```
RRRRRRRRRRR      UUU          UUU  NNN         NNN     000000000     FFFFFFFFFFFFFFF   FFFFFFFFFFFFFFF
RRRRRRRRRRRR     UUU          UUU  NNN         NNN     000000000     FFFFFFFFFFFFFFF   FFFFFFFFFFFFFFF
RRRRRRRRRRRR     UUU          UUU  NNN         NNN     000000000     FFFFFFFFFFFFFFF   FFFFFFFFFFFFFFF
RRR          RRR UUU          UUU  NNN         NNN  000          000 FFF               FFF
RRR          RRR UUU          UUU  NNN         NNN  000          000 FFF               FFF
RRR          RRR UUU          UUU  NNN         NNN  000          000 FFF               FFF
RRR          RRR UUU          UUU  NNNNNN      NNN  000          000 FFF               FFF
RRR          RRR UUU          UUU  NNNNNN      NNN  000          000 FFF               FFF
RRR          RRR UUU          UUU  NNNNNN      NNN  000          000 FFF               FFF
RRRRRRRRRRR      UUU          UUU  NNN   NNN   NNN  000          000 FFFFFFFFFFF       FFFFFFFFFFF
RRRRRRRRRRRR     UUU          UUU  NNN   NNN   NNN  000          000 FFFFFFFFFFF       FFFFFFFFFFF
RRRRRRRRRRRR     UUU          UUU  NNN   NNN   NNN  000          000 FFFFFFFFFFF       FFFFFFFFFFF
RRR   RRR        UUU          UUU  NNN       NNNNNN 000          000 FFF               FFF
RRR   RRR        UUU          UUU  NNN       NNNNNN 000          000 FFF               FFF
RRR   RRR        UUU          UUU  NNN       NNNNNN 000          000 FFF               FFF
RRR      RRR     UUU          UUU  NNN          NNN 000          000 FFF               FFF
RRR      RRR     UUU          UUU  NNN          NNN 000          000 FFF               FFF
RRR      RRR     UUU          UUU  NNN          NNN 000          000 FFF               FFF
RRR         RRR  UUUUUUUUUUUUUUU  NNN          NNN    000000000     FFF               FFF
RRR         RRR  UUUUUUUUUUUUUUU  NNN          NNN    000000000     FFF               FFF
RRR         RRR  UUUUUUUUUUUUUUU  NNN          NNN    000000000     FFF               FFF
RRR         RRR  UUUUUUUUUUUUUUU  NNN          NNN    000000000     FFF               FFF
RRR         RRR  UUUUUUUUUUUUUUU  NNN          NNN    000000000     FFF               FFF
```

```
_$2

Sym
---
NDX
NDX
NUM
NUM
OPE
OUT
PAC
PAC
PAC
PAC
PAC
PAC
PAC
PAD
PAG
PAG
PAG
PAG
PAG
PAG
PAG
PER
PUT
RCO
RIN

RLI
RNO
RNO
RTY
SAV
STR
STR
STR
STR
STR
STR

STR
STR
STR
STR
STR
STR
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STR
```
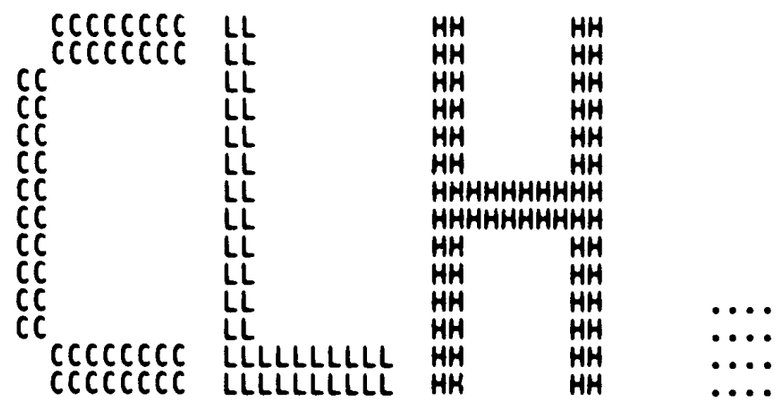
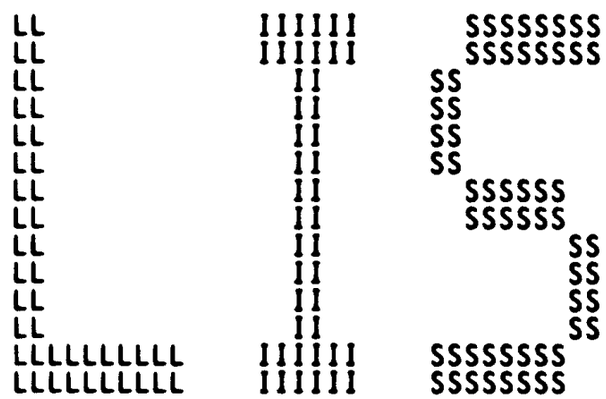

FILEID**CLH


CCCCCCCC LL HH HH
CCCCCCCC LL HH HH
CC LL HH HH
CC LL HH HH
CC LL HH HH
CC LL HH HH
CC LL HHHHHHHHHH
CC LL HHHHHHHHHH
CC LL HH HH
CC LL HH HH
CC LL HH HH ....
CC LL HH HH ....
CCCCCCCC LLLLLLLLLL HH HH ....
CCCCCCCC LLLLLLLLLL HH HH ....


