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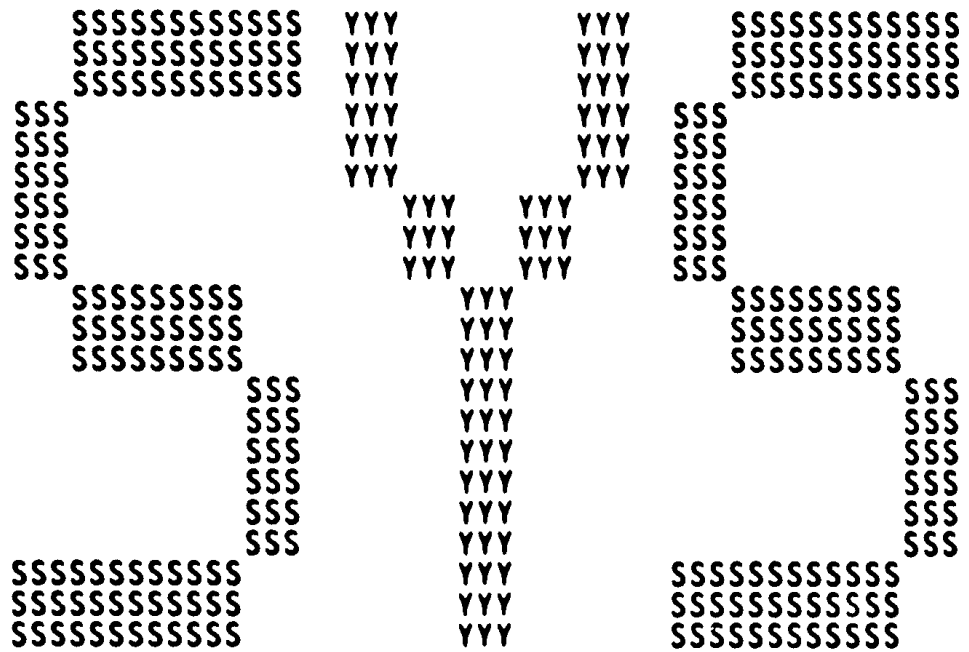
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SSSSSSSS DDDDDDDD AAAAAA TTTTTTTTTT
SSSSSSSS DDDDDDDD AAAAAA TTTTTTTTTT
SS        DD      DD AA      AA      TT
SS        DD      DD AA      AA      TT
SS        DD      DD AA      AA      TT
SS        DD      DD AA      AA      TT
SSSSSS   DD      DD AA      AA      TT
SSSSSS   DD      DD AA      AA      TT
          SS     DD      DD AAAAAAAAAA TT
          SS     DD      DD AAAAAAAAAA TT
          SS     DD      DD AA      AA      TT
          SS     DD      DD AA      AA      TT
SSSSSSSS DDDDDDDD AA      AA      TT
SSSSSSSS DDDDDDDD AA      AA      TT

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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 SS^SSSSS

```

```

0000 1      .TITLE  SDAT SCHEDULER DATA
0000 2      .IDENT  'V04-000'
0000 3
0000 4      :*****
0000 5      :*
0000 6      :*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0000 22     :*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 23     :*
0000 24     :*
0000 25     :*****
0000 26
0000 27     :++
0000 28     :*  FACILITY: EXECUTIVE,SCHEDULER
0000 29
0000 30     :*  ABSTRACT: THIS MODULE CONTAINS THE STATIC GLOBAL DATA FOR ALL
0000 31     :*  PROCESS SCHEDULING MODULES.
0000 32
0000 33     :*  V03-001 HRJ0060      Herb Jacobs      30-Mar-1982
0000 34     :*  Add flags for swapper to synchronize FREWSLE with process.
0000 35
0000 36     :*  V02-003 HRJ0051      Herb Jacobs      29-Jan-1982
0000 37     :*  Added flag byte for RELPFN to communicate with OSWPSCHED.
0000 38     :*  Remove global definitions of unused SIP flags.
0000 39
0000 40     :*  V02-002 SPF0006      Steve Forgey    06-Jul-1981
0000 41     :*  Add cumulative pages inswapped counter
0000 42
0000 43     :*  --
0000 44     :*  $STATEDEF                      : SCHEDULER STATE DEFINITIONS
0000 45
0000 46     :*  MACROS:
0000 47
0000 48     :*  .MACRO $HEADR
0000 49     :*  .LONG      :-4
0000 50     :*  .LONG
0000 51     :*  .ENDM
0000 52
0000 53
0000 54     :*  WAIT QUEUE HEADER GENERATING MACRO
0000 55
0000 56     :*  WQHEAD WAITSTATE,QNAME
0000 57

```

```

0000 58 .MACRO WQHEAD,STATE,QNAME
0000 59 SAVE.=.
