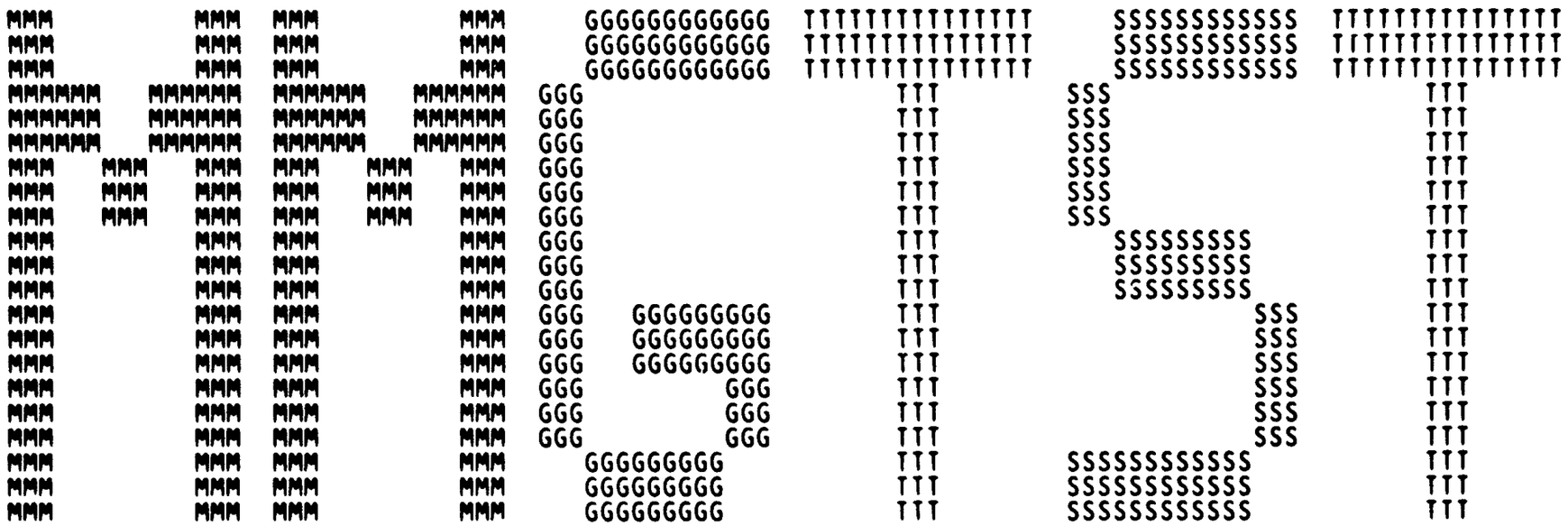
MMM MMM MMM MMM GGGGGGGGGGG TTTTTTTTTTTTTTT SSSSSSSSSSS TTTTTTTTTTTTTTT
MMMMMMM MMMMMMM MMMMMMM MMMMMMM GGG TTT SSS TTT
MMM MMM MMM MMM MMM MMM GGG TTT SSS TTT
MMM MMM MMM MMM GGG TTT SSS TTT
MMM MMM MMM MMM GGG TTT SSSSSSSSS TTT
MMM MMM MMM MMM GGG TTT SSSSSSSSS TTT
MMM MMM MMM MMM GGG GGGGGGGGG TTT SSS TTT
MMM MMM MMM MMM GGG GGGGGGGGG TTT SSS TTT
MMM MMM MMM MMM GGG GGG TTT SSS TTT
MMM MMM MMM MMM GGG GGG TTT SSS TTT
MMM MMM MMM MMM GGG GGG TTT SSS TTT
MMM MMM MMM MMM GGGGGGGGG TTT SSSSSSSSSSS TTT
MMM MMM MMM MMM GGGGGGGGG TTT SSSSSSSSSSS TTT
MMM MMM MMM MMM GGGGGGGGG TTT SSSSSSSSSSS TTT
MMM MMM MMM MMM GGGGGGGGG TTT SSSSSSSSSSS TTT

```
MM      MM  MM      MM    GGGGGGGG  EEEEEEEEEE  XX      XX  PPPPPPPP      CCCCCCCC  NN      NN  TTTTTTTTTT
MM      MM  MM      MM    GGGGGGGG  EEEEEEEEEE  XX      XX  PPPPPPPP      CCCCCCCC  NN      NN  TTTTTTTTTT
MMMM  MMMM  MMMM  MMMM  GG          EE          XX      XX  PP      PP  CC          NN      NN      TT
MMMM  MMMM  MMMM  MMMM  GG          EE          XX      XX  PP      PP  CC          NN      NN      TT
MM  MM  MM  MM  MM  MM  GG          EE            XX  XX    PP      PP  CC          NNNN    NN      TT
MM  MM  MM  MM  MM  MM  GG          EE            XX  XX    PP      PP  CC          NNNN    NN      TT
MM      MM  MM      MM  GG          EEEEEEEE        XX      PPPPPPPP    CC          NN  NN  NN      TT
MM      MM  MM      MM  GG          EEEEEEEE        XX      PPPPPPPP    CC          NN  NN  NN      TT
MM      MM  MM      MM  GG  GGGGGG  EE            XX  XX    PP          CC          NN    NNNN      TT
MM      MM  MM      MM  GG  GGGGGG  EE            XX  XX    PP          CC          NN    NNNN      TT
MM      MM  MM      MM  GG      GG  EE          XX      XX  PP          CC          NN      NN      TT          ....
MM      MM  MM      MM  GG      GG  EE          XX      XX  PP          CC          NN      NN      TT          ....
MM      MM  MM      MM    GGGGGG    EEEEEEEEEE  XX      XX  PP            CCCCCCCC  NN      NN      TT          ....
MM      MM  MM      MM    GGGGGG    EEEEEEEEEE  XX      XX  PP            CCCCCCCC  NN      NN      TT          ....

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
```

```
0000     1 ;                MEMORY MANAGEMENT SERVICES TEST #5
0000     2 ;
0000     3 ;       .TITLE  MMGEXPCNT - TEST OF $EXPREG/$CNTREG SYSTEM SERVICES
0000     4 ;       .IDENT  'V04-000'
0000     5 ;
0000     6 ;*****************************************************************************
0000     7 ;*                                                                           *
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0000    24 ;*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                  *
0000    25 ;*                                                                           *
0000    26 ;*                                                                           *
0000    27 ;*****************************************************************************
0000    28
0000    29 ;++
0000    30 ; FACILITY: USER MODE MEMORY MANAGEMENT SERVICES TEST
0000    31 ;
0000    32 ; ABSTRACT: THIS SET OF ROUTINES TESTS THE MEMORY MANAGEMENT SERVICES
0000    33 ;
0000    34 ; ENVIRONMENT: USER MODE DIAGNOSTIC
0000    35 ;
0000    36 ; AUTHOR: PETER H. LIPMAN       , CREATION DATE: 6-JAN-77
0000    37 ;
0000    38 ; MODIFIED BY:
0000    39 ;
0000    40 ;       V02-012 SHZ0004         Stephen Zalewski        20-Aug-1980
0000    41 ;               Incorporated this program into MMG test package.
0000    42 ;
0000    43 ;       V02-012 TSC0004         Thomas Clark            25-Jul-1980
0000    44 ;               Added further tests to system services tested in this
0000    45 ;               program.
0000    46 ;
```

```
0000     48          .SBTTL DECLARATIONS
0000     49 ;
0000     50 ; INCLUDE FILES:
0000     51 ;
0000     52          .SBTTL  MACROS
0000     53 ;
0000     54 ; MACROS:
0000     55 ;
0000     56          .MACRO  LIST
0000     57          .LIST   MEB
0000     58          .ENDM   LIST
0000     59
0000     60          .MACRO  NLIST
0000     61          .NLIST  MEB
0000     62          .ENDM   NLIST
0000     63
0000     64          .MACRO  DELTVA  STARTVA,ENDVA,STATUS=S^#SS$_NORMAL,-
0000     65                           INADR=W^INRANGE,RETADR=W^RETRANGE
0000     66          LIST
0000     67                  .IF     NB,STARTVA
0000     68                  MOVL    STARTVA,W^INRANGE
0000     69                  .ENDC
0000     70                  .IF     NB,ENDVA
0000     71                  MOVL    ENDVA,W^INRANGE+4
0000     72                  .ENDC
0000     73                  MOVZWL  STATUS,R3
0000     74                  MOVAL   INADR,R0
0000     75                  MOVAL   RETADR,R1
0000     76                  BSBW    DELTVASUBR
0000     77          NLIST
0000     78          .ENDM   DELTVA
0000     79
0000     80          .MACRO  CNTREG  PAGCNT,REGION=#0,STATUS=S^#SS$_NORMAL,-
0000     81                  RETADR=W^RETRANGE
0000     82          LIST
0000     83                  MOVZWL  STATUS,R3
0000     84                  MOVL    PAGCNT,R4
0000     85                  MOVAL   RETADR,R1
0000     86                  .IF     IDN,<REGION>,<#0>
0000     87                  CLRL    R5
0000     88                  .IFF
0000     89                  MOVL    REGION,R5
0000     90                  .ENDC
0000     91                  BSBW    CNTREGSUBR
0000     92          NLIST
0000     93          .ENDM   CNTREG
0000     94
0000     95          .MACRO  EXPREG  PAGCNT,REGION=#0,STATUS-S^#SS$_NORMAL,-
0000     96                  RETADR=W^RETRANGE
0000     97          LIST
0000     98                  MOVZWL  STATUS,R3
0000     99                  MOVL    PAGCNT,R4
0000    100                  MOVAL   RETADR,R1
0000    101                  .IF     IDN,<REGION>,<#0>
0000    102                  CLRL    R5
0000    103                  .IFF
0000    104                  MOVL    REGION,R5
```

```
0000   105                     .ENDC
0000   106                     BSBW    EXPREGSUBR
0000   107             NLIST
0000   108             .ENDM   EXPREG
0000   109
0000   110             .MACRO  RANGECHK ONOROFF
0000   111             LIST
0000   112             .IF     IDN <ONOROFF>,<OFF>
0000   113                     BICL    #CTL$M_RNGCHK,W^CTLFLG
0000   114             .IFF
0000   115                     BISL    #CTL$M_RNGCHK,W^CTLFLG
0000   116             .ENDC
0000   117             NLIST
0000   118             .ENDM   RANGECHK