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

```
;  1          0001  0 %TITLE 'file processing interface and command line handler'
;  2          0002  0 MODULE clh (    IDENT = 'V04-000'
;  3        P 0003  0                 %BLISS32 [, ADDRESSING_MODE (EXTERNAL    = long_relative,
;  4          0004  0                                               NONEXTERNAL = long_relative)]
;  5          0005  0                 ) =
;  6          0006  1 BEGIN
;  7          0007  1 !
;  8          0008  1 !*****************************************************************************
;  9          0009  1 !*                                                                           *
; 10          0010  1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                                  *
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; 26          0026  1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                  *
; 27          0027  1 !*                                                                           *
; 28          0028  1 !*                                                                           *
; 29          0029  1 !*****************************************************************************
; 30          0030  1 !
; 31          0031  1 !++
; 32          0032  1 ! FACILITY:      DSR (Digital Standard RUNOFF) / DSRPLUS
; 33          0033  1 !
; 34          0034  1 ! ABSTRACT:     File processing interface and command line handler.
; 35          0035  1 !
; 36          0036  1 ! ENVIRONMENT:  Transportable
; 37          0037  1 !
; 38          0038  1 ! AUTHOR:       R.W.Friday      CREATION DATE:  April, 1978
; 39          0039  1 !
```

```
;    41          0040  1 %SBTTL 'Revision History'
;    42          0041  1 !
;    43          0042  1 ! MODIFIED BY:
;    44          0043  1 !
;    45          0044  1 !       041     REM00041        Ray Marshall    23-February-1984
;    46          0045  1 !               Moved IN_TYPE and OUT_TYPE to GLBDAT.BLI and renamed them to
;    47          0046  1 !                 IPFTOP and OPFTOP respectivly.  Also created there another
;    48          0047  1 !                 global variable and one global literal to support new logic
;    49          0048  1 !                 herein.  All this was done because in VMS V4 there is a new
;    50          0049  1 !                 feature (search lists) which necessatates our making calls
;    51          0050  1 !                 to LIB$FIND_FILE to find input files after the first one
;    52          0051  1 !                 when multiple input files are specified.  To do this, the
;    53          0052  1 !                 logic to verify the input filespec was copied to a new
;    54          0053  1 !                 routine within RUNOFF.BLI and changes were made herein to
;    55          0054  1 !                 the sections that open the output and input files.
;    56          0055  1 !
;    57          0056  1 !       040     KFA00040        Ken Alden       20-Jul-1983
;    58          0057  1 !               Fixed wild card bug interaction with /auto.
;    59          0058  1 !
;    60          0059  1 !       039     KFA00039        Ken Alden       10-Jun-1983
;    61          0060  1 !               Improved error handling of wild-carding input file names.
;    62          0061  1 !
;    63          0062  1 !       038     KFA00038        Ken Alden       4-May-1983
;    64          0063  1 !               Added conditional for gca_skip_out in OUT_NO_CRLF branch.
;    65          0064  1 !
;    66          0065  1 !       037     KAD00037        Keith Dawson    14-Apr-1983
;    67          0066  1 !               Fixed bug: FLIP (.BFL) output file was not being opened.
;    68          0067  1 !
;    69          0068  1 !       036     KAD00036        Keith Dawson    22-Mar-1983
;    70          0069  1 !               Added LN01 support.
;    71          0070  1 !
;    72          0071  1 !       035     KFA00035        Ken Alden       07-Mar-1983
;    73          0072  1 !               Global edit of all modules. Updated module names, idents,
;    74          0073  1 !               copyright dates. Changed require files to BLISS library.
;    75          0074  1 !
;    76          0075  1 !--
```

```
;    78          0076  1 %SBTTL 'Module Level Declarations'
;    79          0077  1 !
;    80          0078  1 ! TAB   OF CONTENTS:
;    81          0079  1 !
;    82          0080  1 FORWARD ROUTINE
;    83          0081  1     GET_OUT_DEFAULT : NOVALUE,
;    84          0082  1     BWAIT : NOVALUE,
;    85          0083  1     FBWAIT : NOVALUE;
;    86          0084  1
;    87          0085  1 !
;    88          0086  1 ! INCLUDE FILES:
;    89          0087  1 !
;    90          0088  1
;    91          0089  1 LIBRARY 'NXPORT:XPORT';                 ! XPORT Library
;    92          0090  1 REQUIRE 'REQ:RNODEF';                   ! RUNOFF variant definitions
;    93          0221  1
;    94        U 0222  1 %IF DSRPLUS %THEN
;    95        U 0223  1 LIBRARY 'REQ:DPLLIB';                   ! DSRPLUS BLISS Library
;    96          0224  1 %ELSE
;    97          0225  1 LIBRARY 'REQ:DSRLIB';                   ! DSR BLISS Library
;    98          0226  1 %FI
;    99          0227  1
;   100          0228  1 !
;   101          0229  1 ! MACROS:
;   102          0230  1 !
;   103          0231  1 MACRO
;   104        M 0232  1     XPROMPT (TEXT) =
;   105        M 0233  1         ($XPO_PUT( IOB = TTOIOB
;   106        M 0234  1         ,STRING = ( %CHARCOUNT(TEXT)
;   107          0235  1         ,CH$PTR(UPLIT(TEXT))) )  )%;
;   108          0236  1
;   109          0237  1 !
;   110          0238  1 ! OWN STORAGE:
;   111          0239  1 !
;   112          0240  1 OWN
;   113          0241  1     status;
;   114          0242  1
;   115          0243  1 OWN
;   116          0244  1     DEF_OUT_LNG,
;   117          0245  1     DEF_OUT_SPC : VECTOR [CH$ALLOCATION (50)];
;   118          0246  1
;   119          0247  1 !
;   120          0248  1 ! EXTERNAL REFERENCES:
;   121          0249  1 !
;   122          0250  1 EXTERNAL
;   123          0251  1     fra : FIXED_STRING,
;   124          0252  1     gca : GCA_DEFINITION,
;   125          0253  1     fs01 : FIXED_STRING,
;   126          0254  1     ira : FIXED_STRING,
;   127          0255  1     irac : IRAC_DEFINITION,
;   128          0256  1     ipftyp,                    ! Cell in GLBDAT to hold the index into IPFTOP
;   129          0257  1     ipftop : VECTOR,
;   130          0258  1     opftop : VECTOR;
;   131          0259  1
;   132          0260  1 EXTERNAL
;   133          0261  1     IOBSTK : BLOCK,                    !IOB stack for doing .REQUIRE.
;   134          0262  1     RNEIOB : REF $XPO_IOB (),          !Always points to IOB for primary input.
```

```
;  135          0263  1     RNIIOB : REF $XPO_IOB (),                    !Primary input file
;  136          0264  1     RNOIOB : REF $XPO_IOB (),                    !IOB for output file
;  137          0265  1     TSIIOB : $XPO_IOB (),                        !IOB for STREAM input from terminal.
;  138          0266  1     TTIIOB : $XPO_IOB (),                        !IOB for input from terminal
;  139          0267  1     TTOIOB : $XPO_IOB ();                        !IOB for output to terminal
;  140          0268  1
;  141          0269  1 EXTERNAL LITERAL
;  142          0270  1     ipftct,      ! Literal defining the lengths of IPFTOP and OPFTOP.
;  143          0271  1
;  144          0272  1             ! Error messages
;  145          0273  1     rnfile,
;  146        U 0274  1 %IF dsrplus %THEN
;  147        U 0275  1     rnfoft,
;  148          0276  1 %FI
;  149          0277  1     rnfrtl;
;  150          0278  1
;  151          0279  1 EXTERNAL ROUTINE
;  152          0280  1     ERMS,
;  153        U 0281  1 %IF DSRPLUS %THEN
;  154        U 0282  1     ERM,
;  155          0283  1 %FI
;  156          0284  1     GRAB_RESULTANT,
;  157          0285  1     PUTMSG,
;  158          0286  1     TSTTFE;
;  159          0287  1
```

```
;  161          0288  1 %sbttl 'CLH -- OPCODE controlled main-line routine'
;  162          0289  1 GLOBAL ROUTINE clh (opcode) =
;  163          0290  1
;  164          0291  1 !++
;  165          0292  1 ! FUNCTIONAL DESCRIPTION:
;  166          0293  1 !
;  167          0294  1 !       See ABSTRACT, above.
;  168          0295  1 !
;  169          0296  1 ! FORMAL PARAMETERS:
;  170          0297  1 !
;  171          0298  1 !       OPCODE specifies the operation to be performed.
;  172          0299  1 !
;  173          0300  1 ! IMPLICIT INPUTS:      None
;  174          0301  1 !
;  175          0302  1 ! IMPLICIT OUTPUTS:     None
;  176          0303  1 !
;  177          0304  1 ! ROUTINE VALUE:
;  178          0305  1 ! COMPLETION CODES:
;  179          0306  1 !
;  180          0307  1 !       See CLHCC.REQ for a description.
;  181          0308  1 !
;  182          0309  1 ! SIDE EFFECTS:         None
;  183          0310  1 !
;  184          0311  1 !--
;  185          0312  1
;  186          0313  2     BEGIN
;  187          0314  2
;  188          0315  2     LOCAL
;  189          0316  2         temp;
;  190          0317  2
;  191          0318  2     CASE .opcode FROM 1 TO clh_ops_count OF
;  192          0319  2         SET
;  193          0320  2
```

```
;  195     0321  2 %sbttl 'CLH -- open input file'
;  196     0322  2
;  197     0323  2         [CLH_OPEN_INPUT] :          ! Open primary input file.
;  198     0324  3             BEGIN
;  199     0325  3
;  200   U 0326  3 %IF NOT %BLISS(BLISS32) AND DSRPLUS %THEN
;  201   U 0327  3
;  202   U 0328  3             INCR I FROM 0 TO (ipftct-1) DO      ! fourteen different file types
;  203   U 0329  3                 BEGIN                           ! loop until one found.
;  204   U 0330  3                 IF .gca_pass_count GTR 1
;  205   U 0331  3                 THEN
;  206   U 0332  3                     BEGIN
;  207   U 0333  3                     status = $XPO_OPEN  (IOB     = .rniiob
;  208   U 0334  3                                         ,OPTIONS = INPUT
;  209   U 0335  3                                         ,DEFAULT = (4, .ipftop [ .ipftyp ])
;  210   U 0336  3                                         ,FAILURE = grab_resultant);
;  211   U 0337  3                     IF .status
;  212   U 0338  3                     THEN
;  213   U 0339  3                         I = .ipftyp;
;  214   U 0340  3                     END
;  215   U 0341  3                 ELSE
;  216   U 0342  3                     status = $XPO_OPEN  (IOB     = .rniiob
;  217   U 0343  3                                         ,OPTIONS = INPUT
;  218   U 0344  3                                         ,DEFAULT = (4, .ipftop [.I ])
;  219   U 0345  3                                         ,FAILURE = grab_resultant);
;  220   U 0346  3
;  221   U 0347  3                 IF .status THEN EXITLOOP  ! If we open a file, exit the INCR loop
;  222   U 0348  3
;  223   U 0349  3                 END;                !end of INCR loop.
;  224     0350  3 %ELSE
;  225   P 0351  3             status = $XPO_OPEN  (IOB     = .rniiob
;  226   P 0352  3                                 ,OPTIONS = INPUT
;  227   P 0353  3                                 ,DEFAULT = (4, CH$PTR (UPLIT ('.RNO')))
;  228     0354  3                                 ,FAILURE = grab_resultant);
;  229     0355  3 %FI
;  230     0356  3             IF  .status                     ! Succeeded in opening (any type)?
;  231     0357  3             THEN
;  232     0358  4                 BEGIN                       !    Yes...
;  233     0359  4                 BIND
;  234     0360  4                     file_spec_stuff = rniiob [iob$t_resultant] : $STR_DESCRIPTOR ();
;  235     0361  4
;  236     0362  4                 ! Pick off the name and length of the file spec for ERROR.BLI:
;  237     0363  4
;  238     0364  4                 irac_fspecp = .file_spec_stuff [str$a_pointer];
;  239     0365  4                 irac_fspecc = .file_spec_stuff [str$h_length];
;  240     0366  4
;  241   U 0367  4 %IF NOT %BLISS(BLISS32) AND DSRPLUS %THEN
;  242   U 0368  4                 ipftyp = .i;
;  243   U 0369  4                 IF  (.I GTR 0)          !Succeeded in opening, but not '.RNO'.
;  244   U 0370  4                 THEN
;  245   U 0371  4                     ERM (rnfoft);
;  246     0372  4 %FI
;  247     0373  4                 RETURN clh_normal
;  248     0374  4                 END
;  249     0375  3             ELSE                        ! Open failed.
;  250     0376  3                 RETURN clh_cant_open
;  251     0377  2             END;
```

```
;  253          0378  2 %sbttl 'CLH -- open output file'
;  254          0379  2
;  255          0380  2         [CLH_OPEN_OUT] :
;  256          0381  2             ! Open output file.
;  257          0382  3             BEGIN
;  258          0383  3             get_out_default (rniiob [iob$t_resultant]);
;  259          0384  3
;  260          0385  3             CASE .gca_op_dev FROM op_dev_first TO op_dev_last OF
;  261          0386  3
;  262          0387  3                 SET
;  263          0388  3
;  264          0389  3                 [op_dev_line_printer, op_dev_diablo] :
;  265          0390  3                     !
;  266          0391  3                     !Normal cases: lineprinter output. Open STREAM output file using
;  267          0392  3                     !file type already determined (.MEM, .MEC, or whatever).
;  268          0393  3                     !
;  269        P 0394  3                     status = $XPO_OPEN
;  270        P 0395  3                             (IOB        = .rnoiob
;  271        P 0396  3                             ,OPTIONS    = OUTPUT
;  272        P 0397  3                             ,ATTRIBUTES = STREAM
;  273        P 0398  3                             ,RELATED    = rniiob [iob$t_resultant]
;  274        P 0399  3                             ,DEFAULT    = (.def_out_lng, CH$PTR (def_out_spc))
;  275        P 0400  3                             ,FAILURE    = grab_resultant
;  276          0401  3                             );
;  277        U 0402  3 %IF DSRPLUS %THEN
;  278        U 0403  3                 [op_dev_vt100] :
;  279        U 0404  3
;  280        U 0405  3                     IF NOT .gca_s_output
;  281        U 0406  3                     THEN
;  282        U 0407  3                         !
;  283        U 0408  3                         !User said /DEC=VT100, and did not say /OUTPUT=name,
;  284        U 0409  3                         !so send output to TT: (SYS$OUTPUT).
;  285        U 0410  3                         !
;  286        U 0411  3                         status = $XPO_OPEN
;  287        U 0412  3                                 (IOB        = .rnoiob
;  288        U 0413  3                                 ,OPTIONS    = OUTPUT
;  289        U 0414  3                                 ,FILE_SPEC = $XPO_OUTPUT
;  290        U 0415  3                                 ,RELATED    = rniiob [iob$t_resultant]
;  291        U 0416  3                                 ,DEFAULT    = (.def_out_lng, CH$PTR (def_out_spc))
;  292        U 0417  3                                 ,FAILURE    = grab_resultant
;  293        U 0418  3                                 )
;  294        U 0419  3                     ELSE
;  295        U 0420  3                         !
;  296        U 0421  3                         !Open non-STREAM output file using file type already
;  297        U 0422  3                         !determined (.VT1).
;  298        U 0423  3                         !
;  299        U 0424  3                         status = $XPO_OPEN
;  300        U 0425  3                                 (IOB        = .rnoiob
;  301        U 0426  3                                 ,OPTIONS    = OUTPUT
;  302        U 0427  3                                 ,RELATED    = rniiob [iob$t_resultant]
;  303        U 0428  3                                 ,DEFAULT    = (.def_out_lng, CH$PTR (def_out_spc))
;  304        U 0429  3                                 ,FAILURE    = grab_resultant
;  305        U 0430  3                                 );
;  306          0431  3 %FI
;  307          0432  3 %IF LN01 %THEN
;  308          0433  3                 [op_dev_ln01, op_dev_ln01e] :
;  309          0434  3                     !
```

```
;  310     0435  3                    !Open non-STREAM output file using file type already
;  311     0436  3                    !determined (.LNI).
;  312     0437  3                    !
;  313   P 0438  3                    status = $XPO_OPEN
;  314   P 0439  3                                (IOB        = .rnoiob
;  315   P 0440  3                                ,OPTIONS    = OUTPUT
;  316   P 0441  3                                ,RELATED    = rniiob [iob$t_resultant]
;  317   P 0442  3                                ,DEFAULT    = (.def_out_lng, CH$PTR (def_out_spc))
;  318   P 0443  3                                ,FAILURE    = grab_resultant
;  319     0444  3                                );
;  320     0445  3            %FI
;  321   U 0446  3            %IF FLIP %THEN
;  322   U 0447  3                        [op_dev_flip] :
;  323   U 0448  3                            !
;  324   U 0449  3                            !Open non-STREAM output file using file type already
;  325   U 0450  3                            !determined (.BFL).
;  326   U 0451  3                            !
;  327   U 0452  3                            status = $XPO_OPEN
;  328   U 0453  3                                        (IOB        = .rnoiob
;  329   U 0454  3                                        ,OPTIONS    = OUTPUT
;  330   U 0455  3                                        ,RELATED    = rniiob [iob$t_resultant]
;  331   U 0456  3                                        ,DEFAULT    = (.def_out_lng, CH$PTR (def_out_spc))
;  332   U 0457  3                                        ,FAILURE    = grab_resultant
;  333   U 0458  3                                        );
;  334     0459  3            %FI
;  335     0460  3                        [INRANGE] : 0;
;  336     0461  3                        [OUTRANGE] : 0;
;  337     0462  3
;  338     0463  3                        TES;
;  339     0464  3
;  340     0465  3                    IF  NOT .status
;  341     0466  3                    THEN
