

Burroughs Corporation

B1000

Release 12.0

New Product Information Transfer

September 24 - September 27, 1984

**Burroughs Corporation**

SANTA BARBARA PLANT

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B1000

Release 12.0

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## AGENDA

Monday, September 24, 1984

09:00	Opening Ceremonies	Dick Holmes
09:45	11.0 Software Overview	Ken Denny
10:00	12.0 NPIT Overview	Jane Ridlon
10:15	Break	
10:30	Quality	Derek Hedges
11:00	New Peripherals Memorex Disk Drives Laser Printers	Ken Shenkel
13:00	System Utilities	Jane Ridlon
13:30	Operating System	Jane Ridlon
14:15	Break	
14:30	Debugging Techniques	Dave Gilmore

AGENDA

Tuesday, September 25, 1984

08:30	Introduction	Jane Ridlon
08:45	SYSTEM/IDA	Larry Ramsey
10:30	Break	
10:45	Data Base Management DASDL DMS Inquiry	Mort Nasoff
11:30	Data Communications	Jane Ridlon
13:15	RJE3770	John Bostock
13:45	SYCOM	John Bostock
14:30	Break	
14:45	BNA	Dan Valeska

## AGENDA

### Wednesday, September 26, 1984

08:30	Introduction	Jane Ridlon
08:45	COBOL74B COBOL74B/RAID	Andy Harrington
09:45	Break	
10:00	System Performance	Carl Hopkins
13:00	WFL	Debbie Hood
13:30	PASCAL & RPG	Jane Ridlon
14:00	Break	
14:15	To be announced	Derek Hedges

### Thursday, September 27, 1984

08:30	Introduction	Jane Ridlon
08:45	UPL2	Dave Gilmore
09:30	13.0 Suggestions	Hedges / Hopkins
10:15	Break	
10:30	NPIT Evaluation	Ridlon / Hedges
11:00	Closing Ceremonies	Derek Hedges
11:30	EOJ	

## 12.0 NPIT OBJECTIVES

- \* How to install 12.0
- \* Impact on existing sites – operations & programming
- \* New features implemented since Mark 11.0 NPIT
- \* Networking concepts
- \* Debugging Techniques
- \* Documentation & tapes
- \* Training plan & materials
- \* Form of future NPITs

## 12.0 HIGHLIGHTS

- \* COBOL74B
- \* RJE3770
- \* PASCAL
- \* Update in DMS/INQUIRY
- \* Increased number of DMS structures
- \* Performance improvement - all ISAM files
  - BNA file transfer
  - backup to tape
- \* Performance monitor
- \* Printer backup files
  - can be printed while being created
  - not lost after Clear/Start
- \* Interactive program dump analyzer

## UTILITIES

Reference: DOCUMENT/SYSNOTE1  
SOG Vol. 2 #1152097-001

### GENERAL NOTES:

- \* All standalone utilities - SPCFY to make ODT more readable
- \* All appropriate utilities support Memorex drives

### PACK/INIT & SYSTEM/DISK-INIT

- \* use either utility to initialize packs for 12.0
- \* Memorex Fixed (659) - use FC (new option)  
Removable (677) - use I
- \* both have RR option - sector relocate  
{only for 659/677 drives}
  
- \* SYSTEM/DISK-INIT - new switch settings
  - SW1 = 0 - listing of session
  - SW2 = 0 - goes to EOJ after session
  - SW2 = 1 - remains in mix



## UTILITIES

### COLDSTART/TAPE & DISK

- \* Must COLDSTART to come up on 12.0
- \* 11.0 code and data files are automatically changed to 12.0 format
- \* Install 11.0.183 or greater prior to 12.0 installation to be able to go back to 11.0
- \* New required files:
  - SYSTEM/PANDA
  - SDL2/INTERP3M
- \* COLDSTART/TAPE - changed to check for "SYSTEM" tape first

## UTILITIES

### CLEAR/START

- \* 12.0 cassette required
- \* CPY name table slot - program named here will be executed whenever COPY, ADD, COMPARE, or DIR entered
- \* PAN name table slot (new) - program named here will be executed whenever SYSTEM/PANDA commands entered

Note: All DEBUG code now in GISMO2/GISMO3.  
Old GISMO/DEBUG had a slight 4% performance degradation. The new GISMO2/GISMO3 has been improved for 12.0 to offset this overhead.

## UTILITIES

### SYSTEM/ELOGOUT

\* Disk pack and unit error statistics now reported

### QWIKLOG & SYSTEM/LOGOUT

\* SMCP & MMCP times, code & data overlays now  
included for primary, DMS, and IBASIC environments

### LOGCONVERT

\* DMS-STRUCTURE-NUMBER expanded to PIC S9(5) COMP

## UTILITIES

### RD

- \* UP <family-name> - gives files in use
- \* UF <file-id> - gives users of a file

### CANDE

- \* Exact number of sectors obtained on a SAVE
- \* Auto sequencing of JOB and DATA files
- \* User controls duplicate file handling  
on SAVE AS command with SW 7

## UTILITIES

### DMPALL

- \* PAGE.SIZE, LOWER.MARGIN, LINEFORMAT
- \* Can file equate or modify LISTFILE

### SYSTEM/COPY

- \* Multiple copy requests – different files to different packs on single pass of tape
- \* Update and access dates of original and copy will match
- \* MANDATORY:
  - Error handling: abnormal terminate on hard errors; request of operator assistance if pack or tape not on line (IL not allowed)
  - MR response to duplicate file condition: abnormal terminate
- \* Summary listings – now include reel number (except number 1), time, and date
- \* STATUS command – displays name of tape or disk
- \* IN USE message now FILE OPEN OUTPUT OR LOCKOUT
- \* TASKVALUE attribute now set to:
  - 0 if copy completed successfully
  - 1 if could not compare because file split on reel boundary
  - 1 if any error

## UTILITIES

### SYSTEM/PACKCOPY

Reference: System Support Letter #34

- \* Used to dump user packs to tape
- \* Uses SYSTEM/COPY syntax, ie. = for !=
- \* Files retrieved from tape by SYSTEM/COPY
- \* COPY & COMPARE
  - copy, rewind, compare, then on to next reel
- \* Run by itself to get 100 ips rate (25 ips with other programs in mix)

## UTILITIES

### User Pack Handling

11.0 - MCP updated unit portion of disk addresses

12.0 - Now SYSTEM/PANDA:

- \* Absolutizes
- \* Removes temporary files
- \* Generates correct EOF pointers for protected files
- \* If fatal error - ACCEPT to operator

## MCP Enhancements

Reference: DOCUMENT/SYSNOTE1  
SOG VOL. 1 #1151982-002

### MCP OPTIONS

- \* RFAC & TOUT de-implemented
- \* WFL (new)

### Operational Commands

#### Changed:

- \* DM - DEBUG must be on or must enter with  
job number of zero
- \* PO - list of units separated by commas, and  
PO of pack with users will be forgotten
- \* ML - maximum now 255
- \* SM - STATUS option for reporting abnormal conditions  
{irrecoverable write error on dictionary,  
structure write error, . . . }
- \* QF,MO - work properly when internal name begins with  
a digit
- \* RB,RF - commas required between list elements



Operational Commands      (continued)

- \* FM, IL, KC, KP, OL, OU, PG, RL, SD:
  - can use PACK <name> instead of unit mnemonic
  
- \* HALT - causes an orderly halt like the interrupt button; entering GO causes system to continue like the start button

## MCP ENHANCEMENTS

### OPERATIONAL COMMANDS

#### New:

- \* ER - displays error rates on removable/fixed drives and can reset historic rate
- \* PASSWORD - permanently changes password associated with a usercode
- \* DL - replaces BD which will be de-implemented on 13.0; allows designation for backup files to be different from the designation for dump files

#### De-implemented:

- \* QC - Use NC QUIT

## MCP ENHANCEMENTS

### OPERATIONAL COMMANDS

Enhanced responses:

- \* CU - virtual disk utilization
- \* TO - options in alphabetical order
- \* MH - diagnostic messages clarified
- \* SW - valid command acknowledged
- \* TI - interpreter, MMCP, SMCP times, total processor and elapsed time displayed
- \* Tape creation date displayed with tape label (LIB=1)

## MCP ENHANCEMENTS

### File Naming

- \* Must specify DISK for system disk  
[ie. SYSTEM/MAKEUSER ON DISK]
- \* Blanks in pack-id position causes system to:
  - check pack associated with usercode, then
  - check default for that file type (set by DL)
- \* Use of \*[usercode] - causes syntax error on 12.0

Note: user-named backup print files follow same rules

### FILE TYPES

- \* New - UPL2CODE, UPL2SYMBOL

## MCP ENHANCEMENTS

### File Handling

#### Prevention of data loss through PROTECTED attribute

- 11.0 - System halt or abnormal termination of program caused loss of records added or whole file
- 12.0 - Recovery of protected files by automatic reinstatement of EOF pointer; all file types can be protected

#### \* Establish protection:

- MO <program> FI <file> PROTECTION = PROTECTED
- OR
- Set AUDIT to true for ANSI74 indexed files

#### \* Impact:

- does not allocate at open
- enters name in directory
- SEQUENTIAL ACCESS files: writes known bit pattern after record added; used to re-establish EOF pointer in case of recovery
- RANDOM ACCESS files: constantly updates EOF pointer in disk file header

## MCP ENHANCEMENTS

### FILE HANDLING

Reference: COBOL74 #1168622-001

#### ISAM Performance Improvements:

- \* When auditing, SMCP initiates I-O but no longer waits for I-O COMPLETE
- \* ISAM processing runs on either master or slave
- \* Buffers no longer fill memory - are reused as much as possible
- \* Probability of problems stemming from multiple users are greatly reduced

## SYSTEM/IDA

Reference: DOCUMENT/IDA (ISSA)  
DOCUMENT/SYSNOTE1  
System Memory Dump Analyzer #1152055-001

### Major Enhancements

- \* Analyzes program dumps
- \* New Dumpfile name - DUMPFIL/PM<next backup #>
- \* Analyzes DMS structures
  - open data bases
  - jobs using a data base
  - assigned buffers
  - currents for any DMS job or structure
  - overview of DMS structures in memory
- \* Better queue information
  - display queues by type  
  (ie. Station, COBOL74, family, etc.)
  - condensed display easier to read
  - data displayed
- \* Increased disk analysis
  - Decodes Result Descriptors (RD) and  
  Extended Result Descriptors (ERD)
  - Decodes the Result Status fields
  - Displays different RD/ERD breakdowns  
  on command  
  (ie. 206/207, DSC/DPC, 659/677, etc.)
  - Will decode "test" RD/ERD on command

## SYSTEM/IDA

### Major Enhancements (continued)

#### \* Improved STATE analysis

- shows owner of code segments in A-Stack  
(ie. SDL2, GISMO3, MMCP, etc.)
- Channel/Unit Busy table
- Unit Statistics table
- Reference Address table
- More interpreter information

#### \* Memory Link analysis

- Usage totals by job, by type
- Detailed link analysis



## SYSTEM/IDA

Reference: DOCUMENT/SYSNOTE1  
HELP command in SYSTEM/IDA

### Function

- \* Package Dump
- \* Interactive Analysis of System Dump
- \* Interactive Analysis of Packaged Dump
- \* Interactive Analysis of Program Dump

### Execution

- \* ODT:
  - PM system command
  - EX with concatenated AC
  - EX <interactive AX commands>
- \* Remote Terminal:
  - EX <interactive remote file>
  - PASS <IDA not attached to remote file>
  - ON <IDA is attached to remote file>

### Commands

- \* SCROLL commands
- \* CONTROL commands
- \* PROGRAM OBJECT commands
- \* SYSTEM OBJECT commands

## SYSTEM/IDA

### IDA Commands

#### SCROLL Commands:

+ (increment line number)

- (decrement line number)

<line number> , ie. 1 - to see first line

\$ (last line)

HELP displays which line you are currently on

CONTROL commands most useful for program  
dump analysis:

Help

Get - GET DMP<nn>

File - view file information blocks

Memory - hex or character list

Smachine - view data area dump (switches,  
data values, perform stack)

Print - obtain a printer listing

Option - UPPERCASE, NO LINE (release a  
printer backup file); LIST (send  
to both printer and terminal)

BYE - sign off

PROGRAM OBJECT commands - less frequently used

RSN

FPB

ESN

PPB

FIB

SPAD

SYSTEM OBJECT commands - useful for system  
memory dump analysis

## SYSTEM/IDA

### Typical Command Sequence

[Non-SDL2/UPL2 program dump analysis]

- 1) EX SYSTEM/IDA - from a remote ODT
- 2) GET DMP01 - access program dump
- \*3) SMACHINE - view data values
- 4) + - next page of data values
- 5) OPTION UPPERCASE - translate lower to upper case for printing
- \*6) PRINT SMACHINE - obtain hard copy of portion of dump
- 7) OPTION NO LINE - release printer backup file opened in previous step
- 8) BYE - sign off

\*Note - SMACHINE analysis for non-SDL2 dumps displays in 132 column "wraparound" fashion. This makes screen analysis of dumps more difficult to read than the printed output.