0000   119
0000   120 ;
0000   121 ; EQUATED SYMBOLS:
0000   122 ;
0000   123             $SSDEF
0000   124             $SECDEF
0000   125             $PRTDEF
0000   126             $GBLINI
0000   127             $VIELD  CTL,0,<-                        ;DEFINE CONTROL BITS IN R3
0000   128                     <MEMLOOP,,MASK>,-               ;LOOP IN MEMORY WRITE LOOP
0000   129                     <TSTLOOP,,MASK>,-               ;REDO ENTIRE TEST FROM TOP
0000   130                     <PIDMSG,,MASK>,-                ;PUT PROCESS ID IN EACH TYPEOUT
0000   131                     <RNGCHK,,MASK>-                 ;ON IF CHECKING RETURN RANGE
0000   132                     >
00000010 0000   133             PRT$C_NONE=1@4
0000   134 ;
0000   135 ; OWN STORAGE:
0000   136 ;
```

```
                        0000   138          .SBTTL  DATA STORAGE AND MESSAGE STRINGS
                    00000000   139          .PSECT  DATA0,PAGE,WRT,NOEXE
                        0000   140 INRANGE:
                    00000008   141          .BLKL   2
                        0008   142 RETRANGE:
                    00000010   143          .BLKL   2
                    00000006   144 CTLFLG:  .LONG   CTL$M_TSTLOOP!CTL$M_PIDMSG
                    00000018   145 SAVEND:  .BLKL   1
                        0018   146 HIGHPOADR:
                    0000001C   147          .BLKL   1                       ;LAST BYTE ADDRESS IN PO SPACE
                    00000020   148 PID:     .BLKL   1                       ;PROCESS ID
                        0020   149 MAXPASSCNT:
                    00000003   150          .LONG   3                       ;NUMBER OF PASSES TO RUN
                        0024   151 PASSCNT:
                    00000028   152          .BLKL   1                       ;PASS COUNTER
                        0028   153 WRKSETLIM:
                    0000002C   154          .BLKL   1                       ;RETURNED NEW WORKING SET LIMIT
                        002C   155 WRKSETDEF:
                    00000044   156          .BLKL   6                       ;DEFAULT, MAX, MIN WORKING SET LIMIT
                    00000034   157          WRKSETMAX=WRKSETDEF+8
                    0000003C   158          WRKSETMIN=WRKSETDEF+16
                        0044   159 WRKSETMAXADD:
                    00000048   160          .BLKL   1                       ;WRKSETMAX-WRKSETDEF
                        0048   161 PREVPROT:
                        0048   162 FAB:     $FAB    FAC=PUT, FNA=OUTNAMADR, FNS=OUTNAMSIZ ;FAB FOR OUTPUT
                        0098   163 RAB:     $RAB    FAB=FAB                 ;RECORD ACCESS BLOCK FOR OUTPUT
                    000000E0   164 MSGLEN:  .BLKL   1                       ;RETURN LENGTH FROM FAO
          000000FE'000000A0'   165 MSGBUFD: .LONG   MSGBUFSIZ,MSGBUF        ;MESSAGE BUFFER DESCRIPTOR
                        00E8   166 PIDMSGD:
          000000FA'00000004'   167          .LONG   MSGBUF-PIDMSG,PIDMSG
                        00F0   168 ;
                        00F0   169 ; ***** DO NOT SEPARATE OR REORDER THE FOLLOWING LINES
                        00F0   170 ;
                        00F0   171 MSGBUFID:
                  0A 0D 00F0   172 CRLF:    .BYTE   ^015,^012
20 53 53 45 43 4F 52 50 00F2   173          .ASCII  $PROCESS $
                  20 20 20 20   00FA   174 PIDMSG: .ASCII  $    $
                    0000019E   00FE   175 MSGBUF:  .BLKB   160                 ;MESSAGE BUFFER USED BY FAO
                    000000A0   019E   176          MSGBUFSIZ=.-MSGBUF
                               019E   177 ;
                               019E   178 ; ***** DO NOT SEPARATE OR REORDER THE PRECEEDING LINES
                               019E   179 ;
                               019E   180
                    00000000   181          .PSECT  DATA1,PAGE,WRT,NOEXE
                               0000   182 ;
                               0000   183 WRTPAGES:
                    00000800   0000   184          .BLKL   128*4
                               0800   185
                    00000000   186          .PSECT  DATA2,PAGE,NOWRT,NOEXE
                               0000   187 RDPAGES:
                    00000800   0000   188          .BLKL   128*4
                               0800   189
```

```
                                00000000   191          .PSECT  CODE,PAGE,NOWRT,EXE
                                    0000   192
                                    0000   193 OUTNAMADR:
      54 55 50 54 55 4F 24 53 59 53 0000   194          .ASCII  /SYS$OUTPUT/
                                0000000A   195          OUTNAMSIZ=.-OUTNAMADR
                                    000A   196
                                    000A   197 DELTVAERRADR:
52 52 45 20 41 56 54 4C 45 44 2F 21 000A   198          .ASCII  $!/DELTVA ERROR - PC = !XL,STATUS WAS !XL, SHOULD BE !XL$
58 21 20 3D 20 43 50 20 2D 20 52 4F 0016
53 41 57 20 53 55 54 41 54 53 2C 4C 0022
44 4C 55 4F 48 53 20 2C 4C 58 21 20 002E
            4C 58 21 20 45 42 20    003A
21 20 3D 20 52 44 41 4E 49 09 2F 21 0041   199          .ASCII  $!/     INADR = !XL - !XL, RETADR = !XL - !XL!/$
45 52 20 2C 4C 58 21 20 2D 20 4C 58 004D
2D 20 4C 58 21 20 3D 20 52 44 41 54 0059
               2F 21 4C 58 21 20    0065
                                00000061   006B   200          DELTVAERRSIZ=.-DELTVAERRADR
                                    006B   201
                                    006B   202 CNTREGERRADR:
52 52 45 20 47 45 52 54 4E 43 2F 21 006B   203          .ASCII  $!/CNTREG ERROR - PC = !XL, STATUS WAS !XL, SHOULD BE !XL$
58 21 20 3D 20 43 50 20 2D 20 52 4F 0077
41 57 20 53 55 54 41 54 53 20 2C 4C 0083
4C 55 4F 48 53 20 2C 4C 58 21 20 53 008F
            4C 58 21 20 45 42 20 44 009B
20 3D 20 54 4E 43 47 41 50 09 2F 21 00A3   204          .ASCII  $!/     PAGCNT = !UL, REGION = P!UB SPACE, $
20 4E 4F 49 47 45 52 20 2C 4C 55 21 00AF
45 43 41 50 53 20 42 55 21 50 20 3D 00BB
                        20 2C       00C7
4C 58 21 20 3D 20 52 44 41 54 45 52 00C9   205          .ASCII  $RETADR = !XL - !XL!/$
            2F 21 4C 58 21 20 2D 20 00D5
                                00000072   00DD   206          CNTREGERRSIZ=.-CNTREGERRADR
                                    00DD   207
                                    00DD   208 EXPREGERRADR:
52 52 45 20 47 45 52 50 58 45 2F 21 00DD   209          .ASCII  $!/EXPREG ERROR - PC = !XL, STATUS WAS !XL, SHOULD BE !XL$
58 21 20 3D 20 43 50 20 2D 20 52 4F 00E9
41 57 20 53 55 54 41 54 53 20 2C 4C 00F5
4C 55 4F 48 53 20 2C 4C 58 21 20 53 0101
