

VVV		VVV	MMM	MMM	SSSSSSSSSSSS	LLL	IIIIIIII	0000000000	
VVV		VVV	MMM	MMM	SSSSSSSSSSSS	LLL	IIIIIIII	0000000000	
VVV		VVV	MMM	MMM	SSSSSSSSSSSS	LLL	IIIIIIII	0000000000	
VVV		VVV	MMMMMM	MMMMMM	SSS	LLL	III	000	000
VVV		VVV	MMMMMM	MMMMMM	SSS	LLL	III	000	000
VVV		VVV	MMMMMM	MMMMMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSSSSSSSSS	LLL	III	0000000000	
VVV		VVV	MMM	MMM	SSSSSSSSSS	LLL	III	0000000000	
VVV		VVV	MMM	MMM	SSSSSSSSSS	LLL	III	0000000000	
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSS	LLL	III	000	000
VVV		VVV	MMM	MMM	SSSSSSSSSSSS	LLLLLLLLLLLLLLLL	IIIIIIII	0000000000	
VVV		VVV	MMM	MMM	SSSSSSSSSSSS	LLLLLLLLLLLLLLLL	IIIIIIII	0000000000	
VVV		VVV	MMM	MMM	SSSSSSSSSSSS	LLLLLLLLLLLLLLLL	IIIIIIII	0000000000	

```
LL      IIIIII  BBBB BBBB  MM      MM  EEEEEEEEE  RRRRRRRR  GGGGGGGG  EEEEEEEEE
LL      IIIIII  BBBB BBBB  MM      MM  EEEEEEEEE  RRRRRRRR  GGGGGGGG  EEEEEEEEE
LL      II      BB      BB  MMMM  MMMM  EE      EE  RR      RR  GG      GG  EE      EE
LL      II      BB      BB  MMMM  MMMM  EE      EE  RR      RR  GG      GG  EE      EE
LL      II      BB      BB  MM      MM  EE      EE  RR      RR  GG      GG  EE      EE
LL      II      BBBB BBBB  MM      MM  EEEEEEEEE  RRRRRRRR  GG      GG  EEEEEEEEE
LL      II      BBBB BBBB  MM      MM  EEEEEEEEE  RRRRRRRR  GG      GG  EEEEEEEEE
LL      II      BB      BB  MM      MM  EE      EE  RR      RR  GG      GG  EE      EE
LL      II      BB      BB  MM      MM  EE      EE  RR      RR  GG      GG  EE      EE
LL      II      BB      BB  MM      MM  EE      EE  RR      RR  GG      GG  EE      EE
LLLLLLLL  IIIIII  BBBB BBBB  MM      MM  EEEEEEEEE  RR      RR  GGGGGG  EEEEEEEEE
LLLLLLLL  IIIIII  BBBB BBBB  MM      MM  EEEEEEEEE  RR      RR  GGGGGG  EEEEEEEEE
```

```
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
LLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLL  IIIIII  SSSSSSSS
```


