fig-FORTH

# 68000

ASSEMBLY SOURCE LISTING

RELEASE 1.1

WITH COMPILER SECURITY

AND

VARIABLE LENGTH NAMES

October 1983



FORTH INTEREST GROUP * PO BOX 1105 * SAN CARLOS, CA 94070

# fig-FORTH 68000

## Release 1.1



ASSEMBLER FOR fig-FORTH 68000 Contact.....

MOUNTAIN VIEW PRESS, INC.
PO Box 4656
Mountain View, CA 94040
(415) 961-4103


68000 fig-FORTH Release 1.1 and ASSEMBLER by:

Kenneth Mantei
Department of Chemistry
California State College
San Bernardino, CA 02407

Address comments and corrections to Kenneth Mantei



Acknowledgements:

FIG installation Manual - Release 1
FIG 1802 Assembly Source Listing
68000 Assembly Language Programming by Kane, Hawkins and Leventhal

This Listing printed: October 1983 (Release 1.1)





This publication has been made available by the

FORTH Interest Group
PO Box 1105
San Carlos, CA 94070

# 68000 fig-FORTH

This version of FORTH implements the fig-FORTH model presented in the FORTH Interest Group's Installation Manual in Motorola 68000 microprocessor code. It does not make intentional use of the 32-bit addressing capabilities of the 68000, but uses conventional two-byte addresses. For most users the implementation of NEXT, chosen for speed and brevity, will force this to be honestly described as a 32K FORTH.

The FORTH inner interpreter, NEXT, is

```
3A5C    MOVE    (IP)+,WP
305D    MOVE    (WP)+,A0
4ED0    JMP     (A0)
```

This works uneventfully for addresses in the range 0000-7FFF (i.e. lowest 32K of memory). 16-bit addresses, standard in fig-FORTH, are sign-extended automatically by the 68000 CPU so that 16-bit addresses in the range 8000-FFFF point the CPU to FFFF 8000-FFFF FFFF (i.e. highest 32K). Unfortunately, most systems do not have RAM available, decoded for this upper 32K. Unless your system does, this 68000 implementation will work only in the lowest 32K.

Two significant bugs were found in Release 1.0. New definitions of @ and (+LOOP) are presented in this Release 1.1 to fix these. @ will now retrieve data at odd addresses, and +LOOP will now count down in a manner consistent with the definition of S in the fig-Editor. For convenience in looping from 0000 to FFFF, the non-fig word /LOOP has been added.

Several words were defined as high level in Release 1.0 simply because the original 6502 implementation did this. In Release 1.1 the following have been converted to code words: MIN, MAX, M*, M/, /, */, *, -, +- , and D+- . This makes / and */ about 7 and 12 times faster, respectively. In FORTH DIMENSIONS Vol. III No. 1 page 11, some benchmarks are given. Using a 3.58 MHz 68000 with no wait states, this Release 1.1 runs LOOPTEST in 0.7, -TEST in 2.1, *TEST in 2.6, and /TEST in 3.5 seconds.

Minor improvements have been made in Release 1.1 in the code for: BRANCH, (LOOP), (FIND), CMOVE, SP@, OVER, SWAP, DUP, and S→D. The fig-FORTH word END has been omitted since it is a little-used alias for UNTIL.

Following the assembly listing, a hex dump is presented. As a further aid to users who have entered the code by hand, there are some checksum data at the end. Also, the string exiting words of the fig-Editor cannot be implemented without the MATCH word. A code version of MATCH is appended which works with either Release 1.0 or 1.1.

The rest of these notes are excerpted from Release 1.0, where "original" referred to the 6502 fig-FORTH Installation Manual implementation of FORTH.

# 68000 fig-FORTH

Kenneth Mantei
Department of Chemistry
California State College
San Bernardino, Calif. 92407
Phone (714) 887-7344

Primitive words are located at 2000-25E9H, with the six-byte inner interpreter appended to each word. Constants and variables run from 25EA-27D1H. Most of the constants relate to hardware and it seemed desirable to locate these on the USER page. So a new primitive, (USERCONSTANT) was defined that requires no modification to FORTH source material, but gets constants from the USER page. The rest of the kernal runs from 27D2-3117H. The conditional compiler, math words, output words, and VLIST run from 3118-340DH. Disc I/O and boot-up code runs from 340E-371FH. FORTH is entered by a jump to COLD at 3662, or the warmstart at 369E.

The original model assumed 128-byte buffer blocks. Modifications were made in +BUF to handle automatically 1024, 512, and 256-byte buffers as well. "84" was replaced by "B/BUF 4+". Similarly, the null word, X, was modified to handle 1,2,4, as well as the original 8 buffers/screen. "7" was replaced by "B/SCR 1-". B/BUF and B/SCR, now userconstants on the USER page, need only be chosen to give 1024 bytes/screen.

CREATE originally assumed that unchecked dictionary growth would run into the computation stack. To enable the latter to be located arbitrarily, a USER variable, DICTLIMIT, has been introduced. CREATE now checks to be sure the dictionary is not exceeding DICTLIMIT, rather than encountering the computation stack. To ensure that LFA's fall on even addresses, as required by the 68000, CREATE has also been modified to insert 00 fill bytes ahead of NFA's when necessary.

The original CMOVE always moved the byte lowest in memory first (untrue to its definition), producing unadvertised results for short moves up. The original FILL took advantage of this. The present 68000 version of CMOVE is bidirectional and faithful to the definition. FILL then is necessarily rewritten now as a code word.

A new code word, C=, has been added that functions like = except that only the low bytes are compared. This is used in EXPECT a couple of times to replace =. EXPECT has also been modified to get its backspace-keyin and backspace-output ASCII codes from the USER page, where they are called BKSPKEY and BKSPEMIT.

+ORIGIN accesses the same bootup parameters, exactly as shown on SCR# 79 and 97 of the Installation Manual. However, the bootups are now located in COLD, rather than in front of FORTH.

224 words are listed in the glossary of the Installation Manual. Modification of 4 of these: CMOVE, FILL, EXPECT, AND CREATE has been mentioned above. 16 other glossary words have been omitted in this implementation: (ABORT), ;CODE, DLIST, I, MON, MOVE, TASK, TRIAD, DR1, BLOCK-READ, BLOCK-WRITE, NEXT, POP, PUSH, PUT, and END. 18 words, not appearing in the glossary, are added: ORIGIN, CURRENT, C/L, C=, !CODE, (VAR), (CONST), (USER), (USERCONSTANT), (NEST), BKSPKEY, BKSPEMIT, DICTLIMIT, EMITSUB, KEYSUB, ?TERMSUB, CRSUB, and R/WSUB.

## NOTES ON THE FORM OF THE ASSEMBLY

Address registers are numbered 0-7 in the 68000, as are the data registers. In the assembly listing these are referred to as 0 AR, 1AR ..., 7 AR, 0 DR, 1 DR ..., 7 DR -- reflecting the reverse Polish flavor of my 68000 assembler, itself written in FORTH. Five address registers are dedicated pointers. 3 AR is CS, the computation stack pointer, which grows toward low memory and is always left pointing at the high order (but lower memory) byte of the top 2-byte stack cell. 4 AR is IP, the instruction pointer which is incremented when used, to point to the next cell. 5 AR is WP, the word pointer, loaded as usual via IP and incremented when used. 6 AR is US, the USER page pointer with which offset addresses are used to locate USER variables and userconstants. 7 AR is RS, the return stack, which operates like CS. Any code routines that use 3 AR - 7 AR must save and restore them.

Written especially for assembling FORTH, the assembler is not Motorola's, and several features need explanation. Assembler symbols for indirect addressing "[", with predecrement "-[", or postincrement "[+", should be obvious. And "&[" shows indirect addressing with offset, as in "2E US &[".

Labels are marked by ">" signs and most often point to parameter fields. Since high level words are lists of CFA's, this assembler uses "$LAY" to subtract 2 from a labelled address before assembling it. This assembler uses plain "LAY" to assemble an address or number without subtracting 2. A labelled address is converted by "*+" into the relative address required for 68000 code branches.

The tilde, "~", found on most lines of the assembly listing causes the line to be printed, and for code words also initializes variables used in verifying that the proper number of arguments are associated with each assembly mneumonic. When a source and a destination are both specified for an assembly mneumonic, they are presented in that order, separated by a carat, "^".

## RUNNING 68000 fig-FORTH

1. Load the 68000 code into a 68000 system from 2000-371F. This version is not relocatable, but can be assembled to run at a different location on request.

2. Write 68000 code subroutines for EMIT, KEY, ?TERMINAL, CR, and R/W and put the addresses of these subroutines at bytes 40-49 on the USER page by filling them into the appropriate locations in COLD, 36CC-36D5. Data register 0 (0 DR) is used to pass ASCII bytes in EMIT and KEY, and the flag in ?TERMINAL. Remember to save and restore address registers 3-7 if they are used. FORTH will look on the USER page for the addresses of these subroutines, and COLD will have put them there.

3. Fit U0, S0, R0, TIB, BKSPKEY, BKSPEMIT, DICTLIMIT, FIRST, LIMIT, USE, PREV, B/BUF, and B/SCR to fit your hardware. Do this by changing the addresses in COLD as needed. If desired, on the first attempt to bring this system up, WARNING can be left 0. But it must be reset to 1 in order for the error messages to be read from the disc.