            4C 58 21 20 45 42 20 44 010D
20 3D 20 54 4E 43 47 41 50 09 2F 21 0115   210          .ASCII  $!/     PAGCNT = !SL, REGION = P!UB SPACE, $
20 4E 4F 49 47 45 52 20 2C 4C 53 21 0121
45 43 41 50 53 20 42 55 21 50 20 3D 012D
                        20 2C       0139
4C 58 21 20 3D 20 52 44 41 54 45 52 013B   211          .ASCII  $RETADR = !XL - !XL!/$
            2F 21 4C 58 21 20 2D 20 0147
                                00000072   014F   212          EXPREGERRSIZ=.-EXPREGERRADR
                                    014F   213
                                    014F   214 RANGERRADR:
4E 41 52 20 4E 52 55 54 45 52 2F 21 014F   215          .ASCII  $!/RETURN RANGE ERROR - LOCATION = !XL$
4C 20 2D 20 52 4F 52 52 45 20 45 47 015B
58 21 20 3D 20 4E 4F 49 54 41 43 4F 0167
                                    4C 0173
21 20 3D 20 52 44 41 4E 49 09 2F 21 0174   216          .ASCII  $!/     INADR = !XL - !XL, RETADR = !XL - !XL!/$
45 52 20 2C 4C 58 21 20 2D 20 4C 58 0180
2D 20 4C 58 21 20 3D 20 52 44 41 54 018C
               2F 21 4C 58 21 20    0198
                                0000004F   019E   217          RANGERRSIZ=.-RANGERRADR
                                    019E   218
```

```
                                                019E    219 DMDZERRADR:
43 20 54 4F 4E 20 45 47 41 50 2F 21             019E    220         .ASCII  $!/PAGE NOT CREATED DEMAND ZERO!/$
4E 41 4D 45 44 20 44 45 54 41 45 52             01AA
               2F 21 4F 52 45 5A 20 44          01B6
                                    00000020    01BE    221         DMDZERRSIZ=.-DMDZERRADR
                                                01BE    222
                                                01BE    223 IDMSGADR:
4E 41 4D 20 59 52 4F 4D 45 4D 2F 21             01BE    224         .ASCII  $!/MEMORY MANAGEMENT SERVICES TEST #5 (EXPCNT), PASS !UL!/$
56 52 45 53 20 54 4E 45 4D 45 47 41             01CA
35 23 20 54 53 45 54 20 53 45 43 49             01D6
50 20 2C 29 54 4E 43 50 58 45 28 20             01E2
            2F 21 4C 55 21 20 53 53 41          01EE
                                    00000039    01F7    225         IDMSGSIZ=.-IDMSGADR
                                                01F7    226
                                                01F7    227 RUN1_MSGADR:
20 20 2A 2A 2A 2A 2A 20 20 20 2F 21             01F7    228         .ASCII  $!/   *****   TEST WILL NOW BE RUN USING REGULAR VA SPACE   *****$
4E 20 4C 4C 49 57 20 54 53 45 54 20             0203
53 55 20 4E 55 52 20 45 42 20 57 4F             020F
20 52 41 4C 55 47 45 52 20 47 4E 49             021B
2A 20 20 20 45 43 41 50 53 20 41 56             0227
                        2A 2A 2A 2A             0233
                                    20 2F 21    0237    229         .ASCII  $!/ $
                                    00000043    023A    230         RUN1_MSGSIZ=.-RUN1_MSGADR
                                                023A    231
                                                023A    232 PIDCTLADR:
                                    4C 55 21    023A    233         .ASCII  $!UL$
                                    00000003    023D    234         PIDCTLSIZ=.-PIDCTLADR
```

```
                        023D    236 ;
                        023D    237 ; STRING DESCRIPTORS
                        023D    238 ;
                        023D    239         .ALIGN  LONG
                        0240    240
                        0240    241 DELTVAERR:
0000000A'00000061       0240    242         .LONG   DELTVAERRSIZ,DELTVAERRADR
                        0248    243 CNTREGERR:
0000006B'00000072       0248    244         .LONG   CNTREGERRSIZ,CNTREGERRADR
                        0250    245 EXPREGERR:
000000DD'00000072       0250    246         .LONG   EXPREGERRSIZ,EXPREGERRADR
                        0258    247 RANGERR:
C000014F'0000004F       0258    248         .LONG   RANGERRSIZ,RANGERRADR
                        0260    249 DMDZERR:
0000019E'00000020       0260    250         .LONG   DMDZERRSIZ,DMDZERRADR
                        0268    251 IDMSG:
000001BE'00000039       0268    252         .LONG   IDMSGSIZ,IDMSGADR
                        0270    253 RUN1_MSG:
000001F7'00000043       0270    254         .LONG   RUN1_MSGSIZ,RUN1_MSGADR
                        0278    255 PIDCTL:
0000023A'00000003       0278    256         .LONG   PIDCTLSIZ,PIDCTLADR
                        0280    257
```

```
                                0280   259          .SBTTL  INITIALIZATION
                                0280   260 ;*****************************************************************************
                                0280   261 ;PROGRAM DESCRIPTION:
                                0280   262 ;
                                0280   263 ;          THIS PROGRAM TESTS THE FOLLOWING SYSTEM SERVICES:
                                0280   264 ;               $EXPREG, $CNTREG
                                0280   265 ;
                                0280   266 ;          THE PROGRAM DOES SOME SIMPLE EXPAND AND CONTRACT REGIONS TO CHECK
                                0280   267 ;        THAT THE SERVICES PERFORM CORRECTLY. FOLLOWING THIS THE PROGRAM FORCES
                                0280   268 ;        POSSIBLE ERROR PATHS FOR THE ABOVE MENTIONED SYSTEM SERVICES.  THREE
                                0280   269 ;        PASSES ARE MADE THROUGH THE TEST LOOP TO ENSURE PATH REPEATABILITY.
                                0280   270 ;        ONLY REGULAR VA SPACE IS USED IN THIS TEST PROGRAM.
                                0280   271 ;
                                0280   272 ;          REFER TO MASD$:[MMGTST.COM]MMGTST.RAP FOR FURTHER INFORMATION
                                0280   273 ;        REGARDING JUST HOW COMPLETELY THE ABOVE MENTIONED SYSTEM SERVICES
                                0280   274 ;        ARE TESTED BY THIS PROGRAM.
                                0280   275 ;
                                0280   276 ;       *PRIVILEGES:
                                0280   277 ;          THIS PROGRAM NEEDS NO SPECIAL PRIVILEGES TO EXECUTE.
                                0280   278 ;*****************************************************************************
                                0280   279 ;
                                0280   280 ; START HERE
                                0280   281 ;
                          0000  0280   282 START:   .WORD   0                                ;ENTRY MASK
                                0282   283          $OPEN   W^FAB                           ;OPEN THE FILE ''$OUTPUT''
