

**PUBLICATIONS  
UPDATE**

**Operating System/4 (OS/4)**

**System Generation**

**Programmer Reference**

**UP-8213 Rev.2-A**

**This Library Memo announces the release and availability of Updating Package A to "SPERRY UNIVAC Operating System/4 (OS/4) System Generation Programmer Reference", UP-8213 Rev.2.**

This update contains additions and corrections to the following areas:

- 9400/9480 Systems Macro Instructions (SYSTEM, PUB, SYSDVC, SWLIST LUT, and RESLIST) in Section 2
- 90/60, 70 Systems Macro Instructions (SYSTEM, ERRJR,PUB, SYSDVC, SWLIST, LUT, and RESLIST) in Section 3.
- Minor corrections and additions to information for \$P\$SPOOL and SYSABS files in Section 4.

In addition, sample listings for both 9400/9480 and 90/60, 70 Systems (Sections 2 and 3 have been replaced by new listings.

Copies of Updating Package A are now available for requisitioning. Either the updating package alone, or the complete manual with the updating package may be requisitioned by your local Sperry Univac Representative. To receive the updating package alone, order UP-8312 Rev.2-A. To receive the complete manual, order UP-8213 Rev. 2.

LIBRARY MEMO ONLY	LIBRARY MEMO AND ATTACHMENTS	THIS SHEET IS
Mailing Lists BZ, CZ and MZ	Mailing Lists 60, 61, 65 and 66 (Package A to UP-8312 Rev. 2, 55 pages plus Memo)	Library Memo
		RELEASE DATE: March 1978



# **SPERRY UNIVAC Operating System/4 (OS/4) System Generation**

## **Programmer Reference**

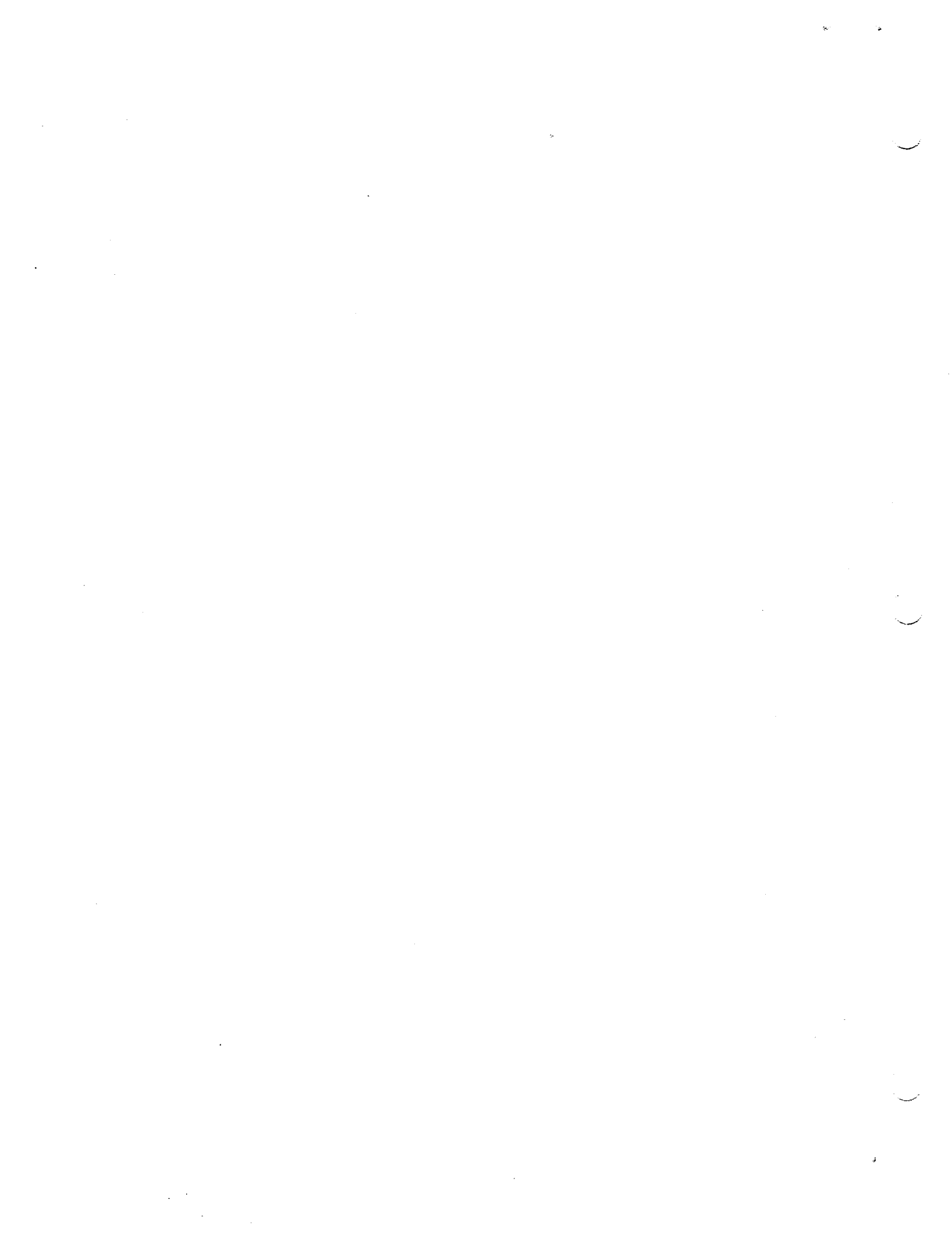
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Format:

LABEL	Δ OPERATION Δ	OPERAND
	STDEQU	[HW] [,SB] [,JB] [,JP] [,IP] [,DM] [,MC] [,JA] [,MM] [,JI]

Parameters:

These parameters may be specified in any sequence.

**HW**

Equates the hardware locations of the program status words, subchannel control words, channel status words, timer control word, H registers (that is, equating a register designation to a specific hardware location), and RS special purpose registers.

**SB**

System information block labels are equated.

**JB**

Job control block labels are equated.

**JP**

System job preamble labels are equated.

**IP**

Physical unit block labels are equated.

**DM**

All data management labels are equated.

**MC**

All message control labels are equated.

**JA**

All job accounting labels are equated.

**JI**

All job initiator labels are equated.

*NOTE:*

*If JI is specified, DM must also be specified.*

**MM**

Specifies all mini-MCP definitions. This parameter is required when generating a supervisor for a communications environment.

*NOTE:*

*If all labels are required for the program, no parameters are required; the operand field is blank.*

**2.2.3. Facility Description (SYSTEM) Macro Instruction**

Function:

Describes the facilities of the hardware environment and optional software features. The first parameter is the only required specification; all other parameters are optional and may appear in any order.

Format:

LABEL	△ OPERATION △	OPERAND
	SYSTEM	{ TAPE [, REDSC, SEL] } { DISC [, RETAP] } } [, MINIO] [, MINS] COMB, RETAP  [ { NWPROT } ] [, AER] [, ASCII] [ { AVR } ] [ { WPROT } ]  [, BALT] [, COCHN] [ { COOP } ] [, DIAG] [, DM] [ { COOPT } ]  [, DMCC] [, ECP93] [, ERLG] [, EXCPC] [, FLE] [, IMSG]  [, JPROC] [, LDCD] [ { MCP } ] [, MIDP] [, NOISE] [ { MMCP } ]  [, ODR] [, PAPT] [, POS] [, RESTR] [ { ROWP } ] [ { ROWP, ROWRP } ]  [, RTY] [, SEL] [, SIMDAY] [, URSVC] [, U12RWD]  [ { 1004H } ] [ { 1004H2 } ] [ { JAS } ] [, SEEK] [, SPLR] [, INIT] [ { 9300H } ] [ { JASM } ] [ { 9300H2 } ]  [, TRNDX] [, STEP] [, 24HRCLK]

The following paragraphs categorize the parameters into three groups for ease of selection: supervisor type selection, main storage write protect selection, and hardware/software feature selection.

### 2.2.3.1. Supervisor Type Selection

Parameters:

#### TAPE

Specifies the generation of a tape-oriented supervisor (loads programs only from tape; disc error recovery is excluded unless REDSC is specified).

#### DISC

Specifies the generation of a disc-oriented supervisor (loads programs only from disc; tape error recovery is excluded unless RETAP is specified). Capability of handling selector channels is automatically included.

#### COMB

Specifies the generation of a supervisor for a combination tape/disc-oriented system (reads programs from tape or disc; disc error recovery is included).

#### RETAP

Specifies tape error recovery.

#### NOTE:

When COMB is generated, RETAP must be specified for tape error recovery.

**REDSC**

Specifies disc error recovery when a tape supervisor is generated. SEL must also be specified.

**SEL**

Specifies inclusion in the supervisor of those components that control selector channel operation.

**MINIO**

Specifies the generation of a 12K minimum system. This parameter ensures operation within 12,288 bytes of main storage.

**NOTE:**

*The MINIO parameter specification requires the following system characteristics:*

- *The system must be either a 4-tape or a 2-disc system, with the standard card reader and printer.*
- *Additional SYSTEM macro parameter specifications can be DM only for both TAPE or DISC and can be SEL only for tape systems that include UNISERVO 12C or 16C Magnetic Tape Subsystems.*
- *SWLIST macro parameter 1 must be 3.*
- *JOBS macro call parameters must be 1,1.*
- *Resident dump cannot be specified on the SPVKNL macro call.*

**MINS**

Specifies the generation of a minimum supervisor.

**NOTES:**

1. *When the MINIO/MINS parameter is specified for a tape system, the supervisor GETCS macro instruction does not process multistatement job control cards.*
2. *The MINIO/MINS parameter is included to provide minimum storage size capability and should not be used with any of the following parameters: COMB, SIMDAY, 24HRCLK, MCP, PAPT, ODR, COCHN, 1004H2, 9300H2, U12RWD, EXCPC, NOISE, POS, DIAG, AER, RTY, COOP, COOPT, DMCC, SEEK, JAS, JASM, AVR, AVR D, FLE, BAL T, ASCII, LDCD, URSVC, ERLG, RESTR, MMCP, ECP93, SPLR, INIT, STEP, and TRNDX. Also, SWLIST parameter 1 must be 3, and JOBS parameter 2 may not exceed 5.*

### 2.2.3.2. Main Storage Write Protection Selection

The write protection specification is automatically assumed. It may be omitted from the SYSTEM macro instruction if desired.

Parameters:

**NWPROT**

Specifies that hardware is not equipped with the limits register option and that all programs may operate outside their own main storage bounds without incurring a program check (write protect).

If this option is selected and the limits register (main storage protect) feature is present, the OPTION NOWP job control statement is required for all programs that modify areas outside their own main storage bounds. This includes all SPERRY UNIVAC processors, the linkage editor, and any programs utilizing sort facilities.

**WPROT**

Specifies that the hardware is equipped with the limits register option, and the supervisor requires all programs except SPERRY UNIVAC software to operate only within their own main storage bounds. The OPTION NOWP job control statement is ineffective.

**NOTE:**

→ *Improper specification of the WPROT and NWPROT parameters or the OPTION NOWP job control statement results in program checks (ERROR CODE=0940) when limits register hardware is present.*

**2.2.3.3. Hardware/Software Feature Selection**

## Parameters:

**AER**

Specifies the inclusion of the automatic error recovery capability.

**ASCII**

→ Specifies inclusion of the translation and control features necessary to enable Sperry Univac and user software to process ASCII files and programs. See DOS information interchange standards programmer reference, UP-7902 (current version).

**AVR**

Specifies inclusion of the automatic volume recognition capability (not effective for a tape supervisor).