(2) 50
(3) 82
(5) 220

DECLARATIONS

LIB\$Px_MERGE - Merge an Image into P0 or P1 Space
REORDER_VECTOR - Reorder Privileged Vector List

```
0000 1 .TITLE LIB$MERGE - Merge Image Activate an Image
0000 2 .IDENT 'V04-000'
0000 3
0000 4 :
0000 5 :*****
0000 6 :*
0000 7 :* COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0000 23 :* SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 24 :*
0000 25 :*
0000 26 :*****
0000 27 :
0000 28 :
0000 29 :++
0000 30 : FACILITY: VMS-specific library
0000 31 :
0000 32 : ABSTRACT: The routines in this module merge an image into P0 or P1 space.
0000 33 :
0000 34 : ENVIRONMENT:
0000 35 :
0000 36 : AUTHOR: Kathleen D. Morse , CREATION DATE: 10-Jan-80
0000 37 :
0000 38 : MODIFIED BY:
0000 39 :
0000 40 : V03-002 LJK0277 Lawrence J. Kenah 1-May-1984
0000 41 : Do not reorder privileged vectors until $IMGFIX has been called.
0000 42 : This change reflects the change in the way that privileged
0000 43 : vectors are added to the dispatch lists.
0000 44 :
0000 45 : V03-001 LJK0261 Lawrence J. Kenah 8-Feb-1984
0000 46 : Allow message and change mode vectors that are part of an
0000 47 : image mapped into P1 space to survive image rundown.
0000 48 :--
```

```
0000 50      .SBTTL  DECLARATIONS
0000 51      :
0000 52      : INCLUDE FILES:
0000 53      :
0000 54      :
0000 55      $IACDEF      ;IMAGE ACTIVATION FLAGS
0000 56      $PHDDEF      ;PROCESS HEADER DEFINITIONS
0000 57      $OPDEF       ;SYMBOLIC OPCODE DEFINITIONS
0000 58      $SSDEF       ;SYSTEM SERVICE STATUS CODES
0000 59      :
0000 60      :
0000 61      : MACROS:
0000 62      :
0000 63      :
0000 64      :
0000 65      : EQUATED SYMBOLS:
0000 66      :
0000 67      :
0000 68      :
0000 69      : OFFSETS (FROM AP) FOR INPUT ARGUMENT LIST FOR LIB$Px_MERGE
0000 70      :
0000 71      :
00000004 0000 72 FILNAM=4      ; Address of image file name descriptor
00000008 0000 73 DFLTNAM=8     ; Address of default file name descriptor
0000000C 0000 74 HDRBUF=12     ; Address of image header buffer
00000010 0000 75 RETADR=16     ; Address of quadword for range of
                                ; virtual addresses actually mapped
0000 76      :
0000 77      :
0000 78      :
0000 79      : OWN STORAGE:
0000 80      :
```



```
0000 82 .SBTTL LIB$Px_MERGE - Merge an Image into P0 or P1 Space
0000 83 :+
0000 84 : FUNCTIONAL DESCRIPTION:
0000 85 :
0000 86 : This routine merges an image into P0 or P1 space.
0000 87 :
0000 88 : If called at LIB$P0_MERGE, a simple merged image activation is performed,
0000 89 : placing the designated image at the high address end of P0 space.
0000 90 :
0000 91 : A more complicated sequence of events is required to merge an image into
0000 92 : the low address end of P1 space. Because the image activator must know the
0000 93 : exact amount of P1 space needed for the image being merged, LIB$P1_MERGE
0000 94 : first merges the image into P0 space with the expand region option. After
0000 95 : this merge is completed, the routine computes the P1 range that will hold
0000 96 : the image. This is done by finding the first free P1 page and computing
0000 97 : the number of pages just mapped into P0 space. A P1 virtual address range
0000 98 : is then computed. The pages mapped into P0 space are deleted and second
0000 99 : merge image activate is done. This time the expand region option is turned
0000 100 : off and the exact P1 range needed is specified.
0000 101 :
0000 102 : CALLING SEQUENCE:
0000 103 :
0000 104 : CALLS #4, LIB$Px_MERGE
0000 105 :
0000 106 : INPUT PARAMETERS:
0000 107 :
0000 108 : FILNAM(AP) = Address of image file name descriptor
0000 109 : DFLTNAM(AP) = Address of default file name descriptor
0000 110 : HDRBUF(AP) = Address of 512-byte image header buffer
0000 111 : RETADR(AP) = Address of quadword for range of virtual addresses mapped
0000 112 :
0000 113 : IMPLICIT INPUT:
0000 114 :
0000 115 : none
0000 116 :
0000 117 : OUTPUT PARAMETERS:
0000 118 :
0000 119 : none
0000 120 :
0000 121 : IMPLICIT OUTPUT:
0000 122 :
0000 123 : The address range actually mapped is returned in the RETADR quadword
0000 124 : provided as an input parameter.
0000 125 :
0000 126 : The first block of the image header is copied to the 512-byte buffer
0000 127 : provided as an input parameter.
0000 128 :
0000 129 : COMPLETION CODES:
0000 130 :
0000 131 : R0 low bit set => Image successfully merged
0000 132 :
0000 133 : SSS_NORMAL
0000 134 :
0000 135 : R0 low bit clear => Error occurred while activating image
0000 136 :
0000 137 : SSS_NOPRIV Entry was as LIB$P1_MERGE and process
0000 138 : does not have CMKRNC privilege.
```