                     0E 50 E9   0285   284          BLBC    R0,10$                          ;BRANCH IF ERROR
                                0290   285          $CONNECT W^RAB                          ;CONNECT THE RECORD ACCESS BLOCK
                     09 50 E8   029B   286          BLBS    R0,20$
                                029E   287 10$:      $EXIT_S R0                              ;EXIT WITH STATUS IN R0
00000024'EF 01 D0   02A7   288 20$:      MOVL    #1,PASSCNT                              ;INITIALIZE THE PASS COUNT
                                02AE   289          $RESUME_S PID                           ;SET UP PROCESS ID
50 0000001C'EF 3C   02BD   290          MOVZWL  PID,R0
                                02C4   291          $FAO_S  PIDCTL,MSGLEN,PIDMSGD,R0        ;INIT THE PROCESS ID STRING
                                02DC   292 ;
                                02DC   293 ;  INFORM OPERATOR THAT TESTS WILL BE RUN USING ONLY NORMAL VA SPACE
                                02DC   294 ;
                                02DC   295          $FAO_S  RUN1_MSG,MSGLEN,MSGBUFD         ;INFORM OPR NORMAL VA USED FOR TEST
                   02B5 30      02F2   296          BSBW    TYPEMSGBUF
0010'CF 04 CA                   02F5   297          BICL    #CTL$M_PIDMSG,W^CTLFLG          ;STOP PROCESS ID FROM PRINTING
                                02FA   298 RSTART:
                                02FA   299          RANGECHK ON
0010'CF 08 C8                   02FA                        BISL    #CTL$M_RNGCHK,W^CTLFLG
                                02FF   300          $FAO_S  IDMSG,MSGLEN,MSGBUFD,PASSCNT
                   028B 30      031C   301          BSBW    TYPEMSGBUF
                                031F   302          EXPREG  #1
                53 01 3C        031F                        MOVZWL  S^#SS$_NORMAL,R3
                54 01 D0        0322                        MOVL    #1,R4
           51 0008'CF DE        0325                        MOVAL   W^RETRANGE,R1
                      55 D4     032A                        CLRL    R5
                   0198 30      032C                        BSBW    EXPREGSUBR
           52 0008'CF 7D        032F   303          MOVQ    W^RETRANGE,R2
0000'CF 52 7D                   0334   304          MOVQ    R2,W^INRANGE
0014'CF 52 D0                   0339   305          MOVL    R2,W^SAVEND
```

```
                     033E   307          .SBTTL  EXPAND/CONTRACT REGION TEST
                     033E   308 ;
                     033E   309 ; TEST EXPAND/CONTRACT REGION
                     033E   310 ;
                     033E   311          EXPREG  #1,#0                           ;EXPAND BY 1 PAGE IN P0 SPACE
     53    01    3C  033E                       MOVZWL  S^#SS$_NORMAL,R3
     54    01    D0  0341                       MOVL    #1,R4
51   0008'CF    DE  0344                       MOVAL   W^RETRANGE,R1
        55       D4  0349                       CLRL    R5
       0179      30  034B                       BSBW    EXPREGSUBR
       0293      30  034E   312          BSBW    DMDZERTST                       ;CHECK FOR DEMAND ZEROING
                     0351   313          CNTREG  #1,#0                           ;CONTRACT 1 PAGE P0 SPACE
     53    01    3C  0351                       MOVZWL  S^#SS$_NORMAL,R3
     54    01    D0  0354                       MOVL    #1,R4
51   0008'CF    DE  0357                       MOVAL   W^RETRANGE,R1
        55       D4  035C                       CLRL    R5
       0150      30  035E                       BSBW    CNTREGSUBR
                     0361   314          EXPREG  #1,#1                           ;EXPAND 1 PAGE P1 SPACE
     53    01    3C  0361                       MOVZWL  S^#SS$_NORMAL,R3
     54    01    D0  0364                       MOVL    #1,R4
51   0008'CF    DE  0367                       MOVAL   W^RETRANGE,R1
     55    01    D0  036C                       MOVL    #1,R5
       0155      30  036F                       BSBW    EXPREGSUBR
       026F      30  0372   315          BSBW    DMDZERTST                       ;CHECK FOR DEMAND ZEROING
                     0375   316          CNTREG  #1,#1                           ;CONTRACT 1 PAGE P1 SPACE
     53    01    3C  0375                       MOVZWL  S^#SS$_NORMAL,R3
     54    01    D0  0378                       MOVL    #1,R4
51   0008'CF    DE  037B                       MOVAL   W^RETRANGE,R1
     55    01    D0  0380                       MOVL    #1,R5
       012B      30  0383                       BSBW    CNTREGSUBR
```

```
                                0386   318          .SBTTL  FORCE ERRORS FROM EXPREG/CNTREG
                                0386   319 ;
                                0386   320 ; FORCE ERRORS FROM EXPAND/CONTRACT REGION
                                0386   321 ;
                                0386   322          EXPREG  #1,#0,STATUS=#SS$_ACCVIO,RETADR=W^4 ;EXPAND W/INVALID RETADR
          53    0C    3C      0386                   MOVZWL  #SS$_ACCVIO,R3
          54    01    D0      0389                   MOVL    #1,R4
     51   0004'CF    DE      038C                   MOVAL   W^4,R1
               55    D4      0391                   CLRL    R5
             0131    30      0393                   BSBW    EXPREGSUBR
                                0396   323          CNTREG  #1,#0,STATUS=#SS$_ACCVIO,RETADR=W^4 ;CONTRACT W/INVALID RETADR
          53    0C    3C      0396                   MOVZWL  #SS$_ACCVIO,R3
          54    01    D0      0399                   MOVL    #1,R4
     51   0004'CF    DE      039C                   MOVAL   W^4,R1
               55    D4      03A1                   CLRL    R5
             010B    30      03A3                   BSBW    CNTREGSUBR
                                03A6   324          EXPREG  #-1,#0,STATUS=#SS$_ILLPAGCNT    ;EXPAND W/ILLEGAL PAGE COUNT
          53   00FC 8F    3C      03A6                   MOVZWL  #SS$_ILLPAGCNT,R3
     54  FFFFFFFF 8F    D0      03AB                   MOVL    #-1,R4
     51   0008'CF    DE      03B2                   MOVAL   W^RETRANGE,R1
               55    D4      03B7                   CLRL    R5
             010B    30      03B9                   BSBW    EXPREGSUBR
                                03BC   325          CNTREG  #-1,#0,STATUS=#SS$_ILLPAGCNT    ;CONTRACT W/ILLEGAL PAGE COUNT
          53   00FC 8F    3C      03BC                   MOVZWL  #SS$_ILLPAGCNT,R3
     54  FFFFFFFF 8F    D0      03C1                   MOVL    #-1,R4