## DMSII

Reference: DOCUMENT/SYSNOTE1  
DMSII Functional Description #1152444-001  
DMSII Host Language Interface #1152451  
DMS/DASDL #1152089-001

### Major Enhancements

- \* Maximum number of structures:  
increased from 255 to 996 per data base
- \* COBOL74, COBOL74B, RPGII:  
may access structures greater than 255
- \* Global initial values in DASDL
- \* Update capability in DMS/INQUIRY

## DMSII

### Enhanced SM Command

\* Allows user to check flags in dictionary

\* Syntax:

SM <dbname> ON <pack> STATUS

\* Responses:

NORMAL - no abnormal condition exists

RECOVERY REQUIRED - data base currently closed,  
close was abnormal

WRITE ERROR - irrecoverable write error on  
dictionary itself, full dump recovery  
required

REORGANIZATION - reorganize has been initiated but  
not completed

STRUCTURE WRITE ERROR - at least one structure had  
a write error; run DBMAP to identify  
structure

## DMSII

### Utilities

- \* DMS/RECOVERDB - PT is set
  
- \* DMS/REORGANIZE - goes to EOJ with a syntax error  
on any abort
  
- \* DMS/DBMAP - COUNT ENTRIES option  
- maximum records reported
  
- \* DMS/AUDITANALY - CLUSTER option

## DMSII

### DASDL

#### Global Initial Values:

- \* Set default values for ALPHA or NUMBER items

  - ALPHA - blanks

  - NUMBER - zeroes

- \* Can be overridden for specific items

- \* Syntax example:

```
DEFAULTS (ALPHA (INITIALVALUE IS BLANKS),
```

```
NUMBER (INITIALVALUE IS 0));
```

#### No libraries by default:

- \* Use \$COBOLIB to generate COBOL68 and COBOL74 libraries

- \*Use \$RPGLIB to generate RPG libraries

- \*COBOL74B obtains "invoke" information directly from dictionary.

## DMSII

### Recovery

- \* Audit file format:
  - 11.0 has 104 bit audit buffer trail
  - 12.0 has 132 bit
  
- \* CLEAR/START, dump, partial dump recoveries can run under 11.0 or 12.0 with audit files from either release
  
- \* 12.0 DMS/RECOVERDB must be used with:
  - 12.0 MCP
  - 12.0 Data Base Dictionary
  
- \* 11.0 DMS/RECOVERDB must be run with:
  - 11.0 MCP
  - 11.0 Data Base dictionary
  - Patch #5 to DMS/RECOVERDB



## DMSII

### Conversion

11.0 data bases must be converted to 12.0

- \* Same process as from 10.0 to 11.0
- \* DASDL compile under 12.0:
  - SCONVERT in source or
  - CO <dbname> DMS/DASDL LI; AXSCONVERT
- \* Conversion affects dictionary only
- \* Cannot skip over Release 11.0 for data bases
- \* No conversion required for user programs:
  - Change to code file PPB done automatically
  - first BOJ may take longer

## DMSII

### Convert 12.0 data base BACK to 11.0

\* Same process as from 11.0 to 10.0

1) Run DMS/DBBACK under 12.0:

EX DMS/DBBACK FILE DICTIONARY NAME <dbname>/DICTIONARY

2) DMS/DASDL compile under 11.0: \$UPDATE

\* Potential problems:

1) Data base has more than 255 structures

2) Data base has less than 255 structures BUT  
structure numbers are greater than 255

DMS/DBBACK will check for 12.0 changes:

If finds structure numbers greater  
than 255 - message on ODT, abort

If finds global initial values - ACCEPT  
on ODT, user has choice to continue  
or abort

## DMSII

### DMSII/INQUIRY

Reference: DOCUMENT/SYSNOTE1  
DMSII/INQUIRY #1108875-001

- \* Larger code size due to conversion to SDL2
- \* Must run 12.0 DMS/BUILDING before using
- \* All entries are audited if data base is audited
- \* Update capability (security may be specified):
  - CREATE
  - UPDATE
  - DELETE

## DATACOMM ENHANCEMENTS

Reference: DOCUMENT/SYSNOTE1

### AP1350 Terminal Printer

- \* Tabletop, dot matrix, microprocessor based
- \* Can print forward and backward at:
  - 200 characters/sec or
  - 35 characters/sec for letter quality or
  - 60 characters/sec for block graphics
- \* Provides 10, 12, 17.1 characters per inch  
and double width characters for each size
- \* Provides super-script, sub-script, double  
strike, and continuous underscore
- \* Text justification and proportional spacing
- \* Color graphics:
  - 4 color ribbon
  - All points addressable graphics
  - Block graphics
- \* 2048 character buffer
- \* 300 - 19200 BPS (maximum recommended - 9600)
- \* Auto-answer and auto-disconnect

## DATACOMM ENHANCEMENTS

### NDL

- \* For Japanese and Chinese terminals:
  - New STATION variable - STATION(TRANSLATIONREQUIRED)
  - New TERMINAL parameter - SPECIALALPHABETOPTION
  
- \* Optional maximum message size for QUEUE INPUT:
  - QUEUE INPUT [ <text size expression> ]
  
- \* Error logging to ELOG:
  - LOG ERROR

DATACOMM ENHANCEMENTS

REMOTE/PRINT

AP1350 qualified:

\* Terminal type - 74

\* Available options:

CHARSPERINCH - 10, 12, 16

LINESPERINCH - 6, 8

FONT - E7, S7

GRAPHICS - unprintable characters to  
question mark

## DATACOMM ENHANCEMENTS

### SMCS

- \* CHANGE changed to MAKE
- \* REMOVE changed to CLEAR
- \* PASSWORD changed to SYSTEM PASSWORD
- \* JOBS file may be called any name

## DATACOMM ENHANCEMENTS

### RJE3770

Reference: DOCUMENT/SYSNOTE1  
RJE3770 Manual #1168408

- \* Similar to HASP
- \* Same commands as HASP for same functions
- \* HELP query
- \* Conversion from HASP - execute RJE3770 and create parameters
- \* Adaptor pool

\* Differences:

<u>RJE3770</u>	<u>HASP</u>
SDLC	Bi-sync
SNA (IBM 3770)	HASP/JES/JES2
1 SDL2 program	3/4 SDL programs
No spooling	Spooling
Error recovery	Error detection



## DATACOMM ENHANCEMENTS

Reference: DOCUMENT/SYSNOTE1  
BNA Installation Manual #1151874-001

### BNA

- \* Station Transfer
  - up to 50 stations
  - DEPENDENT MODE virtual terminal capability
  - protocol matches large systems' 3.5 protocol
- \* Port Level Manager
  - saves PORT OPEN request
  - SUBPORT OPEN ALL WAIT waits for last subport
- \* X.25
  - USER DATA portion of CALL REQUEST packet must begin with @C8@
- \* File Transfer
  - FOREIGN CODE files can be copied to B1000 and marked as Type Code
  - improved performance for files with BLOCKSIZE greater than MAXTEXTSIZE

## COBOL74B

Reference: DOCUMENT/SYSNOTE1  
COBOL74 Manual #1168622-001 (COBOL74B)  
COBOL74 Manual #1108883

### COBOL74B versus COBOL74

- \* Compiler options
  - must precede with SET, RESET or POP followed by an equal (=)
  - can be in library files (\$LIBDOLLAR)
- \* Non-standard coding - syntax errors for placed "noise" words
  - such as ARE, ADVANCING, CONTAINS, EVERY, IS, LINES, SENTENCE, SIZE, STANDARD, UNIT, WITH
- \* Task attributes used in a conditional expression, CHANGE or MOVE
  - such as JOBNUMBER, PRIORITY, CHARGE, TITLE (of program)
- \* Interpreter is COBOL74B/INTERP
  - provides some execution speed improvement
- \* Faster compile

COBOL74B versus COBOL74 (continued)

- \* Syntax errors always below the line and indicate when scan resumed
- \* Uses DMS dictionary for DATABASE INVOKES [no DMS libraries]
- \* Requires more resources
- \* 16 million user identifiers
- \* 4094 code segments
- \* Interactive debugging through COBOL74B/RAID
- \* First release restrictions
  - Independent segment altered paragraphs
  - No DEBUG module

## WFL

Reference: DOCUMENT/SYSNOTE1  
WFL Manual #1138039-001

### \* Portability Warnings

- many have been removed (greater compliance with B5000/6000/7000 3.5 release)

### \* START Statement

- can contain a parameter list like the START system command

### \* Full Expressions

- can contain more than two operands and parentheses to reorder precedence
- new file-naming operands: /=, ON, \*

### \* COPY Statement

- multiple copy requests like SYSTEM/COPY
- DATE option now allows a string primary as well as an integer constant
- string expressions used with KIND and DENSITY have been changed to string primaries (place string expressions in parentheses for currently working jobs)

### \* System Commands

- PASSWORD
- RUN and COMPILE:
  - a. Extended to system command level
  - b. Do not permit task variables and data decks
  - c. Only allowable type of expressions are constants

## WFL

- \* **MODIFY Statement**
  - same function as MODIFY system command
- \* **Data Decks**
  - input inserted directly after RUN or COMPILE
  - a question mark (?) in column one terminates the deck
- \* **INSTRUCTION Statement**
  - displays information on the ODT only when requested by the IB system command
  - IB with an instruction number displays that instruction
  - IB alone displays the last instruction encountered
- \* **TASKVALUE Attribute**
  - allows communication between WFL, COBOL74B, and SYSTEM/COPY
  - can be set or queried by WFL and COBOL74B
  - set by SYSTEM/COPY to 0, -1, or 1 depending on completion status
- \* **TIME Intrinsic**
  - time, date, system type, and operating system release level
- \* **Terminating WFL**
  - WFL EOJ, WFL END, or WFL STOP
  - no AX messages

## PASCAL

Reference: DOCUMENT/SYSNOTE1  
PASCAL Manual #1152048

### General

- \* General purpose, high level language
- \* Based on ALGOL-60
- \* Easy to learn, good teaching tool

### B1000 Implementation

- \* Interpreter - PASCAL/INTERP4M
- \* Compiler
  - written in PASCAL, one pass
  - automatically segments code
  - CANDE compile (file type - PASCAL) or normal COMPILE command (compiler - PASCAL)
  - PASCAL/LIBRARY needed at compile time if trigonometric functions used
- \* Program dump analysis - EX PASCAL/ANALYZER  
or PM <n> SW1 = 1
- \* Run-time errors (DS/DP condition) reported by source line number
- \* Can modify file attributes
- \* Adheres to ANSI standards with some restrictions

## PASCAL

### Standards Considerations/Restrictions

- \* Statements – subset of Large Systems PASCAL
- \* Compiler options – subset of ANSI standard
- \* All characters of identifiers significant
- \* All data types are available
- \* FOR loop control variables – restricted to local
- \* String type – declare as  
PACKED ARRAY [1..n] OF CHAR
- \* Parameters cannot be passed from one procedure  
another
- \* Not implemented: PACK, UNPACK, DISPOSE,  
non-local GOTO
- \* For dynamic allocation – use MARK and RELEASE
  - Memory is divided into a stack and  
a heap which grow toward each other
  - Static data items loaded onto the stack
  - Dynamic variables allocated in the heap  
and manipulated through predefined  
procedures (MARK, NEW, RELEASE)

## NEW PERIPHERALS

### Memorex Disk Drives

Reference: Memorex Installation Manual #1151917  
System Support Letter #38

- \* B9484-12 (677-33) - 252 MB Removeable  
B9494-5 (659-1) - 542 MB Fixed
- \* B1990 systems only
- \* Sequential vs. Interlaced  
B1990 - does not support sequential
- \* Initialization:  
PACK/INIT - FC (Factory Convert) to write new  
label, relocate table  
- RR (Single Sector Relocate)
- \* Temperature critical in use of fixed drive:  
- One hour warm-up  
- Ensure doors closed and latched

### Laser Printer Emulator

- \* B9290-31
- \* Speed - 30 pages per minute
- \* ODEC printer interface
- \* Features
- \* Reliability



## UPL2

- \* DISPLAY - verbatim
- \* WAIT - change for port files
- \* TYPE - length in bits
- \* WITH - <identifier> as <variable>
- \* Global dynamics
  - separate compilation
  - dynamic variable
- \* Sub-records
  - like COSPATIAL
  - embedded records
- \* Explicit sizes for sets
- \* SEQCHECK - syntax error

UPL2

(continued)

\* New file attributes:  
Reference Communicates and Structures Manual

PRINTCOPIES

DUMMYFILE

UNITNAME

PROTOCOL

INSECURE

SIMPLE .HDRS

ALTERDATE

\* Only available on B1000 GEMCOS release tape

SYSTEM/IDA

IDA Commands

SCROLL Commands |

+ {increment}  
- {decrement}  
1  
\$  
{number}

CONTROL commands |

Help  
Get  
Job  
Environment  
File  
Layout  
Memory  
Smachine  
Print  
PM  
Option  
BYE  
?BRK

PROGRAM OBJECT commands |

DATA  
RSN  
ESN  
FIB  
IPC  
PPB  
FPB  
SPAD

SYSTEM/IDA

IDA Commands (continued)

SYSTEM OBJECT commands |

BNA	IOAT
CHANNELS	IPC RUL
CODE	LINKS
CSV	MPB
DCH	NAMETABLE
DFH	ODT
DISK	PACKS
DMS	PSR
ERRORTABLE	QUEUES
HINTS	STATE
INTERPS	TAPE
	TRACE

SYSTEM/IDA

CONTROL Commands

Help-----  
|-----<command>-----|

Get-----  
|-----<title>-----  
|-----<number>-----|

\*Job-----  
|-----Summary-----  
|-----<number>-----  
|----- + -----|

Environment-----  
|-----<number>-----  
|----- LAYOUT -----  
|----- FILE <title>-----|  
|----- SMACHINE --<interp>-----|

SYSTEM/IDA

CONTROL Commands (continued)

```
*File-----  
|----- Summary -----|  
|-----<number>-----|
```

```
*Layout----- Summary -----  
|-----<num>-----|  
|-----|Var-----| |
|-----|-----<name>-----|  
|-----|-----|-----<address>-----|  
|-----|-----|-----<range>-----|
```