**AVRD**

Specifies inclusion of disc-only, automatic-volume-recognition capability (not effective for a tape supervisor).

**BALT**

Specifies inclusion of resident code that simulates 25 instructions contained in the IBM System 360.

**COCHN**

Specifies inclusion of control codes for selector channel cochanneling. The primary and secondary channel specification must also be declared in the PUB macro instruction for the tape and disc devices that are to utilize cochanneling.

**COOP**

→ Specifies that output from the cooperative is to be routed to disc or tape. The RECLCK macro instruction feature is automatically included. This parameter cannot be specified if COOPT or SPLR is specified.

**COOPT**

→ Specifies that output from the cooperative is to be routed to tape only. This parameter cannot be specified if COOP or SPLR is specified.

**DIAG**

Specifies that the command code and sense bytes are to be appended to each SEnn error message.

**DM**

Specifies the inclusion of a routine to handle the data management LBRET macro instruction.

**DMCC**

Specifies a routine to provide data management common code capability.

- *The SPLR parameter is incompatible with the MINS or MINIO parameter. If MINS or MINIO are used, the spooler capability is ignored.*
- *The SPLR parameter is incompatible with the COOP or COOPT parameter. If COOP or COOPT are used, SPLR is ignored.*

**STEP**

Specifies that job control step-look-ahead capability is to be included in the system. ←

**TRNDX**

Specifies inclusion of code to perform automatic dynamic tabling of transient index information, thereby reducing loading time and disc I/O traffic for frequently called transients.

**URSVC**

Specifies that user transient routines are supported.

**U12RWD**

Specifies that UNISERVO 12/16 Magnetic Tape Subsystem rewind interrupt logic is to be altered by software to coincide with UNISERVO VI-C Magnetic Tape Subsystem logic. If this specification is not included when UNISERVO 12 or UNISERVO 16 subsystem hardware is present, rewind time will not be overlapped.

**1004H**

Specifies inclusion of SPERRY UNIVAC 1004 Card Processor System handler. (Do not specify when 1004H2 is specified.)

**1004H2**

Specifies inclusion of dual 1004 card processor system handlers. (Do not specify when 1004H is specified.)

**9300H**

Specifies inclusion of a handler for one online SPERRY UNIVAC 9200/9300 Series Subsystem. (Do not specify when 9300H2 is specified.)

**9300H2**

Specifies inclusion of a handler for two online 9200/9300 series subsystems. (Do not specify when 9300H is specified.)

**24HRCLK**

Specifies inclusion of timer routine to update the system date and clock when the console clock reaches 2400 (midnight). When this option is included, the SIMDAY option is assumed. ↓



## 2.2.4. Cooperative Function Capabilities (PCOOP) Macro Instruction

Function:

If the COOP or COOPT parameter is specified in the SYSTEM macro instruction, the PCOOP macro instruction is required to specify the capabilities of the cooperative.

Format:

LABEL	Δ OPERATION Δ	OPERAND
	PCOOP	$\left[ \begin{array}{c} \{ \frac{T}{D} \} \\ B \end{array} \right] [ , PRNT ] \left[ \begin{array}{c} \{ SS \} \\ \underline{10} \end{array} \right] [ , PUNCH ] [ , JOBLOG ] [ , ]$ $[ , f ] \left[ , COMP = \begin{array}{c} \{ YES \} \\ \{ NO \} \end{array} \right]$

If no positional parameters are specified, T,PRNT,10 is assumed.

Positional Parameter 1:

**T**  
— Specifies that cooperative output is to go only to tape.

**D**  
Specifies that cooperative output is to go only to disc.

**B**  
Specifies that cooperative output is to go to tape or disc.

Positional Parameter 2:

**PRNT**  
Specifies that the cooperative is to process printer files.

If omitted, printer files are processed unless positional parameter 4 (PUNCH) is specified.

Positional Parameter 3:

$\left\{ \begin{array}{c} SS \\ \underline{10} \end{array} \right\}$  Specifies the maximum number of skips that can be accommodated on a forms control loop.

Positional Parameter 4:

**PUNCH**  
Specifies that the cooperative is to process punch orders.

If omitted, printer files are processed.

Positional Parameter 5:

**JOBLOG**  
Specifies that the cooperative is to process job control console messages.

Positional Parameter 6:

This parameter field is reserved for future expansion. If positional parameter 7 is used, the comma for positional parameter 6 must be used.

Positional Parameter 7:

**f**

Specifies the maximum number of files to be processed concurrently by the cooperative (excluding the JOBLOG positional parameter).

If omitted, the maximum number of files is set to the number of jobs plus the number of transient routine execution areas in the system.

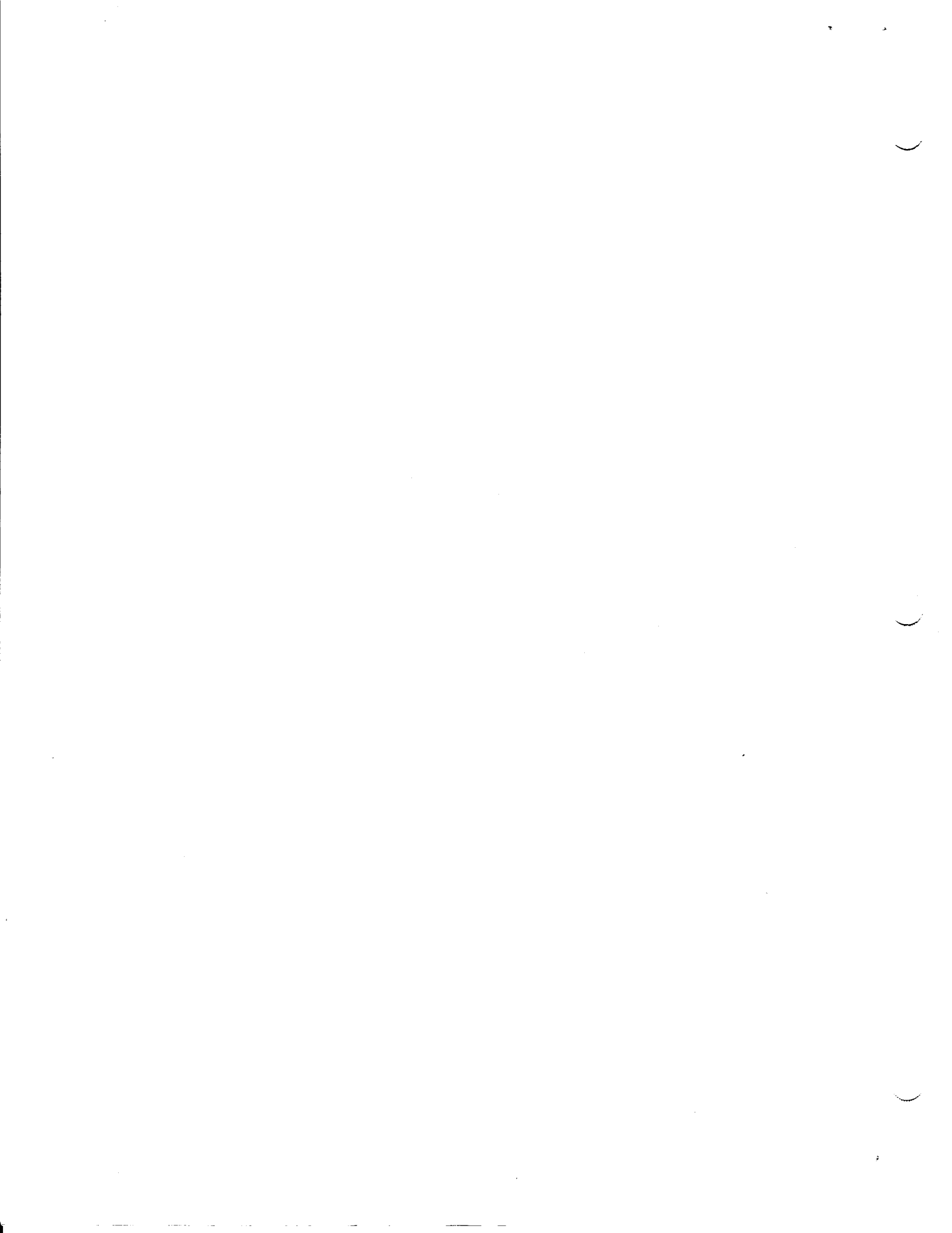
COMP Keyword Parameter:

**COMP=YES**

Specifies that data compression is to be performed on cooperative output.

**COMP=NO**

Specifies that data compression is not to be performed on cooperative output.





Positional Parameter 6:

**CON**

Indicates that the system console device is described by the PUB macro instruction.

**RDR**

Indicates that the system reader device is described by the PUB macro instruction. This parameter may only be specified on the last card reader PUB macro instruction. ←

**SYSDVC**

Indicates that the 1004/1005 channel adapter or the 9200/9300 channel adapter is described by the PUB macro instruction.

**SHR**

Indicates that this device will be marked shared.

**CAUTION**

*Improper use of the SHR parameter could result in the inadvertent destruction of data on a volume, since the shareability of this parameter applies to all volumes mounted on the device until the option is removed via the appropriate SET command.*

Positional Parameter 7:

**LAST**

Identifies the last PUB macro instruction and is required for that instruction.

### 2.2.14. 1004/1005 Channel Adapter (U1004) Macro Instruction

Function:

If the 1004/1005 channel adapter is to be used, the U1004 macro instruction must be specified after the last PUB macro instruction.

Format:

LABEL	△ OPERATION △	OPERAND
	<b>U1004</b>	<b>CTL=labela,RDR=labelb,PRT=labeld</b> <b>[,PCH=labelc] [,CTL1=labele]</b> <b>[,RDR1=labelf] [,PCH1=labelg]</b> <b>[,PRT1=labelh]</b>

CTL Keyword Parameter:

**CTL=labela**

Specifies the user-assigned label of the PUB for the 1004/1005 channel adapter.

RDR Keyword Parameter:

**RDR=labelb**

Specifies the user-assigned label of the PUB for the 1004/1005 card reader.

PRT Keyword Parameter:

**PRT=labeld**

Specifies the user-assigned label of the PUB for the 1004/1005 printer.

PCH Keyword Parameter:

**PCH=labelc**

Specifies the user-assigned label of the PUB for the 1004/1005 card punch, if present.

CTL1 Keyword Parameter:

**CTL1=labele**

Specifies the user-assigned label of the PUB for second 1004/1005 channel adapter, if present.

RDR1 Keyword Parameter:

**RDR1=labelf**

Specifies the user-assigned label of the PUB for second 1004/1005 card reader, if present.

PCH1 Keyword Parameter:

**PCH1=labelg**

Specifies the user-assigned label of the PUB for second 1004/1005 card punch, if present.

PRT1 Keyword Parameter:

**PRT1=labelh**

Specifies the user-assigned label of the PUB for second 1004/1005 printer, if present.

### 2.2.15. 9200/9300 Channel Adapter (U9300) Macro Instruction

Function:

If the 9200/9300 channel adapter is to be used, the U9300 macro instruction must be specified after the last PUB macro instruction.

Format:

LABEL	△ OPERATION △	OPERAND
	U9300	CTL=labela,RDR=labelb,PRT=labelc [,RDR1=labeld] [,PCH=labelc] [,PCH1=labelf] [,PRT1=labelg]

CTL Keyword Parameter:

**CTL=labela**

Specifies the user-assigned label of the PUB for the 9200/9300 channel adapter.

RDR Keyword Parameter:

**RDR=labelb**

Specifies the user-assigned label of the PUB for the first 9200/9300 card reader.

