding format item.
; 1159          1218  1 !
; 1160          1219  1 ! FORMAL PARAMETERS:
; 1161          1220  1 !
; 1162          1221  1 !       None
; 1163          1222  1 !
; 1164          1223  1 ! IMPLICIT INPUTS:
; 1165          1224  1 !
; 1166          1225  1 !       FMTDAT array
; 1167          1226  1 !
; 1168          1227  1 !
; 1169          1228  1 ! IMPLICIT OUTPUTS:
; 1170          1229  1 !
; 1171          1230  1 !       NONE
; 1172          1231  1 !
; 1173          1232  1 ! ROUTINE VALUE:
; 1174          1233  1 !
; 1175          1234  1 !       NONE
; 1176          1235  1 !
; 1177          1236  1 ! SIDE EFFECTS:
; 1178          1237  1 !
; 1179          1238  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1180          1239  1 !
; 1181          1240  1 !--
; 1182          1241  1
; 1183          1242  2     BEGIN
; 1184          1243  2     EXT_REG;                                    ! Declare external registers
; 1185          1244  2
; 1186          1245  2     IF .PTR [L_FDEFER] NEQ 0 THEN ERROR (ERRFMTSEPR);
; 1187          1246  2
; 1188          1247  1     END;



                                              0000 00000 NZERO:  .WORD   Save nothing                                ; 1209
                                           69  D5 00002          TSTL    (PTR)                                       ; 1245
                                           09  13 00004          BEQL    1$                                          ;
                                           3E  DD 00006          PUSHL   #62                                         ;
                         00000000G  00     01  FB 00008          CALLS   #1, FOR$$SIGNAL_STO                         ;
                                               04 0000F 1$:      RET                                                 ; 1247

; Routine Size:  16 bytes,    Routine Base:  _FOR$CODE + 05EE
; 1190          1248  1 ROUTINE NSAVE : CALL_G3 NOVALUE =
; 1191          1249  1
; 1192          1250  1 !++
; 1193          1251  1 ! FUNCTIONAL DESCRIPTION:
; 1194          1252  1 !
; 1195          1253  1 !       Save the values of PTR[L_NVAL] and PTR[L_TYPE] in SAVTYP and SAVVAL
; 1196          1254  1 !
; 1197          1255  1 ! FORMAL PARAMETERS:
; 1198          1256  1 !
; 1199          1257  1 !       None
; 1200          1258  1 !
; 1201          1259  1 ! IMPLICIT INPUTS:
; 1202          1260  1 !
; 1203          1261  1 !       PTR[L_NVAL]     - value of a  numeric term
; 1204          1262  1 !       PTR[L_TYPE]     - PTR[L_TYPE] of the numeric term
; 1205          1263  1 !       PTR[L_SIGN]     - indicator if a minus PTR[L_SIGN] has been encounted
; 1206          1264  1 !       PTR[L_PHASE]    - indicator of what the PTR[[_NVAL] and PTR[L_TYPE] associate
; 1207          1265  1 !                 to repetition count, W or D.
; 1208          1266  1 !
; 1209          1267  1 ! IMPLICIT OUTPUTS:
; 1210          1268  1 !
; 1211          1269  1 !       FMTDAT array
; 1212          1270  1 !
; 1213          1271  1 ! ROUTINE VALUE:
; 1214          1272  1 !
; 1215          1273  1 !       NONE
; 1216          1274  1 !
; 1217          1275  1 ! SIDE EFFECTS:
; 1218          1276  1 !
; 1219          1277  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62="SYNTAX ERROR IN FORMAT")
; 1220          1278  1 !
; 1221          1279  1 !--
; 1222          1280  1
; 1223          1281  2     BEGIN
; 1224          1282  2     EXT_REG;                                    ! Declare external registers
; 1225          1283  2
; 1226          1284  2     IF .PTR [L_SIGN] NEQ 0 THEN ERROR (ERRFMTPTR [L_SIGN]);
; 1227          1285  2
; 1228          1286  2     SAVVAL [.PTR [L_PHASE]] = .PTR [L_NVAL];
; 1229          1287  2     SAVTYP [.PTR [L_PHASE]] = .PTR [L_TYPE];
; 1230          1288  2     PTR [L_PHASE] = .PTR [L_PHASE] + 1;
; 1231          1289  2     PTR [L_SIGN] = 0;
; 1232          1290  2     PTR [L_NVAL] = 0;
; 1233          1291  2     PTR [L_TYPE] = 0;
; 1234          1292  1     END;


                                   0000 00000 NSAVE:  .WORD    Save nothing                          ; 1248
                        10      A9  D5 00002          TSTL     16(PTR)                               ; 1284
                                0A  13 00005          BEQL     1$                                    ;
                                3E  DD 00007          PUSHL    #62                                   ;
             00000000G  00      01  FB 00009          CALLS    #1, FOR$$SIGNAL_STO                   ;
                                    04 00010          RET                                            ;
                    50  08      A9  D0 00011 1$:      MOVL     8(PTR), R0                            ; 1286
```

