H 2

```
RRRRRRRRRRRR     EEEEEEEEEEEEEEE  MMM         MMM
RRRRRRRRRRRR     EEEEEEEEEEEEEEE  MMM         MMM
RRRRRRRRRRRR     EEEEEEEEEEEEEEE  MMM         MMM
RRR         RRR  EEE              MMMMMM   MMMMMM
RRR         RRR  EEE              MMMMMM   MMMMMM
RRR         RRR  EEE              MMMMMM   MMMMMM
RRR         RRR  EEE              MMM   MMM   MMM
RRR         RRR  EEE              MMM   MMM   MMM
RRR         RRR  EEE              MMM   MMM   MMM
RRRRRRRRRRRR     EEEEEEEEEEEE     MMM         MMM
RRRRRRRRRRRR     EEEEEEEEEEEE     MMM         MMM
RRRRRRRRRRRR     EEEEEEEEEEEE     MMM         MMM
RRR   RRR        EEE              MMM         MMM
RRR   RRR        EEE              MMM         MMM
RRR   RRR        EEE              MMM         MMM
RRR      RRR     EEE              MMM         MMM
RRR      RRR     EEE              MMM         MMM
RRR      RRR     EEE              MMM         MMM
RRR         RRR  EEEEEEEEEEEEEEE  MMM         MMM
RRR         RRR  EEEEEEEEEEEEEEE  MMM         MMM
RRR         RRR  EEEEEEEEEEEEEEE  MMM         MMM
```

```
**FILE**ID**REMPROTCL                                    M  8




RRRRRRRR    EEEEEEEEEE  MM      MM  PPPPPPPP    RRRRRRRR      OOOOOO      TTTTTTTTTT    CCCCCCCC  LL
RRRRRRRR    EEEEEEEEEE  MM      MM  PPPPPPPP    RRRRRRRR      OOOOOO      TTTTTTTTTT    CCCCCCCC  LL
RR      RR  EE          MMMM  MMMM  PP      PP  RR      RR  OO      OO        TT      CC          LL
RR      RR  EE          MMMM  MMMM  PP      PP  RR      RR  OO      OO        TT      CC          LL
RR      RR  EE          MM  MM  MM  PP      PP  RR      RR  OO      OO        TT      CC          LL
RR      RR  EE          MM  MM  MM  PP      PP  RR      RR  OO      OO        TT      CC          LL
RRRRPRRR    EEEEEEEE    MM      MM  PPPPPPPP    RRRRRRRR    OO      OO        TT      CC          LL
RRRRRRRR    EEEEEEEE    MM      MM  PPPPPPPP    RRRRRRRR    OO      OO        TT      CC          LL
RR  RR      EE          MM      MM  PP          RR  RR      OO      OO        TT      CC          LL
RR  RR      EE          MM      MM  PP          RR  RR      OO      OO        TT      CC          LL
RR    RR    EE          MM      MM  PP          RR    RR    OO      OO        TT      CC          LL               ....
RR    RR    EE          MM      MM  PP          RR    RR    OO      OO        TT      CC          LL               ....
RR      RR  EEEEEEEEEE  MM      MM  PP          RR      RR    OOOOOO          TT        CCCCCCCC  LLLLLLLLLL       ....
RR      RR  EEEEEEEEEE  MM      MM  PP          RR      RR    OOOOOO          TT        CCCCCCCC  LLLLLLLLLL       ....


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
```