4. Run by jumping to coldstart at 3662 (or later, warmstart at 369E).

```
81 1     ^   HEX 2000 DP2 !   0 CURRNFA !
81 3   LAYCODEHEADER LIT                                  2000|83 4C 49 D4
81 3   LAYCODEHEADER LIT                                  2004|0000  2008
81 4    > $LIT        ^ IP [+ ^ CS -[ .W .MOVE             2008|371C
81 5                  NEXT                                 200A|3A5C  305D  4ED0
81 7   LAYCODEHEADER EXECUTE                              2010|87 45 58 45 43 55 54 C5
81 7   LAYCODEHEADER EXECUTE                              2018|2000  201C
81 8    > $EXECUTE    ^ CS [+ ^ WP AR .W .MOVE            201C|3A5B
81 9                  ^ WP [+ ^ 0 AR .W .MOVE             201E|305D
81 10                 ^ 0 [ .JMP                          2020|4ED0
81 12  LAYCODEHEADER BRANCH                               2022|0 86 42 52 41 4E 43 C8
81 12  LAYCODEHEADER BRANCH                               202A|2010  202E
81 13   > $BRANCH     ^ IP [ ^ IP AR .W .ADD              202E|D8D4
81 14                   NEXT                              2030|3A5C  305D  4ED0
82 0   LAYCODEHEADER 0BRANCH                              2036|87 30 42 52 41 4E 43 C8
82 0   LAYCODEHEADER 0BRANCH                              203E|2023  2042
82 1    > $0BRANCH    ^ CS [+ .W .TST                     2042|4A5B
82 2                  ^ .EQ. $BRANCH X+ .BCC              2044|67E8
82 3                  ^ 2 IMM ^ IP AR .W .ADDQ            2046|544C
82 4                  NEXT                                2048|3A5C  305D  4ED0
82 6   LAYCODEHEADER (LOOP)                               204E|0 86 28 4C 4F 4F 50 A9
82 6   LAYCODEHEADER (LOOP)                               2056|2036  205A
82 7    > $(LOOP)     ^ 1 IMM ^ RS [ .W .ADDQ ( INCRE CURR COUNT )  205A|5257
82 8    > $(LOOP)2    ^ 2 RS &[ ^ 0 DR .W .MOVE ( LIMIT=CURRENT? )  205C|302F  0002
82 9                  ^ RS [ ^ 0 DR .W .CMP ( IS BETTER WAY? )      2060|B057
82 10                 ^ .GT. $(LOOP)3 X+ .BCC  ( BR IF LIM>CURR )   2062|6E06
82 11   > $(LOOP)5    ^ 2 IMM ^ IP AR .W .ADDQ ( CLEAN UP & LEAVE )  2064|544C
82 12                 ^ 4 IMM ^ RS AR .W .ADDQ                      2066|584F
82 13                 ^ $(LOOP)4 X+ .BRA                            2068|6002
82 14   > $(LOOP)3    ^ IP [ ^ IP AR .W .ADD              206A|D8D4
82 15   > $(LOOP)4      NEXT            -->               206C|3A5C  305D  4ED0
83 0   LAYCODEHEADER (+LOOP)                              2072|87 28 2B 4C 4F 4F 50 A9
83 0   LAYCODEHEADER (+LOOP)                              207A|204F  207E
83 1    > $(+LOOP)    ^ CS [+ ^ 0 DR .W .MOVE             207E|301B
83 2                  ^ 0 DR ^ RS [ .W .ADD               2080|D157
83 3                  ^ 0 DR .TST ( NEGATIVE INCREMENT? )  2082|4A40
83 4                  ^ .PL. $(LOOP)2 X+ .BCC ( POS INC )  2084|6AD6
83 5                  ^ 2 RS &[ ^ 0 DR .MOVE              2086|302F  0002
83 6                  ^   RS  [ ^ 0 DR .CMP               208A|B057
83 7                  ^ .GE. $(LOOP)5 X+ .BCC ( DONE )    208C|6CD6
83 8                  ^      $(LOOP)3 X+ .BRA ( CONTINUE )  208E|60DA
83 9   LAYCODEHEADER (/LOOP)                              2090|87 28 2F 4C 4F 4F 50 A9
83 9   LAYCODEHEADER (/LOOP)                              2098|2072  209C
83 10   > $(/LOOP)    ^ CS [+ ^ 0 DR .W .MOVE             209C|301B
83 11                 ^ 0 DR ^ RS [ .ADD                  209E|D157
83 12                 ^ 2 RS &[ ^ 0 DR .MOVE              20A0|302F  0002
83 13                 ^ RS [ ^ 0 DR .CMP ( CURR VS. LIMIT )  20A4|B057
83 14                 ^ .HI. $(LOOP)3 X+ .BCC ( CONTINUE )  20A6|62D2
83 15                 ^      $(LOOP)5 X+ .BRA ( DONE )   -->  20A8|60EA
84 0   LAYCODEHEADER (DO)                                 20AA|0 84 28 44 4F A9
84 0   LAYCODEHEADER (DO)                                 20B0|2090  20B4
84 1    > $(DO)       ^ CS [+ ^ RS -[ .L .MOVE            20B4|2F1B
84 2                    NEXT                              20B6|3A5C  305D  4ED0
```

```
84 4   LAYCODEHEADER DIGIT                                                  20BC|85 44 49 47 49 D4
84 4   LAYCODEHEADER DIGIT                                                  20C2|20AB  20C6
84 5    > $DIGIT     ^ CS [+ ^ 1 DR .W .MOVE ( LOAD BASE INTO DR1 )         20C6|321B
84 6                 ^ CS [ ^ 0 DR .W .MOVE  ( LOAD ASCII INTO DR0 )        20C8|3013
84 7                 ^ 30 IMM ^ 0 DR .W .SUB                                20CA|0440  0030
84 8                 ^ .CS. $BADDIGIT x+ .BCC                               20CE|651C
84 9                 ^ 9 IMM ^ 0 DR .W .CMP                                 20D0|0C40  0009
84 10                ^ .LE. $BASECK x+ .BCC                                 20D4|6F0A
84 11                ^ 11 IMM ^ 0 DR .W .CMP                                20D6|0C40  0011
84 12                ^ .LT. $BADDIGIT x+ .BCC                               20DA|6D10
84 13                ^ 7 IMM ^ 0 DR .W .SUB                                 20DC|0440  0007
84 14   > $BASECK     ^ 1 DR ^ 0 DR .W .CMP                                  20E0|B041
84 15                ^ .GE. $BADDIGIT x+ .BCC        -->                    20E2|6C08
85 0                 ^ 0 DR ^ CS [ .W .MOVE ( RETURN BINARY ON STK )        20E4|3680
85 1                 ^ 1 IMM ^ CS -[ .W .MOVE ( & GOODDIGIT FLAG )          20E6|373C  0001
85 2                 ^ $DIGIT1 x+ .BRA                                      20EA|6004
85 3    > $BADDIGIT  ^ 0 IMM ^ CS [ .W .MOVE                                20EC|368C  0000
85 4    > $DIGIT1    NEXT                                                   20F0|3A5C  305D  4ED0
85 6   LAYCODEHEADER (FIND)                                                 20F6|0 86 28 46 49 4E 44 A9
85 6   LAYCODEHEADER (FIND)                                                 20FE|20BC  2102
85 7    > $(FIND)    ^ CS [+ ^ 1 AR .W .MOVE  ( LOAD TRIAL NFA )            2102|325B
85 8                 ^ CS [ ^ 0 AR .W .MOVE  ( FIXED TEST PTR )             2104|3053
85 9    > $(FIND)1   ^ 0 AR ^ 2 AR .W .MOVE ( MAKE WORK COPY TEXT PTR )     2106|3448
85 10                ^ 1 [+ ^ 1 DR .B .MOVE ( READ NFA LENGTHBYTE )         2108|1219
85 11                ^ 1 DR ^ 4 DR .B .MOVE ( MAKE COPY OF NFALEN )         210A|1801
85 12                ^ 4 DR ^ 3 DR .W .MOVE ( MAKE ANOTHER COPY )           210C|3604
86 0                 ^ 1F IMM ^ 3 DR .W .AND ( MASK TO GET COUNT )          210E|0243  001F
86 1                 ^ 1 AR ^ 3 DR .W .ADD ( ADD COUNT TO NFA+1 )           2112|D649
86 2                 ^ 1 IMM ^ 3 DR .W .ADDQ ( AND FIND NEXT EVEN ... )    2114|5243
86 3                 ^ FFFE IMM ^ 3 DR .W .AND ( ADDRESS = LFA. )           2116|0243  FFFE
86 4                 ^ 2 [+ ^ 6 DR .B .MOVE                                 211A|1C1A
86 5                 ^ 6 DR ^ 4 DR .B .EOR ( COMPARE LENGTH BYTES .. )      211C|B D04
86 6                 ^ 3F IMM ^ 4 DR .B .AND ( 6 LOWEST BITS. )             211E|0204  003F
86 7                 ^ .NE. $(FIND)3 x+ .BCC  ( BRANCH IF LENGTHS DIFF )    2122|6620
86 8    > $(FIND)2   ^ 2 [+ ^ 2 DR .B .MOVE ( GET ASCII TEXT CHAR )         2124|141A
86 9                 ^ 7 IMM ^ 2 DR .BCLR  ( IGNORE BIT 7 )                 2126|0882  0007
86 10                ^ 1 [+ ^ 6 DR .B .MOVE                                 212A|1C19
86 11                ^ 6 DR ^ 2 DR .B .EOR ( COMPARE NFA CHAR )             212C|B D02
86 12                ^ 1 IMM ^ 2 DR .B .ASL ( SHIFT OUT BIT 7 ... )         212E|E302
86 13                ^ .NE. $(FIND)3 x+ .BCC ( AND BRANCH IF NO MATCH )     2130|6612
86 14                ^ .CC. $(FIND)2 x+ .BCC ( OR LOOP TILL LAST CHAR. )    2132|64F0
87 0                 ^ 4 IMM ^ 3 DR .W .ADDQ ( CALC PFA OF FOUND WORD )     2134|5843
87 1                 ^ 3 DR ^ CS [ .W .MOVE ( & LEAVE ON STACK. )           2136|3683
87 2                 ^ FF IMM ^ 1 DR .W .AND                                2138|0241  00FF
87 3                 ^ 1 DR ^ CS -[ .W .MOVE ( LEAVE LENGTHBYTE ON STK)     213C|3701
87 4                 ^ 1 IMM ^ CS -[ .W .MOVE ( LEAVE FOUND NFA FLAG )      213E|373C  0001
87 5                 ^ $(FIND)4 x+ .BRA  ( BRANCH TO EXIT. )                2142|600C
87 6    > $(FIND)3   ^ 3 DR ^ 2 AR .W .MOVE ( PUT LFA INTO ADDRESS REG )    2144|3443
87 7                 ^ 2 [ ^ 1 AR .W .MOVE ( LOAD LINKED NFA )              2146|3252
87 8                 ^ 1 AR ^ 6 DR .W .MOVE ( SO CAN SEE IF ZEROS )         2148|3C09
87 9                 ^ .NE. $(FIND)1 x+ .BCC ( TILL EXHAUST DICT. )         214A|668A
87 10                ^ 0 IMM ^ CS [ .W .MOVE ( LEAVE FAIL FLAG )            214C|368C  0000
87 11   > $(FIND)4   NEXT                                                   2150|3A5C  305D  4ED0
```

```
88 0   LAYCODEHEADER ENCLOSE                                          2156|87 45 4E 43 4C 4F 53 C5
88 0   LAYCODEHEADER ENCLOSE                                          215E|20F7  2162
88 1    > $ENCLOSE   ^ CS [+ ^ 0 DR .W .MOVE  ( DELIMITER )           2162|301B
88 2                 ^ CS [ ^ 0 AR .W .MOVE     ( TEXTADDRESS )     2164|3053
88 3                 ^ 1 DR  .L .CLR                                2166|4281
88 4                 ^ $ENCLOSE2 x+ .BRA                            2168|6002
88 5    > $ENCLOSE1  ^ 1 IMM ^ 1 DR .W .ADDQ                        216A|5241
88 6    > $ENCLOSE2  ^ 0 0 1 &DC ^ 0 DR .B .CMP                     216C|B030  1000
88 7                 ^ .EQ. $ENCLOSE1 x+ .BCC ( LOOP TILL NONDELIMIT ) 2170|67F8
88 8                 ^ 1 DR ^ CS -[ .W .MOVE  ( SAVE N1 )           2172|3701
88 9    > $ENCLOSE3  ^ 0  0 1 &DC ^ 0 DR .B .CMP                     2174|B030  1000
88 10                ^ .EQ. $ENCLOSE6 x+ .BCC                       2178|671A
88 11                ^ 0 IMM ^ 0 0 1 &DC .B .CMP                    217A|0C30  0000  1000
88 12                ^ .EQ. $ENCLOSE4 x+ .BCC  ( ASCII 00 )         2180|6704
88 13                ^ 1 IMM ^ 1 DR .W .ADDQ                        2182|5241
88 14                ^ $ENCLOSE3 x+ .BRA                            2184|60EE
89 0    > $ENCLOSE4  ^ CS [ ^ 1 DR .W .CMP  ( JUST 00 ? )           2186|B253
89 1                 ^ .NE. $ENCLOSE5 x+ .BCC  ( BRANCH IF NOT )    2188|6606
89 2                 ^ 1 IMM ^ 1 DR .W .ADDQ ( ENCLOSE 00 )         218A|5241
89 3                 ^ 1 DR ^ CS -[ .W .MOVE  ( SAVE N2 )           218C|3701
89 4                 ^ $ENCLOSE8 x+ .BRA                            218E|6008
89 5    > $ENCLOSE5  ^ 1 DR ^ CS -[ .W .MOVE  ( SAVE N2 )           2190|3701
89 6                 ^ $ENCLOSE8 x+ .BRA                            2192|6004
89 7    > $ENCLOSE6  ^ 1 DR ^ CS -[ .W .MOVE  ( SAVE N2 )           2194|3701
89 8                 ^ 1 IMM ^ 1 DR .W .ADDQ ( SKIP DELIMITER )     2196|5241
89 9    > $ENCLOSE8  ^ 1 DR ^ CS -[ .W .MOVE ( SAVE N3 )            2198|3701
89 10                NEXT                                           219A|3A5C  305D  4ED0
90 0   LAYCODEHEADER CMOVE                                          21A0|85 43 4D 4F 56 C5
90 0   LAYCODEHEADER CMOVE                                          21A6|2156  21AA
90 1    > $CMOVE     ^ 0 AR ^ 0 AR .L .SUB ( ZERO REGISTER )        21AA|91C8
90 2                 ^ 0 AR ^ 1 AR .L .MOVE                         21AC|2248
90 3                 ^ CS [+ ^ 0 DR .W .MOVE                        21AE|301B
90 4                 ^ CS [+ ^ 1 AR .W .MOVE                        21B0|325B
90 5                 ^ CS [+ ^ 0 AR .W .MOVE                        21B2|305B
90 6                 ^ 0 AR ^ 1 AR .W .CMP                          21B4|B2C8
90 7                 ^ .GT. $MOVBKWD x+ .BCC                        21B6|6E0A
90 8                 ^ $MOVFWD1 x+ .BRA                             21B8|6002
90 9    > $MOVFWD    ^ 0 [+ ^ 1 [+ .B .MOVE                         21BA|12D8
90 10   > $MOVFWD1   ^ .F. 0 $MOVFWD x+ .DBCC                       21BC|51C8  FFFC
90 11                ^ $CMOVE5 x+ .BRA                              21C0|600C
90 12   > $MOVBKWD   ^ 0 DR ^ 0 AR .W .ADD                         21C2|D0C0
90 13                ^ 0 DR ^ 1 AR .W .ADD                          21C4|D2C0
90 14                ^ $MOVBKWD2 x+ .BRA                            21C6|6002
91 0    > $MOVBKWD1  ^ 0 -[ ^ 1 -[ .B .MOVE                         21C8|1320
91 1    > $MOVBKWD2  ^ .F. 0 $MOVBKWD1 x+ .DBCC                     21CA|51C8  FFFC
91 2    > $CMOVE5    NEXT                                           21CE|3A5C  305D  4ED0
91 4   LAYCODEHEADER U*                                             21D4|0 82 55 AA
91 4   LAYCODEHEADER U*                                             21D8|21A0  21DC
91 5    > $U*        ^ CS [+ ^ 0 DR .W .MOVE                        21DC|301B
91 6                 ^ CS [+ ^ 0 DR .MULU                           21DE|C0DB
91 7                 ^ 0 DR ^ CS -[ .L .MOVE                        21E0|2700
91 8                 NEXT                                           21E2|3A5C  305D  4ED0
```

```
91 9   LAYCODEHEADER U/                                  21E8|0 82 55 AF
91 9   LAYCODEHEADER U/                                  21EC|21D5  21F0
91 10   > $U/          ^ CS C+ ^ 1 DR .W .MOVE           21F0|321B
91 11                  ^ CS C ^ 0 DR .L .MOVE            21F2|2013
91 12                  ^ 1 DR ^ 0 DR .DIVU               21F4|80C1
91 13                  ^ 0 DR .SWAP                      21F6|4840
91 14                  ^ 0 DR ^ CS C .L .MOVE            21F8|2680
91 15                  NEXT   —>                         21FA|3A5C  305D  4ED0
92 0   LAYCODEHEADER M*                                  2200|0 82 4D AA
92 0   LAYCODEHEADER M*                                  2204|21E9  2208
92 1    > $M*          ^ CS C+ ^ 0 DR .W .MOVE           2208|301B
92 2                   ^ CS C+ ^ 0 DR .MULS              220A|C1DB
92 3                   ^ 0 DR ^ CS -C .L .MOVE           220C|2700
92 4                   NEXT                              220E|3A5C  305D  4ED0
92 6   LAYCODEHEADER M/                                  2214|0 82 4D AF
92 6   LAYCODEHEADER M/                                  2218|2201  221C
92 7    > $M/          ^ CS C+ ^ 1 DR .W .MOVE           221C|321B
92 8                   ^ CS C ^ 0 DR .L .MOVE            221E|2013
92 9                   ^ 1 DR ^ 0 DR .DIVS               2220|81C1
92 10                  ^ 0 DR .SWAP                      2222|4840
92 11                  ^ 0 DR ^ CS C .L .MOVE            2224|2680
92 12                  NEXT   —>                         2226|3A5C  305D  4ED0
93 0   LAYCODEHEADER *                                   222C|81 AA
93 0   LAYCODEHEADER *                                   222E|2215  2232
93 1    > $*           ^ CS C+ ^ 0 DR .W .MOVE           2232|301B
93 2                   ^ CS C ^ 0 DR .MULS               2234|C1D3
93 3                   ^ 0 DR ^ CS C .MOVE               2236|3680
93 4                   NEXT                              2238|3A5C  305D  4ED0
93 6   LAYCODEHEADER /                                   223E|81 AF
93 6   LAYCODEHEADER /                                   2240|222C  2244
93 7    > $/           ^ 2 CS &C ^ 0 DR .W .MOVE         2244|302B  0002
93 8                   ^         0 DR .L .EXT            2248|48C0
93 9                   ^ CS C+ ^ 0 DR .DIVS              224A|81DB
93 10                  ^ 0 DR ^ CS C .MOVE               224C|3680
93 11                  NEXT                              224E|3A5C  305D  4ED0
94 0   LAYCODEHEADER */                                  2254|0 82 2A AF
94 0   LAYCODEHEADER */                                  2258|223E  225C
94 1    > $*/          ^ CS C+ ^ 1 DR .W .MOVE           225C|321B
94 2                   ^ CS C+ ^ 0 DR .MOVE              225E|301B
94 3                   ^ CS C ^ 0 DR .MULS               2260|C1D3
94 4                   ^ 1 DR ^ 0 DR .DIVS               2262|81C1
94 5                   ^ 0 DR ^ CS C .MOVE               2264|3680
94 6                   NEXT                              2266|3A5C  305D  4ED0
94 8   LAYCODEHEADER +                                   226C|81 A8
94 8   LAYCODEHEADER +                                   226E|2255  2272
94 9    > $+           ^ CS C+ ^ 0 DR .W .MOVE           2272|301B
94 10                  ^ 0 DR ^ CS C .W .ADD             2274|D153
94 11                  NEXT                              2276|3A5C  305D  4ED0
94 12  LAYCODEHEADER -                                   227C|81 A0
94 12  LAYCODEHEADER -                                   227E|226C  2282
94 13   > $-           ^ CS C+ ^ 0 DR .W .MOVE           2282|301B
94 14                  ^ 0 DR ^ CS C .W .SUB             2284|9153
94 15                  NEXT                 —>           2286|3A5C  305D  4ED0
```

```
95 0   LAYCODEHEADER MINUS                                                  22BC|85 4D 49 4E 55 D3
95 0   LAYCODEHEADER MINUS                                                  2292|227C  2296
95 1    > $MINUS      ^ CS C .W .NEG                                        2296|4453
95 2                  NEXT                                                 2298|3A5C  305D  4ED0
95 4   LAYCODEHEADER D+                                                     229E|0 82 44 AB
95 4   LAYCODEHEADER D+                                                     22A2|228C  22A6
95 5    > $D+         ^ CS C+ ^ 0 DR .L .MOVE ( HI 16 BITS LOWER IN )       22A6|201B
95 6                  ^ 0 DR ^ CS C .L .ADD   ( MEMORY SINCE STACK  )       22A8|D193
95 7                  NEXT                    ( GROWS DOWN. )               22AA|3A5C  305D  4ED0
95 8   LAYCODEHEADER DMINUS                                                 22B0|0 86 44 4D 49 4E 55 D3
95 8   LAYCODEHEADER DMINUS                                                 22B8|229F  22BC
95 9    > $DMINUS     ^ CS C .L .NEG                                        22BC|4493
95 10                 NEXT                                                 22BE|3A5C  305D  4ED0
95 11  LAYCODEHEADER S->D                                                   22C4|0 84 53 2D 3E C4
95 11  LAYCODEHEADER S->D                                                   22CA|22B1  22CE
95 12   > $S->D      ^ CS C+ ^ 0 DR .MOVE                                  22CE|301B
95 13                ^       0 DR .L .EXT                                  22D0|48C0
95 14                ^ 0 DR ^ CS -C .L .MOVE                               22D2|2700
95 15                NEXT             -->                                 22D4|3A5C  305D  4ED0
96 0   LAYCODEHEADER AND                                                    22DA|83 41 4E C4
96 0   LAYCODEHEADER AND                                                    22DE|22C5  22E2
96 1    > $AND       ^ CS C+ ^ 0 DR .W .MOVE                               22E2|301B
96 2                 ^ 0 DR ^ CS C .W .AND                                 22E4|C153