;  342     0467  3                        RETURN clh_cant_open
;  343     0468  3                    ELSE
;  344     0469  3                        RETURN clh_normal;
;  345     0470  3
;  346     0471  2                    END;
```

```
;  348     0472  2 %sbttl 'CLH -- Read one record from current input file'
;  349     0473  2
;  350     0474  2         [CLH_READ_INPUT] :
;  351     0475  2             ! Read one record from current input file.
;  352     0476  3             BEGIN
;  353     0477  3             status = $XPO_GET (IOB = .rniiob);
;  354     0478  3
;  355     0479  3             IF  .status  OR                     !  If no error in above get or
;  356     0480  4                 (.status EQL xpo$_truncated)    !Truncated records are really not too bad.
;  357     0481  3             THEN
;  358     0482  3                 ! A record was successfully read. Set up information
;  359     0483  3                 ! needed by the remainder of the program.
;  360     0484  4                 BEGIN
;  361     0485  4                 irac_iseqn  = .rniiob [iob$g_seq_numb]; !Input record/sequence number.
;  362     0486  4                 irac_ipagen = .rniiob [iob$h_page_numb];        !Input page number.
;  363     0487  4                 irac_seqn_flag = .rniiob [iob$v_sequenced];     !Indicates meaning of IRAC_ISEQN.
;  364     0488  4
;  365     0489  4                 ! Inform user if it was a truncated record that was read.
;  366     0490  4                 IF  .status EQL xpo$_truncated
;  367     0491  4                 THEN
;  368     0492  4                     erms (rnfrtl
;  369     0493  4                          ,.rniiob [iob$a_string]
;  370     0494  4                          ,min (.rniiob [iob$h_string]
;  371     0495  4                          ,50));
;  372     0496  4
;  373     0497  4                 ! Set up the input as a FIXED_STRING.
;  374     0498  4                 fs_start (ira)   = .rniiob [iob$a_string];
;  375     0499  4                 fs_next (ira)    = .fs_start (ira);
;  376     0500  4                 fs_maxsize (ira) = .rniiob [iob$h_string];
;  377     0501  4                 fs_length (ira)  = .fs_maxsize (ira);
;  378     0502  4
;  379     0503  4 !******PATCH TO GET AROUND XPORT DEFICIENCIES
;  380     0504  4 !Upon entering this block, the fixed string IRA is set up such that
;  381     0505  4 !FS_NEXT(IRA) returns a CH$PTR to the first character to be processed.
;  382     0506  4 !The contents of KHAR are undefined.  The block is exited with the
;  383     0507  4 !same conditions holding; the only effects are:
;  384     0508  4 !       1. Updating the input page/line counters, and
;  385     0509  4 !       2. Movement of FS_NEXT(IRA) over all LEADING formfeeds, nulls,
;  386     0510  4 !          and dels.
;  387     0511  4
;  388     0512  5                     BEGIN
;  389     0513  5
;  390     0514  5                     LITERAL
;  391     0515  5                         ff = %O'014';
;  392     0516  5
;  393     0517  5                     LOCAL
;  394     0518  5                         ptr,
;  395     0519  5                         x;
;  396     0520  5
;  397     0521  5                     WHILE (.fs_length (ira) GTR 0) DO
;  398     0522  5
;  399     0523  6                         BEGIN
;  400     0524  6                         ! First point to the character about to be considered.
;  401     0525  6                         ptr = .fs_next (ira);
;  402     0526  6                         ! Now, actually pick up the character.  Note that
;  403     0527  6                         ! FS_RCHAR is not used because it advances its pointer
;  404     0528  6                         ! such that if this character is not to be discarded
```

```
;  405     0529  6                        ! we can't back up.
;  406     0530  6                        x = CH$RCHAR (.ptr);
;  407     0531  6
;  408     0532  6                        SELECT .x OF
;  409     0533  6                            SET
;  410     0534  6
;  411     0535  6                            [FF] :
;  412     0536  7                                BEGIN
;  413     0537  7                                ! If the file is sequenced, LEADING formfeeds do not
;  414     0538  7                                ! start new pages; the assumption here is that the
;  415     0539  7                                ! file will be looked at using the same editor (presumably SOS)
;  416     0540  7                                ! as the one that created it, and that editor behaves like
;  417     0541  7                                ! SOS.  The action for sequenced files is
;  418     0542  7                                ! simply to ignore the formfeed.
;  419     0543  7                                ! For unsequenced files, leading formfeeds do start new
;  420     0544  7                                ! pages, especially if you lock at that file using SOS.
;  421     0545  7                                ! In such cases, XPORT does not pay attention to the
;  422     0546  7                                ! formfeeds, and feeds them through without counting a
;  423     0547  7                                ! new page.  In this case, WE have to look for them and
;  424     0548  7                                ! set up the page and sequence number items.
;  425     0549  7                                ! (Note however that XPORT does count pagemarks).
;  426     0550  7
;  427     0551  7                                IF  NOT .rniiob [iob$v_sequenced]
;  428     0552  7                                THEN
;  429     0553  8                                    BEGIN
;  430     0554  8                                    irac_ipagen = .irac_ipagen + 1;
;  431     0555  8                                    irac_iseqn = 1;
;  432     0556  8                                    rniiob [iob$g_seq_numb] = .irac_iseqn;
;  433     0557  8                                    rniiob [iob$h_page_numb] = .irac_ipagen;
;  434     0558  7                                    END;
;  435     0559  7
;  436     0560  6                                END;
;  437     0561  6
;  438     0562  6                            [0, FF, DEL] :
;  439     0563  7                                BEGIN
;  440     0564  7                                ! Actually read the character that is being rejected.
;  441     0565  7                                ! This results in FS_NEXT(IRA) pointing to the next
;  442     0566  7                                ! character that is to be considered.
;  443     0567  7                                fs_rchar (ira, x);  ! (X is a dummy for this one line.)
;  444     0568  6                                END;
;  445     0569  6
;  446     0570  6                            [OTHERWISE] :
;  447     0571  6                                EXITLOOP;
;  448     0572  6
;  449     0573  6                            TES;
;  450     0574  6
;  451     0575  5                        END;
;  452     0576  5
;  453     0577  4                    END;
;  454     0578  4 !******END OF PATCH
;  455     0579  4
;  456     0580  4                    RETURN clh_normal;
;  457     0581  4                    END
;  458     0582  3                ELSE
;  459     0583  4                    BEGIN
;  460     0584  4
;  461     0585  4                    IF  .status EQL xpo$_end_file
```

```
;  462     0586  4                    THEN                                ! End of file processing
;  463     0587  5                        BEGIN
;  464     0588  5
;  465     0589  5                        IF  .gca_req_depth NEQ 0
;  466     0590  5                        THEN
;  467     0591  5                            ! It's a ".REQUIRE" file to be closed.
;  468     0592  6                            BEGIN
;  469     0593  6                            clh (clh_pop);
;  470     0594  6                            ! Note that the following is a recursive call on this
;  471     0595  6                            ! particular code sequence.  When CLH encounters an end
;  472     0596  6                            ! of file when it attempts to read a record from a
;  473     0597  6                            ! require file, it must still, nevertheless, return a
;  474     0598  6                            ! record, unless there is not more input.  If a
;  475     0599  6                            ! .REQUIRE command is the last record read from the
;  476     0600  6                            ! file that referenced the file just closed, then the
;  477     0601  6                            ! attempt to read a record from that file will also
;  478     0602  6                            ! meet with an end of file being detected.  In this
;  479     0603  6                            ! case, you have to pop that file too, and try again.
;  480     0604  6                            ! That happens until either a record is finally read,
;  481     0605  6                            ! or all files have been popped and an end of file
;  482     0606  6                            ! occurs when trying to read the main input file.
;  483     0607  6                            RETURN clh (clh_read_input);
;  484     0608  5                            END;
;  485     0609  5
;  486     0610  5                        ! End of file on primary input file.
;  487     0611  5                        fs_length (ira) = 0;
;  488     0612  5                        RETURN clh_end_file;
;  489     0613  5                        END
;  490     0614  4                    ELSE
;  491     0615  4                    ! Error reading input file.
;  492     0616  5                        BEGIN
;  493     0617  5                        fs_length (ira) = 0;
;  494     0618  5                        RETURN clh_cant_read;
;  495     0619  4                        END;
;  496     0620  4
;  497     0621  3                    END;
;  498     0622  3
;  499     0623  2                END;
;  500     0624  2
```

```
;  502          0625  2 %sbttl 'CLH -- Write 1 record to O/P file with CRLF suffix'
;  503          0626  2
;  504          0627  2          [CLH_WRITE_OUT] :
;  505          0628  2              ! Write one record to the output file.
;  506          0629  2              BEGIN
;  507          0630  2
;  508        U 0631  2 %IF FLIP %THEN
;  509        U 0632  2              LOCAL
;  510        U 0633  2                  temp_record : $flip_rnotxt;
;  511          0634  2 %FI
;  512          0635  2
;  513          0636  2              ! Append carriage control information to the record
;  514          0637  2              fs_wchar (fra, %O'15');             !Carriage return
;  515          0638  2              fs_wchar (fra, %O'12');             !Line feed
;  516          0639  2
;  517        U 0640  2 %IF FLIP %THEN
;  518        U 0641  2              IF  (.gca_op_dev EQL op_dev_flio)
;  519        U 0642  2              THEN
;  520        U 0643  2                  BEGIN
;  521        U 0644  2                  temp_record [rnotxt_code]   = flip$k_rnotxt;
;  522        U 0645  2                  temp_record [rnotxt_length] = .fs_length (fra);
;  523        U 0646  2                  CH$MOVE (.fs_length (fra)
;  524        U 0647  2                           ,.fs_start (fra)
;  525        U 0648  2                           ,CH$PTR (temp_record [rnotxt_text]));
;  526        U 0649  2                  status = $XPO_PUT (IOB    = .rnoiob,
;  527        U 0650  2                                     STRING = (flip$k_rnotxt_basesiz +
;  528        U 0651  2                                               .fs_length (fra),
;  529        U 0652  2                                               CH$PTR (temp_record)));
;  530        U 0653  2                  END
;  531        U 0654  2              ELSE
;  532          0655  2 %FI
;  533          0656  2
;  534        P 0657  2                  status = $XPO_PUT  (IOB    = .rnoiob,
;  535        P 0658  2                                      STRING = (.fs_length (fra),
;  536          0659  2                                                .fs_start  (fra)));
;  537          0660  2
;  538          0661  2              ! Remove the appended characters from the end of the buffer
;  539          0662  2              fs_next   (fra) = CH$PLUS (.fs_next (fra), -2);     !Back up pointer
;  540          0663  2              fs_length (fra) = .fs_length (fra) - 2;             !Back up counter
;  541          0664  2
;  542          0665  2              IF  .status
;  543          0666  2              THEN
;  544          0667  2                  RETURN clh_normal;
;  545          0668  2
;  546          0669  2              END;
;  547          0670  2
```

```
;  549          0671  2 %sbttl 'CLH -- Write 1 record to O/P file w/o CRLF suffix'
;  550          0672  2
;  551          0673  2          [CLH_OUT_NOCRLF] :
;  552          0674  2              ! Write one record to the output file. Don't add carriage control information.
;  553          0675  3              BEGIN
;  554          0676  3              IF NOT .gca_skip_out
;  555          0677  3              THEN
;  556          0678  4                  BEGIN
;  557        U 0679  4 %IF FLIP %THEN
;  558        U 0680  4                  LOCAL
;  559        U 0681  4                      TEMP_RECORD : $FLIP_RNOTXT;
;  560        U 0682  4
;  561        U 0683  4                  IF  (.gca_op_dev EQL op_dev_flip)
;  562        U 0684  4                  THEN
;  563        U 0685  4                      BEGIN
;  564        U 0686  4                      TEMP_RECORD[RNOTXT_CODE] = FLIP$K_RNOTXT;
;  565        U 0687  4                      TEMP_RECORD[RNOTXT_LENGTH] = .FS_LENGTH(FRA);
;  566        U 0688  4                      CH$MOVE( .FS_LENGTH(FRA),.FS_START(FRA)
;  567        U 0689  4                               ,CH$PTR(TEMP_RECORD[RNOTXT_TEXT]));
;  568        U 0690  4                      STATUS = $XPO_PUT( IOB=.RNOIOB
;  569        U 0691  4                                        ,STRING=( FLIP$K_RNOTXT_BASESIZ+.FS_LENGTH(FRA)
;  570        U 0692  4                                                 ,CH$PTR(TEMP_RECORD) ) );
;  571        U 0693  4                      END
;  572        U 0694  4                  ELSE
;  573          0695  4 %FI
;  574          0696  4
;  575        P 0697  4                      STATUS = $XPO_PUT ( IOB = .RNOIOB
;  576        P 0698  4                                         ,STRING = ( .FS_LENGTH (FRA)
;  577          0699  4                                           ,.FS_START (FRA) ) );
;  578          0700  3                  END;
;  579          0701  3
;  580          0702  3              IF  .STATUS OR .gca_skip_out
;  581          0703  3              THEN
;  582          0704  3                  RETURN CLH_NORMAL;
;  583          0705  3
;  584          0706  2              END;
;  585          0707  2
```

```
;  587          0708  2 %sbttl 'CLH -- file closing functions'
;  588          0709  2         [CLH_CLOSE_INPUT] :
;  589          0710  2             ! Close current input file.
;  590          0711  3             BEGIN
;  591        P 0712  3             STATUS = $XPO_CLOSE ( IOB = .RNIIOB
;  592          0713  3                                 ,FAILURE = grab_resultant);
;  593          0714  3             RETURN CLH_NORMAL;
;  594          0715  2             END;
;  595          0716  2
;  596          0717  2         [CLH_CLOSE_OUT] :
;  597          0718  2             ! Close output file
;  598          0719  3             BEGIN
;  599        P 0720  3             STATUS = $XPO_CLOSE ( IOB = .RNOIOB
;  600          0721  3                                 ,FAILURE = grab_resultant);
;  601          0722  3             RETURN CLH_NORMAL;
;  602          0723  2             END;
;  603          0724  2
;  604          0725  2         [CLH_CLOSE_DEL_OUT] :
;  605          0726  2             ! Close output file
;  606          0727  3             BEGIN
;  607          0728  3
;  608          0729  3             IF   .RNOIOB[IOB$V_TERMINAL]
;  609          0730  3             THEN                    ! If it's a terminal,
;  610        P 0731  3                 STATUS = $XPO_CLOSE ( IOB = .RNOIOB     !   just close it.
;  611          0732  4                                     ,FAILURE = grab_resultant)
;  612          0733  3             ELSE
;  613          0734  4                 BEGIN
;  614        P 0735  4                 STATUS = $XPO_CLOSE ( IOB = .RNOIOB     ! Otherwise, close
;  615        P 0736  4                                     ,OPTIONS = REMEMBER !   and delete it.
;  616          0737  4                                     ,FAILURE = grab_resultant);
;  617        P 0738  4                 STATUS = $XPO_DELETE ( IOB = .RNOIOB
;  618          0739  4                                      ,FAILURE = grab_resultant);
;  619          0740  3                 END;
;  620          0741  3
;  621          0742  3         RETURN CLH_NORMAL;
;  622          0743  2         END;
;  623          0744  2
```

```
;  625          0745  2 %sbttl 'CLH -- Push IOB onto stack'
;  626          0746  2
;  627          0747  2          [CLH_PUSH] :
;  628          0748  3              BEGIN
;  629          0749  3              !
;  630          0750  3              ! If there are not too many files already open allocate
;  631          0751  3              ! a new IOB on IOBSTK (pointed to by RNIIOB).
;  632          0752  3              !
;  633          0753  3              IF  .GCA_REQ_DEPTH NEQ .GCA_MAX_REQUIRE
;  634          0754  3              THEN
;  635          0755  4                  BEGIN
;  636          0756  4                  RNIIOB = IOBSTK + (IOB$K_LENGTH * %UPVAL) * .GCA_REQ_DEPTH;
;  637          0757  4                  GCA_REQ_DEPTH = .GCA_REQ_DEPTH + 1;
;  638          0758  4                  RETURN CLH_NORMAL;
;  639          0759  4                  END
;  640          0760  3              ELSE                        ! No room on IOB stack for the IOB.
;  641          0761  3                  RETURN CLH_NO_SPACE;
;  642          0762  3
;  643          0763  2              END;
;  644          0764  2
```

```
;  646          0765  2 %sbttl 'CLH -- Pop IOB from stack and reaccess previous one'
;  647          0766  2
;  648          0767  2          [CLH_POP] :
;  649          0768  2              ! Cause RUNOFF to stop reading from the current file