PRT Keyword Parameter:

**PRT=labelc**

Specifies the user-assigned label of the PUB for the first 9200/9300 printer.

RDR1 Keyword Parameter:

**RDR1=labeld**

Specifies the user-assigned label of the PUB for the second 9200/9300 card reader, if present.

PCH Keyword Parameter:

**PCH=labele**

Specifies the user-assigned label of the PUB for the first 9200/9300 card punch, if present.

PCH1 Keyword Parameter:

**PCH1=labelf**

Specifies the user-assigned label of the PUB for the second 9200/9300 card punch, if present.

PRT1 Keyword Parameter:

**PRT1=labelg**

Specifies the user-assigned label of the PUB for the second 9200/9300 printer, if present.

## 2.2.16. User-Selected Devices (SYSDVC) Macro Instruction

Function:

The SYSDVC macro instruction identifies the user-selected system devices, which can later be redefined by operator commands entered at the console.

Format:

LABEL	△ OPERATION △	OPERAND
	SYSDVC	RDR=symbol,LOG=symbol,IPT=symbol, PCH=symbol,LST=symbol,RES=symbol [ADP=symbol,ADN=number [,ADP1=symbol,ADN1=number]]

NOTE:

Multiple macro calls must be specified if all parameters cannot be written on one card. The user-defined symbol must be the same as the symbol written in the label field of the appropriate PUB macro instruction. If a required keyword parameter is omitted, the specification for the symbolic name must be set to 0 (e.g., PCH=0).

RDR Keyword Parameter:

**RDR=symbol**

Identifies the PUB for the system reader device; defines the unit on which control streams are filed. The value must be 0 under DOS operation.



LOG Keyword Parameter:

**LOG=symbol**

Identifies the PUB for the system log device (must be console).

IPT Keyword Parameter:

**IPT=symbol**

Identifies the PUB for the system input device; defines the unit from which control streams to be filed are read.

PCH Keyword Parameter:

**PCH=symbol**

Identifies the PUB for the system punch device.

LST Keyword Parameter:

**LST=symbol**

Identifies the PUB for the system list device.

RES Keyword Parameter:

**RES=symbol**

Identifies the PUB for SYSRES; may be specified as 0, if desired. The SYSRES device is established at supervisor initial load time.

ADP Keyword Parameter:

**ADP=symbol**

Identifies the PUB for 1004/1005 or 9200/9300 channel adapter.

ADN Keyword Parameter:

**ADN=number**

Identifies the number of devices on the 1004/1005 or 9200/9300 handler, including the 1004/1005 channel adapter.

ADP1 Keyword Parameter:

**ADP1=symbol**

Identifies the PUB for the second 1004/1005 channel adapter (1004H2).

ADN1 Keyword Parameter:

**ADN1=number**

Identifies the number of devices on the second 1004/1005 handler (1004H2), including the second 1004/1005 channel adapter.

### 2.2.17. Program Switch List (SWLIST) Macro Instruction

Function:

The SWLIST macro instruction generates the program switch list. There are 14 program priority levels available, 13 of which are available to the user for problem programs. The user can specify the amount of time (from 10 to 4000 milliseconds) to be allocated to each user priority level by the system time allocation routine. The priority levels are as follows:

- Priority level S, reserved for spooler job only
- Priority level 1, reserved for use by the MCP or mini-MCP control program only. Other user programs must operate at user priority 2 or lower.
- Priority level 2 through 13, user priority levels

Format:

LABEL	△ OPERATION △	OPERAND
	SWLIST	$n \left[ \left\{ \begin{array}{l} \text{time1} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time2} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time3} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time4} \\ \underline{500} \end{array} \right\} \right]$ $\left[ \left\{ \begin{array}{l} \text{time5} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time6} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time7} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time8} \\ \underline{500} \end{array} \right\} \right]$ $\left[ \left\{ \begin{array}{l} \text{time9} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time10} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time11} \\ \underline{500} \end{array} \right\} \right]$ $\left[ \left\{ \begin{array}{l} \text{time12} \\ \underline{500} \end{array} \right\} \right] \left[ \left\{ \begin{array}{l} \text{time13} \\ \underline{500} \end{array} \right\} \right]$

Positional Parameter 1:

- n**  
Indicates the number of priority levels in the program SWLIST for user programs. The range of n is 3 through 13.

Positional Parameters 2 through 14:

- timen**  
Indicates the amount of time (in milliseconds) to be used by the time allocation routine when dispatching programs assigned to user priority level n. This priority level can be 1 through 13. The default value is 500 milliseconds.

### 2.2.18. System Information Block (SIB) Macro Instruction

Function:

The SIB macro instruction is used to generate the system information block.

Format:

LABEL	Δ OPERATION Δ	OPERAND
	SIB	$X'xxxxxx', ttt, C'ii' \left[ \left\{ \begin{matrix} X'ss' \\ X'00' \end{matrix} \right\} \right] \left[ \left\{ \begin{matrix} X'yy' \\ X'11' \end{matrix} \right\} \right]$ [,SSP] [,ISD]

Positional Parameter 1:

**X'xxxxxx'**

Main storage size expressed in hexadecimal bytes. The supervisor restricts main storage utilization to this number of bytes unless it is determined that the system has less main storage available, in which case the smaller size is effective.

**NOTE:**

*For a system with greater than 131K bytes of main storage, the size specified must be at least 131K bytes plus 1(X'20000') or the supervisor cannot maintain limits register protection. Therefore, the initialization of the system is aborted.*

Positional Parameter 2:

**ttt**

Specifies the amount of time (in minutes) that is to be used as a limit for those control streams that do not specify a time limit in the JOB statement.

Positional Parameter 3:

**C'ii'**

Supervisor identification expressed as an alphanumeric value (must correspond to the ii label of the START assembler directive).

Positional Parameter 4:

$\left\{ \begin{matrix} X'ss' \\ X'00' \end{matrix} \right\}$

The system program switch indicator (SPSI) is initially set to the hexadecimal value specified by this parameter.

Positional Parameter 5:

$\left\{ \begin{matrix} X'yy' \\ X'11' \end{matrix} \right\}$

Specifies the SYSPool multiplicative factor. This consists of two 4-bit hexadecimal multipliers; the first is for scratch files and the second is for the module complex library (MCL).

Positional Parameter 6:

**SSP**

Specifies that all processors have the capability of running in single SYSPool (SSP) mode.

If omitted, all processors using SYSPool require at least two SYSPool volumes.

Positional Parameter 7:

**ISD**

Specifies that the date field in the SIB is in the International Standard Date (ISD) format (yy/mm/dd).

If omitted, the date field is in the American Standard Date (ASD) format (mm/dd/yy).

**2.2.19. Logical Unit Table (LUT) Macro Instruction**

Function:

The LUT macro instruction defines the entries in the system logical unit table. This table consists of up to 255 entries, each containing a device type code which is used to relate a logical unit number with a particular type of device. Entries in the table are referenced by a number from 000 through 255. Each LUT macro instruction permits the definition of multiple table entries which are contiguous and have the same device type code.

Format:

LABEL	△ OPERATION △	OPERAND
	LUT	fff,ttt,X'tt'[,LAST]

Positional Parameter 1:

**fff**

Specifies the starting or single logical unit table entry number (000—255) that is to be assigned the type code specified by positional parameter 3.

Positional Parameter 2:

**ttt**

Specifies the ending or single logical unit table entry number (000—255) that is to be assigned the type code specified by positional parameter 3.

Positional Parameter 3:

**X'tt'**

Specifies the device type code (two hexadecimal characters). These codes can be obtained from Table 2—2.

**NOTE:**

*The device type code specified by positional parameter 3 is generated in each table entry beginning with the entry specified by positional parameter 1 and ending with the entry specified by positional parameter 2. When there is more than one LUT entry, no gaps are permitted between entries; they must be contiguous. The first entry must specify logic unit number 0 and device type X'OF'.*

Positional Parameter 4:

**LAST**

Indicates the last LUT macro call.

## 2.2.20. Device Substitution (DVCSUB) Macro Instruction

### Function:

The DVCSUB macro instruction is optional and allows the user to generate a table of device types as substitutes for allocated devices. Type substitution by device allocation is accomplished by placing a second parameter on the DVC job control statement which is in the form of an alphabetic letter from A to Z which corresponds to the letter generated at SYSGEN time by means of the DVCSUB macro instruction. (Refer to job control programmer reference, UP-7793 (current version) for further explanation of device substitution.) This feature specifies substitute tape devices when more than one type of subsystem, such as disc, tape, or reader, is included in a system.

### Format:

LABEL	△ OPERATION △	OPERAND
	DVCSUB	a,tt[,tt,...] [,LAST]

### Positional Parameter 1:

**a**

Specifies that an alphabetic letter from A to Z is to appear in the generated table to define the device types which follow.

### Positional Parameter 2 through n-1:

**tt**

Specifies 2-digit substitute device type. (Substitute devices must have the same characteristics and features as the devices for which they are substituted.)

### Positional Parameter n:

**LAST**

Indicates the last DVCSUB macro call.

## 2.2.21. Supervisor Control (SPVKNL) Macro Instruction

### Function:

The SPVKNL macro instruction generates control routines that are used by the main storage resident portion of the supervisor.

There are three formats for the SPVKNL macro instruction.



Format:

LABEL	△ OPERATION △	OPERAND
START	SPVINT	

### 2.2.23. Resident Transient Inclusion List (RESLIST) Macro Instruction

Function:

The RESLIST macro instruction generates a list of transient names that may be optionally or automatically loaded as resident transients at supervisor initialization. This macro is optional if RESTR is specified on the SYSTEM macro instruction. The number of entries in the list may not exceed the number of resident transients specified by the RESTRAN macro instruction.

Format:

LABEL	△ OPERATION △	OPERAND
	RESLIST	[name1] [,...,namen] [ ,AUTO=YES] [ ,DISP=NO]

Positional Parameters 1 through n:

**namen**

Indicates the last five characters of a transient module to be loaded from \$YSTRAN.

Keyword Parameters:

**AUTO=YES**

Specifies that the resident transients will be loaded without displaying the SV44 message.

If omitted, the transients will be loaded only by response to the SV44 message.

**DISP=NO**

Specifies that the SV43 messages are not to be displayed.

### 2.2.24. Supervisor Index (SPVNDX) Macro Instruction

Function:

The SPVNDX macro instruction provides a reference of several label values, routine address, and supervisor characteristics that are useful in interpreting a main storage dump containing the resident supervisor. It has no effect on the operation of the supervisor and is optional and informational. Assembly errors (U) may be encountered when utilizing this macro instruction if the label conventions are not followed when assigning PUB macro instruction names (2.2.13). (The names used are CONSOLE, READER, PRINTER, TAPE1 through TAPEn, and DISC1 through DISCn.) If specified, the macro instruction must be placed immediately before the END assembler directive.

Format:

LABEL	△ OPERATION △	OPERAND
	SPVNDX	[label-1] [,label-2,... [,label-40] ]

Positional Parameters 1 through 40:

label-n

Specifies the symbolic labels for additional label values, routine addresses, and supervisor characteristics to be included in the supervisor index.

### 2.2.25. End Control Routine (END) Assembler Directive

Function:

The END assembler directive concludes the initial program loading procedure and initiates generation of the supervisor.