<address>

```
----- <number> -----  
|----- @ <number> @ -----| |----- ABS -----|
```

<range>

```
--- [ <number> ----- ] ---  
|-----<number>-----|
```

SYSTEM/IDA

CONTROL Commands

\*Memory-----  
- H - | | - + - | | -<address>-  
- C - | | - - - | |  
- A - | |  
- R - | |  
- L - | |

\*Smachine-----  
----- Control -----  
- Display -- | -<address>---- |  
- Layout ----  
- Name -----  
- Procedure-  
  
- DISPLAY-BASE --<address>-----  
- Virtual -----<address>-----

Print-----  
|-----<command>-----|

SYSTEM/IDA

CONTROL Commands (continued)

Option	
	-ADDRESSES-----
-NO--	-CODECHECK-----
	-DOUBLESPEACE----
	-LIST-----
	-NEWLINE-----
	-RESTOREBUFFER--
	-SimpleType-----
	-UPPERCASE-----
	-LIMITARRAYS-----
	-<number>-----
	-NESTLIMIT-----
	-<number>-----
	-LINE-----
	--<title>-----
	-NO LINE-----
	-LINESPERSCREEN-----
	-<number>-----
	-REMOTE-----
	-NO REMOTE-----



SYSTEM/IDA

CONTROL Commands (continued)

PM-----  
|-----NO CODECHECK-----|

BYE-----

?BRK-----

SYSTEM/IDA

PROGRAM OBJECT Commands

DATA-----  
|-----DICT-----|  
|-----SEGS-----|  
|-----INTERP-----|

RSN-----  
|-----Eventlist-----|  
|-----Integrity-----|  
|-----Overlay-----|  
|-----Task-----|

ESN-----  
|-----Communicate-----|

FIB-----  
|-----Dict-----|

PPB-----

FPB-----

SPAD-----

IPC-----

SYSTEM/IDA

SYSTEM OBJECT Commands

BNA-----

CHANNELS-----

CODE-----  
|-----CHECK-----|

CSV-----

DFH-----

DCH-----

DISK-----  
|-----ERD-----  
|-----TEST-----  
|-----<unit mnemonic>-----|-----<str>-----  
|-----<type>-----<cntrl>-----|

DMS---<DMS options>-----

ERRORTABLE-----

HINTS-----  
|-----COMM-----  
|-----DCPU-----  
|-----TT-----

INTERPS-----

IOAT-----

IPC RUL-----

SYSTEM/IDA

SYSTEM OBJECT Commands (continued)

LINKS-----  
|-----  
|---ALL-----  
---SUMMARY-----

MPB-----

NAMETABLE-----

ODT-----  
|-----  
|---QUEUE-----  
---DESCRIPTOR-----

PACKS-----

PSR-----

QUEUES-----  
|-----  
|---ALL-----  
|---C74-----  
|---QUEUE <id>-----  
|---REMOTE-----  
---STATION [<lsn>]-----

RD-----<unit mnemonic>-----TEST-----  
|-----|-----|-----  
|---<hardware type>---|---<str>---|-----

STATE-----

TAPE-----

TRACE-----

SYSTEM/IDA

SYSTEM OBJECT Commands [DMS]

```
DMS--ALL-----|
      | -NO-BUFFERS--|
      |-----|
      | -HELP-----|
      |-----|
      | -SUMMARY-----|
      |-----|
      | -INTEGRITY-----|
      |-----|
      | -AUDIT-----|
      |-----|
      | -DATABASE-----|
      |   |<data base name>-----|
      |   | SELECTONLY|
      |-----|
      | -STRUCTURE-----|
      |   |<structure number>-----|
      |   | SELECTONLY|
      |-----|
      | -JOB STRUCTURE-----|
      |   |<structure number>-----|
      |   | SELECTONLY|
      |-----|
      | -JOB-----|
      |   |<job number>-----|
      |   | SELECTONLY|
      |-----|
      | -JOB CURRENT-----|
      |   |<invoke number>-----|
      |-----|
      | -CURRENT-----|
      |   |<job number>-----|
      |   |<invoke number>|
      |-----|
      | -JOB BUFFER-----|
      |   |<area number>-<block number>|
      |-----|
      | -BUFFER-----|
      |   | -TOUCH-BITS-ON-----|
      |   |<area number>-<block number>|
```

WHAT TO ORDER

<u>11.0</u>	<u>MANUAL</u>	<u>12.0</u>
1151982	SOG I	1151982-002
1152097	SOG II	1152097-001
1152006	CANDE	1152006-001
1057197-004	COBOL	
1168622	COBOL74	1168622-001
1152089	DMS/DASDL	1152089-001
1152444	DMSII Func Desc	1152444-001
1152451	DMSII Host Lang Inter	
1108875	DMSII Inquiry	1108875-001
1152246	NDL/LIBRARY Func Desc	1152246-001
1152196	Network Cont Inst	1152196-001
1152014	NDL	1152014-001
1152253	MCS Func Desc	1152253-001
1152279	SMCS	1152279-001
1152287	SYCOM	
	RJE3770	1168408
1152303	HASP	
1152329	RJE Host Inst	
1152311	RJE Terminal Inst	
1151974	BNA Inst	1151974-001
	PASCAL	1152048
1138039	WFL	1138039-001
1152055	Sys Mem Dump Analyzer	1152055-001
1152337	EM3270/BSC	
1152345	EM3270/SNA	
1152261	Job Spawn Func Desc	

WHAT TO ORDER      (continued)

REFERENCE CARDS:

1152238	Network Cont
1151990	RD
1152022	Remote Print
1152212	SMCS
1152220	SYCOM

Note: Form number in 11.0 column if new manual or PCN on 11.0

T H A T ' S   A L L   F O L K S ! !



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B 1000 SYSTEM SOFTWARE RELEASE MARK 12.0

DOCUMENT/SYSNOTE1

SYSTEM NOTES

```
*****
*
* TITLE:  B1000 SYSTEM SOFTWARE RELEASE MARK 12.0 (DOCUMENT)
*
* FILE ID:  DOCUMENT/SYSNOTE1                TAPE ID:  DOCUMENT
*
* *****
* ***
* ***          PROPRIETARY PROGRAM MATERIAL          ***
* ***
* ***  THIS MATERIAL IS PROPRIETARY TO BURROUGHS CORPORATION AND ***
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* ***
* *****
```

B 1000 System Software Release  
Mark 12.0.000

General Information Section

Introduction

The B1000 Mark 12.0 system software release contains new products and enhancements that you have requested including the following CUBE resolutions:

A faster COBOL74 compiler (COBOL74B)

An interactive COBOL74B debugger program (RAID)

Initial release of the B1000 PASCAL compiler

Update added to DMS/INQUIRY

Increased number of DMSII structures

Substantial performance improvement in ISAM, Audited multiprocessing mix

Backup files not lost after a Clear/Start

Print a backup file while it is being created

At your request, new sections have been added to this document. They are:

- a. Coming up on the Mark 12.0 release
- b. Performance characteristics
- c. Memory and Disk requirements

SYSNOTE2 and SYSNOTE3

The printer backup files DOCUMENT/SYSNOTE2 and DOCUMENT/SYSNOTE3 are included with this release. The DOCUMENT/SYSNOTE2 file is a report on Field Communication Forms (FCF) outstanding for the Mark 12.0 initial release. The DOCUMENT/SYSNOTE3 file is a report on Mark 11.0 FCF's resolved with the Mark 12.0 initial release.

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Mark 12.0.000

Coming Up On The Mark 12.0 Release

Mark 12.0 Coldstart Required

A system Coldstart is required to come up on the Mark 12.0 software. You have been supplied with a Mark 12.0 version of the Coldstart/Tape or the Coldstart/Disk cassette to accomplish this. If you have any questions on performing the Coldstart procedure, please refer to the Software Operation Guide Volume one.

Mark 12.0 CLEAR/START Cassette Required

A Mark 12.0 CLEAR/START cassette is required to Clear/Start the Mark 12.0 system software.

Mark 12.0 Compatibility

The Mark 12.0 software release will accept code and data files that were used with the Mark 11.0 software. It is very important, however, that patch 11.0.183 be installed on your system prior to switching to Mark 12.0. This is a requirement in the event that it should become necessary to transport Mark 12.0 code or DMSII files back to a Mark 11.0 system. It is also recommended that you archive all your Mark 11.0 code files prior to running them with the Mark 12.0 software. Please refer to the DMSII section of this document for further considerations on transporting DMSII files between Mark releases.

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Mark 12.0.000

Mark 12.0 Operational Changes

The differences between Mark 12.0 and previous releases are summarized below. The sections referred to are all included within this document.

1. If the commands CHANGE, COMPILE, MODIFY, and REMOVE are to be used in the same context as on prior releases, the new system option WFL must be reset after the Mark 12.0 system is coldstarted. With the WFL system option set, these commands must fully conform to the WFL syntax rules or a syntax error will occur. See WFL System Option in the MCP II section.
2. The SYSTEM/PANDA program is now a required system file. A new entry to the Name Table <PAN> has been added. SYSTEM/PANDA now handles many disk pack housekeeping tasks that were handled by the MCP prior to Mark 12.0. The SYSTEM/PANDA program must reside on the system disk. See User Disk Pack Handling in the MCP II section.
3. The SDL2 interpreter is now named SDL2/INTERP3M
4. The increase in the number of DMSII structures from 255 to 996 requires a DMS/DASDL run to convert the data base to 12.0. If a Mark 12.0 data base acquires a structure number greater than 255 (this may occur even if the current total number of structures is less than 255), the data base cannot be taken back to the Mark 11.0 release.  
  
DMS/BUILDINQ must be run on data bases that are to be accessed by the Mark 12.0 DMS/INQUIRY program.  
  
The DMSII section should be studied before coming up on the Mark 12.0 release.
5. The syntax for the WFL KIND and DENSITY statements have been changed. See KIND and DENSITY Statements in the WFL section.
6. The BNA X.25 USER DATA portion of a CALL REQUEST packet must now start with @C8@. See X.25 in the BNA section.
7. The BNA station transfer protocol has been changed to match the Burroughs large systems' Mark 3.5 release protocol. See Station Transfer in the BNA section.
8. The CANDE <SAVE AS> function works differently in Mark 12.0. See <SAVE AS> Duplicate File Handling in the CANDE section.

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Mark 12.0.000

Mark 12.0 Operational Changes (continued)

9. The ISSA program has been renamed SYSTEM/IDA (Interactive Dump Analyzer) in the Mark 12.0 release. The SYSTEM/IDA program now provides analysis of both System memory dumps and Program memory dumps. All analyzing functions that were provided by the DUMP/ANALYZER program are now provided by the SYSTEM/IDA program. The DUMP/ANALYZER program is no longer supported in Mark 12.0 and later releases.
10. The SYSTEM/IDA program packages the dumpfile with a new naming convention. See New DUMPFILe Naming Convention in the SYSTEM/IDA section.
11. The LOG/CONVERT program has changed the DMS Statistics Record. See DMS Statistics Record Change in the LOG/CONVERT section.
12. The GISM03/DEBUG and GISM02/DEBUG programs no longer exist after Mark 11.0. All the Debug functions of GISMO are now handled by GISM03 and GISM02.
13. The Network Controller Quit (QC) system command has been de-implemented in Mark 12.0. It has been replaced by the NC QUIT system command.
14. The syntax of the the DMS/AUDITANALY STRUCTURE command has been expanded. See DMS/AUDITANALY in the DMSII section.
15. The DMS/DASDL program no longer generates COBOL library files by default. A \$COBOLIB statement must be included in existing DASDL sources. See No Libraries By Default in the DMS/DASDL section.
16. The REMOTE.KEY file attribute is no longer supported as of the Mark 12.0 release.
17. Mark 12.0 System logs cannot be analyzed with earlier software releases.
18. The Mark 12.0 COLDSTART/TAPE program checks for the presence of a System tape before starting the coldstart process.
19. The RFAC and TOUT system options have been removed. These functions are now performed automatically.
20. The BRGR system option has been removed. The functions provided by this option are now provided by the VLCP or VLI0 system options.

B 1000 System Software Release  
Mark 12.0.000

Mark 12.0 Operational Changes (continued)

21. The syntax for the DM system command has been tightened. See System DM Validation in the MCPII section.
22. Commas are now required between list elements in P0, RB, and RF strings.
23. The MCP processing of the P0 system command has changed. See Delayed Power Off for Disk in the MCPII section.
24. The BD system command will be phased out during the 12.0 release. It is being replaced with a new system command <DL>. See New DL System Command in the MCPII section.
25. The meaning of the PROTECTED attribute value of the file attribute PROTECTION has been changed. See New Meaning For Protected Value in the MCPII section.
26. The maximum Mix Limit has been increased. See New Mix Limit in the MCPII section.
27. The HALT system command has been changed. See Expanded Halt System Command in the MCPII section.
28. The blocking factor for backup files has been changed. See Improved Blocking For Backup Files in the MCPII section.
29. Job processor times recorded in the System Log now include the MMCP and SMCP resource times for each job. See Improved Processor Time Statistics in the MCPII section.
30. Jobs that run with the TIME program attribute will be affected by the added MMCP and SMCP resource times that are now added to their time. See Improved Processor Time Statistics in the MCPII section.
31. There have been some changes made to the B1000 file naming conventions. See File Naming Convention Changes in the MCPII section.
32. An \*(usercode) will result in a syntax error on the Mark 12.0 release. See New Meaning For Asterisk in the MCPII section.
33. The input file for the SYSTEM/BUILDTRAIN program has been changed from INPUT/PC5TABLES to INPUT/PC5-TABLES.