;  650          0769  2              ! and read from the previous file instead.
;  651          0770  3              BEGIN
;  652          0771  3
;  653          0772  3              IF  .GCA_REQ_DEPTH EQL 0
;  65           0773  3              THEN
;  65>          0774  4                  BEGIN
;  656          0775  4                  ! Internal logic error: should not try to
;  657          0776  4                  ! pop the main file.
;  658          0777  4                  0
;  659          0778  4                  END
;  660          0779  3              ELSE
;  661          0780  4                  BEGIN
;  662          0781  4                  ! Forcefully terminate open .LIST, .NOTE and .IF commands that
;  663          0782  4                  ! are still open when the file in which they occured is about
;  664          0783  4                  ! to be closed.  I.E., do not allow .END commands to be in a
;  665          0784  4                  ! different file than the the opening .LIST, .NOTE,... command.
;  666          0785  4                  TSTTFE (.GCA_REQ_DEPTH);
;  667          0786  4
;  668          0787  4                  IF  .RNIIOB [IOB$V_OPEN]                ! Really close the file if
;  669          0788  4                  THEN                            !  there was a file opened
;  670          0789  4                      !  ( see REQUIR.BLI for case when it's not )
;  671        P 0790  4                      STATUS = $XPO_CLOSE ( IOB = .RNIIOB
;  672          0791  4                                           ,FAILURE = grab_resultant);
;  673          0792  4                  !Now do pop the file stack.
;  674          0793  4                  RNIIOB = .RNIIOB - (IOB$K_LENGTH * %UPVAL);
;  675          0794  4                  GCA_REQ_DEPTH = .GCA_REQ_DEPTH - 1;
;  676          0795  4
;  677          0796  4                  IF  .GCA_REQ_DEPTH EQL 0
;  678          0797  4                  THEN            !Popped all the way back to primary input file
;  679          0798  4                      RNIIOB = .RNEIOB;           !Get real primary IOB.
;  680          0799  4
;  681          0800  4                  ! The routine ERROR needs the following information in IRAC.
;  682          0801  5                  BEGIN
;  683          0802  5                  ! Pick of the name and length of the file spec
;  684          0803  5                  BIND
;  685          0804  5                      FILE_SPEC_STUFF = RNIIOB [IOB$T_RESULTANT] : $STR_DESCRIPTOR ();
;  686          0805  5                  IRAC_FSPECP = .FILE_SPEC_STUFF [STR$A_POINTER];
;  687          0806  5                  IRAC_FSPECC = .FILE_SPEC_STUFF [STR$H_LENGTH];
;  688          0807  4                  END;
;  689          0808  4                  IRAC_ISEQN = .RNIIOB [IOB$G_SEQ_NUMB];
;  690          0809  4                  IRAC_IPAGEN = .RNIIOB [IOB$A_PAGE_NUMB];
;  691          0810  4                  RETURN CLH_NORMAL;
;  692          0811  3                  END;
;  693          0812  3
;  694          0813  2          END;
;  695          0814  2
```

```
;  697          0815  2 %sbttl 'CLH -- Open REQUIRE file spec.'
;  698          0816  2
;  699          0817  2          [CLH_OPEN_REQ] :
;  700          0818  2              ! Open a file requested on a .REQUIRE command.
;  701          0819  3              BEGIN
;  702          0820  3              status = $XPO_IOB_INIT (IOB = .rniiob);
;  703        P 0821  3              status = $XPO_OPEN  (IOB = .rniiob
;  704        P 0822  3                                  ,OPTIONS = INPUT  !  INPUT file
;  705        P 0823  3                                  ,DEFAULT = '.RNO' ! Default the extension only!
;  706        P 0824  3                                  ,FILE_SPEC = ( .fs_length(fs01)     ! filename
;  707        P 0825  3                                                ,.fs_start (fs01))
;  708          0826  3                                  ,FAILURE = grab_resultant);
;  709          0827  3
;  710          0828  3              IF  .status
;  711          0829  3              THEN
;  712          0830  3                  ! Reset input line/page counters.
;  713          0831  4                  BEGIN
;  714          0832  4                  irac_ipagen = 1;
;  715          0833  4                  irac_iseqn = 1;
;  716          0834  5                  BEGIN
;  717          0835  5                  ! Pick off the name and length of the filespec.
;  718          0836  5                  BIND
;  719          0837  5                      file_spec_stuff = rniiob [iob$t_resultant] : $STR_DESCRIPTOR ();
;  720          0838  5
;  721          0839  5                  irac_fspecp = .file_spec_stuff [str$a_pointer];
;  722          0840  5                  irac_fspecc = .file_spec_stuff [str$h_length];
;  723          0841  5                  !
;  724          0842  5                  ! Output name of .REQUIRED file in .MEM file, if user
;  725          0843  5                  ! said /DEBUG:FILES
;  726          0844  5                  !
;  727          0845  5                  IF  .gca_debug_fil AND NOT .gca_skip_out
;  728          0846  5                  THEN
;  729          0847  5                      !
;  730          0848  5                      ! Yes: User said /DEBUG:FILES and output is being
;  731          0849  5                      ! generated because the current page is included
;  732          0850  5                      ! in a /PAGES list.
;  733          0851  5                      !
;  734          0852  6                      BEGIN
;  735          0853  6                      LOCAL
;  736        U 0854  6 %IF FLIP %THEN
;  737        U 0855  6                          temp_record : $flip_rnotxt,
;  738          0856  6 %FI
;  739          0857  6                          work_area : VECTOR [CH$ALLOCATION (100)],
;  740          0858  6                          work_count,
;  741          0859  6                          work_ptr;
;  742          0860  6
;  743          0861  6                      work_ptr   = CH$PTR (work_area);
;  744          0862  6                      work_ptr   = CH$MOVE (10, CH$PTR (UPLIT ('.REQUIRE '")), .work_ptr);
;  745          0863  6                      work_count = 10;
;  746          0864  6                      work_ptr   = CH$MOVE (.irac_fspecc, .irac_fspecp, .work_ptr);
;  747          0865  6                      work_count = .work_count + .irac_fspecc;
;  748          0866  6                      CH$WCHAR_A (%C'"', work_ptr);
;  749          0867  6                      CH$WCHAR_A (%O'15', work_ptr);      !Carriage return
;  750          0868  6                      CH$WCHAR_A (%O'12', work_ptr);      !Line feed
;  751          0869  6                      work_count = .work_count + 3;
;  752        U 0870  6 %IF FLIP %THEN
;  753        U 0871  6                      IF  (.gca_op_dev EQL op_dev_flip)
```

```
;  754          U 0872  6                       THEN
;  755          U 0873  6                           BEGIN
;  756          U 0874  6                           temp_record [rnotxt_code]   = flip$k_rnotxt;
;  757          U 0875  6                           temp_record [rnotxt_length] = .work_count;
;  758          U 0876  6                           CH$MOVE (.work_count, CH$PTR (work_area),
;  759          U 0877  6                                    CH$PTR (temp_record [rnotxt_text]));
;  760          U 0878  6                           status = $XPO_PUT (IOB = .rnoiob,
;  761          U 0879  6                                              STRING = (flip$k_rnotxt_basesiz +
;  762          U 0880  6                                                        .work_count,
;  763          U 0881  6                                                        CH$PTR(temp_record)));
;  764          U 0882  6                           END
;  765          U 0883  6                       ELSE
;  766            0884  6 %FI
;  767          P 0885  6                           $XPO_PUT (IOB = .rnoiob,
;  768            0886  6                                     STRING = (.work_count, CH$PTR (work_area)));
;  769            0887  5                       END;
;  770            0888  4                   END;
;  771            0889  4
;  772            0890  4                   RETURN clh_normal;
;  773            0891  4
;  774            0892  4                   END
;  775            0893  3               ELSE
;  776            0894  3                   RETURN clh_cant_open;
;  777            0895  3
;  778            0896  2               END;
;  779            0897  2
```

```
;  781          0898  2 %sbttl 'CLH -- Close REQUIRE file (NULL) and bad OPCODE processing'
;  782          0899  2
;  783          0900  2         [CLH_CLOSE_REQ] :
;  784          0901  2             ! Close a ".REQUIRE" file.
;  785          0902  3             BEGIN
;  786          0903  3             0
;  787          0904  2             END;
;  788          0905  2
```

```
;  790          0906  2 %SBTTL 'Open initialization file'
;  791          0907  2
;  792          0908  2         [CLH_OPEN_INIT] :
;  793          0909  2
;  794          0910  2             ! Open initialization file specified in fs01.
;  795          0911  2             !
;  796          0912  3             BEGIN
;  797          0913  3             status = $XPO_IOB_INIT (IOB   = .rniiob);
;  798        P 0914  3             status = $XPO_OPEN
;  799        P 0915  3                         (IOB     = .rniiob,
;  800        P 0916  3                          OPTIONS = input,
;  801        P 0917  3                          FILE_SPEC = (.fs_length (fs01),
;  802        P 0918  3                                       .fs_start (fs01)),
;  803          0919  3                          FAILURE = grab_resultant);
;  804          0920  3             IF  .status
;  805          0921  3             THEN
;  806          0922  3                 !
;  807          0923  3                 ! Succeeded in opening file.
;  808          0924  3                 !
;  809          0925  4                 BEGIN
;  810          0926  4                 !
;  811          0927  4                 ! Pick off name and length of filespec.
;  812          0928  4                 !
;  813          0929  4                 BIND
;  814          0930  4                     file_spec_stuff = rniiob [iob$t_resultant] : $STR_DESCRIPTOR ();
;  815          0931  4
;  816          0932  4                 irac_fspecp = .file_spec_stuff [str$a_pointer];
;  817          0933  4                 irac_fspecc = .file_spec_stuff [str$h_length];
;  818          0934  4                 !
;  819          0935  4                 ! Output name of initialization file in .MEM file, if user
;  820          0936  4                 ! said /DEBUG:FILES
;  821          0937  4                 !
;  822          0938  4                 IF  .gca_debug_fil AND NOT .gca_skip_out
;  823          0939  4                 THEN
;  824          0940  4                     !
;  825          0941  4                     ! Yes, user said /DEBUG:FILES and output is being
;  826          0942  4                     ! generated because the current page is included
;  827          0943  4                     ! in a /PAGES list.
;  828          0944  4                     !
;  829          0945  5                     BEGIN
;  830          0946  5                     LOCAL
;  831          0947  5
;  832        U 0948  5 %IF FLIP %THEN
;  833        ; 0949  5
;  834          0950  5 %FI
;  835          0951  5                         work_area : VECTOR [CH$ALLOCATION (100)],
;  836          0952  5                         work_count,
;  837          0953  5                         work_ptr;
;  838          0954  5
;  839          0955  5                     work_ptr = CH$PTR (work_area);
;  840          0956  5                     !
;  841          0957  5                     ! Move descriptive text into work area.
;  842          0958  5                     ! Identifies DSR$INIT if only 8 characters long.
;  843          0959  5                     ! Otherwise, it must be for DSRPLUS$INIT.
;  844          0960  5                     !
;  845          0961  5                     IF  .fs_length (fs01) EQL 8
;  846          0962  5                     THEN
```

```
;  847          0963  6                        BEGIN
;  848          0964  6                        work_count = 15;
;  849          0965  6                        work_ptr   = CH$MOVE (.work_count,
;  850          0966  6                                              CH$PTR (UPLIT ('DSR$INIT file '')),
;  851          0967  6                                              .work_ptr);
;  852          0968  6                        END
;  853          0969  5                    ELSE
;  854          0970  6                        BEGIN
;  855          0971  6                        work_count = 19;
;  856          0972  6                        work_ptr   = CH$MOVE (.work_count,
;  857          0973  6                                              CH$PTR (UPLIT ('DSRPLUS$INIT file '')),
;  858          0974  6                                              .work_ptr);
;  859          0975  5                        END;
;  860          0976  5                    !
;  861          0977  5                    ! Add file name to work area.
;  862          0978  5                    !
;  863          0979  5                    work_ptr   = CH$MOVE (.irac_fspecc, .irac_fspecp, .work_ptr);
;  864          0980  5                    work_count = .work_count + .irac_fspecc;
;  865          0981  5                    !
;  866          0982  5                    ! Add end-of-line characters to work area.
;  867          0983  5                    !
;  868          0984  5                    CH$WCHAR_A (%C'',  work_ptr);
;  869          0985  5                    CH$WCHAR_A (%O'15', work_ptr);      !Carriage return
;  870          0986  5                    CH$WCHAR_A (%O'12', work_ptr);      !Line feed
;  871          0987  5                    work_count = .work_count + 3;
;  872        U 0988  5 %IF FLIP %THEN
;  873        U 0989  5                      If FLIP, send initialization file info to user
;  874        U 0990  5                    ! in correct form for FLIP.
;  875        U 0991  5                    !
;  876        U 0992  5                    IF  (.gca_op_dev EQL op_dev_flip)
;  877        U 0993  5                    THEN
;  878        U 0994  5                        BEGIN
;  879        U 0995  5                        temp_record [rnotxt_code]   = flip$k_rnotxt;
;  880        U 0996  5                        temp_record [rnotxt_length] = .work_count;
;  881        U 0997  5                        CH$MOVE (.work_count, CH$PTR (work_area),
;  882        U 0998  5                                 CH$PTR (temp_record [rnotxt_text]));
;  883        U 0999  5                        status = $XPO_PUT (IOB    = .rnoiob,
;  884        U 1000  5                                           STRING = (flip$k_rnotxt_basesiz +
;  885        U 1001  5                                                     .work_count,
;  886        U 1002  5                                                     CH$PTR(temp_record)));
;  887        U 1003  5                        END
;  888        U 1004  5                    ELSE
;  889          1005  5 %FI
;  890          1006  5                        !
;  891          1007  5                        ! Otherwise, send initialization file info to user
;  892          1008  5                        ! in DSRPLUS form.
;  893          1009  5                        !
;  894        P 1010  5                        $XPO_PUT (IOB    = .rnoiob,
;  895          1011  5                                  STRING = (.work_count, CH$PTR (work_area)));
;  896          1012  4                    END;
;  897          1013  4
;  898          1014  4                RETURN clh_normal;
;  899          1015  4                END
;  900          1016  3            ELSE
;  901          1017  3                !
;  902          1018  3                ! Couldn't find file to open.
;  903          1019  3                !
```

```
;  904          1020  3                  RETURN clh_cant_open;
;  905          1021  3
;  906          1022  2              END;
;  907          1023  2
;  908          1024  2          [OUTRANGE] :
;  909          1025  2              ! Error in program.
;  910          1026  3              BEGIN
;  911          1027  3              PUTMSG (rnfile, CH$PTR (UPLIT ('CLH')), 3);
;  912          1028  3              RETURN clh_end_file;                ! Make a guess
;  913          1029  2              END;
;  914          1030  2
;  915          1031  2          TES;
;  916          1032  2          0
;  917          1033  2
;  918          1034  1      END;                                        ! End of CLH


                                                                        .TITLE  CLH file processing interface and command line
;                                                                                   hand
                                                                        .IDENT  \V04-000\

                                                                        .PSECT  $PLIT$,NOWRT,NOEXE,2

                                                    4F  4E  52  2E  00000 P.AAE:  .ASCII  \.RNO\                                  ;
                                                    4F  4E  52  2E  00004 P.AAF:  .ASCII  \.RNO\                                  ;
                00  00  22  20  45  52  49  55  51  45  52  2E  00008 P.AAG:  .ASCII  \.REQUIRE ''\<0><0>                          ;
22  20  65  6C  69  66  20  54  49  4E  49  24  52  53  44  00014 P.AAH:  .ASCII  \DSR$INIT file ''\<0>                           ;
                                                                00  00023
69  66  20  54  49  4E  49  24  53  55  4C  50  52  53  44  00024 P.AAI:  .ASCII  \DSRPLUS$INIT file ''\<0>                       ;
                                                        00  22  20  65  6C  00033
                                                            00  48  4C  43  00038 P.AAJ:  .ASCII  \CLH\<0>                         ;

                                                                        .PSECT  $OWN$,NOEXE,2

                                                        00000 STATUS:   .BLKB   4
                                                        00004 DEF_OUT_LNG:
                                                                        .BLKB   4
                                                        00008 DEF_OUT_SPC:
                                                                        .BLKB   52
                                                    0004  0003C $IOB$DEFAULT:
                                                                        .WORD   4
                                                  01  0E  0003E           .BYTE   14, 1                                           ;
                                                00000000' 00040           .ADDRESS P.AAF                                          ;

                                                                        .EXTRN  FRA, GCA, FSO1, IRA
                                                                        .EXTRN  IRAC, IPFTYP, IPFTOP
                                                                        .EXTRN  OPFTOP, IOBSTK, RNEIOB
                                                                        .EXTRN  RNIIOB, RNOIOB, TSIIOB
                                                                        .EXTRN  TTIIOB, TTOIOB, IPFTCT
                                                                        .EXTRN  RNFILE, RNFRTL, ERMS
                                                                        .EXTRN  GRAB_RESULTANT, PUTMSG
                                                                        .EXTRN  TSTTFE, XST$FORMAT
                                                                        .EXTRN  XPO$OPEN, XPO$GET
                                                                        .EXTRN  XPO$FAILURE, XPO$PUT
                                                                        .EXTRN  XPO$CLOSE, XPO$DELETE

                                                                        .PSECT  $CODE$,NOWRT,2
```

```
                                                 0FFC 00000          .ENTRY  CLH, Save R2,R3,R4,R5,R6,R7,R8,R9,R10,R11    ; 0289
                                        5B 00000000G   EF   9E 00002 MOVAB   IRA+4, R11                                  ;
                                        5A 00000000G   EF   9E 00009 MOVAB   GCA+188, R10                                ;
                                        59 00000000G   EF   9E 00010 MOVAB   RNIIOB, R9                                  ;
                                        58 00000000G   EF   9E 00017 MOVAB   IRAC+20, R8                                 ;
                                        57 00000000'   EF   9E 0001E MOVAB   STATUS, R7                                  ;
                                        5E       94    AE   9E 00025 MOVAB   -108(SP), SP                               ;
                              0C        01        04    AC   CF 00029 CASEL   OPCODE, #1, #12                            ; 0318
        02F3          02EE          0089          0032       0002E 1$:  .WORD   3$-1$,-                                   ;
        0388          036A          022F          013A       00036      4$-1$,-                                   ;
        0311          02A5          0578          03E6       0003E      29$-1$,-                                  ;
                                                  0488       00046      30$-1$,-                                  ;
                                                                        11$-1$,-                                  ;
                                                                        24$-1$,-                                  ;
                                                                        37$-1$,-                                  ;
                                                                        39$-1$,-                                  ;
                                                                        44$-1$,-                                  ;
                                                                        54$-1$,-                                  ;
                                                                        26$-1$,-                                  ;
                                                                        33$-1$,-                                  ;
                                                                        48$-1$                                    ;
                                                     03   DD 00048          PUSHL   #3                                   ; 1027
                                        00000000'    EF   9F 0004A          PUSHAB  P.AAJ                                ;
                                        00000000G    8F   DD 00050          PUSHL   #RNFILE                              ;
                                00000000G   EF            03   FB 00056    CALLS   #3, PUTMSG                           ;
                                                     0542 31   0005D 2$:    BRW     53$                                  ; 1028
                                     52                 69   D0 00060 3$:    MOVL    RNIIOB, R2                           ; 0354
                                  64    AE              04   B0 00063       MOVW    #4, $STR$STRING                      ;
                                  66    AE              0E   90 00067       MOVB    #14, $STR$STRING+2                   ;
                                  67    AE              01   90 0006B       MOVB    #1, $STR$STRING+3                    ;
                                  68    AE  00000000'   EF   9E 0006F       MOVAB   P.AAE, $STR$STRING+4                 ;
                                                        7E   D4 00077       CLRL    -(SP)                                ;
                                                  68    AE   9F 00079       PUSHAB  $STR$STRING                          ;
                                                        7E   D4 0007C       CLRL    -(SP)                                ;
                                00000000G   EF            03   FB 0007E    CALLS   #3, XST$FORMAT                       ;
                                     08    A2             50   D0 00085    MOVL    R0, 8(R2)                            ;
                                     2E    A2             01   88 00089    BISB2   #1, 46(R2)                           ;
                                     2C    A2             01   90 0008D    MOVB    #1, 44(R2)                           ;
                                        00000000G   EF    9F   00091       PUSHAB  GRAB_RESULTANT                       ;
                                                    7E    D4   00097       CLRL    -(SP)                                ;
                                                    52    DD   00099       PUSHL   R2                                   ;
                                00000000G   EF            03   FB 0009B    CALLS   #3, XPO$OPEN                         ;
                                                    67    50   D0 000A2    MOVL    R0, STATUS                           ;
                                                    B5    67   E9 000A5    BLBC    STATUS, 2$                           ; 0356
                                  50                69   1C   C1 000A8    ADDL3   #28, RNIIOB, R0                      ; 0360
                                     FC   A8        04   A0   D0 000AC    MOVL    4(R0), IRAC+16                       ; 0364
                                                    68   3C   D0 000B1    MOVZWL  (R0), IRAC+20                        ; 0365
                                                         04E7 31 000B4    BRW     52$                                  ; 0376
                                  7E                69   1C   C1 000B7 4$:  ADDL3   #28, RNIIOB, -(SP)                 ; 0383
                                00000000V   EF            01   FB 000BB    CALLS   #1, GET_OUT_DEFAULT                  ;
        53          14    AA                  04   04   EF 000C2    EXTZV   #4, #4, GCA+208, R3                  ; 0385
                                  05                    00   53   CF 000C8    CASEL   R3, #0, #5                           ;
        0093          0093                    000F       000F       000CC 5$:  .WORD   6$-5$,-                              ;
                                              0048       0048       000D4      6$-5$,-                                   ;
                                                                                9$-5$,-                                   ;
                                                                                9$-5$,-                                   ;
```

```
                                                                         7$-5$,-
                                                                         7$-5$
                                       0084  31 000D8         BRW     9$
                 52  00000000G   EF    D0 000DB  6$:          MOVL    RNOIOB, R2                         : 0401
          64  AE          04     A7    B0 000E2               MOVW    DEF_OUT_LNG, $STR$STRING           :
          66  AE                 0E    90 000E7               MOVB    #14, $STR$STRING+2                 :
          67  AE                 01    90 000EB               MOVB    #1, $STR$STRING+3                  :
          68  AE          08     A7    9E 000EF               MOVAB   DEF_OUT_SPC, $STR$STRING+4         :
                                 7E    D4 000F4               CLRL    -(SP)                              :
                          68     AE    9F 000F6               PUSHAB  $STR$STRING                        :
                                 7E    D4 000F9               CLRL    -(SP)                              :
      00000000G   EF             03    FB 000FB               CALLS   #3, XST$FORMAT                     :
   51             69             1C    C1 00102               ADDL3   #28, RNIIOB, R1                    :
          08      A2             50    7D 00106               MOVQ    R0, 8(R2)                          :
          2E      A2  00040002   8F    C8 0010A               BISL2   #262146, 46(R2)                    :
                                 33    11 00112               BRB     8$                                 :
                 52  00000000G   EF    DC 00114  7$:          MOVL    RNOIOB, R2                         : 0444
          64  AE          04     A7    B0 0011B               MOVW    DEF_OUT_LNG, $STR$STRING           :
          66  AE                 0E    90 00120               MOVB    #14, $STR$STRING+2                 :
          67  AE                 01    90 00124               MOVB    #1, $STR$STRING+3                  :
          68  AE          08     A7    9E 00128               MOVAB   DEF_OUT_SPC, $STR$STRING+4         :
                                 7E    D4 0012D               CLRL    -(SP)                              :
                          68     AE    9F 0012F               PUSHAB  $STR$STRING                        :
                                 7E    D4 00132               CLRL    -(SP)                              :
      00000000G   EF             03    FB 00134               CALLS   #3, XST$FORMAT                     :
   51             69             1C    C1 0013B               ADDL3   #28, RNIIOB, R1                    :
          08      A2             50    7D 0013F               MOVQ    R0, 8(R2)                          :
          2E      A2             02    88 00143               BISB2   #2, 46(R2)                         :
          2C      A2             01    90 00147  8$:          MOVB    #1, 44(R2)                         :
                      00000000G  EF    9F 0014B               PUSHAB  GRAB_RESULTANT                     :
                                 7E    D4 00151               CLRL    -(SP)                              :
                                 52    DD 00153               PUSHL   R2                                 :
      00000000G   EF             03    FB 00155               CALLS   #3, XPO$OPEN                       :
                  67             50    D0 0015C               MOVL    R0, STATUS                         :
                  03             67    E8 0015F  9$:          BLBS    STATUS, 10$                        : 0465
                               043D    31 00162               BRW     53$                                :
                               0436    31 00165  10$:         BRW     52$                                :
                  50             69    D0 00168  11$:         MOVL    RNIIOB, R0                         : 0477
          2C      A0             06    90 0016B               MOVB    #6, 44(R0)                         :
                      00000000G  EF    9F 0016F               PUSHAB  XPO$FAILURE                        :
                                 7E    D4 00175               CLRL    -(SP)                              :
                                 50    DD 00177               PUSHL   R0                                 :
      00000000G   EF             03    FB 00179               CALLS   #3, XPO$GET                        :
                  67             50    D0 00180               MOVL    R0, STATUS                         :
                  51             67    D0 00183               MOVL    STATUS, R1                         : 0479
                  0C             51    E8 00186               BLBS    R1, 12$                            :
      0020A22A    8F             51    D1 00189               CMPL    R1, #2138666                       : 0480
                                 03    13 00190               BEQL    12$                                :
                               00A0    31 00192               BRW     20$                                :
                  50             69    D0 00195  12$:         MOVL    RNIIOB, R0                         : 0485
          F4      A8      4C     A0    D0 00198               MOVL    76(R0), IRAC+8                     :
          F8      A8      4A     A0    32 0019D               CVTWL   74(R0), IRAC+12                    : 0486
F0   A8     30    A0      01     04    EF 001A2               EXTZV   #4, #1, 48(R0), IRAC+4             : 0487
      0020A22A    8F             51    D1 001A9               CMPL    R1, #2138666                       : 0490
                                 1C    12 001B0               BNEQ    14$                                :
                  7E      34     A0    3C 001B2               MOVZWL  52(R0), -(SP)                      : 0494
                  32             6E    B1 001B6               CMPW    (SP), #50                          :
```

```
                                    03  1B 001B9          BLEQU   13$                                                    ;
                                6E  32  D0 001BB          MOVL    #50, (SP)                                              ;
                                38  A0  DD 001BE 13$:      PUSHL   56(R0)                                                 ; 0493
                          00000000G 8F  DD 001C1          PUSHL   #RNFRTL                                                ; 0492
                          00000000G EF  03  FB 001C7      CALLS   #3, ERMS                                               ;
                                51  69  D0 001CE 14$:      MOVL    RNIIOB, R1                                             ; 0498
                             FC AB  38  A1  D0 001D1        MOVL    56(R1), IRA                                            ;
                             6B FC  AB  D0 001D6            MOVL    IRA, IRA+4                                             ; 0499
                             04 AB  34  A1  3C 001DA        MOVZWL  52(R1), IRA+8                                          ; 0500
                             08 AB  04  AB  D0 001DF        MOVL    IRA+8, IRA+12                                          ; 0501
                                    08  AB  D5 001E4 15$:   TSTL    IRA+12                                                 ; 0521
                                    49  15 001E7            BLEQ    19$                                                    ;
                                54  6B  D0 001E9            MOVL    IRA+4, PTR                                             ; 0525
                                50  64  9A 001EC            MOVZBL  (PTR), X                                               ; 0530
                                52  50  D0 001EF            MOVL    X, R2                                                  ; 0532
                                53  01  D0 001F2            MOVL    #1, R3                                                 ;
                                0C  52  D1 001F5            CMPL    R2, #12                                                ; 0535
                                    18  12 001F8            BNEQ    16$                                                    ;
                                    53  D4 001FA            CLRL    R3                                                     ;
                        11      30  A1  04  E0 001FC        BBS     #4, 48(R1), 16$                                        ; 0551
                                F8  A8  D6 00201            INCL    IRAC+12                                                ; 0554
                             F4 A8  01  D0 00204            MOVL    #1, IRAC+8                                             ; 0555
                             4C A1  F4  A8 D0 00208         MOVL    IRAC+8, 76(R1)                                         ; 0556
                             4A A1  F8  A8 B0 0020D         MOVW    IRAC+12, 74(R1)                                        ; 0557
                                    52  D5 00212 16$:       TSTL    R2                                                     ; 0562
                                    0E  13 00214            BEQL    17$                                                    ;
                                0C  52  D1 00216            CMPL    R2, #12                                                ;
                                    09  13 00219            BEQL    17$                                                    ;
                          0000007F  8F  52  D1 0021B        CMPL    R2, #127                                               ;
                                    0B  12 00222            BNEQ    18$                                                    ;
