

CP-V -61 E01

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## 1.0 PRODUCT DESCRIPTION

### 1.1 Purpose

This document accompanies the release of CP-V E01. CP-V E01 is an update to CP-V E00 which includes several enhancements, and 363 SIDRs.

### 1.2 Features/Areas of Enhancement

The major enhancements included in CP-V E01 are documented in this section.

#### 1.2.1 MPC

##### 1.2.1.1 General

The Model 9210/9211 disk system is supported by the E01 release of CP-V. Up to 15 disk drives are controlled by one MPC (Micro Programmed Controller) or may be controlled by two MPC's in a dual access configuration. A formatted disk pack contains twelve (12) sectors per track and 19 tracks per cylinder; from the total of 815 cylinders, cylinders 0 to 807 are for CP-V usage, cylinders 808 to 813 are for flawed track alternates, and cylinder 814 is for diagnostic program usage. This provides more than 188 million bytes of storage for allocation by CP-V.

The MPC presents the storage on each disk as one continuous address space. Physical track and cylinder boundaries are totally transparent to the operating system. The MPC computes arm positioning, head, and sector selection information that it needs when the operating system issues a seek command and disk address in the form of an extent (relative sector number and number of sectors). CP-V uses this capability to organize the disk storage as described in Section 5.0, SYSGEN Considerations.

##### 1.2.1.2 Features

MPC disk drives may be used to allocate CP-V public storage (PER and PFA areas) or private storage (PFA area).

During system generation, firmware for each MPC is automatically included on a CP-V PO tape for those systems that require it. Whenever such a CP-V system is booted from tape or swapper (as in system recovery) the firmware is automatically downloaded to the MPC(s), this also occurs during power fail safe operations, after receipt of the power on interrupt.

All programs which make standard calling sequences to the I/O system, using CP-V file management services, require no program changes.

Any programs which use the privileged M:NEWQ (BAL type) calling sequences may need to be changed; the table below compares the M:NEWQ function codes for the MPC disk handler (MPCDIO) to those used by DPAK, the handler for all other CP-V supported disk drives, (see Miscellaneous Real-Time Services in the CP-V System Programming (SP) Reference Manual). Function codes 3-7 should not be used by external calls.

<u>M:NEWQ Function Code</u>	<u>MPCDIO Operation</u>	<u>Comment</u>
0	Pre-seek, then read	Same as DPAK handler
1	Pre-seek, then write	Same as DPAK handler
2	Sense for external calls	Same as DPAK handler
3	Read after pre-seek done	For internal use by MPCDIO
4	Write after pre-seek done	For internal use by MPCDIO
5	Sense for error log	For internal use by MPCDIO
6	Restore carriage, then original code	For internal use by MPCDIO
7	Check write, after write complete	For internal use by MPCDIO

Users of any of the BAL type calling sequences, such as M:QUEUE and M:NEWQ, which pass a generalized disk address (GDA) as a DCB parameter or in a register should note that 18 bits are required to represent a relative sector number (RSN) for a MPC disk address (see M:GDG description in the CP-V SP reference manual). The format of a GDA is one word in length and is described below:

<u>Bit Positions</u>	<u>Contents</u>
0-7	Reserved
8	Second most significant bit of RSN
9	Most significant bit of RSN
10-15	DCT index
16-31	Least significant 16 bits of RSN

User programs which manipulate GDAs should use the SYSTEM UTS PROCs described in the M:GDG description mentioned above.

### 1.2.2 Sigma 5 Support

CP-V will now run on a Sigma 5 with a minimum of 80K core, floating point hardware, and the new memory map (Honeywell Model XPF 5850 Virtual Memory Subsystem).

The CP-V Sigma 5 configurations that are supported can be summarized as follows:

- A Sigma 5 CPU and those CPU options which have Sigma 7 counterparts required or supported by CP-V.
- 80K minimum, up to 128K maximum memory size.
- All types of Sigma 5 IOP's: IIOP, MIOP, and SIOP.
- Any peripheral devices that are available for Sigma 5 and that are also available for Sigma 7.

A SYSGEN option will include software instruction simulators for the Decimal, Bytestring, and Conversion instructions in the monitor root.

Although CP-V with instruction simulation does not preclude the installation and operation of any CP-V operating system feature, processor, compiler, or library, the user should be aware that execution times in each system component may be influenced significantly by the various uses of the simulated instructions.

The instruction simulators have the following incompatibilities from the Sigma 7/9 and Xerox 560 hardware instruction descriptions:

- If an operand "wraps around" from location X'1FFFF' into register 0, or overlaps from register 15 into location X'10', the results are meaningless.
- If the instruction to be simulated is EXU'd and the trapped PSD was master mode, then inhibits remain constantly set while the EXU chain is being decoded.
- Contents of the "decimal accumulator" (registers 12 through 15) are assumed to be valid, so no pre-checking is performed to validate it. However, all decimal operands are pre-checked.
- There is no ANSCII output from the EBS instruction; all output is EBCDIC.
- Real extended addressing is not supported.

Other CP-V changes that will be evident only to those users who have installed the simulators are:

- C\$CPU will contain a X'90' in byte 0.
- ANLZ dumps will have location X'40' pointing to S5SIM instead of NOPPGM
- Initialization installs the XPSD's for the simulators only if running on a Sigma 5
- Read access is allowed to page 1 (for user access to temporary storage cells in TCATCH) and to the two pages containing the simulators. The simulators are written so as to assure that they are the only code in their two-page segment
- Screech code 79-02 is used to indicate TSTACK overflow only if the simulators were running at the time. Non-Sigma 5 users should never see this screech code.

### 1.2.3 Multi-account Private Pack Sets

CP-V E01 multi-account private pack sets extend the CP-V private pack set concept to allow pack sets to be created on which up to 96 accounts may store files.

Minor operational modifications to on-line VOLINIT, FRES, FSAVE and FIX which facilitates maintenance of multi-account private pack sets are noted in the -91. MAPINIT.X may also be used to write the Volume Table of Contents (VTOC).

Private Pack Set files may be EDITed, copied and merged using a PCL style fid in E01, i.e.,

DP#sn/filename.acct.pswd

### 1.2.4 Multiprocessing Performance Enhancement

The CP-V Multi-processing feature has been enhanced by making more types of compute tasks eligible for processing by slave CPUs. Prior to E01, user program slave mode compute tasks were the only type eligible for slave CPU processing and slave CPUs were "blocked" at entry to the monitor, typically after the user program did a CAL requesting monitor service. (A block idles the slave CPU until the master CPU is notified and selects another user for the slave to execute.)

In E01 this initial block no longer exists, and slave CPUs are allowed to continue processing the monitor's mapped master mode procedure until dynamic central monitor tables need to be accessed, then it is blocked. Minimally, this permits the slave CPU to do the initial processing for each type of service request. However, since central monitor tables need not be accessed for a high percentage of the most frequently used service requests, the slave CPU can process many of the monitor service requests entirely and return to the user to continue processing its slave mode compute task without requesting the master CPU to intervene.

The major types of service requests that can be processed in this manner are blocked keyed and consecutive file accesses and those reads and writes which access symbiont files (e.g., writes to the line printer). As a result, the slave CPUs eliminate some of the master CPU scheduling overhead and process a significant percentage of all monitor service requests.

Samples of production usage have shown that the slave CPU in a dual processor system will initiate the processing of up to 50% of all service requests and will complete the processing of up to 90% of these 50%.

Two changes of note to the installation system manager are:

- The STATS EVNT display has been changed to record the number of service requests started and completed on each CPU.
- The CONTROL parameter MPCALR, multi-processing CAL rate threshold, is no longer used.

### 1.2.5 Miscellaneous

#### 1.2.5.1 Read Checks

WRONG WRONG WRONG (SEE DASHANDL)

Read Checks are no longer dependent on Sense Switch 3. In order to do Read Checks on disk operations, set M:RDCK in TABLES to 1. This cell can be changed with ANLZ or changed with a Patch at boot time.

#### 1.2.5.2 New Control Parameters

Three new Control parameters have been introduced. They replace the parameter SL:IOTA (I/O time allowance). The CONTROL processor now recognizes BIOTA, OIOTA, and GIOTA; the batch, online, and ghost replacements for SL:IOTA. They contain the pseudo-time charged for each physical I/O done on behalf of a user. As in previous versions, the default value is 2 (4 msec of time). Increasing IOTA makes I/O bound users reach quantum end faster and more frequently, thus making them out swap candidates more frequently. This can reduce CPU I/O wait time (and increase CPU utilization) that is caused by large I/O bound users which may occupy main memory for relatively long periods of time. Warning: setting the IOTA(s) too high will degrade system response and performance.