## Performance Characteristics

The performance characteristics herein are determined from measurements on a set of programs known as the Series D mix. While the Series D mix is a good, conservative predictor of performance, the performance estimates given here may not apply to every customer.

The Series D mix contains COBOL74, FORTRAN and RPG compiles and executions. A sort program and a SYSTEM/COPY is included. Data Communications is simulated by a program that continually sends messages to a TD830 that is programmed to echo the message back to the sending program. The sending program reads this message and checks for correctness. More than one hundred thousand I/O's are processed in the Series D mix including indexed sequential and DMS operations.

The performance of 12.0 as compared to 11.0 using the Series D mix is unchanged.

The thrashing point of the Series D mix has been determined by measurements where the amount of available memory was reduced during Clear/Start. It has increased from 504 KB to 512 KB for a total of 8 KB.

COBOL74 compilation is three times faster with a new compiler called COBOL74B.

Substantial improvements have been made to RPG and COBOL programs that use ISAM writes with AUDITED set in a multiprocessing mix. This performance improvement is available for programs compiled with the COBOL74 compilers. It is also available to RPG programs using \$IXSEQ.

The time required to archive a user pack while invoking the COMPARE option has been significantly improved with the Mark 12.0 SYSTEM/PAKCOPY program.

BNA file transfer performance has been improved for files that have a BLOCKSIZE greater than MAXTEXTSIZE.

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Mark 12.0.000

Memory Requirements

The following is a comparison of memory requirements for the last two releases of software for the B 1000.

B 1000 MEMORY REQUIREMENTS IN BYTES	Mark 11.0	Mark 12.0
-----	-----	-----
STATIC SYSTEM SPACE	51843	52566
MMCP	4926	4927
	-----	-----
TOTAL SYSTEM SPACE	56769	57493
RPG program + INTERPRETER	13803	13803
	-----	-----
B 1000/RPG program THRASHING POINT	70572	71296

NOTE

These memory requirements do not reflect the memory requirements shown in the Mark 11.0 system notes because a different RPG program was used.



B 1000 System Software Release  
Mark 12.0.000

Disk Requirements

The code sizes of the Mark 12.0 and Mark 11.0 system files are shown below. All sizes are in disk segments.

See Programs Converted to SDL2 in the Mark 12.0 Enhancements for the list of other programs that require more disk storage on the Mark 12.0 release.

PROGRAM	MARK 11.0	MARK 12.0
MCPII	13046	13853
GISM03	49	69
SYSTEM/INIT	38	38
SDL2/INTERP	52	--
SDL2/INTERP3M	--	52
SDL2INTRIN/AGGREGATE	53	57
MCPII/MICRO-MCP	166	169
SYSTEM/COPY	1080	1145
SYSTEM/CONTROLLER	2162	2189
SYSTEM/ODT	470	546
SDLINTRIN/AGGREGATE	132	132
SYSTEM/PANDA	614	1139

B 1000 System Software Release  
Mark 12.0.000

Program and Feature Support Changes

The following products/features are no longer supported with the Mark 12.0 and later System Software releases.

CHECK/LOAD-DUMP

Superseded by the SYSTEM/COPY program.

SYSTEM/LOAD-DUMP

Superseded by the SYSTEM/COPY program.

The LOAD system command

Superseded by the COPY system command.

DUMP/ANALYZER

Superseded by the Interactive Dump Analyzer (SYSTEM/IDA) program.

B 1000 System Software Release  
Mark 12.0.000

Released Software

The following program products are included in the Mark 12.0 B 1000 system software. Where applicable, the title and form number of the manual for the associated program product are included.

B 1000 System Software Release  
Mark 12.0.000

MASTER CONTROL PROGRAM II

Style number: B1000MP2  
Catalog number: 3258 6679

Software Manual: Unless otherwise noted, the MASTER CONTROL PROGRAM Software is documented in: Software Operation Guide Volume 1, form number 1151982-001.

	Compile Date	Patch Level
	-----	-----
✓ BASIC/INTERP3M	/ /	12.0.000
✓ BASINTRN3/AGGREGATE	/ /	12.0.000
✓ COBOL/INTERP1M	/ /	12.0.000
✓ COBOL74/INTERP1M	/ /	12.0.000
✓ COBOL74B/INTERP1M	/ /	12.0.000
✓ FOR-INTRIN	/ /	12.0.000
✓ FORTRAN/INTERP1M	/ /	12.0.000
✓ FORTRAN77/INTERP2M	/ /	12.0.000
✓ FORTRAN77/INTRINSICS	/ /	12.0.000
✓ GISM03 (or GISM02 for International)	/ /	12.0.000
✓ IBASIC/INTERP	/ /	12.0.000
✓ IBASIC/INTRINSICS	/ /	12.0.000
✓ MCP II	/ /	12.0.000
✓ MCP II/MICRO-MCP	/ /	12.0.000
✓ PASCAL/INTERP4M	/ /	12.0.000
✓ PASCAL/LIBRARY	/ /	12.0.000
✓ RPG/INTERP1M	/ /	12.0.000
✓ SDL/INTERP1M	/ /	12.0.000
✓ SDLINTRIN/AGGREGATE	/ /	12.0.000
✓ SDL2/INTERP3M	/ /	12.0.000
✓ SDL2INTRIN/AGGREGATE	/ /	12.0.000
✓ SYSTEM/CONTROLLER	/ /	12.0.000
✓ SYSTEM/COPY *	/ /	12.0.000
✓ SYSTEM/INIT	/ /	12.0.000
✓ SYSTEM/ODT *	/ /	12.0.000
✓ SYSTEM/PANDA *	/ /	12.0.000

\* These program products are documented in:  
Software Operation Guide volume 2,  
form number 1152097-001.

B 1000 System Software Release  
Mark 12.0.000

CASSETTE UTILITIES

Style number: B1000XMT  
Catalog number: 3258 7370

Software Manual: The CASSETTE UTILITIES software is documented in:  
Software Operation Guide Volume 2,  
form number 1152097-001.

	Compile Date	Patch Level
	-----	-----
CLEAR/START	/ /	12.0.000
COLDSTART/DISK	/ /	12.0.000
COLDSTART/TAPE	/ /	12.0.000
DISK/DUMP	/ /	12.0.000
PACK/INIT	/ /	12.0.000
STANDALONE/DISK-DUMP	/ /	12.0.000

SYSTEM UTILITIES

Style number: B1000UTL  
Catalog number: 3258 7370

Software Manual: Unless otherwise noted, the SYSTEM UTILITIES  
software is documented in:  
Software Operation Guide Volume 2,  
form number 1152097-001

	Compile Date	Patch Level
	-----	-----
CASSETTE/LOADER	/ /	12.0.000
CASSETTE/MAKER	/ /	12.0.000
CLEAR/START	/ /	12.0.000
CODE/ANALYZER	/ /	12.0.000
COLDSTART/DISK	/ /	12.0.000
COLDSTART/TAPE	/ /	12.0.000
CONVERT/BACKUP	/ /	12.0.000
CREATE/ISAM	/ /	12.0.000
CREATE/TABLE	/ /	12.0.000
DC/AUDIT	/ /	12.0.000
DISK/ALLOCATOR	/ /	12.0.000
DISK/DUMP	/ /	12.0.000
DISKETTE/COPY	/ /	12.0.000
DISKPACK/INTERCHANG	/ /	12.0.000

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Mark 12.0.000

	Compile Date	Patch Level
	-----	-----
DMPALL	/ /	12.0.000
FOREIGN/TAPECOPY	/ /	12.0.000
GISMO/SA	/ /	12.0.000
INITIALIZE/ANALYZER	/ /	12.0.000
INPUT/PC5-TABLES	/ /	12.0.000
INTRINSICS/AGGR-MAKER	/ /	12.0.000
LOGCONVERT	/ /	12.0.000
MICRO-MCP/DEBUG	/ /	12.0.000
PACK/INIT	/ /	12.0.000
QWIKLOG	/ /	12.0.000
RD	/ /	12.0.000
RDCOPY **	/ /	12.0.000
REMOTE/LISTER	/ /	12.0.000
REMOTE/PRINT	/ /	12.0.000
SDL/INTERP1U	/ /	12.0.000
SDL/SSC	/ /	12.0.000
SSLOAD/MAKCAS	/ /	12.0.000
STANDALONE/DISK-DUMP	/ /	12.0.000
SYSTEM/BACKUP	/ /	12.0.000
SYSTEM/BUILDTRAIN	/ /	12.0.000
SYSTEM/COMPARE	/ /	12.0.000
SYSTEM/DISK-DUMP	/ /	12.0.000
SYSTEM/DISK-INIT	/ /	12.0.000
SYSTEM/ELOGOUT	/ /	12.0.000
SYSTEM/FILE-INIT	/ /	12.0.000
SYSTEM/ICMD-INIT	/ /	12.0.000
SYSTEM/IDA *	/ /	12.0.000
SYSTEM/ISVERIFY	/ /	12.0.000
SYSTEM/IS-MAINT	/ /	12.0.000
SYSTEM/LDCONTRL	/ /	12.0.000
SYSTEM/LOAD-CAS	/ /	12.0.000
SYSTEM/LOGOUT	/ /	12.0.000
SYSTEM/MAKEUSER	/ /	12.0.000
SYSTEM/MARK-SEGS	/ /	12.0.000
SYSTEM/MLFIRMWARE	/ /	12.0.000
SYSTEM/ODTLOGOUT	/ /	12.0.000
SYSTEM/PACKCOPY	/ /	12.0.000
SYSTEM/PACKCOPY-T	/ /	12.0.000
SYSTEM/SQUASH	/ /	12.0.000
SYSTEM/TRAINTABLE	/ /	12.0.000
TAPECOPY	/ /	12.0.000

\* SYSTEM/IDA is documented in the B1000 Systems Memory Dump Analyzer Functional Description Manual, form number 1152055

\*\* Support product

B 1000 System Software Release  
Mark 12.0.000

SYSTEM SORT

Style number: B1000 SRT/STP/STG  
Catalog number: 3258 7180

Software Manual: SORT Manual,  
form number 1152071-001

	Compile Date	Patch Level
	-----	-----
SORT	/ /	12.0.000
SORT/MERGE	/ /	12.0.000
SORT/QSORT	/ /	12.0.000
SORT/TAPESORT	/ /	12.0.000
SORT/UTILITY	/ /	12.0.000
SORT/VSORT	/ /	12.0.000

BASIC COMPILER

Style number: B1000BAS  
Catalog number: 3258 6067

Software Manual: BASIC Language Manual,  
form number 1067535

	Compile Date	Patch Level
	-----	-----
BASIC	/ /	12.0.000

B300/B500 INTERPRETER

Style number: B1800B3I  
Catalog number: 2814 3758

Software Manual: B500 Interpreter Manual,  
form number 1127552

	Compile Date	Patch Level
	-----	-----
B500/IEP	/ /	12.0.000
B500/INTERP2U	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

BURROUGHS NETWORK ARCHITECTURE

Style number: B1000BNS  
Catalog number: 2964 7542

Software Manuals: Burroughs Network Architecture (BNA) Installation  
and Operation Manual,  
form number 1151974-001

BNA Architectural Description Ref. Man. (Vol. 1)  
form number 1132172

BNA Network Control Ref. Man. (Vol. 2)  
Form number 1132180

	Compile Date	Patch Level
	-----	-----
BNA/AUDIT	/ /	12.0.000
BNA/HSLIO	/ /	12.0.000
BNA/HSP	/ /	12.0.000
BNA/MSGs	/ /	12.0.000
BNA/NSM	/ /	12.0.000
BNA/NSP	/ /	12.0.000
BNA/PLM	/ /	12.0.000
BNA/SIZEFILE	/ /	12.0.000
BNA/TRACE	/ /	12.0.000
RSVP (DOCUMENT/RSVP on Support Tape)	/ /	12.0.000
RSVP/TEACH	/ /	12.0.000

COMMAND AND EDIT (CANDE)

Style number: B1000CE1  
Catalog number: 3258 6174

Software Manual: CANDE Installation and Operation,  
form number 1152006-001

	Compile Date	Patch Level
	-----	-----
CANDE	/ /	12.0.000
CANDE/ANALYZER	/ /	12.0.000
CANDE/TEACH-FILE	/ /	12.0.000



B 1000 System Software Release  
Mark 12.0.000

COBOL COMPILER

Style number: B1800COB  
Catalog number: 2814 3535

Software Manual: COBOL Language Manual,  
form number 1057197-003

	Compile Date	Patch Level
	-----	-----
COBOL	/ /	12.0.000
COBOL/XREF	/ /	12.0.000

COBOL '74 COMPILER

Style number: B1000CB1  
Catalog number: 3258 6166

Software Manual: COBOL74 Language Manual,  
form number 1108883-001

	Compile Date	Patch Level
	-----	-----
COBOL74	/ /	12.0.000
MCS74	/ /	12.0.000

COBOL '74B COMPILER

Style number: -----  
Catalog number: -----

Software Manual: COBOL74 Language Manual,  
form number 1168622-001

	Compile Date	Patch Level
	-----	-----
COBOL74B	/ /	12.0.000
MCS74	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

DATA MANAGEMENT SYSTEM II

Style number: B1000DM2  
Catalog number: 3258 6640

Software Manuals: DMS/DASDL Language Manual,  
form number 1152089-001

DMSII Functional Description,  
form number 1152444-001

DMSII Host Language Interface,  
form number 1152451

	Compile Date	Patch Level
	-----	-----
DMS/ACR	/ /	12.0.000
DMS/ACR-DBG	/ /	12.0.000
DMS/AUDITANALY	/ /	12.0.000
DMS/DASDL	/ /	12.0.000
DMS/DASDLANALY	/ /	12.0.000
DMS/DBBACK	/ /	12.0.000
DMS/DBLOCK	/ /	12.0.000
DMS/DBMAP	/ /	12.0.000
DMS/DECOMPILER	/ /	12.0.000
DMS/RECOVERDB	/ /	12.0.000
DMS/REORGANIZE	/ /	12.0.000