Table of contents

```
0000     1         .TITLE  REMPROTCL - PROCESS PROTOCOL DEPENDENT STUFF
0000     2         .IDENT  'V04-000'
0000     3 ;
0000     4 ;*****************************************************************************
0000     5 ;*                                                                           *
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0000    23 ;*                                                                           *
0000    24 ;*                                                                           *
0000    25 ;*****************************************************************************
0000    26
0000    27 ;++
0000    28 ; FACILITY: REMOTE I/O ACP
0000    29 ;
0000    30 ; ABSTRACT:
0000    31 ;       THIS MODULE PERFORMS PROTOCOL DEPENDENT FUNCTIONS FOR REMACP
0000    32 ;
0000    33 ; ENVIRONMENT:
0000    34 ;       MODE = KERNEL
0000    35 ;--
```

```
0000     37          .SBTTL  HISTORY
0000     38 ; AUTHOR:        SCOTT G. DAVIS, CREATION DATE: 21-Aug-1979
0000     39 ;
0000     40 ; MODIFIED BY:
0000     41 ;
0000     42 ;       V03-003 JLV0251         Jake VanNoy             29-APR-1983
0000     43 ;               Change TSA connections to look for BIND ACCEPT
0000     44 ;               rather than a BIND.
0000     45 ;
0000     46 ;       V03-002 JLV0216         Jake VanNoy             29-OCT-1982
0000     47 ;               Add code to support TSA connects. This code is a
0000     48 ;               first cut, as the connect session is likely to be
0000     49 ;               ECOed soon. This will enable short term testing
0000     50 ;               of VAX to VAX connections with the CTERM protocol.
0000     51 ;
0000     52 ;       V03-001 DJD3002 Darrell Duffy   16-March-1982
0000     53 ;               Initialize DEVDEPEND2 from config message.
0000     54 ;
0000     55 ;       V02-003 DJD3001 Darrell Duffy   21-October-1981
0000     56 ;               Compare protocol version and eco to allow upward
0000     57 ;               compatibility for this and next versions.
0000     58 ;
0000     59 ;       V02-002 DJD2001 Darrell Duffy   5-Mar-1981
0000     60 ;                       RTTDRIVER calls netdriver directly for io.
0000     61 ;
```

```
                          0000          .SBTTL  DECLARATIONS
                          0000   ;
                          0000   ; INCLUDE FILES:
                          0000   ;
                          0000
                          0000          $CCBDEF
                          0000          $DDBDEF                 ; device data block
                          0000          $DDTDEF                 ; driver dispatch table
                          0000          $DYNDEF GLOBAL
                          0000          $PCBDEF GLOBAL
                          0000          $RBFDEF
                          0000          $REMDEF
                          0000          $UCBDEF
                          0000          $RTTUCBEXT              ; RTT UCB extensions
                          0000
                          0000   ;
                          0000   ; MACROS:
                          0000   ;
                          0000
                          0000   ;
                          0000   ; EQUATED SYMBOLS:
                          0000   ;
                          0000
                0000000A  0000   CTP$B_TYPE            = ^X0A          ; *** TEMP
                          0000
                          0000   ;
                          0000   ; OWN STORAGE:
                          0000   ;
                          0000
                      00000000          .PSECT  REM_PURE,NOWRT,NOEXE
                          0000
                          0000   VAX_CONFIG_MSG:                        ; Remote terminal handler configuration msg
                      01  0000          .BYTE   1                       ; This is a configuration message
                      01  0001          .BYTE   REM$C_CURVRS            ; Protocol version
                   00 01  0002          .BYTE   REM$C_CURECO,0          ; ECO, customer mod
                    0007  0004          .WORD   7                       ; This is a VMS system speaking
                    0004  0006   SUPPORT:       .WORD   1@2             ; I speak only the VMS protocol
                          0008   VAX_CONFIG_END:                        ; End of message
                          0008
                          0008   CTERM_BIND_MSG:                        ; Remote terminal handler configuration msg
                      01  0008          .BYTE   1                       ; This is a BIND message
                      02  0009          .BYTE   2                       ; Protocol version (TSA/CTERM)
                   00 00  000A          .BYTE   0,0                     ; ECO, customer mod
                    0007  000C          .WORD   7                       ; This is a VMS system speaking
                    0010  000E          .WORD   1@4                     ; I speak CTERM protocol
                          0010   CTERM_BIND_END:                        ; End of message
                          0010
                          0010   CTERM_UNBIND_MSG:
                      02  0010          .BYTE   2                       ; UNBIND
                    0001  0011          .WORD   1                       ; Incompatible version reason code
                          0013   CTERM_UNBIND_END:
                          0013
52 45 56 49 52 44 54 43 00'  0013   CTDRV_NAME:     .ASCIC  /CTDRIVER/
                      08  0013
                          001C
                      00000000          .PSECT  REM_IMPURE      NOSHR,NOEXE,RD,WRT
                          0000
```

```
                     0000   119 DISCON_MSG:                          ; Protocol DISCONNECT message
                  02 0000   120          .BYTE   2                  ; Message type code
            00000002 0001   121 DISC_REASON:    .BLKB   1           ; This is the reason - T.B.S.
                     0002   122 DISCON_END:                          ; End of message
```

```
                00000000   124          .PSECT  REM_CODE,NOWRT
                    0000   125
                    0000   126 ;++
                    0000   127 ;
                    0000   128 ; REM$PROTOCOL - This is an incredibly protocol-dependent module for
                    0000   129 ;                remote terminal handling.  The idea is to take the DECnet
                    0000   130 ;                standard of CONNECT,CONFIG,OPERATE and use it here,
                    0000   131 ;                more or less.  What is expected here is a CONFIGURE
                    0000   132 ;                message with the format above, but a quadword of terminal