Format:

LABEL	△ OPERATION △	OPERAND
	END	START

## 2.3. SAMPLE SUPERVISOR GENERATION LISTING: 9400/9480 SYSTEMS

### Minimum System

```

FID      NAME      DISC ADDR  VERS  #BLKS  FLAG
SRCE SE1  05704D   11-01  0006   0000
**SRCE MODULE
00001      SYSSE100  START 0
00002      STDEQU HW,SB,JB,JP,IP
00003      EJECT
00004      SYSTEM DISC,MINS,DH,RETAP
00005      JOBS 1,1
00006      CONSOLE PUB X'0F',C'D80',X'80',0,,CON
00007      READER  PUB X'10',C'D90',X'90',0
00008      PRNTR  PUB X'30',C'E80',X'80',0
00009      TAPE1   PUB X'52',C'G90',X'90',X'01',X'C8'
00010      TAPE2   PUB X'52',C'G91',X'91',X'01',X'C8'
00011      TAPE3   PUB X'52',C'G92',X'92',X'01',X'C8'
00012      TAPE4   PUB X'52',C'G93',X'93',X'01',X'C8'
00013      DISC1   PUB X'60',C'J80',X'80',X'02'
00014      DISC2   PUB X'60',C'J81',X'81',X'02',,,LAST
00015      SYS0VC  IPT=READER,LST=PRNTR,LOG=CONSOLE,PCH=0,RDR=0
00016      SYS0VC  RES=0,ADP=0,ADN=0
00017      SWLIST  3,500,750,2000
00018      SIB    X'00007FFF',60,C'E1'
00019      LUT    0,0,X'0F'
00020      LUT    1,1,X'10'
00021      LUT    2,2,X'30'
00022      LUT    3,6,X'52'
00023      LUT    7,8,X'60',LAST
00024      SPVKNL
00025      START  SPVINT
00026      END    START
    
```

Complete System

```

FID      NAME      DISC ADDR  VERS  #BLKS  FLAG
SRCE SE2      057056   11-01  0018   0000
**SRCE MODULE
00001      SYSSE200  START 0
00002      STDEQU
00003      EJECT
00004      SYSTEM COMB,
00005      AER,
00006      AVR,
00007      BALT,
00008      ERLG,
00009      JASH,
00010      SEEK,
00011      RESTR,
00012      FLE,
00013      IMSG,
00014      LDCD,
00015      MIDP,
00016      POS,
00017      SIMDAY,
00018      JPROC,
00019      MCP,
00020      DM,
00021      DMCC,
00022      RETAP,
00023      ROWP,
00024      ROWRP,
00025      WPROT,
00026      1004H2,
00027      COCHN,
00028      EXCPC,
00029      PAPT,
00030      ODR,
00031      NOISE,
00032      DIAG,
00033      UJ2RWD,
00034      ASCII,
00035      URSVC,
00036      RTY,
00037      INIT,
00038      TRNDX,
00039      STEP,
00040      24HRCLK,
00041      SPLR
00042      EJECT
00043      MCPGEN 1ST=4
00044      RECLCK 10
00045      RESTRAN 50
00046      EJECT
00047      JOBS 5,12
00048      ACCT TRM=20
00049      MAXTIME 5,60
00050      USERSVC SV$UTRN,SV$UTRN,SV$UTRN,SV$UTRN,
00051      SV$UTRN,SV$UTRN,SV$UTRN,SV$UTRN,
00052      SV$UTRN,SV$UTRN
00053      ERRLOG SITE=PHILADELPHIA-DEVELOPMENT-CENTER
00054      EJECT
00055      CONSOLE PUB X'0F',C'080',X'80',0,0,CON
00056      READER PUB X'10',C'090',X'90',0,0
00057      PRINTER PUB X'30',C'E80',X'80',X'00',X'00'
00058      TAPE1 PUB X'40',C'AC0',X'CO',X'00',X'90'
00059      TAPE2 PUB X'41',C'AC1',X'C1',X'00',X'00'
00060      TAPE3 PUB X'41',C'AC2',X'C2',X'00',X'00'
00061      TAPE4 PUB X'52',C'G90',X'90',X'12',X'CB'
00062      TAPE5 PUB X'52',C'G91',X'91',X'21',X'CB'
00063      TAPE6 PUB X'53',C'G92',X'92',X'12',X'CB'
00064      TAPE7 PUB X'52',C'G93',X'93',X'21',X'CB'
00065      TAPE8 PUB X'52',C'G94',X'94',X'12',X'CB'

```

SRCE MODULE

```

00066 TAPE9 PUB X'52',C'G95',X'95',X'21',X'CB'
00067 TAPE10 PUB X'5A',C'G96',X'96',X'12',X'CB'
00068 TAPE11 PUB X'5A',C'G97',X'97',X'21',X'CB'
00069 DISC1 PUB X'60',C'J80',X'80',X'12',X'00',SHR
00070 DISC2 PUB X'60',C'J81',X'81',X'21',X'00',SHR
00071 DISC3 PUB X'60',C'J82',X'82',X'12',X'00',SHR
00072 DISC4 PUB X'60',C'J83',X'83',X'21',X'00',SHR
00073 DISC5 PUB X'61',C'KA0',X'A0',X'12',X'00',SHR
00074 DISC6 PUB X'61',C'KA1',X'A1',X'21',X'00',SHR
00075 DISC7 PUB X'61',C'KA2',X'A2',X'12',X'00',SHR
00076 ODR PUB X'90',C'OA0',X'A0',X'00',X'00'
00077 PAPP PUB X'82',C'PD1',X'D1',X'00',X'00'
00078 PAPR PUB X'81',C'PD0',X'D0',X'00',X'00'
00079 GEN1004 PUB X'F4',C'BE0',X'E0',X'00',X'00',SYSDVC
00080 RDR1004 PUB X'14',C'1E0',X'E0',0,0
00081 PCH1004 PUB X'24',C'2E0',X'E0',0,0
00082 PRT1004 PUB X'34',C'3E0',X'E0',0,0
00083 GENA PUB X'F4',C'BD0',X'D0',X'00',X'00',SYSDVC
00084 RDR1A PUB X'14',C'100',X'D0',0,0,RDR
00085 PCH1A PUB X'24',C'200',X'D0',0,0
00086 PRT1A PUB X'34',C'300',X'D0',0,0,,LAST
00087 EJECT
00088 UI004 CTL=GEN1004,RDR=RDR1004,RDR1=RDR1A,PCH=PCH1004,PCH1=PCH1A
00089 A,PRT=PRT1004,PRT1=PRT1A
00090 EJECT
00091 SYSDVC RDR=0,IPT=READER,LST=PRINTER,LOG=CONSOLE
00092 SYSDVC ADP=GEN1004,ADN=4,RES=0,PCH=PCH1004,ADP1=GENA,ADN1=4
00093 EJECT
00094 SWLIST 13,1000,2000,4000,4000,4000,4000,4000,4000,4000, X
00095 4000,4000,4000
00096 EJECT
00097 SIB X'0003FFFF',15,C'E2'
00098 EJECT
00099 LUT 000,000,X'0F'
00100 LUT 001,001,X'10'
00101 LUT 002,003,X'14'
00102 LUT 004,005,X'24'
00103 LUT 006,006,X'30'
00104 LUT 007,007,X'34'
00105 LUT 008,008,X'40'
00106 LUT 009,010,X'41'
00107 LUT 011,015,X'52'
00108 LUT 016,016,X'53'
00109 LUT 017,018,X'5A'
00110 LUT 019,022,X'60'
00111 LUT 023,025,X'61'
00112 LUT 026,026,X'81'
00113 LUT 027,027,X'82'
00114 LUT 028,028,X'90',LAST
00115 EJECT
00116 DVCSUB D,61,60
00117 DVCSUB S,52,41,53,40,5A
00118 DVCSUB F,52,41,5A
00119 DVCSUB C,53,40
00120 DVCSUB R,10,14
00121 DVCSUB P,30,34,LAST
00122 EJECT
00123 SPVKNL DMP4
00124 EJECT
00125 RESLIST R0000,T6ADD,56600,56601,56603,56604,56605,56606,56607,X
00126 56800,56801,56802, X
00127 DISP=NO,AUTO=YES
00128 EJECT
00129 START SPVINT
00130 EJECT
00131 SPVNDX GEN1004,RDR1004,PCH1004,PRT1004,ODR,PAPP,PAPR,GENA,RDRX
00132 IA,PCH1A,PRT1A
00133 END START

```





Normal System

```

FID   NAME   DISC ADDR  VERS  IBLKS  FLAG
SRCE  SE3    057077  11-01  000F   0000
**SRCE MODULE
00001      SYSSE300 START 0
00002      STDEQU HW,SB,JB,JP,IP,JI,DM
00003      SYSTEM DISC,
00004          SEL,
00005          SIMDAY,
00006          RETAP,
00007          WPROT,
00008          ROWP,
00009          ROWRP,
00010          COCHN,
00011          9300H,
00012          U12RWD,
00013          DM,
00014          NOISE,
00015          POS,
00016          DIAG,
00017          MIDP,
00018          AER,
00019          RTY,
00020          AVR0,
00021          JPROC,
00022          INIT,
00023          SPLR,
00024          24HRCLK,
00025          ERLG
00026      EJECT
00027      JOBS 3,4
00028      EJECT
00029      ERRLOG
00030      EJECT
00031      CONSOLE PUB X'0F',C'D80',X'80',X'00',X'00',CON
00032      PRINTER PUB X'30',C'E80',X'B0',X'00',X'00'
00033      GEN9300 PUB X'F9',C'B00',X'D0',X'00',X'00',SYSDVC
00034      READER  PUB X'19',C'100',X'D0',X'00',X'00'
00035      PUNCH   PUB X'29',C'200',X'D0',X'00',X'00'
00036      PRT9300 PUB X'39',C'300',X'D0',X'00',X'00'
00037      TAPE1   PUB X'5A',C'G90',X'90',X'01',X'C8'
00038      TAPE2   PUB X'5A',C'G91',X'91',X'01',X'C8'
00039      TAPE3   PUB X'5A',C'G92',X'92',X'01',X'C8'
00040      TAPE4   PUB X'5A',C'G93',X'93',X'01',X'C8'
00041      DISC1   PUB X'61',C'K80',X'80',X'21',X'00'
00042      DISC2   PUB X'61',C'K81',X'81',X'12',X'00'
00043      DISC3   PUB X'62',C'LA0',X'A0',X'12',X'00'
00044      DISC4   PUB X'62',C'LA1',X'A1',X'21',X'00'
00045      DISC5   PUB X'62',C'LA2',X'A2',X'12',X'00'
00046      DISC6   PUB X'62',C'LA3',X'A3',X'21',X'00',.LAST
00047      EJECT
00048      U9300 CTL=GEN9300,RDR=READER,PCH=PUNCH,PRT=PRT9300
00049      EJECT
00050      SYSDVC RDR=0,LOG=CONSOLE,PCH=PUNCH,LST=PRINTER
00051      SYSDVC IPT=READER,RES=0,ADP=GEN9300,ADN=4,ADP1=0,ADN1=0
00052      EJECT
00053      SWLIST 4,50,50,100,1000
00054      EJECT
00055      SIB X'0002FFFF',15,C'E3'
00056      EJECT
00057      LUT 000,000,X'0F'
00058      LUT 001,001,X'19'
00059      LUT 002,002,X'29'
00060      LUT 003,003,X'30'
00061      LUT 004,004,X'39'
00062      LUT 005,008,X'5A'
00063      LUT 009,010,X'61'
00064      LUT 011,014,X'62',LAST
00065      EJECT
00066      DVCSUB D,62,61

```



↓ SRCE MODULE

```
00067          DVCSUB P,30,39
00068          EJECT
00069          SPVKNL (DMPTPS),X'90'
00070          EJECT
00071          START SPVINT
00072          EJECT
00073          SPVNDX
00074          END   START
```

↑

Format:

LABEL	△ OPERATION △	OPERAND
STDEQUS4		[HW] [,SB] [,JB] [,JP] [,IP] [,DM] [,MC] [,JA] [,MM] [,JI]

Parameters:

**HW**

Equate the hardware locations of the program status words, subchannel control words, channel status words, timer control word, H registers (that is, equating a register designation to a specific hardware location), and RS special purpose registers.