     51   0008'CF    DE      03C8                   MOVAL   W^RETRANGE,R1
               55    D4      03CD                   CLRL    R5
             00DF    30      03CF                   BSBW    CNTREGSUBR
                                03D2   326          EXPREG  #1@21-1,#0,STATUS=#SS$_VASFULL  ;FILL THE PAGE TABLE, P0
          53   0244 8F    3C      03D2                   MOVZWL  #SS$_VASFULL,R3
     54  001FFFFF 8F    D0      03D7                   MOVL    #1@21-1,R4
     51   0008'CF    DE      03DE                   MOVAL   W^RETRANGE,R1
               55    D4      03E3                   CLRL    R5
             00DF    30      03E5                   BSBW    EXPREGSUBR
                                03E8   327          RANGECHK OFF
     0010'CF    08    CA      03E8                   BICL    #CTL$M_RNGCHK,W^CTLFLG
                                03ED   328          DELTVA  INADR=W^RETRANGE                  ;DELETE WHAT WE CREATED
          53    01    3C      03ED                   MOVZWL  S^#SS$_NORMAL,R3
     50   0008'CF    DE      03F0                   MOVAL   W^RETRANGE,R0
     51   0008'CF    DE      03F5                   MOVAL   W^RETRANGE,R1
             004D    30      03FA                   BSBW    DELTVASUBR
                                03FD   329          RANGECHK ON
     0010'CF    08    C8      03FD                   BISL    #CTL$M_RNGCHK,W^CTLFLG
                                0402   330          EXPREG  #1@21-1,#1,STATUS=#SS$_VASFULL  ;FILL THE PAGE TABLE, P1
          53   0244 8F    3C      0402                   MOVZWL  #SS$_VASFULL,R3
     54  001FFFFF 8F    D0      0407                   MOVL    #1@21-1,R4
     51   0008'CF    DE      040E                   MOVAL   W^RETRANGE,R1
          55    01    D0      0413                   MOVL    #1,R5
             00AE    30      0416                   BSBW    EXPREGSUBR
                                0419   331          RANGECHK OFF
     0010'CF    08    CA      0419                   BICL    #CTL$M_RNGCHK,W^CTLFLG
                                041E   332          DELTVA  INADR=W^RETRANGE                  ;DELETE WHAT WE CREATED
          53    01    3C      041E                   MOVZWL  S^#SS$_NORMAL,R3
     50   0008'CF    DE      0421                   MOVAL   W^RETRANGE,R0
     51   0008'CF    DE      0426                   MOVAL   W^RETRANGE,R1
             001C    30      042B                   BSBW    DELTVASUBR
                                042E   333          RANGECHK ON
```

```
                0010'CF    08   C8  042E                    BISL    #CTL$M_RNGCHK,W^CTLFLG
```

```
                                0433    335 ;
                                0433    336 ;END OF LOOP
                                0433    337 ;
      0C 0024'CF    0020'CF   F3  0433    338          AOBLEQ  W^MAXPASSCNT,W^PASSCNT,160$
                    50    01    D0  043B    339 150$:    MOVL    #1,R0
                                    043E    340          $EXIT_S R0
                        FEB0    31  0447    341 160$:    BRW     RSTART
```

```
                     044A   343          .SBTTL  SUBROUTINES TO CALL THE SERVICES
                     044A   344 ;
                     044A   345 ; INPUT:
                     044A   346 ;
                     044A   347 ;       R0 = INADR
                     044A   348 ;       R1 = RETADR
                     044A   349 ;       R3 = DESIRED S'ATUS
                     044A   350 ;
                     044A   351 ; OUTPUT:
                     044A   352 ;
                     044A   353 ;       R2 PRESERVED
                     044A   354 ;
                     044A   355 DELTVASUBR:
                     044A   356          $DELTVA_S       (R0),(R1)
 51   FDE5 CF   DE   0457   357          MOVAL           W^DELTVAERR,R1          ;ERROR CONTROL STRING
           00   11   045C   358          BRB             CHECK1
                     045E   359
                     045E   360 CHECK1:
      53   50   D1   045E   361          CMPL    R0,R3                   ;STATUS AS DESIRED
           4B   13   0461   362          BEQL    10$                     ;BRANCH IF YES
 53   0244 8F   B1   0463   363          CMPW    #SS$_VASFULL,R3         ;IF EXPECTING VIRTUAL ADDRESS SPACE FULL
           05   12   0468   364          BNEQ    5$
      50   1C   B1   046A   365          CMPW    #SS$_EXQUOTA,R0         ;THEN EXCEEDS QUOTA MAY ALSO BE RETURNED
           3F   13   046D   366          BEQL    10$
           54   DD   046F   367 5$:       PUSHL   R4
   54   04 AE   D0   0471   368          MOVL    4(SP),R4                ;ADDRESS OF ERROR
                     0475   369          $FAO_S  (R1),MSGLEN,MSGBUFD,R4,R0,R3,-
                     0475   370                  INRANGE,INRANGE+4,RETRANGE,RETRANGE+4
           10   BA   04A8   371          POPR    #^M<R4>
         00FD   30   04AA   372          BSBW    TYPEMSGBUF
                05   04AD   373          RSB
                     04AE   374 10$:
         007F   31   04AE   375          BRW     RANGECHK                ;GO CHECK THE RETURN RANGE
                     04B1   376
```

```
                     04B1    378 ;
                     04B1    379 ; INPUT:
                     04B1    380 ;
                     04B1    381 ;       R1 = RETADR
                     04B1    382 ;       R3 = DESIRED STATUS
                     04B1    383 ;       R4 = PAGCNT
                     04B1    384 ;       R5 = REGION
                     04B1    385 ;
                     04B1    386 ; OUTPUT:
                     04B1    387 ;
                     04B1    388 ;       R2 PRESERVED
                     04B1    389 ;
                     04B1    390 CNTREGSUBR:
                     04B1    391         $CNTREG_S R4,(R1),,R5
 51   FD84 CF    DE  04C0    392         MOVAL   W^CNTREGERR,R1                  ;ERROR CONTROL STRING
            14  11   04C5    393         BRB     CHECK2
                     04C7    394 ;
                     04C7    395 ; INPUT:
                     04C7    396 ;
                     04C7    397 ;       R1 = RETADR
                     04C7    398 ;       R3 = DESIRED STATUS
                     04C7    399 ;       R4 = PAGCNT
                     04C7    400 ;       R5 = REGION
                     04C7    401 ;
                     04C7    402 ; OUTPUT:
                     04C7    403 ;
                     04C7    404 ;       R2 PRESERVED
                     04C7    405 ;
                     04C7    406 EXPREGSUBR:
                     04C7    407         $EXPREG_S R4,(R1),,R5