0000 139 :
0000 140 :
0000 141 :
0000 142 :
0000 143 :
0000 144 :
0000 145 :
0000 146 :
0000 147 :
0000 148 :-

Various errors returned by \$IMGACT and \$DELTVA

SIDE EFFECTS:

If entry is at LIB\$P1_MERGE, the permanent portion of P1 space is expanded to accommodate the merged image. The message and change mode vectors are reordered and the reset points are adjusted to allow any such vectors in a P1 image to survive image rundown.


```
0000 150 .ENABL LOCAL_BLOCK
0000 151
00000000 152 .PSECT _LIB$CODE PIC,SHR,BYTE,RD,EXE,NOWRT
0000 153
0000 154 LIB$P0_MERGE::
57 30 00FC 0000 155 .WORD ^M<R2,R3,R4,R5,R6,R7> :REGISTER SAVE MASK
09 11 0002 156 MOVL #<IAC$M_MERGE!IAC$M_EXPREG>,R7 :IMAGE ACTIVATION FLAGS
0005 157 BRB 10$ :JOIN COMMON CODE PATH
0007 158
0007 159 LIB$P1_MERGE::
0007 160 .WORD ^M<R2,R3,R4,R5,R6,R7> :REGISTER SAVE MASK
0009 161 MOVL #<IAC$M_MERGE!IAC$M_EXPREG!IAC$M_P1MERGE>,R7
7E 03FF 8F 3C 0010 162 10$: MOVZWL #^X3FF,=(SP) :END VA FOR BLUEPRINT P0 VA RANGE
7E 0200 8F 3C 0015 163 MOVZWL #^X200,=(SP) :START VA FOR BLUEPRINT P0 VA RANGE
54 5E D0 001A 164 MOVL SP,R4 :ADR OF INPUT VA RANGE
7E 7C 001D 165 CLRQ -(SP) :RETURN VA RANGE
55 5E D0 001F 166 MOVL SP,R5 :ADR OF RETURN VA RANGE
7E 7C 0022 167 CLRQ -(SP) :PLACE TO HOLD IDENT
56 5E D0 0024 168 MOVL SP,R6 :ADR OF IDENT QUADWORD
0027 169 $IMGACT_S - :P0 MERGE IMAGE ACTIVATE CALL
0027 170 NAME=@FILNAM(AP),- :FILE NAME
0027 171 DFLNAM=@DFLTNAM(AP),- :DEFAULT FILE NAME
0027 172 HDRBUF=@HDRBUF(AP),- :IMAGE HEADER BUFFER ADDRESS
0027 173 IMGCTL=R7,- :IMAGE ACTIVATION FLAGS
0027 174 INADR=(R4),- :INPUT BLUEPRINT P0 RANGE
0027 175 RETADR=(R5),- :RETURN VA RANGE
0027 176 IDENT=(R6) :NO IDENT PARAMETER
4C 79 50 E9 0041 177 BLBC R0,IMGACT_ERR :BR IF ERROR IN $IMGACT
57 06 E1 0044 178 BBC #IAC$V_P1MERGE,R7,50$ :ALL DONE IF P0 MERGE
52 65 7D 0048 179 MOVQ (R5),R2 :R2=START VA, R3=END VA (MAPPED)
53 52 C2 004B 180 SUBL2 R2,R3 :GET # OF BYTES MAPPED
50 00000000'9F D0 004E 181 MOVL @#CTL$GL PHD,R0 :GET ADR OF PROCESS HEADER
04 A4 30 A0 000001FF 8F C1 0055 182 ADDL3 #^X1FF,PHD$L FREP1VA(R0),4(R4) :GET END VA IN P1 SPACE
64 04 A4 53 C3 005F 183 SUBL3 R3,4(R4),(R4) :GET START VA IN P1 SPACE
0064 184 $DELTVA_S - :DELETE P0 VIRTUAL ADDRESS RANGE MAPPED
0064 185 INADR=(R5) :VA RANGE RETURNED BY $IMGACT
48 50 E9 0071 186 BLBC R0,100$ :BRANCH IF ERROR IN $DELTVA
0074 187 ASSUME IAC$V_EXPREG LE 7 :BIT MUST BE IN LOW-ORDER BYTE
57 20 8A 0074 188 BICB2 #IAC$M_EXPREG,R7 :TURN OFF EXPREG BIT BEFORE P1 ACTIVATE
0077 189 $IMGACT_S - :NOW ACTIVATE IMAGE INTO P1 SPACE
0077 190 NAME=@FILNAM(AP),- :FILE NAME
0077 191 DFLNAM=@DFLTNAM(AP),- :DEFAULT FILE NAME
0077 192 HDRBUF=@HDRBUF(AP),- :IMAGE HEADER BUFFER ADDRESS
0077 193 IMGCTL=R7,- :IMAGE ACTIVATION FLAGS
0077 194 INADR=(R4),- :INPUT EXACT P1 RANGE
0077 195 RETADR=(R5),- :RETURN VA RANGE
0077 196 IDENT=(R6) :NO IDENT PARAMETER