```
                                 6B40      14   A9  D0 00015          MOVL    20(PTR), (SAVVAL)[R0]                    ;
                                 6A40      18   A9  D0 0001A          MOVL    24(PTR), (SAVTYP)[R0]                    ; 1287
                                           08   A9  D6 0001F          INCL    8(PTR)                                   ; 1288
                                           10   A9  7C 00022          CLRQ    16(PTR)                                  ; 1289
                                           18   A9  D4 00025          CLRL    24(PTR)                                  ; 1291
                                                    04 00028          RET                                              ; 1292

; Routine Size:  41 bytes,    Routine Base:  _FOR$CODE + 05FE
```

```
1 ROUTINE PUTBYT (V) : CALL_G3 NOVALUE =
1
1 !++
1 ! FUNCTIONAL DESCRIPTION:
1 !
1 !       Output a byte through argument
1 !
1 ! FORMAL PARAMETERS:
1 !
1 !       V       - vaule to be output
1 !
1 ! IMPLICIT INPUTS:
1 !
1 !       FMTDAT array
1 !
1 ! IMPLICIT OUTPUTS:
1 !
1 !       FMTDAT array
1 !
1 ! ROUTINE VALUE:
1 !
1 !       NONE
1 !
1 ! SIDE EFFECTS:
1 !
1 !       SIGNAL_STOPs FOR$SYNERRFOR (62=''SYNTAX ERROR IN FORMAT")
1 !
1 !--
1
2     BEGIN
2
2     LOCAL
2         A_OLD_BUF_BEG;                          ! Place to save old format buffer address
2
2     EXT_REG;                                    ! Declare external registers
2
2     !+
2     ! Check if room in currently allocated format buffer.
2     ! If not allocate twice as much and copy old format buffer,
2     ! then deallocate old format buffer.
2     !-
2
2     IF .PTR [L_NCHAR] GEQ .PTR [L_FMT_BUF_SIZ]
2     THEN
3         BEGIN
3         A_OLD_BUF_BEG = .PTR [A_FMT_BUF_BEG];
3
3         IF .PTR [L_FMT_BUF_SIZ] GEQ 32768 THEN ERROR ();
3
3         PTR [A_FMT_BUF_BEG] = FOR$$GET_VM (.PTR [L_FMT_BUF_SIZ]*2);
3         CH$MOVE (.PTR [L_FMT_BUF_SIZ], .A_OLD_BUF_BEG, .PTR [A_FMT_BUF_BEG]);
3         FOR$$FREE_VM (.PTR [L_FMT_BUF_SIZ], .A_OLD_BUF_BEG);
3         PTR [L_FMT_BUF_SIZ] = .PTR [L_FMT_BUF_SIZ]*2;
2         END;
2
2     !+
2     ! Store away the byte in format buffer
```

```
; 1293          1350  2     !-
; 1294          1351  2
; 1295          1352  2     (.PTR [A_FMT_BUF_BEG] + .PTR [L_NCHAR])<0, 8> = .V,
; 1296          1353  2     PTR [L_NCHAR] = .PTR [L_NCHAR] + 1;
; 1297          1354  1     END;
```

```
                                                       007C 00000 PUTBYT: .WORD   Save R2,R3,R4,R5,R6                         ; 1293
                                  28   A9       1C   A9  D1 00002         CMPL    28(PTR), 40(PTR)                            ; 1335
                                                     3E  19 00007         BLSS    2$                                          ;
                                       56       20   A9  D0 00009         MOVL    32(PTR), A_OLD_BUF_BEG                      ; 1338
                            00008000   8F       28   A9  D1 0000D         CMPL    40(PTR), #32768                             ; 1340
                                                     0A  19 00015         BLSS    1$                                          ;
                                                     3E  DD 00017         PUSHL   #62                                         ;
                            0000000G   00            01  FB 00019         CALLS   #1, FOR$$SIGNAL_STO                         ;
                                                         04 00020         RET                                                 ;
                         7E       28   A9            01  78 00021 1$:     ASHL    #1, 40(PTR), -(SP)                          ; 1342
                            0000000G   00            01  FB 00026         CALLS   #1, FOR$$GET_VM                             ;
                                  20   A9            50  D0 0002D         MOVL    R0, 32(PTR)                                 ;
                    20   B9            66       28   A9  28 00031         MOVC3   40(PTR), (A_OLD_BUF_BEG), @32(PTR)          ; 1343
                                                     56  DD 00037         PUSHL   A_OLD_BUF_BEG                               ; 1344
                                                28   A9  DD 00039         PUSHL   40(PTR)                                     ;
                            0000000G   00            02  FB 0003C         CALLS   #2, FOR$$FREE_VM                            ;
                                  28   A9            02  C4 00043         MULL2   #2, 40(PTR)                                 ; 1345
                         50       20   A9       1C   A9  C1 00047 2$:     ADDL3   28(PTR), 32(PTR), R0                        ; 1352
                                       60       04   AC  90 0004D         MOVB    V, (R0)                                     ;
                                                1C   A9  D6 00051         INCL    28(PTR)                                     ; 1353
                                                         04 00054         RET                                                 ; 1354