96 3                 NEXT                                                 22E6|3A5C  305D  4ED0
96 5   LAYCODEHEADER OR                                                     22EC|0 82 4F D2
96 5   LAYCODEHEADER OR                                                     22F0|22DA  22F4
96 6    > $OR        ^ CS C+ ^ 0 DR .W .MOVE                               22F4|301B
96 7                 ^ 0 DR ^ CS C .W .OR                                  22F6|8153
96 8                 NEXT                                                 22F8|3A5C  305D  4ED0
96 10  LAYCODEHEADER XOR                                                    22FE|83 58 4F D2
96 10  LAYCODEHEADER XOR                                                    2302|22ED  2306
96 11   > $XOR       ^ CS C+ ^ 0 DR .W .MOVE                               2306|301B
96 12                ^ 0 DR ^ CS C .W .EOR                                 2308|B153
96 13                NEXT                                                 230A|3A5C  305D  4ED0
97 0   LAYCODEHEADER SP@                                                    2310|83 53 50 C0
97 0   LAYCODEHEADER SP@                                                    2314|22FE  2318
97 1    > $SP@       ^ CS AR ^ CS -C .W .MOVE                              2318|3708
97 2                 NEXT                                                 231A|3A5C  305D  4ED0
97 4   LAYCODEHEADER SP!                                                    2320|83 53 50 A1
97 4   LAYCODEHEADER SP!                                                    2324|2310  2328
97 5    > $SP!       ^ 6 US &C ^ CS AR .W .MOVE                            2328|366E  0006
97 6                 NEXT                                                 232C|3A5C  305D  4ED0
97 8   LAYCODEHEADER RP!                                                    2332|83 52 50 A1
97 8   LAYCODEHEADER RP!                                                    2336|2320  233A
97 9    > $RP!       ^ 8 US &C ^ RS AR .W .MOVE                            233A|3E6E  0008
97 10                NEXT                                                 233E|3A5C  305D  4ED0
97 12  LAYCODEHEADER ;S  ( UNNEST )                                         2344|0 82 38 D3
97 12  LAYCODEHEADER ;S  ( UNNEST )                                         2348|2332  234C
97 13   > $;S         ^ RS C+ ^ IP AR .W .MOVE                              234C|385F
97 14                NEXT                  -->                            234E|3A5C  305D  4ED0
98 0   LAYCODEHEADER LEAVE                                                  2354|85 4C 45 41 56 C5
98 0   LAYCODEHEADER LEAVE                                                  235A|2345  235E
98 1    > $LEAVE     ^ RS C ^ 2 RS &C .W .MOVE                             235E|3F57  0002
98 2                 NEXT                                                 2362|3A5C  305D  4ED0
```

```
98 4   LAYCODEHEADER >R
98 4   LAYCODEHEADER >R
98 5    > $>R        ^ CS [+ ^ RS -[ ,W ,MOVE
98 6                 NEXT
98 8   LAYCODEHEADER R>
98 8   LAYCODEHEADER R>
98 9    > $R>        ^ RS [+ ^ CS -[ ,W ,MOVE
98 10                NEXT
98 12  LAYCODEHEADER R
98 12  LAYCODEHEADER R
98 13   > $R         ^ RS [ ^ CS -[ ,W ,MOVE
98 14                NEXT
99 0   LAYCODEHEADER 0=
99 0   LAYCODEHEADER 0=
99 1    > $0=        ^ CS [ ,W ,TST
99 2                 ^ ,EQ, 1 CS &[ ,B ,SCC
99 3                 ^ 1 IMM ^ CS [ ,W ,AND
99 4                 NEXT
99 6   LAYCODEHEADER 0<
99 6   LAYCODEHEADER 0<
99 7    > $0<        ^ CS [ ,W ,TST
99 8                 ^ ,MI, 1 CS &[ ,B ,SCC
99 9                 ^ 1 IMM ^ CS [ ,W ,AND
99 10                NEXT
99 11  LAYCODEHEADER MAX
99 11  LAYCODEHEADER MAX
99 12   > $MAX       ^ CS [+ ^ 0 DR ,MOVE
99 13                ^ CS [ ^ 0 DR ,CMP
99 14                ^ ,LE, $MIN2 x+ ,BCC
99 15                ^      $MIN1 x+ ,BRA      -->
100 0  LAYCODEHEADER MIN
100 0  LAYCODEHEADER MIN
100 1   > $MIN       ^ CS [+ ^ 0 DR ,MOVE
100 2                ^ CS [ ^ 0 DR ,CMP
100 3                ^ ,GE, $MIN2 x+ ,BCC
100 4   > $MIN1      ^ 0 DR ^ CS [ ,MOVE
100 5   > $MIN2      NEXT
100 6  LAYCODEHEADER +-
100 6  LAYCODEHEADER +-
100 7   > $+-        ^ CS [+ ,TST
100 8                ^ ,PL, $+-1 x+ ,BCC
100 9                ^ CS [ ,NEG
100 10  > $+-1       NEXT
100 11 LAYCODEHEADER D+-
100 11 LAYCODEHEADER D+-
100 12  > $D+-       ^ CS [+ ,TST
100 13               ^ ,PL, $D+-1 x+ ,BCC
100 14               ^ CS [ ,L ,NEG
100 15  > $D+-1      NEXT         -->
101 0  LAYCODEHEADER OVER
101 0  LAYCODEHEADER OVER
101 1   > $OVER      ^ 2 CS &[ ^ CS -[ ,W ,MOVE
101 2                NEXT
```

```
2368|0 82 3E D2
236C|2354  2370
2370|3F1B
2372|3A5C  305D  4ED0
2378|0 82 52 8E
237C|2369  2380
2380|371F
2382|3A5C  305D  4ED0
2388|81 D2
238A|2379  238E
238E|3717
2390|3A5C  305D  4ED0
2396|0 82 30 8D
239A|2388  239E
239E|4A53
23A0|57EB  0001
23A4|0253  0001
23A8|3A5C  305D  4ED0
23AE|0 82 30 8C
23B2|2397  23B6
23B6|4A53
23B8|5BEB  0001
23BC|0253  0001
23C0|3A5C  305D  4ED0
23C6|83 4D 41 D8
23CA|23AF  23CE
23CE|301B
23D0|B053
23D2|6F12
23D4|600E
23D6|83 4D 49 CE
23DA|23C6  23DE
23DE|301B
23E0|B053
23E2|6C02
23E4|3680
23E6|3A5C  305D  4ED0
23EC|0 82 2B AD
23F0|23D6  23F4
23F4|4A5B
23F6|6A02
23F8|4453
23FA|3A5C  305D  4ED0
2400|83 44 2B AD
2404|23ED  2408
2408|4A5B
240A|6A02
240C|4493
240E|3A5C  305D  4ED0
2414|0 84 4F 56 45 D2
241A|2400  241E
241E|372B  0002
2422|3A5C  305D  4ED0
```

```
101 4  LAYCODEHEADER DROP                                    2428|0 84 44 52 4F D0
101 4  LAYCODEHEADER DROP                                    242E|2415  2432
101 5   > $DROP      ^ 2 IMM ^ CS AR .W .ADDQ                2432|544B
101 6               NEXT                                     2434|3A5C  305D  4ED0
101 8  LAYCODEHEADER SWAP                                    243A|0 84 53 57 41 D0
101 8  LAYCODEHEADER SWAP                                    2440|2429  2444
101 9   > $SWAP      ^ CS C ^ 0 DR .L .MOVE                  2444|2013
101 10              ^        0 DR .SWAP                      2446|4840
101 11              ^ 0 DR ^ CS C .L .MOVE                   2448|2680
101 12              NEXT                                     244A|3A5C  305D  4ED0
102 0  LAYCODEHEADER DUP                                     2450|83 44 55 D0
102 0  LAYCODEHEADER DUP                                     2454|2438  2458
102 1   > $DUP       ^ CS C ^ CS -C .W .MOVE                  2458|3713
102 2               NEXT                                     245A|3A5C  305D  4ED0
102 4  LAYCODEHEADER +!                                      2460|0 82 2B A1
102 4  LAYCODEHEADER +!                                      2464|2450  2468
102 5   > $+!       ^ CS C+ ^ 0 AR .W .MOVE                  2468|305B
102 6               ^ CS C+ ^ 0 DR .W .MOVE                  246A|301B
102 7               ^ 0 DR ^ 0 C .W .ADD                     246C|D150
102 8               NEXT                                     246E|3A5C  305D  4ED0
102 10 LAYCODEHEADER TOGGLE                                  2474|0 86 54 4F 47 47 4C C5
102 10 LAYCODEHEADER TOGGLE                                  247C|2461  2480
102 11  > $TOGGLE   ^ CS C+ ^ 0 DR .W .MOVE                  2480|301B
102 12              ^ CS C+ ^ 0 AR .W .MOVE                  2482|305B
102 13              ^ 0 DR ^ 0 C .B .EOR                     2484|B110
102 14              NEXT              -->                    2486|3A5C  305D  4ED0
103 0  LAYCODEHEADER @                                       248C|81 C0
103 0  LAYCODEHEADER @                                       248E|2475  2492
103 1   > $@        ^ CS C ^ 0 AR .W .MOVE                   2492|3053
103 2               ^ 0 C+ ^ CS C .B .MOVE                   2494|1698
103 3               ^ 0 C ^ 1 3 &C .B .MOVE                  2496|1750  0001
103 4               NEXT                                     249A|3A5C  305D  4ED0
103 5  LAYCODEHEADER C@                                      24A0|0 82 43 C0
103 5  LAYCODEHEADER C@                                      24A4|248C  24A8
103 6   > $C@       ^ CS C+ ^ 0 AR .W .MOVE                  24A8|305B
103 7               ^ 0 C ^ CS -C .B .MOVE                   24AA|1710
103 8               ^ 0 IMM ^ CS -C .B .MOVE                 24AC|173C  0000
103 9               NEXT                                     24B0|3A5C  305D  4ED0
103 11 LAYCODEHEADER !                                       24B6|81 A1
103 11 LAYCODEHEADER !                                       24B8|24A1  24BC
103 12  > $!        ^ CS C+ ^ 0 AR .W .MOVE                  24BC|305B
103 13              ^ CS C+ ^ 0 C+ .B .MOVE                  24BE|10D8
103 14              ^ CS C+ ^ 0 C .B .MOVE                   24C0|1098
103 15              NEXT      -->                            24C2|3A5C  305D  4ED0
104 0  LAYCODEHEADER FILL                                    24C8|0 84 46 49 4C CC
104 0  LAYCODEHEADER FILL                                    24CE|24B6  24D2
104 1   > $FILL      ^ CS C+ ^ 0 DR .W .MOVE ( FILLBYTE )    24D2|301B
104 2               ^ CS C+ ^ 1 DR .W .MOVE ( QUANTITY )     24D4|3218
104 3               ^ CS C+ ^ 0 AR .W .MOVE ( POINTER )      24D6|305B
104 4               ^ $FILL3 x+ .BRA                         24D8|6002
104 5   > $FILL2    ^ 0 DR ^ 0 C+ .B .MOVE                   24DA|10C0
104 6   > $FILL3    ^ .F. 1 $FILL2 x+ .DBCC                  24DC|51C9  FFFC
104 7               NEXT                                     24E0|3A5C  305D  4ED0
```

```
104 8  LAYCODEHEADER C!                                                  24E6|0 82 43 A1
104 8  LAYCODEHEADER C!                                                  24EA|24C9  24EE
104 9   > $C!          ^ CS [+ ^ 0 AR .W .MOVE                           24EE|305B
104 10                 ^ 1 IMM ^ CS AR .W .ADDQ                          24F0|524B
104 11                 ^ CS [+ ^ 0 [ .B .MOVE                            24F2|1098
104 12                 NEXT                                              24F4|3A5C  305D  4ED0
104 13 LAY:HEADER C=                                                     24FA|0 82 43 80
104 13 LAY:HEADER C=                                                     24FE|24E7  25E0
104 14  > $C=          ^ $-  $LAY   $LIT  $LAY   00FF  LAY               2502|2280  2006  00FF
104 15                 ^ $AND  $LAY   $0=  $LAY   $;     —>              2508|22E0  239C  234A
105 0  LAYCODEHEADER EMIT                                                250E|0 84 45 4D 49 D4
105 0  LAYCODEHEADER EMIT                                                2514|24FB  2518
105 1   > $EMIT        ^ CS [+ ^ 0 DR .W .MOVE ( SEND BYTE IN DR0 )      2518|301B
105 2                 ^ 1 IMM ^ 1A US &[ .W .ADDQ  ( INC OUT )          251A|526E  001A
105 3                 ^ 40 US &[ ^ 0 AR .W .MOVE ( EMITCODE ADDRESS )   251E|306E  0040
105 4                 ^ 0 [ .JSR                                        2522|4E90
105 5                 NEXT                                              2524|3A5C  305D  4ED0
105 6  LAYCODEHEADER KEY                                                 252A|83 4B 45 D9
105 6  LAYCODEHEADER KEY                                                 252E|250F  2532
105 7   > $KEY         ^ 42 US &[ ^ 0 AR .W .MOVE ( KEYCODE ADDRESS )    2532|306E  0042
105 8                 ^ 0 [ .JSR                                        2536|4E90
105 9                 ^ 0 DR ^ CS -[ .W .MOVE ( GET BYTE FROM DR0 )     2538|3700
105 10                NEXT                                              253A|3A5C  305D  4ED0
105 11 LAYCODEHEADER ?TERMINAL                                           2540|89 3F 54 45 52 4D 49 4E 41 CC
105 11 LAYCODEHEADER ?TERMINAL                                           254A|252A  254E
105 12  > $?TERMINAL  ^ 44 US &[ ^ 0 AR .W .MOVE ( ?TERMCODE ADDRESS )   254E|306E  0044
105 13                ^ 0 [ .JSR                                         2552|4E90
105 14                ^ 0 DR ^ CS -[ .W .MOVE ( GET FLAG FROM DR0 )      2554|3700
105 15                NEXT   —>                                          2556|3A5C  305D  4ED0
106 0  LAYCODEHEADER CR                                                  255C|0 82 43 D2
106 0  LAYCODEHEADER CR                                                  2560|2540  2564
106 1   > $CR         ^ 0 IMM ^ 1A US &[ .W .MOVE  ( ZERO OUT )         2564|3D7C  0000  001A
106 2                 ^ 46 US &[ ^ 0 AR .W .MOVE ( CRCODE ADDRESS )     256A|306E  0046
106 3                 ^ 0 [ .JSR                                        256E|4E90
106 4                 NEXT                                              2570|3A5C  305D  4ED0
106 6  LAYCODEHEADER (VAR)                                               2576|85 28 56 41 52 A9
106 6  LAYCODEHEADER (VAR)                                               257C|255D  2580
106 7   > $(VAR)      ^ HP AR ^ CS -[ .W .MOVE                          2580|370D
106 8                 NEXT                                              2582|3A5C  305D  4ED0
106 9  LAYCODEHEADER (CONST)                                             2588|87 28 43 4F 4E 53 54 A9
106 9  LAYCODEHEADER (CONST)                                             2590|2576  2594
106 10  > $(CONST)    ^ HP [ ^ CS -[ .W .MOVE                           2594|3715
106 11                NEXT          —>                                 2596|3A5C  305D  4ED0
107 0  LAYCODEHEADER (USER)                                              259C|0 86 28 55 53 45 52 A9
107 0  LAYCODEHEADER (USER)                                              25A4|2588  25A8
107 1   > $(USER)     ^ HP [ ^ 0 DR .W .MOVE                            25A8|3015
107 2                 ^ 6 AR ^ 0 DR .W .ADD                             25AA|D04E
107 3                 ^ 0 DR ^ CS -[ .W .MOVE                           25AC|3700
107 4                 NEXT                                              25AE|3A5C  305D  4ED0
107 5  LAYCODEHEADER (USERCONSTANT)                                      25B4|0 8E 28 55 53 45 52 43 4F 4E 53 54 41 4E 54 A

107 5  LAYCODEHEADER (USERCONSTANT)                                      25C4|25D0  25C8
107 6   > $(USERCONSTANT)   ^ HP [ ^ 0 AR .W .MOVE                       25C8|3055
107 7                 ^ 6 AR ^ 0 AR .W .ADD                             25CA|D0CE
107 8                 ^ 0 [ ^ CS -[ .W .MOVE                            25CC|3710
107 9                 NEXT                                              25CE|3A5C  305D  4ED0
```

```
107 10 LAYCODEHEADER (NEST)
107 10 LAYCODEHEADER (NEST)
107 11  > $(NEST)     ^ IP AR ^ RS -[ ,W .MOVE
107 12               ^ WP AR ^ IP AR ,W .MOVE
107 13               NEXT
108 0  LAYCONSTANT 0          > $0          0000 LAY
108 0  LAYCONSTANT 0          > $0          0000 LAY
108 1  LAYCONSTANT 1          > $1          0001 LAY
108 1  LAYCONSTANT 1          > $1          0001 LAY
108 2  LAYCONSTANT 2          > $2          0002 LAY
108 2  LAYCONSTANT 2          > $2          0002 LAY
108 3  LAYCONSTANT 3          > $3          0003 LAY
108 3  LAYCONSTANT 3          > $3          0003 LAY
108 4  LAYCONSTANT BL         > $BL         0020 LAY
108 4  LAYCONSTANT BL         > $BL         0020 LAY
108 5  LAYUSER BKSPKEY        > $BKSPKEY      0002 LAY
108 5  LAYUSER BKSPKEY        > $BKSPKEY      0002 LAY
108 6  LAYUSER S0             > $S0         0006 LAY
108 6  LAYUSER S0             > $S0         0006 LAY
108 7  LAYUSER R0             > $R0         0008 LAY
108 7  LAYUSER R0             > $R0         0008 LAY
108 8  LAYUSER TIB            > $TIB        000A LAY
108 8  LAYUSER TIB            > $TIB        000A LAY
108 9  LAYUSER WIDTH          > $WIDTH      000C LAY
108 9  LAYUSER WIDTH          > $WIDTH      000C LAY
108 10 LAYUSER WARNING        > $WARNING    000E LAY
108 10 LAYUSER WARNING        > $WARNING    000E LAY
108 11 LAYUSER FENCE          > $FENCE      0010 LAY
108 11 LAYUSER FENCE          > $FENCE      0010 LAY
109 0  LAYUSER DP             > $DP         0012 LAY
109 0  LAYUSER DP             > $DP         0012 LAY
109 1  LAYUSER VOC-LINK       > $VOC-LINK   0014 LAY
109 1  LAYUSER VOC-LINK       > $VOC-LINK   0014 LAY
109 2  LAYUSER BLK            > $BLK        0016 LAY
109 2  LAYUSER BLK            > $BLK        0016 LAY
109 3  LAYUSER IN             > $IN         0018 LAY
109 3  LAYUSER IN             > $IN         0018 LAY
109 4  LAYUSER OUT            > $OUT        001A LAY
109 4  LAYUSER OUT            > $OUT        001A LAY
109 5  LAYUSER SCR            > $SCR        001C LAY
109 5  LAYUSER SCR            > $SCR        001C LAY
109 6  LAYUSER OFFSET         > $OFFSET     001E LAY
109 6  LAYUSER OFFSET         > $OFFSET     001E LAY
109 7  LAYUSER CONTEXT        > $CONTEXT    0020 LAY
109 7  LAYUSER CONTEXT        > $CONTEXT    0020 LAY
109 8  LAYUSER CURRENT        > $CURRENT    0022 LAY
109 8  LAYUSER CURRENT        > $CURRENT    0022 LAY
109 9  LAYUSER STATE          > $STATE      0024 LAY
109 9  LAYUSER STATE          > $STATE      0024 LAY
109 10 LAYUSER BASE           > $BASE       0026 LAY
109 10 LAYUSER BASE           > $BASE       0026 LAY
109 11 LAYUSER DPL            > $DPL        0028 LAY
109 11 LAYUSER DPL            > $DPL        0028 LAY
109 12 LAYUSER FLD            > $FLD        002A LAY
109 12 LAYUSER FLD            > $FLD        002A LAY
```

```
25D4|0 86 28 4E 45 53 54 A9
25DC|25B5  25E0
25E0|3F0C
25E2|384D
25E4|3A5C  305D  4ED0
25EA|81 B0
25EC|25D5  2594  0000
25F2|81 B1
25F4|25EA  2594  0001
25FA|81 B2
25FC|25F2  2594  0002
2602|81 B3
2604|25FA  2594  0003
260A|0 82 42 CC
260E|2602  2594  0020
2614|87 42 4B 53 50 4B 45 D9
261C|260B  25A8  0002
2622|0 82 53 B0
2626|2614  25A8  0006
262C|0 82 52 B0
2630|2623  25A8  0008
2636|83 54 49 C2
263A|262D  25A8  000A
2640|85 57 49 44 54 C8
2646|2636  25A8  000C
264C|87 57 41 52 4E 49 4E C7
2654|2640  25A8  000E
265A|85 46 45 4E 43 C5
2660|264C  25A8  0010
2666|0 82 44 D0
266A|265A  25A8  0012
2670|0 88 56 4F 43 2D 4C 49 4E C8
267A|2667  25A8  0014
2680|83 42 4C C8
2684|2671  25A8  0016
268A|0 82 49 CE
268E|2680  25A8  0018
2694|83 4F 55 D4
2698|268B  25A8  001A
269E|83 53 43 D2
26A2|2694  25A8  001C
26A8|0 86 4F 46 46 53 45 D4
26B0|269E  25A8  001E
26B6|87 43 4F 4E 54 45 58 D4
26BE|26A9  25A8  0020
26C4|87 43 55 52 52 45 4E D4
26CC|26B6  25A8  0022
26D2|85 53 54 41 54 C5
26D8|26C4  25A8  0024
26DE|0 84 42 41 53 C5
26E4|26D2  25A8  0026
26EA|83 44 50 CC
26EE|26DF  25A8  0028
26F4|83 46 4C C4
26F8|26EA  25A8  002A
```

```
109 13 LAYUSER CSP              > $CSP          002C LAY                26FE|83 43 53 D0
109 13 LAYUSER CSP              > $CSP          002C LAY                2702|26F4  25A8  002C
109 14 LAYUSER R#               > $R#           002E LAY                2708|0 82 52 A3
109 14 LAYUSER R#               > $R#           002E LAY                270C|26FE  25A8  002E
109 15 LAYUSER HLD              > $HLD          0030 LAY    -->         2712|83 48 4C C4