                                    53  D4 00224 17$:       CLRL    R3                                                     ;
                                50  00  BB  9A 00226        MOVZBL  @IRA+4, X                                              ; 0567
                                    6B  D6 0022A            INCL    IRA+4                                                  ;
                                08  AB  D7 0022C            DECL    IRA+12                                                 ;
                                B2      53  E9 0022F 18$:   BLBC    R3, 15$                                                ; 0570
                                    0369 31 00232 19$:      BRW     52$                                                    ; 0583
                          00209000  8F  51  D1 00235 20$:   CMPL    R1, #2134016                                           ; 0585
                                    18  12 0023C            BNEQ    22$                                                    ;
                                    6A  D5 0023E            TSTL    GCA+188                                                ; 0589
                                    0F  13 00240            BEQL    21$                                                    ;
                                    08  DD 00242            PUSHL   #8                                                     ; 0593
                             FDB7   CF  01  FB 00244        CALLS   #1, CLH                                                ;
                                    05  DD 00249            PUSHL   #5                                                     ; 0607
                             FDB0   CF  01  FB 0024B        CALLS   #1, CLH                                                ;
                                    04  00250            RET                                                            ;
                                50  02  D0 00251 21$:      MOVL    #2, R0                                                 ; 0616
                                    03  11 00254            BRB     23$                                                    ;
                                50  03  D0 00256 22$:      MOVL    #3, R0                                                 ; 0618
                                08  AB  D4 00259 23$:      CLRL    IRA+12                                                 ; 0611
                                    04  0025C            RET                                                            ; 0583
                          00000000G FF  0D  90 0025D 24$:   MOVB    #13, @FRA+4                                            ; 0637
                              00000000G EF  D6 00264        INCL    FRA+4                                                  ;
                              00000000G EF  D6 0026A        INCL    FRA+12                                                 ;
                          00000000G FF  0A  90 00270        MOVB    #10, @FRA+4                                            ; 0638
                              00000000G EF  D6 00277        INCL    FRA+4                                                  ;
                              00000000G EF  D6 0027D        INCL    FRA+12                                                 ;
                                50 00000000G EF  D0 00283   MOVL    RNOIOB, R0                                             ; 0659
```

```
                64   AE 00000000G   EF   B0 0028A          MOVW    FRA+12, $IOB$OUTPUT
                66   AE             0E   90 00292          MOVB    #14, $IOB$OUTPUT+2
                67   AE             01   90 00296          MOVB    #1, $IOB$OUTPUT+3
                68   AE 00000000G   EF   D0 0029A          MOVL    FRA, $IOB$OUTPUT+4
                44   A0       64    AE   9E 002A2          MOVAB   $IOB$OUTPUT, 68(R0)
                2C   A0             07   90 002A7          MOVB    #7, 44(R0)
                     00000000G      EF   9F 002AB          PUSHAB  XPO$FAILURE
                                    7E   D4 002B1          CLRL    -(SP)
                                    50   DD 002B3          PUSHL   R0
        00000000G   EF              03   FB 002B5          CALLS   #3, XPO$PUT
                    67              50   D0 002BC          MOVL    R0, STATUS
        00000000G   EF              02   C2 002BF          SUBL2   #2, FRA+4                       ;  0662
        00000000G   EF              02   C2 002C6          SUBL2   #2, FRA+12                      ;  0663
                    4A              67   E8 002CD          BLBS    STATUS, 28$                     ;  0665
                              02D3  31   002D0 25$:         BRW     54$
                    3C        B4    AA   E8 002D3 26$:     BLBS    GCA+112, 27$                    ;  0676
                    50 00000000G    EF   D0 002D7          MOVL    RNOIOB, R0                      ;  0699
                64   AE 00000000G   EF   B0 002DE          MOVW    FRA+12, $IOB$OUTPUT
                66   AE             0E   90 002E6          MOVB    #14, $IOB$OUTPUT+2
                67   AE             01   90 002EA          MOVB    #1, $IOB$OUTPUT+3
                68   AE 00000000G   EF   D0 002EE          MOVL    FRA, $IOB$OUTPUT+4
                44   A0       64    AE   9E 002F6          MOVAB   $IOB$OUTPUT, 68(R0)
                2C   A0             07   90 002FB          MOVB    #7, 44(R0)
                     00000000G      EF   9F 002FF          PUSHAB  XPO$FAILURE
                                    7E   D4 00305          CLRL    -(SP)
                                    50   DD 00307          PUSHL   R0
        00000000G   EF              03   FB 00309          CALLS   #3, XPO$PUT
                    67              50   D0 00310          MOVL    R0, STATUS
                    04              67   E8 00313 27$:     BLBS    STATUS, 28$                     ;  0702
                    B6        B4    AA   E9 00316          BLBC    GCA+112, 25$
                                    7A   11 0031A 28$:     BRB     36$                             ;  0704
                    50              69   D0 0031C 29$:     MOVL    RNIIOB, R0                      ;  0713
                                    07   11 0031F          BRB     31$
                    50 00000000G    EF   D0 00321 30$:     MOVL    RNOIOB, R0                      ;  0721
                2C  A0              02   90 00328 31$:     MOVB    #2, 44(R0)
                     00000000G      EF   9F 0032C          PUSHAB  GRAB_RESULTANT
                                    7E   D4 00332          CLRL    -(SP)
                                    50   DD 00334          PUSHL   R0
        00000000G   EF              03   FB 00336 32$:     CALLS   #3, XPO$CLOSE
                                    54   11 0033D          BRB     35$
                    52 00000000G    EF   D0 0033F 33$:     MOVL    RNOIOB, R2                      ;  0729
            10  32  A2              04   E1 00346          BBC     #4, 50(R2), 34$
                2C  A2              02   90 0034B          MOVB    #2, 44(R2)                      ;  0732
                     00000000G      EF   9F 0034F          PUSHAB  GRAB_RESULTANT
                                    7E   D4 00355          CLRL    -(SP)
                                    52   DD 00357          PUSHL   R2
                                    DB   11 00359          BRB     32$
                2E  A2              10   88 0035B 34$:     BISB2   #16, 46(R2)                     ;  0737
                2C  A2              02   90 0035F          MOVB    #2, 44(R2)
                     00000000G      EF   9F 00363          PUSHAB  GRAB_RESULTANT
                                    7E   D4 00369          CLRL    -(SP)
                                    52   DD 0036B          PUSHL   R2
        00000000G   EF              03   FB 0036D          CALLS   #3, XPO$CLOSE
                    67              50   D0 00374          MOVL    R0, STATUS
                    50 00000000G    EF   D0 00377          MOVL    RNOIOB, R0                      ;  0739
                2C  A0              03   90 0037E          MOVB    #3, 44(R0)
                     00000000G      EF   9F 00382          PUSHAB  GRAB_RESULTANT
```

```
                                                7E  D4 00388          CLRL    -(SP)                                                   ;
                                                50  DD 0038A          PUSHL   R0                                                      ;
                    00000000G   EF              03  FB 0038C          CALLS   #3, XPO$DELETE                                          ;
                                67              50  D0 00393 35$:     MOVL    R0, STATUS                                              ;
                                                79  11 00396 36$:     BRB     43$                                                     ; 0742
                            FC  AA              6A  D1 00398 37$:     CMPL    GCA+188, GCA+184                                        ; 0753
                                                14  13 0039C          BEQL    38$                                                     ;
                        50      6A 000000F4     8F  C5 0039E          MULL3   #244, GCA+188, R0                                       ; 0756
                                69 00000000GEF40    9E 003A6          MOVAB   IOBSTK[R0], RNIIOB                                      ;
                                                6A  D6 003AE          INCL    GCA+188                                                 ; 0757
                                                5F  11 003B0          BRB     43$                                                     ; 0761
                                50              05  D0 003B2 38$:     MOVL    #5, R0                                                  ;
                                                    04 003B5          RET                                                             ;
                                50              6A  D0 003B6 39$:     MOVL    GCA+188, R0                                             ; 0772
                                                03  12 003B9          BNEQ    40$                                                     ;
                                            01E8    31 003BB          BRW     54$                                                     ;
                                                50  DD 003BE 40$:     PUSHL   R0                                                      ; 0785
                    00000000G   EF              01  FB 003C0          CALLS   #1, TSTTFE                                              ;
                                50              69  D0 003C7          MOVL    RNIIOB, R0                                              ; 0787
                                18          32  A0  E9 003CA          BLBC    50(R0), 41$                                             ;
                            2C  A0              02  90 003CE          MOVB    #2, 44(R0)                                              ; 0791
                                    00000000G   EF  9F 003D2          PUSHAB  GRAB_RESULTANT                                          ;
                                                7E  D4 003D8          CLRL    -(SP)                                                   ;
                                                50  DD 003DA          PUSHL   R0                                                      ;
                    00000000G   EF              03  FB 003DC          CALLS   #3, XPO$CLOSE                                           ;
                                67              50  D0 003E3          MOVL    R0, STATUS                                              ;
                                69 000000F4     8F  C2 003E6 41$:     SUBL2   #244, RNIIOB                                            ; 0793
                                                6A  D7 003ED          DECL    GCA+188                                                 ; 0794
                                                07  12 003EF          BNEQ    42$                                                     ; 0796
                                69 00000000G    EF  D0 003F1          MOVL    RNEIOB, RNIIOB                                          ; 0798
                                50              69  D0 003F8 42$:     MOVL    RNIIOB, R0                                              ; 0804
                                51          1C  A0  9E 003FB          MOVAB   28(R0), R1                                              ;
                            FC  A8          04  A1  D0 003FF          MOVL    4(R1), IRAC+16                                          ; 0805
                                68              61  3C 00404          MOVZWL  (R1), IRAC+20                                           ; 0806
                            F4  A8          4C  A0  D0 00407          MOVL    76(R0), IRAC+8                                          ; 0808
                            F8  A8          4A  A0  32 0040C          CVTWL   74(R0), IRAC+12                                         ; 0809
                                            018A    31 00411 43$:     BRW     52$                                                     ; 0810
                                56                  69 D0 00414 44$:  MOVL    RNIIOB, R6                                              ; 0820
00F4    8F              00      6E                  00 2C 00417       MOVC5   #0, (SP), #0, #244, (R6)                                ;
                                                    66    0041E       MOVL    #50397245, (R6)                                         ;
                                66 0301003D     8F  D0 0041F          MOVW    #526, 30(R6)                                            ;
                            1E  A6      020E    8F  B0 00426          MOVL    #2129921, STATUS                                        ;
                            64  AE 00000000G    EF  B0 00433          MOVW    FS01+12, $STR$STRING                                    ; 0826
                            66  AE              0E  90 0043B          MOVB    #14, $STR$STRING+2                                      ;
                            67  AE              01  90 0043F          MOVB    #1, $STR$STRING+3                                       ;
                            68  AE 00000000G    EF  D0 00443          MOVL    FS01, $STR$STRING+4                                     ;
                                                7E  D4 0044B          CLRL    -(SP)                                                   ;
                                            68  AE  9F 0044D          PUSHAB  $STR$STRING                                             ;
                                                7E  D4 00450          CLRL    -(SP)                                                   ;
                    00000000G   EF              03  FB 00452          CALLS   #3, XST$FORMAT                                          ;
                            04  A6              50  D0 00459          MOVL    R0, 4(R6)                                               ;
                            08  A6          3C  A7  9E 0045D          MOVAB   $IOB$DEFAULT, 8(R6)                                     ;
                            2E  A6              01  88 00462          BISB2   #1, 46(R6)                                              ;
                            2C  A6              01  90 00466          MOVB    #1, 44(R6)                                              ;
                                    00000000G   EF  9F 0046A          PUSHAB  GRAB_RESULTANT                                          ;
                                                7E  D4 00470          CLRL    -(SP)                                                   ;
```

```
                                       56  DD 00472          PUSHL   R6                                          ;
                 00000000G  EF         03  FB 00474          CALLS   #3, XPO$OPEN                                ;
                            67         50  D0 0047B          MOVL    R0, STATUS                                  ;
                            03         67  E8 0047E          BLBS    STATUS, 45$                                 ; 0828
                                     011E  31 00481          BRW     53$                                         ;
                     F8     A8         01  D0 00484 45$:     MOVL    #1, IRAC+12                                 ; 0832
                     F4     A8         01  D0 00488          MOVL    #1, IRAC+8                                  ; 0833
              50            69         1C  C1 0048C          ADDL3   #28, RNIIOB, R0                             ; 0837
                     FC     A8     04  A0  D0 00490          MOVL    4(R0), IRAC+16                              ; 0839
                            68         60  3C 00495          MOVZWL  (R0), IRAC+20                               ; 0840
              03     B8     AA         03  E0 00498          BBS     #3, GCA+116, 47$                            ; 0845
                                     00FE  31 0049D 46$:     BRW     52$                                         ;
                            F9     B4  AA  E8 004A0 47$:     BLBS    GCA+112, 46$                                ;
                            53     08  AE  9E 004A4          MOVAB   WORK_AREA, WORK_PTR                         ; 0861
              63 00000000'  EF         0A  28 004A8          MOVC3   #10, P.AAG, (WORK_PTR)                      ; 0862
                            56         0A  D0 004B0          MOVL    #10, WORK_COUNT                             ; 0863
                                     00A5  31 004B3          BRW     51$                                         ; 0864
                            56         69  D0 004B6 48$:     MOVL    RNIIOB, R6                                  ; 0913
 00F4   8F    00            6E         00  2C 004B9          MOVC5   #0, (SP), #0, #244, (R6)                    ;
                            66            004C0                                                              ;
                            66 0301003D  8F  D0 004C1        MOVL    #50397245, (R6)                             ;
                     1E     A6     020E  8F  B0 004C8        MOVW    #526, 30(R6)                                ;