**SB**

System information block labels are equated.

**JB**

Job control block labels are equated.

**JP**

System job preamble labels are equated.

**IP**

Physical unit block labels are equated.

**DM**

All data management labels are equated.

**MC**

All message control labels are equated.

**JA**

All job accounting labels are equated.

**MM**

Specifies all mini-MCP definitions. This parameter is required when generating a supervisor for a communications environment.

**JI**

All job initiator labels are equated.

**NOTE:**

*If JI is specified, DM must also be specified. If all labels are required for the program, no parameters are required; the operand field is blank.*

**3.2.3. Facility Description (SYSTEM) Macro Instruction**

Function:

The SYSTEM macro instruction describes certain facilities of the hardware environment and optional software features. These parameters may be specified in any order.

Format:

LABEL	△ OPERATION △	OPERAND
	SYSTEM	[SIMDAY] [ {MCP} ] [ {ROWP, ROWRP} ] [PAPT] [ODR] [ {9300H, 9300H2, 1004H, 1004H2} ] [EXCPC] [ {COOP, COOPT} ] [DIAG] [,DM] [,DMCC] [,NOISE] [,POS] [,AER] [,RTY] [,MIDP] [,AVR] [,AVRD] [,FLE] [,ASCII] [,LDCD] [,URSV] [,FP] [,EL] [,JPROC] [,MCHK] [,RESTR] [,IMSG] [ {JAS, JASM} ] [,SPLR] [,INIT] [,TRNDX] [,STEP] [,24HRCLK]

Parameters:

**SIMDAY**

Specifies that the full timer services be included in the supervisor.

**MCP**

Specifies that the generated supervisor include facilities for controlling a communications environment.

**MMCP**

Specifies inclusion of mini-MCP capability.

**ROWP**

Specifies that a punch translate table for a punch is to be included.

**ROWRP**

Specifies that a read translate table for a read punch is to be included. (ROWP must also be specified.)

**PAPT**

Specifies that paper tape routines and error recovery are to be included.

**ODR**

Specifies that optical document reader routines and error recovery are to be included.

**9300H**

Specifies that a handler for one online 9200/9300 series subsystem is to be included. (Do not specify when 9300H2 is specified.)

**9300H2**

Specifies that a handler for two online 9200/9300 series subsystems is to be included. (Do not specify when 9300H is specified.)

**1004H**

Specifies inclusion of the 1004 card processor system handler. (Do not specify when 1004H2 is specified.)



**STEP**

Specifies that job control step-look-ahead capability is to be included in the system.

**TRNDX**

Specifies inclusion of code to perform automatic dynamic tabling of transient index information, thereby reducing loading time and disc I/O traffic for frequently called transients.

**24HRCLK**

Specifies inclusion of timer routine to update the system date and clock when the console clock reaches 2400 (midnight). When this option is included, the SIMDAY option is assumed.

**NOTES:**

1. *Only one SYSTEM macro instruction card may be used. If the parameter cannot fit on one card, continuation cards should be used.*
2. *A combination disc or tape supervisor is always generated. Loading from tape is possible for limited use as a tape starter supervisor only. (See the 90/60,70 systems operations handbook operator reference, UP-7937 (current version).)*
3. *Either AVR or AVR D may be specified, but not both.*
4. *Specifying job accounting capability with the JAS and JASM parameters is affected by other parameters that may also be specified in the SYSTEM macro instruction. The effect of the other parameters upon the job accounting capability is summarized in the following text:*
  - *When the JAS or JASM parameter is specified, the SIMDAY parameter must be specified.*
  - *When the JASM parameter is specified without specifying the MCP parameter, the JAS parameter is assumed, and an assembly diagnostic message will result.*
  - *If both the JASM and the JAS parameters are specified, the JAS parameter is assumed.*
  - *The JASM parameter is incompatible with the MMCP parameter (mini-MCP) and, if used, JAS parameter is assumed.*
  - *The specification of both the JAS parameter and the MCP parameter is legitimate; however, the MCP message data is not accounted.*

**3.2.4. Cooperative Function Capabilities (PCOOP) Macro Instruction****Function:**

The PCOOP macro instructions specify the capabilities of the cooperative function. It is required if either the COOP or COOPT parameter is specified in the SYSTEM macro instruction.

Format:

LABEL	△ OPERATION △	OPERAND
	PCOOP	$\left[ \begin{array}{c} \{ B \} \\ \{ D \} \\ \{ T \} \end{array} \right] [ , PRNT ] \left[ , \begin{array}{c} \{ ss \} \\ \{ 10 \} \end{array} \right] [ , PUNCH ] [ , JOBLOG ]$ $[ , ] [ , f ] [ , COMP = \left\{ \begin{array}{c} YES \\ NO \end{array} \right\} ]$

Positional Parameter 1:

- B**  
Specifies that the cooperative output can go to tape or disc.
- D**  
Specifies that the cooperative output is to go only to disc.
- T**  
Specifies that the cooperative output is to go only to tape.

Positional Parameter 2:

- PRNT**  
Specifies that the cooperative is to process printer files.

If omitted, printer files are processed unless positional parameter 4 is PUNCH.

Positional Parameter 3:

- $\left\{ \begin{array}{c} ss \\ 10 \end{array} \right\}$   
Specifies the maximum number of skips that can be accommodated on a forms control loop.

Positional Parameter 4:

- PUNCH**  
Specifies that the cooperative is to process punch orders.

If omitted, printer files are processed.

Positional Parameter 5:

- JOBLOG**  
Specifies that the cooperative is to process job control console messages.

Positional Parameter 6:

- [,]  
This parameter is reserved. If T is selected in positional parameter 1, the comma for positional parameter 6 must be used.

Positional Parameter 7:

f

Specifies the maximum number of files to be processed concurrently by the cooperative (excluding JOBLOG).

If omitted, the maximum number of files is set to the number of the jobs plus the number of transient routine execution areas in the system.

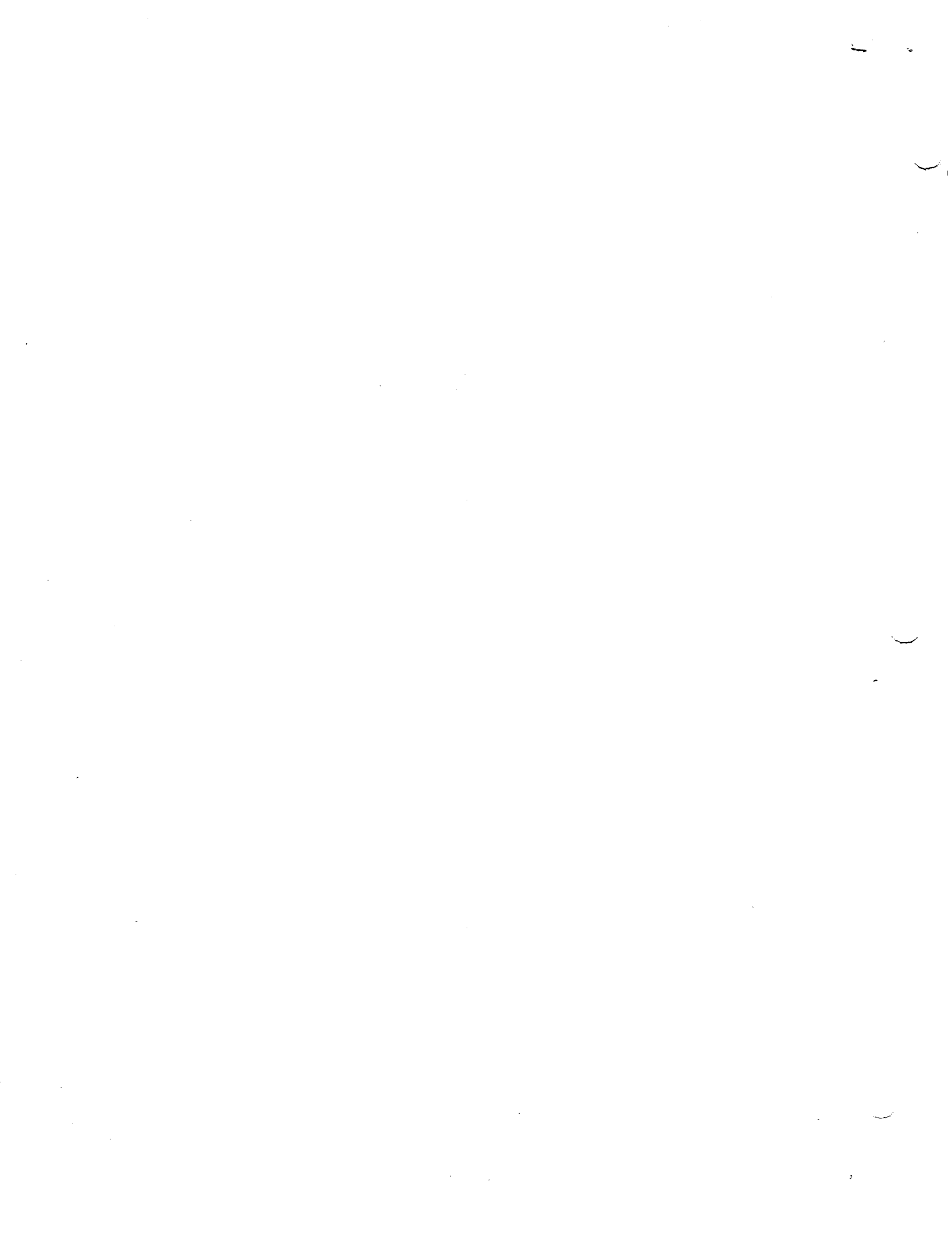
COMP Keyword Parameter:

**COMP=YES**

Specifies that data compression is to be performed on cooperative output.

**COMP=NO**

Specifies that data compression is not to be performed on cooperative output.



### 3.2.5. Interrupt Processing Generation (MCPGEN) Macro Instruction

Function:

If MCP or MMCP parameter is specified in the SYSTEM macro instruction, the MCPGEN macro instruction is required to specify the generation of interrupt processing tables used to control the nonshared multiplexer channel in a communications environment.

Format:

LABEL	Δ OPERATION Δ	OPERAND
	MCPGEN	[ IST= { $\frac{nn}{4}$ } ]

IST Keyword Parameter:

$$\text{IST} = \left\{ \frac{nn}{4} \right\}$$

Specifies the maximum number of communications lines, in the range of 4 through 64, that can be active at any one time.

### 3.2.6. Error Recovery (ERRJP) Macro Instruction

Function:

The ERRJP macro instruction provides an option for the creation of error recovery buffers.