 51   FD76 CF    DE  04D6    408         MOVAL   W^EXPREGERR,R1                  ;ERROR CONTROL STRING
```

```
                                04DB   410 CHECK2:
                     53   50    D1 04DB   411          CMPL    R0,R3                           ;STATUS AS DESIRED?
                          39    13 04DE   412          BEQL    10$                             ;BRANCH IF YES
                          56    DD 04E0   413          PUSHL   R6
                    56    04 AE   D0 04E2   414          MOVL    4(SP),R6                        ;ADDRESS OF ERROR
                                   04E6   415          $FAO_S  (R1),MSGLEN,MSGBUFD,R6,R0,R3,R4,R5,-
                                   04E6   416                  RETRANGE,RETRANGE+4
                        0040 8F    BA 0511   417          POPR    #^M<R6>
                           0092    30 0515   418          BSBW    TYPEMSGBUF
                                   05 0518   419          RSB
          0000'CF    0008'CF    D0 0519   420 10$:       MOVL    W^RETRANGE,W^INRANGE            ;MAKE INPUT RANGE LOOK LIKE CRETVA/D
                          54    D7 0520   421          DECL    R4
                 54       54    09 78 0522   422          ASHL    #9,R4,R4
      0004'CF    0000'CF    C1 0526   423          ADDL3   R4,W^INRANGE,W^INRANGE+4
                          00    11 052E   424          BRB     RANGECHK                        ;AND CHECK THE RETURN RANGE
                                0530   425
                                0530   426 RANGECHK:
               73 0010'CF    03    E1 0530   427          BBC     #CTL$V_RNGCHK,W^CTLFLG,40$      ;BRANCH IF RANGE CHECK IS DISABLED
                       70    50    E9 0536   428          BLBC    R0,40$                          ;IF ERROR IN SERVICE, SKIP THE RANGE
                50    0000'CF    7D 0539   429          MOVQ    W^INRANGE,R0                    ;R0 = STARVA, R1 = ENDVA
                      51    50    D1 053E   430          CMPL    R0,R1                           ;WHICH DIRECTION?
                            12    1A 0541   431          BGTRU   10$                             ;BRANCH IF BACKWARDS
                            04    1F 0543   432          BLSSU   5$                              ;BRANCH IF FORWARDS
                     0C 50    1E    E0 0545   433          BBS     #30,R0,10$                      ;FOR EQUAL, P0 SPACE FORWARDS, P1 BA
                                0549   434 ;
                                0549   435 ; REQUESTED RANGE IS FORWARDS
                                0549   436 ;
                50    01FF 8F    AA 0549   437 5$:        BICW    #^X1FF,R0                       ;FROM BYTE 0 OF STARTVA
                51    01FF 8F    AB 054E   438          BISW    #^X1FF,R1                       ;THROUGH LAST BYTE OF ENDVA
                            0A    11 0553   439          BRB     20$                             ;
                                0555   440 ;
                                0555   441 ; GOING BACKWARDS IN VIRTUAL ADDRESS SPACE
                                0555   442 ;
          50    01FF 8F    AB 0555   443 10$:       BISW    #^X1FF,R0                       ;LAST BYTE OF STARTVA
          51    01FF 8F    AA 055A   444          BICW    #^X1FF,R1                       ;THROUGH FIRST BYTE OF ENDVA
     0008'CF      50    D1 055F   445 20$:       CMPL    R0,W^RETRANGE                   ;IS THIS WHAT WAS RETURNED?
                          07    12 0564   446          BNEQ    30$                             ;BRANCH IF NOT, ERROR
     000C'CF      51    D1 0566   447          CMPL    R1,W^RETRANGE+4                 ;THIS ONE OK TOO?
                          3C    13 056B   448          BEQL    40$                             ;BRANCH IF YES, RANGE OK
                          53    DD 056D   449 30$:       PUSHL   R3                              ;SAVE REGISTER
            53    04 AE   D0 056F   450          MOVL    4(SP),R3                        ;TO USE FOR ERROR PC
                                0573   451          $FAO_S  <W^RANGERR>,MSGLEN,MSGBUFD,R3,- ;FORMAT THE ERROR MESSAGE
                                0573   452                  INRANGE,INRANGE+4,RETRANGE,RETRANGE+4
                             08    BA 05A4   453          POPR    #^M<R3>                         ;RESTORE SAVE REGISTER
                           0001    30 05A6   454          BSBW    TYPEMSGBUF                      ;OUTPUT THE ERROR MESSAGE
                                05 05A9   455 40$:       RSB                                     ;AND RETURN
```

```
                                05AA    457          .SBTTL  MISCELLANEOUS SUBROUTINES
                                05AA    458 ;
                                05AA    459 ; TYPE A MESSAGE
                                05AA    460 ;       MSGBUF IS THE ADDRESS OF THE BEGINNING OF THE STRING
                                05AA    461 ;       MSGLEN CONTAINS THE SIZE (IN BYTES) OF THE STRING
                                05AA    462 ;
                                05AA    463 TYPEMSGBUF:
      50    00DC'CF    D0      05AA    464          MOVL    W^MSGLEN,R0                     ;SIZE TO R0
      51    00FE'CF    DE      05AF    465          MOVAL   W^MSGBUF,R1                     ;ADDRESS TO R1
   08 0010'CF    02    E1      05B4    466          BBC     #CTL$V_PIDMSG,W^CTLFLG,5$       ;BRANCH IF NO PROCESS ID REQUIRED
      51    00F0'CF    DE      05BA    467          MOVAL   W^MSGBUFID,R1                   ;ADDRESS INCLUDING PID MSG
            50    0E'  C0      05BF    468          ADDL    S^#<MSGBUF-MSGBUFID>,R0         ;INCLUDE EXTRA BYTES IN COUNT
                                05C2    469 5$:
   00C0'CF    51    D0      05C2    470          MOVL    R1,W^RAB+RAB$L_RBF              ;SET BUFFER ADDRESS
   00BA'CF    50    B0      05C7    471          MOVW    R0,W^RAB+RAB$W_RSZ              ;AND SIZE
                                05CC    472          $PUT    W^RAB                           ;OUTPUT THE MESSAGE
            01 50    E9      05D7    473          BLBC    R0,20$
                     05      05DA    474          RSB
                                05DB    475 20$:    $EXIT_S R0                              ;EXIT WITH ERROR STATUS
                                05E4    476 ;
                                05E4    477 ; TEST FOR DEMAND ZEROING
                                05E4    478 ;       RETRANGE CONTAINS RANGE TO BE TESTED
                                05E4    479 ;
                                05E4    480 DMDZERTST:
   50   00000003'EF    D0      05E4    481          MOVL    RETRANGE,R0                     ;GET ADDR TO START ON
                60    D5      05EB    482 5$:      TSTL    (R0)                            ;CHECK A LONGWORD
                  0B  12      05ED    483          BNEQU   10$
FFF2 50   04    0000000C'EF    F1      05EF    484          ACBL    RETRANGE+4,#4,R0,5$             ;AND LOOP
                05      05F9    485          RSB
                                05FA    486 10$:    $FAO_S  <W^DMDZERR>,MSGLEN,MSGBUFD      ;FORMAT THE ERROR MESSAGE
                  FF96  30      0611    487          BSBW    TYPEMSGBUF                      ;OUTPUT IT
                05      0614    488          RSB                                     ;AND RETURN
                                0615    489
                                0615    490          .END    START
```

```
$$.TAB                  = 00000098 R      02
$$.TABEND               = 000000DC R      02
$$.TMP                  = 00000000
$$.TMP1                 = 00000001
$$.TMP2                 = 000000CF
$$T1                    = 00000000
$$T2                    = 00000003
BIT...                  = 00000004
CHECK1                    0000045E R      05
CHECK2                    000004DB R      05
CNTREGERR                 00000248 R      05
CNTREGERRADR              00000068 R      05
CNTREGERRSIZ            = 00000072
CNTREGSUBR                000004B1 R      05
CRLF                      000000F0 R      02
CTL$M_MEMLOOP           = 00000001
CTL$M_PIDMSG            = 00000004
CTL$M_RNGCHK            = 00000008
CTL$M_TSTLOOP           = 00000002
CTL$V_MEMLOOP           = 00000000
CTL$V_PIDMSG            = 00000002
CTL$V_RNGCHK            = 00000003
CTL$V_TSTLOOP           = 00000001
CTLFLG                    00000010 R      02
DELTVAERR                 00000240 R      05
DELTVAERRADR              0000000A R      05
DELTVAERRSIZ            = 00000061
DELTVASUBR                0000044A R      05
DMDZERR                   00000260 R      05
DMDZERRADR                0000019E R      05
DMDZERRSIZ              = 00000020
DMDZERTST                 000005E4 R      05
EXPREGERR                 00000250 R      05
EXPREGERRADR              000000DD R      05
EXPREGERRSIZ            = 00000072
EXPREGSUBR                000004C7 R      05
FAB                       00000048 R      02
FAB$C_BID               = 00000003
FAB$C_BLN               = 00000050
FAB$C_SEQ               = 00000000
FAB$C_VAR               = 00000002
FAB$L_ALQ               = 00000010
FAB$L_FOP               = 00000004
FAB$V_CHAN_MODE         = 00000002
FAB$V_FILE_MODE         = 00000004
FAB$V_LNM_MODE          = 00000000
FAB$V_PUT               = 00000000
FAB$W_GBC               = 00000048
HIGHPOADR                 00000018 R      02
IDMSG                     00000268 R      05
IDMSGADR                  000001BE R      05
IDMSGSIZ                = 00000039
INRANGE                   00000000 R      02
MAXPASSCNT                00000020 R      02
MSGBUF                    000000FE R      02
MSGBUFD                   000000E0 R      02
MSGBUFID                  000000F0 R      02
MSGBUFSIZ                                   = 000000A0
MSGLEN                                        000000DC R      02
OUTNAMADR                                     00000000 R      05
OUTNAMSIZ                                   = 0000000A
PASSCNT                                       00000024 R      02
PID                                           0000001C R      02
PIDCTL                                        00000278 R      05
PIDCTLADR                                     0000023A R      05
PIDCTLSIZ                                   = 00000003
PIDMSG                                        000000FA R      02
PIDMSGD                                       000000E8 R      02
PREVPROT                                      00000048 R      02
PRT$C_NONE                                  = 00000010
RAB                                           00000098 R      02
RAB$B_RAC                                   = 0000001E
RAB$C_BID                                   = 00000001
RAB$C_BLN                                   = 00000044
RAB$C_SEQ                                   = 00000000
RAB$L_CTX                                   = 00000018
RAB$L_RBF                                   = 00000028
RAB$L_ROP                                   = 00000004
RAB$W_RSZ                                   = 00000022
RANGECHK                                      00000530 R      05
RANGERR                                       00000258 R      05
RANGERRADR                                    0000014F R      05
RANGERRSIZ                                  = 0000004F
RDPAGES                                       00000000 R      04
RETRANGE                                      00000008 R      02
RSTART                                        000002FA R      05
RUN1_MSG                                      00000270 R      05
RUN1_MSGADR                                   000001F7 R      05
RUN1_MSGSIZ                                 = 00000043
SAVEND                                        00000014 R      02
SIZ...                                      = 00000001
SS$_ACCVIO                                  = 0000000C
SS$_EXQUOTA                                 = 0000001C
SS$_ILLPAGCNT                               = 000000FC
SS$_NORMAL                                  = 00000001
SS$_VASFULL                                 = 00000244
START                                         00000280 R      05
SYS$CNTREG                                    ********  GX    05
SYS$CONNECT                                   ********  GX    05
SYS$DELTVA                                    ********  GX    05
SYS$EXIT                                      ********  GX    05
SYS$EXPREG                                    ********  GX    05
SYS$FAO                                       ********   X    05
SYS$OPEN                                      ********  GX    05
SYS$PUT                                       ********  GX    05
SYS$RESUME                                    ********  GX    05
TYPEMSGBUF                                    000005AA R      05
WRKSETDEF                                     0000002C R      02
WRKSETLIM                                     00000028 R      02
WRKSETMAX                                   = 00000034 R      02
WRKSETMAXADD                                  00000044 R      02
WRKSETMIN                                   = 0000003C R      02
WRTPAGES                                      00000000 R      03
```