                            67 00208001  8F  D0 004CE        MOVL    #2129921, STATUS                            ;
                     64     AE 00000000G EF  B0 004D5        MOVW    FS01+12, $STR$STRING                        ; 0919
                     66     AE         0E  90 004DD          MOVB    #14, $STR$STRING+2                          ;
                     67     AE         01  90 004E1          MOVB    #1, $STR$STRING+3                           ;
                     68     AE 00000000G EF  D0 004E5        MOVL    FS01, $STR$STRING+4                         ;
                                       7E  D4 004ED          CLRL    -(SP)                                       ;
                                   68  AE  9F 004EF          PUSHAB  $STR$STRING                                 ;
                                       7E  D4 004F2          CLRL    -(SP)                                       ;
                 00000000G  EF         03  FB 004F4          CALLS   #3, XST$FORMAT                              ;
                     04     A6         50  D0 004FB          MOVL    R0, 4(R6)                                   ;
                     2E     A6         01  88 004FF          BISB2   #1, 46(R6)                                  ;
                     2C     A6         01  90 00503          MOVB    #1, 44(R6)                                  ;
                               00000000G EF  9F 00507        PUSHAB  GRAB_RESULTANT                              ;
                                       7E  D4 0050D          CLRL    -(SP)                                       ;
                                       56  DD 0050F          PUSHL   R6                                          ;
                 00000000G  EF         03  FB 00511          CALLS   #3, XPO$OPEN                                ;
                            67         50  D0 00518          MOVL    R0, STATUS                                  ;
                            03         67  E8 0051B          BLBS    STATUS, 49$                                 ; 0920
                                     0081  31 0051E          BRW     53$                                         ;
              50            69         1C  C1 00521 49$:     ADDL3   #28, RNIIOB, R0                             ; 0930
                     FC     A8     04  A0  D0 00525          MOVL    4(R0), IRAC+16                              ; 0932
                            68         60  3C 0052A          MOVZWL  (R0), IRAC+20                               ; 0933
              6C     B8     AA         03  E1 0052D          BBC     #3, GCA+116, 52$                            ; 0938
                            68     B4  AA  E8 00532          BLBS    GCA+112, 52$                                ;
                            53     08  AE  9E 00536          MOVAB   WORK_AREA, WORK_PTR                         ; 0955
                            08 00000000G EF  D1 0053A        CMPL    FS01+12, #8                                 ; 0961
                                       0D  12 00541          BNEQ    50$                                         ;
                            56         0F  D0 00543          MOVL    #15, WORK_COUNT                             ; 0964
              63 00000000'  EF         56  28 00546          MOVC3   WORK_COUNT, P.AAH, (WORK_PTR)               ; 0967
                                       08  11 0054E          BRB     51$                                         ; 0961
                            56         13  D0 00550 50$:     MOVL    #19, WORK_COUNT                             ; 0971
              63 00000000'  EF         56  28 00553          MOVC3   WORK_COUNT, P.AAI, (WORK_PTR)               ; 0974
              63     FC     B8         68  28 0055B 51$:     MOVC3   IRAC+20, @IRAC+16, (WORK_PTR)               ; 0979
                            56         68  C0 00560          ADDL2   IRAC+20, WORK_COUNT                         ; 0980
                            83     0D22  8F  B0 00563        MOVW    #3362, (WORK_PTR)+                          ; 0984
```

```
                                83              0A  90 00568          MOVB    #10, (WORK_PTR)+                                ; 0986
                                56              03  C0 0056B          ADDL2   #3, WORK_COUNT                                  ; 0987
                                50 00000000G    EF  D0 0056E          MOVL    RNOIOB, R0                                      ; 1011
                                6E              56  B0 00575          MOVW    WORK_COUNT, $IOB$OUTPUT                         ;
                          02    AE              0E  90 00578          MOVB    #14, $IOB$OUTPUT+2                              ;
                          03    AE              01  90 0057C          MOVB    #1, $IOB$OUTPUT+3                               ;
                          04    AE        08    AE  9E 00580          MOVAB   WORK_AREA, $IOB$OUTPUT+4                        ;
                          44    A0              6E  9E 00585          MOVAB   $IOB$OUTPUT, 68(R0)                             ;
                          2C    A0              07  90 00589          MOVB    #7, 44(R0)                                      ;
                                    00000000G   EF  9F 0058D          PUSHAB  XPO$FAILURE                                     ;
                                                7E  D4 00593          CLRL    -(SP)                                           ;
                                                50  DD 00595          PUSHL   R0                                              ;
                    00000000G   EF              03  FB 00597          CALLS   #3, XPO$PUT                                     ;
                                50              01  D0 0059E 52$:     MOVL    #1, R0                                          ; 1020
                                                    04 005A1          RET                                                     ;
                                50              02  D0 005A2 53$:     MOVL    #2, R0                                          ;
                                                    04 005A5          RET                                                     ;
                                                50  D4 005A6 54$:     CLRL    R0                                              ; 1034
                                                    04 005A8          RET                                                     ;

; Routine Size:  1449 bytes,    Routine Base:  $CODE$ + 0000

;  919          1035  1
```

```
;   921          1036  1 %sbttl 'get_out_default -- compute output filename from input filename'
;   922          1037  1 ROUTINE get_out_default (file_descriptor) : NOVALUE =
;   923          1038  1
;   924          1039  1 !++
;   925          1040  1 ! FUNCTIONAL DESCRIPTION:
;   926          1041  1 !
;   927          1042  1 !       This routine uses the input file type to compute the
;   928          1043  1 !       output file type (i.e., sometimes called extension).
;   929          1044  1 !
;   930          1045  1 ! FORMAL PARAMETERS:
;   931          1046  1 !
;   932          1047  1 !       FILE_DESCRIPTOR is a string descriptor for the input file name.
;   933          1048  1 !
;   934          1049  1 ! IMPLICIT INPUTS:      None
;   935          1050  1 !
;   936          1051  1 ! IMPLICIT OUTPUTS:     None
;   937          1052  1 !
;   938          1053  1 ! ROUTINE VALUE:
;   939          1054  1 ! COMPLETION CODES:     None
;   940          1055  1 !
;   941          1056  1 ! SIDE FFFECTS:         None
;   942          1057  1 !
;   943          1058  1 !--
;   944          1059  1
;   945          1060  2     BEGIN
;   946          1061  2
;   947          1062  2     BIND
;   948          1063  2         file_spec_stuff = .FILE_DESCRIPTOR : $STR_DESCRIPTOR ();
;   949          1064  2
;   950          1065  2     LOCAL
;   951          1066  2         file_specx,
;   952          1067  2         file_spec_lng,
;   953          1068  2         name_length,
;   954          1069  2         parse_spec_blk : $XPO_SPEC_BLOCK,
;   955          1070  2         ptr_u_ext,
;   956          1071  2         ptr_i,
;   957          1072  2         ptr_o,
;   958          1073  2         type_length,
;   959          1074  2         u_ext : VECTOR [CH$ALLOCATION (50)];
;   960          1075  2
;   961          1076  2     file_specx = .file_spec_stuff [STR$A_POINTER];
;   962          1077  2     file_spec_lng = .file_spec_stuff [STR$H_LENGTH];
;   963          1078  2
;   964          1079  2 !The code conditionalized by the %BLISS32 lexical function is
;   965          1080  2 !to get around a bug introduced in version 2.0 of VAX/VMS.
;   966          1081  2 !Logical names now start with an underscore, and this mucks up
;   967          1082  2 !XPORT's file spec parsing.
;   968          1083  2 %IF %BLISS(BLISS32) %THEN
;   969          1084  2         !Inform the builder of RUNOFF that this kludge is here.
;   970        L 1085  2         %MESSAGE ('BLISS32 Patch code included to strip "_" from output filespec');
;   971          1086  2         !Ignore the first character of the file spec if it's
;   972          1087  2         !an underscore so XPORT; this lets XPORT work correctly.
;   973          1088  2         IF  CH$RCHAR(.file_specx) EQL %C'_'
;   974          1089  2         THEN
;   975          1090  2             !It's an underscore. Do the kludge.
;   976          1091  3             BEGIN
;   977          1092  3             file_specx = CH$PLUS (.file_specx, 1);
```

```
;  978          1093  3              file_spec_lng = .file_spec_lng - 1;
;  979          1094  2              END;
;  980          1095  2 %FI
;  981          1096  2             !End of crock code.
;  982          1097  2
;  983          1098  2     !Parse the input file spec to get the specified type.
;  984        P 1099  2     $XPO_PARSE_SPEC ( SPEC_BLOCK = parse_spec_blk
;  985        P 1100  2                      ,FILE_SPEC = ( .file_spec_lng
;  986          1101  2                                   ,.file_specx )   );
;  987          1102  2     !Start building the output file spec.
;  988          1103  2     !
;  989          1104  2     !First set CH$PTRs to the parsed input file name.
;  990          1105  3     BEGIN
;  991          1106  3     BIND
;  992          1107  3         temp = parse_spec_blk [XPO$T_FILE_NAME] : $STR_DESCRIPTOR ();
;  993          1108  3
;  994          1109  3     name_length = .temp [STR$H_LENGTH];
;  995          1110  3     ptr_i = .temp [STR$A_POINTER];
;  996          1111  2     END;
;  997          1112  2
;  998          1113  2     !Set a CH$PTR to where the computed output file spec goes.
;  999          1114  2     ptr_o = CH$PTR (def_out_spc);
; 1000          1115  2     !Copy the input file name to the output file spec.
; 1001          1116  2
; 1002          1117  2     INCR i FROM 1 TO .name_length DO
; 1003          1118  2         CH$WCHAR_A (CH$RCHAR_A (ptr_i), ptr_o);
; 1004          1119  2
; 1005          1120  2     def_out_lng = .name_length;                  !Set current length.
; 1006          1121  3     BEGIN
; 1007          1122  3     BIND
; 1008          1123  3         temp = parse_spec_blk [XPO$T_FILE_TYPE] : $STR_DESCRIPTOR ();
; 1009          1124  3     type_length = .temp [STR$H_LENGTH];
; 1010          1125  3     ptr_i = .temp [STR$A_POINTER];
; 1011          1126  2     END;
; 1012          1127  2
; 1013          1128  2     !Translate the file type to upper case.
; 1014          1129  2     !Leave the result in U_EXT.
; 1015          1130  2     ptr_u_ext = CH$PTR (u_ext);          !CH$PTR to where file type goes when in upper case.
; 1016          1131  2     INCR i FROM 1 TO .type_length DO
; 1017          1132  3         BEGIN
; 1018          1133  3
; 1019          1134  3         LOCAL
; 1020          1135  3             temp;
; 1021          1136  3
; 1022          1137  3         temp = CH$RCHAR_A (ptr_i);
; 1023          1138  3
; 1024          1139  4         IF  lower_letter (.temp)
; 1025          1140  3         THEN
; 1026          1141  3             !Convert lower case letter to upper case.
; 1027          1142  3             temp = upper_case (.temp);
; 1028          1143  3
; 1029          1144  3         !Put processed character into file type area.
; 1030          1145  3         CH$WCHAR_A (.temp, ptr_u_ext);
; 1031          1146  2         END;
; 1032          1147  2
; 1033          1148  2     ! Search through the various known input filetypes looking for a type that
; 1034          1149  2     ! matches what was given.
```

```
;  1035          1150  2
;  1036          1151  2      ptr_u_ext = .opftop [0];     !Assume it won't be found, and point to ".MEM".
;  1037          1152  2
;  1038          1153  2      IF .ipftyp EQL -1 THEN       ! We haven't yet mapped against IPFTOP
;  1039          1154  3          BEGIN
;  1040          1155  3          INCR i FROM 0 TO (ipftct-1) DO
;  1041          1156  3
;  1042          1157  3              IF CH$EQL ( .type_length
;  1043          1158  3                        ,CH$PTR (u_ext)
;  1044          1159  3                        ,4
;  1045          1160  3                        ,.ipftop [.i]  )
;  1046          1161  3              THEN
;  1047          1162  3              !Found a match.  Set a CH$PTR to the matching output file type.
;  1048          1163  4                  BEGIN
;  1049          1164  4                  ptr_u_ext = .opftop [.i];
;  1050          1165  4                  EXITLOOP
;  1051          1166  4                  END
;  1052          1167  3          END
;  1053          1168  2      ELSE
;  1054          1169  2          ptr_u_ext = .opftop[.ipftyp];
;  1055          1170  2
;  1056        U 1171  2 %IF DSRPLUS %THEN
;  1057        U 1172  2      IF  .gca_op_dev EQL op_dev_vt100
;  1058        U 1173  2      THEN
;  1059        U 1174  2          !User said /DEC=VT100, so make .VT1 the default output type.
;  1060        U 1175  2          ptr_u_ext = CH$PTR (UPLIT ('.VT1'));
;  1061          1176  2 %FI
;  1062          1177  2
;  1063          1178  2 %IF LN01 %THEN
;  1064          1179  3      IF (.gca_op_dev EQL op_dev_ln01
;  1065          1180  3         OR .gca_op_dev EQL op_dev_ln01e)
;  1066          1181  2      THEN
;  1067          1182  2          !User said /DEVICE=LN01[e], so make .LNI the default output type.
;  1068          1183  2          ptr_u_ext = CH$PTR (UPLIT ('.LNI'));
;  1069          1184  2 %FI
;  1070          1185  2
;  1071        U 1186  2 %IF FLIP %THEN
;  1072        U 1187  2      IF  (.gca_op_dev EQL op_dev_flip)
;  1073        U 1188  2      THEN
;  1074        U 1189  2          !User said /DEC=FLIP; this overrides a /DEC=VT100 (if also given).
;  1075        U 1190  2          ptr_u_ext = CH$PTR (UPLIT ('.BFL'));
;  1076          1191  2 %FI
;  1077          1192  2
;  1078          1193  2      !Copy the file type to the output file spec area.
;  1079          1194  2      !Note that if there was no match, then PTR_U_EXT points to ".MEM"
;  1080          1195  2
;  1081          1196  2      INCR i FROM 1 TO 4 DO
;  1082          1197  2          CH$WCHAR_A (CH$RCHAR_A (ptr_u_ext), ptr_o);
;  1083          1198  2
;  1084          1199  2      def_out_lng = .def_out_lng + 4;              !Update file spec length.
;  1085          1200  1      END;                                         !End of get_out_default


                                                        .PSECT  $PLIT$,NOWRT,NOEXE,2

                                    49  4E  4C  2E  0003C P.AAK:  .ASCII  \.LNI\                                    ;
```

```
                                                        .EXTRN  XPO$PARSE_SPEC

                                                        .PSECT  $CODE$,NOWRT,2

                                        07FC 00000 GET_OUT_DEFAULT:
                                                        .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9,R10                ; 1037
                    5A 00000000G    EF   9E 00002       MOVAB   GCA'208, R10
                    59 00000000G    EF   9E 00009       MOVAB   OPFTOP, R9
                    58 00000000'    EF   9E 00010       MOVAB   DEF_OUT_LNG, R8
                    5E      FF7C    CE   9E 00017       MOVAB   -132(SP), SP
                    50        04    AC   D0 0001C       MOVL    FILE_DESCRIPTOR, R0                             ; 1063
                    51        04    A0   D0 00020       MOVL    4(R0), FILE_SPECX                               ; 1076
                    50              60   3C 00024       MOVZWL  (R0), FILE_SPEC_LNG                             ; 1077
                 5F 8F              61   91 00027       CMPB    (FILE_SPECX), #95                               ; 1088
                                    04   12 0002B       BNEQ    1$
                                    51   D6 0002D       INCL    FILE_SPECX                                      ; 1092
                                    50   D7 0002F       DECL    FILE_SPEC_LNG                                   ; 1093
                    6E              50   BU 00031 1$:   MOVW    FILE_SPEC_LNG, $STR$FILE_SPEC                   ; 1101
                 02 AE              0E   90 00034       MOVB    #14, $STR$FILE_SPEC+2
                 03 AE              01   90 00038       MOVB    #1, $STR$FILE_SPEC+3
                 04 AE              51   D0 0003C       MOVL    FILE_SPECX, $STR$FILE_SPEC+4
                       00000000G    EF   9F 00040       PUSHAB  XPO$FAILURE
                                    7E   D4 00046       CLRL    -(SP)
                    7E              01   CE 00048       MNEGL   #1, -(SP)
                            48      AE   9F 0004B       PUSHAB  PARSE_SPEC_BLK
                            10      AE   9F 0004E       PUSHAB  $STR$FILE_SPEC
                00000000G   EF          05   FB 00051       CALLS   #5, XPO$PARSE_SPEC
                    51          5C      AE   3C 00058       MOVZWL  TEMP, NAME_LENGTH                           ; 1109
                    52          60      AE   D0 0005C       MOVL    TEMP+4, PTR_I                               ; 1110
                    56          04      A8   9E 00060       MOVAB   DEF_OUT_SPC, PTR_O                          ; 1114