Format:

LABEL	Δ OPERATION Δ	OPERAND
	ERRJP	[ ERBNO= { $\frac{n}{1}$ } ]

ERBNO Keyword Parameter:

$$\text{ERBNO} = \left\{ \frac{n}{1} \right\}$$

Specifies the number of error recovery buffers the user desires, up to a maximum value of 14. ←

NOTES:

1. A recovery buffer is required for the duration of recovery for a disc error requiring recalibration or for a tape error that requires repositioning or erasing. Increasing the number of buffers increases the number of devices that can be simultaneously in recovery from these types of errors.
2. The number of buffers requested depends on the needs of the user. Choosing  $n$  should be based on the number of jobs running concurrently, with  $n+1$  buffers specified for  $n$  concurrent jobs. The maximum number of concurrent jobs is 13. ←

### 3.2.7. Record/Track Lockout (RECLCK) Macro Instruction

#### Function:

The RECLCK macro instruction is required to ensure that the record/track lockout feature is included. The inclusion of COOP in the SYSTEM macro instruction automatically generates RECLCK with a parameter specification of 4. If the RECLCK macro instruction is specified, it overrides the automatic specification; however, a supervisor that contains the disc cooperative requires a minimum parameter specification of 4. If COOPT is specified on the SYSTEM macro instruction, no automatic RECLCK specification is made.

LIBUPS file lock protection is available only if the RECLCK macro is specified. The minimum parameter specification is 1. However, an optimum specification is equivalent to the number of LIBUPS jobs that concurrently write in unique library files.

#### Format:

LABEL	△ OPERATION △	OPERAND
	RECLCK	nn

#### Parameter:

nn

Specifies the number (1—50) of table entries generated to contain the address of the tracks locked out at any one time.

### 3.2.8. Resident Transients (RESTRAN) Macro Instruction

#### Function:

The inclusion of RESTR in the SYSTEM macro instruction allows the loading of up to four resident transients. If the optional RESTRAN macro instruction is specified, the number of resident transients established by the RESTR parameter of the SYSTEM macro instruction is overridden.

#### Format:

LABEL	△ OPERATION △	OPERAND
	RESTRAN	nn

Table 3-3. Mode Settings (Part 2 of 3)

Optical Document Reader Features		
ODR Type	Mode Setting	Feature
2703-00, 01	80	600 dpm read rate feature Mark reading feature Punched card reading feature Validity check feature
	40	
	20	
	10	

UNISERVO VI-C Magnetic Tape Subsystems				
Track Type	Mode Setting	Bytes per Inch	Parity	Convert Feature
7-track	10	200	Odd	On
	20	200	Even	Off
	30	200	Odd	Off
	50	556	Odd	On
	60	556	Even	Off
	70	556	Odd	Off
	90	800	Odd	On
	A0	800	Even	Off
B0	800	Odd	Off	
9-track	80	800	Odd	Off

UNISERVO 12/16 Magnetic Tape Subsystem					
Track Type	Mode Setting	Bytes per Inch	Parity	Translate	Convert Feature
7-track	10	200	Odd	Off	On
	20	200	Even	Off	Off
	28	200	Even	On	Off
	30	200	Odd	Off	Off
	38	200	Odd	On	Off
	50	556	Odd	Off	On
	60	556	Even	Off	Off
	68	556	Even	On	Off
	70	556	Odd	Off	Off
	78	556	Odd	On	Off
	90	800	Odd	Off	On
	A0	800	Even	Off	Off
	A8	800	Even	On	Off
	B0	800	Odd	Off	Off
B8	800	Odd	On	Off	
9-track	C8	800	Odd	Off	Off
	C0	1600	Odd	Off	Off

Table 3-3. Mode Settings (Part 3 of 3)

UNISERVO 20 Magnetic Tape Subsystem					
Configuration	Code	Bytes per Inch	Parity	Translate	Convert Feature
9-track	C0	1600	Odd	Off	Off

## NOTES:

1. For card readers, mode setting code is an extension of device type for descriptive use and is used by job control in assigning an appropriate device. Codes can be combined for multiple feature 0711/0716 card readers.
2. The tape mode setting determines the density and parity of data written on tape.
3. The mode must always be specified for tape devices with phase-encoded capability.

## Positional Parameter 6:

**X'0200'**

Specifies a 2-byte control flag that indicates an adapter device.

**X'0000'**

Unused; has the same effect as omitting the parameter.

## NOTE:

*This parameter is required when using an adapter device.*

## Positional Parameter 7:

**CON**

Indicates that the PUB macro instruction describes the system console device.

**RDR**

Indicates that the PUB macro instruction describes the systems reader device. This parameter may only be specified on the last card reader PUB macro instruction.

**SYSDVC**

Indicates that the PUB macro instruction describes the 1004/1005 channel adapter or the 9200/9300 channel adapter.

**SHR**

Indicates that this device will be marked shared.



ADN Keyword Parameter:

**ADN=number**

Specifies the number of adapter device PUBs, including the adapter PUB (9300 or first 1004).

ADN=0 may be either specified or omitted when an adapter is not connected.

ADP Keyword Parameter:

**ADP=symbol**

Specifies the label of the PUB for the 9200/9300 channel adapter or the first 1004/1005 channel adapter.

ADP=0 may be either specified or omitted when an adapter is not connected.

ADN1 Keyword Parameter:

**ADN1=number**

Specifies the number of adapter device PUBs associated with the second 1004/1005 handler (1004H2), including the second 1004/1005 channel adapter.

ADP1 Keyword Parameter:

**ADP1=symbol**

Specifies the label of the PUB for the second 1004/1005 channel adapter (1004H2).

COP Keyword Parameter:

**COP=symbol**

Specifies the label of the console printer PUB.

CRT Keyword Parameter:

**CRT=symbol**

Specifies the label of the console PUB.

IPT Keyword Parameter:

**IPT=symbol**

Specifies the label of the PUB for the systems input device from which the job control streams are read and filed.

LOG Keyword Parameter:

**LOG=symbol**

Specifies the label of the systems logging device (must be console).

LST Keyword Parameter:

**LST=symbol**

Specifies the label of the PUB for the systems listing devices.

PCH Keyword Parameter:

**PCH=symbol**

Specifies the label of the PUB for the system card punch.

RDR Keyword Parameter:

**RDR=symbol**

Specifies the label of the PUB for the systems reader device; defines the unit on which job control streams are filed. The value must be 0 under DOS operation.

RES Keyword Parameter:

**RES=symbol**

Specifies the label of the PUB for the system resident (SYSRES) volume; the value may be 0. The resident device is established at supervisor initial load time.

### 3.2.19. Program Switch List (SWLIST) Macro Instruction

Function:

The SWLIST macro instruction generates the program switch list. There are 14 program priority levels available, 13 of which are available to the user for problem programs. The user can specify the amount of time (from 10 to 4000 milliseconds) to be allocated to each user priority level by the system time allocation routine. The priority levels are as follows:

- Priority level S, reserved for spooler job only
- Priority level 1, reserved for use by the MCP or mini-MCP control program only. Other user programs must operate at user priority 2 or lower.
- Priority level 2 through 13, user priority levels

Format:

LABEL	△ OPERATION △	OPERAND
	SWLIST	$n \left[ \left\{ \frac{\text{time1}}{500} \right\} \right] \left[ \left\{ \frac{\text{time2}}{500} \right\} \right] \left[ \left\{ \frac{\text{time3}}{500} \right\} \right] \left[ \left\{ \frac{\text{time4}}{500} \right\} \right]$ $\left[ \left\{ \frac{\text{time5}}{500} \right\} \right] \left[ \left\{ \frac{\text{time6}}{500} \right\} \right] \left[ \left\{ \frac{\text{time7}}{500} \right\} \right] \left[ \left\{ \frac{\text{time8}}{500} \right\} \right]$ $\left[ \left\{ \frac{\text{time9}}{500} \right\} \right] \left[ \left\{ \frac{\text{time10}}{500} \right\} \right] \left[ \left\{ \frac{\text{time11}}{500} \right\} \right]$ $\left[ \left\{ \frac{\text{time12}}{500} \right\} \right] \left[ \left\{ \frac{\text{time13}}{500} \right\} \right]$

Positional Parameter 1:

**n**

Indicates the number of priority levels in the program SWLIST for user programs. The range of n is 3 through 13.

Positional Parameters 2 through 14:

**timen**

Indicates the amount of time (in milliseconds) to be used by the time allocation routine when dispatching programs assigned to user priority level n. This priority level can be 1 through 13. The default value is 500 milliseconds.

### 3.2.20. System Information Block (SIB) Macro Instruction

Function:

The SIB macro instruction is used to generate the system information block.

Format:

LABEL	Δ OPERATION Δ	OPERAND
	SIB	X'xxxxxx',ttt,C'ii' [ { X'ss' } ] [ { X'yy' } ] [ ,SSP ] [ ,ISD ]

Positional Parameter 1:

**X'xxxxxx'**

Main storage size expressed in hexadecimal bytes. The supervisor restricts main storage utilization to this number of bytes unless it is determined that the system has less main storage available, in which case the smaller size is effective.

Positional Parameter 2:

**ttt**

Specifies the amount of time (in minutes) that is to be used as a limit for those control streams that do not specify a time limit in the JOB statement.

Positional Parameter 3:

**C'ii'**

Supervisor identification expressed as an alphanumeric value (must correspond to the ii label of the START assembler directive).

Positional Parameter 4:

**{ X'ss' }  
{ X'00' }**

The system program switch indicator (SPSI) is initially set to the hexadecimal value specified by this parameter.

Positional Parameter 5:

**{ X'yy' }  
{ X'11' }**

Specifies the SYSPPOOL multiplicative factor. This consists of two 4-bit hexadecimal multipliers; the first is for scratch files and the second is for the module complex library (MCL).

Positional Parameter 6:

**SSP**

Specifies that all processors have the capability of running in single SYSPPOOL (SSP) mode.

If omitted, all processors using SYSPPOOL require at least two SYSPPOOL volumes.

Positional Parameter 7:

**ISD**

Specifies that the date field in the SIB is in the International Standard Date (ISD) format (yy/mm/dd).

If omitted, the date field is in the American Standard Date (ASD) format (mm/dd/yy).

### 3.2.21. Logical Unit Table (LUT) Macro Instruction

Function:

The LUT macro instruction defines the entries in the system logical unit table. This table consists of up to 255 entries, each containing a device type code which is used to relate a logical unit number with a particular type of device. Entries in the table are referenced by a number from 000 through 255. Each LUT macro instruction permits the definition of multiple table entries which are contiguous and have the same device type code. The first LUT entry must be 000 for positional parameter 1.

Format:

LABEL	Δ OPERATION Δ	OPERAND
	LUT	fff,ttt,X'tt'[,LAST]

Positional Parameter 1:

**fff**

Specifies the starting or single logical unit table entry number (000—255) that is to be assigned the type code specified by positional parameter 3.

Positional Parameter 2:

**ttt**

Specifies the ending or single logical unit table entry number (000—255) that is to be assigned the type code specified by positional parameter 3.

Positional Parameter 3:

**X'tt'**

Specifies the device type code (two hexadecimal characters). These codes can be obtained from Table 3—2.

**NOTE:**

*The device type code specified by positional parameter 3 is generated in each table entry beginning with the entry specified by positional parameter 1 and ending with the entry specified by positional parameter 2. When there is more than one LUT entry, no gaps are permitted between entries; they must be contiguous. The first entry must specify logic unit number 0 and device type X'OF'.*

Positional Parameter 4:

**LAST**

Indicates the last LUT macro call. This parameter must be included with the highest logical number used.

The starting address of the resident dump selected can be determined by finding the label UM\$DMP in the supervisor assembly listing.

Reloading and initializing the supervisor are always necessary after executing the resident dump.

### 3.2.24. Supervisor Initialization (SPVINT) Macro Instruction

Function:

The SPVINT macro instruction generates the supervisor initialization routine which is given control immediately following the initial program loading procedures. The SPVINT macro instruction must be specified immediately following the SPVKNL macro instruction.