                    0000   133 ;                characteristics is appended - they are jammed into the UCB
                    0000   134 ;                After that, the link reverts to passing all messages through.
                    0000   135 ;
                    0000   136 ; INPUTS:
                    0000   137 ;
                    0000   138 ;       R5 - virtual device UCB address
                    0000   139 ;       R7 - address of received message
                    0000   140 ;       R11 - device index
                    0000   141 ;
                    0000   142 ; OUTPUTS:
                    0000   143 ;
                    0000   144 ;       NONE
                    0000   145 ;
                    0000   146 ;--
                    0000   147
                    0000   148 ;
                    0000   149 ; Message wasn't a VAX protocol connection...
                    0000   150 ;
                    0000   151 NOT_VAX:
                    0000   152          BRW     TRY_CTERM               ; Branch
                    0003   153
                    0003   154 REM$PROTOCOL::
                    0003   155
00D8 C5   2A   91   0003   156          CMPB    #42,UCB$B_RTT_OBJ(R5)   ; TSA request?
          F6   13   0008   157          BEQL    NOT_VAX                 ; go ahead
                    000A   158
50   0000'CF   9E   000A   159          MOVAB   W^VAX_CONFIG_MSG,R0     ; Point at template
     51   57   D0   000F   160          MOVL    R7,R1                   ; Point at received message
     81   80   91   0012   161          CMPB    (R0)+,(R1)+             ; Check message type
          6F   12   0015   162          BNEQ    PROT_ERROR              ; If NEQ protocol error
0001'CF   01   90   0017   163          MOVB    #1,W^DISC_REASON        ; Assume wrong version
00D4 C5   61   90   001C   164          MOVB    (R1), -                 ; Squirrel away the version for later
                    0021   165                  UCB$B_RTT_PROVRS(R5)    ;
     81   80   91   0021   166          CMPB    (R0)+,(R1)+             ; Check protocol version
          63   1F   0024   167          BLSSU   SEND_DISCON             ; send a DISCONNECT
00D5 C5   61   90   0026   168          MOVB    (R1), -                 ; Save the ECO number for now
                    002B   169                  UCB$B_RTT_PROECO(R5)    ;
0001'CF   02   90   002B   170          MOVB    #2,W^DISC_REASON        ; Assume he doesn't speak my language
     50   04   C0   0030   171          ADDL    #4,R0                   ; Move past uninteresting stuff
     51   04   C0   0033   172          ADDL    #4,R1                   ; Here, too
     81   80   B3   0036   173          BITW    (R0)+,(R1)+             ; Can he do what I do?
          4E   13   0039   174          BEQL    SEND_DISCON             ; If EQL no - error
                    003B   175
                    003B   176 ;
                    003B   177 ;       Decide which VRS and ECO we are going to speak on our end.
                    003B   178 ;       PROVRS and PROECO are his end of things.  We will set them to our
                    003B   179 ;       end so that RTTDRIVER can look at these to decide what protocol to
                    003B   180 ;       build.
```

```
                     003B   181 ;
                     003B   182
        00D4 C5   91 003B   183          CMPB    UCB$B_RTT_PROVRS(R5),-  ; If other side is up to snuff
             01      003F   184                  #REM$C_CURVRS           ; and not beyond us
             0C   13 0040   185          BEQL    10$                     ; then check eco number
  00D4 C5    01   90 0042   186          MOVB    #REM$C_CURVRS, -        ; Else speak our latest to him.
                     0047   187                  UCB$B_RTT_PROVRS(R5)    ; and he will talk down to us.
  00D5 C5    01   90 0047   188 5$:      MOVB    #REM$C_CURECO, -        ; use our latest eco as well
                     004C   189                  UCB$B_RTT_PROECO(R5)    ;
             07   11 004C   190          BRB     20$                     ;
                     004E   191
        00D5 C5   91 004E   192 10$:     CMPB    UCB$B_RTT_PROECO(R5),-  ; Is the ECO greater than ours
             01      0052   193                  #REM$C_CURECO           ;
             F2   1A 0053   194          BGTRU   5$                      ; Use our latest ECO to talk to him
                     0055   195 20$:
                     0055   196
                     0055   197          ASSUME  UCB$L_DEVDEPEND-UCB$B_DEVCLASS EQ 4
                     0055   198
     40 A5   81   7D 0055   199          MOVQ    (R1)+,UCB$B_DEVCLASS(R5) ; Stuff the terminal characteristics
        00D5 C5   95 0059   200          TSTB    UCB$B_RTT_PROECO(R5)    ; Is this the latest version?
             04   13 005D   201          BEQL    30$                     ; Nope, just 8 bytes of chars
             81   D0 005F   202          MOVL    (R1)+,-                 ;
          48 A5      0061   203                  UCB$L_RTT_DEVDEPEND2(R5) ; for all 12 bytes
     64 A5   10   88 0063   204 30$:     BISB    #UCB$M_ONLINE,UCB$W_STS(R5) ; Not initializing protocol
                     0067   205
                     0067   206 ;
                     0067   207 ; Now the link is valid and up.  We need to obtain the window block
                     0067   208 ; for the rttdriver and then call it with an attention message to
                     0067   209 ; start its receive to the net link.
                     0067   210 ;
                     0067   211
50   0000'DF4B   3C  0067   212          MOVZWL  @W^REM$GL_CHANVEC[R11],R0 ; Obtain the channel
55   0000'DF4B   D0  006D   213          MOVL    @W^REM$GL_UCBVEC[R11],R5 ; and the ucb address
   00000000'GF   16  0073   214          JSB     G^IOC$VERIFYCHAN        ; obtain the ccb address for the net
        04 A1    D0  0079   215          MOVL    CCB$L_WIND(R1),-        ; Store the window block address
      00B4 C5        007C   216                  UCB$L_RTT_NETWIND(R5)   ; in the ucb for the rttdriver
      52   04    D0  007F   217          MOVL    #RBF$C_TT_STARTRCV, R2  ; The attention modifier code
         FF7B'   30  0082   218          BSBW    REM$ATTNMSG             ; Call driver with attention message
                 05  0085   219          RSB                             ; Done
                     0086   220 ;
                     0086   221 ; There was some sort of error on the link
                     0086   222 ;
                     0086   223 PROT_ERROR:
         FF77'   31  0086   224          BRW     REM$KILL_UCB            ; Break the link and forget about it
                     0089   225
                     0089   226 ;++
                     0089   227 ;
                     0089   228 ; REM$SEND_CONFIG - send CONFIGURE message to partner