#### 1.2.5.3 Default COC Terminal Types

There is now more control over default COC terminal (translation) types. The default terminal type becomes

the current type whenever a line disconnects or connects, or when a hardwired line logs off. If a dialup line logs off and back on without disconnecting, whatever type was in effect at log off time will remain in effect for the new session. As before, the current type may be changed by the user via the TEL TERMINAL command or the M:STA monitor service call. Previously, when a user logged off, the terminal type was reset to a default of either "Teletype Model 33" for non-2741 lines or "unidentified" for 2741 lines. ("Unidentified" means the user must type an \* when logging on.) Now, the default can be specified on a line-by-line basis in PASS2/:COC and/or on a line speed/format basis at COC initialization time.

If a line's default type is specified in PASS2/:COC, that type will be the default type unless there is a 2741 conflict. (See "2741 conflict resolution", later.)

If a line's default type isn't specified in PASS2/:COC, and AUTO isn't specified in PASS2/:COC, then the default is "Teletype Model 33" for non-2741 lines and "unidentified" for 2741 lines.

If a line's default type isn't specified in PASS2/:COC, and AUTO is specified in PASS2/:COC, then the default is determined by line speed/format. The defaults are:

<u>Speed or Format</u>	<u>Default Type</u>	<u>COCG DEF</u>
110 BAUD	Teletype Model 33	TYPE110
300 BAUD	Teletype Model 37	TYPE300
600 BAUD	Teletype Model 37	TYPE600
1200 BAUD	Teletype Model 37	TYPE1200
2400 BAUD	Teletype Model 37	TYPE2400
2741 FORMAT	"Unidentified"	TYPE2741

The above default types may be changed by GENMDing COCG. COCG contains DEFs for the items listed under "COCG DEF"; each item is a full word, and contains a value listed under "COCTERM Value", later.

2741 conflict resolution - the 2741/non-2741 indicators for a line must be consistent. The COC table MODE2



indicates if the line is of 2741 format, and is set by either the PASS2/:COC 2741 option or by COCG if the AUTO option is used. The default terminal type also indicates if the line is a 2741 line, and is set by the PASS2/:COC default type options and/or by COCG if the AUTO OPTION IS USED. When COCG runs (at boot, recovery, or COC restart times) it will check for consistency; if there is an inconsistency, the MODE2 value will prevail, and the default type will be set to the value described above under "Default Type".

PASS2/:COC options - the format of the PASS2/:COC default type option is:

(keyword, lines)

where:

lines is a list of line numbers, using the standard COC line number syntax described under the PASS2/:COC HARDWIRE option.

keyword is a default terminal type selected from the following table:

<u>Keyword</u>	<u>Meaning</u>	<u>COCTERM Value</u>
D33	Teletype Model 33	0
D35	Teletype Model 35	1
D37	Teletype Model 37	2
D7015	Xerox 7015	3
DEA	2741 with EBCD APL Typeball	6
DES	2741 with EBCD Standard Typeball	4
DSA	2741 with Selectric APL Typeball	10
DSS	2741 with Selectric Standard Typeball	8
DASCIAPL	ASCII Terminal with APL Character Set	17

Data Base - there is a new byte table called COB:CTI, indexed by line number, of the following format:

	RFU	Default terminal type					
0	1	2	3	4	5	6	7

Bit 0 is set if the line's default wasn't specified by PASS2/:COC.

#### 1.2.5.4 Boot Time Use of ALLOCAT Dual

When an E01 system is booted from the swapper or "under files", ALLOCAT data from the swapper is compared with its dual. If they are not the same, the message

"DO YOU WANT ALLOCAT DUAL (Y,N)"

is typed at the operator's console. The steps taken preceding the boot should be reviewed to determine why the two copies of data are different. If the response is Y, the data from the dual (on PFA) will be used; if the response is N, the data from the swapper will be used.

#### 1.2.5.5 Volume Initialization Programs

With support of the MPC disk drives, two more volume initialization programs may be used. The chart below describes which program can be used to perform various types of initializations.

	<u>Write VTOC</u>			
	<u>Write Headers</u>	<u>Surface Test and Assign Alternates</u>	<u>Single Account</u>	<u>Mult. Account</u>
CP-V On-Line VOLINIT*	X	X	X	X
Stand-Alone VOLINIT	X	X	X	-
INITVOL.X	-	-	X,M	-
MAPINIT.X	-	-	X,M	X,M
MPC Disk Diagnostic	M	M	-	-

where

X = applicability to the Xerox disk system models 7242, 7270, 7260, 7275, 3275.

M = applicability to the MPC Disk system, model 9210.

\*See restriction in Section 7.2.

### 1.3 Supporting Publications

No reference manual updates will be distributed with CP-V E01. The following E00 level manuals are to be used for E01.

	<u>Xerox Number</u>	<u>Honeywell Number</u>
CP-V BP Reference Manual	90 17 64H	XL89
CP-V OPS Reference Manual	90 16 75H-1	XL23A
CP-V SP Reference Manual	90 31 13B-1	XQ63A
CP-V SM Reference Manual	90 16 74H-1	XL21A
CP-V TS Reference Manual	90 09 07H	XG15
CP-V TS Users Guide	90 16 92D-4	XL34D
CP-V RP Reference Manual	90 30 26C-1	XP94A
CP-V TP Reference Manual	90 31 12A-3	XQG1C
CP-V Data Base Technical Manual	90 19 95D-2	XN15B

Any major changes to these documents will be found in the CP-V -91E01 which will accompany the release of CP-V E01.

## 2.0 HARDWARE CHANGES

CP-V runs in a minimum configuration of 64K words of memory; however, the minimum requirements are dependent on the options selected (for example, the TP option requires a minimum of 80K memory). Combinations of options may require more than the standard minimum for CP-V.

CP-V supports a larger than 128K memory on both the Sigma 9 and the Xerox 560. CP-V supports up to a 512K memory on the Sigma 9, and up to 256K memory on the Xerox 560.

CP-V Multi-Processing support is provided for a Sigma 9 with up to four (4) CPU's and two (2) CPU's on the Xerox 560. Minimum memory recommendations for multi-processing are 128K for two CPU's, 192K for three CPU's, and 256K for four CPU's.

### 2.1 CP-V on a Sigma 5

The Sigma 5 configurations that are supported by CP-V E01 are as follows:

- A Sigma 5 CPU and those CPU options which have Sigma 7 counterparts required by or supported by CP-V.
- 80K minimum, up to 128K maximum memory size.
- All types of Sigma 5 IOP's: IIOP, MIOP, and SIOP.
- Any peripheral devices that are available for Sigma 5 and that are also available for Sigma 7.

3.0 SIDR's CLOSED

The following is a list of SIDR's included in the CP-V E01 release.

707000 - Submitted Against CP-V General

- 29788
- 29772
- 29702
- 29675
- 29572
- 29393
- 29353
- 29325
- 29263
- 29258
- 29216
- 29188
- 29173
- 29131
- 29047
- 28994
- 28885
- 28872
- 28840
- 28802
- 28801
- 28799
- 28763
- 28723
- 28722
- 28543
- 28538
- 28471
- 28470
- 28469
- 28468
- 28295
- 28294
- 28272
- 27301

707001 - File Maintenance

- 29509
- 29391
- 29390
- 29292

29202  
29166  
29135  
29134  
29117  
29110  
28990  
28830  
28816  
28479  
28477  
28476  
28400  
28302  
27921

707002 - File Management

29775  
29630  
29629  
29584  
29520  
29515  
29497  
29485  
29457  
29300  
29296  
29282  
29196  
29191  
29190  
29178  
29168  
29108  
29089  
29077  
29036  
28935  
28827  
28826  
28824  
28821  
28820  
28805  
28790  
28782  
28704

28700  
28678  
28618  
28617  
28480  
28478  
28474  
28333  
28296  
27812  
27415

707003 - System Management

29730  
29729  
29728  
29727  
29726  
29718  
29461  
29455  
29415  
29347  
29261  
29204  
29084  
28734  
28701  
28475  
27739

707004 - Communications

29861  
29860  
29844  
29832  
29831  
29818  
29810  
29787  
29626  
29529  
29518  
29398  
29397  
29368

29324  
29285  
29075  
29013  
29012  
29009  
29007  
28978  
28928  
28927  
28873  
28604

707005 - Recovery

29768  
29696  
29425  
29363  
29360  
29338  
29326  
29272  
28998  
28878  
28815  
28810  
28394  
27247

707006 - Software Checks

29858  
29794  
29603  
29407  
29385  
29321  
29320  
29236  
29199  
29156  
29152  
29138  
28937  
28789  
28760  
28755