0000 60 ST=SCH$C 'STATE
0000 61 STMP=ST-MXST
0000 62 .IF GT,STMP
0000 63 .REPT STMP
0000 64 $HEADR
0000 65 .LONG 0
0000 66 .ENDR
0000 67 SAVE.=.
0000 68 MXST=ST
0000 69 .ENDC
0000 70 ST=12*ST
0000 71 .=ST+SCH$AQ WQHDR
0000 72 SCH$GQ_'QNAME::
0000 73 $HEADR
0000 74 .WORD 0
0000 75 .WORD SCH$C 'STATE
0000 76 .IF GT,STMP
0000 77 SAVE.=.
0000 78 .ENDC
0000 79 .=SAVE.
0000 80 .ENDM WQHEAD
0000 81
0000 82 :
0000 83 : EQUATES:
0000 84 :
0000001 0000 85 MXST=1 ;INITIALIZE MAXIMUM STATE SEEN
0000 86
0000 87 :
0000 88 : SCHEDULER GLOBAL DATA AREA
0000 89 :
0000 90 : CAUTION - - THESE DATA STRUCTURES ARE CAREFULLY ORDERED AND
0000 91 : SHOULD NOT BE ALTERED WITHOUT MAKING CORRESPONDING
0000 92 : CHANGES IN ALL CODE REFERENCING THEM.
0000 93 :
0000000 00000000 0000 94 .PSECT $$$220, LONG
0000000 00000000 0000 95 .LONG 0,0 ; ZERO HEADER FOR OSWPSCHED SCAN
00000008' 0008 96 SCH$AQ_COMH:: ;PRIORITY 0 COMPUTE QUEUE HEAD
00000008' 000C 97 .LONG .
00000008' 000C 98 SCH$AQ_COMT:: ;PRIORITY 0 COMPUTE QUEUE TAIL
0000 99 .LONG -4
0010 100 :
0010 101 $HEADR ;PRIORITY 1 COMPUTE QUEUE HEADER
0018 102 $HEADR ;PRIORITY 2 COMPUTE QUEUE HEADER
0020 103 $HEADR ;PRIORITY 3 COMPUTE QUEUE HEADER
0028 104 $HEADR ;PRIORITY 4 COMPUTE QUEUE HEADER
0030 105 $HEADR ;PRIORITY 5 COMPUTE QUEUE HEADER
0038 106 $HEADR ;PRIORITY 6 COMPUTE QUEUE HEADER
0040 107 $HEADR ;PRIORITY 7 COMPUTE QUEUE HEADER
0048 108 $HEADR ;PRIORITY 8 COMPUTE QUEUE HEADER
0050 109 $HEADR ;PRIORITY 9 COMPUTE QUEUE HEADER
0058 110 $HEADR ;PRIORITY 10 COMPUTE QUEUE HEADER
0060 111 $HEADR ;PRIORITY 11 COMPUTE QUEUE HEADER
0068 112 $HEADR ;PRIORITY 12 COMPUTE QUEUE HEADER
0070 113 $HEADR ;PRIORITY 13 COMPUTE QUEUE HEADER
0078 114 $HEADR ;PRIORITY 14 COMPUTE QUEUE HEADER

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0080 115 $HEADR :PRIORITY 15 COMPUTE QUEUE HEADER
0088 116 $HEADR :PRIORITY 16 COMPUTE QUEUE HEADER
0090 117 $HEADR :PRIORITY 17 COMPUTE QUEUE HEADER
0098 118 $HEADR :PRIORITY 18 COMPUTE QUEUE HEADER
00A0 119 $HEADR :PRIORITY 19 COMPUTE QUEUE HEADER
00A8 120 $HEADR :PRIORITY 20 COMPUTE QUEUE HEADER
00B0 121 $HEADR :PRIORITY 21 COMPUTE QUEUE HEADER
00B8 122 $HEADR :PRIORITY 22 COMPUTE QUEUE HEADER
00C0 123 $HEADR :PRIORITY 23 COMPUTE QUEUE HEADER
00C8 124 $HEADR :PRIORITY 24 COMPUTE QUEUE HEADER
00D0 125 $HEADR :PRIORITY 25 COMPUTE QUEUE HEADER
00D8 126 $HEADR :PRIORITY 26 COMPUTE QUEUE HEADER