Format:

LABEL	△ OPERATION △	OPERAND
name	SPVINT	

where:

**name**

Is a symbolic label that must be identical to the operand specified with the END assembler directive.

### 3.2.25. Resident Transient Inclusion List (RESLIST) Macro Instruction

Function:

The RESLIST macro instruction generates a list of transient names that may be optionally or automatically loaded as resident transients at supervisor initialization. This macro is optional if RESTR is specified on the SYSTEM macro instruction. The number of entries in the list may not exceed the number of resident transients specified by the RESTRAN macro instruction.

Format:

LABEL	△ OPERATION △	OPERAND
	RESLIST	[name1] [...,namen] [,AUTO=YES] [,DISP=NO]

Positional Parameters 1 through n:

**namen**

Indicates the last five characters of a transient module to be loaded from \$Y\$TRAN.

Keyword Parameters:

**AUTO=YES**

Specifies that the resident transients will be loaded without displaying the SV44 message.

If omitted, the transients will be loaded only by response to the SV44 message.

**DISP=NO**

Specifies that the SV43 messages are not to be displayed.

**3.2.26. Supervisor Index (SPVNDX) Macro Instruction**

Function:

The SPVNDX macro instruction provides a reference of several label values, routine addresses, and supervisor characteristics that are useful in interpreting a main storage dump containing the resident supervisor. It has no effect on the operation of the supervisor and is optional and informational. Assembly errors (U) may be encountered when utilizing this macro instruction if the label conventions are not followed when assigning PUB macro instruction names (3.2.15). (The names used are CONSOLE, READER, PRINTER, TAPE1 through TAPEn, and DISC 1 through DISCn.) If specified, the macro instruction must be placed immediately before the end assembler directive.

Format:

LABEL	△OPERATION△	OPERAND
	SPVNDX	[label-1] [,label-2,...[,label-40] ]

Positional Parameters 1 through 40:

**label-n**

Specifies the symbolic labels for additional label values, routine addresses, and supervisor characteristics to be included in the supervisor index.

**3.2.27. End Control Routine (END) Assembler Directive**

Function:

The END assembler directive concludes the initial program loading procedure and initiates generation of the supervisor.

Format:

LABEL	△OPERATION△	OPERAND
	END	name

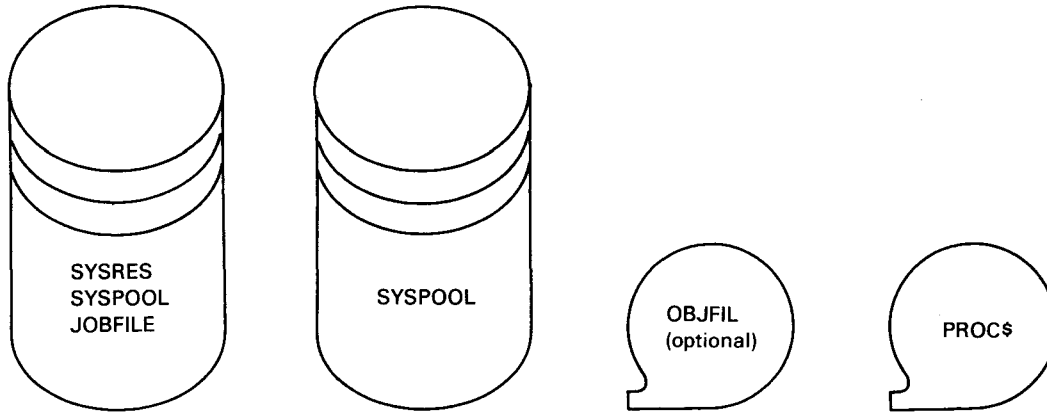
Positional Parameter:

**name**

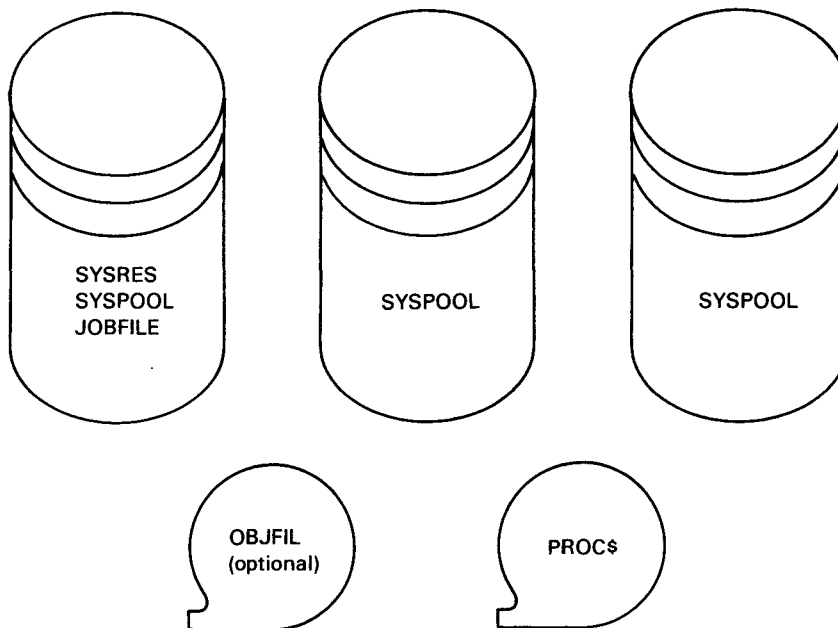
Symbolic label identical to the contents of the label field of the SPVINT macro instruction.

### 3.2.28. Assembly of Supervisor

Supervisor generation (SUPGEN) can be accomplished without creating a special proc disc. Procs are input from tape by the assembler (PARAM LIN) and stored in the SYSPool area. The method is as follows:



A site with three discs could use the following optional method of SUPGEN. Again, no special proc disc is required; this setup can accommodate very large system generations.



### 3.3. SAMPLE SUPERVISOR GENERATION LISTING: 90/60,70 SYSTEMS

■ Minimum System

```

↓
FID      NAME      DISC ADDR  VERS  #BLKS  FLAG
SRCE SE4      057089   11-01  0006   0000
**SRCE MODULE
00001      SY$SE400  START 0
00002      STDEQUS4
00003      SYSTEM SIMDAY,DM,MIDP
00004      IQ&TRIO  SET 0
00005      IQ&TRSV  SET 0
00006      ERRJP   ERBNO=2
00007      JOBS    1,2
00008      CHNNL   1,1
00009      CONSOLE PUB   X'0F',C'DF1',X'F1',0,0,0,CON
00010      CONSOLPR PUB  X'0F',C'DF0',X'F0',0,0,0,CON
00011      READER  PUB   X'10',C'BE8',X'E8',0,0,0
00012      PRINTER PUB   X'30',C'EO',X'EO',0,0,0
00013      TAPE1   PUB   X'5A',C'G90',X'90',1,X'CB'
00014      TAPE2   PUB   X'5A',C'G91',X'91',1,X'CB'
00015      DISC1   PUB   X'61',C'K80',X'80',1,0
00016      DISC2   PUB   X'61',C'K61',X'81',1,0,,,LAST
00017      SEL     1,X'08',1,LAST
00018      COMQ    6
00019      SYSDVC  RDR=0,1PT=READER,LOG=CONSOLE,LST=PRINTER,
00020      PCH=0,CRT=CONSOLE,COP=CONSOLPR,RES=0
00021      SWLIST 3,1000,2000,4000
00022      SIB     X'00100000',120,C'E4'
00023      LUT     000,001,X'0F'
00024      LUT     002,002,X'10'
00025      LUT     003,003,X'30'
00026      LUT     004,005,X'5A'
00027      LUT     006,007,X'61',LAST
00028      SPVKNL
00029      START  SPVINT
00030      END    START

```

■ Complete System

```

↑
FID      NAME      DISC ADDR  VERS  #BLKS  FLAG
SRCE SE6      05E13C   11-01  0016   0000
**SRCE MODULE
00001      SY$SE600  START 0
00002      STDEQUS4
00003      SYSTEM SIMDAY,MCP,ROMP,ROARP,PAPT,ODR,9300H,EXCPC,
00004      DM,DMCC,NOISE,POS,AER,RTY,AVR,FLE,
00005      RESTR,MIDP,JASM,SPLR,TRNDX,INIT,
00006      ASCII,LDCD,URSVC,FP,EL,MCHK,IMSG,JPROC,STEP,24HRCLK
00007      MCPGEN 1ST=4
00008      ERPJP   ERBNO=3
00009      RECLCK 10
00010      RESTRAN 13
00011      JOBS    5,12
00012      ACCT    TRM=20
00013      MAXTIME 5,60
00014      USERSVC SV$UTRN,SV$UTRN,SV$UTRN,SV$UTRN,SV$UTRN,SV$UTRN
00015      CHNNL   4,1
00016      ERRLOG
00017      CONSOLE PUB   X'0F',C'DF1',X'F1',0,0,0,CON
00018      CONSOLPR PUB  X'0F',C'DF0',X'F0',0,0,0,CON
00019      READER  PUB   X'10',C'BE8',X'E8',0,0,0
00020      READER1 PUB  X'12',C'BC8',X'CB',0,0,0
↑

```



```

00021 PRINTER PUB X'30',C'EED',X'EO',0,0
00022 PRINTER1 PUB X'30',C'EDB',X'DB',0,0
00023 PRINTER2 PUB X'32',C'EDB',X'80',0,0
00024 ODR PUB X'90',C'DB8',X'B8',0,0
00025 PUNCH PUB X'21',C'FD0',X'D0',0,0
00026 PAPR PUB X'81',C'CB8',X'88',0,0
00027 PAPT PUB X'82',C'CB9',X'89',0,0
00028 TAPE1 PUB X'5A',C'G90',X'90',3,X'CB'
00029 TAPE2 PUB X'5A',C'G91',X'91',3,X'CB'
00030 TAPE3 PUB X'5A',C'G92',X'92',3,X'CB'
00031 TAPE4 PUB X'5A',C'G93',X'93',3,X'CB'
00032 TAPE5 PUB X'5A',C'G94',X'94',3,X'CB'
00033 TAPE6 PUB X'5A',C'G95',X'95',3,X'CB'
00034 TAPE7 PUB X'40',C'ACD',X'CO',0
00035 TAPE8 PUB X'41',C'AC1',X'C1',0
00036 TAPE9 PUB X'5C',C'IB0',X'80',3,X'CO'
00037 TAPE10 PUB X'5C',C'IB1',X'81',3,X'CO'
00038 DISC1 PUB X'61',C'K80',X'80',1,0
00039 DISC2 PUB X'61',C'K61',X'81',1,0
00040 DISC3 PUB X'61',C'K82',X'82',1,0
00041 DISC4 PUB X'61',C'K83',X'83',1,0
00042 DISC5 PUB X'61',C'K84',X'84',1,0
00043 DISC6 PUB X'61',C'K85',X'85',1,0
00044 DISC7 PUB X'62',C'LA0',X'A0',2,0
00045 DISC8 PUB X'62',C'LA1',X'A1',2,0
00046 DISC9 PUB X'62',C'LA2',X'A2',2,0
00047 DISC10 PUB X'62',C'LA3',X'A3',2,0
00048 A9300 PUB X'F9',C'DC0',X'CO',0,0,,SYSDVC
00049 READER93 PUB X'19',C'1C0',X'CO',0,0,X'0200'
00050 PUNCH93 PUB X'29',C'2C0',X'CO',0,0,X'0200'
00051 PRNTR93 PUB X'39',C'3C0',X'CO',0,0,X'0200',,LAST
00052 SEL 1,X'08',1,2,3,4,LAST
00053 COMQ 30
00054 SYSDVC RDR=0,
00055 IPT=READER,
00056 LOG=CONSOLE,
00057 LST=PRINTER,
00058 CRT=CONSOLE,
00059 COP=CONSOLPR,
00060 PCH=PUNCH,
00061 AOP=A9300,
00062 ADN=4,
00063 RES=0
00064 SWLIST 13,1000,2000,4000,4000,4000,4000,4000,4000,4000,4000, X
00065 4000,4000,4000
00066 SIB X'00100000',120,C'E6',,,SSP,15D
00067 LUT 000,000,X'0F' . CONSOLE
00068 LUT 001,001,X'10' . 711/716 STD READER
00069 LUT 002,002,X'12' . 711/716 WITH FEATURE
00070 LUT 003,003,X'19' . 9300 READER
00071 LUT 004,004,X'FD'
00072 LUT 005,005,X'90' . ODR
00073 LUT 006,006,X'81' . PT READER
00074 LUT 007,009,X'FD'
00075 LUT 010,010,X'21' . 250 CPM PUNCH
00076 LUT 011,012,X'FD'
00077 LUT 013,013,X'29' . 9300 PUNCH
00078 LUT 014,015,X'FD'
00079 LUT 016,016,X'82' . PT PUNCH
00080 LUT 017,019,X'FD'
00081 LUT 020,021,X'30' . 900/1100 LPM DRUM PRINTER
00082 LUT 022,022,X'FD'
00083 LUT 023,023,X'39' . 9300 PRINTER
00084 LUT 024,024,X'FD'
00085 LUT 025,026,X'32' . ASCII PRINTER
00086 LUT 027,039,X'FD'
00087 LUT 040,040,X'52' . U12 9-CHNL DUAL
00088 LUT 041,041,X'53' . U12 7-CHNL NRZI
00089 LUT 042,049,X'FD'
00090 LUT 050,054,X'5A' . U16 9-CHNL DUAL