29 50 E9 0091 197 BLBC R0,IMGACT_ERR :BRANCH IF ERROR IN $IMGACT
0094 198 50$: $IMGFIX_S - :PERFORM ADDRESS RELOCATION
1F 50 E9 009B 199 BLBC R0,IMGACT_ERR :QUIT IF ERROR OCCURS
13 57 06 E1 009E 200 BBC #IAC$V_P1MERGE,R7,75$ :ALL DONE IF P0 MERGE
55 DD 00A2 201 PUSHL R5 :PASS RETADR ARRAY TO KERNEL MODE
01 DD 00A4 202 PUSHL #1 :ONE ARGUMENT FOR ROUTINE
00A6 203 $CMKRNL_S - :SET A NEW CONTROL REGION BASE
00A6 204 ROUTIN=REORDER_VECTOR,- :AND MANIPULATE VECTORS
00A6 205 ARG1ST=(SP)
10 BC 65 7D 00B5 206 75$: MOVQ (R5),@RETADR(AP) :SET RETURN VA RANGE ACTUALLY MAPPED
```



```
50 01 9A 00B9 207 MOVZBL #SS$_NORMAL,R0 ;REPORT SUCCESSFUL MERGE IMAGE ACTIVATE
    04 00BC 208 100$: RET ; AND RETURN TO CALLER
    00BD 209
    00BD 210 IMGACT_ERR:
51 65 01 C1 00BD 211 ADDL3 #1,(R5),R1 ;ANYTHING AT ALL MAPPED?
    F9 13 00C1 212 BEQL 100$ ;BR IF NOTHING MAPPED (SKIP $DELTVA)
    50 DD 00C3 213 PUSHL R0 ;REMEMBER RETURN STATUS CODE
    00C5 214 $DELTVA,S ;DELETE P0 VIRTUAL ADDRESS RANGE MAPPED
    00C5 215 INADR=(R5) ;VA RANGE RETURNED BY $IMGACT
50 8E D0 00D2 216 MOVL (SP)+,R0 ;RESTORE ORIGINAL ERROR CODE
    E5 11 00D5 217 BRB 100$ ;JOIN COMMON CODE
    00D7 218 .DSABL LSB
```



```
00D7 220 .SUBTITLE REORDER_VECTOR - Reorder Privileged Vector List
00D7 221 ;+
00D7 222 : Functional Description:
00D7 223 :
00D7 224 : This routine scans the various privileged vector lists and reorders
00D7 225 : each list so that the vectors that point into the image that was just
00D7 226 : activated into P1 space precede the other vectors. In addition, the
00D7 227 : cells that contain the reset points are altered to locate the first
00D7 228 : vector that is NOT in the image just mapped.
00D7 229 :
00D7 230 : The net result of this change is that the vectors associated with an
00D7 231 : image permanently mapped into P1 space survive image rundown.
00D7 232 :
00D7 233 : Input Parameter:
00D7 234 :
00D7 235 : 4(AP) - Address of two-longword array that describes the address
00D7 236 : range into which the image was just mapped.
00D7 237 :
00D7 238 : Implicit Input:
00D7 239 :
00D7 240 : CTL$A_DISPVEC - The address of two pages devoted to dispatch vectors
00D7 241 : for kernel, exec, rundown, and message sections.
00D7 242 :
00D7 243 : IAC$AW_VECRESET - The address of a four-word array that contains the
00D7 244 : reset points for each of the four dispatch tables.
00D7 245 :
00D7 246 : Output Parameters:
00D7 247 :
00D7 248 : none
00D7 249 :
00D7 250 : Implicit Output:
00D7 251 :
00D7 252 : If any of the addresses in any of the vectors below the reset point
00D7 253 : are located in the image just mapped into P1 space, these vectors are
00D7 254 : switched around and the reset point modified so that the vectors
00D7 255 : survive image rundown.
00D7 256 :
00D7 257 : Calling Sequence:
00D7 258 :
00D7 259 : $CMKRNL routin = REORDER_VECTOR