DMS II INQUIRY

Style number: B1000DM1  
Catalog number: 3258 6232

Software Manual: DMSII Inquiry Manual,  
form number 1108875-001

	Compile Date	Patch Level
	-----	-----
DMS/BUILDING	/ /	12.0.000
DMS/HELPING	/ /	12.0.000
DMS/INQUIRY	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

IBM 3270 BISYNC EMULATOR

Style number: B1000EBS  
Catalog number: 3628 1236

Software Manual: EM3270/BSC Manual,  
form number 1152337

	Compile Date	Patch Level
	-----	-----
EM3270/BSC	/ /	12.0.000

IBM 3270 SNA EMULATOR

Style number: B1000ESN  
Catalog number: 3628 1244

Software Manual: EM3270/SNA Manual,  
form number 1152345

	Compile Date	Patch Level
	-----	-----
EM3270/SNA	/ /	12.0.000

FORTRAN COMPILER

Style number: B1000FOR  
Catalog number: 3258 6273

Software Manual: FORTRAN Language Manual,  
form number 1081882-001

	Compile Date	Patch Level
	-----	-----
FORTRAN	/ /	12.0.000
FORTRAN/INTMAKER	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

FORTRAN '77 COMPILER

Style number: B1000FR1  
Catalog number: 3258 6299

Software Manual: FORTRAN77 Language Manual,  
form number 1152113

	Compile Date	Patch Level
	-----	-----
FORTRAN77	/ /	12.0.000
FORTRAN77/ANALYZER	/ /	12.0.000

HASP REMOTE TERMINAL PROGRAM

Style number: B1000HAS  
Catalog number: 3258 6364

Software Manual: HASP Reference Manual,  
form number 1152303

	Compile Date	Patch Level
	-----	-----
HASP	/ /	12.0.000
HASP/MODIFIER	/ /	12.0.000
HASP/SPOOL	/ /	12.0.000
HASP/DISPLAY	/ /	12.0.000

INTERACTIVE BASIC

Style number: B1000BA1  
Catalog number: 3258 6075

Software Manual: Interactive BASIC Language Manual,  
form number 1152105

	Compile Date	Patch Level
	-----	-----
IBASIC	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

NETWORK DEFINITION LANGUAGE

Style number: B1000NDL  
Catalog number: 3258 6752

Software Manuals: Network Definition Language Manual,  
form number 1152014-001

Network Controller Installation Manual,  
form number 1152196-001

NDL/LIBRARY Functional Description,  
form number 1152246-001

	Compile Date	Patch Level
	-----	-----
NDL	/ /	12.0.000
NDL/LIBRARY	/ /	12.0.000
<del>SYSTEM/CONDEBUG</del> <i>Q</i>	/ /	12.0.000
SYSTEM/CONFIGURE <i>→ UTL</i>	/ /	12.0.000

PASCAL

Style number: B1000---  
Catalog number: ---- ----

Software Manual: Pascal Language Manual,  
form number 1152048

	Compile Date	Patch Level
	-----	-----
PASCAL	/ /	12.0.000
PASCAL/ANALYZER	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

REMOTE JOB ENTRY HOST

Style number: B1000R10  
Catalog number: UNKNOWN

Software Manual: RJE Host Installation and Operation Manual,  
form number 1152329

	Compile Date	Patch Level
	-----	-----
RJE/AUTOBACKUP	/ /	12.0.000
RJE/CONTROLLER	/ /	12.0.000
RJE/MESSAGES	/ /	12.0.000

REMOTE JOB ENTRY TERMINAL

Style number: B1000R41 / R61  
Catalog number: 3258 7123 / 3258 7131

Software Manual: RJE Terminal Installation and Operation Manual,  
form number 1152311

	Compile Date	Patch Level
	-----	-----
RJE	/ /	12.0.000

REMOTE JOB ENTRY IBM3780

Style number: B1000PWR  
Catalog number: 3258 7065

Software Manual: RJE3780 Manual,  
form number 1152295

	Compile Date	Patch Level
	-----	-----
RJE3780	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

REPORT PROGRAM GENERATOR (RPG)

Style number: B1000RPG  
Catalog number: 3258 7099

Software Manual: RPG Language Manual,  
form number 1152063

	Compile Date	Patch Level
	-----	-----
RPG	/ /	12.0.000
RPG/BTF	/ /	12.0.000
RPG/REORD	/ /	12.0.000
RPG/REORG	/ /	12.0.000

REMOTE JOB ENTRY IBM3770 SNA (RJE3770)

Style number: B1000---  
Catalog number: ---- ----

Software Manual: RJE3770 Installation, Operation, & Functional Desc.,  
form number 1168408

	Compile Date	Patch Level
	-----	-----
RJE3770	/ /	12.0.000

SUPERVISORY MESSAGE CONTROL PROGRAM (SMCS)

Style number: B1000SMC  
Catalog number: 3258 7198

Software Manual: SMCS Installation, Operation, & Functional Desc.,  
form number 1152279-001

	Compile Date	Patch Level
	-----	-----
SMCS	/ /	12.0.000

B 1000 System Software Release  
Mark 12.0.000

SYSTEMS COMMUNICATION MODULE (SYCOM)

Style number: B1000SYC  
Catalog number: 3258 7289

Software Manual: System Communications Module (SYCOM),  
form number 1152287

	Compile Date	Patch Level
	-----	-----
SYCOM	/ /	12.0.000

TIME ANALYSIS AND BILLING SYSTEM (TABS)

Style number: B1000TAB  
Catalog number: 3258 8741

Software Manual: Time Analysis and Billing System (TABS) Manual,  
form number 1090669

	Compile Date	Patch Level
	-----	-----
TABS/ACCTS	/ /	12.0.000
TABS/BILLING	/ /	12.0.000
TABS/DMS	/ /	12.0.000
TABS/ERR	/ /	12.0.000
TABS/EXEC	/ /	12.0.000
TABS/HDWR	/ /	12.0.000
TABS/LOGOUT	/ /	12.0.000
TABS/MIX	/ /	12.0.000
TABS/REPORTGEN	/ /	12.0.000
TABS/SUM	/ /	12.0.000
TABS/UPDATE	/ /	12.0.000

TEXT/EDITOR

Style number: B1000TE1  
Catalog number: 3258 7321

Software Manual: Text Editor Reference Manual,  
form number 1090610

	Compile Date	Patch Level
	-----	-----
TEXT/EDITOR	/ /	12.0.000



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Mark 12.0.000

USER PROGRAMMING LANGUAGE COMPILER

Style number: B1000UPL  
Catalog number: 3258 7362

Software Manual: SDL/UPL Language Manual,  
form number 1137833-001

	Compile Date	Patch Level
	-----	-----
SDL/ERRORS	/ /	12.0.000
SDL/XMAP	/ /	12.0.000
SDL/XREF	/ /	12.0.000
UPL	/ /	12.0.000

WORK FLOW LANGUAGE

Style number: B1000WFL  
Catalog number: 3628 1251

Software Manual: Work Flow Language (WFL) Manual,  
form number 1138039-001

	Compile Date	Patch Level
	-----	-----
SYSTEM/WFL	/ /	12.0.000
WFLINTRIN/AGGREGATE	/ /	12.0.000

IBM 1400 INTERPRETER

Style number: B100014M  
Catalog number: 2814 3741

Software Manual: 1400 Interpreter Manual  
form number 1127560

	Compile Date	Patch Level
	-----	-----
1400/CREATE1311	/ /	12.0.000
1400/IEP	/ /	12.0.000
1400/INTERP2U	/ /	12.0.000

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Mark 12.0.000

Field Communication Procedures

Introduction

The procedure for reporting problems for the B 1000 system software is described in the following paragraphs.

Field Communication Form (FCF)

The standard form for reporting B 1000 system software problems is the Field Communication Form (FCF), form number 3027057 (06/82). This is a single page, six-copy form which provides the Product Assurance and Support (PA&S) group with information to process and resolve the report.

The following information and guidelines have been included in the System Notes in order to ensure proper understanding of the procedure and requirements when submitting an FCF.

When a problem is encountered, it should be reported to the local Burroughs representative. If the problem cannot be resolved at a local level, an FCF should be filled out and sent to the local Burroughs representative who will forward it to PA&S through the District office, or through Subsidiary or Distributor Head Offices in the International Group.

The local personnel who submit FCF's must be certain that the FCF is accompanied by all of the necessary supporting documentation or media.

The address for PA&S in Santa Barbara is:

Burroughs Corporation  
PA&S - B 1000 Systems Support  
6300 Hollister Avenue  
Goleta, California 93117-3180 USA

When the FCF is received by PA&S, a priority is assigned and receipt is acknowledged by mail within three working days. A thorough investigation of the report is conducted. If the report does not require a software change, PA&S answers the FCF and returns the answer to the originator through the District/Subsidiary Office.

If the report requires software or documentation changes, the FCF is sent to the Programming Activity for their action. When the correction is scheduled or made, the Programming Activity sends the answer to PA&S and PA&S forwards the answer to the originator through the District/Subsidiary Office.

The following guidelines must be followed when submitting FCF's:

Write a separate FCF for each problem to be reported.

Use FCF form number 3027057 (6/82).

Make sure all copies are legible, preferably typewritten.

Ensure that all attachments are labeled with the FCF number and are listed on the FCF form.

There are specific instructions that must be followed when completing the FCF form. These instructions are listed on the back of the last copy (originator's copy) of the FCF form.

#### Attachments to a FCF

The FCF should include any information that may help solve the problem. Some attachments that should always be considered for inclusion are:

1. A full system memory dump that has been packaged by the SYSTEM/IDA program. A packaged dumpfile should be submitted on a SYSTEM/COPY library tape. Do not send the actual SYSTEM/DUMPFIL on tape because the memory dump file must be analyzed on the system on which it was created.
2. The appropriate SINGLE or DUAL PROCESSOR FAULT DOCKET as documented under MCP FCF Submission Requirements in the MCP section of this document.
3. A listing containing a formatted analysis of a program dump file, if applicable.
4. A program trace file listing, if applicable, such as a DC/AUDIT program listing for data communications programs, a SMCS/TRACE file listing for the SMCS program, or a CANDE/ANALYZER listing for the CANDE program.
5. A copy of the ODT log entries for the pertinent time period.
6. A code listing of the erroneous compiler output.
7. A source listing of user programs involved in the problem.
8. Source and object files on machine readable media. Include all library files referenced in the source.
9. If the problem is reproducible, a small test case on machine readable media is most helpful.

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Mark 12.0.000

10. Observations, made by site personnel, that could be pertinent to the problem.
11. Any notes, information, and comments by the person analyzing the problem.

**Return of Included Media**

Machine readable media is returned if requested. Each item to be returned must be labeled with the return address.

**Memory Dumps**

Both the program dump and full system dump are valuable. Program dumps are useful when the problem is restricted to the program environment, otherwise submit a full system dump. A full system dump must be included with all program dumps when reporting a DMSII problem.

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BNA Submission Requirements

1. SYSTEM/IDA listing of the BNA program.
2. If the problem occurs when communicating with another system, include a DC/AUDIT listing showing the line activity during the problem and specify the following options: IO.DESC=1, OUTPUT=H, BDLC.
3. ODT log showing the events that transpired.
4. Listing of the initialization file used.
5. The BNA/AUDIT-FILE file that is the result of running the BNA/TRACE program. Refer to the B 1000 Systems Burroughs Network Architecture (BNA) Installation and Operation Manual for the details on setting the appropriate program switches.

CANDE Submission Requirements

1. CANDE/ANALYZER listing.
2. CANDE program dump.
3. Network controller compile listing. Be sure that there are no \$NO LIST cards in the source deck.
4. Source file on machine readable media (where applicable).

COBOL68/COBOL74 Submission Requirements

1. Source media to include source code, object code and all files necessary to reproduce the problem.
2. The ODT listing.
3. A program dump if the problem involves an abort situation, and for ISAM program aborts, a system dump.
4. If appropriate, the program output and/or KA's for the files.

#### CREATE/ISAM Submission Requirements

1. Source media to include the data file that was used during execution of the utility.
2. The ODT Listing.
3. Packaged system dump, if a halt occurred, otherwise a formatted analysis of a program dump.

#### DMSII Submission Requirements

For most DMSII problems, a full System Memory Dump is needed. A small machine readable test case which duplicates the problem is also most helpful. The system dump should be packaged using the PM command and submitted on tape so it may be analyzed with the SYSTEM/IDA program. Any FCF which deals with integrity errors should include the data base dictionary, relevant data files, and the audit files from the time in question. FCF's dealing with any data base utilities should always include the data base dictionary plus any other files needed to support the report. A machine readable copy of the DMS/DASDL source file should also be included.

Any problems associated with a reorganization should include any of the following which are available.

1. The original dictionary.
2. The DASDL update source.
3. The listing from the DASDL update compile.
4. The reorganization control file.
5. The listing from the execution of DMS/REORGANIZE along with the resulting dictionary and relevant data files.

Any problems with the DMS/INQUIRY program should include a hard copy trace along with a program dump, if applicable. Please refer to the DMSII Inquiry Language Manual, form number 1108875-001 for instructions on obtaining the trace.