109 15 LAYUSER HLD              > $HLD          0030 LAY    -->         2716|2709  25A8  0030
110 0  LAYUSERCONSTANT FIRST    > $FIRST        0034 LAY                271C|85 46 49 52 53 D4
110 0  LAYUSERCONSTANT FIRST    > $FIRST        0034 LAY                2722|2712  25C8  0034
110 1  LAYUSERCONSTANT LIMIT    > $LIMIT        0036 LAY                2728|85 4C 49 4D 49 D4
110 1  LAYUSERCONSTANT LIMIT    > $LIMIT        0036 LAY                272E|271C  25C8  0036
110 2  LAYUSER USE              > $USE          0038 LAY                2734|83 55 53 C5
110 2  LAYUSER USE              > $USE          0038 LAY                2738|2728  25A8  0038
110 3  LAYUSER PREV             > $PREV         003A LAY                273E|0 84 50 52 45 D6
110 3  LAYUSER PREV             > $PREV         003A LAY                2744|2734  25A8  003A
110 4  LAYUSER DICTLIMIT        > $DICTLIMIT    003C LAY                274A|89 44 49 43 54 4C 49 4D 49 D4
110 4  LAYUSER DICTLIMIT        > $DICTLIMIT    003C LAY                2754|273F  25A8  003C
110 5  LAYUSER BKSPEMIT         > $BKSPEMIT     003E LAY                275A|0 88 42 4B 53 50 45 4D 49 D4
110 5  LAYUSER BKSPEMIT         > $BKSPEMIT     003E LAY                2764|274A  25A8  003E
110 6  LAYUSER EMITSUB          > $EMITSUB      0040 LAY                276A|87 45 4D 49 54 53 55 C2
110 6  LAYUSER EMITSUB          > $EMITSUB      0040 LAY                2772|275B  25A8  0040
110 7  LAYUSER KEYSUB           > $KEYSUB       0042 LAY                2778|0 86 4B 45 59 53 55 C2
110 7  LAYUSER KEYSUB           > $KEYSUB       0042 LAY                2780|276A  25A8  0042
110 8  LAYUSER ?TERMSUB         > $?TERMSUB     0044 LAY                2786|0 88 3F 54 45 52 4D 53 55 C2
110 8  LAYUSER ?TERMSUB         > $?TERMSUB     0044 LAY                2790|2779  25A8  0044
110 9  LAYUSER CRSUB            > $CRSUB        0046 LAY                2796|85 43 52 53 55 C2
110 9  LAYUSER CRSUB            > $CRSUB        0046 LAY                279C|2787  25A8  0046
110 10 LAYUSER R/WSUB           > $R/WSUB       0048 LAY                27A2|0 86 52 2F 57 53 55 C2
110 10 LAYUSER R/WSUB           > $R/WSUB       0048 LAY                27AA|2796  25A8  0048
110 11 LAYUSERCONSTANT B/BUF    > $B/BUF        004A LAY                27B0|85 42 2F 42 55 C6
110 11 LAYUSERCONSTANT B/BUF    > $B/BUF        004A LAY                27B6|27A3  25C8  004A
110 12 LAYUSERCONSTANT B/SCR    > $B/SCR        004C LAY                27BC|85 42 2F 53 43 D2
110 12 LAYUSERCONSTANT B/SCR    > $B/SCR        004C LAY                27C2|27B0  25C8  004C
110 13 LAYUSERCONSTANT C/L      > $C/L          004E LAY                27C8|83 43 2F CC
110 13 LAYUSERCONSTANT C/L      > $C/L          004E LAY                27CC|27BC  25C8  004E
111 0  LAY:HEADER 1+                                                   27D2|0 82 31 AB
111 0  LAY:HEADER 1+                                                   27D6|27C8  25E0
111 1   > $1+   ^ $1 $LAY    $+ $LAY  $;                                27DA|25F6  2270  234A
111 3  LAY:HEADER 2+                                                   27E0|0 82 32 AB
111 3  LAY:HEADER 2+                                                   27E4|27D3  25E0
111 4   > $2+   ^ $2 $LAY    $+ $LAY  $;                                27E8|25FE  2270  234A
111 6  LAY:HEADER HERE                                                 27EE|0 84 48 45 52 C5
111 6  LAY:HEADER HERE                                                 27F4|27E1  25E0
111 7   > $HERE   ^ $DP $LAY   $@ $LAY  $;                             27F8|266C  2490  234A
111 9  LAY:HEADER ALLOT                                                27FE|85 41 4C 4C 4F D4
111 9  LAY:HEADER ALLOT                                                2804|27EF  25E0
111 10  > $ALLOT   ^ $DP $LAY   $+! $LAY   $;                          2808|266C  2466  234A
111 12 LAY:HEADER ,                                                    280E|81 AC
111 12 LAY:HEADER ,                                                    2810|27FE  25E0
111 13  > $,   ^ $HERE  $LAY    $! $LAY   $2 $LAY   $ALLOT  $LAY $;    2814|27F6  24BA  25FE  2806  234A
112 0  LAY:HEADER C,                                                   281E|0 82 43 AC
112 0  LAY:HEADER C,                                                   2822|280E  25E0
112 1   > $C,   ^ $HERE  $LAY    $C! $LAY    $1 $LAY                    2826|27F6  24EC  25F6
112 2          ^ $ALLOT  $LAY    $;                                    282C|2806  234A
```

```
112 4  LAY:HEADER =                                                    2830|81 BD
112 4  LAY:HEADER =                                                    2832|281F  25E0
112 5   > $=     ^ $-  $LAY    $0=  $LAY    $;                         2836|2280  239C  234A
112 7  LAY:HEADER <                                                    283C|81 BC
112 7  LAY:HEADER <                                                    283E|2830  25E0
112 8   > $<     ^ $-  $LAY    $0<  $LAY    $;                         2842|2280  23B4  234A
112 10 LAY:HEADER > DUMMY ( AN ARTIFACT OF THIS ASSEMBLER )            2848|81 BE
112 10 LAY:HEADER > DUMMY ( AN ARTIFACT OF THIS ASSEMBLER )            284A|283C  25E0
112 11  > $>  ^ $SWAP  $LAY    $<  $LAY    $;                         284E|2442  2840  234A
113 0  LAY:HEADER ROT                                                  2854|83 52 4F D4
113 0  LAY:HEADER ROT                                                  2858|2848  25E0
113 1   > $ROT    ^ $>R  $LAY    $SWAP  $LAY    $R>  $LAY              285C|236E  2442  237E
113 2            ^ $SWAP  $LAY    $;                                   2862|2442  234A
113 4  LAY:HEADER SPACE                                                2866|85 53 50 41 43 C5
113 4  LAY:HEADER SPACE                                                286C|2854  25E0
113 5   > $SPACE    ^ $BL  $LAY    $EMIT  $LAY    $;                   2870|2610  2516  234A
113 7  LAY:HEADER -DUP                                                 2876|0 84 2D 44 55 D0
113 7  LAY:HEADER -DUP                                                 287C|2866  25E0
113 8   > $-DUP    ^ $DUP $LAY    $0BRANCH  $LAY    4 LAY              2880|2456  2040  0004
113 9            ^ $DUP $LAY    $;                                     2886|2456  234A
113 11 LAY:HEADER TRAVERSE                                             288A|0 88 54 52 41 56 45 52 53 C5
113 11 LAY:HEADER TRAVERSE                                             2894|2877  25E0
113 12  > $TRAVERSE    ^ $SWAP  $LAY    $OVER  $LAY    $+  $LAY       2898|2442  241C  2270
113 13               ^ $LIT  $LAY    7F LAY    $OVER  $LAY            289E|2006  007F  241C
113 14           ^ $C@  $LAY    $<  $LAY    $0BRANCH  $LAY  -10 LAY   28A4|24A6  2840  2040  FFF0
113 15           ^ $SWAP  $LAY    $DROP  $LAY    $;          -->       28AC|2442  2430  234A
114 0  LAY:HEADER LATEST                                               28B2|0 86 4C 41 54 45 53 D4
114 0  LAY:HEADER LATEST                                               28BA|28B8  25E0
114 1   > $LATEST    ^ $CURRENT  $LAY    $@  $LAY    $@  $LAY   $;    28BE|26CE  2490  2490  234A
114 3  LAY:HEADER LFA                                                  28C6|83 4C 46 C1
114 3  LAY:HEADER LFA                                                  28CA|28B3  25E0
114 4   > $LFA     ^ $LIT  $LAY    4 LAY    $-  $LAY    $;             28CE|2006  0004  2280  234A
114 6  LAY:HEADER CFA                                                  28D6|83 43 46 C1
114 6  LAY:HEADER CFA                                                  28DA|28C6  25E0
114 7   > $CFA     ^ $2  $LAY     $-  $LAY    $;                      28DE|25FE  2280  234A
114 9  LAY:HEADER NFA                                                  28E4|83 4E 46 C1
114 9  LAY:HEADER NFA                                                  28EB|28D6  25E0
114 10  > $NFA    ^ $LIT  $LAY    5 LAY    $-  $LAY                   28EC|2006  0005  2280
114 11           ^ $LIT  $LAY    -1 LAY    $TRAVERSE  $LAY    $;      28F2|2006  FFFF  2896  234A
114 13 LAY:HEADER PFA                                                  28FA|83 50 46 C1
114 13 LAY:HEADER PFA                                                  28FE|28E4  25E0
114 14  > $PFA    ^ $1  $LAY    $TRAVERSE  $LAY    $LIT  $LAY    5 LAY 2902|25F6  2896  2006  0005
114 15           ^ $+  $LAY    $;                    -->               290A|2270  234A
115 0  LAY:HEADER !CSP                                                 290E|0 84 21 43 53 D0
115 0  LAY:HEADER !CSP                                                 2914|28FA  25E0
115 1   > $!CSP    ^ $SP@  $LAY    $CSP  $LAY    $!  $LAY  $;         2918|2316  2704  24BA  234A
115 3  LAY:HEADER ?ERROR                                               2920|0 86 3F 45 52 52 4F D2
115 3  LAY:HEADER ?ERROR                                               2928|290F  25E0
115 4   > $?ERROR    ^ $SWAP  $LAY    $0BRANCH  $LAY    8 LAY         292C|2442  2040  0008
115 5              ^ $ERROR  $LAY    $ERANCH  $LAY    4 LAY          2932|2D1C  202C  0004
115 6              ^ $DROP  $LAY    $;                               2938|2430  234A
115 8  LAY:HEADER ?COMP                                                293C|85 3F 43 4F 4D D0
115 8  LAY:HEADER ?COMP                                                2942|2921  25E0
115 9   > $?COMP    ^ $STATE  $LAY    $@  $LAY    $0=  $LAY           2946|260A  2490  239C
115 10             ^ $LIT  $LAY    11 LAY    $?ERROR  $LAY    $;      294C|2006  0011  292A  234A
```

```
115 12 LAY:HEADER ?EXEC                                                 2954|85 3F 45 58 45 C3
115 12 LAY:HEADER ?EXEC                                                 295A|293C  25E0
115 13  > $?EXEC    ^ $STATE  $LAY    $@  $LAY                          295E|26DA  2490
115 14              ^ $LIT  $LAY    12 LAY    $?ERROR  $LAY    $;       2962|2006  0012  292A  234A
116 0  LAY:HEADER ?PAIRS                                                296A|0 86 3F 50 41 49 52 D3
116 0  LAY:HEADER ?PAIRS                                                2972|2954  25E0
116 1   > $?PAIRS   ^ $-  $LAY    $LIT  $LAY    13 LAY                    2976|2280  2006  0013
116 2              ^ $?ERROR  $LAY    $;                                297C|292A  234A
116 4  LAY:HEADER ?CSP                                                  2980|0 84 3F 43 53 D0
116 4  LAY:HEADER ?CSP                                                  2986|296B  25E0
116 5   > $?CSP    ^ $SP@  $LAY    $CSP  $LAY    $@  $LAY              298A|2316  2704  2490
116 6              ^ $-  $LAY    $LIT  $LAY  14 LAY                     2990|2280  2006  0014
116 7              ^ $?ERROR  $LAY    $;                               2996|292A  234A
116 9  LAY:HEADER ?LOADING                                              299A|0 88 3F 4C 4F 41 44 49 4E C7
116 9  LAY:HEADER ?LOADING                                              29A4|2981  25E0
116 10  > $?LOADING    ^ $BLK  $LAY    $@  $LAY    $0=  $LAY            29A8|2686  2490  239C
116 11               ^ $LIT  $LAY    16 LAY    $?ERROR  $LAY    $;     29AE|2006  0016  292A  234A
116 12 LAY:HEADER COMPILE                                               29B6|87 43 4F 4D 50 49 4C C5
116 12 LAY:HEADER COMPILE                                               29BE|299B  25E0
116 13  > $COMPILE    ^ $?COMP  $LAY    $R>  $LAY    $DUP  $LAY         29C2|2944  237E  2456
116 14               ^ $2+  $LAY    $>R  $LAY    $@  $LAY               29C8|27E6  236E  2490
116 15               ^ $,  $LAY    $;       —>                         29CE|2B12  234A
117 0  LAY:HEADER [  IMMED                                              29D2|C] DB
117 0  LAY:HEADER [  IMMED                                              29D4|29B6  25E0
117 1   > $[    ^ $0  $LAY    $STATE  $LAY    $!  $LAY    $;            29D8|25EE  26DA  24BA  234A
117 3  LAY:HEADER ]                                                     29E0|81 DD
117 3  LAY:HEADER ]                                                     29E2|29D2  25E0
117 4   > $]    ^ $LIT  $LAY    C0 LAY    $STATE  $LAY                  29E6|2006  00C0  26DA
117 5          ^ $!  $LAY  $;                                           29EC|24BA  234A
117 7  LAY:HEADER SMUDGE                                                29F0|0 86 53 4D 55 44 47 C5
117 7  LAY:HEADER SMUDGE                                                29F8|29E0  25E0
117 8   > $SMUDGE    ^ $LATEST  $LAY  $LIT  $LAY  20 LAY                29FC|28BC  2006  0020
117 9               ^ $TOGGLE  $LAY  $;                                 2A02|247E  234A
117 11 LAY:HEADER HEX                                                   2A06|83 48 45 D8
117 11 LAY:HEADER HEX                                                   2A0A|29F1  25E0
117 12  > $HEX    ^ $LIT  $LAY  10 LAY  $BASE  $LAY                     2A0E|2006  0010  26E6
117 13           ^ $!  $LAY  $;                                         2A14|24BA  234A
118 0  LAY:HEADER DECIMAL                                               2A18|87 44 45 43 49 4D 41 CC
118 0  LAY:HEADER DECIMAL                                               2A20|2A06  25E0
118 1   > $DECIMAL    ^ $LIT  $LAY  0A LAY  $BASE  $LAY                 2A24|2006  000A  26E6
118 2               ^ $!  $LAY  $;                                      2A2A|24BA  234A
118 4  LAY:HEADER (;CODE)                                               2A2E|87 28 3B 43 4F 44 45 A9
118 4  LAY:HEADER (;CODE)                                               2A36|2A18  25E0
118 5   > $(;CODE)    ^ $R>  $LAY    $LATEST  $LAY    $PFA  $LAY       2A3A|237E  28BC  2900
118 6               ^ $CFA  $LAY    $!  $LAY    $;                      2A40|28DC  24BA  234A
118 8  LAY:HEADER COUNT                                                 2A46|85 43 4F 55 4E D4
118 8  LAY:HEADER COUNT                                                 2A4C|2A2E  25E0
118 9   > $COUNT    ^ $DUP  $LAY    $1+  $LAY  $SWAP  $LAY              2A50|2456  27D8  2442
118 10              ^ $C@  $LAY  $;                                     2A56|24A6  234A
118 12 LAY:HEADER TYPE                                                  2A5A|0 84 54 59 50 C5
118 12 LAY:HEADER TYPE                                                  2A60|2A46  25E0
118 13  > $TYPE    ^ $-DUP  $LAY    $0BRANCH  $LAY    18 LAY           2A64|287E  2040  0018
118 14              ^ $OVER  $LAY    $+  $LAY    $SWAP  $LAY            2A6A|241C  2270  2442
118 15              ^ $(DO)  $LAY    $R  $LAY    $C@  $LAY      —>      2A70|20B2  28BC  24A6
119 0              ^ $EMIT  $LAY    $(LOOP)  $LAY  -8 LAY               2A76|2516  2058  FFF8
119 1              ^ $BRANCH  $LAY    4 LAY    $DROP  $LAY             2A7C|202C  0004  2430
119 2              ^ $;                                                 2A82|234A
```

```
119 3  LAY:HEADER -TRAILING                                                    2A84|89 2D 54 52 41 49 4C 49 4E C7
119 3  LAY:HEADER -TRAILING                                                    2A8E|2A5B  25E0
119 4   > $-TRAILING    ^ $DUP  $LAY    $0  $LAY    $(DO)  $LAY               2A92|2456  25EE  20B2
119 5              ^ $OVER $LAY    $OVER  $LAY    $+  $LAY                    2A98|241C  241C  2270
119 6              ^ $1  $LAY    $-  $LAY    $C@  $LAY                       2A9E|25F6  2280  24A6
119 7              ^ $BL  $LAY    $-  $LAY    $0BRANCH  $LAY  8 LAY          2AA4|2610  2280  2040  0008
119 8              ^ $LEAVE  $LAY    $BRANCH  $LAY    6 LAY                  2AAC|235C  202C  0006
119 9              ^ $1  $LAY    $-  $LAY                                     2AB2|25F6  2280
119 10             ^ $(LOOP)  $LAY   -20 LAY    $;                          2AB6|2058  FFE0  234A
119 11 LAY:HEADER (.")                                                       2ABC|0 84 28 2E 22 A9
119 11 LAY:HEADER (.")                                                       2AC2|2A84  25E0
119 12  > $(.")    ^ $R  $LAY   $COUNT  $LAY   $DUP  $LAY                   2AC6|238C  2A4E  2456
119 13             ^ $2+  $LAY   $LIT  $LAY   FFFE  LAY                     2ACC|27E6  2006  FFFE
119 14             ^ $AND  $LAY   $R>  $LAY   $+  $LAY                      2AD2|22E0  237E  2270
119 15             ^ $>R  $LAY   $TYPE  $LAY   $;  —>                       2AD8|236E  2A62  234A
120 0  LAY:HEADER EXPECT                                                     2ADE|0 86 45 58 50 45 43 D4
120 0  LAY:HEADER EXPECT                                                     2AE6|2A8D  25E0
120 1   > $EXPECT   ^ $OVER  $LAY   $+  $LAY   $OVER  $LAY                   2AEA|241C  2270  241C
120 2              ^ $(DO)  $LAY   $KEY  $LAY   $DUP  $LAY                  2AF0|20B2  2530  2456
120 3              ^ $EKSPKEY  $LAY   $@  $LAY   $C=  $LAY                  2AF6|261E  2490  2500
120 4              ^ $0BRANCH  $LAY  20 LAY   $DROP  $LAY                   2AFC|2040  0020  2430
120 5              ^ $EKSPEMIT  $LAY  $@  $LAY                              2B02|2766  2490
120 6              ^ $OVER  $LAY   $R  $LAY   $=  $LAY                      2B06|241C  238C  2834
120 7              ^ $DUP  $LAY   $R>  $LAY   $2  $LAY                      2B0C|2456  237E  25FE
120 8              ^ $-  $LAY   $+  $LAY   $>R  $LAY                        2B12|2280  2270  236E
120 9              ^ $-  $LAY   $BRANCH  $LAY   28 LAY                      2B18|2280  202C  0028
120 10             ^ $DUP  $LAY   $LIT  $LAY  0D  LAY                       2B1E|2456  2006  000D
120 11             ^ $C=  $LAY   $0BRANCH  $LAY   0E LAY                    2B24|2500  2040  000E
120 12             ^ $LEAVE  $LAY   $DROP  $LAY  $BL  $LAY                  2B2A|235C  2430  2610
120 13             ^ $0  $LAY  $BRANCH  $LAY   04  LAY                      2B30|25EE  202C  0004
120 14             ^ $DUP  $LAY   $R  $LAY   $C!  $LAY                      2B36|2456  238C  24EC
120 15             ^ $0  $LAY   $R  $LAY   $1+  $LAY  —>                   2B3C|25EE  238C  2708
121 0              ^ $C!  $LAY   $EMIT  $LAY.  $(LOOP)  $LAY                2B42|24EC  2516  2058
121 1              ^ FFAA LAY  $DROP  $LAY   $;                             2B48|FFAA  2430  234A
121 2  LAY:HEADER QUERY                                                      2B4E|85 51 55 45 52 D9
121 2  LAY:HEADER QUERY                                                      2B54|2ADF  25E0
121 3   > $QUERY    ^ $TIB  $LAY   $@  $LAY   $LIT  $LAY                     2B58|263C  2490  2006
121 4              ^ 50  LAY   $EXPECT  $LAY  $0  $LAY                      2B5E|0050  2AE8  25EE
121 5              ^ $IN  $LAY   $!  $LAY  $;                               2B64|2690  24BA  234A
121 6  LAY:HEADER X                                                          2B6A|C180
121 6  LAY:HEADER X                                                          2B6C|2B4E  25E0
121 7   > $X        ^ C180 DP2 @ 6 - !  ( FIX UP NULL DUMMY WORD )           2B70|