28696  
28637  
28510  
28072  
27982

707007 - Operator Communications

29544  
29542  
29408  
29054  
29053  
29052  
29051  
28915  
28914  
28800  
28716  
28661  
28658  
28624  
28594  
28578  
28576

707008 - SYSGEN

29715  
29562  
29508  
29380  
28932

707009 - Debug Tools

29610  
29601  
29366  
29086  
28681  
27247

707010 - Loaders

29714  
29372  
29359  
29284  
29172  
29149  
29144  
29109  
29056  
28984  
28897  
28862  
28804  
28697  
28694  
28643  
28632  
27943

707011 - Symbionts

29476  
29088  
28811  
28226  
27105

707012 - Accounting Performance

29719  
29543  
29513  
29346  
29233  
29113  
29023  
28899  
28781  
28693  
28651  
28505

707013 - Monitor Services

29575  
29422  
29340  
29148  
29106  
28581  
27691  
27318

707014 - Initialization

29913  
29289  
29136  
29105  
28929  
28806

707015 - Reliability

29456  
29313  
29243  
28847  
28579

707016 - Command Processors

29830  
29613  
29604  
29521  
29059  
29008  
28909  
28894  
28876  
28861  
28752  
28742  
28741  
28689  
28688  
28650  
28649

28638  
28575  
28481  
28473  
27912

707017 - Utility Processors

30180  
29774  
29773  
29764  
29762  
29743  
29720  
29702  
29698  
29695  
29628  
29566  
29554  
29504  
29496  
29475  
29460  
29433  
29403  
29394  
29364  
29342  
29280  
29260  
29256  
29251  
29235  
29230  
29186  
29184  
29182  
29153  
29145  
29140  
29094  
29066  
29048  
29041  
29030  
29024  
28942

28889  
28887  
28846  
28757  
28699  
28695  
28687  
28685  
28683  
28680  
28616  
28336  
28179  
28138  
27728  
27374  
23259

707019 - Transaction Processing

29869  
29814  
29733  
29458  
29423  
29396  
29330  
29290  
29158  
29021  
29020  
29019  
28874  
28758  
28703  
28629  
28628  
28627  
28626  
28625  
28516  
28189  
27399  
27190  
26993  
26912

## 4.0 RELEASE CONTENTS

4.1 Release Tape - 707000 - 26/46/66 / 86

Two single volume FSAVE tape sets contain all the input necessary to generate a CP-V E01 system. These tapes contain the following accounts which will be described separately.

FSAVE tape SN# 01E0, account :SYS, contains the following accounts:

:E01B0	Control files and relocatable binary modules
CPVPROC	Standard processor load modules

FSAVE tape SN# 01E1, account :SYS, contains the following accounts:

:E01CI	New E01 Modules
:E01SI	Source update files
:SYSRT	Real Time library
CDBGLIB	COBOL Debug library
COBLIB	COBOL library
RPGLIB	RPG library
SORTLIB	SORT library
X	Non-supported utility programs

4.1.1 :E01B0

Binary files for all CP-V modules. In addition, all processors and control files needed to perform an E01 SYSGEN are included. The processor names begin with "\$\$" and the control file names begin with "\$". All CP-V assembly SYSTEMS (BPM, RTPROCS, etc.) are included here in compressed format. MPC9210, the firmware for the MPC, is also included in this account.

DATADEF is included in :E01B0 for assembling module PART in the CONTROL processor. It is not a standard CP-V release element and no development support of DATADEF is implied.

4.1.2 CPVPROC

CPVPROC contains the following files and standard processors:

<u>File Name</u>	<u>Version</u>	<u>Description</u>
\$.STDDEF	-	Standard DEF file for AP
\$.STDMET	-	Standard DEF file for META
:BLIB	G04	Non-shared library for LINK
:LIB	G04	Non-shared library for LYNX or LOAD
:PO	G04	Shared FDP library - REF's/DEF's
:P00	G04	Shared FDP library - Code
:P1	G04	Shared library - REF's/DEF's
:P11	G04	Shared library - Code
:P4	G04	Shared Real-time Library - REF's/DEF's
:P44	G04	Shared Real-time Library - Code
ANSFORT	B04	ANSI FORTRAN Compiler
AP	C01	AP Assembler
APL	D04	APL Processor
APLTRMSB	-	Translate Table for APL
BASIC	D03	BASIC Processor
CDD6	-	OLTEST ROM <sup>2</sup>
COBOL	F02	COBOL Compiler
CRPD	-	OLTEST ROM <sup>2</sup>
EASY	B02	EASY Subsystem
ERRNOTES	C00	RPG <sup>1</sup>

FLAG	D00	FORTTRAN Compiler <sup>1</sup>
FORT	F01	Extended FORTRAN Compiler
FORTLIB	A01	System FORTLIB
JIT	-	See note 3
MERGE	F03	MERGE Processor <sup>1</sup>
METASYM	H01	METASYMBOL Assembler
MSMT	-	OLTEST ROM <sup>2</sup>
NSLP	-	OLTEST ROM <sup>2</sup>
OLMON	-	OLTEST ROM <sup>2</sup>
RDC6	-	OLTEST ROM <sup>2</sup>
RMC6	-	OLTEST ROM <sup>2</sup>
RMP6	-	OLTEST ROM <sup>2</sup>
RPG	C00	RPG Processor <sup>1</sup>
SILP	-	OLTEST ROM <sup>2</sup>
SIML	-	1400 Simulator <sup>1</sup>
SIMT	-	OLTEST ROM <sup>2</sup>
SORT	F03	SORT <sup>1</sup>
TAPECVT	-	SIML Tape Converter
TEXT	XCO	TEXT <sup>1</sup>

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<sup>1</sup>These processor file names were excluded from the \$DEFJOB file and should be added to the :INCLUDE cards if desired on the PO tape.

<sup>2</sup>These ROM's are used to load the program OLTEST for the CP-V on-line Diagnostic Programming System (on-line DPS). For further information refer to document number 706497-11A01.

<sup>3</sup>See STEP 4, Section 5.4, How to SYSGEN CP-V E01.



4.1.3 :E01CI

Compressed input for modules that are new or recompressed in the release of E01. These modules include:

FIRMLDR	Module to read the MPC firmware tape.
MPCDIO	MPC handler.
M9210	Patching DEF for MPC firmware monitor overlay.
SUM	Source for the SUMMARY processor.
S5SIM	Contains SIG5 instruction simulators and TRAP 40 preprocessor.
TICINIT	Terminal Interface Controller source module.
TICKEYIN	Terminal Interface Controller source module.
TICLABOR	Terminal Interface Controller source module.
TICROOT	Terminal Interface Controller source module.

4.1.4 :E01SI

This file has in it all of the PLUS card corrections that were applied to :E00CI to create the :E01B0, except for the TIC modules which were recompressed and are in :E01CI.

4.1.5 :SYSRT

Account :SYSRT contains the following files which make up the Real-Time library:

:BLIB       :LIB

4.1.6 CDBGLIB

Account CDBGLIB contains the following files which make up the COBOL DEBUG library:

:LIB           BLIB:           C:DBGR

4.1.7 COBLIB

Account COBLIB contains the following files which make up the COBOL library:

:LIB           BLIB:           S:SRT

4.1.8 RPGLIB

Account RPGLIB contains the following files which make up the RPG library:

:LIB           RLIB:

4.1.9 SORTLIB

Account SORTLIB contains the following files which make up the SORT library.

\$::BSORT	CTS RTP01	SROOT
\$::CSORT	CTS RTP1	SRP
\$SRT:STD	CTS RTP11	SRP0
CROOT	CTS RTP2	SRP01
CRS RTP	CTS RTP3	SRP1
CRS RTP0	CTS RTP31	SRP11
CRS RTP01	LOCCTBMERGE	SRP2
CRS RTP1	LOCCTBSORT	SRP3
CRS RTP11	MERGEINA	SRP31
CRS RTP2	MERGEINB	SSP
CRS RTP3	MERGEJCL	SSP0
CRS RTP31	MERGE0	SSP01
CRTPRE	S:DCB1	SSP1
CSRTDCBS	SORTINFO	SSP11
CSRTMRGE	SORTJCL	SSP2
CTS RTP	SORTTEST	SSP3
CTS RTP0	SPRE	SSP31

4.1.10 X

Account X contains a set of utility programs which are not supported, but which are used by Development Programming and tend to be useful to CP-V installations. The source for each program is included so that improvements or modifications can be made by an installation. All of the load modules created have (READ, NONE), (EXEC, ALL). Some files in account X which are particularly useful are these:

- JOBMNSTK            This file should be batched (with the E option) after a new system is generated in order to reload these programs in account X which load with MONSTK.
- JOB                 This file can be batched (with the E option) to compile and load all of the programs in account X.
- HELP                The HELP program will describe each program in account X and give information about the use of each program. For information on how to use HELP, call it and type ?.
- TERM                TERM allows the user to:
- Set almost any specifiable terminal attribute.
  - Set terminal attributes by specifying a terminal name.
  - Define new terminal names and their attributes.