                     0089   229 ;
                     0089   230 ;--
                     0089   231
                     0089   232 SEND_DISCON:                             ; Send a DISCONNECT message
56   0000'CF    9E  0089   233          MOVAB   W^DISCON_MSG,R6         ; Get msg address
     5A   02'   D0  008E   234          MOVL    S^#DISCON_END-DISCON_MSG,R10 ; Get msg length
58   00C5'CF    9E  0091   235          MOVAB   W^DISCON_AST,R8         ; Set for an AST to kill channel
          2A    11  0096   236          BRB     SEND_COMMON             ; Finish in common code
                     0098   237
```

```
                     0098   238 SEND_CTERM_DISC:
56   0010'CF   9E    0098   239         MOVAB   W^CTERM_UNBIND_MSG,R6           ; Get msg address
     5A   03'  D0    009D   240         MOVL    S^#CTERM_UNBIND_END-CTERM_UNBIND_MSG,R10 ; Get msg length
58   00C5'CF   9E    00A0   241         MOVAB   W^DISCON_AST,R8                 ; Set for an AST to kill channel
          1B   11    00A5   242         BRB     SEND_COMMON                     ; Finish in common code
                     00A7   243
                     00A7   244 REM$SEND_CONFIG::                               ; Send a CONFIGURE message
00D8 C5   2A   91    00A7   245         CMPB    #42,UCB$B_RTT_OBJ(R5)           ; TSA request?
          0A   13    00AC   246         BEQL    10$                             ; go ahead
56   0000'CF   9E    00AE   247         MOVAB   W^VAX_CONFIG_MSG,R6             ; Get msg address
     5A   08'  D0    00B3   248         MOVL    S^#VAX_CONFIG_END-VAX_CONFIG_MSG,R10 ; Get msg length
          08   11    00B6   249         BRB     20$
                     00B8   250 10$:
56   0008'CF   9E    00B8   251         MOVAB   W^CTERM_BIND_MSG,R6             ; Get msg address
     5A   08'  D0    00BD   252         MOVL    S^#CTERM_BIND_END-CTERM_BIND_MSG,R10 ; Get msg length
                     00C0   253 20$:
          58   D4    00C0   254         CLRL    R8                              ; No AST
                     00C2   255
                     00C2   256 SEND_COMMON:
     FF3B'     31    00C2   257         BRW     REM$SEND_MSGAST                 ; Send message and return
                     00C5   258
                     00C5   259 ;++
                     00C5   260 ;
                     00C5   261 ; DISCON_AST - DISCONNECT message is gone; break the link
                     00C5   262 ;
                     00C5   263 ; INPUTS:
                     00C5   264 ;
                     00C5   265 ;       4(AP) - device index
                     00C5   266 ;
                     00C5   267 ;--
                     00C5   268
     0800            00C5   269 DISCON_AST:     .WORD   ^M<R11>
5B   04 AC    D0    00C7   270         MOVL    4(AP),R11                       ; Get the device index
      FF32'   30    00CB   271         BSBW    REM$KILL_UCB                    ; Kill the channel
              04    00CE   272         RET                                     ; Done
                     00CF   273
```

```
                                00CF    275
                                00CF    276 ;
                                00CF    277 ; Check for CTERM protocol BIND message
                                00CF    278 ;
                                00CF    279
                                00CF    280 TRY_CTERM:
                                00CF    281
      50  0009'CF   9E  00CF    282         MOVAB   W^CTERM_BIND_MSG+1,R0   ; Point at template (past message type)
          51    57  D0  00D4    283         MOVL    R7,R1                   ; Point at received message
          81    04  91  00D7    284         CMPB    #4,(R1)+                ; BIND ACCEPT?
                AA  12  00DA    285         BNEQ    PROT_ERROR              ; If NEQ, not either protocol
  00D4 C5   61  90  00DC    286         MOVB    (R1),-                  ; Squirrel away the version for later
                00E1    287                 UCB$B_RTT_PROVRS(R5)    ;
          81    80  91  00E1    288         CMPB    (R0)+,(R1)+             ; Check protocol version
                B2  1F  00E4    289         BLSSU   SEND_CTERM_DISC         ; If NEQ NG - send a DISCONNECT
  00D5 C5   61  90  00E6    290         MOVB    (R1),-                  ; Save the ECO number for now
                00EB    291                 UCB$B_RTT_PROECO(R5)    ;
                00EB    292         ;
                00EB    293         ; revision field is used to denote VMS connections.
                00EB    294         ;
  00D9 C5   02  A1  B0  00EB    295         MOVW    2(R1),UCB$W_RTT_SYSTYPE(R5) ; Save away first part of revision
                00F1    296 ;
                00F1    297 ;       Decide which VRS and ECO we are going to speak on our end.
                00F1    298 ;       PROVRS and PROECO are his end of things.  We will set them to our
                00F1    299 ;       end so that CTDRIVER can look at these to decide what protocol to
                00F1    300 ;       build.
                00F1    301 ;
                00F1    302
    02  00D4 C5   91  00F1    303         CMPB    UCB$B_RTT_PROVRS(R5),#2 ; If other side is up to snuff and not beyon
                0C  13  00F6    304         BEQL    10$                     ; then check eco number
                02  90  00F8    305         MOVB    #2,-                    ; Else speak our latest to him.
          00D4 C5       00FA    306                 UCB$B_RTT_PROVRS(R5)    ; and he will talk down to us.
                00  90  00FD    307 5$:     MOVB    #0,-                    ; use our latest eco as well
          00D5 C5       00FF    308                 UCB$B_RTT_PROECO(R5)    ;
                07  11  0102    309         BRB     20$                     ;
                0104    310
          00D5 C5   91  0104    311 10$:    CMPB    UCB$B_RTT_PROECO(R5),-  ; Is the ECO greater than ours
                00      0108    312                 #0                      ;
                F2  1A  0109    313         BGTRU   5$                      ; Use our latest ECO to talk to him
                010B    314 20$:
       64 A5    10  88  010B    315         BISB    #UCB$M_ONLINE,UCB$W_STS(R5) ; Not initializing protocol
                010F    316
                010F    317 ;
                010F    318 ; Now the link is valid and up.  We need to obtain the window block
                010F    319 ; for the rttdriver and then call it with an attention message to
                010F    320 ; start its receive to the net link.
                010F    321 ;
                010F    322
  50    0000'DF4B   3C  010F    323         MOVZWL  @W^REM$GL_CHANVEC[R11],R0 ; Obtain the channel