121 8              ^ $BLK  $LAY   $@  $LAY   $0BRANCH  $LAY                 2B70|2686  2490  2040
121 9              ^ 2A  LAY   $1  $LAY  $BLK  $LAY                         2B76|002A  25F6  2686
121 10             ^ $+!  $LAY   $0  $LAY   $IN  $LAY                       2B7C|2466  25EE  2690
121 11             ^ $!  $LAY   $BLK  $LAY   $@  $LAY                       2B82|24BA  2686  2490
121 12             ^ $B/SCR  $LAY  $1  $LAY  $-  $LAY  $AND  $LAY           2B88|27C4  25F6  2280  22E0
121 13             ^ $0=  $LAY   $0BRANCH  $LAY   8 LAY                     2B90|239C  2040  0008
121 14             ^ $?EXEC  $LAY   $R>  $LAY   $DROP  $LAY                 2B96|295C  237E  2430
121 15             ^ $BRANCH  $LAY  6 LAY   $R>  $LAY  —>                   2B9C|202C  0006  237E
122 0              ^ $DROP  $LAY  $;                                         2BA2|2430  234A
122 1  LAY:HEADER ERASE                                                      2BA6|85 45 52 41 53 C5
122 1  LAY:HEADER ERASE                                                      2BAC|2B6A  25E0
122 2   > $ERASE    ^ $0  $LAY   $FILL  $LAY  $;                             2BB0|25EE  24D0  234A
```

```
122 3  LAY:HEADER BLANKS                                        2BB6|0 86 42 4C 41 4E 4B D3
122 3  LAY:HEADER BLANKS                                        2BBE|2BA6  25E0
122 4   > $BLANKS   ^ $BL  $LAY   $FILL  $LAY   $;             2BC2|2610  24D0  234A
122 5  LAY:HEADER HOLD                                         2BC8|0 84 48 4F 4C C4
122 5  LAY:HEADER HOLD                                         2BCE|2B87  25E0
122 6   > $HOLD     ^ $LIT  $LAY   -1 LAY   $HLD  $LAY        2BD2|2006  FFFF  2718
122 7             ^ $+!  $LAY   $HLD  $LAY   $@  $LAY        2BD8|2466  2718  2490
122 8             ^ $C!  $LAY   $;                            2BDE|24EC  234A
122 9  LAY:HEADER PAD                                          2BE2|83 50 41 C4
122 9  LAY:HEADER PAD                                          2BE6|2BC9  25E0
122 10  > $PAD     ^ $HERE  $LAY   $LIT  $LAY   44 LAY  —>    2BEA|27F6  2006  0044
123 0             ^ $+  $LAY   $;                             2BF0|2270  234A
123 1  LAY:HEADER WORD                                         2BF4|0 84 57 4F 52 C4
123 1  LAY:HEADER WORD                                         2BFA|2BE2  25E0
123 2   > $WORD     ^ $BLK  $LAY   $@ $LAY   $0BRANCH $LAY    2BFE|2686  2490  2040
123 3             ^ 0C LAY   $BLK  $LAY   $@  $LAY           2C04|000C  2686  2490
123 4             ^ $BLOCK  $LAY                              2C0A|34CA
123 5             ^ $BRANCH  $LAY   06 LAY  $TIB  $LAY      2C0C|202C  0006  263C
123 6             ^ $@  $LAY   $IN  $LAY   $@  $LAY          2C12|2490  2690  2490
123 7             ^ $+  $LAY   $SWAP  $LAY   $ENCLOSE  $LAY  2C18|2270  2442  2160
123 8             ^ $HERE  $LAY  $LIT  $LAY  22 LAY          2C1E|27F6  2006  0022
123 9             ^ $BLANKS  $LAY  $IN  $LAY   $+!  $LAY    2C24|2BC0  2690  2466
123 10            ^ $OVER  $LAY   $-  $LAY   $>R  $LAY      2C2A|241C  22B0  236E
123 11            ^ $R  $LAY   $HERE  $LAY   $C!  $LAY      2C30|238C  27F6  24EC
123 12            ^ $+  $LAY   $HERE  $LAY   $1+  $LAY      2C36|2270  27F6  27D8
123 13            ^ $R>  $LAY   $CMOVE  $LAY   $;           2C3C|237E  21A8  234A
123 14 LAY:HEADER (NUMBER)                                     2C42|0 88 28 4E 55 4D 42 45 52 A9
123 14 LAY:HEADER (NUMBER)                                     2C4C|2BF5  25E0
123 15  > $(NUMBER) ^ $1+ $LAY   $DUP $LAY   $>R  $LAY  —>    2C50|27D8  2456  236E
124 0             ^ $C@  $LAY   $BASE  $LAY   $@  $LAY       2C56|24A6  26E6  2490
124 1             ^ $DIGIT  $LAY   $0BRANCH  $LAY   2C  LAY  2C5C|20C4  2040  002C
124 2             ^ $SWAP  $LAY   $BASE  $LAY   $@  $LAY     2C62|2442  26E6  2490
124 3             ^ $U*  $LAY   $DROP  $LAY   $ROT  $LAY    2C68|21DA  2430  285A
124 4             ^ $BASE  $LAY   $@  $LAY   $U*  $LAY      2C6E|26E6  2490  21DA
124 5             ^ $D+  $LAY   $DPL  $LAY   $@  $LAY       2C74|22A4  26F0  2490
124 6             ^ $1+  $LAY   $0BRANCH  $LAY   8 LAY     2C7A|27D8  2040  0008
124 7             ^ $1  $LAY   $DPL  $LAY   $+!  $LAY      2C80|25F6  26F0  2466
124 8             ^ $R>  $LAY   $BRANCH  $LAY   -3A  LAY   2C86|237E  202C  FFC6
124 9             ^ $R>  $LAY   $;                          2C8C|237E  234A
124 10 LAY:HEADER NUMBER                                       2C90|0 86 4E 55 4D 42 45 D2
124 10 LAY:HEADER NUMBER                                       2C98|2C43  25E0
124 11  > $NUMBER   ^ $0  $LAY   $0  $LAY   $ROT  $LAY       2C9C|25EE  25EE  285A
124 12            ^ $DUP  $LAY   $1+  $LAY   $C@  $LAY      2CA2|2456  27D8  24A6
124 13            ^ $LIT  $LAY   2D  LAY   $=  $LAY         2CA8|2006  002D  2B34
124 14            ^ $DUP  $LAY   $>R  $LAY   $+  $LAY      2CAE|2456  236E  2270
124 15            ^ $LIT  $LAY   -1 LAY   $DPL  $LAY  —>   2CB4|2006  FFFF  26F0
125 0             ^ $!  $LAY   $(NUMBER)  $LAY   $DUP  $LAY  2CBA|24BA  2C4E  2456
125 1             ^ $C@  $LAY   $BL  $LAY   $-  $LAY        2CC0|24A6  2610  2280
125 2             ^ $0BRANCH  $LAY   16 LAY   $DUP  $LAY    2CC6|2040  0016  2456
125 3             ^ $C@  $LAY   $LIT  $LAY   2E LAY         2CCC|24A6  2006  002E
125 4             ^ $-  $LAY   $0  $LAY   $?ERROR  $LAY     2CD2|2280  25EE  292A
125 5             ^ $0  $LAY   $BRANCH  $LAY   -24 LAY     2CD8|25EE  202C  FFDC
125 6             ^ $DROP  $LAY   $R>  $LAY   $0BRANCH  $LAY  2CDE|2430  237E  2040
125 7             ^ 4 LAY  $DMINUS  $LAY   $;               2CE4|0004  22BA  234A
```

```
125 8  LAY:HEADER -FIND                                        2CEA|85 2D 46 49 4E C4
125 8  LAY:HEADER -FIND                                        2CF0|2C91  25E0
125 9   > $-FIND     ^ $BL  $LAY   $WORD  $LAY   $HERE  $LAY   2CF4|2610  2BFC  27F6
125 10              ^ $CONTEXT  $LAY   $@  $LAY   $@  $LAY    2CFA|26C0  2490  2490
125 11              ^ $(FIND)  $LAY   $DUP  $LAY   $0=  $LAY  2D00|2100  2456  239C
125 12              ^ $0BRANCH  $LAY   A LAY   $DROP  $LAY    2D06|2040  000A  2430
125 13              ^ $HERE  $LAY   $LATEST  $LAY   $(FIND)  $LAY  2D0C|27F6  288C  2100
125 14              ^ $;                                       2D12|234A
126 0  LAY:HEADER ERROR                                        2D14|85 45 52 52 4F D2
126 0  LAY:HEADER ERROR                                        2D1A|2CEA  25E0
126 1   > $ERROR    ^ $WARNING  $LAY   $@  $LAY   $0<  $LAY    2D1E|2656  2490  2384
126 2              ^ $0BRANCH  $LAY   4 LAY   $ABORT  $LAY    2D24|2040  0004  300E
126 3              ^ $HERE  $LAY   $COUNT  $LAY   $TYPE  $LAY  2D2A|27F6  2A4E  2A62
126 4              ^ $(.")  $LAY   0320 LAY  203F  LAY        2D30|2AC4  0320  203F
126 5              ^ $MESSAGE  $LAY                           2D36|3562
126 6              ^ $SP!  $LAY   $IN  $LAY   $@  $LAY       2D38|2326  2690  2490
126 7              ^ $BLK  $LAY   $@  $LAY   $QUIT  $LAY     2D3E|2686  2490  2FDC
126 8              ^ $;                                       2D44|234A
126 10 LAY:HEADER ID.                                          2D46|83 49 44 AE
126 10 LAY:HEADER ID.                                          2D4A|2D14  25E0
126 11  > $ID.      ^ $PAD  $LAY   $LIT  $LAY   20 LAY         2D4E|2BE8  2006  0020
126 12              ^ $LIT  $LAY   5F  LAY   $FILL  $LAY      2D54|2006  005F  24D0
126 13              ^ $DUP  $LAY   $PFA  $LAY   $LFA  $LAY  -> 2D5A|2456  2900  2BCC
127 0               ^ $OVER  $LAY   $-  $LAY   $PAD  $LAY   . 2D60|241C  2280  2BE8
127 1               ^ $SWAP  $LAY   $CMOVE  $LAY   $PAD  $LAY  2D66|2442  21A8  2BE8
127 2               ^ $COUNT  $LAY   $LIT  $LAY   1F  LAY     2D6C|2A4E  2006  001F
127 3               ^ $AND  $LAY   $TYPE  $LAY   $SPACE  $LAY  2D72|22E0  2A62  2B6E
127 4               ^ $;                                       2D78|234A
127 5  LAY:HEADER CREATE                                       2D7A|0 86 43 52 45 41 54 C5
127 5  LAY:HEADER CREATE                                       2D82|2D46  25E0
127 6   > $CREATE   ^ $DICTLIMIT  $LAY   $@  $LAY   $HERE  $LAY  2D86|2756  2490  27F6
127 7              ^ $LIT  $LAY   30  LAY   $+  $LAY   $<  $LAY  2D8C|2006  0030  2270  2840
127 8              ^ $2  $LAY   $?ERROR  $LAY   $-FIND  $LAY  2D94|25FE  292A  2CF2
127 9              ^ $0BRANCH  $LAY   10  LAY                 2D9A|2040  0010
127 10             ^ $DROP  $LAY   $NFA  $LAY   $ID.  $LAY    2D9E|2430  2BEA  2D4C
127 11             ^ $LIT  $LAY   4  LAY   $MESSAGE  $LAY     2DA4|2006  0004  3562
127 12             ^ $SPACE  $LAY  $HERE  $LAY  $DUP  $LAY  $C@  $LAY  2DAA|286E  27F6  2456  24A6
127 13             ^ $XOR  $LAY   $1  $LAY   $AND  $LAY   $0=  $LAY  2DB2|2304  25F6  22E0  239C
127 14             ^ $0BRANCH  $LAY  1C  LAY   $HERE  $LAY   2DBA|2040  001C  27F6
127 15             ^ $DUP  $LAY   $DUP  $LAY   $1+  $LAY  -> 2DC0|2456  2456  2708
128 0              ^ $OVER  $LAY   $C@  $LAY   $1+  $LAY      2DC6|241C  24A6  2708
128 1              ^ $CMOVE  $LAY   $0  $LAY   $SWAP  $LAY   2DCC|21A8  25EE  2442
128 2              ^ $C!  $LAY   $1  $LAY   $ALLOT  $LAY     2DD2|24EC  25F6  2B06
128 3              ^ $HERE  $LAY   $DUP  $LAY                 2DD8|27F6  2456
128 4              ^ $C@  $LAY   $WIDTH  $LAY   $@  $LAY     2DDC|24A6  2648  2490
128 5              ^ $MIN  $LAY   $1+  $LAY   $ALLOT  $LAY   2DE2|23DC  2708  2B06
128 6              ^ $DUP  $LAY   $LIT  $LAY   A0  LAY       2DE8|2456  2006  00A0
128 7              ^ $TOGGLE  $LAY   $HERE  $LAY   $1  $LAY  2DEE|247E  27F6  25F6
128 8              ^ $-  $LAY   $LIT  $LAY   80 LAY           2DF4|2280  2006  0080
128 9              ^ $TOGGLE  $LAY   $LATEST  $LAY   $,  $LAY  2DFA|247E  288C  2B12
128 10             ^ $CURRENT  $LAY   $@  $LAY   $!  $LAY    2E00|26CE  2490  24BA
128 11             ^ $HERE  $LAY   $2+  $LAY   $,  $LAY      2E06|27F6  27E6  2B12
128 12             ^ $;                                       2E0C|234A
```

```
129 0  LAY:HEADER  :  IMMED                                                    2E0E|C1 BA
129 0  LAY:HEADER  :  IMMED                                                    2E10|2D7B  25E0
129 1   > $:        ^ $?EXEC  $LAY   $!CSP  $LAY   $CURRENT  $LAY            2E14|295C  2916  26CE
129 2             ^ $@  $LAY   $CONTEXT  $LAY   $!  $LAY                     2E1A|2490  26C0  24BA
129 3             ^ $CREATE  $LAY   $]  $LAY   $LIT  $LAY                   2E20|2D84  29E4  2006
129 4             ^ -2  LAY   $DP  $LAY   $+!  $LAY                         2E26|FFFE  266C  2466
129 5             ^ $COMPILE  $LAY   $(NEST)  LAY  $;                       2E2C|29C0  25E0  234A
129 6  LAY:HEADER !CODE                                                       2E32|85 21 43 4F 44 C5
129 6  LAY:HEADER !CODE                                                       2E38|2E0E  25E0
129 7   > $!CODE   ^ $CREATE  $LAY   $SMUDGE  $LAY   $LATEST  $LAY          2E3C|2D84  29FA  288C
129 8             ^ $PFA  $LAY   $CFA  $LAY   $!  $LAY                       2E42|2900  2BDC  24BA
129 9             ^ $,  $LAY   $;  —>                                       2E48|2812  234A
130 0  LAY:HEADER CONSTANT                                                    2E4C|0 88 43 4F 4E 53 54 41 4E D4
130 0  LAY:HEADER CONSTANT                                                    2E56|2E32  25E0
130 1   > $CONSTANT ^ $LIT  $LAY   $(CONST)  LAY   $!CODE  $LAY              2E5A|2006  2594  2E3A
130 2             ^ $;                                                      2E60|234A
130 3  LAY:HEADER VARIABLE                                                    2E62|0 88 56 41 52 49 41 42 4C C5
130 3  LAY:HEADER VARIABLE                                                    2E6C|2E4D  25E0
130 4   > $VARIABLE ^ $LIT  $LAY   $(VAR)  LAY  $!CODE  $LAY                 2E70|2006  2580  2E3A
130 5             ^ $;                                                      2E76|234A
130 6  LAY:HEADER USER                                                        2E78|0 84 55 53 45 D2
130 6  LAY:HEADER USER                                                        2E7E|2E63  25E0
130 7   > $USER     ^ $LIT  $LAY   $(USER)  LAY   $!CODE  $LAY               2E82|2006  25A8  2E3A
130 8             ^ $;                                                      2E88|234A
130 9  LAY:HEADER <BUILDS                                                     2E8A|87 3C 42 55 49 4C 44 D3
130 9  LAY:HEADER <BUILDS                                                     2E92|2E79  25E0
130 10  > $<BUILDS  ^ $0  $LAY   $CONSTANT  $LAY  $;                         2E96|25EE  2E58  234A
130 11 LAY:HEADER DOES>                                                       2E9C|85 44 4F 45 53 BE
130 11 LAY:HEADER DOES>                                                       2EA2|2EBA  25E0
130 12  > $DOES>    ^ $R>  $LAY   $LATEST  $LAY   $PFA  $LAY                 2EA6|237E  28BC  2900
130 13            ^ $!  $LAY   $(;CODE)  $LAY                               2EAC|24BA  2A38
130 14  > $DOESCODE ^ IP AR ^ RS -[ .W .MOVE                                  2EB0|3F0C
130 15            ^ WP [+ ^ IP AR .W .MOVE   —>                             2EB2|385D
131 0             ^ WP AR ^ CS -[ .W .MOVE                                  2EB4|370D
131 1               NEXT                                                    2EB6|3A5C  305D  4ED0
131 2  LAY:HEADER LITERAL  IMMED                                              2EBC|C7 4C 49 54 45 52 41 CC
131 2  LAY:HEADER LITERAL  IMMED                                              2EC4|2E9C  25E0
131 3   > $LITERAL  ^ $STATE  $LAY   $@  $LAY   $0BRANCH  $LAY               2EC8|26DA  2490  2040
131 4             ^ 8 LAY   $COMPILE  $LAY   $LIT  $LAY                      2ECE|0008  29C0  2006
131 5             ^ $,  $LAY   $;                                           2ED4|2812  234A
131 6  LAY:HEADER DLITERAL  IMMED                                             2ED8|0C8 44 4C 49 54 45 52 41 CC
131 6  LAY:HEADER DLITERAL  IMMED                                             2EE2|2EBC  25E0
131 7   > $DLITERAL ^ $STATE  $LAY   $@  $LAY   $0BRANCH  $LAY               2EE6|26DA  2490  2040
131 8             ^ 8 LAY   $SWAP  $LAY   $LITERAL  $LAY                     2EEC|0008  2442  2EC6
131 9             ^ $LITERAL  $LAY   $;                                     2EF2|2EC6  234A
131 10 LAY:HEADER ?STACK                                                      2EF6|0 86 3F 53 54 41 43 CB
131 10 LAY:HEADER ?STACK                                                      2EFE|2ED9  25E0
131 11  > $?STACK   ^ $S0  $LAY   $@  $LAY   $DUP  $LAY                      2F02|2628  2490  2456
131 12            ^ $SP@  $LAY   $<  $LAY   $1  $LAY                        2F08|2316  2840  25F6
131 13            ^ $?ERROR  $LAY   $LIT  $LAY   100  LAY                   2F0E|292A  2006  0100
131 14            ^ $+  $LAY   $SP@  $LAY   $<  $LAY                        2F14|2270  2316  2840
131 15            ^ $LIT  $LAY   7 LAY   $?ERROR  $LAY  —>                  2F1A|2006  0007  292A
132 0             ^ $;                                                      2F20|234A
```

```
132 1  LAY:HEADER INTERPRET                                    2F22|89 49 4E 54 45 52 50 52 45 D4
132 1  LAY:HEADER INTERPRET                                    2F2C|2EF7  25E0
132 2   > $INTERPRET ^ $-FIND  $LAY   $0BRANCH  $LAY   1E LAY  2F30|2CF2  2040  001E
132 3               ^ $STATE  $LAY   $@  $LAY   $<  $LAY      2F36|26DA  2490  2840
132 4               ^ $0BRANCH  $LAY   A LAY   $CFA  $LAY     2F3C|2040  000A  26DC
132 5               ^ $,  $LAY   $BRANCH  $LAY   6 LAY       2F42|2812  202C  0006
132 6               ^ $CFA  $LAY   $EXECUTE  $LAY   $?STACK  $LAY  2F48|28DC  201A  2F00
132 7               ^ $BRANCH  $LAY   1C  LAY   $HERE  $LAY   2F4E|202C  001C  27F6
132 8               ^ $NUMBER  $LAY   $DPL  $LAY   $@  $LAY   2F54|2C9A  26F0  2490
132 9               ^ $1+  $LAY   $0BRANCH  $LAY   8 LAY      2F5A|27D8  2040  0008
132 10              ^ $DLITERAL  $LAY   $BRANCH  $LAY   6 LAY  2F60|2EE4  202C  0006
132 11              ^ $DROP  $LAY   $LITERAL  $LAY   $?STACK  $LAY  2F66|2430  2ED6  2F00
132 12              ^ $BRANCH  $LAY  -3E LAY   $;             2F6C|202C  FFC2  234A
132 13 LAY:HEADER VOCABULARY                                   2F72|0 8A 56 4F 43 41 42 55 4C 41 52 D9
132 13 LAY:HEADER VOCABULARY                                   2F7E|2F22  25E0
132 14  > $VOCABULARY ^ $<BUILDS  $LAY   $LIT  $LAY   81A0  LAY  2F82|2E94  2006  81A0
132 15              ^ $,  $LAY   $CURRENT  $LAY   $@  $LAY  —>  2F88|2812  26CE  2490
133 0               ^ $CFA  $LAY   $,  $LAY   $HERE  $LAY      2F8E|28DC  2812  27F6
133 1               ^ $VOC-LINK  $LAY   $@  $LAY   $,  $LAY   2F94|267C  2490  2812
133 2               ^ $VOC-LINK  $LAY   $!  $LAY   $DOES>  $LAY  2F9A|267C  24BA  2EA4
133 3   > $VOCMID    ^ $2+  $LAY   $CONTEXT  $LAY   $!  $LAY   2FA0|27E6  26C0  24BA
133 4               ^ $;                                       2FA6|234A
133 5  LAYCODEHEADER FORTH  IMMED                              2FA8|C5 46 4F 52 54 C8
133 5  LAYCODEHEADER FORTH  IMMED                              2FAE|2F73  2EBO
133 6   > $FORTH   ^ -2  DP2  +!  $DOESCODE   LAY  $VOCMID   LAY  2FB2|      2FA0
133 7             ^ 81A0 LAY   0 ( COLD REFILLS THIS ) LAY   0  LAY  2FB4|81A0  0000  0000
133 8  LAY:HEADER DEFINITIONS                                  2FBA|8B 44 45 46 49 4E 49 54 49 4F 4E D3
133 8  LAY:HEADER DEFINITIONS                                  2FC6|2FA8  25E0
133 9   > $DEFINITIONS ^ $CONTEXT  $LAY   $@  $LAY   $CURRENT  $LAY  2FCA|26C0  2490  26CE
133 10              ^ $!  $LAY   $;                            2FD0|24BA  234A
133 11 LAY:HEADER QUIT                                         2FD4|0 84 51 55 49 D4
133 11 LAY:HEADER QUIT                                         2FDA|2FBA  25E0
133 12  > $QUIT     ^ $0  $LAY   $BLK  $LAY   $!  $LAY        2FDE|25EE  2686  24BA
133 13              ^ $C  $LAY   $RP!  $LAY   $CR  $LAY       2FE4|29D6  2338  2562
133 14              ^ $QUERY  $LAY   $INTERPRET  $LAY   $STATE  $LAY  2FEA|2B56  2F2E  26DA
133 15              ^ $@  $LAY   $0=  $LAY   $0BRANCH  $LAY  —>  2FF0|2490  239C  2040
134 0               ^ A LAY   $(.")  $LAY   0520  LAY   2020  LAY  2FF6|000A  2AC4  0520  2020
134 1               ^ 4F4B  LAY   $BRANCH  $LAY   -1C  LAY    2FFE|4F4B  202C  FFE4
134 2               ^ $;                                       3004|234A
134 3  LAY:HEADER ABORT                                        3006|85 41 42 4F 52 D4
134 3  LAY:HEADER ABORT                                        300C|2FD5  25E0
134 4   > $ABORT    ^ $SP!  $LAY   $DECIMAL  $LAY   $CR  $LAY  3010|2326  2A22  2562