For more information, call TERM.X and type: HELP.

- MAPINIT            This program may be used to write the Volume Table of Contents (VTOC) on multi-account private packs. It is fully described by requesting HELP when using it from the X account. Operation requires a 'CO' privilege.

#### 4.2 70700-61 Program Description

This document contains a description of the new features of CP-V E01, a list of SIDR's closed, SYSGEN procedures, release contents, etc.

#### 4.3 707000-91 Reference Manual Updates

This document contains CP-V E01 manual updates and corrections. The manuals subject to these changes are listed in Section 1.3.

#### 4.4 707000-76 Quality Assurance and Control Test Tape

The QUAC Test Tape contains the CP-V Test Case Library. Section 10.0 of this document describes the test procedures. The QUAC Test Tape is an FSAVE tape with an INSN = 00A0 and ACCOUNT = :SYS.

#### 4.5 707000-56 Compressed Listing Tape

The compressed listing tapes contain listings of all supported modules of CP-V; the tapes, which represent the contents of the :E01LO account, also contain the CP-V E01 technical manual data base. There are four single volume tapes in the set, all created under PCL; three contain the listings and the fourth contains the technical manual. The contents of the first three tapes are:

<u>SN/Acct.</u>	<u>Content</u>
E1L0.:E01LO	Files AAPL to FIN
E1L1.:E01LO	Files FIRMLDR to QREMAKE
E1L2.:E01LO	Files RA to 7TAP

The fourth tape is SN E1L3 account :E01LO. This tape contains a group of files used to produce the technical documentation that is also released on the microfiche. These files are made available to the user to produce documentation tailored to his needs.

Included are the EXTRACT load module, its compressed source and the complete CP-V E01 comment data base. See Appendix A for instructions on the use of EXTRACT.

\$\$EXTRACT	The documentation program load module
\$\$EXTRACTCI	Compressed source for EXTRACT
\$\$DB	The complete E01 data base for EXTRACT as taken from the UTILIST LO files

Also included is a series of control files which can be used with EXTRACT to produce reports of special interest. These reports are included on the microfiche but not on the listing tapes.

\$CCI	All CCI modules
\$CENTSYS	Central system modules
\$DEBUG	Debug modules
\$DISKFM	File management modules
\$FILEMAINT	FILL, FSAVE, FRES
\$HANDLER	Handler modules
\$INITREC	Initialization and recovery modules
\$LOADER	Loader modules
\$PCL	PCL modules
\$REMOTE	Remote processing modules
\$\$SYMCOOP	Symbionts and cooperative modules
\$TAPEFM	Tape file management

#### 4.6 707000-59 Microfiche

This element consists of the listings of all CP-V modules as well as technical documentation produced from the listing commentary by the EXTRACT processor.

## 5.0 SYSGEN CONSIDERATIONS

### 5.1 Introduction

This section describes changes to the SYSGEN processors for E01 and the step by step procedures to follow to build an E01 system.

### 5.2 PASS2 Changes

#### 5.2.1 MPC Disk Changes

The commands necessary to do a successful PASS2 for a system with MPC disk drives are the :HANDLERS2 command and the :DEVICE command.

If the :HANDLERS2 command is omitted PASS2 will abort, reporting that the command is required. The appropriate handler and default disk size information is chosen via the :DEVICE command when the 9210 model number is given with the MOD option as follows: (MOD,D,9210). Warning: do not avoid use of the MOD,D,9210 option nor change the defaults for NSPT and NTPC. The default disk size information is different from the actual physical organization of the pack, as described in Section 1.0. Because of a system restriction, MPC disk packs have been assigned the following size parameters:

<u>:DEVICE Option</u>	<u>Value in hex.</u>	<u>Value in dec.</u>
NSPT	8	8
NTPC	1C	28
NCYL	336	822

The default for CYLIN is X'70' (112 dec.) granules per cylinder. The minimum CYLIN value that may be chosen is 6. Since MPC disk drives cannot be used for swapping, the PSA option should not be used.

#### 5.2.2 Sigma 5 Changes

One option on the :MON card is all that is necessary to select Sigma 5 support for the target system. The option is SIG5.

### 5.2.3 COC Changes

The :COC command changes are described in Section 1.2.5.3.

### 5.3 PASS3 Changes

PASS3 has been changed for MPC support. If a version of MPC firmware, other than that released with E01, is to be down loaded via CP-V; then PASS3 must be given instructions to find the new firmware when it loads M:MON.

PASS3 will search for the MPC firmware that it needs from a Honeywell supplied firmware tape when the F:FIRMLDR DCB is ASSIGNED to the \$\$FIRMLDR load module in :E01BO. If the firmware supplied with the E01 release is to be used, then make no changes to the assignment; PASS3 will use the firmware from the MPC 9210 file.

### 5.4 How to SYSGEN CP-V E01

CP-V E01 may be generated under any currently supported CP-V system. The running system must have at least 30K of core available for loading the target monitor. If a 64K system does not have enough core available, the E01 starter system may be used as the host for doing the SYSGEN. The starter system will run on any standard CP-V configuration that contains Xerox disk systems (3275, 7240, 7270, or 7275 disk systems). All of the E01 processors required to do a SYSGEN are in the :E01BO account and will be executed from there; processors in the :SYS account of the running system need not be replaced. Note: the E01 starter system has limited capabilities and is not recommended as a "model" system.

All of the control files needed to perform a SYSGEN are included in the :E01BO account with names beginning with "\$". Files whose names begin with "\$\$" are load modules used during the SYSGEN. A PCL range copy may be used to obtain listings of all job control files and sample PASS2 command files, e.g.,

COPYALL DC.:E01BO/\$A,\$9 TO LP(K)

The control files in :E01B0 are:

\$SUPERJOB	Job that authorizes the :E01SGEN, CP-V account for running the SYSGEN jobs.
\$LOCCTS	Job that builds the E01 LOCCT tables for SYSGEN PASS3.
\$INSERT	EDIT XEQ file to be used when doing a SYSGEN on a system which does not have communications equipment for timesharing.
\$PATCH	Pre-release E01 patch file. It is superseded by the E01 patch files on FSST tapes.
\$P2DUAL560	PASS2 job for a large dual 560 multi-processing system with dual access MPC disks, remote processing, transaction processing, and real-time.
\$P2MINI	The PASS2 job which was used to create the E01 starter PO tape.
\$P2NOCOC	PASS2 and LOCCT jobs for a Sigma 6 system that does not have timesharing (COC) capability.
\$P2SIG5PAK	PASS2 job for a Sigma 5 with a 7270 pack swapper, MPC disk drives, and real-time.
\$P2SIG5RAD	PASS2 job for a Sigma 5 with a 7232 RAD swapper, MPC disk drives, and real-time.
\$P2SIG6PAK	PASS2 job for a Sigma 6 with a 7275 pack swapper, remote processing, and transaction processing.
\$P2SIG6RAD	PASS2 job for a Sigma 6 with a 7212 RAD swapper, remote processing, and transaction processing.
\$P2SIG9RAD	PASS2 job for a Sigma 9 with a 7212 RAD swapper.



\$GENJOB1 Job that copies required files into the SYSGEN account, performs initial PASS3 (loads), and starts \$GENJOB2.

\$GENJOB2 Jobs that perform the remaining PASS3's and create the sorted symbol table for the analyze processor.

\$DEFJOB Jobs that write two PO tapes.

\$XREFJOB Optional job that produces a cross-reference of the M:MON load module. Use requires the X account be restored.

\$GHOSTSI Control file for running STATS as a ghost.

\$ALISTFILE E01 control file used to BATCH assemblies with METAFUM.

\$ERRTEXT E01 file of error message text records.

Additionally, the :E01B0 account includes the following special files:

MPC9210 The MPC9210 file contains firmware for the MPC in CP-V library load module format for direct use in the M:MON PASS3. This file is the default firmware selected when \$GENJOB1 is executed. It was built by the FIRMLDR program from the XER1, revision A1 segment of the MSP450AA-0A firmware, dated 10/3/77. This firmware is distributed on magnetic tape and is shipped with each MPC controller.