; Routine Size:  85 bytes,    Routine Base:  _FOR$CODE + 0627
; 1299          1355  1 ROUTINE BYTSIZ (VAL) =
; 1300          1356  1
; 1301          1357  1 !++
; 1302          1358  1 ! FUNCTIONAL DESCRIPTION:
; 1303          1359  1 !
; 1304          1360  1 !       Calculate the number of bytes to hold VAL
; 1305          1361  1 !
; 1306          1362  1 ! FORMAL PARAMETERS:
; 1307          1363  1 !
; 1308          1364  1 !       VAL     - value to be sized
; 1309          1365  1 !
; 1310          1366  1 ! IMPLICIT INPUTS:
; 1311          1367  1 !
; 1312          1368  1 !       NONE
; 1313          1369  1 !
; 1314          1370  1 !
; 1315          1371  1 ! IMPLICIT OUTPUTS:
; 1316          1372  1 !
; 1317          1373  1 !       NONE
; 1318          1374  1 !
; 1319          1375  1 ! ROUTINE VALUE:
; 1320          1376  1 !
; 1321          1377  1 !       NONE
; 1322          1378  1 !
; 1323          1379  1 ! SIDE EFFECTS:
; 1324          1380  1 !
; 1325          1381  1 !       SIGNAL_STOPs FOR$SYNERRFOR (62=''SYNTAX ERROR IN FORMAT'')
; 1326          1382  1 !
; 1327          1383  1 !--
; 1328          1384  1
; 1329          1385  2     BEGIN
; 1330          1386  2
; 1331          1387  2     MAP
; 1332          1388  2         VAL : LONG UNSIGNED;
; 1333          1389  2
; 1334          1390  2     IF .VAL LSS 0
; 1335          1391  2     THEN
; 1336          1392  3         ERROR (ERRFMTRNGE)
; 1337          1393  2     ELSE
; 1338          1394  2
; 1339          1395  2         IF .VAL LSS 256
; 1340          1396  2         THEN
; 1341          1397  2             RETURN 1
; 1342          1398  2         ELSE
; 1343          1399  2
; 1344          1400  2             IF .VAL LSS 65536 THEN RETURN 2 ELSE ERROR (ERRFMTRNGE);
; 1345          1401  2
; 1346          1402  1     END;



                                      0004 00000 BYTSIZ: .WORD    Save R2                               ; 1355
                   52        04    AC  D0 00002          MOVL     VAL, R2                               ; 1390
                                   1A  19 00006          BLSS     2$                                    ;
         00000100  8F              52  D1 00008          CMPL     R2, #256                              ; 1395
```

```
                                              04  18 0000F          BGEQ    1$                                    ;
                           50                 01  D0 00011          MOVL    #1, R0                                ; 1397
                                                  04 00014          RET                                           ;
                 00010000  8F                 52  D1 00015 1$:      CMPL    R2, #65536                            ; 1400
                                              04  18 0001C          BGEQ    2$                                    ;
                           50                 02  D0 0001E          MOVL    #2, R0                                ;
                                                  04 00021          RET                                           ;
                                              3E  DD 00022 2$:      PUSHL   #62                                   ;
                 00000000G 00                 01  FB 00024          CALLS   #1, FOR$$SIGNAL_STO                   ;
                                              50  D4 0002B          CLRL    R0                                    ;
                                                  04 0002D          RET                                           ; 1402

; Routine Size:  46 bytes,    Routine Base:  _FOR$CODE + 067C


; 1347          1403  1 END
; 1348          1404  1
; 1349          1405  0 ELUDOM





;                                   PSECT SUMMARY
;
;       Name                         Bytes                       Attributes
;
;  _FOR$CODE                            1706  NOVEC,NOWRT,  RD ,  EXE,  SHR,  LCL,  REL,  CON,  PIC,ALIGN(2)



;                             Library Statistics
;
;                                              -------- Symbols --------       Pages       Processing
;       File                                   Total    Loaded   Percent       Mapped      Time
;
;  _$255$DUA28:[SYSLIB]STARLET.L32;1            9776        0         0         581         00:01.0
;  _$255$DUA28:[FORRTL.OBJ]FORLIB.L32;1          711        2         0          52         00:00.5
;  _$255$DUA28:[FORRTL.OBJ]RTLLIB.L32;1           36        0         0           8         00:00.1