134 5               ^ $(.")  $LAY   1536 LAY   3830  LAY     3016|2AC4  1536  3830
134 6               ^ 3030  LAY   2066  LAY   6967  LAY      301C|3030  2066  6967
134 7               ^ 2D46  LAY   4F52  LAY   5448  LAY      3022|2D46  4F52  5448
134 8               ^ 2056  LAY   312E  LAY   3120  LAY      3028|2056  312E  3120
134 9               ^ ( 68000 fig-FORTH V1.1)                  302E|
134 10              ^ $FORTH  $LAY   $DEFINITIONS $LAY   $CR0  $LAY  302E|2FB0  2FC8  3716
134 11              ^ $QUIT  $LAY   $;                         3034|2FDC  234A
135 0  LAY:HEADER ;  IMMED                                     3038|C1 BB
135 0  LAY:HEADER ;  IMMED                                     303A|3006  25E0
135 1               ^ $?CSP  $LAY   $COMPILE  $LAY   $;S  $LAY  303E|2988  29C0  234A
135 2               ^ $SMUDGE  $LAY   $C  $LAY   $;            3044|29FA  29D6  234A
```

```
135 5  LAY:HEADER ."  IMMED                                                    304A|0C2 2E A2
135 5  LAY:HEADER ."  IMMED                                                    304E|3038  25E0
135 6   > $."        ^ $LIT  $LAY  22 LAY   $STATE  $LAY                      3052|2006  0022  26DA
135 7               ^ $@  $LAY   $0BRANCH  $LAY   1A LAY                     3058|2490  2040  001A
135 8               ^ $COMPILE  $LAY   $(.")  $LAY   $WORD  $LAY             305E|29C0  2AC4  2EFC
135 9               ^ $HERE  $LAY   $C@  $LAY   $2+  $LAY                    3064|27F6  29A6  27E6
135 10              ^ $LIT  $LAY    FFFE LAY   $AND  $LAY                    306A|2006  FFFE  22E0
135 11              ^ $ALLOT  $LAY   $BRANCH  $LAY   0A LAY                  3070|2806  202C  000A
135 12              ^ $WORD  $LAY   $HERE  $LAY   $COUNT  $LAY               3076|2EFC  27F6  2A4E
135 13              ^ $TYPE  $LAY   $;                                       307C|2A62  234A
135 14 LAY:HEADER (  IMMED                                                   3080|C1 A8
135 14 LAY:HEADER (  IMMED                                                   3082|304B  25E0
135 15  > $(        ^ $LIT  $LAY   29 LAY   $WORD  $LAY  $;  —>              3086|2006  0029  2EFC  234A
136 0  LAY:HEADER  IMMEDIATE                                                 308E|89 49 4D 4D 45 44 49 41 54 C5
136 0  LAY:HEADER  IMMEDIATE                                                 3098|3080  25E0
136 1   > $IMMEDIATE ^ $LATEST  $LAY  $LIT  $LAY  40 LAY                     309C|28BC  2006  0040
136 2                ^ $TOGGLE  $LAY  $;                                     30A2|247E  234A
136 3  LAY:HEADER  [COMPILE]  IMMED                                          30A6|C9 5B 43 4F 4D 50 49 4C 45 DD
136 3  LAY:HEADER  [COMPILE]  IMMED                                          30B0|308E  25E0
136 4   > $[COMPILE] ^ $-FIND  $LAY   $0=  $LAY   $0  $LAY                   30B4|2CF2  239C  25EE
136 5               ^ $?ERROR  $LAY   $DROP  $LAY   $CFA  $LAY              30BA|292A  2430  28DC
136 6               ^ $,  $LAY   $;                                          30C0|2812  234A
136 7  LAY:HEADER  '  IMMED                                                  30C4|C1 A7
136 7  LAY:HEADER  '  IMMED                                                  30C6|30A6  25E0
136 8   > $'        ^ $-FIND  $LAY   $0=  $LAY   $0  $LAY                    30CA|2CF2  239C  25EE
136 9               ^ $?ERROR  $LAY   $DROP  $LAY   $LITERAL  $LAY          30D0|292A  2430  2EC6
136 10              ^ $;                                                     30D6|234A
136 11 LAY:HEADER  FORGET                                                    30D8|0 86 46 4F 52 47 45 D4
136 11 LAY:HEADER  FORGET                                                    30E0|30C4  25E0
136 12  > $FORGET   ^ $CURRENT  $LAY  $@  $LAY   $CONTEXT  $LAY              30E4|26CE  2490  26C0
136 13              ^ $@  $LAY   $-  $LAY   $LIT  $LAY  18 LAY              30EA|2490  2280  2006  0018
136 14              ^ $?ERROR  $LAY  $'  $LAY   $DUP  $LAY                  30F2|292A  30C8  2456
136 15              ^ $FENCE  $LAY   $@  $LAY   $<  $LAY  —>                30F8|2662  2490  2840
137 0               ^ $LIT  $LAY  15  LAY   $?ERROR  $LAY                   30FE|2006  0015  292A
137 1               ^ $DUP  $LAY   $NFA  $LAY   $DP  $LAY                   3104|2456  2BEA  266C
137 2               ^ $!  $LAY   $LFA  $LAY   $@  $LAY                      310A|24BA  2BCC  2490
137 3               ^ $CURRENT  $LAY  $@  $LAY  $!  $LAY  $;                3110|26CE  2490  24BA  234A
137 4  LAY:HEADER  BACK                                                      3118|0 84 42 41 43 CB
137 4  LAY:HEADER  BACK                                                      311E|30D9  25E0
137 5   > $BACK     ^ $HERE  $LAY  $-  $LAY  $,  $LAY  $;                    3122|27F6  2280  2812  234A
137 6  LAY:HEADER  BEGIN  IMMED                                              312A|C5 42 45 47 49 CE
137 6  LAY:HEADER  BEGIN  IMMED                                              3130|3119  25E0
137 7               ^ $?COMP  $LAY   $HERE  $LAY  $1  $LAY  $;               3134|2944  27F6  25F6  234A
137 8  LAY:HEADER  ENDIF  IMMED                                              313C|C5 45 4E 44 49 C6
137 8  LAY:HEADER  ENDIF  IMMED                                              3142|312A  25E0
137 9   > $ENDIF    ^ $?COMP  $LAY  $2  $LAY                                 3146|2944  25FE
137 10              ^ $?PAIRS  $LAY   $HERE  $LAY   $OVER  $LAY              314A|2974  27F6  241C
137 11              ^ $-  $LAY   $SWAP  $LAY   $!  $LAY   $;                3150|2280  2442  24BA  234A
137 12 LAY:HEADER  THEN  IMMED                                               3158|0 C4 54 48 45 CE
137 12 LAY:HEADER  THEN  IMMED                                               315E|313C  25E0
137 13              ^ $ENDIF  $LAY  $;                                       3162|3144  234A
```

```
138 0  LAY:HEADER  DO  IMMED                                          3166|0 C2 44 CF
138 0  LAY:HEADER  DO  IMMED                                          316A|3159  25E0
138 1               ^ $COMPILE  $LAY  $(DO)  $LAY  $HERE  $LAY        316E|29C0  2082  27F6
138 2               ^ $3  $LAY    $;                                  3174|2606  234A
138 3  LAY:HEADER  LOOP  IMMED                                        3178|0 C4 4C 4F 4F D0
138 3  LAY:HEADER  LOOP  IMMED                                        317E|3167  25E0
138 4               ^ $3  $LAY  $?PAIRS  $LAY                         3182|2606  2974
138 5               ^ $COMPILE  $LAY   $(LOOP)  $LAY   $BACK  $LAY    3186|29C0  2058  3120
138 6               ^ $;                                              318C|234A
138 7  LAY:HEADER  +LOOP  IMMED                                       318E|C52B 4C 4F 4F D0
138 7  LAY:HEADER  +LOOP  IMMED                                       3194|3179  25E0
138 8               ^ $3  $LAY  $?PAIRS  $LAY                         3198|2606  2974
138 9               ^ $COMPILE  $LAY   $(+LOOP)  $LAY  $BACK  $LAY    319C|29C0  207C  3120
138 10              ^ $;                                              31A2|234A
138 11 LAY:HEADER  /LOOP  IMMED                                       31A4|C52F 4C 4F 4F D0
138 11 LAY:HEADER  /LOOP  IMMED                                       31AA|318E  25E0
138 12              ^ $3  $LAY  $?PAIRS  $LAY                         31AE|2606  2974
138 13              ^ $COMPILE  $LAY   $(/LOOP)  $LAY  $BACK  $LAY    31B2|29C0  209A  3120
138 14              ^ $;                                              31B8|234A
139 0  LAY:HEADER  UNTIL  IMMED                                       31BA|C555 4E 54 49 CC
139 0  LAY:HEADER  UNTIL  IMMED                                       31C0|31A4  25E0
139 1   > $UNTIL    ^ $1  $LAY  $?PAIRS  $LAY                         31C4|25F6  2974
139 2               ^ $COMPILE  $LAY  $0BRANCH  $LAY  $BACK  $LAY    31C8|29C0  2040  3120
139 3               ^ $;                                              31CE|234A
139 4  LAY:HEADER  AGAIN  IMMED                                       31D0|C541 47 41 49 CE
139 4  LAY:HEADER  AGAIN  IMMED                                       31D6|31BA  25E0
139 5   > $AGAIN    ^ $1  $LAY   $?PAIRS  $LAY   $COMPILE  $LAY      31DA|25F6  2974  29C0
139 6               ^ $BRANCH  $LAY   $BACK  $LAY  $;                31E0|202C  3120  234A
139 7  LAY:HEADER  REPEAT  IMMED                                      31E6|0C6 52 45 50 45 41 D4
139 7  LAY:HEADER  REPEAT  IMMED                                      31EE|31D0  25E0
139 8               ^ $>R  $LAY   $>R  $LAY   $AGAIN  $LAY          31F2|236E  236E  31D8
139 9               ^ $R>  $LAY   $R>  $LAY   $2  $LAY               31F8|237E  237E  25FE
139 10              ^ $-  $LAY   $ENDIF  $LAY  $;                     31FE|2280  3144  234A
139 11 LAY:HEADER  IF  IMMED                                          3204|0C2 49 C6
139 11 LAY:HEADER  IF  IMMED                                          3208|31E7  25E0
139 12  > $IF       ^ $COMPILE  $LAY   $0BRANCH  $LAY   $HERE  $LAY  320C|29C0  2040  27F6
139 13              ^ $0  $LAY  $,  $LAY   $2  $LAY   $;             3212|25EE  2812  25FE  234A
140 0  LAY:HEADER  ELSE  IMMED                                        321A|0C4 45 4C 53 C5
140 0  LAY:HEADER  ELSE  IMMED                                        3220|3205  25E0
140 1               ^ $2  $LAY  $?PAIRS  $LAY   $COMPILE  $LAY       3224|25FE  2974  29C0
140 2               ^ $BRANCH  $LAY   $HERE  $LAY   $0  $LAY         322A|202C  27F6  25EE
140 3               ^ $,  $LAY   $SWAP  $LAY   $2  $LAY              3230|2812  2442  25FE
140 4               ^ $ENDIF  $LAY   $2  $LAY   $;                    3236|3144  25FE  234A
140 6  LAY:HEADER  WHILE  IMMED                                       323C|C557 48 49 4C C5
140 6  LAY:HEADER  WHILE  IMMED                                       3242|3218  25E0
140 7               ^ $IF  $LAY   $2+  $LAY   $;                      3246|320A  27E6  234A
140 9  LAY:HEADER  ABS                                                324C|83 41 42 D3
140 9  LAY:HEADER  ABS                                                3250|323C  25E0
140 10  > $ABS      ^ $DUP  $LAY   $+-  $LAY   $;                     3254|2456  23F2  234A
140 12 LAY:HEADER  DABS                                               325A|0 84 44 41 42 D3
140 12 LAY:HEADER  DABS                                               3260|324C  25E0
140 13  > $DABS     ^ $DUP $LAY   $D+-  $LAY   $;                     3264|2456  2406  234A
141 0  LAY:HEADER  /MOD                                               326A|0 84 2F 4D 4F C4
141 0  LAY:HEADER  /MOD                                               3270|3258  25E0
141 1   > $/MOD     ^ $>R  $LAY   $S->D  $LAY   $R>  $LAY            3274|236E  22CC  237E
141 2               ^ $M/  $LAY   $;                                  327A|221A  234A
```

```
141 4  LAY:HEADER  MOD                                                    327E|83 4D 4F C4
141 4  LAY:HEADER  MOD                                                    3282|326B  25E0
141 5   > $MOD      ^ $/MOD  $LAY   $DROP  $LAY   $;                      32B6|3272  2430  234A
141 7  LAY:HEADER  */MOD                                                 32BC|85 2A 2F 4D 4F C4
141 7  LAY:HEADER  */MOD                                                 3292|327E  25E0
141 8   > $*/MOD    ^ $>R  $LAY   $M*  $LAY   $R>  $LAY                   3296|236E  2206  237E
141 9               ^ $M/  $LAY   $;                                      329C|221A  234A
141 11 LAY:HEADER  M/MOD                                                  32A0|85 4D 2F 4D 4F C4
141 11 LAY:HEADER  M/MOD                                                  32A6|328C  25E0
141 12  > $M/MOD    ^ $>R  $LAY   $0  $LAY   $R  $LAY                     32AA|236E  25EE  238C
141 13              ^ $U/  $LAY   $R>  $LAY   $SWAP  $LAY                 32B0|21EE  237E  2442
141 14              ^ $>R  $LAY   $U/  $LAY   $R>  $LAY   $;              32B6|236E  21EE  237E  234A
142 0  LAY:HEADER  SPACES                                                 32BE|0 86 53 50 41 43 45 D3
142 0  LAY:HEADER  SPACES                                                 32C6|32A0  25E0
142 1   > $SPACES   ^ $0  $LAY   $MAX  $LAY   $-DUP  $LAY                 32CA|25EE  23CC  287E
142 2               ^ $0BRANCH  $LAY   C LAY   $0  $LAY                   32D0|2040  000C  25EE
142 3               ^ $(DO)  $LAY   $SPACE  $LAY   $(LOOP)  $LAY         32D6|20B2  2B6E  2058
142 4               ^ -4  LAY  $;                                         32DC|FFFC  234A
142 5  LAY:HEADER  <#                                                     32E0|0 82 3C A3
142 5  LAY:HEADER  <#                                                     32E4|32BF  25E0
142 6   > $<#      ^ $PAD  $LAY   $HLD  $LAY   $!  $LAY   $;             32EB|2BEB  2718  24BA  234A
142 7  LAY:HEADER  #>                                                     32F0|0 82 23 BE
142 7  LAY:HEADER  #>                                                     32F4|32E1  25E0
142 8   > $#>      ^ $DROP  $LAY   $DROP  $LAY   $HLD  $LAY              32F8|2430  2430  2718
142 9               ^ $@  $LAY   $PAD  $LAY   $OVER  $LAY               32FE|2490  2BEB  241C
142 10              ^ $-  $LAY   $;                                       3304|2280  234A
142 11 LAY:HEADER  SIGN                                                   3308|0 84 53 49 47 CE
142 11 LAY:HEADER  SIGN                                                   330E|32F1  25E0
142 12  > $SIGN     ^ $ROT  $LAY   $0<  $LAY   $0BRANCH  $LAY            3312|285A  23B4  2040
142 13              ^ 8 LAY   $LIT  $LAY   2D  LAY                       3318|0008  2006  002D
142 14              ^ $HOLD  $LAY   $;                                    331E|2BD0  234A
143 0  LAY:HEADER  #                                                      3322|81 A3
143 0  LAY:HEADER  #                                                      3324|3309  25E0
143 1   > $#        ^ $BASE  $LAY   $@  $LAY   $M/MOD  $LAY              3328|26E6  2490  32A8
143 2               ^ $ROT  $LAY   $LIT  $LAY   9 LAY                    332E|285A  2006  0009
143 3               ^ $OVER  $LAY   $<  $LAY   $0BRANCH  $LAY           3334|241C  2840  2040
143 4               ^ 8 LAY   $LIT  $LAY  7 LAY   $+  $LAY              333A|0008  2006  0007  2270
143 5               ^ $LIT  $LAY  30 LAY   $+  $LAY                     3342|2006  0030  2270
143 6               ^ $HOLD  $LAY   $;                                    3348|2BD0  234A
143 7  LAY:HEADER  #S                                                     334C|0 82 23 D3
143 7  LAY:HEADER  #S                                                     3350|3322  25E0
143 8   > $#S       ^ $#  $LAY   $OVER  $LAY   $OVER  $LAY               3354|3326  241C  241C
143 9               ^ $OR  $LAY   $0=  $LAY   $0BRANCH  $LAY            335A|22F2  239C  2040
143 10              ^ -C  LAY   $;                                        3360|FFF4  234A
143 11 LAY:HEADER  D.R                                                    3364|83 44 2E D2
143 11 LAY:HEADER  D.R                                                    3368|334D  25E0
143 12  > $D.R      ^ $>R  $LAY   $SWAP  $LAY   $OVER  $LAY               336C|236E  2442  241C
143 13              ^ $DABS  $LAY   $<#  $LAY   $#S  $LAY                3372|3262  32E6  3352
143 14              ^ $SIGN  $LAY   $#>  $LAY   $R>  $LAY                3378|3310  32F6  237E
143 15              ^ $OVER  $LAY   $-  $LAY   $SPACES  $LAY -->          337E|241C  2280  32C8
144 0               ^ $TYPE  $LAY   $;                                    3384|2A62  234A
144 1  LAY:HEADER  D.                                                     3388|0 82 44 AE
144 1  LAY:HEADER  D.                                                     338C|3364  25E0
144 2   > $D.       ^ $0  $LAY   $D.R  $LAY   $SPACE  $LAY  $;           3390|25EE  336A  286E  234A
```

```
144 3  LAY:HEADER  .R                                                    3398|0 82 2E D2
144 3  LAY:HEADER  .R                                                    339C|3389  25E0
144 4   > $.R       ^ $>R   $LAY   $S->D  $LAY   $R>  $LAY              33A0|236E  22CC  237E
144 5              ^ $D.R  $LAY   $;                                    33A6|336A  234A
144 6  LAY:HEADER  .                                                    33AA|81 AE
144 6  LAY:HEADER  .                                                    33AC|3399  25E0
144 7   > $.       ^ $S->D  $LAY   $D.  $LAY   $;                       33B0|22CC  338E  234A
144 8  LAY:HEADER  ?                                                    33B6|81 BF
144 8  LAY:HEADER  ?                                                    33B8|33AA  25E0
144 9   > $?       ^ $@  $LAY   $.  $LAY   $;                           33BC|2490  33AE  234A
145 0  LAY:HEADER  VLIST                                                33C2|85 56 4C 49 53 D4
145 0  LAY:HEADER  VLIST                                                33C8|3386  25E0
145 1       ^ $LIT  $LAY   80 LAY   $OUT  $LAY   $!  $LAY               33CC|2006  0080  269A  248A
145 2       ^ $CONTEXT  $LAY   $@  $LAY  $@  $LAY   $OUT  $LAY         33D4|26C0  2490  2490  269A
145 3       ^ $@  $LAY   $C/L  $LAY   $>  $LAY   $0BRANCH  $LAY        33DC|2490  27CE  284C  2040
145 4       ^ C LAY   $CR  $LAY   $LIT  $LAY   E LAY                   33E4|000C  2562  2006  000E
145 5       ^ $OUT  $LAY   $!  $LAY   $DUP  $LAY   $ID.  $LAY         33EC|269A  248A  2456  2D4C
145 6       ^ $SPACE  $LAY   $SPACE  $LAY   $PFA  $LAY  $LFA  $LAY    33F4|286E  286E  2900  28CC
145 7       ^ $@  $LAY   $DUP  $LAY   $0=  $LAY   $?TERMINAL  $LAY    33FC|2490  2456  239C  254C
145 8       ^ $OR  $LAY   $0BRANCH  $LAY   -2E LAY   $DROP  $LAY      3404|22F2  2040  FFD2  2430
145 9       ^ $;                                                        340C|234A
146 0  LAY:HEADER  +BUF                                                  340E|0 84 2B 42 55 C6
146 0  LAY:HEADER  +BUF                                                  3414|33C2  25E0
146 1   > $+BUF     ^ $B/BUF  $LAY   $LIT  $LAY   4 LAY                 3418|27B8  2006  0004
146 2              ^ $+  $LAY   $+  $LAY   $DUP  $LAY                   341E|2270  2270  2456
146 3              ^ $LIMIT   $LAY   $=  $LAY   $0BRANCH  $LAY         3424|2730  2834  2040
146 4              ^ 6 LAY   $DROP  $LAY   $FIRST  $LAY                342A|0006  2430  2724
146 5              ^ $DUP  $LAY   $PREV  $LAY   $@  $LAY               3430|2456  2746  2490
146 6              ^ $-  $LAY  $;                                       3436|2280  234A
146 7  LAY:HEADER  UPDATE                                                343A|0 86 55 50 44 41 54 C5
146 7  LAY:HEADER  UPDATE                                                3442|340F  25E0