## DEVDMF

DEVDMF is a stand alone program that will make a device copy of any Xerox RAD or Xerox disk pack on magnetic tape. It is loaded into memory using the stand alone loader, LOADDEVDMF, from account X. A description of DEVDMF is in the CP-V Operations Reference Manual 901675. To make a bootable copy, use the following commands:

```
!PCL
COPY LOADDEVDMF.X TO CP(BIN)
COPY DEVDMF.:E01B0 TO CP(BIN)
END
```

Perform the following steps to do an E01 SYSGEN.

Step 1 - (optional) The E01 starter tape has the following device addresses assigned:

<u>NAME</u>	<u>ADDRESS</u>	<u>MODEL</u>
TY	A01	7012
LP	A02	7445
LP	A06	3465 (NS or 7446)
CR	A03	7140
9T	A80	7322 (Wang)
9T	A81	7322 (Wang)
9T	DF1	7333 (Potter)
9T	DF2	7333 (Potter)
9T	AC0	3345 (NS)
9T	AC1	3345 (NS)
DP	AE0	7271
DP	AE1	7271
ME	A10	7611
MC	A0B	FFFF (560 Remote Assist)

Prior to booting the starter PO tape prepare the :TYPE cards which will change the configuration to the appropriate addresses. It is recommended that :TYPE cards be used for each device type available and that the complete starter system configuration be defined without using the :SAVE command.

Example 1 - Reconfiguration Deck for Starter  
Tape on a 560:

```

:TYPE      TY7012,A01
:TYPE      LP3465,A02
:TYPE      CR7140,A03
:TYPE      9T3345,A80,A81
:TYPE      DP7271,EFO,EF1
:TYPE      ME7611,A05
:END
*
!EOD

```

Note that the :TYPE card for the disk devices specifies 7271, even though the device is actually a 3275. This is because the system was SYSGENed for 7271 disk devices. Special code enables a 7271 pack swapper system to boot on any kind of disk drive. In this system it is normal for the message "HGP TRUNCATED - TOO BIG FOR ALLOCATION DATA" to be typed on the operator's console during system initialization.

Boot the starter PO tape, keying in 'IPFTC' on request.

Change the address of the swapper, card reader, and printer (if necessary):

```

C/LL/DC ASSIGN OK (YES/NO)   NO
CRA03 = CRnnd
LPA02 = LPnnd
DPAE0 = DPnnd

```

Step 2 - From the operator's console, initiate FRES as a ghost job (!GJOB FRES) and enter the following commands:

```

+VOL
  01E0
+SELECT
:E01BO
CPVPROC
+END

```

This will restore all files necessary to perform the target SYSGEN.

- Step 3 - LOGON under :SYS, LBE and BATCH THE \$SUPERJOB in :E01B0; this will create the :E01SGEN, CPV account. The target SYSGEN will be performed in this account.
- Step 4 - (optional) If password scrambling is not desired in the target system, it will be necessary to copy JIT from the :E01B0 account; this ROM for JIT has the ADEF SEED set to 0 which will disable password scrambling. Note: The SEED specified in E01 is the same as the value for D00 and E00; if password scrambling is currently in use, no change is required unless SEED was changed from its previous value.

If the MPC9210 firmware file from the :E01B0 account is not desired, and if a newer version of this firmware is available from a Honeywell supplied firmware tape, then \$GENJOB1 must be modified as follows. Replace the command:

```
!ASSIGN F:FIRMLDR,(DEVICE,NO)
```

with this command,

```
!ASSIGN F:FIRMLDR,(FILE,$$FIRMLDR,:E01B0)
```

Then, when \$GENJOB1 runs, the firmware tape should be mounted. The FIRMLDR program will search the tape for the correct file and will build the file MPC9210 in the running (:E01SGEN) account, for use by PASS3.

- Step 5 - LOGON to account :E01SGEN,CPV and BATCH \$LOCCTS.:E01B0. This job will create all the needed LOCCT's in account :E01SGEN. The LOCCT for SUMMARY has UNSAT = CPVPROC; if that account is not restored, the LOCCT must be modified to point to the account which contains the copy of :LIB which is in CPVPROC.
- Step 6 - In account :E01SGEN, copy the PASS2 control file from :E01B0 which most closely matches your installation. Use EDIT to modify the file to match the installation. Either BATCH the job or run it on-line. Verify the results.

Check the output from the PASS2 jobs for any fatal diagnostics or unexpected warnings.

Step 7 - In account :E01SGEN, BATCH \$GENJOB1.:E01B0. This GENJOB will terminate by BATCHING a subsequent GENJOB. Verify all the GENJOB output.

These jobs should run with only the following error messages:

- PASS3 of RATLER gives a severity level 4 message.
- PASS3 of MOOSE has 11 PREF's for mono-processor systems only.

These should not affect the operation of the system.

Two items to watch for:

- The end of the monitor root (which is mapped one to one) must be less than X'8000'. Look for SUSPTERM, it must be less than X'8000' in the map produced for M:MON.
- Each overlay of M:MON should be less than 3K in size except for UMOV and MPC9210 (which are optional overlays).

Step 8 - At this point, the :E01SGEN account will contain everything necessary to generate a CP-V E01 PO tape. If other processors are desired on the PO tape by installations, they should be added to the \$DEFJOB INCLUDE list and !ASSIGN F:INCLUDE account list prior to DEFing the tape. (Note: All pre-B00 loaded processors and user-programs must be reloaded before they will execute under the E01 version of CP-V.)

Step 9 - If the installation desires the patch deck to be included on the PO tape, restore the E01 patch file from the most recent FSST tape to the :E01SGEN account. EDIT the file \$DEFJOB

to include an ASSIGN command at lines 4.5 and 16.5:

```
!ASSIGN M:PATCH,(FILE,filename)
```

In account :E01SGEN, BATCH \$DEFJOB.:E01BO.  
This will create two PO tapes, Serial Number CPE1.

Step 10 - After booting the new CP-V PO tape, restore the library accounts from FSAVE Tape 01E1. See Section 4 for the libraries supplied with the system.

## 5.5 How to do a SYSGEN on a COC-LESS System

EDIT, BATCH, and FRES are to be run as ghost jobs from the OC.

Step 1 - See Step 1, Section 5.4 for instructions on booting the starter PO tape. In addition, if the starter tape is used add a reconfiguration card to partition out the COC (i.e., :REMOVE A10).

Step 2 - Same as Step 2, Section 5.4.

Step 3 - 1. BATCH \$SUPERJOB.:E01B0. This will create the :E01SGEN account. GJOB EDIT and XEQ \$INSERT.:E01B0.  
2. This will insert a name, account, and priority into !JOB cards that will be run in the following steps.

Step 4 - Note (optional) Step 4, Section 5.4.

Step 5 - BATCH \$LOCCTS.:E01B0. See Note, Step 5, Section 5.4.

Step 6 - Select the PASS2 control job \$P2NOCOC.:E01B0 and, using EDIT, modify it to match the installation desired. Note that the file contains a modified LOCCT for M:MON, the CP-V monitor. BATCH \$P2NOCOC.:E01B0 and verify the results; also note the error warning Step 6, Section 5.4.

Step 7 - BATCH \$GENJOB1.:E01B0. Verify all the GENJOB output; also note the error messages in Step 7, Section 5.4.

Step 8 - Same as Step 8, Section 5.4.

Step 9 - BATCH \$DEFJOB.:E01B0. If the installation desires the patch deck to be included on the PO tape see the instruction in Step 9, Section 5.4.

Step 10 - Same as Step 10, Section 5.4.

## 6.0 INCOMPATIBILITIES

## 7.0 RESTRICTIONS/KNOWN PROBLEMS

7.1 Boot-Time Reconfiguration

Partitioning or removing a single-access controller at boot-time does not work, i.e.,

```
:PART CONT,XXX
```

or,

```
:REMOVE CONT,XXX
```

are not effective. However they work correctly for a dual access controller.

Instead of these commands, use single device :REMOVE and :PART commands for each device on the controller, i.e.,

```
:PART XXX,XXX,XXX
```

and

```
:REMOVE XXX,XXX,XXX
```

Work correctly and accomplish the equivalent desired result.

7.2 On-Line VOLINIT and 3275 (RMP) Disk Systems

On a Xerox 560 computer system, the use of On-Line VOLINIT to initialize disk packs on 3277 disk devices may cause file inconsistencies. The file inconsistencies may develop on files located on other disk drives attached to the RMP, not on the pack being initialized. However, the I/O error which can lead to the file inconsistencies occurs only when using On-Line VOLINIT to do a complete initialization (header writing and surface testing). In this mode (invoked with CVOL command) On-Line VOLINIT normally causes the RMP to report "sector unavailable" at the end of processing the channel program to read or write each cylinder of the pack. This error is improperly handled by the RMP and may be reported on concurrent I/O operations to other disk drives connected to the same RMP. Until a fix is available, the On-Line VOLINIT CVOL command should not be used.