  55    0000'DF4B   D0  0115    324         MOVL    @W^REM$GL_UCBVEC[R11],R5 ; and the ucb address
     00000000'GF    16  011B    325         JSB     G^IOC$VERIFYCHAN        ; obtain the ccb address for the net
           04 A1    D0  0121    326         MOVL    CCB$L_WIND(R1),-        ; Store the window block address
         00B4 C5       0124    327                 UCB$L_RTT_NETWIND(R5)   ; in the ucb for the rttdriver
                0127    328 ;
                0127    329 ; *** PLUG UCB DDT address with CTDRIVER DDT.
                0127    330 ;
                0127    331
```

```
                001C   30  0127   332          BSBW    FIND_CTDRV              ; Find and relocate
              03 50    E8  012A   333          BLBS    R0,30$                  ; done, continue
               FF68    31  012D   334          BRW     SEND_CTERM_DISC         ; no driver, abort link
                       0130   335 ;
                       0130   336 ; Tell driver we have a call for him
                       0130   337 ;
                       0130   338 30$:
               FECD'   30  0130   339          BSBW    REM$ALLOC_IRP           ; Allocate block
           53    52    D0  0133   340          MOVL    R2,R3                   ; Set address
        0A A2    13    90  0136   341          MOVB    #DYN$C_BUFIO, -
                       013A   342                  CTP$B_TYPE(R2)          ; Set buffer type
                       013A   343 ;***
                       013A   344 ;*** this info must be filled in as soon as TSADEF is in EXECML !!!
                       013A   345 ;***
                       013A   346 ;***     MOVAB   CTP$B_PRO_MSGTYPE(R2),- ;
                       013A   347 ;***             CTP$L_MSGDAT(R2)        ; Set address of data
                       013A   348 ;***     CLRL    CTP$L_USRBFR(R2)        ; Set the user buffer address to zero
                       013A   349 ;***     MOVB    #PRO$C_BIND, -
                       013A   350 ;***             CTP$B_PRO_MSGTYPE(R2)   ; Set message type to BIND
                       013A   351
    52    0088 C5   D0  013A   352          MOVL    UCB$L_DDT(R5),R2        ; Fetch DDT address from UCB
      52    04 A2   D0  013F   353          MOVL    DDT$L_UNSOLINT(R2),R2   ; Fetch unsolicited interrupt vector
            62    16  0143   354          JSB     (R2)                    ; call
                      0145   355
                05    0145   356          RSB                             ; Done
                      0146   357 ;
```

```
                                0146   359 ;
                                0146   360 ; Inputs: R5 - UCB to be plugged with DDT address
                                0146   361 ;
                                0146   362
                                0146   363 FIND_CTDRV:
                                0146   364
                    0FFE 8F     BB 0146   365         PUSHR   #^M<R1,R2,R3,R4,R5,R6,R7,R8,R9,R10,R11>
                                014A   366
            59  00000013'EF     9E 014A   367         MOVAB   CTDRV_NAME,R9           ; GET ADDR OF DRIVER NAME
                       58  89   9A 0151   368         MOVZBL  (R9)+,R8                ; GET SIZE OF DRIVER NAME
            5A  00000000'GF     9E 0154   369         MOVAB   G^IOC$GL_DEVLIST,R10    ; GET ADDR OF DDB LIST
                                015B   370 20$:
                        5A  6A  D0 015B   371         MOVL    DDB$L_LINK(R10),R10     ; GET ADDR OF NEXT DDB
                            05  12 015E   372         BNEQ    30$                     ; BR IF NOT
                            50  D4 0160   373         CLRL    R0                      ; ELSE NOT LOADED
                          0018  31 0162   374         BRW     CTDRV_EXIT
                                0165   375
                    51  24 AA  9E 0165   376 30$:     MOVAB   DDB$T_DRVNAME(R10),R1   ; GET ADDR OF DRIVER NAME
                       50  81  9A 0169   377         MOVZBL  (R1)+,R0                ; GET SIZE OF DRIVER NAME
        69  58  00  61  50  2D 016C   378         CMPC5   R0,(R1),#0,R8,(R9)      ; COMPARE DRIVER NAMES
                        E7  12 0172   379         BNEQ    20$                     ; BR IF NOT EQUAL
                                0174   380 ;
                                0174   381 ;  R10 is DDB for CTDRIVER
                                0174   382 ;
                      0C AA  D0 0174   383         MOVL    DDB$L_DDT(R10),-
                    0088 C5         0177   384                 UCB$L_DDT(R5)           ; Set DDT address
                    50  01  D0 017A   385         MOVL    #1,R0
                                017D   386
                                017D   387 CTDRV_EXIT:
                    0FFE 8F     BA 017D   388         POPR    #^M<R1,R2,R3,R4,R5,R6,R7,R8,R9,R10,R11>
                            05  0181   389         RSB
                                0182   390
                                0182   391         .END
```

```
CCB$L_WIND                = 00000004
CTDRV_EXIT                  0000017D R      04
CTDRV_NAME                  00000013 R      02
CTERM_BIND_END              00000010 R      02
CTERM_BIND_MSG              00000008 R      02
CTERM_UNBIND_END            00000013 R      02
CTERM_UNBIND_MSG            00000010 R      02
CTP$B_TYPE                = 0000000A
DDB$L_DDT                 = 0000000C
DDB$L_LINK                = 00000000
DDB$T_DRVNAME             = 00000024
DDT$L_UNSOLINT            = 00000004
DISCON_AST                  000000C5 R      04
DISCON_END                  00000002 R      03
DISCON_MSG                  00000000 R      03
DISC_REASON                 00000001 R      03
DYN$C_ACB                 = 00000002  G
DYN$C_ACL                 = 0000003F  G
DYN$C_ADP                 = 00000001  G
DYN$C_AQB                 = 00000003  G
DYN$C_BOOTCB              = 00000006  G
DYN$C_BRDCST              = 0000001A  G
DYN$C_BUFIO               = 00000013  G
DYN$C_CDB                 = 00000033  G
DYN$C_CDRP                = 00000039  G
DYN$C_CD_BBRPG            = 00000002  G
DYN$C_CD_CDDB             = 00000001  G
DYN$C_CD_SHDW_WRK         = 00000003  G
DYN$C_CEB                 = 00000004  G
DYN$C_CHIP                = 00000048  G
DYN$C_CI                  = 00000061  G
DYN$C_CIA                 = 00000045  G
DYN$C_CIDG                = 0000003B  G
DYN$C_CIMSG               = 0000003C  G
DYN$C_CI_BDT              = 00000001  G
DYN$C_CI_FQDT             = 00000002  G
DYN$C_CLASSDRV            = 00000064  G
DYN$C_CLU                 = 00000065  G
DYN$C_CLU_BTX             = 00000004  G
DYN$C_CLU_CLUB            = 00000003  G
DYN$C_CLU_CLUDCB          = 00000005  G
DYN$C_CLU_CLUOPT          = 00000006  G
DYN$C_CLU_CLUVEC          = 00000002  G
DYN$C_CLU_CSB             = 00000001  G
DYN$C_CLU_LCKDIR          = 00000007  G