146 8   > $UPDATE   ^ $PREV  $LAY   $@  $LAY   $@  $LAY                 3446|2746  2490  2490
146 9              ^ $LIT  $LAY   8000 LAY   $OR  $LAY                  344C|2006  8000  22F2
146 10             ^ $PREV  $LAY   $@  $LAY   $!  $LAY   $;            3452|2746  2490  248A  234A
146 11 LAY:HEADER  EMPTY-BUFFERS                                         345A|8D 45 4D 50 54 59 2D 42 55 46 46 45 52 D3
146 11 LAY:HEADER  EMPTY-BUFFERS                                         3468|343B  25E0
146 12  > $EMPTY-BUFFERS ^ $FIRST  $LAY  $LIMIT  $LAY  $OVER  $LAY      346C|2724  2730  241C
146 13             ^ $-  $LAY   $ERASE  $LAY   $;                       3472|2280  2BAE  234A
147 0  LAY:HEADER  BUFFER                                                3478|0 86 42 55 46 46 45 D2
147 0  LAY:HEADER  BUFFER                                                3480|345A  25E0
147 1   > $BUFFER   ^ $USE  $LAY   $@  $LAY   $DUP  $LAY                3484|273A  2490  2456
147 2              ^ $>R  $LAY   $+BUF  $LAY   $0BRANCH  $LAY          348A|236E  3416  2040
147 3              ^ -4 LAY   $USE  $LAY   $!  $LAY                     3490|FFFC  273A  248A
147 4              ^ $R  $LAY   $@  $LAY   $0<  $LAY                    3496|238C  2490  2384
147 5              ^ $0BRANCH  $LAY   14 LAY   $R  $LAY                349C|2040  0014  238C
147 6              ^ $2+  $LAY   $R  $LAY   $@  $LAY                   34A2|27E6  238C  2490
147 7              ^ $LIT  $LAY   7FFF  LAY   $AND  $LAY               34A8|2006  7FFF  22E0
147 8              ^ $0  $LAY   $R/W  $LAY   $R  $LAY                  34AE|25EE  36E2  238C
147 9              ^ $!  $LAY   $R  $LAY   $PREV  $LAY                34B4|24BA  238C  2746
147 10             ^ $!  $LAY   $R>  $LAY   $2+  $LAY   $;            34BA|24BA  237E  27E6  234A
```

```
147 11 LAY:HEADER  BLOCK                                                    34C2|85 42 4C 4F 43 CB
147 11 LAY:HEADER  BLOCK                                                    34C8|3479  25E0
147 12  > $BLOCK    ^ $OFFSET  $LAY   $@  $LAY   $+  $LAY                  34CC|2682  2490  2270
147 13              ^ $>R  $LAY   $PREV  $LAY   $@  $LAY                   34D2|236E  2746  2490
147 14              ^ $DUP  $LAY   $@  $LAY   $R  $LAY                     34D8|2456  2490  238C
147 15              ^ $-  $LAY   $DUP  $LAY   $+  $LAY   —>               34DE|2280  2456  2270
148 0               ^ $0BRANCH  $LAY   34  LAY   $+BUF  $LAY              34E4|2040  0034  3416
148 1               ^ $0=  $LAY   $0BRANCH  $LAY   14 LAY                  34EA|239C  2040  0014
148 2               ^ $DROP  $LAY   $R  $LAY   $BUFFER  $LAY              34F0|2430  238C  3482
148 3               ^ $DUP  $LAY   $R  $LAY   $1  $LAY                     34F6|2456  238C  25F6
148 4               ^ $R/W  $LAY   $2  $LAY   $-  $LAY                     34FC|36E2  25FE  2280
148 5               ^ $DUP  $LAY   $@  $LAY   $R  $LAY                     3502|2456  2490  238C
148 6               ^ $-  $LAY   $DUP  $LAY   $+  $LAY                     3508|2280  2456  2270
148 7               ^ $0=  $LAY   $0BRANCH   $LAY   -2A  LAY              350E|239C  2040  FFD6
148 8               ^ $DUP  $LAY   $PREV  $LAY   $!  $LAY                 3514|2456  2746  24BA
148 9               ^ $R>  $LAY   $DROP  $LAY   $2+  $LAY   $;            351A|237E  2430  27E6  234A
148 10 LAY:HEADER  (LINE)                                                   3522|0 86 28 4C 49 4E 45 A9
148 10 LAY:HEADER  (LINE)                                                   352A|34C2  25E0
148 11  > $(LINE)   ^ $>R  $LAY   $C/L  $LAY   $B/BUF  $LAY                352E|236E  27CE  27B8
148 12              ^ $*/MOD  $LAY   $R>  $LAY   $B/SCR  $LAY              3534|3294  237E  27C4
148 13              ^ $*  $LAY   $+  $LAY   $BLOCK  $LAY                   353A|2230  2270  34CA
148 14              ^ $+  $LAY   $C/L  $LAY   $;                            3540|2270  27CE  234A
149 0  LAY:HEADER  .LINE                                                    3546|85 2E 4C 49 4E C5
149 0  LAY:HEADER  .LINE                                                    354C|3523  25E0
149 1   > $.LINE    ^ $(LINE)  $LAY   $-TRAILING  $LAY   $TYPE  $LAY       3550|352C  2A90  2A62
149 2               ^ $;                                                    3556|234A
149 3  LAY:HEADER  MESSAGE                                                  3558|87 4D 45 53 53 41 47 C5
149 3  LAY:HEADER  MESSAGE                                                  3560|3546  25E0
149 4   > $MESSAGE  ^ $WARNING  $LAY   $@  $LAY   $0BRANCH  $LAY           3564|2656  2490  2040
149 5               ^ 1C LAY   $-DUP  $LAY   $0BRANCH  $LAY               356A|001C  2B7E  2040
149 6               ^ 12 LAY   $LIT  $LAY   4 LAY                         3570|0012  2006  0004
149 7               ^ $OFFSET  $LAY   $@  $LAY   $B/SCR  $LAY             3576|2682  2490  27C4
149 8               ^ $/  $LAY   $-  $LAY   $.LINE  $LAY                  357C|2242  2280  354E
149 9               ^ $BRANCH  $LAY  C LAY   $(.")  $LAY                   3582|202C  000C  2AC4
149 10              ^ 054D LAY   5347 LAY   2023  LAY  ( MSG # )          3588|054D  5347  2023
149 11              ^ $.  $LAY   $;                                         358E|33AE  234A
149 12 LAY:HEADER  LOAD                                                     3592|0 84 4C 4F 41 C4
149 12 LAY:HEADER  LOAD                                                     3598|3558  25E0
149 13  > $LOAD     ^ $BLK  $LAY  $@  $LAY   $>R  $LAY                     359C|2686  2490  236E
149 14              ^ $IN  $LAY   $@  $LAY   $>R  $LAY                     35A2|2690  2490  236E
149 15              ^ $0  $LAY   $IN  $LAY   $!  $LAY   —>                 35A8|25EE  2690  24BA
150 0               ^ $B/SCR  $LAY   $*  $LAY   $BLK  $LAY                35AE|27C4  2230  2686
150 1               ^ $!  $LAY   $INTERPRET  $LAY   $R>  $LAY              35B4|24BA  2F2E  237E
150 2               ^ $IN  $LAY   $!  $LAY   $R>  $LAY                     35BA|2690  24BA  237E
150 3               ^ $BLK  $LAY   $!  $LAY   $;                           35C0|2686  24BA  234A
150 4  LAY:HEADER  —>  IMMED                                               35C6|C3 2D 2D BE
150 4  LAY:HEADER  —>  IMMED                                               35CA|3593  25E0
150 5   > $—>      ^ $?LOADING  $LAY   $0  $LAY   $IN  $LAY                35CE|29A6  25EE  2690
150 6               ^ $!  $LAY   $B/SCR  $LAY   $BLK  $LAY                 35D4|24BA  27C4  2686
150 7               ^ $@  $LAY   $OVER  $LAY   $MOD  $LAY                 35DA|2490  241C  3284
150 8               ^ $-  $LAY   $BLK  $LAY   $+!  $LAY   $;              35E0|2280  2686  2466  234A
```

```
150 9  LAY:HEADER  LIST                                                    35EB|0 84 4C 49 53 D4
150 9  LAY:HEADER  LIST                                                    35EE|35C6  25E0
150 10  > $LIST    ^ $DECIMAL  $LAY   $CR  $LAY   $DUP  $LAY              35F2|2A22  2562  2456
150 11             ^ $SCR  $LAY   $!  $LAY   $(.")  $LAY                 35F8|26A4  24BA  2AC4
150 12             ^ 0553  LAY   4352  LAY   2023  LAY  ( SCR # )        35FE|0553  4352  2023
150 13             ^ $,  $LAY   $LIT  $LAY  10  LAY                       3604|33AE  2006  0010
150 14             ^ $0  $LAY   $(DO)  $LAY   $CR  $LAY                  360A|25EE  20B2  2562
150 15             ^ $R  $LAY   $3  $LAY      —>                          3610|238C  2606
151 0               ^ $.R   $LAY   $SPACE  $LAY   $R  $LAY               3614|339E  286E  238C
151 1               ^ $SCR  $LAY   $@  $LAY   $.LINE  $LAY               361A|26A4  2490  354E
151 2               ^ $(LOOP)  $LAY   -14  LAY   $CR  $LAY  $;           3620|2058  FFEC  2562  234A
151 3  LAY:HEADER  INDEX                                                   3628|85 49 4E 44 45 D8
151 3  LAY:HEADER  INDEX                                                   362E|35E9  25E0
151 4   > $INDEX    ^ $CR  $LAY   $1+  $LAY   $SWAP  $LAY                 3632|2562  27D8  2442
151 5              ^ $(DO)  $LAY   $CR  $LAY   $R  $LAY                   3638|20B2  2562  238C
151 6              ^ $3  $LAY   $.R  $LAY                                 363E|2606  339E
151 7              ^ $SPACE  $LAY   $0  $LAY   $R  $LAY                   3642|286E  25EE  238C
151 8              ^ $.LINE  $LAY $?TERMINAL $LAY  $0BRANCH  $LAY        3648|354E  254C  2040
151 9              ^ 4 LAY   $LEAVE  $LAY   $(LOOP)  $LAY                364E|0004  235C  2058
151 10             ^ -1A  LAY   $;                                        3654|FFE6  234A
152 0  LAYCODEHEADER  COLD                                                 3658|0 84 43 4F 4C C4
152 0  LAYCODEHEADER  COLD                                                 365E|3628  3662
152 1   > $COLDSTART ^ $COLDUSER IMM ^ 0 AR .W .MOVE ( BOOTLIST )          3662|307C  36AA
152 2              ^ 0 [ ^ $FORTH 4 + ABSO .W .MOVE ( TOPNFA SET )        3666|31D0  2FB6
152 3              ^ 4 0 &[ ^ US AR .W .MOVE ( SET USER PTR REG )         366A|3C68  0004
152 4              ^ US AR ^ 1 AR .W .MOVE ( WORKCOPY OF USER PTR )       366E|324E
152 5              ^ 0A IMM ^ 0 DR .W .MOVE ( MOVE ELEVEN BOOTUPS )       3670|303C  000A
152 6   > $FILLUSER ^ 0 [+ ^ 1 [+ .W .MOVE ( ONE AT A TIME )              3674|32D8
152 7              ^ .F. 0 $FILLUSER x+ .DBCC  ( UNTIL DONE. )            3676|51C8  FFFC
152 8              ^ 1E IMM ^ 1 AR .W .ADD  ( POINT TO BYTE US + 34 )     367A|D2FC  001E
152 9              ^ D IMM ^ 0 DR .W .MOVE ( MOVE 14 MORE BOOTUPS )       367E|303C  000D
152 10  > $FILLMORE ^ 0 [+ ^ 1 [+ .W .MOVE ( ONE AT A TIME )              3682|32D8
152 11             ^ .F. 0 $FILLMORE x+ .DBCC  ( UNTIL DONE. )            3684|51C8  FFFC
152 12             ^ 36 US &[ ^ 0 DR .W .MOVE ( GET LIMIT )               3688|302E  0036
152 13             ^ 34 US &[ ^ 0 AR .W .MOVE ( GET FIRST )               368C|306E  0034
152 14             ^ 0 AR ^ 0 DR .W .SUB ( CALC BUFF AREA BYTES )         3690|9048
153 0              ^ 1 IMM ^ 0 DR .W .SUBQ ( LOOP PREDECREMENT )          3692|5340
153 1   > $MTBUFFS  ^ 0 IMM ^ 0 [+ .B .MOVE ( FILL AREA WITH 00 )         3694|10FC  0000
153 2              ^ .F. 0 $MTBUFFS x+ .DBCC ( UNTIL DONE )               3698|51C8  FFFA
153 3              ^ $GOFORTH x+ .BRA                                     369C|6004
153 4   > $WARMSTART ^ $COLDUSER 4 + ABSO ^ US AR .W .MOVE ( SET US )     369E|3C78  36AE
153 5   > $GOFORTH  ^ $ABORT IMM ^ IP AR .W .MOVE ( SET IP REG )          36A2|387C  3010
153 6              ^ $RP! ABSO .JMP ( JUMP TO RP! CODE )                  36A6|4EF8  233A
```

```
153 7   > $COLDUSER ^ ( INITIAL TOP FORTH NFA CHANGES AS SYS EXPANDS )  36AA|3710
153 9              ^ 007F LAY ( BKSPKEY DEPENDS ON KEYBOARD )          36AC|007F
153 10             ^ 1A00 LAY ( USER PAGE CAN BE MOVED )               36AE|1A00
153 11             ^ 19FE LAY ( COMPUTATION STACK CAN BE MOVED )       36B0|19FE
153 12             ^ 1BFE LAY ( RETURN STACK CAN BE MOVED )            36B2|1BFE
153 13             ^ 1820 LAY ( TIB CAN BE MOVED )                     36B4|1820
153 14             ^ 001F LAY ( WIDTH NOT LIKELY TO BE CHANGED )       36B6|001F
154 0              ^ 0001 LAY ( WARNING UNTIL DISC IS IMPLEMENTED )    36B8|0001
154 1              ^ ( COLD FENCE IS USUALLY 1ST FREE BYTE )           36BA|3720
154 3              ^ ( DP IS USUALLY ALSO 1ST FREE BYTE )              36BC|3720
154 5              ^ ( VOC-LINK SHOULD NOT BE CHANGED )                36BE|2FB8
154 7              ^ 1000 LAY ( FIRST CAN BE MOVED -DISC BUFF STUFF )  36C0|1000
154 8              ^ 1820 LAY ( LIMIT CAN BE MOVED -DISC BUFF STUFF )  36C2|1820
154 9              ^ 1000 LAY ( USE CAN BE MOVED - DISC BUFF STUFF )   36C4|1000
154 10             ^ 1000 LAY ( PREV CAN BE MOVED - DISC BUFF STUFF )  36C6|1000
154 11             ^ 4800 LAY ( DICTLIMIT CAN BE MOVED )               36C8|4800
154 12             ^ 0008 LAY ( BKSPEMIT COULD NEED CHANGE FOR I/O )   36CA|0008
154 13             ^ 1C00 LAY ( ADDRESS OF EMIT CODE SUBROUTINE )      36CC|1C00
154 14             ^ 1D0A LAY ( ADDRESS OF KEY CODE SUBROUTINE )       36CE|1D0A
155 0              ^ 1D18 LAY ( ADDRESS OF ?TERMINAL CODE SUBROUTINE ) 36D0|1D18
155 1              ^ 1D2E LAY ( ADDRESS OF CR CODE SUBROUTINE )        36D2|1D2E
155 2              ^ 1E00 LAY ( ADDRESS OF R/W CODE SUBROUTINE )       36D4|1E00
155 3              ^ 0100 LAY ( BYTES/BUFFER = B/BUF )                 36D6|0100
155 4              ^ 0004 LAY ( BUFFERS/SCREEN = B/SCR )               36D8|0004
155 5              ^ 0040 LAY ( #CHAR/LINE = C/L )                     36DA|0040
155 6  LAYCODEHEADER  R/W                                              36DC|83 52 2F D7
155 6  LAYCODEHEADER  R/W                                              36E0|3659  36E4
155 7   > $R/W      ^ 48 US &C ^ 0 AR .W .MOVE ( R/WSUB ADDRESS )      36E4|306E  0048
155 8              ^ 0 C .JSR                                          36E8|4E90
155 9              NEXT                                                36EA|3A5C  305D  4ED0
155 10 LAYCONSTANT ORIGIN      > $ORIGIN   $COLDUSER C - LAY           36F0|0 86 4F 52 49 47 49 CE
155 10 LAYCONSTANT ORIGIN      > $ORIGIN   $COLDUSER C - LAY           36F8|36DC  2594  369E
155 11 LAY:HEADER  +ORIGIN                                             36FE|87 2B 4F 52 49 47 49 CE
155 11 LAY:HEADER  +ORIGIN                                             3706|36F1  25E0
155 12  > $+ORIGIN  ^ $ORIGIN  $LAY   $+  $LAY   $;                    370A|36FA  2270  234A
155 13 LAY:HEADER  DR0                                                 3710|83 44 52 B0
155 13 LAY:HEADER  DR0                                                 3714|36FE  25E0
155 14  > $DR0      ^ $0  $LAY   $OFFSET  $LAY   $!  $LAY  $;         3718|25EE  2682  24BA  234A
```

```
2000 | 83 4C 49 D4  00 00 20 08  37 1C 3A 5C  30 5D 4E D0
2010 | 87 45 58 45  43 55 54 C5  20 00 20 1C  3A 5B 30 5D
2020 | 4E D0 00 86  42 52 41 4E  43 C8 20 10  20 2E D8 D4
2030 | 3A 5C 30 5D  4E D0 87 30  42 52 41 4E  43 C8 20 23
2040 | 20 42 4A 5B  67 E8 54 4C  3A 5C 30 5D  4E D0 00 86
2050 | 28 4C 4F 4F  50 A9 20 36  20 5A 52 57  30 2F 00 02
2060 | B0 57 6E 06  54 4C 58 4F  60 02 D8 D4  3A 5C 30 5D
2070 | 4E D0 87 28  2B 4C 4F 4F  50 A9 20 4F  20 7E 30 1B
2080 | D1 57 4A 40  6A D6 30 2F  00 02 B0 57  6C D6 60 DA
2090 | 87 28 2F 4C  4F 4F 50 A9  20 72 20 9C  30 1B D1 57
20A0 | 30 2F 00 02  B0 57 62 C2  60 BA 00 84  28 44 4F A9
20B0 | 20 90 20 B4  2F 1B 3A 5C  30 5D 4E D0  85 44 49 47
20C0 | 49 D4 20 AB  20 C6 32 1B  30 13 04 40  00 30 65 1C
20D0 | 0C 40 00 09  6F 0A 0C 40  00 11 6D 10  04 40 00 07
20E0 | B0 41 6C 08  36 80 37 3C  00 01 60 04  36 BC 00 00
20F0 | 3A 5C 30 5D  4E D0 00 86  28 46 49 4E  44 A9 20 BC
2100 | 21 02 32 5B  30 53 34 48  12 19 18 01  36 04 02 43
2110 | 00 1F D6 49  52 43 02 43  FF FE 1C 1A  BD 04 02 04
2120 | 00 3F 66 20  14 1A 08 82  00 07 1C 19  BD 02 E3 02
2130 | 66 12 64 F0  58 43 36 83  02 41 00 FF  37 01 37 3C
2140 | 00 01 60 0C  34 43 32 52  3C 09 66 BA  36 BC 00 00
2150 | 3A 5C 30 5D  4E D0 87 45  4E 43 4C 4F  53 C5 20 F7
2160 | 21 62 30 1B  30 53 42 81  60 02 52 41  B0 30 10 00
2170 | 67 F8 37 01  B0 30 10 00  67 1A 0C 30  00 00 10 00
2180 | 67 04 52 41  60 EE B2 53  66 06 52 41  37 01 60 08
2190 | 37 01 60 04  37 01 52 41  37 01 3A 5C  30 5D 4E D0
21A0 | 85 43 4D 4F  56 C5 21 56  21 AA 91 C8  22 48 30 1B
21B0 | 32 5B 30 5B  B2 C8 6E 0A  60 02 12 D8  51 C8 FF FC
21C0 | 60 0C D0 C0  D2 C0 60 02  13 20 51 C8  FF FC 3A 5C
21D0 | 30 5D 4E D0  00 82 55 AA  21 A0 21 DC  30 1B C0 DB
21E0 | 27 00 3A 5C  30 5D 4E D0  00 82 55 AF  21 D5 21 F0
21F0 | 32 1B 20 13  80 C1 48 40  26 80 3A 5C  30 5D 4E D0
2200 | 00 82 4D AA  21 E9 22 08  30 1B C1 DB  27 00 3A 5C
2210 | 30 5D 4E D0  00 82 4D AF  22 01 22 1C  32 1B 20 13
2220 | 81 C1 48 40  26 80 3A 5C  30 5D 4E D0  81 AA 22 15
2230 | 22 32 30 1B  C1 D3 36 80  3A 5C 30 5D  4E D0 81 AF
2240 | 22 2C 22 44  30 2B 00 02  48 C0 81 DB  36 80 3A 5C
2250 | 30 5D 4E D0  00 82 2A AF  22 3E 22 5C  32 1B 30 1B
2260 | C1 D3 81 C1  36 80 3A 5C  30 5D 4E D0  81 AB 22 55
2270 | 22 72 30 1B  D1 53 3A 5C  30 5D 4E D0  81 AD 22 6C
2280 | 22 82 30 1B  91 53 3A 5C  30 5D 4E D0  85 4D 49 4E
2290 | 55 D3 22 7C  22 96 44 53  3A 5C 30 5D  4E D0 00 82
22A0 | 44 AB 22 8C  22 A6 20 1B  D1 93 3A 5C  30 5D 4E D0
22B0 | 00 86 44 4D  49 4E 55 D3  22 9F 22 BC  44 93 3A 5C
22C0 | 30 5D 4E D0  00 84 53 2D  3E C4 22 B1  22 CE 30 1B
22D0 | 48 C0 27 00  3A 5C 30 5D  4E D0 83 41  4E C4 22 C5
22E0 | 22 E2 30 1B  C1 53 3A 5C  30 5D 4E D0  00 82 4F D2
22F0 | 22 DA 22 F4  30 1B 81 53  3A 5C 30 5D  4E D0 83 58
2300 | 4F D2 22 ED  23 06 30 1B  B1 53 3A 5C  30 5D 4E D0
2310 | 83 53 50 C0  22 FE 23 18  37 0B 3A 5C  30 5D 4E D0
2320 | 83 53 50 A1  23 10 23 28  36 6E 00 06  3A 5C 30 5D
2330 | 4E D0 83 52  50 A1 23 20  23 3A 3E 6E  00 08 3A 5C
2340 | 30 5D 4E D0  00 82 3B D3  23 32 23 4C  38 5F 3A 5C
2350 | 30 5D 4E D0  85 4C 45 41  56 C5 23 45  23 5E 3F 57
2360 | 00 02 3A 5C  30 5D 4E D0  00 82 3E D2  23 54 23 70
2370 | 3F 1B 3A 5C  30 5D 4E D0  00 82 52 BE  23 69 23 80
2380 | 37 1F 3A 5C  30 5D 4E D0  81 D2 23 79  23 8E 37 17
2390 | 3A 5C 30 5D  4E D0 00 82  30 BD 23 88  23 9E 4A 53
23A0 | 57 EB 00 01  02 53 00 01  3A 5C 30 5D  4E D0 00 82
23B0 | 30 BC 23 97  23 B6 4A 53  5B EB 00 01  02 53 00 01
23C0 | 3A 5C 30 5D  4E D0 83 4D  41 D8 23 AF  23 CE 30 1B
23D0 | B0 53 6F 12  60 0E 83 4D  49 CE 23 C6  23 DE 30 1B
23E0 | B0 53 6C 02  36 80 3A 5C  30 5D 4E D0  00 82 2B AD
23F0 | 23 D6 23 F4  4A 5B 6A 02  44 53 3A 5C  30 5D 4E D0
```

```
2400 | 83 44 2B AD  23 ED 24 08  4A 5B 6A 02  44 93 3A 5C
2410 | 30 5D 4E D0  00 84 4F 56  45 D2 24 00  24 1E 37 2B
2420 | 00 02 3A 5C  30 5D 4E D0  00 84 44 52  4F D0 24 15
2430 | 24 32 54 4B  3A 5C 30 5D  4E D0 00 84  53 57 41 D0
2440 | 24 29 24 44  20 13 48 40  26 80 3A 5C  30 5D 4E D0
2450 | 83 44 55 D0  24 3B 24 58  37 13 3A 5C  30 5D 4E D0
2460 | 00 82 2B A1  24 50 24 68  30 5B 30 1B  D1 50 3A 5C
2470 | 30 5D 4E D0  00 86 54 4F  47 47 4C C5  24 61 24 80
2480 | 30 1B 30 5B  B1 10 3A 5C  30 5D 4E D0  81 C0 24 75
2490 | 24 92 30 53  16 98 17 50  00 01 3A 5C  30 5D 4E D0
24A0 | 00 82 43 C0  24 8C 24 A8  30 5B 17 10  17 3C 00 00
24B0 | 3A 5C 30 5D  4E D0 81 A1  24 A1 24 BC  30 5B 10 DB
24C0 | 10 9B 3A 5C  30 5D 4E D0  00 84 46 49  4C CC 24 B6
24D0 | 24 D2 30 1B  32 1B 30 5B  60 02 10 C0  51 C9 FF FC
24E0 | 3A 5C 30 5D  4E D0 00 82  43 A1 24 C9  24 EE 30 5B
24F0 | 52 4B 10 9B  3A 5C 30 5D  4E D0 00 82  43 BD 24 E7
2500 | 25 E0 22 80  20 06 00 FF  22 E0 23 9C  23 4A 00 84
2510 | 45 4D 49 D4  24 FB 25 18  30 1B 52 6E  00 1A 30 6E
2520 | 00 40 4E 90  3A 5C 30 5D  4E D0 83 4B  45 D9 25 0F
2530 | 25 32 30 6E  00 42 4E 90  37 00 3A 5C  30 5D 4E D0