#### EM3270/BSC and EM3270/SNA Submission Requirements

1. Program dump of the EM3270/BSC or EM3270/SNA program.
2. Network controller compiler listing. Be sure that there are no \$ NO LIST cards in the source deck.
3. Listing of the failing file or command.
4. User program source files on machine readable media (where applicable). 1600 PE tape is the preferred media.
5. DC/AUDIT listing showing the affected lines.
6. System dump if the problem affects the whole system.

#### FORTRAN/FORTRAN77 Submission Requirements

1. If the problem can be reproduced with a very short FORTRAN77 program, a listing can be submitted, otherwise source media is required. Source media should include source code, object code and all files necessary to reproduce the problem.
2. ODT listing.
3. Program dump if the problem involves an abort situation.
4. If appropriate, the program output and/or KA's of the files.
5. Instructions for reproducing the problem.

#### GISMO Submission Requirements

1. For channel related problems, please submit a GISMO trace of the channel activity.
2. Refer to FCF Submission Requirements for MCPPII for other GISMO FCF requirements.

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MCPII Submission Requirements

1. A packaged system memory dump.
2. Be sure to note your system type (1700, 1800, etc.).
3. One of the following two pages should be submitted with each Field Communication Form which applies to system hangs or system halts. These forms may be photocopied for that purpose.



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B 1000 Dual Processor Fault Docket

OPERATOR: \_\_\_\_\_ SYSTEM: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

In the event of a system hang or system halt, please answer the following (circle the appropriate response):

1. Does the system respond to ODT input? YES NO
2. Are the RUN lights ON?  
Master: ON OFF Slave: ON OFF  
If both are OFF, then go to step 6.
3. Press the INTERRUPT pushbutton. Are the RUN lights ON?  
Master: ON OFF Slave: ON OFF  
If both are OFF, then go to step 6.
4. Press the HALT pushbutton. Are the RUN lights ON?  
Master: ON OFF Slave: ON OFF  
If both are OFF, then go to step 6.
5. Press HALT and CLEAR. Call Field Engineer for assistance.
6. Is the ERROR light ON?  
Master: ON OFF Slave: ON OFF
7. Is the STATE light ON?  
Master: ON OFF Slave: ON OFF
8. What are the values in the following registers?

Master		Slave	
L	LR	L	LR
T	CC	T	CC
X	CD	X	CD
Y	PERM	Y	PERM
A	PERP	A	PERP
FA		FA	

9. Write the halt definition below:  
Master:

Slave:

10. Comments:

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Mark 12.0.000

B 1000 Single Processor Fault Docket

OPERATOR: \_\_\_\_\_ SYSTEM: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

In the event of a system hang or system halt, please answer the following (circle the appropriate response):

1. Does the system respond to ODT input? YES NO
2. Is the RUN light ON?  
ON OFF  
If OFF, then go to step 6.
3. Press the INTERRUPT pushbutton. Is the RUN light ON?  
ON OFF  
If OFF, then go to step 6.
4. Press the HALT pushbutton. Is the RUN light ON?  
ON OFF  
If OFF, then go to step 6.
5. Press HALT and CLEAR. Call Field Engineer for assistance.
6. Is the ERROR light ON?  
ON OFF
7. Is the STATE light ON?  
ON OFF
8. What are the values in the following registers?  

L	LR
T	CC
X	CD
Y	PERM
A	PERP
FA	
9. Write the halt definition below:
10. Comments:

#### MICRO-MCP Submission Requirements

Refer to FCF Submission Requirements for MCP II.

#### NDL Submission Requirements

1. Program dump of the network controller.
2. Network Controller compiler listing. Be sure that there are no \$NO LIST cards in the source deck.
3. User program compile listing (where applicable).
4. User program source files on machine readable media (where applicable).
5. DC/AUDIT listing.
6. System dump if the problem affects the whole system.
7. SMCS trace and or CANDE/ANALYZER listing if these products are involved.

#### REMOTE/PRINT Submission Requirements

1. ODT listing.
2. Network controller compile listing.
3. If the terminal is type 79, include a description of the printer.
4. If the REMOTE/PRINT program has an abnormal terminate, include a packaged dump of the REMOTE/PRINT program.
5. If the REMOTE/PRINT program hangs, include DC/AUDIT listing and a packaged dump of the REMOTE/PRINT program.
6. If the line hangs, include a DC/AUDIT listing and a packaged dump of the network controller.
7. If the REMOTE/PRINT program does not properly reproduce the print file, include the backup file and the incorrect listing.

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RD Submission Requirements

1. Program dump.
2. Network controller compile listing.
3. Screen listing via the PRT command (where applicable).
4. ODT listing.
5. SMCS trace listing (where applicable).

RJEHOST Submission Requirements

1. Program dump.
2. DC/AUDIT listing.
3. Debug list of RJE/CONTROLLER
4. Debug list of RJE/AUTOBACKUP.
5. Network controller compiler listing. Be sure that there are no \$NO LIST cards in the source deck.

RJE Submission Requirements

1. Program dump.
2. DC/AUDIT listing.

RJE3770 Submission Requirements

1. Program dump.
2. DC/AUDIT listing.

RJE3780 Submission Requirements

1. Program dump.
2. DC/AUDIT listing.
3. Network Controller compile listing.

4. ODT listing.

RPG Submission Requirements

1. Program source file.
2. If the RPG compiler aborts, include an SYSTEM/IDA listing of the RPG compiler's dumpfile in hardcopy or a printer backup file on tape.
3. If the RPG compiler generates an incorrect code file, include all data files required to run the RPG program.
4. If the RPG compiler or RPG program causes any B 1000 system halts, include an SYSTEM/IDA listing of the analyzed system memory dumpfile, in hardcopy or a printer backup file on 1600 PE tape.
5. Include instructions on how to duplicate the problem.

SMCS Submission Requirements

1. Program dump.
2. SMCS trace listing.
3. User program compile listing.
4. Network controller compile listing.
5. A packaged system memory dump.
6. ODT listing.
7. DC/AUDIT listing.

#### SYCOM Submission Requirements

1. Program dump.
2. SYCOM trace file.
3. SMCS trace listing.
4. User program compile listing.
5. Network controller compile listing.
6. A packaged system memory dump.
7. ODT listing.
8. DC/AUDIT listing.

#### SYSTEM/ISVERIFY Submission Requirements

1. Source media to include the global, data and index files for the ISAM file which causes the problem.
2. Print file.
3. ODT listing.

#### SYSTEM/ODT Submission Requirements

1. Program dump.
2. ODT listing.
3. Transferred Log listing.
4. SYSTEM/ODT-QUEUE on a tape.

#### SYSTEM/PANDA Submission Requirements

When submitting an FCF for the SYSTEM/PANDA program the following should be included. If SYSTEM/PANDA aborts, a program dump, ODT LOG and any output produced should be submitted. Otherwise, the ODT LOG, and output produced by SYSTEM/PANDA should be included.

#### SYSTEM/SQUASH Submission Requirements

When submitting an FCF for the SYSTEM/SQUASH program include the KA listing before and after the squash and the ODT LOG.

#### TABS Submission Requirements

1. Instructions on how to duplicate the problem.
2. Any input files and/or specifications needed to run the TABS package, including the log files and TAB/= files. This can be in any B 1000 machine-readable form.
3. Any output files created by the TABS programs in hardcopy or a printer backup file on tape.
4. If a TABS program aborts, include a formatted analysis of the program dump file in hardcopy or a printer backup file on tape.

#### Work Flow Language Submission Requirements

1. WFL source program (JOB).
2. Instructions on how to duplicate the problem.
3. If the WFL source program gets erroneous syntax errors, include a jobsummary with "\$SET LIST" in the source.
4. If the SYSTEM/WFL program aborts or hangs, include the formatted analysis of the program dump file.
5. If the WFL generated object program aborts or hangs, include the formatted analysis of the program dump file and a jobsummary with "JOB SUMMARY = UNCONDITIONAL".

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Mark 12.0 Enhancements

Programs Converted to SDL2

Several programs have been converted to the SDL2 programming language for the Mark 12.0 release. Changing the programming language from SDL to SDL2 saves, on the average, 25 percent of the processor time allocated to that program during its execution.

SDL2 programs also have vastly improved diagnostic capabilities via the Interactive Dump Analyzer (SYSTEM/IDA) program. The SYSTEM/IDA program displays the symbolic names of the SDL2 program components with its dump analysis. This enables the programmer to readily associate the dump information with the source listing of the program.

The provision of carrying these symbolic names with the disk resident SDL2 code files causes the disk resident code file sizes to increase. The following table shows the programs that have been converted to the SDL2 programming language for the Mark 12.0 release and their old and new disk code file sizes:

PROGRAM	SIZE IN DISK SEGMENTS	
	11.0	12.0
BNA/PLM	436	1048
DMPALL	137	340
DMS/DASDLANALY	179	464
DMS/INQUIRY	1959	3569 *
LOGCONVERT	74	250
SYSTEM/DISK-INIT	129	650 **
SYSTEM/ELOGOUT	149	440
SYSTEM/ISVERIFY	181	370
SYSTEM/LOGOUT	114	270
SYSTEM/ODTLOGOUT	32	110
SYSTEM/SQUASH	148	350

\* Includes changes for Update capability

\*\* Includes changes for Memorex disk



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Mark 12.0 Enhancements Description

The following pages list the B 1000 program products that have changes for the Mark 12.0 release and a brief description of those changes.

BNA

Introduction

Burroughs Network Architecture ("BNA") provides a means to perform distributed data processing such as file transfer, remote task initiation and control, logical I/O, inter-process communication, and resource sharing.

New Features and Enhancements

The Mark 12.0 version of the BNA implementation provides a subset of the new Station Transfer Protocol. It also reflects performance improvements. Specifically it contains the following:

Station Transfer:

BNA now allows up to 50 stations to be transferred across a BNA network.

DEPENDENT MODE virtual terminal capability through the BNA Network is now available.

The Mark 12.0 protocol has been changed to match the protocol of the Mark 3.5 release of Burroughs large systems' BNA. All hosts in the network, to which station transfer is to be used, must have the same protocol. Therefore, all hosts must upgrade to the B1000 Mark 12.0 release and to the large systems' Mark 3.5 release at the same point in time.

Data can now be transferred from a terminal on one system to a program on another system and back again. However, because of the difference in datacomm formatting on the various systems (i.e. carriage control, tabbing, homing the cursor, etc.), data may not be represented the same on different systems. Applications must be aware of and make provisions for the different formatting characteristics.

Port Level Manager (PLM)

If a PORT OPEN request occurs when resources are currently exhausted, the PLM will save the PORT OPEN request and process it when resources are available.

<SUBPORT OPEN ALL WAIT> now waits until the last SUBPORT is open before reinstating the program.

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BNA (continued)

X.25

The USER DATA portion of a CALL REQUEST packet must start with @C8@. This requirement was not enforced in the Mark 11.0 release.

File Transfer

The SYSTEM/COPY program will now allow FOREIGN CODE files to be copied to the B1000 and marked as Type = Code.

Performance Improvements:

Performance improvements for file transfer have been realized by modifying Logical I/O handling. Previously, files which had a blocksize greater than (MAXTEXTSIZE - protocol header [36 bytes]) were sent one record at a time. The new algorithm sends data as follows:

BLOCKSIZE when the length of the block is less than or equal to (MAXTEXTSIZE - protocol header)

OR

((MAXTEXTSIZE - protocol header) / record size \* record size) when the size of the block is greater than (MAXTEXTSIZE - protocol header)

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CANDE

Introduction

The B 1000 COMMAND and EDIT (CANDE) program provides the capability of generalized file preparation and updating.

New Features and Enhancements

Optimized Area Size

In prior releases, the CANDE program would obtain 1,000 sectors for a SAVE regardless of the size of the file. As of this release, the area size is computed and the CANDE program obtains the exact number of sectors required to hold the file.

Auto-Sequence for JOB and DATA Files

Auto-Sequence is now applied to blank sequence numbers that are inserted into JOB and DATA Files.

<SAVE AS> Duplicate File Handling

The CANDE program now handles Duplicate File conditions when doing a <SAVE AS> command. Duplicate File handling is conditioned by the setting of Program Switch Seven as follows:

Program Switch 7 = 0 - The <SAVE AS> command causes the removal of the existing file. This is the default setting.

Program Switch 7 = 1 - The <SAVE AS> is not allowed. A message stating that the file already exists is displayed. The duplicate file must be removed before the <SAVE AS> command will be allowed.

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CLEAR/START

Introduction

The CLEAR/START program is a standalone utility used to load and initiate the execution of the MCP. Parameters can be specified which control the MCP operating environment. There are no major changes to this program for the Mark 12.0 release.

NOTE

The new Mark 12.0 CLEAR/START cassette is required for use with the Mark 12.0 System Software.

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COBOL74B

Introduction

The COBOL74B compiler is a one-pass, recursive-descent compiler created to improve the compile speed, error detection, and error reporting of the current B 1000 COBOL74 compiler.

New Features and Enhancements

COBOL74B is a compiler that is intended to replace the COBOL74 compiler where compile time performance is an important factor. There are a few differences between the compilers, but these differences should not affect most of the existing users of the COBOL74 compiler.

Source File Changes

There are differences between the COBOL74B and COBOL74 compilers that may require source changes to an existing COBOL74 program. Changes to the COBOL74 source might be required because of:

1. Constructs that are not implemented for the initial release of COBOL74B.
2. Changes to compiler control lines.
3. Errant noise words in the COBOL74 source.
4. Duplicate user-defined words.

Constructs Not Implemented In The Initial Release

The following constructs are not implemented in the first release of COBOL74B.

DEBUG Module

Debug USE routines and DEBUG-ITEM are scanned by the COBOL74B compiler. However, existence of these items will cause compile errors indicating non-implementation.