DYN$C_CONF                = 00000007  G
DYN$C_CRB                 = 00000005  G
DYN$C_CST                 = 00000008  G
DYN$C_CXB                 = 0000001B  G
DYN$C_DCCB                = 00000027  G
DYN$C_DDB                 = 00000006  G
DYN$C_DPT                 = 0000001E  G
DYN$C_ERP                 = 0000003A  G
DYN$C_EXTGSD              = 00000028  G
DYN$C_FCB                 = 00000007  G
DYN$C_FRK                 = 00000008  G
DYN$C_GSD                 = 00000015  G
DYN$C_IDB                 - 00000009  G
DYN$C_INIT                = 00000063  G
DYN$C_IRP                 = 0000000A  G
DYN$C_IRPE                = 0000002C  G
DYN$C_JIB                 = 0000002F  G
DYN$C_JNL                 = 00000067  G
DYN$C_JNLWCB              = 00000024  G
DYN$C_JNL_ABL             = 00000001  G
DYN$C_JNL_ACBM            = 00000004  G
DYN$C_JNL_ADL             = 00000002  G
DYN$C_JNL_BCB             = 00000003  G
DYN$C_JNL_BUF             = 00000005  G
DYN$C_JNL_BXSTS           = 00000013  G
DYN$C_JNL_CWQ             = 00000010  G
DYN$C_JNL_DB              = 00000006  G
DYN$C_JNL_DIOREAD         = 00000015  G
DYN$C_JNL_JMT             = 00000009  G
DYN$C_JNL_MSG             = 00000012  G
DYN$C_JNL_MSGDATA         = 00000014  G
DYN$C_JNL_NDL             = 00000008  G
DYN$C_JNL_RC              = 00000011  G
DYN$C_JNL_RCPC            = 0000000C  G
DYN$C_JNL_RM              = 0000000A  G
DYN$C_JNL_RRP             = 0000000B  G
DYN$C_JNL_RUL             = 0000000D  G
DYN$C_JNL_SFT             = 00000007  G
DYN$C_JNL_VCL             = 0000000E  G
DYN$C_JNL_VLE             = 0000000F  G
DYN$C_JPB                 = 0000001F  G
DYN$C_KFD                 = 00000043  G
DYN$C_KFE                 = 00000018  G
DYN$C_KFPB                = 00000044  G
DYN$C_KFRH                = 00000026  G
DYN$C_LC_CHREML           = 00000006  G
DYN$C_LC_CLS              = 00000005  G
DYN$C_LC_FPEMUL           = 00000007  G
DYN$C_LC_MP               = 00000003  G
DYN$C_LC_MSCP             = 00000008  G
DYN$C_LC_SCS              = 00000004  G
DYN$C_LC_SYSL             = 00000009  G
DYN$C_LKB                 = 00000035  G
DYN$C_LKID                = 00000037  G
DYN$C_LNM                 = 00000040  G
DYN$C_LOADCODE            = 00000062  G
DYN$C_LOG                 = 0000000B  G
DYN$C_LPD                 = 00000034  G
DYN$C_MBX                 = 0000002B  G
DYN$C_MPWMAP              = 00000004  G
DYN$C_MTL                 = 00000019  G
DYN$C_MVL                 = 00000016  G
DYN$C_NDB                 = 0000001C  G
DYN$C_NET                 = 00000017  G
DYN$C_NON_PAGED           = 00000001  G
DYN$C_ORB                 = 00000049  G
DYN$C_PAGED               = 00000002  G
DYN$C_PBH                 = 00000020  G
DYN$C_PCB                 = 0000000C  G
```

```
DYN$C_PCBVEC                    = 00000001  G      PCB$B_PRI                       = 0000000B  G
DYN$C_PDB                       = 00000021  G      PCB$B_PRIB                      = 0000002F  G
DYN$C_PFB                       = 00000047  G      PCB$B_PRIBSAV                   = 00000029  G
DYN$C_PFL                       = 00000023  G      PCB$B_PRISAV                    = 00000028  G
DYN$C_PGD                       = 00000066  G      PCB$B_TYPE                      = 0000000A  G
DYN$C_PGD_F11BC                 = 00000001  G      PCB$B_WEFC                      = 0000002E  G
DYN$C_PHVEC                     = 00000002  G      PCB$C_LENGTH                    = 00000120  G
DYN$C_PIB                       = 00000022  G      PCB$K_LENGTH                    = 00000120  G
DYN$C_PMB                       = 00000046  G      PCB$L_ACLBL                     = 00000100  G
DYN$C_PQB                       = 0000000D  G      PCB$L_ACLFL                     = 000000FC  G
DYN$C_PRCMAP                    = 00000005  G      PCB$L_ARB                       = 0000008C  G
DYN$C_PTR                       = 00000025  G      PCB$L_ASTQBL                    = 00000014  G
DYN$C_RBM                       = 00000031  G      PCB$L_ASTQFL                    = 00000010  G
DYN$C_RIGHTSLIST                = 00000042  G      PCB$L_DEFPROT                   = 00000114  G
DYN$C_RSB                       = 00000036  G      PCB$L_DLCKPRI                   = 0000010C  G
DYN$C_RSHT                      = 00000038  G      PCB$L_EFC2P                     = 00000058  G
DYN$C_RVT                       = 0000000E  G      PCB$L_EFC3P                     = 0000005C  G
DYN$C_SCS                       = 00000060  G      PCB$L_EFCS                      = 00000050  G
DYN$C_SCS_CDL                   = 00000001  G      PCB$L_EFCU                      = 00000054  G
DYN$C_SCS_CDT                   = 00000002  G      PCB$L_EFWM                      = 0000004C  G
DYN$C_SCS_DIR                   = 00000003  G      PCB$L_EOWNER                    = 00000068  G
DYN$C_SCS_HQB                   = 0000000B  G      PCB$L_EPID                      = 00000064  G
DYN$C_SCS_PB                    = 00000004  G      PCB$L_IPAST                     = 00000110  G
DYN$C_SCS_PDT                   = 00000005  G      PCB$L_JIB                       = 00000080  G
DYN$C_SCS_RDT                   = 00000006  G      PCB$L_LOCKQBL                   = 00000108  G
DYN$C_SCS_SB                    = 00000007  G      PCB$L_LOCKQFL                   = 00000104  G
DYN$C_SCS_SPNB                  = 00000009  G      PCB$L_OWNER                     = 0000001C  G
DYN$C_SCS_SPPB                  = 00000008  G      PCB$L_PHD                       = 0000006C  G
DYN$C_SCS_UQB                   = 0000000A  G      PCB$L_PHYPCB                    = 00000018  G
DYN$C_SHB                       = 0000002A  G      PCB$L_PID                       = 00000060  G
DYN$C_SHMCEB                    = 0000002E  G      PCB$L_PMB                       = 0000011C  G
DYN$C_SHMGSD                    = 00000029  G      PCB$L_PQB                       = 0000004C  G
DYN$C_SHRBUFIO                  = 00000080  G      PCB$L_SQBL                      = 00000004  G
DYN$C_SLAVCEB                   = 0000002D  G      PCB$L_SQFL                      = 00000000  G
DYN$C_SPECIAL                   = 00000080  G      PCB$L_STS                       = 00000024  G
DYN$C_SSB                       = 0000001D  G      PCB$L_SWAPSIZE                  = 0000005C  G
DYN$C_SUBTYPE                   = 00000060  G      PCB$L_UIC                       = 000000BC  G
DYN$C_SWPMAP                    = 00000003  G      PCB$L_WAITIME                   = 00000118  G
DYN$C_TQE                       = 0000000F  G      PCB$L_WSSWP                     = 00000020  G
DYN$C_TWP                       = 00000030  G      PCB$L_WTIME                     = 00000028  G
DYN$C_TYPAHD                    = 00000014  G      PCB$M_ASTPEN                    = 00020000  G
DYN$C_UCB                       = 00000010  G      PCB$M_BATCH                     = 00004000  G