;                                    COMMAND QUALIFIERS

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

; Size:          1594 code + 112 data bytes
; Run Time:         00:36.2
; Elapsed Time:     01:28.9
; Lines/CPU Min:      2326
; Lexemes/CPU-Min: 16995
; Memory Used:  326 pages
; Compilation Complete
```

0180 AH-BT13A-SE
VAX/VMS V4.0

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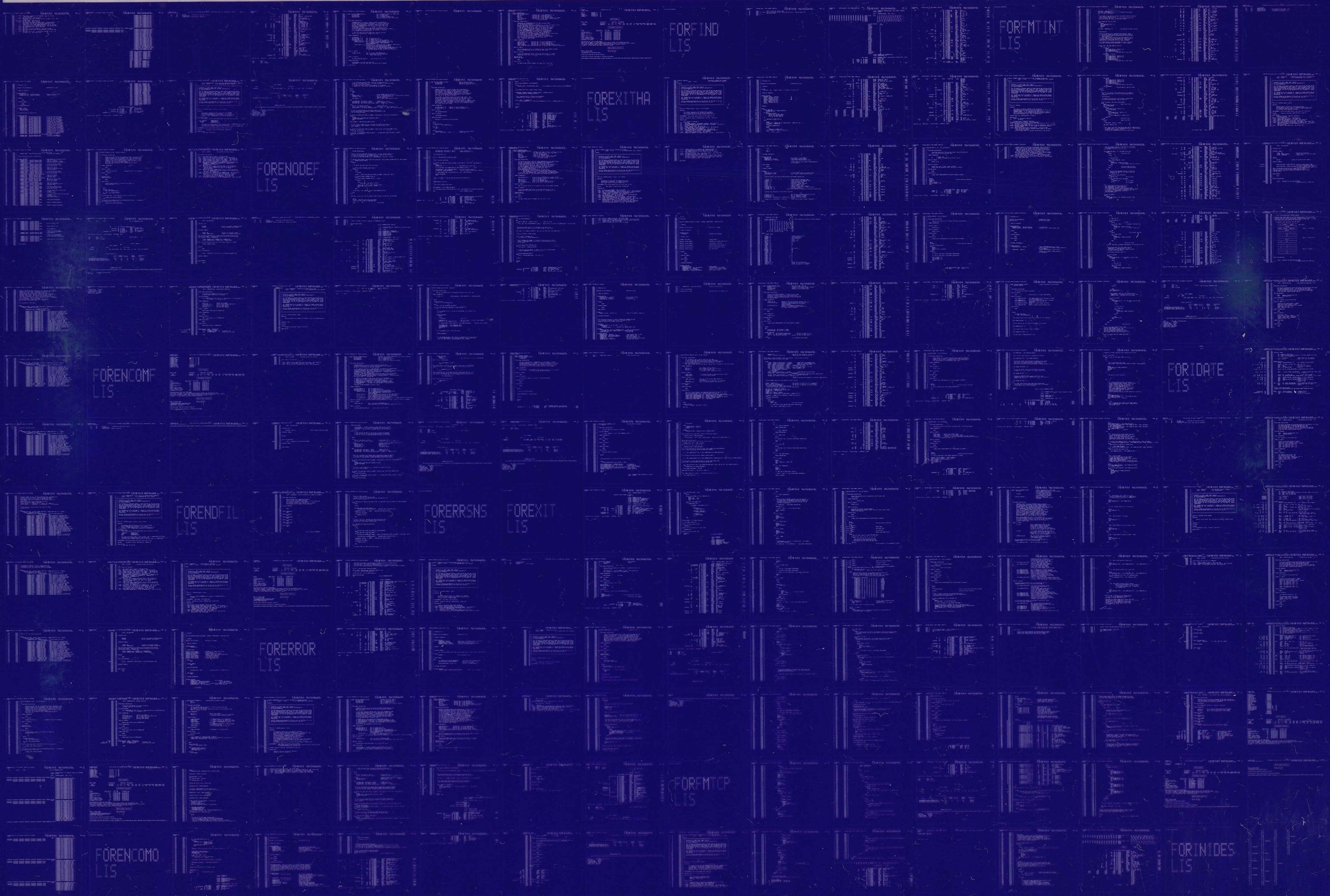

FORFIND
LIS

FORFMTINT
LIS

FOREXITHA
LIS

FORENODEF
LIS

FORENCOMF
LIS

FORIDATE
LIS

FORENDFIL
LIS

FORERRSNS
LIS

FOREXIT
LIS

FORERROR
LIS

FORFMTCP
LIS

FORENCOMO
LIS

FORINIDES
LIS