COBOL74B (continued)

FEDLEVEL Flagging

\$ FEDLEVEL = <number> is allowed. However, warnings for constructs with FEDLEVEL greater than the current FEDLEVEL will not be generated. Changing FEDLEVEL to a value less than 5 will cause a compile warning.

Independent Segment ALTERed Paragraphs

While the ALTER statement is implemented, GO paragraphs in independent segments that are ALTERed are not implemented for the first release. GO paragraphs in overlayable sections that are ALTERed are required to revert to the initial state of the paragraph when the section is entered via a GO or PERFORM statement or implicitly entered through a fall-through. This particular use of the GO paragraph will cause a compile error.

Compiler control lines

The compiler control lines (\$-lines) in COBOL74B require that an option must be preceded by a SET, RESET, POP or followed by an equals sign, "=". Although this is not required by the COBOL74 compiler, it prevents a problem when compiling the same program with COBOL74 compilers for other Burroughs systems.

"Noise" word scanning

Because of the COBOL74 compiler's primary requirement to compile in minimum memory, some COBOL reserved words are ignored in scanning a COBOL74 program. These words may appear anywhere in the source regardless of context. The COBOL74B compiler will issue syntax errors for improperly placed "noise" words in an effort to prevent non-standard COBOL programs. Some of these noise words are:

ADVANCING	ARE	CONTAINS	EVERY
IS	LINES	SENTENCE	SIZE
STANDARD	UNIT	WITH	

COBOL74B (continued)

Duplicate User Defined Words

The COBOL74 compiler sometimes allows user-defined words to belong to more than one of the disjoint sets that make up user defined words. The COBOL74B compiler does not. Specifically, the use of a mnemonic-name as a data name or paragraph name is not allowed.



COBOL74B (continued)

Other Enhancements

The following enhancements do not require source changes to existing COBOL74 programs. These enhancements are in the DMS interface, addition of task attributes, a new interpreter, performance, and increased compiler limits.

DMS Interface

The DMS interface for COBOL74B does not use the library files generated by DASDL, but directly interprets information from the DMS dictionary. This interface provides more information within the program listing as well as removes the version mismatch problem between the dictionary and the library file. Locating the dictionary on a user pack is accomplished by file equating the DICTIONARY file in the COBOL74B compiler.

Task attributes

Task attributes have been added to the COBOL74B compiler. These attributes may be used in the CHANGE statement, a conditional expression, or as a sending operand of a MOVE statement. Some examples of the use of task attributes are:

```
IF ATTRIBUTE TITLE OF MYSELF = "PAYROLL" ...  
CHANGE ATTRIBUTE PRIORITY OF MYJOB TO 10  
MOVE ATTRIBUTE CHARGE OF MYSELF TO CHECK-CHARGE
```

The currently implemented task attributes are:

CHARGE	MAXLINES	SW3
COMPILETYPE	MAXPROCTIME	SW4
DEBUG	MAXTIME	SW5
ELAPSEDTIME	MAXWAIT	SW6
FILE	MIXNUMBER	SW7
INVISIBLE	PRIORITY	SW8
JOBNUMBER	PROTECTED	TASKVALUE
JOBSUMMARY	SW1	TITLE
MAXCARDS	SW2	USERCODE

COBOL74B (continued)

New COBOL74B Interpreter

The interpreter for COBOL74B is different than the COBOL74 interpreter. This interpreter includes some execution speed improvements as well as some changes to facilitate efficient compilation. The new interpreter is called COBOL74B/INTERP.

Resource Requirements

The COBOL74B compiler requires more memory than the COBOL74 compiler. Memory requirements depend on several characteristics of the program being compiled; so the requirements included here are to be used as a general guide. The minimum memory requirements for compiling programs with less than 10,000 lines are:

47,000 bytes of static memory (MS)  
32,500 bytes of dynamic memory (ME)  
-----  
79,500 bytes of memory

Compiles of programs with more than 3,500 lines will benefit from increased use of dynamic memory. The compiler also requires about 6000 sectors of virtual disk for programs up to 10000 lines. A program compiled with COBOL74B will require additional static disk space amounting to about 0.2 times the disk space required by COBOL74. This additional disk space includes symbol table information for improved program analysis.

COBOL74B (continued)

COBOL74B Performance

While a detailed examination of the compile performance of the COBOL74B compiler has not been completed, preliminary findings show compile rates to be about 2 times the COBOL74 compiler in the data division and about 5 times in the procedure division. These values may change when the COBOL74B compiler is optimized for compile speed. Typical compile rate for a 1500 line program should be about 1000 lines per elapsed minute when listing to a backup file. Processor rates exceeding 2000 lines per minute should be noticed.

Compile speed is not the only performance gain from using the COBOL74B compiler. Error reporting is more consistent in the COBOL74B compiler than in the COBOL74 compiler. All error messages will be displayed below the line in error. Some errors that must be displaced more than one line below the token will still correctly identify the column and line in error. Also, the COBOL74B compiler contains a flexible syntax error recovery mechanism that will continue to be improved in the future.

Compiler Limits

The following table describes the differences in the compile limits between the COBOL74B and the COBOL74 compilers.

Limit	COBOL74B	COBOL74
source lines	16,777,215	16,777,215
user data items	NA	16,383
user identifiers	16,777,215	---
unique PICTURE strings	16,777,215	16,383
terminal procedure references	NA	4,095
procedure references	16,383	16,383
digits in a referenced group	16,383	16,383
digits in an un-referenced group	1,048,575	1,048,575
digits in an elementary item	16,383	16,383
independent code segments	4,094	126
alternate keys for an indexed file	98	98
levels of subscripting	48	48
IPC parameters	128	128
index names in a CD clause	5	5

COBOL74B (continued)

COBOL74B/RAID

Introduction

COBOL74B/RAID allows a user to analyze and debug a COBOL74B program at runtime. Using a COBOL-like interface, the COBOL74B/RAID program provides the COBOL74B programmer with the ability to:

1. Trace a COBOL74B program.
2. Control the flow of a COBOL74B program.
3. Display data items from a COBOL74B program.
4. Modify data items in a COBOL74B program.

COLDSTART/DISK

Introduction

COLDSTART/DISK, a standalone utility, loads the required system programs from a disk to a pre-initialized system disk. The new disk is in the format required by the Mark 12.0 CLEAR/START to load the Mark 12.0 operating system into memory.

NOTE

The new Mark 12.0 COLDSTART/DISK cassette is required for use with the Mark 12.0 System Software.

Required System Files

The required system files for Mark 12.0 are listed below.

MCPII  
MCPII/MICRO-MCP  
GISM03 (or GISM02 for international users)  
SDL2/INTERP3M  
SDL2INTRIN/AGGREGATE  
SYSTEM/ODT  
SYSTEM/INIT  
SYSTEM/COPY  
SYSTEM/CONTROLLER  
SYSTEM/LOAD-CAS (only if no tape drive on system)  
SYSTEM/PANDA

If the COLDSTART/DISK program cannot find the required file on the input disk under the default name, the program prompts the operator for the name of an acceptable substitute. For instance, DMPALL is frequently substituted for SYSTEM/LOAD-CAS.

COLDSTART/DISK (continued)

New Features and Enhancements

The following new features are available in the Mark 12.0 COLDSTART/DISK program:

Memorex Disk Handling

The COLDSTART/DISK program is now compatible with the Memorex 677 removable pack drive (B9484-12) and the Memorex 659-1 fixed disk drive (B9494-5).

ETX Display on System ODT

Pressing the SPCFY key modifies COLDSTART/DISK's screen handling method. The default display method assumes that a CRT ODT's firmware is configured to suppress a received ETX. If this is not the case, press the SPCFY key and the display method is altered to provide a screen that is more readable. The SPCFY key toggles the display method so that pressing the key again returns the display method to the default display method. The screen modification occurs when COLDSTART/DISK expects an operators ODT response.

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COLDSTART/TAPE

Introduction

COLDSTART/TAPE, a standalone utility, loads the required system programs from a B1000 System tape to a pre-initialized system disk. The new disk is in the format required by the Mark 12.0 CLEAR/START to load the Mark 12.0 operating system into memory.

NOTE

The new Mark 12.0 COLDSTART/TAPE cassette is required for use with the Mark 12.0 System Software.

Required System Files

The required system files for Mark 12.0 are listed below.

MCPII  
MCPII/MICRO-MCP  
GISM03 (or GISM02 for international users)  
SDL2/INTERP3M  
SDL2INTRIN/AGGREGATE  
SYSTEM/ODT  
SYSTEM/INIT  
SYSTEM/COPY  
SYSTEM/CONTROLLER  
SYSTEM/LOAD-CAS (only if no tape drive on system)  
SYSTEM/PANDA

COLDSTART/TAPE (continued)

New Features and Enhancements

The following new features are available in the Mark 12.0 COLDSTART/TAPE program:

Memorex Disk Handling

The COLDSTART/TAPE program is now compatible with the Memorex 677 removable pack drive (B9484-12) and the Memorex 659-1 fixed disk drive (B9494-5).

Check For System Tape

The COLDSTART/TAPE program now checks for the presence of a valid SYSTEM tape before starting the coldstart process. This was done to help ensure that an accidental coldstart does not occur.



DMPALL

Introduction

The DMPALL program is a normal-state utility used for file media conversion.

New Features and Enhancements

Page Control For The LIST Command

When using the LIST command, the page format can now be controlled using the LISTFILE file attributes LINEFORMAT, PAGESIZE, and LOWERMARGIN. The default settings for these attributes are:

```
LINEFORMAT:  TRUE
PAGESIZE:    65
LOWERMARGIN: 1
```

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DMSII

Introduction

Outlined below are the changes and enhancements to the DMSII system for the Mark 12.0 release.

New Features and Enhancements

The following paragraphs describe the new features and enhancements for the Mark 12.0 DMSII.

996 Structures

A data base compiled under Mark 12.0 DMS/DASDL may have up to 996 different structures. The pre-Mark 12.0 limit was 255 structures. All DMS utilities support these new data bases with large structure numbers.

In order to implement this change, formats of tables in the data base dictionary have been changed. To take an existing data base from Mark 11.0 to Mark 12.0, DMS/DASDL must be run to convert it:

```
CO <dbpack>/<dbname>/ DMS/DASDL LI; AX$CONVERT
```

or, alternatively, make a card file containing just the \$CONVERT card and compile with DMS/DASDL with that file as the CARD file. This is the same operation that was performed to take a Mark 10.0 data base to Mark 11.0.

NOTE

All data base dictionary files from the Mark 10.0 release and from previous releases must be converted to the Mark 11.0 format prior to being converted to the Mark 12.0 format.

No changes to user programs are required. Although the format of the Program Parameter Block (PPB) has changed, the conversion will happen automatically under both Mark 11.0.183 and Mark 12.0. Code files can be readily transported back and forth between the releases. Because the path dictionary must be verified when a program is first run under a different release, the first BOJ will take more time than subsequent BOJ's.

DMSII (continued)

If it is necessary to take a data base from Mark 12.0 back to Mark 11.0, the Mark 12.0 DMS/DBBACK program must run to produce a half-way dictionary. The conversion of this dictionary back to Mark 11.0 will be completed by a \$UPDATE only compile under the Mark 11.0 DMS/DASDL compiler, and the subsequent execution of the DMS/REORGANIZE program. This operation is the same as it was for taking a Mark 11.0 data base back to Mark 10.0. It is very important to remember that the Mark 11.0 that you back up to must be at patch level 11.0.183 or later. Refer to the DMS/INQUIRY section for other considerations in going back to Mark 11.0.

If, under Mark 12.0, the data base has acquired some structure numbers greater than 255, it cannot be taken back to Mark 11.0. A data base will have high structure numbers if it has more than 255 structures. It may even have high structure numbers if it has fewer than 255 structures, if at some time it had more than 255 structures, and since then structures have been removed with reorganizations.

When, doing an update compile, the DMS/DASDL compiler assigns structure numbers to new structures. It chooses a number not used in the old data base. It would be possible to get high structure numbers by adding and deleting structures in the same reorganization. The structure numbers from the deleted structures will not be reused for the added structures in that same DMS/REORGANIZATION. If this is a concern, the deletions and additions should be done in separate DMS/REORGANIZATIONS. Once a structure exists in the data base there is no way to change its number.

If a data base with structure numbers greater than 255 must be taken back to Mark 11.0, all structures with high numbers must be unloaded with a user program and removed from the data base with a Mark 12.0 reorganization. Once the data base is converted to Mark 11.0, the removed structure may be added back and reloaded. They will be assigned any unused structure numbers. The data base cannot have a total of more than 255 structures under Mark 11.0.

To change the Dictionary file from a Mark 12.0 release back to a Mark 11.0 release, execute DMS/DBBACK as follows:

```
EX DMS/DBBACK FILE DICTIONARY NAME <data base dictionary>
```

DMSII (continued)

The DMS/DBBACK changes the dictionary in place and will go through the same routine that was used in Mark 11.0 to warn the user of this fact. Mark 12.0 DBBACK has two additional messages:

1. If the dictionary has structure numbers which are too large (as stated above), an error message is issued and the program aborts.
2. If the data base has used the global default initial values, a warning message is given. At this point, the operator has the choice to resume or discontinue the program. If the program is resumed, the fields affected by the default initial value will not be initialized under Mark 11.0, so care should be taken when choosing this option.

The format of Mark 12.0 audit files is different. There is a 132 bit audit buffer trail for Mark 12.0 audit files. Audit files created under Mark 11.0 have a 104 bit audit buffer trailer. Clear/Start operations and Dump Recovery operations can be run under either release, with audit trails of either release (requires patch Mark 11.0.005 of the DMS/RECOVERDB program). The Mark 12.0 DMS/AUDITANALY program analyzes both Mark 11.0 and Mark 12.0 audit files. Mark 11.0 DMS/AUDITANALY program will only analyze pre-Mark 12.0 audit files.