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
DATA0	0000019E (414.)	02 (2.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC PAGE
DATA1	00000800 (2048.)	03 (3.)	NOPIC USR CON REL LCL NOSHR NOEXE RD WRT NOVEC PAGE
DATA2	00000800 (2048.)	04 (4.)	NOPIC USR CON REL LCL NOSHR NOEXE RD NOWRT NOVEC PAGE
CODE	00000615 (1557.)	05 (5.)	NOPIC USR CON REL LCL NOSHR EXE RD NOWRT NOVEC PAGE

Performance indicators

Phase	Page faults	CPU Time	Elapsed Time
Initialization	17	00:00:00.07	00:00:01.69
Command processing	87	00:00:00.80	00:00:04.16
Pass 1	305	00:00:10.78	00:00:39.16
Symbol table sort	0	00:00:01.21	00:00:03.71
Pass 2	109	00:00:02.42	00:00:06.24
Symbol table output	13	00:00:00.10	00:00:00.10
Psect synopsis output	3	00:00:00.03	00:00:00.05
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	536	00:00:15.41	00:00:55.11

The working set limit was 1200 pages.
61911 bytes (121 pages) of virtual memory were used to buffer the intermediate code.
There were 50 pages of symbol table space allocated to hold 866 non-local and 16 local symbols.
490 source lines were read in Pass 1, producing 23 object records in Pass 2.
41 pages of virtual memory were used to define 34 macros.

Macro library statistics

Macro library name	Macros defined
_255DUA28:[SYS.OBJ]LIB.MLB;1	0
_255DUA28:[SYSLIB]STARLET.MLB;2	25
TOTALS (all libraries)	25

1120 GETS were required to define 25 macros.

There were no errors, warnings or information messages.

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

MMGEXPCNT
LIS

MMGSNSFWSL
LIS

MOM
MAP

MMGCRTDEL
LIS

MMGCRDLSP
LIS

MMGCRTFIL
LIS

MMGLKWULW
LIS

MMGXQUOTA
LIS

MMGSETPRT
LIS

MOM