00E0 127 $HEADR :PRIORITY 27 COMPUTE QUEUE HEADER
00E8 128 $HEADR :PRIORITY 28 COMPUTE QUEUE HEADER
00F0 129 $HEADR :PRIORITY 29 COMPUTE QUEUE HEADER
00F8 130 $HEADR :PRIORITY 30 COMPUTE QUEUE HEADER
0100 131 $HEADR :PRIORITY 31 COMPUTE QUEUE HEADER
0108 132 SCH$AQ_COMOH:: :NON RESIDENT COMPUTE QUEUE HEADER VECTOR
00000108' 0108 133 .LONG . :PRIORITY 0 NON-RES HEADER
010C 134 SCH$AQ_COMOT:: :NON-RESIDENT COMPUTE QUEUE TAIL VECTOR
00000108' 010C 135 .LONG .-4
0110 136 $HEADR :PRIORITY 1 NON-RES COMPUTE QUEUE
0118 137 $HEADR :PRIORITY 2 NON-RES COMPUTE QUEUE
0120 138 $HEADR :PRIORITY 3 NON-RES COMPUTE QUEUE
0128 139 $HEADR :PRIORITY 4 NON-RES COMPUTE QUEUE
0130 140 $HEADR :PRIORITY 5 NON-RES COMPUTE QUEUE
0138 141 $HEADR :PRIORITY 6 NON-RES COMPUTE QUEUE
0140 142 $HEADR :PRIORITY 7 NON-RES COMPUTE QUEUE
0148 143 $HEADR :PRIORITY 8 NON-RES COMPUTE QUEUE
0150 144 $HEADR :PRIORITY 9 NON-RES COMPUTE QUEUE
0158 145 $HEADR :PRIORITY 10 NON-RES COMPUTE QUEUE
0160 146 $HEADR :PRIORITY 11 NON-RES COMPUTE QUEUE
0168 147 $HEADR :PRIORITY 12 NON-RES COMPUTE QUEUE
0170 148 $HEADR :PRIORITY 13 NON-RES COMPUTE QUEUE
0178 149 $HEADR :PRIORITY 14 NON-RES COMPUTE QUEUE
0180 150 $HEADR :PRIORITY 15 NON-RES COMPUTE QUEUE
0188 151 $HEADR :PRIORITY 16 NON-RES COMPUTE QUEUE
0190 152 $HEADR :PRIORITY 17 NON-RES COMPUTE QUEUE
0198 153 $HEADR :PRIORITY 18 NON-RES COMPUTE QUEUE
01A0 154 $HEADR :PRIORITY 19 NON-RES COMPUTE QUEUE
01A8 155 $HEADR :PRIORITY 20 NON-RES COMPUTE QUEUE
01B0 156 $HEADR :PRIORITY 21 NON-RES COMPUTE QUEUE
01B8 157 $HEADR :PRIORITY 22 NON-RES COMPUTE QUEUE
01C0 158 $HEADR :PRIORITY 23 NON-RES COMPUTE QUEUE
01C8 159 $HEADR :PRIORITY 24 NON-RES COMPUTE QUEUE
01D0 160 $HEADR :PRIORITY 25 NON-RES COMPUTE QUEUE
01D8 161 $HEADR :PRIORITY 26 NON-RES COMPUTE QUEUE
01E0 162 $HEADR :PRIORITY 27 NON-RES COMPUTE QUEUE
01E8 163 $HEADR :PRIORITY 28 NON-RES COMPUTE QUEUE
01F0 164 $HEADR :PRIORITY 29 NON-RES COMPUTE QUEUE
01F8 165 $HEADR :PRIORITY 30 NON-RES COMPUTE QUEUE
0200 166 $HEADR :PRIORITY 31 NON-RES COMPUTE QUEUE
0208 167 :
0208 168 :
0208 169 :
0208 170 :
0208 171 :

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WAIT QUEUE HEADERS
THE WAIT QUEUE HEADERS ARE ARRANGED IN STATE NUMBER ORDER

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0208 172 : BY THE WQHEAD MACRO. SINCE THEY ARE INDEXED BY STATE NUMBER
0208 173 : THIS ORDER MUST BE PRESERVED.