### 7.3 CP-V ANS FORTRAN B04

The following SIDR's represent known difficulties that have not been fixed in this version (which is in the CPVPROC account).

<u>SIDR No.</u>	<u>Problem Description</u>
29995	On first write to a unit, 9BCDWRT pads (unconditionally) the record to 12 bytes, as the DCB is unopened.
30128	:DATA, !EOD, F:unit = (IN) does not work.
30140	XEROX NAMELIST (total namelist) fails in RUN case.
30141	Prior TI files can not be reloaded by new compilers.
30144	Character variables incorrectly used in formatted input with O, M, Z specification are not diagnosed, may cause errors/aborts.
30149	Unformatted REC = I/O fails for character list items.

## 8.0 MAINTENANCE PROCEDURES

### 8.1 Patch Deck

In CP-V, corrections to problems are distributed to users via patches. Normally, only severity 1 or 2 problems will be patched. All others are closed as pending the next release.

A copy of the current patch deck which has been tested and used in a production environment is available as the file E01PATCH, in account PATCH, on the Xerox 560 in LADC. This file is updated once a week and a patch area of 750 words is assumed. Each patch contains the date, SIDR number, and the card sequence number. New patches are also added to the beginning of the file CHRONO E01 (also in account PATCH). This file contains all the patches in chronological order with explanatory notes about each set of patches. The patch files are distributed monthly to field offices on the Field

Software Support Tape (FSST). The first E01 patch files are available on the November 1977 FSST tape.

## 8.2 Problem Reporting

Difficulties encountered in CP-V E01 should be reported through the SIDR system. Use of the SIDR system is described in the PAL (Program Availability List) Manual.

The system catalog number for CP-V is 707000. Program catalog numbers to be used in submitting SIDR's should reflect the following functional areas:

<u>Program Catalog Number</u>	<u>Area Name</u>	<u>Included Functions</u>
707001	File Maintenance	BACKUP/FILL, FSAVE/FRES
707002	File Management	All File Management functions for public and private files, ALLOCAT and file inconsistencies.
707003	System Management	Scheduler, STEP, Memory Management, Swapper, IOQ, device handlers, SEGLOAD, LDLNK, RBBAT, GERM, and Real-Time
707004	Communications	COC and Remote Processing
707005	Recovery	RECOVERY, ANALYZE, FIX
707006	Software Checks	All software checks
707007	Operator Comm.	KEYIN
707008	SYSGEN	PASS2, PASS3, LOCCT, and DEF
707009	DEBUG Tools	DELTA, XDELTA, PMD, snaps and user dump facilities
707010	LOADERS	LOAD and LYNX
707011	SYMBIONT	Symbionts, streams, cooperatives, and LDEV

707012	Acctg. and Perf.	SUPER, ACCTSUM, LOGON, RATES, CONTROL, STATS, and SUMMARY
707013	Monitor Services	PROC's and miscellaneous CAL's
707014	Initialization	SYSMAK, GHOST1, DRSP, RECONFIG, and SYSCON
707015	Reliability	ELLA, ERRFIL, error logging
707016	Command Proc.	CCI and TEL
707017	Utility Proc.	PCL, EDIT, DEFCON, SYMCON, ERRMWR, and online VOLINIT
707018	Miscellaneous	Error message file, Mailbox, and JIT
707019	Transaction Proc.	TP Terminal control, TP Queue initialization, management, and recovery

## 9.0 MONITOR SIZING

### 9.1 General Core Requirements

The optional features of CP-V E01 are listed below with their resident monitor core requirements.

IRBT	IRBT Support	3 pages + 1 page <sup>1</sup> per IRBT device
	2780/3780 & IRBT Support	4-1/2 pages + 1 page <sup>1</sup> per 7605 device
	7670 & IRBT Support	4-1/2 pages + 1 page <sup>1</sup> per IRBT device
	2780/3780 & 7670 & IRBT Support	5-3/4 pages + 1 page <sup>1</sup> per IRBT device

	2780/3780 Support	2-1/2 pages + 1/2 page (2780) or 1 page (3780) per 7605 device
MP	Multi-Processing Support	1-1/2 pages + 1 page per active slave CPU
TP	TP Modules	2-1/2 pages
	Additional for Message Mode Lines	1-1/2 pages + 1 buffer page <sup>2</sup> per line
	Additional for Queue	5 pages <sup>1</sup>
	Also 2-5 pages of the TIC and TPC modules may be temporarily locked in memory during processing	
RA	Read Ahead	1 page
	For Table Size, see RASIZE description on :IMC option.	
RT	Real-Time Modules	1-1/2 pages
	Additional for RESDF	number of pages specified by SYSGEN
	Additional for DYNRESDF	number of pages specified by SYSGEN <sup>3</sup>

S5SIM	Sigma 5 Instruction simulators	2 pages
-------	--------------------------------------	---------

---

<sup>1</sup>These pages are subtracted from the maximum user size, but not from the swap space when the line is not logged on. Note that on large-core machines maximum user size is not affected by these pages since it is limited by other factors.

<sup>2</sup>These pages are only required when TP is active.

<sup>3</sup>These pages are subtracted from the maximum user size, but are not actually acquired until they are needed.

## 9.2 Monitor Table Sizes Based on SYSGEN Parameters

### Keyword

:SPROCS	9-1/2 words per shared processor entry + 1/2 word per entry if disk pack swapper + 1/2 word per entry if (BIG) specified (Maximum 10-12-1/2 words per entry)
:IMC	1 word per physical wordk page (PWP,n) <sup>1</sup> 8-1/4 words per user (n+m+p) (MAXOL,n) + (MAXB,m) + 4-1/3 words per ghost job + (MAXG,p) 22 words initially + 3 words per entry (RASIZE,n) + 1/4 word per entry if (BIG) specified
:COC	4 words per buffer (BUFFERS,n) 7 words per line (LINES,n) 1 word per buffer (RING,n) 4 words per ECB (ECB,n) 96 words per Translate Table 1 byte per COC line (COUPLE)
:MON	2 words per entry (ENQ,n) 34 words per MPOOL (MPOOL,n) 40 words per CPOOL (CPOOL,n) 9 words per IOQ (QUEUE,n) 19 words per CFU (CFU,n) Patch space (n words) MPATCH,n) 1/4 word per physical page (CORE,n) + 1/4 word per physical page if (BIG) specified (m-X'62') words (ORG,m) 308 words for Sigma 9 traps (SIG9) 444 words for X560 traps (X560) 45 words for Sigma 7 traps (SIG7) or (SIG6) 2 pages for S5SIM (SIG5) 1961 words for MINICOC (MINICOC) 2718 words for COC (neither (TP) nor (MINICOC)) 3119 words for TPOC (TP) <sup>1</sup>
:INTBL	1-1/4 words for every label (label,n,m)
:FRGD	12 words per entry (NINT,n) See RT size for RESDF and DYNRESDF
:SCPU	7 words for CPU <sup>2</sup>

<sup>1</sup>TP systems only.

<sup>2</sup>MP systems only.

Keyword

:CHAN 2 words per CHANNEL (CIT entry)

:DEVICE 15 words per DEVICE (DCT entry)  
 + 3-1/2 words per tape device (AVR tables)  
 + 3-1/2 words per (PRIV) disk pack (AVR tables)  
 + 8 words per public RAD or pack (HGP tables)  
 + n words per private pack

n = 20 for 7274  
 20 for 7271  
 35 for 7275

assuming default  
 logical cylinder sizes

+ 5 words per RBT device  
 + 7 words per RAD or disk pack model  
 + 7 - 74 word CLIST per device

PUNCH = 74 words  
 DP = 12 words  
 other = 6-8 words

non-standard device-variable

+ 4 words per non-standard device type

:RES 1/2 word per specified RES  
 + 6-1/4 words per RES option  
 + 1/4 word per (RES option)\* (number of partitions)

:PART 6-3/4 words per partition

:LDEV 3/4 word per entry

:OPL 1-1/4 words per non-standard entry

:SDEVICE 3 words per symbiont device  
 + (4-1/2 words)<sup>1</sup> (MXSTRM value)

---

<sup>1</sup>TP systems only.

## 10.0 CP-V E01 TEST PROCEDURES

10.1 The Test Tape

The QUAC TEST tape (707000-76E01) is an FSAVE tape, INSN 00A0, containing the E01 test case library in account C7308398 and \$\$\$FILL. The test case library consists of job sequences and the files necessary to run time. Test cases are organized in groups which exercise a particular area of the system. These groups are described below.