00D7 260 :-
00D7 261
0000009F 00D7 262 ABSOLUTE_MODE = ^X9F
00009F16 00D7 263 JSB_ABSOLUTE = ABSOLUTE_MODE@8 ! OP$_JSB ; Opcode and mode for JSB @#address
00000006 00D7 264 VECTOR_SIZE = 6 ; Six bytes in such an instruction
00000100 00D7 265 VECTOR_PAGE = 256 ; One half page for each vector
00000004 00D7 266 VECTOR_COUNT = 4 ; There are four of them
00D7 267
00D7 268 REORDER_VECTOR:
00D7 269 .WORD ^M<R2,R3,R4,R5>
54 52 04 AC 003C 00D9 270 MOVL 4(AP),R2 ; Save address range pointer in R2
00000000'9F DE 00DD 271 MOVAL @#CTL$A_DISPVEC,R4 ; Get base address of vector pages
55 D4 00E4 272 CLRL R5 ; R5 is an index on the section type
00E6 273
00E6 274 ; The outer loop is executed for each different type of dispatch vector
00E6 275
50 00000000'9F45 3C 00E6 276 10$: MOVZWL @#IAC$AW_VECRESET[R5],- ; Get initial reset point
```



```

51 50 54 C0 00EE 277
    02 A0 9E 00EE 278 ADDL2 R0
    00F1 279 MOVAB R4,R0 ; Convert offset to an address
    00F5 280 ; Point R1 to first JSB destination
    00F5 281 ; The inner loop is executed for each vector in the page
    00F5 282
9F16 8F 80 B1 00F5 283 20$: CMPW (R0)+,#JSB_ABSOLUTE ; First two bytes of JSB @#address?
    21 12 00FA 284 BNEQ 50$ ; Nope. Must be end of list
    62 60 D1 00FC 285 CMPL (R0),(R2) ; Is address below lower limit?
    17 1F 00FF 286 BLSSU 40$ ; Yup, skip to next vector
04 A2 60 D1 0101 287 CMPL (R0),4(R2) ; Is address above upper limit?
    11 1A 0105 288 BGTRU 40$ ; Yup, skip to next vector
    51 50 D1 0107 289 CMPL R0,R1 ; Does RESET locate the same place?
    09 13 010A 290 BEQL 30$ ; Yes. No exchange necessary
    010C 291
    010C 292 ; The next three instructions exchange the two vectors located by R0 and R1.
    010C 293
    53 61 D0 010C 294 MOVL (R1),R3 ; Save a vector
    61 60 D0 010F 295 MOVL (R0),(R1) ; Move the new vector up the list
    60 53 D0 0112 296 MOVL R3,(R0) ; Restore the saved vector in a new home
    0115 297
    51 06 C0 0115 298 30$: ADDL #VECTOR_SIZE,R1 ; Advance the reset point
    0118 299
    50 04 C0 0118 300 40$: ADDL #4,R0 ; Skip over address
    D8 11 011B 301 BRB 20$ ; ... and get the next vector
    011D 302
    011D 303 ; At this point, we have successfully traversed a vector page. We need
    011D 304 ; to establish a new reset point.
    011D 305
00000000'EF45 51 54 C2 011D 306 50$: SUBL R4,R1 ; Get new reset offset
    51 02 A3 0120 307 SUBW3 #2,R1,IAC$AW_VECRESET[R5] ; Store it minus bias
    54 00000100 8F C0 0129 308 ADDL #VECTOR_PAGE,R4 ; Advance base of next "page"
    B2 55 04 F2 0130 309 AOBLS #VECTOR_COUNT,R5,10$ ; Have we done all vector sections?
    0134 310
00000000'GF 62 D0 0134 311 MOVL (R2),G^CTL$GL_CTLBASVA ; Set new control region base address
    50 01 3C 013B 312 MOVZWL #SS$_NORMAL,R0 ; Indicate success
    04 013E 313 RET ; ... and return
    013F 314
    013F 315 .END
```