0208 174 :
0208 175 :
000001FC 0208 176 SCH$AQ_WQHDR=-12 : BASE OF WAIT QUEUE HEADER VECTOR
0208 177 WQHEAD LEF,LEFWQ : LOCAL EVENT FLAG WAIT (RESIDENT)
0244 178 WQHEAD LEFO,LEFOWQ : LOCAL EVENT FLAG WAIT (NON-RESIDENT)
0250 179 WQHEAD HIB,HIBWQ : HIBERNATE WAIT (RESIDENT)
025C 180 WQHEAD HIBO,HIBOWQ : HIBERNATE WAIT (NON-RESIDENT)
0268 181 WQHEAD SUSP,SUSP : SUSPENDED (RESIDENT)
0274 182 WQHEAD SUSPO,SUSPO : SUSPENDED (NON-RESIDENT)
0280 183 WQHEAD MWAIT,MWAIT : MUTEX WAIT
0280 184 WQHEAD COLPG,COLPGWQ : COLLIDED PAGE WAIT
0280 185 WQHEAD PFW,PFWQ : PAGE FAULT WAIT
0280 186 WQHEAD FPG,FPGWQ : FREE PAGE WAIT
028C 187 :
028C 188 :
028C 189 :
00000000' 028C 190 SCH$GL_CURPCB:: : ADDRESS OF CURRENTLY ACTIVE PCB
028C 191 .LONG SCH$GL_NULLPCB :
0290 192 :
0290 193 SCH$GL_COMQS:: : COMPUTE QUEUE SUMMARY BITS
00000000 0290 194 .LONG 0 : INITIALIZE TO ZERO
0294 195 SCH$GL_COMOQS:: : NON-RESIDENT COMPUTE QUEUE SUMMARY BITS
00000000 0294 196 .LONG 0 : INITIALIZE TO ZERO
0298 197 :
0298 198 :
0298 199 : SWAPPER CONTROL CELLS
0298 200 :
0298 201 SCH$GB_SIP:: : SWAP IN PROGRESS FLAG
00 0298 202 .BYTE 0 : 1 => SWAP IN PROGRESS
00000000 0299 203 SCH$V_SIP==0 : SWAP IN PROGRESS FLAG
00000002 0299 204 SCH$V_MPW==2 : MODIFY PAGE WRITER ACTIVE
0299 205 : REST OF ABOVE BYTE RESERVED
0299 206 :
0299 207 SCH$GB_RESCAN:: :
00 0299 208 .BYTE 0 : FLAG BYTE FOR RELPFN TO NOTIFY
00000000 029A 209 SCH$V_REORD==0 : OSWPSCHED QUEUE REORDERING OCCURED
029A 210 :
029A 211 MMG$GB_FREWFLGS:: :
00 029A 212 .BYTE 0 : FLAGS TO ALLOW SWAPPER USE OF FREWSLE
00000002 029B 213 MMG$M_NOWAIT==2 : DON'T ALLOW FREWSLE TO RESOURCE WAIT
00000001 029B 214 MMG$V_NOWAIT==1 : ON MODIFIED LIST BACK PRESSURE
00000001 029B 215 MMG$M_NOLASTUPD==1 : DON'T ALLOW FREWSLE TO UPDATE WSLAST
00000000 029B 216 MMG$V_NOLASTUPD==0 : (PREVENT WSLAST/WSSIZE INTERACTIONS)
029B 217 :
029B 218 .ALIGN WORD : PRESERVE ALIGNMENT
029C 219 SCH$GW_PROCCNT:: : CURRENT COUNT OF PROCESSES
0000 029C 220 .WORD 0 : CREATED WHICH REQUIRE SWAP FILE
029E 221 SCH$GW_PROCLIM:: : MAXIMUM NUMBER OF PROCESSES
0040 029E 222 .WORD 64 : ACTUALLY SET BY INIT
02A0 223 .ALIGN LONG : PRESERVE ALIGNMENT
00000010 02A0 224 SWP$GL_SLOTCNT:: : COUNT OF AVAILABLE SWAP SLOTS
02A0 225 .LONG 16 : NON-ZERO TO PERMIT CREATE OF SYSINIT
02A4 226 :
02A4 227 :
02A4 228 :

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```

02A4 229 : COMMON EVENT CLUSTER LIST
02A4 230 :
02A4 231 SCH$GQ_CEBHD:: : COMMON EVENT BLOCK HEADER
02A4 232 $HEADR : GENERATE LIST HEADER
0000 02AC 233 SCH$GW_CEBCNT:: : NUMBER OF COMMON EVENT BLOCKS
0000 02AE 234 .WORD 0 : INIT TO ZERO