2540 | 89 3F 54 45  52 4D 49 4E  41 CC 25 2A  25 4E 30 6E
2550 | 00 44 4E 90  37 00 3A 5C  30 5D 4E D0  00 82 43 D2
2560 | 25 40 25 64  3D 7C 00 00  00 1A 30 6E  00 46 4E 90
2570 | 3A 5C 30 5D  4E D0 85 28  56 41 52 A9  25 5D 25 80
2580 | 37 0D 3A 5C  30 5D 4E D0  87 28 43 4F  4E 53 54 A9
2590 | 25 76 25 94  37 15 3A 5C  30 5D 4E D0  00 86 28 55
25A0 | 53 45 52 A9  25 88 25 A8  30 15 D0 4E  37 00 3A 5C
25B0 | 30 5D 4E D0  00 8E 28 55  53 45 52 43  4F 4E 53 54
25C0 | 41 4E 54 A9  25 9D 25 C8  30 55 D0 CE  37 10 3A 5C
25D0 | 30 5D 4E D0  00 86 28 4E  45 53 54 A9  25 B5 25 E0
25E0 | 3F 0C 38 4D  3A 5C 30 5D  4E D0 81 B0  25 D5 25 94
25F0 | 00 00 81 B1  25 EA 25 94  00 01 81 B2  25 F2 25 94
2600 | 00 02 81 B3  25 FA 25 94  00 03 00 82  42 CC 26 02
2610 | 25 94 00 20  87 42 4B 53  50 4B 45 D9  26 0B 25 A8
2620 | 00 02 00 82  53 B0 26 14  25 A8 00 06  00 82 52 B0
2630 | 26 23 25 A8  00 08 83 54  49 C2 26 2D  25 A8 00 0A
2640 | 85 57 49 44  54 C8 26 36  25 A8 00 0C  87 57 41 52
2650 | 4E 49 4E C7  26 40 25 A8  00 0E 85 46  45 4E 43 C5
2660 | 26 4C 25 A8  00 10 00 82  44 D0 26 5A  25 A8 00 12
2670 | 00 88 56 4F  43 2D 4C 49  4E CB 26 67  25 A8 00 14
2680 | 83 42 4C C8  26 71 25 A8  00 16 00 82  49 CE 26 80
2690 | 25 A8 00 18  83 4F 55 D4  26 8B 25 A8  00 1A 83 53
26A0 | 43 D2 26 94  25 A8 00 1C  00 86 4F 46  46 53 45 D4
26B0 | 26 9E 25 A8  00 1E 87 43  4F 4E 54 45  58 D4 26 A9
26C0 | 25 A8 00 20  87 43 55 52  52 45 4E D4  26 B6 25 A8
26D0 | 00 22 85 53  54 41 54 C5  26 C4 25 A8  00 24 00 84
26E0 | 42 41 53 C5  26 D2 25 A8  00 26 83 44  50 CC 26 DF
26F0 | 25 A8 00 28  83 46 4C C4  26 EA 25 A8  00 2A 83 43
2700 | 53 D0 26 F4  25 A8 00 2C  00 82 52 A3  26 FE 25 A8
2710 | 00 2E 83 48  4C C4 27 09  25 A8 00 30  85 46 49 52
2720 | 53 D4 27 12  25 C8 00 34  85 4C 49 4D  49 D4 27 1C
2730 | 25 C8 00 36  83 55 53 C5  27 28 25 A8  00 38 00 84
2740 | 50 52 45 D6  27 34 25 A8  00 3A 89 44  49 43 54 4C
2750 | 49 4D 49 D4  27 3F 25 A8  00 3C 00 88  42 4B 53 50
2760 | 45 4D 49 D4  27 4A 25 A8  00 3E 87 45  4D 49 54 53
2770 | 55 C2 27 5B  25 A8 00 40  00 86 4B 45  59 53 55 C2
2780 | 27 6A 25 A8  00 42 00 88  3F 54 45 52  4D 53 55 C2
2790 | 27 79 25 A8  00 44 85 43  52 53 55 C2  27 87 25 A8
27A0 | 00 46 00 86  52 2F 57 53  55 C2 27 96  25 A8 00 48
27B0 | 85 42 2F 42  55 C6 27 A3  25 C8 00 4A  85 42 2F 53
27C0 | 43 D2 27 B0  25 C8 00 4C  83 43 2F CC  27 BC 25 C8
27D0 | 00 4E 00 82  31 AB 27 C8  25 E0 25 F6  22 70 23 4A
27E0 | 00 82 32 AB  27 D3 25 E0  25 FE 22 70  23 4A 00 84
27F0 | 48 45 52 C5  27 E1 25 E0  26 6C 24 90  23 4A 85 41
```

```
2800 | 4C 4C 4F D4  27 EF 25 E0  26 6C 24 66  23 4A 81 AC
2810 | 27 FE 25 E0  27 F6 24 BA  25 FE 28 06  23 4A 00 82
2820 | 43 AC 28 0E  25 E0 27 F6  24 EC 25 F6  28 06 23 4A
2830 | 81 BD 28 1F  25 E0 22 80  23 9C 23 4A  81 BC 28 30
2840 | 25 E0 22 80  23 B4 23 4A  81 BE 28 3C  25 E0 24 42
2850 | 28 40 23 4A  83 52 4F D4  28 48 25 E0  23 6E 24 42
2860 | 23 7E 24 42  23 4A 85 53  50 41 43 C5  28 54 25 E0
2870 | 26 10 25 16  23 4A 00 84  2D 44 55 D0  28 66 25 E0
2880 | 24 56 20 40  00 04 24 56  23 4A 00 88  54 52 41 56
2890 | 45 52 53 C5  28 77 25 E0  24 42 24 1C  22 70 20 06
28A0 | 00 7F 24 1C  24 A6 28 40  20 40 FF F0  24 42 24 30
28B0 | 23 4A 00 86  4C 41 54 45  53 D4 28 8B  25 E0 26 CE
28C0 | 24 90 24 90  23 4A 83 4C  46 C1 28 B3  25 E0 20 06
28D0 | 00 04 22 80  23 4A 83 43  46 C1 28 C6  25 E0 25 FE
28E0 | 22 80 23 4A  83 4E 46 C1  28 D6 25 E0  20 06 00 05
28F0 | 22 80 20 06  FF FF 28 96  23 4A 83 50  46 C1 28 E4
2900 | 25 E0 25 F6  28 96 20 06  00 05 22 70  23 4A 00 84
2910 | 21 43 53 D0  28 FA 25 E0  23 16 27 04  24 BA 23 4A
2920 | 00 86 3F 45  52 52 4F D2  29 0F 25 E0  24 42 20 40
2930 | 00 08 2D 1C  20 2C 00 04  24 30 23 4A  85 3F 43 4F
2940 | 4D D0 29 21  25 E0 26 DA  24 90 23 9C  20 06 00 11
2950 | 29 2A 23 4A  85 3F 45 58  45 C3 29 3C  25 E0 26 DA
2960 | 24 90 20 06  00 12 29 2A  23 4A 00 86  3F 50 41 49
2970 | 52 D3 29 54  25 E0 22 80  20 06 00 13  29 2A 23 4A
2980 | 00 84 3F 43  53 D0 29 6B  25 E0 23 16  27 04 24 90
2990 | 22 80 20 06  00 14 29 2A  23 4A 00 88  3F 4C 4F 41
29A0 | 44 49 4E C7  29 81 25 E0  26 86 24 90  23 9C 20 06
29B0 | 00 16 29 2A  23 4A 87 43  4F 4D 50 49  4C C5 29 9B
29C0 | 25 E0 29 44  23 7E 24 56  27 E6 23 6E  24 90 28 12
29D0 | 23 4A C1 DB  29 B6 25 E0  25 EE 26 DA  24 BA 23 4A
29E0 | 81 DD 29 D2  25 E0 20 06  00 C0 26 DA  24 BA 23 4A
29F0 | 00 86 53 4D  55 44 47 C5  29 E0 25 E0  28 BC 20 06
2A00 | 00 20 24 7E  23 4A 83 48  45 D8 29 F1  25 E0 20 06
2A10 | 00 10 26 E6  24 BA 23 4A  87 44 45 43  49 4D 41 CC
2A20 | 2A 06 25 E0  20 06 00 0A  26 E6 24 BA  23 4A 87 28
2A30 | 3B 43 4F 44  45 A9 2A 18  25 E0 23 7E  28 BC 29 00
2A40 | 28 DC 24 BA  23 4A 85 43  4F 55 4E D4  2A 2E 25 E0
2A50 | 24 56 27 D8  24 42 24 A6  23 4A 00 84  54 59 50 C5
2A60 | 2A 46 25 E0  28 7E 20 40  00 18 24 1C  22 70 24 42
2A70 | 20 B2 23 8C  24 A6 25 16  20 58 FF F8  20 2C 00 04
2A80 | 24 30 23 4A  89 2D 54 52  41 49 4C 49  4E C7 2A 5B
2A90 | 25 E0 24 56  25 EE 20 B2  24 1C 24 1C  22 70 25 F6
2AA0 | 22 80 24 A6  26 10 22 80  20 40 00 08  23 5C 20 2C
2AB0 | 00 06 25 F6  22 80 20 58  FF E0 23 4A  00 84 28 2E
2AC0 | 22 A9 2A 84  25 E0 23 8C  2A 4E 24 56  27 E6 20 06
2AD0 | FF FE 22 E0  23 7E 22 70  23 6E 2A 62  23 4A 00 86
2AE0 | 45 58 50 45  43 D4 2A BD  25 E0 24 1C  22 70 24 1C
2AF0 | 20 B2 25 30  24 56 26 1E  24 90 25 00  20 40 00 20
2B00 | 24 30 27 66  24 90 24 1C  23 8C 28 34  24 56 23 7E
2B10 | 25 FE 22 80  22 70 23 6E  22 80 20 2C  00 28 24 56
2B20 | 20 06 00 0D  25 00 20 40  00 0E 23 5C  24 30 26 10
2B30 | 25 EE 20 2C  00 04 24 56  23 8C 24 EC  25 EE 23 8C
2B40 | 27 D8 24 EC  25 16 20 58  FF AA 24 30  23 4A 85 51
2B50 | 55 45 52 D9  2A DF 25 E0  26 3C 24 90  20 06 00 50
2B60 | 2A E8 25 EE  26 90 24 BA  23 4A C1 80  2B 4E 25 E0
2B70 | 26 86 24 90  20 40 00 2A  25 F6 26 86  24 66 25 EE
2B80 | 26 90 24 BA  26 86 24 90  27 C4 25 F6  22 80 22 E0
2B90 | 23 9C 20 40  00 08 29 5C  23 7E 24 30  20 2C 00 06
2BA0 | 23 7E 24 30  23 4A 85 45  52 41 53 C5  2B 6A 25 E0
2BB0 | 25 EE 24 D0  23 4A 00 86  42 4C 41 4E  4B D3 2B A6
2BC0 | 25 E0 26 10  24 D0 23 4A  00 84 48 4F  4C C4 2B B7
2BD0 | 25 E0 20 06  FF FF 27 18  24 66 27 18  24 90 24 EC
2BE0 | 23 4A 83 50  41 C4 2B C9  25 E0 27 F6  20 06 00 44
2BF0 | 22 70 23 4A  00 84 57 4F  52 C4 2B E2  25 E0 26 86
```

```
2C00 | 24 90 20 40  00 0C 26 86  24 90 34 CA  20 2C 00 06
2C10 | 26 3C 24 90  26 90 24 90  22 70 24 42  21 60 27 F6
2C20 | 20 06 00 22  2B C0 26 90  24 66 24 1C  22 80 23 6E
2C30 | 23 8C 27 F6  24 EC 22 70  27 F6 27 D8  23 7E 21 A8
2C40 | 23 4A 00 88  28 4E 55 4D  42 45 52 A9  2B F5 25 E0
2C50 | 27 D8 24 56  23 6E 24 A6  26 E6 24 90  20 C4 20 40
2C60 | 00 2C 24 42  26 E6 24 90  21 DA 24 30  28 5A 26 E6
2C70 | 24 90 21 DA  22 A4 26 F0  24 90 27 D8  20 40 00 08
2C80 | 25 F6 26 F0  24 66 23 7E  20 2C FF C6  23 7E 23 4A
2C90 | 00 86 4E 55  4D 42 45 D2  2C 43 25 E0  25 EE 25 EE
2CA0 | 28 5A 24 56  27 D8 24 A6  20 06 00 2D  28 34 24 56
2CB0 | 23 6E 22 70  20 06 FF FF  26 F0 24 BA  2C 4E 24 56
2CC0 | 24 A6 26 10  22 80 20 40  00 16 24 56  24 A6 20 06
2CD0 | 00 2E 22 80  25 EE 29 2A  25 EE 20 2C  FF DC 24 30
2CE0 | 23 7E 20 40  00 04 22 BA  23 4A 85 2D  46 49 4E C4
2CF0 | 2C 91 25 E0  26 10 2B FC  27 F6 26 C0  24 90 24 90
2D00 | 21 00 24 56  23 9C 20 40  00 0A 24 30  27 F6 28 BC
2D10 | 21 00 23 4A  85 45 52 52  4F D2 2C EA  25 E0 26 56
2D20 | 24 90 23 B4  20 40 00 04  30 0E 27 F6  2A 4E 2A 62
2D30 | 2A C4 03 20  20 3F 35 62  23 26 26 90  24 90 26 86
2D40 | 24 90 2F DC  23 4A 83 49  44 AE 2D 14  25 E0 2B E8
2D50 | 20 06 00 20  20 06 00 5F  24 D0 24 56  29 00 28 CC
2D60 | 24 1C 22 80  2B E8 24 42  21 A8 2B E8  2A 4E 20 06
2D70 | 00 1F 22 E0  2A 62 28 6E  23 4A 00 86  43 52 45 41
2D80 | 54 C5 2D 46  25 E0 27 56  24 90 27 F6  20 06 00 30
2D90 | 22 70 28 40  25 FE 29 2A  2C F2 20 40  00 10 24 30
2DA0 | 28 EA 2D 4C  20 06 00 04  35 62 28 6E  27 F6 24 56
2DB0 | 24 A6 23 04  25 F6 22 E0  23 9C 20 40  00 1C 27 F6
2DC0 | 24 56 24 56  27 D8 24 1C  24 A6 27 D8  21 A8 25 EE
2DD0 | 24 42 24 EC  25 F6 28 06  27 F6 24 56  24 A6 26 48
2DE0 | 24 90 23 DC  27 D8 28 06  24 56 20 06  00 A0 24 7E
2DF0 | 27 F6 25 F6  22 80 20 06  00 80 24 7E  28 BC 28 12
2E00 | 26 CE 24 90  24 BA 27 F6  27 E6 28 12  23 4A C1 BA
2E10 | 2D 7B 25 E0  29 5C 29 16  26 CE 24 90  26 C0 24 BA
2E20 | 2D 84 29 E4  20 06 FF FE  26 6C 24 66  29 C0 25 E0
2E30 | 23 4A 85 21  43 4F 44 C5  2E 0E 25 E0  2D 84 29 FA
2E40 | 28 BC 29 00  28 DC 24 BA  28 12 23 4A  00 88 43 4F
2E50 | 4E 53 54 41  4E D4 2E 32  25 E0 20 06  25 94 2E 3A
2E60 | 23 4A 00 88  56 41 52 49  41 42 4C C5  2E 4D 25 E0
2E70 | 20 06 25 80  2E 3A 23 4A  00 84 55 53  45 D2 2E 63
2E80 | 25 E0 20 06  25 A8 2E 3A  23 4A 87 3C  42 55 49 4C
2E90 | 44 D3 2E 79  25 E0 25 EE  2E 58 23 4A  85 44 4F 45
2EA0 | 53 BE 2E 8A  25 E0 23 7E  28 BC 29 00  24 BA 2A 38
2EB0 | 3F 0C 38 5D  37 0D 3A 5C  30 5D 4E D0  C7 4C 49 54
2EC0 | 45 52 41 CC  2E 9C 25 E0  26 DA 24 90  20 40 00 08
2ED0 | 29 C0 20 06  28 12 23 4A  00 C8 44 4C  49 54 45 52
2EE0 | 41 CC 2E BC  25 E0 26 DA  24 90 20 40  00 08 24 42
2EF0 | 2E C6 2E C6  23 4A 00 86  3F 53 54 41  43 CB 2E D9
2F00 | 25 E0 26 28  24 90 24 56  23 16 28 40  25 F6 29 2A
2F10 | 20 06 01 00  22 70 23 16  28 40 20 06  00 07 29 2A
2F20 | 23 4A 89 49  4E 54 45 52  50 52 45 D4  2E F7 25 E0
2F30 | 2C F2 20 40  00 1E 26 DA  24 90 28 40  20 40 00 0A
2F40 | 28 DC 28 12  20 2C 00 06  28 DC 20 1A  2F 00 20 2C
2F50 | 00 1C 27 F6  2C 9A 26 F0  24 90 27 D8  20 40 00 08
2F60 | 2E E4 20 2C  00 06 24 30  2E C6 2F 00  20 2C FF C2
2F70 | 23 4A 00 8A  56 4F 43 41  42 55 4C 41  52 D9 2F 22
2F80 | 25 E0 2E 94  20 06 81 A0  28 12 26 CE  24 90 28 DC
2F90 | 28 12 27 F6  26 7C 24 90  28 12 26 7C  24 BA 2E A4
2FA0 | 27 E6 26 C0  24 BA 23 4A  C5 46 4F 52  54 C8 2F 73
2FB0 | 2E B0 2F A0  81 A0 00 00  00 00 8B 44  45 46 49 4E
2FC0 | 49 54 49 4F  4E D3 2F A8  25 E0 26 C0  24 90 26 CE
2FD0 | 24 BA 23 4A  00 84 51 55  49 D4 2F BA  25 E0 25 EE
2FE0 | 26 86 24 BA  29 D6 23 38  25 62 2B 56  2F 2E 26 DA
2FF0 | 24 90 23 9C  20 40 00 0A  2A C4 05 20  20 20 4F 4B
```

```
3000 | 20 2C FF E4  23 4A 85 41  42 4F 52 D4  2F D5 25 E0
3010 | 23 26 2A 22  25 62 2A C4  15 36 38 30  30 30 20 66
3020 | 69 67 2D 46  4F 52 54 48  20 56 31 2E  31 20 2F B0
3030 | 2F C8 37 16  2F DC 23 4A  C1 BB 30 06  25 E0 29 88
3040 | 29 C0 23 4A  29 FA 29 D6  23 4A 00 C2  2E A2 30 38
3050 | 25 E0 20 06  00 22 26 DA  24 90 20 40  00 1A 29 C0
3060 | 2A C4 2B FC  27 F6 24 A6  27 E6 20 06  FF FE 22 E0
3070 | 28 06 20 2C  00 0A 2B FC  27 F6 2A 4E  2A 62 23 4A
3080 | C1 A8 30 4B  25 E0 20 06  00 29 2B FC  23 4A 89 49
3090 | 4D 4D 45 44  49 41 54 C5  30 80 25 E0  28 BC 20 06
30A0 | 00 40 24 7E  23 4A C9 5B  43 4F 4D 50  49 4C 45 DD
30B0 | 30 8E 25 E0  2C F2 23 9C  25 EE 29 2A  24 30 28 DC
30C0 | 28 12 23 4A  C1 A7 30 A6  25 E0 2C F2  23 9C 25 EE
30D0 | 29 2A 24 30  2E C6 23 4A  00 86 46 4F  52 47 45 D4
30E0 | 30 C4 25 E0  26 CE 24 90  26 C0 24 90  22 80 20 06
30F0 | 00 18 29 2A  30 C8 24 56  26 62 24 90  28 40 20 06
3100 | 00 15 29 2A  24 56 28 EA  26 6C 24 BA  28 CC 24 90
3110 | 26 CE 24 90  24 BA 23 4A  00 84 42 41  43 CB 30 D9
3120 | 25 E0 27 F6  22 80 28 12  23 4A C5 42  45 47 49 CE
3130 | 31 19 25 E0  29 44 27 F6  25 F6 23 4A  C5 45 4E 44
3140 | 49 C6 31 2A  25 E0 29 44  25 FE 29 74  27 F6 24 1C
3150 | 22 80 24 42  24 BA 23 4A  00 C4 54 48  45 CE 31 3C
3160 | 25 E0 31 44  23 4A 00 C2  44 CF 31 59  25 E0 29 C0
3170 | 20 B2 27 F6  26 06 23 4A  00 C4 4C 4F  4F D0 31 67
3180 | 25 E0 26 06  29 74 29 C0  20 58 31 20  23 4A C5 2B
3190 | 4C 4F 4F D0  31 79 25 E0  26 06 29 74  29 C0 20 7C
31A0 | 31 20 23 4A  C5 2F 4C 4F  4F D0 31 8E  25 E0 26 06
31B0 | 29 74 29 C0  20 9A 31 20  23 4A C5 55  4E 54 49 CC
31C0 | 31 A4 25 E0  25 F6 29 74  29 C0 20 40  31 20 23 4A
31D0 | C5 41 47 41  49 CE 31 BA  25 E0 25 F6  29 74 29 C0
31E0 | 20 2C 31 20  23 4A 00 C6  52 45 50 45  41 D4 31 D0
31F0 | 25 E0 23 6E  23 6E 31 D8  23 7E 23 7E  25 FE 22 80
3200 | 31 44 23 4A  00 C2 49 C6  31 E7 25 E0  29 C0 20 40
3210 | 27 F6 25 EE  28 12 25 FE  23 4A 00 C4  45 4C 53 C5
3220 | 32 05 25 E0  25 FE 29 74  29 C0 20 2C  27 F6 25 EE
3230 | 28 12 24 42  25 FE 31 44  25 FE 23 4A  C5 57 48 49
3240 | 4C C5 32 1B  25 E0 32 0A  27 E6 23 4A  83 41 42 D3
3250 | 32 3C 25 E0  24 56 23 F2  23 4A 00 84  44 41 42 D3
3260 | 32 4C 25 E0  24 56 24 06  23 4A 00 84  2F 4D 4F C4
3270 | 32 5B 25 E0  23 6E 22 CC  23 7E 22 1A  23 4A 83 4D
3280 | 4F C4 32 6B  25 E0 32 72  24 30 23 4A  85 2A 2F 4D
3290 | 4F C4 32 7E  25 E0 23 6E  22 06 23 7E  22 1A 23 4A
32A0 | 85 4D 2F 4D  4F C4 32 8C  25 E0 23 6E  25 EE 23 8C
32B0 | 21 EE 23 7E  24 42 23 6E  21 EE 23 7E  23 4A 00 86
32C0 | 53 50 41 43  45 D3 32 A0  25 E0 25 EE  23 CC 28 7E
32D0 | 20 40 00 0C  25 EE 20 B2  28 6E 20 58  FF FC 23 4A
32E0 | 00 82 3C A3  32 BF 25 E0  2B E8 27 18  24 BA 23 4A
32F0 | 00 82 23 BE  32 E1 25 E0  24 30 24 30  27 18 24 90
3300 | 2B E8 24 1C  22 80 23 4A  00 84 53 49  47 CE 32 F1
3310 | 25 E0 28 5A  23 B4 20 40  00 08 20 06  00 2D 2B D0
3320 | 23 4A 81 A3  33 09 25 E0  26 E6 24 90  32 A8 28 5A
3330 | 20 06 00 09  24 1C 28 40  20 40 00 08  20 06 00 07
3340 | 22 70 20 06  00 30 22 70  2B D0 23 4A  00 82 23 D3
3350 | 33 22 25 E0  33 26 24 1C  24 1C 22 F2  23 9C 20 40
3360 | FF F4 23 4A  83 44 2E D2  33 4D 25 E0  23 6E 24 42
3370 | 24 1C 32 62  32 E6 33 52  33 10 32 F6  23 7E 24 1C
3380 | 22 80 32 C8  2A 62 23 4A  00 82 44 AE  33 64 25 E0
3390 | 25 EE 33 6A  28 6E 23 4A  00 82 2E D2  33 89 25 E0
33A0 | 23 6E 22 CC  23 7E 33 6A  23 4A 81 AE  33 99 25 E0
33B0 | 22 CC 33 8E  23 4A 81 BF  33 AA 25 E0  24 90 33 AE
33C0 | 23 4A 85 56  4C 49 53 D4  33 B6 25 E0  20 06 00 80
33D0 | 26 9A 24 BA  26 C0 24 90  24 90 26 9A  24 90 27 CE
33E0 | 28 4C 20 40  00 0C 25 62  20 06 00 0E  26 9A 24 BA
33F0 | 24 56 2D 4C  28 6E 28 6E  29 00 28 CC  24 90 24 56
```

```
3400 | 23 9C 25 4C  22 F2 20 40  FF D2 24 30  23 4A 00 84
3410 | 2B 42 55 C6  33 C2 25 E0  27 B8 20 06  00 04 22 70
3420 | 22 70 24 56  27 30 28 34  20 40 00 06  24 30 27 24
3430 | 24 56 27 46  24 90 22 80  23 4A 00 86  55 50 44 41
3440 | 54 C5 34 0F  25 E0 27 46  24 90 24 90  20 06 80 00
3450 | 22 F2 27 46  24 90 24 BA  23 4A 8D 45  4D 50 54 59
3460 | 2D 42 55 46  46 45 52 D3  34 3B 25 E0  27 24 27 30
3470 | 24 1C 22 80  2B AE 23 4A  00 86 42 55  46 46 45 D2
3480 | 34 5A 25 E0  27 3A 24 90  24 56 23 6E  34 16 20 40
3490 | FF FC 27 3A  24 BA 23 8C  24 90 23 B4  20 40 00 14
34A0 | 23 8C 27 E6  23 8C 24 90  20 06 7F FF  22 E0 25 EE
34B0 | 36 E2 23 8C  24 BA 23 8C  27 46 24 BA  23 7E 27 E6
34C0 | 23 4A 85 42  4C 4F 43 CB  34 79 25 E0  26 B2 24 90
34D0 | 22 70 23 6E  27 46 24 90  24 56 24 90  23 8C 22 80
34E0 | 24 56 22 70  20 40 00 34  34 16 23 9C  20 40 00 14
34F0 | 24 30 23 8C  34 82 24 56  23 8C 25 F6  36 E2 25 FE
3500 | 22 80 24 56  24 90 23 8C  22 80 24 56  22 70 23 9C
3510 | 20 40 FF D6  24 56 27 46  24 BA 23 7E  24 30 27 E6
3520 | 23 4A 00 86  28 4C 49 4E  45 A9 34 C2  25 E0 23 6E
3530 | 27 CE 27 B8  32 94 23 7E  27 C4 22 30  22 70 34 CA
3540 | 22 70 27 CE  23 4A 85 2E  4C 49 4E C5  35 23 25 E0
3550 | 35 2C 2A 90  2A 62 23 4A  87 4D 45 53  53 41 47 C5
3560 | 35 46 25 E0  26 56 24 90  20 40 00 1C  28 7E 20 40
3570 | 00 12 20 06  00 04 26 B2  24 90 27 C4  22 42 22 80
3580 | 35 4E 20 2C  00 0C 2A C4  05 4D 53 47  20 23 33 AE
3590 | 23 4A 00 84  4C 4F 41 C4  35 58 25 E0  26 86 24 90
35A0 | 23 6E 26 90  24 90 23 6E  25 EE 26 90  24 BA 27 C4
35B0 | 22 30 26 86  24 BA 2F 2E  23 7E 26 90  24 BA 23 7E
35C0 | 26 86 24 BA  23 4A C3 2D  2D BE 35 93  25 E0 29 A6
35D0 | 25 EE 26 90  24 BA 27 C4  26 86 24 90  24 1C 32 84
35E0 | 22 80 26 86  24 66 23 4A  00 84 4C 49  53 D4 35 C6
35F0 | 25 E0 2A 22  25 62 24 56  26 A4 24 BA  2A C4 05 53
3600 | 43 52 20 23  33 AE 20 06  00 10 25 EE  20 B2 25 62
3610 | 23 8C 26 06  33 9E 28 6E  23 8C 26 A4  24 90 35 4E
3620 | 20 58 FF EC  25 62 23 4A  85 49 4E 44  45 D8 35 E9
3630 | 25 E0 25 62  27 D8 24 42  20 B2 25 62  23 8C 26 06
3640 | 33 9E 28 6E  25 EE 23 8C  35 4E 25 4C  20 40 00 04
3650 | 23 5C 20 58  FF E6 23 4A  00 84 43 4F  4C C4 36 28
3660 | 36 62 30 7C  36 AA 31 D0  2F B6 3C 68  00 04 32 4E
3670 | 30 3C 00 0A  32 D8 51 C8  FF FC D2 FC  00 1E 30 3C
3680 | 00 0D 32 D8  51 C8 FF FC  30 2E 00 36  30 6E 00 34
3690 | 90 48 53 40  10 FC 00 00  51 C8 FF FA  60 04 3C 78
36A0 | 36 AE 38 7C  30 10 4E F8  23 3A 37 10  00 7F 1A 00
36B0 | 19 FE 1B FE  18 20 00 1F  00 01 37 20  37 20 2F B8
36C0 | 10 00 18 20  10 00 10 00  48 00 00 08  1C 00 1D 0A
36D0 | 1D 18 1D 2E  1E 00 01 00  00 04 00 40  83 52 2F D7
36E0 | 36 59 36 E4  30 6E 00 48  4E 90 3A 5C  30 5D 4E D0
36F0 | 00 86 4F 52  49 47 49 CE  36 DC 25 94  36 9E 87 2B
3700 | 4F 52 49 47  49 CE 36 F1  25 E0 36 FA  22 70 23 4A
3710 | 83 44 52 B0  36 FE 25 E0  25 EE 26 B2  24 BA 23 4A
```

```
HEX
: CKSUM  ( from, to include --- ; e.g. 2000, 20FF )
       0 ROT ROT 1+ SWAP  DO R C@ + LOOP  .  ;
: CHECKALL  3700 2000 DO
       CR R .  R  R FF +  CKSUM  100 +LOOP ;
CHECKALL
```

```
2000 507B    2600 525F    2C00 5593    3200 5B07
2100 512D    2700 57E6    2D00 4E0E    3300 5170
2200 5C71    2800 58C2    2E00 57D9    3400 51C2
2300 55E4    2900 4ED8    2F00 5004    3500 54BE
2400 55B4    2A00 5016    3000 584B    3600 5000
2500 54AC    2B00 509C    3100 5C04
```

```
SCR #3
  0 ( 68000 fig-FORTH +LOOP and @ fixes for Release 1.0 )
  1  HEX  FORTH  DEFINITIONS
  2 CREATE @FIX      3053 , 1698 , 1750 , 0001 , 3A5C , 305D ,
  3           4ED0 , SMUDGE  LATEST PFA CFA @    ' @ CFA !
  4 CREATE (+LOOP)FIX      301B , D157 , 4A40 , 680E , 302F ,
  5           0002 , B057 , 620E , 544C , 584F , 600C , 302F ,
  6           0002 , B057 , 6CF2 , 3014 , D8C0 , 3A5C , 305D ,
  7           4ED0 , SMUDGE  LATEST PFA CFA @    ' (+LOOP) CFA !
  8  ;S
  9 fig-FORTH 68000 Release 1.0 has two known bugs as of July '83.
 10 The word @ fails when trying to access a sixteen bit
 11 cell starting at an odd address.  The above can be typed in
 12 directly to repair @.
 13 The second repair gives a (+LOOP) that will count down
 14 through zero using negative increments, and will count up
 15 through 8000 hex using positive increments.
SCR #23
  0
  1
  2
  3
  4
  5
  6
  7
  8
  9
 10
 11
 12
 13
 14
 15
SCR #24
  0 ( MATCH word for fig-FORTH EDITOR and Release 1.0 or 1.1 )
  1                          •
  2
  3 CREATE MATCH       301B , 3218 , 3418 , 3613 , 9440 ,
  4      D642 , 3043 , 90C2 , 3241 , 3800 , 4A44 , 6608 ,
  5      36BC , 0001 , 9563 , 6010 , B308 , 56CC , FFF0 ,
  6      51CA , FFE4 , 36BC , 0000 , 554B , 3A5C , 305D ,
  7      4ED0 ,  SMUDGE
  8       ;S
  9
 10    This is the fig-FORTH MATCH word that is needed in order
 11 to implement the string editing words of the EDITOR present-
 12 ed in the fig-FORTH INSTALLATION MANUAL GLOSSARY MODEL
 13 RELEASE 1, MAY 1979.  The 68000 code above assumes 68000
 14 register assignments used in fig-FORTH 68000, and works
 15 with Release 1.0 and 1.1.
```