DYN$C_UNUSED_2                  = 00000041  G      PCB$M_DELPEN                    = 00000002  G
DYN$C_VCA                       = 00000032  G      PCB$M_DISAWS                    = 01000000  G
DYN$C_VCB                       = 00000011  G      PCB$M_EPID_WILD                 = 80000000  G
DYN$C_WCB                       = 00000012  G      PCB$M_FORCPEN                   = 00000004  G
DYN$C_WQE                       = 0000003E  G      PCB$M_HIBER                     = 00080000  G
DYN$C_XWB                       = 0000003D  G      PCB$M_INQUAN                    = 00000008  G
FIND_CTDRV                        00000146 R    04 PCB$M_INTER                     = 02000000  G
IOC$GL_DEVLIST                    ******** X    04 PCB$M_LOGIN                     = 00100000  G
IOC$VERIFYCHAN                    ******** X    04 PCB$M_NETWRK                    = 00200000  G
NOT_VAX                           00000000 R    04 PCB$M_NOACNT                    = 00008000  G
PCB$B_ASTACT                    = 0000000C  G      PCB$M_NODELET                   = 00800000  G
PCB$B_ASTEN                     = 0000000D  G      PCB$M_PHDRES                    = 00040000  G
PCB$B_AUTHPRI                   = 0000002B  G      PCB$M_PSWAPM                    = 00000010  G
PCB$B_DPC                       = 0000002A  G      PCB$M_PWRAST                    = 00400000  G
PCB$B_PGFLINDEX                 = 0000005A  G      PCB$M_RECOVER                   = 04000000  G
```

```
PCB$M_RES                       = 00000001  G
PCB$M_RESPEN                    = 00000020  G
PCB$M_SECAUDIT                  = 08000000  G
PCB$M_SSFEXC                    = 00000040  G
PCB$M_SSFEXCE                   = 00000080  G
PCB$M_SSFEXCS                   = 00000100  G
PCB$M_SSFEXCU                   = 00000200  G
PCB$M_SSRWAIT                   = 00000400  G
PCB$M_SUSPEN                    = 00000800  G
PCB$M_SWPVBN                    = 00010000  G
PCB$M_WAKEPEN                   = 00001000  G
PCB$M_WALL                      = 00002000  G
PCB$Q_PRIV                      = 00000084  G
PCB$S_EPID_NODE_IDX             = 00000008  G
PCB$S_EPID_NODE_SEQ             = 00000002  G
PCB$S_EPID_PROC                 = 00000015  G
PCB$S_LNAME                     = 00000010  G
PCB$S_PCBDEF                    = 00000120  G
PCB$S_PRIV                      = 00000008  G
PCB$S_TERMINAL                  = 00000008  G
PCB$T_LNAME                     = 00000070  G
PCB$T_TERMINAL                  = 00000044  G
PCB$V_ASTPEN                    = 00000011  G
PCB$V_BATCH                     = 0000000E  G
PCB$V_DELPEN                    = 00000001  G
PCB$V_DISAWS                    = 00000018  G
PCB$V_EPID_NODE_IDX             = 00000015  G
PCB$V_EPID_NODE_SEQ             = 0000001D  G
PCB$V_EPID_PROC                 = 00000000  G
PCB$V_EPID_WILD                 = 0000001F  G
PCB$V_FORCPEN                   = 00000002  G
PCB$V_HIBER                     = 00000013  G
PCB$V_INQUAN                    = 00000003  G
PCB$V_INTER                     = 00000019  G
PCB$V_LOGIN                     = 00000014  G
PCB$V_NETWRK                    = 00000015  G
PCB$V_NOACNT                    = 0000000F  G
PCB$V_NODELET                   = 00000017  G
PCB$V_PHDRES                    = 00000012  G
PCB$V_PSWAPM                    = 00000004  G
PCB$V_PWRAST                    = 00000016  G
PCB$V_RECOVER                   = 0000001A  G
PCB$V_RES                       = 00000000  G
PCB$V_RESPEN                    = 00000005  G
PCB$V_SECAUDIT                  = 0000001B  G
PCB$V_SSFEXC                    = 00000006  G
PCB$V_SSFEXCE                   = 00000007  G
PCB$V_SSFEXCS                   = 00000008  G
PCB$V_SSFEXCU                   = 00000009  G
PCB$V_SSRWAIT                   = 0000000A  G
PCB$V_SUSPEN                    = 0000000B  G
PCB$V_SWPVBN                    = 00000010  G
PCB$V_WAKEPEN                   = 0000000C  G
PCB$V_WALL                      = 0000000D  G
PCB$W_APTCNT                    = 00000030  G
PCB$W_ASTCNT                    = 00000038  G
PCB$W_BIOCNT                    = 0000003A  G
PCB$W_BIOLM                     = 0000003C  G
PCB$W_DIOCNT                    = 0000003E  G
PCB$W_DIOLM                     = 00000040  G
PCB$W_GPGCNT                    = 00000034  G
PCB$W_GRP                       = 000000BE  G
PCB$W_MEM                       = 000000BC  G
PCB$W_MTXCNT                    = 0000000E  G
PCB$W_PGFLCHAR                  = 00000058  G
PCB$W_PPGCNT                    = 00000036  G
PCB$W_PRCCNT                    = 00000042  G
PCB$W_SIZE                      = 00000008  G
PCB$W_STATE                     = 0000002C  G
PCB$W_TMBU                      = 00000032  G
PROT_ERROR                        00000086 R      04
RBF$C_TT_STARTRCV               = 00000004
REM$ALLOC_IRP                     ********    X   04
REM$ATTNMSG                       ********    X   04
REM$C_CURECO                    = 00000001
REM$C_CURVRS                    = 00000001
REM$C_LNK_READ                  = 00000002
REM$C_MAXDEVS                   = 0000000A
REM$C_MAXLINKS                  = 00000010
REM$C_MAXUNITS                  = 00000010
REM$C_MBX_READ                  = 00000001
REM$C_ST_ATTRIB                 = 00000002
REM$C_ST_CONFIG                 = 00000001
REM$GL_CHANVEC                    ********    X   04
REM$GL_UCBVEC                     ********    X   04
REM$KILL_UCB                      ********    X   04
REM$PROTOCOL                      00000003 RG     04
REM$SEND_CONFIG                   000000A7 RG     04
REM$SEND_MSGAST                   ********    X   04
SEND_COMMON                       000000C2 R      04
SEND_CTERM_DISC                   00000098 R      04
SEND_DISCON                       00000089 R      04
SUPPORT                           00000006 R      02
TRY_CTERM                         000000CF R      04
UCB$B_DEVCLASS                  = 00000040
UCB$B_RTT_OBJ                   = 000000D8
UCB$B_RTT_PROECO                = 000000D5
UCB$B_RTT_PROVRS                = 000000D4
UCB$K_RTT_LEN                   = 00000138
UCB$K_RTT_LENGTH                = 00000138
UCB$L_DDT                       = 00000088
UCB$L_DEVDEPEND                 = 00000044
UCB$L_DEVDEPND2                 = 00000048
UCB$L_RTT_CTRLC                 = 00000094
UCB$L_RTT_CTRLY                 = 00000090
UCB$L_RTT_DEVDEPEND2            = 00000048
UCB$L_RTT_NETWIND               = 000000B4
UCB$L_TL_BANDQUE                = 0000009C
UCB$L_TL_CTRLC                  = 00000094
UCB$L_TL_CTRLY                  = 00000090
UCB$L_TL_OUTBAND                = 00000098
UCB$M_ONLINE                    = 00000010
UCB$W_RTT_SYSTYPE               = 000000D9
UCB$W_STS                       = 00000064
```

```
VAX_CONFIG_END                  00000008 R      02
VAX_CONFIG_MSG                  00000000 R      02
```