02AE 235 SCH$GW_DELPDCT:: : COUNT OF HEADERS WITH DELETE PENDING
02B0 236 .WORD 0 : INIT TO ZERO
02B0 237 .ALIGN LONG : GET TO LONGWORD BOUND
00000000 02B0 238 SWP$GL_SHELL:: : SHELL PROCESS SWAP ADDRESS
02B4 239 .LONG 0 : FILLED BY INITIALIZATION
00000000 02B4 240 SWP$GL_INPCB:: : PCB ADDRESS OF INSWAP PROCESS
02B8 241 .LONG 0 :
02B8 242 :
00000000 02B8 243 SWP$GL_ISPAGCNT:: : INSWAP PAGE COUNT
02B8 244 .LONG 0 :
0000 02BC 245 SWP$GW_IBALSETX:: : INSWAP BALANCE SET INDEX
02BC 246 .WORD 0 :
02BE 247 :
00000000 02BE 248 SWP$GB_ISWPRI:: : INSWAP PROCESS PRIORITY
02BE 249 .BYTE 31 : INSWAP PROCESS PRIORITY
00 02BF 250 :
02BF 251 .BYTE 0 : SPARE *****
02C0 252 :
00000000 02C0 253 SWP$GL_ISWPPAGES:: : COUNT OF INSWAPPED PAGES
02C0 254 .LONG 0 :
00000000 02C4 255 SWP$GL_ISWPCNT:: : COUNT OF INSWAPS PERFORMED
02C4 256 .LONG 0 :
00000000 02C8 257 SWP$GL_OSWPCNT:: : COUNT OF OUTSWAPS PERFORMED
02C8 258 .LONG 0 :
00000000 02CC 259 SWP$GL_HOSWPCNT:: : COUNT OF HEADER OUTSWAPS
02CC 260 .LONG 0 :
00000000 02D0 261 SWP$GL_HISWPCNT:: : COUNT OF HEADER INSWAPS
02D0 262 .LONG 0 :
02D4 263 :
02D4 264 :
02D4 265 : SCH$GL_RESMASK IS A BIT VECTOR INDEXED BY RSN$NAME TO
02D4 266 : INDICATE THE PRESENCE OF PROCESSES WAITING FOR THAT RESOURCE.
02D4 267 :
00000000 02D4 268 SCH$GL_RESMASK:: : RESOURCE WAIT BIT VECTOR
02D4 269 .LONG 0 : INITIALIZE TO ZERO, NONE WAITING
02D8 270 :
00 02D8 271 SCH$GB_PRI:: : CURRENT PROCESS PRIORITY
02D8 272 .BYTE 0 :
02D9 273 .END

```

SDAT
Symbol table

SCHEDULER DATA

K 6

16-SEP-1984 01:09:56 VAX/VMS Macro V04-00
5-SEP-1984 03:47:36 [SYS.SRC]SDAT.MAR;1

Page 6
(1)

SEC
V04

MMG\$GB_FREWFLGS	0000029A	RG	02
MMG\$M_NOLASTUPD	= 00000001	G	
MMG\$M_NOWAIT	= 00000002	G	
MMG\$V_NOLASTUPD	= 00000000	G	
MMG\$V_NOWAIT	= 00000001	G	
MXST	= 0000000B		
SAVE.	= 0000028C	R	02
SCH\$AQ_COMH	00000008	RG	02
SCH\$AQ_COMOH	00000108	RG	02
SCH\$AQ_COMOT	0000010C	RG	02
SCH\$AQ_COMT	0000000C	RG	02
SCH\$AQ_WQHDR	= 000001FC	RG	02
SCH\$C_COLPG	= 00000001		
SCH\$C_FPG	= 0000000B		
SCH\$C_HIB	= 00000007		
SCH\$C_HIBO	= 00000008		
SCH\$C_LEF	= 00000005		
SCH\$C_LEFO	= 00000006		
SCH\$C_MWAIT	= 00000002		
SCH\$C_PFW	= 00000004		
SCH\$C_SUSP	= 00000009		
SCH\$C_SUSPO	= 0000000A		
SCH\$GB_PRI	000002D8	RG	02
SCH\$GB_RESCAN	00000299	RG	02
SCH\$GB_SIP	00000298	RG	02
SCH\$GL_COMOQS	00000294	RG	02
SCH\$GL_COMQS	00000290	RG	02
SCH\$GL_CURPCB	0000028C	RG	02
SCH\$GL_NULLPCB	*****	X	02
SCH\$GL_RESMASK	000002D4	RG	02
SCH\$GQ_CEBHD	000002A4	RG	02
SCH\$GQ_COLPGWQ	00000208	RG	02
SCH\$GQ_FPGWQ	00000280	RG	02
SCH\$GQ_HIBWQ	0000025C	RG	02
SCH\$GQ_HIBWQ	00000250	RG	02
SCH\$GQ_LEFWQ	00000244	RG	02