88TPDMS	TP-DMS Sample Application
88TPSIM	TP-Simulator Tests
88TPTIC	TP-TIC/QUEUE Tests
88TPTPC	TP-TPC/QUEUE Tests
88TPPFM	TP-Performance Tests
99GROUP1	General Exerciser
99GROUPEB	Job Step Control
99GROUPEE	Multibatch Scheduler (partitions)
99GROUPEE1	Multibatch Scheduler (resources)
99GROUPE	Swapper
99GROUPEA	LDEV
99GROUPIA	Monitor CAL's
99GROUID	Shared Processors
99GROUPEJ	File Management
99GROUPEJA	ANS Tapes
99GROUPEJB	Private Pack Tests
99GROUPEKA	BACKUP, FILL, PURGE
99GROUPELH	DRSP
99GROUPEPNQ	ENQUEUE/DEQUEUE
99GROUPEPPA	CCI
99GROUPEPPQ	SUPER, CONTROL, SHOW
99GROUPEPRB	LOADER
99GROUPEPRMA	SYSCON/RMA
99GROUPEPRP	Restricted Processors
99GROUPEPRT	Real Time
99GROUPEPSA	PCL
99GROUPEPSC	BATCH
99GROUPEPT	Language Processors

A file 'LIBLIST' on the QUAC TEST tape contains the names and descriptions of the individual tests within each group. The test cases are identified by using the test name as the extended accounting information of the !JOB command. Tests that should abort are designated as such in the 'LIBLIST' file.

Most test cases are self-sufficient and rely on operator intervention only for tape mounting and key-in



responses. Where operator intervention is required (as in the TP and RT tests), comprehensive instructions are displayed on the operator's console.

## 10.2 Use of the Test Tape

The following job is used to restore the QUAC TEST tape library, to authorize accounts, and initialize the system controls.

```
!JOB :SYS, LBE, 7
!LIMIT (9T,1), (CORE, 50)
!FRES
+VOL
OOAO
+END
!BATCH 99QUAC.C7308398
!FIN
```

Due to the special system control parameters necessary for certain tests, only one group should be run at a time. A group is entered into the batch stream with a

```
!BATCH groupname.C7308398
```

command. For example, to enter the PCL test cases use:

```
!JOB :SYS,LBE,7
+BATCH 99GROUPSA.C7308398
!FIN
```

Test cases can be run selectively from within groups by using the DUCK program on-line. A description of how to use DUCK is in the file 'DUCKHELP' on the QUAC TEST tape. To run DUCK, copy it from account C7308398 into account :SYS and then !DUCK will start the program on-line.

## 10.3 Updating the Test Library

Test cases can be added or deleted by editing the relevant 88 or 99 GROUP. See the Time-Sharing Reference Manual (90-09-07) for Edit procedures. A new test tape can be generated by the following commands:

```
!JOB :SYS, LBE, 7
!BATCH QUAC.C7308398
!FIN
```

Some tests require processors and libraries which are not distributed with the CP-V releases. A list of the processors and libraries included in the E01 release can be found in Section 4. The installation can create a test tape containing all necessary processors by restoring the QUAC tape under its present system and running the following (sample) job:

```
!JOB
!LIMIT (9T, 1)
!MESSAGE **USE OUTPUT TAPE #XXXX, RING IN**
!FSAVE
+DUMP
+VOL
OOAO
+SELECT
$$$$FILL
:SYS DICTNARY (required for MANAGE)
:SYS DMSDUMP
:SYS DMSINIT DMS Modules
:SYS DMSLOAD
:SYS EDMSDUMP
:SYS EDMSFDP
:SYS EDMSINIT EDMS Modules
:SYS EDMSLOAD
:SYS EDMSSUMS
:SYS FILEUP (required for MANAGE)
:SYS MANAGE
:SYS REPORT (required for MANAGE)
:SYS RETRIEVE (required for MANAGE)
C7308398
COBLIB
DMSLIB
EDMSLIB
+END
```

APPENDIX AEXTRACT

EXTRACT is a processor design to produce tech manual type documentation and reports using specially formatted comments embedded in the assembly listings. These special comments are all comment lines with a code letter in column two and asterisks in columns one and three as well as all REF's, DEF's and SREF's that have a non-blank comment field. A \*,\* is used for continuation.

The codes are:

- \*M\*        A one line description of each module.
- \*P\*        A paragraph or two describing in brief the purpose of a module and giving an overview of its operation.
- \*F\*        A brief description of each major function within a module.
- \*D\*        A detailed description of a routine in terms of such things as register usage, input, output, interfaces, etc.
- \*E\*        A description of an error condition at the point where it is called.
- \*S\*        A description of a Screech Code at the point it is called.
- \*O\*        An explanation of some communication with the operator at the point where it is sent.
- \*C\*        A description of what has changed for this version of the operating system.
- \*K\*        A description of some concept of term that is useful in understanding the operation of a module.
- \*X\*        X-type comments are all REF's, DEF's and SREF's.

EXTRACT performs two major tasks; first, it calls all of the special comments from UTILIST compressed files of the assembly listings to form a data base, then it produces reports on the desired modules and codes from this data base.

EXTRACT commands have the form:

COMMAND (OPTION), (OPTION)...

The command may be continued at any point except within a word by ending the command with a semi-colon (;). Anything after the semi-colon will be ignored. The commands may be abbreviated to two letters and are:

<u>EXTRACT</u>	create data base from UTILIST compressed files. The legal options are CODES, MODULES, DATA and SOURCE (see option descriptions to follow).
<u>REPORT</u>	generate a report from the data base. The legal options are DATA, CODES, MODULES, SORT, ORDER, HEADING, LINES and FORMAT.
<u>DELETE</u>	remove specified comments from data base. The smallest unit that can be deleted is all of one type from one module. The legal options are DATA, CODES and MODULES.
<u>ADD</u>	add specified comments to an already existing data base. Due to the structure of the data base, it may be more efficient to EXTRACT the comments to be added into a second data base and use PCL to concatenate the two files. The legal options are DATA, CODES, MODULES, and SOURCE.

The options are as follows:

- (DATA, name, account, password) - specifies the name of the data base. The running account is the default.
- (CODES, code letter [,code letter]...) or (CODES, GLOSSARY) or (CODES,ALL - specifies which types of special comments are selected for this command. The legal code letters are M,P,F,D,E,S,C,K,O,X. GLOSSARY is used only in selecting codes for the report command and causes all DEF's, M's and K's to be reported. ALL is the default.
- (MODULES, name or range [,name or range]...) or (MODULES, EXDATA) or (MODULES,ALL) - specifies

which modules are selected for this command. A maximum of ten names or ranges may be specified where a name is simply the name of a module and range is two module names separated by a dash (-), e.g., FILE1-FILE4. EXDATA implies that a file EXDATA exists in the running account and it contains a list of the modules to be used. ALL is the default.

- (SOURCE,account) or (SOURCE,LT# xxxx,account) - gives the labeled tape serial number and account or simply the account of the UTILIST compressed LO files to be searched for comments.
- (SORT, sort parameter [,sort parameter]...) - specifies the order for the selected comments to be reported. The four legal sort parameters are:

CODE	special comment type
MODULE	module name
LINE#	line number within the module
NAME	name of the module, routine, screech code or other item being described by the comments.

The first parameter given is the primary sort key, the second one given is secondary, etc. SORT is required for all report commands.

- (ORDER, code letter [,code letter]\_) - specified the order in which the requested codes are to be sorted. The default is alphabetical (C,D,E,F,K,M,O,P,S,X) and any codes specified in the CODES option but not in the ORDER option will be ordered alphabetically after all those specified.
- (HEADING, text1, sort parameter, text2) - gives a heading to appear at the top of each page of output. Text1 is a 1-8 character field that appears at the far left of the heading. The first four characters of the current value of the sort parameter that is requested will appear in columns 10-13 of the heading. Text2 is a 1-80 character field that begins in column 15 and makes up the main body of the heading.

- (LINES,xxx) - specifies the number of lines per page in the report.
- (FORMAT, sort parameter [, sort parameter]...) - specifies that a top of form is to be issued when the value of the specified sort parameter changes.

#### EXAMPLES

To create a data base file named DATA..SAFE containing all comments from all the files in the running account:

```
>EX (DATA, DATA,,SAFE)
```

To create a data base DATA containing selected codes and modules from UTILIST compressed files on labeled tape #LIST:

```
>EX (DATA, DATA), (CODES,M,P,X),(MODULES,;  
>FILE1,FILE3-FILE7), (SOURCE, LT#LIST)
```

APPENDIX B

Volume Initialization for MPC

The disk pack initialization programs for the MPC are a subset of the MPC Disk Diagnostic Utility Programs. Both utility programs (including the firmware and the programs to load it) and the initialization programs are on one Load Tape.