+----------------+
! Psect synopsis !
+----------------+

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
ABS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
REM_PURE	0000001C (28.)	02 (2.)	NOPIC USR CON REL LCL NOSHR NOEXE RD NOWRT NOVEC BYTE
REM_IMPURE	00000002 (2.)	03 (3.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC BYTE
REM_CODE	00000182 (386.)	04 (4.)	NOPIC USR CON REL LCL NOSHR EXE RD NOWRT NOVEC BYTE

+-------------------------+
. Performance indicators !
+-------------------------+

Phase	Page faults	CPU Time	Elapsed Time
Initialization	37	00:00:00.08	00:00:00.62
Command processing	137	00:00:00.66	00:00:03.44
Pass 1	375	00:00:12.74	00:00:26.63
Symbol table sort	0	00:00:02.14	00:00:04.27
Pass 2	94	00:00:02.33	00:00:05.10
Symbol table output	42	00:00:00.30	00:00:01.22
Psect synopsis output	2	00:00:00.03	00:00:00.03
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	689	00:00:18.28	00:00:41.31

```
The working set limit was 1650 pages.
69244 bytes (136 pages) of virtual memory were used to buffer the intermediate code.
There were 80 pages of symbol table space allocated to hold 1381 non-local and 12 local symbols.
391 source lines were read in Pass 1, producing 31 object records in Pass 2.
28 pages of virtual memory were used to define 27 macros.
```

+---------------------------+
! Macro library statistics !
+---------------------------+

Macro library name	Macros defined
_255DUA28:[REM.OBJ]REM.MLB;1	2
_255DUA28:[SYS.OBJ]LIB.MLB;1	17
_255DUA28:[SYSLIB]STARLET.MLB;2	4
TOTALS (all libraries)	23

```
1506 GETS were required to define 23 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS$:REMPROTCL/OBJ=OBJ$:REMPROTCL MSRC$:REMPROTCL/UPDATE=(ENH$:REMPROTCL)+EXECML$/LIB+LIB$:REM/LIB
```

REMLOCKDB
LIS

REMQIO
LIS

RMS

REMINI
LIS

RMS
MAP

REMPOST
LIS

REMGETIRP
LIS

REM

REMMACROS
MAR

REMACP
MAP

REMXPORTD
LIS

STOPREM
LIS

DAPDEF
MDL

REMACPDAT
LIS

REMPROTCL
LIS

REMSUBR
LIS

TRANSFER
LIS

STOPREM
MAP