```



```

00091      LUT 055,059,X'FD'
00092      LUT 060,061,X'60'      . 8411 DISC
00093      LUT 062,069,X'FD'
00094      LUT 070,079,X'61'
00095      LUT 080,089,X'62',LAST
00096      DVCSUB D,60,61
00097      DVCSUB F,52,53,5A
00098      DVCSUB R,10,12,19
00099      DVCSUB P,30,39,32
00100      DVCSUB H,21,29,LAST
00101      SPVKNL DMP9
00102      EJECT
00103      RESLIST R0000,T8A00,Y6600,Y6601,Y6602,Y6603,Y6609,T9C00,      X
00104      Y6800,Y6801,T9C01,T9E00,T2A00,      X
00105      AUTO=YES,DISP=NO
00106      EJECT
00107      START SPVINT
00108      SPVNDX A9300,READER93,PUNCH93,PRNTR93
00109      END START

```

Normal System

```

FID      NAME      DISC ADDR  VERS  #BLKS  FLAG
SRCE  SES      05E128  11-01  000E  0000
**SRCE MODULE
00001      SYSSE500  START 0
00002      STDEQUS4
00003      SYSTEM  SIMDAY,
00004      SPLR,
00005      INIT,
00006      ROWP,
00007      ROWRP,
00008      1004H,
00009      NOISE,
00010      MIDP,
00011      DM,
00012      AER,
00013      RTY,
00014      EL,
00015      AVR,
00016      24HRCLK,
00017      MCHK
00018      ERRJP  ERBNO=6
00019      JOBS  4,4
00020      CHNNL 3,2
00021      ERRLOG  SITE=PHILADELPHIA-DEVELOPMENT-CENTER
00022      PUB  X'0F',C'0F1',X'F1',0,0,CON
00023      CONSOLPR PUB  X'0F',C'0F0',X'FD',0,0,CON
00024      READER  PUB  X'12',C'REA',X'EB',0,X'FB'
00025      PRINTER PUB  X'30',C'EED',X'EO',0,0
00026      GEN1004 PUB  X'F4',C'000',X'D0',0,0,SYS0VC
00027      RDR1004 PUB  X'14',C'100',X'D0',0,0,X'0200'
00028      PCH1004 PUB  X'24',C'200',X'D0',0,0,X'0200'
00029      PRT1004 PUB  X'34',C'300',X'D0',0,0,X'0200'
00030      TAPE1  PUB  X'53',C'G90',X'90',3,X'90',X'0100'
00031      TAPE2  PUB  X'52',C'G91',X'91',3,X'CB',X'0100'
00032      TAPE3  PUB  X'5A',C'G92',X'92',3,X'CB',X'0100'
00033      TAPE4  PUB  X'5A',C'G93',X'93',3,X'CB',X'0100'
00034      TAPES  PUB  X'5A',C'G94',X'94',3,X'CB',X'0100'
00035      TAPE6  PUB  X'5A',C'G95',X'95',3,X'CB',X'0100'
00036      TAPE7  PUB  X'5A',C'G96',X'96',3,X'CB',X'0100'
00037      DISC1  PUB  X'60',C'J86',X'86',2,0,SHR
00038      DISC2  PUB  X'60',C'J87',X'87',2,0,SHR
00039      DISC3  PUB  X'61',C'K80',X'80',3,0,SHR
00040      DISC4  PUB  X'61',C'K81',X'81',3,0,SHR
00041      DISC5  PUB  X'61',C'K82',X'82',3,0,SHR
00042      DISC6  PUB  X'61',C'K83',X'83',3,0,SHR
00043      DISC7  PUB  X'61',C'K84',X'84',3,0,SHR
00044      DISC8  PUB  X'61',C'K85',X'85',3,0,SHR,,LAST

```

00045 SEL 1,X'08',1,3  
00046 SEL 2,X'08',2,3,LAST  
00047 COMQ 59  
00048 SYSDVC LST=PRINTER,PCH=PCH1004,CRT=CONSOLE,COP=CONSOLEPR  
00049 SYSDVC IPT=READER,LOG=CONSOLE,RES=0,RDR=0,ADP=GEN1004,ADN=4  
00050 S\*LIST 4,500,750,2000,2000  
00051 SIB X'0FFFFFF',15,C'ES',X'22'  
00052 LUT 000,001,X'0F'  
00053 LUT 002,002,X'10'  
00054 LUT 003,003,X'12'  
00055 LUT 004,004,X'21'  
00056 LUT 005,005,X'30'  
00057 LUT 006,006,X'52'  
00058 LUT 007,007,X'53'  
00059 LUT 008,010,X'5A'  
00060 LUT 011,016,X'61',LAST  
00061 DVCSUB D,61,60  
00062 DVCSUB F,5A,52  
00063 DVCSUB R,10,12  
00064 DVCSUB S,5A,52,53,LAST  
00065 SPVKNL (DMPTPS1,X'90')  
00066 START SPVINT  
00067 SPVNOX  
00068 END START





**\$Y\$TRAN**

Contains all transient routines for the system. Use an average of three (five) transients per track or a minimum of two (four) transients per track.

Since the boot tape contains only limited images of each transient and job control element, the disc construction by DACMAP will be faster if one is attentive to the order of their sequence on the tape. Execution time, however, may be faster if frequently used transients are mapped as described in 4.4.4.

**\$Y\$CTRL**

Contains all job control elements that are not transients.

**\$Y\$ABS**

Contains the absolute load library which presently includes SORT and, optionally, RPG overlays and the modules MCLOBJ00, and MCLOBJ01.

\$Y\$ABS is required when spooler capability is generated in the system. All spooler overlay load modules of the load library on the common tape (4.1) must be included in \$Y\$ABS. These modules are in the form SP\$OVRnn, where nn is the hexadecimal phase number. The module SP\$MS000 must also reside in \$Y\$ABS.

- System files requiring definition only

Certain files, including the error log file (\$Y\$ERLG), job accounting file (\$Y\$JACNT), job initiator file (\$Y\$INIT), spooler file (\$P\$SPOOL), and spooler auxiliary file (\$Y\$AUXLY) are not absolute (DACMAP) libraries nor relative (LIBUPS) libraries. Therefore, they do not require filing of elements. Allocation of these files is required only in system generation. System pool or scratch space (\$Y\$POOL) does not require filing of elements either. However, it does require mapping by the DACMAP program before use.

**\$Y\$INIT**

The job initiator file contains the queue of jobs to be scheduled for initiation. This file may be from one to five cylinders.

**\$Y\$ERLG**

The error log file is allocated on the SYSRES disc, using the file identifier \$Y\$ERLG. It is recommended that a minimum of four contiguous cylinders be assigned to error logging. A maximum of 110 errors can be logged on one cylinder of an 8411 disc subsystem; the maximum is 400 on the 8414, 8424, and 8425 disc subsystems. The first track of the first cylinder of the file is reserved for configuration records.

**\$Y\$JACNT**

The job accounting system writes the job accounting information to the system file on the SYSRES disc volume. The file name must be \$Y\$JACNT and the file must begin and end on a cylinder boundary on SYSRES. There is no maximum for the number of contiguous cylinders that may be allocated as the \$Y\$JACNT file.

## → \$P\$SPOOL

→ The spooler file \$P\$SPOOL may or may not exist on the SYSRES volume. Each spoolout volume assigned to a spooler job must consist of a minimum of two extents. The first extent must consist of one track. The second extent must consist of at least two contiguous cylinders if more than two extents are specified. A minimum of three cylinders is required for the second extent if only two extents are assigned. The third through the sixteenth extent can consist of any number of cylinders and must be allocated on a cylinder basis. Large groups of cylinders in the second through sixteenth extent are desirable for maximum spooler efficiency.

## \$Y\$AUXLY

The spooler file \$Y\$AUXLY may or may not exist on the SYSRES volume. The total amount of space allocated to the spooler auxiliary disc should be based on the quantity of auxiliary disc output in a given installation. Space can be allocated on a track or cylinder basis and can consist of up to 16 extents.

## \$Y\$POOL (systems pool or systems scratch) area on the SYSRES volume

The minimum \$Y\$POOL needed in four extents to run any job under the disc operating system (DOS) could be two tracks and two cylinders: one track for each of the first two extents, a third extent of one cylinder for the file control block (FCB) and related job control information, and a fourth extent of one cylinder for the FILE statement to file the job control stream.

The job file, which is a part of the \$Y\$POOL area on the SYSRES volume, also requires space consideration. This file holds both permanent and temporary job control streams filed to the disc before execution. The FILE statement acquires and restores \$Y\$POOL space dynamically, one cylinder at a time, and returns a cylinder to \$Y\$POOL only after all job control streams are placed on the disc at a maximum of 280 (1040) control statements or cards per cylinder and 350 (1300) data cards per cylinder. Packed control statements (more than one control statement per card) are unpacked before being filed, and each job stream begins a new track.

Therefore, a maximum of 10 (20) control streams per cylinder would be true if each of the streams contained 28 (104) or fewer control statements and no data. The FILE statement never dynamically reallocates space on dedicated cylinders even though several tracks may have been made available via a DELETE statement.

Job file space estimation is simplified by the following equations:

1. Without data statements:

$$\text{Number of tracks} = \frac{1}{x} \left( \frac{\text{Number of job control statements}}{4} \right)$$

2. With data statements:

$$\text{Number of tracks} = \frac{1}{x} \left[ \left( \frac{\text{Number of job control statement}}{4} + 1 \right) + \left( \frac{\text{Number of data}}{5} \right) \right]$$

where:

X = 7 for 8411 disc; and

X = 13 for 8414/8424/8425 discs.

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