SCH\$GQ_LEFWQ	00000238	RG	02
SCH\$GQ_MWAIT	00000214	RG	02
SCH\$GQ_PFWQ	0000022C	RG	02
SCH\$GQ_SUSP	00000268	RG	02
SCH\$GQ_SUSPO	00000274	RG	02
SCH\$GW_CEBCNT	000002AC	RG	02
SCH\$GW_DELPDCT	000002AE	RG	02
SCH\$GW_PROCCNT	0000029C	RG	02
SCH\$GW_PROCLIM	0000029E	RG	02
SCH\$V_MPW	= 00000002	G	
SCH\$V_REORD	= 00000000	G	
SCH\$V_SIP	= 00000000	G	
ST	= 00000084		
STMP	= 00000001		
SWP\$GB_ISWPRI	000002BE	RG	02
SWP\$GL_HISWPCNT	000002D0	RG	02
SWP\$GL_HOSWPCNT	000002CC	RG	02
SWP\$GL_INPCB	000002B4	RG	02
SWP\$GL_ISPAGCNT	000002B8	RG	02
SWP\$GL_ISWPCNT	000002C4	RG	02
SWP\$GL_ISWPPAGES	000002C0	RG	02

SWP\$GL_OSWPCNT	000002C8	RG	02
SWP\$GL_SHELL	000002B0	RG	02
SWP\$GL_SLOTCNT	000002A0	RG	02
SWP\$GW_IBALSETX	000002BC	RG	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
\$AB\$\$	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
\$\$\$220	000002D9 (729.)	02 (2.)	NOPIC USR CON REL LCL NOSHR EXE RD WRT NOVEC LONG

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.07	00:00:01.55
Command processing	113	00:00:00.50	00:00:04.51
Pass 1	134	00:00:01.99	00:00:08.88
Symbol table sort	0	00:00:00.04	00:00:00.04
Pass 2	67	00:00:00.74	00:00:03.97
Symbol table output	8	00:00:00.07	00:00:00.47
Psect synopsis output	2	00:00:00.01	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	356	00:00:03.42	00:00:19.44

The working set limit was 1200 pages.
 10022 bytes (20 pages) of virtual memory were used to buffer the intermediate code.
 There were 10 pages of symbol table space allocated to hold 65 non-local and 0 local symbols.
 273 source lines were read in Pass 1, producing 18 object records in Pass 2.
 10 pages of virtual memory were used to define 9 macros.

! Macro library statistics !

Macro library name	Macros defined
-\$255\$DUA28:[SYS.OBJ]LIB.MLB;1	1
-\$255\$DUA28:[SYSLIB]STARLET.MLB;2	3
TOTALS (all libraries)	4

73 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS\$:SDAT/OBJ=OBJ\$:SDAT MSRCS\$:SDAT/UPDATE=(ENH\$:SDAT)+EXECMLS/LIB

A grid of 100 terminal windows, each displaying a different system utility or command-line interface. The windows are arranged in a 10x10 grid. Several windows contain prominent text labels:

- Row 1, Column 5: SHELL LIS
- Row 2, Column 1: RSE LIS
- Row 3, Column 3: SOBVECTOR LIS
- Row 3, Column 4: SDAT LIS
- Row 3, Column 7: SHMSDRTH LIS
- Row 4, Column 3: SCSVEC LIS
- Row 7, Column 3: SCHED LIS
- Row 7, Column 4: SECAUDT LIS
- Row 8, Column 1: RUFYSVEC LIS
- Row 8, Column 9: SPTSKEL LIS

The other windows in the grid show various system status reports, command-line prompts, and data lists, all rendered in a monospaced font on a dark background.