                                        50   D4 00064       CLRL    I                                           ; 1118
                                        03   11 00066       BRB     3$
                                86              82   90 00068 2$:   MOVB    (PTR_I)+, (PTR_O)+
                             F9 50              51   F3 0006B 3$:   AOBLEQ  NAME_LENGTH, I, 2$
                                68              51   D0 0006F       MOVL    NAME_LENGTH, DEF_OUT_LNG            ; 1120
                                57          64  AE   3C 00072       MOVZWL  TEMP, TYPE_LENGTH                   ; 1124
                                52          68  AE   D0 00076       MOVL    TEMP+4, PTR_I                       ; 1125
                                55          08  AE   9E 0007A       MOVAB   U_EXT, PTR_O_EXT                    ; 1130
                                            51   D4 0007E       CLRL    I                                   ; 1131
                                            1B   11 00080       BRB     6$
                                50              82   9A 00082 4$:   MOVZBL  (PTR_I)+, TEMP                     ; 1137
                        00000061 8F             50   D1 00085       CMPL    TEMP, #97                           ; 1139
                                                0C   19 0008C       BLSS    5$
                        0000007A 8F             50   D1 0008E       CMPL    TEMP, #122
                                                03   14 00095       BGTR    5$
                                50              20   C2 00097       SUBL2   #32, TEMP                           ; 1142
                                85              50   90 0009A 5$:   MOVB    TEMP, (PTR_U_EXT)+                  ; 1145
                             E1 51              57   F3 0009D 6$:   AOBLEQ  TYPE_LENGTH, I, 4$                 ; 1131
                                55              69   D0 000A1       MOVL    OPFTOP, PTR_U_EXT                   ; 1151
                                50 00000000G    EF   D0 000A4       MOVL    IPFTYP, R0                          ; 1153
                        FFFFFFFF 8F             50   D1 000AB       CMPL    R0, #-1
                                                26   12 000B2       BNEQ    9$
                                54              01   CE 000B4       MNEGL   #1, I                               ; 1155
                                                17   11 000B7       BRB     8$
                                50 00000000GEF  44   D0 000B9 7$:   MOVL    IPFTOP[I], R0                       ; 1160
                 04          00      08     AE       57   2D 000C1       CMPC5   TYPE_LENGTH, U_EXT, #0, #4, (R0)    ; 1157
```

```
                                          60      000C7                                                    ;
                                          06   12 000C8          BNEQ     8$                              ;
                         55             6944   D0 000CA          MOVL     OPFTOP[I], PTR_U_EXT            ; 1164
                                          0E   11 000CE          BRB      10$                             ; 1163
              E1         54 00000000G     8F   F3 000D0  8$:     AOBLEQ   #IPFTCT-1, I, 7$                ; 1157
                                          04   11 000D8          BRB      10$                             ; 1154
                         55             6940   D0 000DA  9$:     MOVL     OPFTOP[R0], PTR_U_EXT           ; 1169
     04       6A         04               04   ED 000DE  10$:    CMPZV    #4, #4, GCA+208, #4             ; 1179
                                          07   13 000E3          BEQL     11$                             ;
     05       6A         04               04   ED 000E5          CMPZV    #4, #4, GCA+208, #5             ; 1180
                                          07   12 000EA          BNEQ     12$                             ;
                         55 00000000'     EF   9E 000EC  11$:    MOVAB    P.AAK, PTR_U_EXT                ; 1183
                         50               01   D0 000F3  12$:    MOVL     #1, I                           ; 1197
                         86               85   90 000F6  13$:    MOVB     (PTR_U_EXT)+, (PTR_O)+          ;
              F9         50               04   F3 000F9          AOBLEQ   #4, I, 13$                      ;
                         68               04   C0 000FD          ADDL2    #4, DEF_OUT_LNG                 ; 1199
                                               04 00100          RET                                      ; 1200

; Routine Size:  257 bytes,    Routine Base:  $CODE$ + 05A9


; 1086          1201  1
```

```
;1088      1202  1 %sbttl 'FBWAIT -- performs use  syncronization for /PAUSE O/P w/FF'
;1089      1203  1 GLOBAL ROUTINE fbwait : NOVALUE =
;1090      1204  1
;1091      1205  1 !++
;1092      1206  1 ! FUNCTIONAL DESC''PTION:
;1093      1207  1 !
;1094      1208  1 !       Issues some BELLs (^Gs) and a FORMFEED (^L) and waits for
;1095      1209  1 !       the RUNOFF user to input a single character.
;1096      1210  1 !
;1097      1211  1 ! FORMAL PARAMETERS:    None
;1098      1212  1 !
;1099      1213  1 ! IMPLICIT INPUTS·      None
;1100      1214  1 !
;1101      1215  1 ! IMPLICIT OUTPUTS:     None
;1102      1216  1 !
;1103      1217  1 ! ROUTINE VALUE:
;1104      1218  1 ! COMPLETION CODES:     None
;1105      1219  1 !
;1106      1220  1 ! SIDE EFFECTS:         None
;1107      1221  1 !
;1108      1222  1 !--
;1109      1223  1
;1110      1224  2     BEGIN
;1111    P 1225  2     $XPO_GET (IOB = tsiiob
;1112    P 1226  2               ,PROMPT = (3, CH$PTR (UPLIT (
;1113    P 1227  2                         %STRING (BELL, BELL, %CHAR (%O'14')))) )
;1114    P 1228  2               ,CHARACTERS = 1
;1115      1229  2               );
;1116      1230  2
;1117      1231  2     !Send a carriage return, so text starts at the left margin
;1118    P 1232  2     $XPO_PUT (IOB = tsiiob
;1119    P 1233  2               , STRING = (1, CH$PTR(UPLIT(%STRING(%CHAR(%O'15')))))
;1120      1234  2               );
;1121      1235  2
;1122      1236  1     END;                                        !End of FBWAIT


                                                .PSECT  $PLIT$,NOWRT,NOEXE,2

                        00  0C  07  07  00040 P.AAP:  .ASCII  <7><7><12><0>                    ;
                        00  00  00  0D  00044 P.AAT:  .ASCII  <13><0><0><0>                    ;

                                                .EXTRN  XST$FREE_TEMP

                                                .PSECT  $CODE$,NOWRT,2

                                  001C 00000        .ENTRY  FBWAIT, Save R2,R3,R4             ; 1203
                    54 00000000G  EF   9E 00002     MOVAB   XPO$FAILURE, R4                   ;
                    53 00000000G  EF   9E 00009     MOVAB   IOB$+36, R3                       ;
                    5E            08   C2 00010     SUBL2   #8, SP                            ;
                    6E            03   B0 00013     MOVW    #3, $STR$STRING                   ; 1229
                02  AE            0E   90 00016     MOVB    #14, $STR$STRING+2                ;
                03  AE            01   90 0001A     MOVB    #1, $STR$STRING+3                 ;
                04  AE  00000000' EF   9E 0001E     MOVAB   P.AAP, $STR$STRING+4              ;
                                   7E   D4 00026     CLRL    -(SP)                             ;
                              04   AE   9F 00028     PUSHAB  $STR$STRING                       ;
```

```
                                          7E  D4 0002B         CLRL    -(SP)                                ;
        00000000G   EF                    03  FB 0002D         CALLS   #3, XST$FORMAT                       ;
                    52                    50  D0 00034         MOVL    R0, R2                               ;
                    50                    63  D0 00037         MOVL    IOB$+36, R0                          ;
                                          09  13 0003A         BEQL    1$                                   ;
                                          50  DD 0003C         PUSHL   R0                                   ;
        00000000G   EF                    01  FB 0003E         CALLS   #1, XST$FREE_TEMP                    ;
                    63                    52  D0 00045 1$:     MOVL    R2, IOB$+36                          ;
               10   A3                    01  B0 00048         MOVW    #1, IOB$+52                          ;
               12   A3                    0E  90 0004C         MOVB    #14, IOB$+54                         ;
               08   A3                    06  90 00050         MOVB    #6, IOB$+44                          ;
                                          54  DD 00054         PUSHL   R4                                   ;
                                          7E  D4 00056         CLRL    -(SP)                                ;
                                 DC       A3  9F 00058         PUSHAB  IOB$                                 ;
        00000000G   EF                    03  FB 0005B         CALLS   #3, XPO$GET                          ;
                    6E                    01  B0 00062         MOVW    #1, $IOB$OUTPUT                      ; 1234
               02   AE                    0E  90 00065         MOVB    #14, $IOB$OUTPUT+2                   ;
               03   AE                    01  90 00069         MOVB    #1, $IOB$OUTPUT+3                    ;
               04   AE  00000000'         EF  9E 0006D         MOVAB   P.AAT, $IOB$OUTPUT+4                 ;
               20   A3                    6E  9E 00075         MOVAB   $IOB$OUTPUT, IOB$+68                 ;
               08   A3                    07  90 00079         MOVB    #7, IOB$+44                          ;
                                          54  DD 0007D         PUSHL   R4                                   ;
                                          7E  D4 0007F         CLRL    -(SP)                                ;
                                 DC       A3  9F 00081         PUSHAB  IOB$                                 ;
        00000000G   EF                    03  FB 00084         CALLS   #3, XPO$PUT                          ;
                                              04 0008B         RET                                          ; 1236

; Routine Size:  140 bytes,    Routine Base:  $CODE$ + 06AA


; 1123          1237  1
```

```
;  1125          1238  1 %sbttl 'BWAIT -- performs user syncronization for /PAUSE O/P w/o FF'
;  1126          1239  1 GLOBAL ROUTINE bwait : NOVALUE =
;  1127          1240  1
;  1128          1241  1 !++
;  1129          1242  1 ! FUNCTIONAL DESCRIPTION:
;  1130          1243  1 !
;  1131          1244  1 !       This routine is just like FBWAIT, except that no FORMFEED is issued.
;  1132          1245  1 !
;  1133          1246  1 ! FORMAL PARAMETERS:    None
;  1134          1247  1 !
;  1135          1248  1 ! IMPLICIT INPUTS:      None
;  1136          1249  1 !
;  1137          1250  1 ! IMPLICIT OUTPUTS:     None
;  1138          1251  1 !
;  1139          1252  1 ! ROUTINE VALUE:
;  1140          1253  1 ! COMPLETION CODES:     None
;  1141          1254  1 !
;  1142          1255  1 ! SIDE EFFECTS:         None
;  1143          1256  1 !
;  1144          1257  1 !--
;  1145          1258  1
;  1146          1259  2     BEGIN
;  1147          1260  2
;  1148          1261  2     EXTERNAL
;  1149          1262  2         tsiiob: $XPO_IOB();
;  1150          1263  2
;  1151        P 1264  2     $XPO_GET (IOB = tsiiob
;  1152        P 1265  2               ,PROMPT = (4, CH$PTR(UPLIT(%STRING(BELL,DEL,BELL,DEL))) )
;  1153        P 1266  2               ,CHARACTERS = 1
;  1154          1267  2               );
;  1155          1268  2
;  1156          1269  2     !Send a carriage return, so text starts at the left margin
;  1157        P 1270  2     $XPO_PUT (IOB = tsiiob
;  1158        P 1271  2               ,STRING = (1, CH$PTR(UPLIT(%STRING(%CHAR(%O'15')))))
;  1159          1272  2               );
;  1160          1273  1     END;                                        !End of BWAIT


                                                .PSECT  $PLIT$,NOWRT,NOEXE,2

                                7F  07  7F  07  00048 P.AAY:    .ASCII  <7><127><7><127>                ;
                                00  00  00  0D  0004C P.ABC:    .ASCII  <13><0><0><0>                   ;


                                                .PSECT  $CODE$,NOWRT,2

                                        001C 00000              .ENTRY  BWAIT, Save R2,R3,R4            ; 1239
                            54 00000000G    EF   9E 00002       MOVAB   XPO$FAILURE, R4                 ;
                            53 00000000G    EF   9E 00009       MOVAB   IOB$+36, R3                     ;
                            5E              08   C2 00010       SUBL2   #8, SP                          ;
                            6E              04   B0 00013       MOVW    #4, $STR$STRING                 ; 1267
                        02  AE              0E   90 00016       MOVB    #14, $STR$STRING+2              ;
                        03  AE              01   90 0C01A       MOVB    #1, $STR$STRING+3               ;
                        04  AE  00000000'    EF   9E 0001E       MOVAB   P.AAY, $STR$STRING+4            ;
                                            7E   D4 00026       CLRL    -(SP)                           ;
```

```
                                    04   AE  9F 00028          PUSHAB  $STR$STRING                                  ;
                                         7E  D4 0002B          CLRL    -(SP)                                        ;
                     00000000G   EF      03  FB 0002D          CALLS   #3, XST$FORMAT                               ;
                                 52      50  D0 00034          MOVL    R0, R2                                       ;
                                 50      63  D0 00037          MOVL    IOB$+36, R0                                  ;
                                         09  13 0003A          BEQL    1$                                           ;
                                         50  DD 0003C          PUSHL   R0                                           ;
                     00000000G   EF      01  FB 0003E          CALLS   #1, XST$FREE_TEMP                            ;
                                 63      52  D0 00045 1$:      MOVL    R2, IOB$+36                                  ;
                          10     A3      01  B0 00048          MOVW    #1, IOB$+52                                  ;
                          12     A3      0E  90 0004C          MOVB    #14, IOB$+54                                 ;
                          08     A3      06  90 00050          MOVB    #6, IOB$+44                                  ;
                                         54  DD 00054          PUSHL   R4                                           ;
                                         7E  D4 00056          CLRL    -(SP)                                        ;
                                    DC   A3  9F 00058          PUSHAB  IOB$                                         ;
                     00000000G   EF      03  FB 0005B          CALLS   #3, XPO$GET                                  ;
                                 6E      01  B0 00062          MOVW    #1, $IOB$OUTPUT                              ; 1272
                          02     AE      0E  90 00065          MOVB    #14, $IOB$OUTPUT+2                           ;
                          03     AE      01  90 00069          MOVB    #1, $IOB$OUTPUT+3                            ;
                          04     AE 00000000'  EF  9E 0006D    MOVAB   P.ABC, $IOB$OUTPUT+4                         ;
                          20     A3      6E  9E 00075          MOVAB   $IOB$OUTPUT, IOB$+68                         ;
                          08     A3      07  90 00079          MOVB    #7, IOB$+44                                  ;
                                         54  DD 0007D          PUSHL   R4                                           ;
                                         7E  D4 0007F          CLRL    -(SP)                                        ;
                                    DC   A3  9F 00081          PUSHAB  IOB$                                         ;
                     00000000G   EF      03  FB 00084          CALLS   #3, XPO$PUT                                  ;
                                             04 0008B          RET                                                  ; 1273

; Routine Size:  140 bytes,    Routine Base:  $CODE$ + 0736


; 1161          1274  1
; 1162          1275  1 END                                          !End of module
; 1163          1276  0 ELUDOM




;                              PSECT SUMMARY
;
;       Name                     Bytes                   Attributes
;
;  $OWN$                           68  NOVEC,  WRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)
;  $PLIT$                          80  NOVEC,NOWRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)
;  $CODE$                        1986  NOVEC,NOWRT,  RD ,  EXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)


;                        Library Statistics
;
;                                     -------- Symbols --------      Pages       Processing
;       File                          Total    Loaded   Percent      Mapped      Time
;
;  _$255$DUA28:[SYSLIB]XPORT.L32;1      590       168        28        252        00:00.1
```

```
;  _$255$DUA28:[RUNOFF.SRC]DSRLIB.L32;1       1248        54         4        86          00:00.2



;                                       COMMAND QUALIFIERS

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

; Size:          1986 code + 148 data bytes
; Run Time:         01:03.8
; Elapsed Time:     01:54.9
; Lines/CPU Min:     1200
; Lexemes/CPU-Min: 73280
; Memory Used:  465 pages
; Compilation Complete
```

BARS
LIS

SETCAS
REQ

VR
REQ

ALINE
LIS

CARAGE
LIS

SAVSTK
REQ

AREC
LIS

TOCRTY
REQ

XTNTAB
REQ

CAPTION
LIS

CLH
LIS

SCA
REQ

BOTPAG
LIS

TPROB
REQ

CNTVMSREQ
R32

TSF
REQ

NDXVMSREQ
R32

SAVE
REQ

CENTXT
LIS

CNVDAT
LIS

CONVBB
LIS

CONVBR
LIS

CNTVMSMSG
LIS

CONTENTS
LIS

CNTVMS
LIS

CNTVRS
LIS

CONTRL
LIS

CONVBI
LIS