The following discussion is intended to describe the procedures to be followed when installing the MPC and initializing disks for the MPC. It is not intended to fully describe all of the programs on the MPC tape nor to fully explain all of the directives within those programs.

One further note. This document is intended to be an aid to Operations Personnel in running the MPC programs. Since the programs will be run on both the 560 and the Sigma 5-9 there are steps which must be done differently, especially in regards to control commands. In the following discussion the 560 procedure will be given first, next the Sigma 5-9 procedure, and then an explanation of the input. All operator input will be underlined.

The Utility Program and Firmware Load are the first programs to be run.

560	Sigma 5-9	Explanation
<u>Z<sup>c</sup>MM4</u> <u>Z<sup>c</sup>LDN@####</u>	LOAD from unit address of load tape	Boot the Load Tape. #### - four digit hexadecimal I/O address of diagnostic tape device this is a three digit address on the Sigma

UTIL 730030-A02 (V044)  
ENTER DIRECTIVE  
<LOAD ####,MT

Load first program on the tape. #### is again the 3 or 4 digit hexadecimal address of the Load Tape

<RUN

Executes the utility program just loaded.

FILE IN 8-15-77 (V012)  
OUTPUT DEVICE DEFAULT = TTY - USE 'MOD' DIRECTIVE TO ALTER  
LIST 30,80 GIVES DICTIONARY  
LIST 101,249 GIVES EXPLANATION OF PROGRAM  
MODIFY DEFAULT ADDRESSES AS NECESSARY AND DO 'RUN 10'

000 - ADR 80 INPUT DEVICE ADDRESS  
 001 - ADR1 8C0 MPC ADDRESS  
 002 - ALT 30FF,10000000 BIT MAP OF DEVICE ADDRESSES (DEFAULT = 03)

xxxxxxFIRMWARE NOT LOADED - USE 'FLOD' DIRECTIVE

HALT DIRECTIVE ENCOUNTERED  
 ENTER DIRECTIVE

The above message says that version V012 of the program IN is running. The output device is set to TTY. There are two 'LIST' commands that can be entered, but this should not be necessary. The default addresses for the input device (the Load Tape), the MPC address, and the unit bit mask<sup>1</sup> (which unit the disk is on) are given.

The operator is now given a chance to change any of these defaults.

<sup>1</sup>A bit map is merely a one word mask with each bit corresponding to a unit number. Start with bit 0 (corresponding to Unit 0) on the left.

BITS	0							31
	0-3	4-7	8-11	12-15	16-19	20-23	24-27	28-31

For example if only unit 3 is needed, set bit 3 and input in hexadecimal.

1 0 0 0 0 0 0 0

However, if units 2 and 3 are needed, set bits 2 and 3 and input in hexadecimal.

3 0 0 0 0 0 0 0

In our example bit 15 was set to correspond to unit 15.

0 0 0 1 0 0 0 0



&lt;ORG 2

002 > ALT 30FF, 10000003 > EX

In this example the operator wants to change line 2, the unit bit map.

Alter location 30FF with the bit mask for unit 15. More than one unit may be entered into the bit mask.

Exit the insertion mode.

560	Sigma 5-9	Explanation
<u>Z<sup>C</sup>HLT</u> <u>Z<sup>C</sup>SS1</u> = 0001 <u>Z<sup>C</sup>RUN</u>	Turn up Sense Switch 4	Setting this Sense Switch will eliminate unwanted output to the printer
<u>&lt;FLOD #####, D1</u>		Load the firmware from the Load Tape (####) into memory
<u>Z<sup>C</sup>HLT</u> <u>Z<sup>C</sup>SS0</u> = 0000 <u>Z<sup>C</sup>RUN</u>	Turn down Sense Switch 4	Reset the Sense Switch
<u>&lt;LOAD #####, MT, FW</u>		Down load the firmware that came from the Load Tape (####) to the MPC
<u>&lt;RUN or RUN 0</u>		Execute the firmware
FIRMWARE LOAD TEST 1 ADR =08C0 ***FW-OK		The firmware was successfully loaded and executed on the MPC at address 08C0.
END DIRECTIVE ENCOUNTERED		

This is the end of the MPC Utility Program and the Firmware Load. Now the MPC Volume Initialization programs should be run. The controller address and unit bit mask that were used in the Firmware Load will be carried over to the VOLINIT program. Also the Load Tape should be left on the same unit and does not have to be rewound.

ENTER DIRECTIVE  
 <LOAD ####, MT, U1

Load program U1 from the  
 Load Tape (MT) on I/O  
 device number ####

560

Sigma 5-9

Explanation

ZCHLT  
ZCSS4 = 0100  
ZCRUN

Turn up Sense  
 Switch 2

Eliminates operator  
 intervention between the  
 U programs.

RUN

Execute U1. At completion  
 U1 will successively call  
 U2, etc.

TEST U1 WRITE & READ TRACK HEADERS - FULL SURFACE  
 2 ADR =08CF  
 \*\*\*U1-OK

TEST U2 WRITE & READ PATTERN #1 -FULL SURFACE (1 TRACK)  
 2 ADR =08CF

\*\*\*U2-OK

TEST U3 WRITE & READ PATTERN #2 -FULL SURFACE (1 TRACK)  
 2 ADR =08CF

\*\*\*U3-OK

TEST U4 WRITE & READ PATTERN #3 -FULL SURFACE (1 TRACK)  
 2 ADR =08CF

\*\*\*U4-OK

TEST U5 WRITE ALTERNATE HEADER UTILITY  
 2 ADR =08CF

CHANGE ADR2 BY USING ADR2 XXX, SET DEVICE NO BY ALT,4000,X  
 CONTINUE BY USING RUN 51  
 HALT DIRECTIVE ENCOUNTERED  
 ENTER DIRECTIVE

These are the VOLINIT programs. Their approximate times are as follows. These timings are for one disk only.

	MPC BUFFERED MODE	MPC UNBUFFERED MODE
TEST U1	15 min	10 min
TEST U2	60 min	18 min
TEST U3	60 min	18 min
TEST U4	60 min	18 min

The address of the MPC (08C0 in this example) is the same address that was used in the IN program. It is in the IN program that this can be changed, else it stays as is through the entire process.

The F in the above address is the unit being initialized. This was set in the IN program. In this particular example, the unit number was changed by altering the bit map from 10000000 to 10000, on from unit 3 to unit 15, i.e., F. If we had entered more than one unit into the bit map, tests U1-U4 would have been run on each of those units. Each unit would take the specified amount of time.

If any bad sectors are found, tests U1-U4 will print out the bad sector address. Test U5 will write an alternate header for the bad sector. Test U1 will clear the flaw table. It will clean out any felonious entries.

If there are no sectors to flaw do an EX or Y<sup>C</sup> - VOLINIT is completed. If there are bad sectors proceed with Test U5.

<ADR2 ###

Enter the controller and unit number that has the flawed sector. In most cases this will be the same as in the proceeding message. You must include the unit number. In our example ADR2 is 08CF.

<ALT 4000,X

Enter the number of the unit with the flawed track. X=F in our example.

<RUN 51

Execute Test U5.

Now is the time for the operator to enter the address of the sector to be flawed.

USE ERROR LINES FROM U1,U2,U3,U4 FOR INPUT  
 INDICATE FLAWED SECTOR BY ALT 3102,-----\*\*\*\*,\*-----  
 CONTINUE BY USING RUN 56, OR RUN 208 IF ONLY CYL & HEAD ARE KNOWN  
 HALT DIRECTIVE ENCOUNTERED  
 ENTER DIRECTIVE

<ALT 3102,\*\*\*\*,\*0000000

| \*\*\*\*\* is the sector  
 | address that is to be  
 | flawed.

<RUN 56

| Flaw it.

SECTOR \*\*\*\* \*  
 03102 00001182 C0000000  
 CYLINDER TRACK(HEAD)  
 0380E 0000013A 0000000B  
 ALTERNATE SECTOR  
 03102 00002CFA 00000001  
 CYLINDER TRACK  
 0385E 00000328 00000000  
 FOR NEXT FLAWED HEADER SAME UNIT USE RUN 52  
 FOR NEXT UNIT FLAWED HEADERS USE RUN 0  
 HALT DIRECTIVE ENCOUNTERED  
 ENTER DIRECTIVE

There will probably be no more than one flawed sector, but on the chance there is more than one enter a RUN 52 or RUN 0 according to the directions output above. Most likely the operator will terminate the program with

<EX

| End of Program.

Reset the Sense Switch.