LIB\$MERGE
Symbol table

- Merge Image Activate an Image

G 7

16-SEP-1984 02:15:54
5-SEP-1984 04:41:00

VAX/VMS Macro V04-00
[VMSLIB.SRC]LIBMERGE.MAR;1

Page 9
(5)

\$ST1 = 00000000
ABSOLUTE_MODE = 0000009F
CTLSA_DISPVEC ***** X 02
CTLSGC_CTLBASVA ***** X 02
CTLSGL_PHD ***** X 02
DFTNAM = 00000008
FILNAM = 00000004
HDRBUF = 0000000C
IAC\$AW_VECRESET ***** X 02
IAC\$M_EXPREG = 00000020
IAC\$M_MERGE = 00000010
IAC\$M_P1MERGE = 00000040
IAC\$V_EXPREG = 00000005
IAC\$V_P1MERGE = 00000006
IMGACT_ERR 000000BD R 02
JSB_ABSOLUTE = 00009F16
LIB\$PC_MERGE 00000000 RG 02
LIB\$P1_MERGE 00000007 RG 02
OP\$JSB = 00000016
PHD\$F_FREP1VA = 00000030
REORDER_VECTOR 000000D7 R 02
RETADR = 00000010
SS\$NORMAL = 00000001
SY\$CMKRNL ***** GX 02
SY\$DELTVA ***** GX 02
SY\$IMGACT ***** GX 02
SY\$IMGFIX ***** GX 02
VECTOR_COUNT = 00000004
VECTOR_PAGE = 00000100
VECTOR_SIZE = 00000006

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

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
\$ABSS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
_LIB\$CODE	0000013F (319.)	02 (2.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC BYTE

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

Phase	Page faults	CPU Time	Elapsed Time
Initialization	33	00:00:00.09	00:00:00.56
Command processing	145	00:00:00.52	00:00:02.49
Pass 1	287	00:00:08.46	00:00:19.16
Symbol table sort	0	00:00:01.43	00:00:03.03
Pass 2	70	00:00:01.65	00:00:03.44
Symbol table output	5	00:00:00.05	00:00:00.05
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	544	00:00:12.24	00:00:28.76

The working set limit was 1200 pages.

48896 bytes (96 pages) of virtual memory were used to buffer the intermediate code.

There were 50 pages of symbol table space allocated to hold 953 non-local and 9 local symbols.

315 source lines were read in Pass 1, producing 10 object records in Pass 2.

18 pages of virtual memory were used to define 17 macros.

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

Macro library name

Macros defined

_ \$255\$DUA28:[SYS.OBJ]LIB.MLB;1
_ \$255\$DUA28:[SYSLIB]STARLET.MLB;2
TOTALS (all libraries)

1
13
14

1061 GETS were required to define 14 macros.

There were no errors, warnings or information messages.

MACRO/DISA=TRACE/LIS=LISS:LIBMERGE/OBJ=OBJ\$:LIBMERGE MSRC\$:LIBMERGE/UPDATE=(ENH\$:LIBMERGE)+EXECMLS/LIB

0436 AH-BT13A-SE
VAX/VMS V4.0

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