#### New Globals Flags

Two new flags have been added to the DMS globals to control the warning messages and actions associated with system locks. These flags are reset by default, but may be set by use of the SM system command.

The Suppress-warnings flag will suppress display of the message "DMS ACCESSROUTINES HAVE BEEN HUNG WAITING FOR A SYSTEM LOCK FOR 30 SECONDS" which occurs when any particular job has been waiting for a system (internal) lock that has not been freed for a half a minute. Such a situation is likely to cause serious response time problems, but at some sites it may be unavoidable and the messages may be a nuisance.

DMSII (continued)

The Fatalerror-enabled flag will permit a DMS FATALERROR to be generated if a DSed job is unable to obtain a system lock which it needs to complete its operation. The job will wait 5 minutes before causing the FATALERROR. In 11.0 a FATALERROR would be generated for such a job (causing the database to be closed for all users). In 12.0 such a job will, by default, simply remain un-DSable, and a clearstart, or possibly the EOJ of another program, will be required to remove it from the mix; but the database will remain open and other users will be unaffected. If it is preferable to have such users generate a FATALERROR, then the Fatalerror-enabled flag should be set.

Neither flag can be set or reset when the database is open.

DMSII (continued)

DMS/AUDITANALY <CLUSTER>

The DMS/AUDITANALY STRUCTURE command allows structure type, name, number, or ALL for specifying which structures are to be analyzed. An additional option

<structure name> CLUSTER

has been added. This option will provide the named data set, all its embedded structures and their embeddeds, and all index structures for the named data set.

DMS/RECOVERDB Protected

DMS/RECOVERDB is now executed with the Protection (PT) program attribute set. This will prevent it from being accidentally DS'ed.

DMS/REORGANIZE Abnormal Terminate

DMS/REORGANIZE now goes to E0J with Syntax Error if it aborts for any reason.

## DMS/DASDL

### Introduction

The DMS/DASDL compiler creates and maintains the dictionary and data structures of the DMSII system.

### New Features & Enhancements

#### Global Initial Values

This feature allows you to specify a global initial value for all data elements. These default ALPHA and NUMBER initial values are assigned to all variables unless you choose to override it for specific variables.

For ALPHA elements this initial value may be specified as:

BLANKS ( ALPHA elements are initialized to @40@ )

For NUMBER elements this initial value may be specified as:

0 (zero) ( NUMBER elements are initialized to @00@ )

#### Comparisons On Conditions

When comparing WHERE and VERIFY clauses, the DMS/DASDL compiler now checks for syntactically identical expressions. If the expressions differ, even if there is no logical change (for example, A=B changed to B=A), a GENERATE or rebuild of the structure will be required. This change will improve the performance for typical compiles.

#### No Libraries By Default

Because the new COBOL74B compiler does not use libraries, the Mark 12.0 DMS/DASDL program will no longer generate libraries by default. COBOL and COBOL74 users must include a \$COBOLIB statement in existing DASDL sources to ensure generation of libraries with each data base update.

B 1000 System Software Release  
Mark 12.0.000

DMS/DBMAP

Introduction

The DMS/DBMAP program analyzes a B 1000 DMSII data base as that data base currently exists.

New Features & Enhancements

COUNT ENTRIES option

A new COUNT ENTRIES option is available in DMS/DBMAP, allowing the total number of entries in an index or embedded structure to be printed and checked. Because this option does not perform the usual integrity checking, it will operate much more quickly than a validity check when only this one piece of information is needed.

Maximum Records Reported

The maximum number of records or tables which a structure can hold is now printed along with the simple population summary. This information is provided when the NAHO, Count Entries, or VALIDITY options are invoked.



## DMS/INQUIRY

### Introduction

The DMSII INQUIRY system consists of three basic components:

1. DMS/BUILDINQ
2. DMS/INQUIRY
3. DMS/HELPINQ

### New Features & Enhancements

#### Update Capability

The DMS/INQUIRY program has been enhanced to offer UPDATE, CREATE and DELETE capabilities which allows you to update a data base without a user written program.

1. CREATE creates a new record and adds it to a data set. It is equivalent to the CREATE and STORE verbs in COBOL.
2. UPDATE modifies the value of the data items in the currently selected record. It then stores the updated record in the data set.
3. DELETE removes the currently selected record from a data set.

#### NOTE

DMS/BUILDINQ must be re-run under Mark 12.0 to accomodate the new dictionary format and to specify additional security restraints with respect to the Update operations. DMS/INQUIRY will not run on Mark 12.0 with a Mark 11.0 Control file.

In the event that you must go back to Mark 11.0, DMS/BUILDINQ must be re-run again. Mark 11.0 DMS/INQUIRY will not run with a Mark 12.0 Control file.

B 1000 System Software Release  
Mark 12.0.000

LOGCONVERT

Introduction

The LOGCONVERT program is a normal-state utility which produces a copy of a system log file in a format that is readable by a COBOL or RPG program.

New Features and Enhancements

DMS Statistics Record Change

The DMS-STRUCTURE-NUMBER field in the DMS Statistics record has been increased from four to six digits. The declaration should now read:

```
02 DMS-STRUCTURE-NUMBER      PIC S9(5) COMP.
```

MCPII

Introduction

The Mark 12.0 MCP is written in the SDL2 language and uses the SDL2/INTERP3M interpreter.

New Features & Enhancements

The following paragraphs describe the new features and enhancements to the Mark 12.0 MCP.

CU System Command Enhancement

The CU system command now includes Virtual Disk utilization in its reply for a job when the DEBUG system option is set.

END Message For BF, CH, PD, RE, RF, and RB System Commands

The BF, CH, PD, RE, RF, and RB system commands now respond with an END message when the LIB system option is set.

ER System Command

The Mark 12.0 software provides error rates for disk units and removable disk packs. These rates will be reported in the Elog, or they may be seen by use of the ER system command.

The ER system command displays error rates on selected disk drive units or packs and optionally resets their historic error rate.

The syntax for the ER system command is:

```
--- ER ----- UNIT -- <unit-id> -----  
      |                                     | | | |  
      |-- PACK -- <familyname> --!  !-- RESET --!  
      |                                     | | | |  
      |-- ALL ----- UNITS -----  
           | | | |  
           |-- PACKS --!
```

MCPII (continued)

File Integrity Implementation

When a system halt causes a Clear/Start, non-protected files which were opened output or input/output can lose new or added records since the disk file header is not updated after every write. In the case of new files, complete files can also be lost since a new file is not in the disk directory.

Mark 12.0 allows recovery of the data in disk files in the event of a system halt or abnormal program termination.

New Meaning For PROTECTED Value

The meaning of the PROTECTED attribute value of the file attribute PROTECTION has been changed. In previous releases, PROTECTION=PROTECTED meant the same as PROTECTION=SAVE, except that the ALLOCATE.AT.OPEN file attribute was reset. In Mark 12.0 PROTECTION=PROTECTED means that the file is to be protected. Straightforward file-equation can be used to revert to the previous mode of operation, e.g.:

```
FI <internal file name> PROTECTION SAVE NO ALL
```

All File Types Protected

The MCP now extends support of protected files to all disk file organizations.

Protected Serial Access Relative

The MCP now supports protected sequential organization (i.e. conventional) files and serial access relative organization files. Random access relative organization files are already protected. ANSI 74 indexed organization files are protected when the audit attribute is set. After a system failure or program failure protected files will lose very little data. If the file is audited, no data will be lost.

MCPII (continued)

File Integrity Implementation (continued)

Protected ANSI74 ISAM Files Audited

For consistency, ANSI74 indexed organization files specified as protected will be audited to provide protection. For these files only, AUDIT and PROTECTED are synonymous. Please refer to appendix C of SOG1 for a detailed comparison of audited and protected.

Protected COBOL and RPG ISAM

For COBOL indexed files and RPG (\$TAG or \$DIGIT8) indexed files, both data and tag files must be protected.

Invoking PROTECTED

Files are protected when the file attribute PROTECTION is set to PROTECTED. For example:

```
MO IMPORTANT/PROGRAM FI SAVEDINPUT PROTECTION PROTECTED;
```

NOTE

Even with PROTECTED, records within an I/O buffer can still be lost in the event of a halt. Records within a buffer can only be protected by using AUDIT.

Transporting Protected Files

If it should ever be necessary to transport a protected Mark 12.0 file back to Mark 11.0, be sure that the Mark 12.0 SYSTEM/PANDA program has had the opportunity to adjust the protected file's End-of-File pointer.

MCPII (continued)

File Integrity Implementation (continued)

How PROTECTED Works

Conceptually, a known pattern is written to disk in order to be able to recover the end of file pointer. The actual process is transparent to the user. The extra I/Os are logged in the block count for the file. A count of the I/O waits caused by protection on the file is also logged. The actual mechanisms used are described in appendix C to SOG1.

When a disk file is protected (PROTECTION=PROTECTED):

1. A new file will be entered into the disk directory at open time.
2. In the event of an unscheduled system halt, the EOFP (End Of File Pointer) reflects the last complete physical write to the disk unit.
3. In the event of abnormal program termination (DS or DP), the EOFP reflects the last logical write.
4. When a program terminates leaving the file open, the action will be as for (3).
5. Indexed organization files will be audited.
6. Delayed.random access files are allowed, even though the user may lose information in updated buffers that have not been written to disk.

NOTE

A logical write is the write performed by the user program.

A physical write is the write of a complete block of information to the actual disk medium. For serial access files, a physical write is normally performed after records\_per\_block logical writes. For random access files a physical write is performed for each block update. For delayed.random access files a physical I/O is performed when a new buffer is required, or if the buffer has been in memory for a long period of time.

MCPII (continued)

Early Reading Of Backup Files

With the Mark 12.0 release, it is now possible to read a print backup file while the file is being created. The early printing of a backup file may be started with the SYSTEM/BACKUP program. A backup file may be examined early with the REMOTE/PRINT program.

File Naming Convention Changes

The Mark 12.0 software release addresses some problems in B1000 file naming conventions. In an effort to eliminate these problems, and to bring the B1000 file naming conventions closer to the Burroughs standard, there have been some changes made to the Mark 12.0 B1000 file naming conventions.

Pack-id or Familyname = DISK

A <pack-id> or <familyname> of DISK always means the system disk.

Pack-id or Familyname = Blanks

A <pack-id> or <familyname> that is blank always means use the usercode or system default for this filekind.

New Meaning For Asterisk (\*)

A \*(usercode) will result in a syntax error on the Mark 12.0 release. A <pack-id> or <familyname> of DISK should now be used in place of \*(usercode).

User Named Backup Files

User named backup files (U.N or USERBACKUPNAME = TRUE) now follow the same rules as non-user named backup files. When a backup file is created, if the <pack-id> is blank, the file is created on the PACK in the usercode file. If the PACK field is blank or no usercode is involved, the file is created on the DL BACKUP pack.

MCPII (continued)

PACK <familyname>

The system commands FM, IL, KC, KP, OL, OU, PG, RL, and SD will now accept PACK <familyname> as an alternative to <unit-mnemonic>.

Example: PG PACK USERB 123456

Tape Creation Date

The ODT message giving the tape label has been extended to include the tape creation date. It is displayed in the form of MM/DD/YY.

Improved Environment Allocation

Environment allocation has been optimized for those cases where an Interpreter is already in use. This should slightly improve the speed of B0J and Database Open in many cases, and cause less Datacomm interruption during these functions.

System DM Validation

The syntax for the DM system command has been tightened for the 12.0 release. A system DM command will be valid only if either:

- The DEBUG option is set

OR

- An explicit Job number of zero precedes the DM.

Delayed Power Off for Disk

If the MCP cannot perform a PO because the pack has users, you will be notified of the fact, and the MCP will forget the request. In the past, the MCP remembered the request, and performed the Power Off when the pack user count reached zero.



MCPII (continued)

P0 System Command Change

The P0 System Command now allows a list of <units> and requires commas between the units.

QC System Command De-implemented

The Network Controller Quit (QC) system command has been de-implemented in the Mark 12.0 software release. It has been replaced by the NC QUIT system command.

System/Backup Tape Search

Prior to Mark 12.0, the System/Backup program would search a tape forever if the backup number was not found on the tape. This has been corrected. The program will now search the tape only twice. If the backup number is not found, the task will be hung with a NO FILE condition.

PASSWORD System Command

In the past, it was possible to change your Password with the SYSTEM/MAKEUSER program, with CANDE, and within a WFL job. The PASSWORD system command has been implemented to provide an additional way to permanently change the Password associated with your User Code.

The syntax for the PASSWORD command is:

PASSWORD = <Old Password>/<New Password>

The PASSWORD system command must be presented on a line by itself, that is another system command cannot follow the PASSWORD command.

Remove Print Backup File (RB and RF) Syntax Changes

Commas are now required between list elements in an RB or RF string.

MCPII (continued)

Improved File Name Parsing (QF and MO)

Query File (QF) and Modify (MO) will now work properly when the Internal file name starts with a digit rather than a character.

Type Option (TO) Display Changed

The system options are now displayed in alphabetical order in response to the TO system command. The RFAC and TOUT system options are no longer supported with the Mark 12.0 release.

CPY Name Table Changes

The MCP now uses the file name in the CPY name table slot as the program to execute when COPY, COMPARE, ADD, or DIR is entered.

User Disk Pack Handling

Whenever a user pack is first visible to the system, the integrity of the pack is checked, and if necessary the <unit> portion of the disk addresses are updated. For packs with a large number of files, this is a lengthy process. Prior to Mark 12.0, the MCP dedicated all its resources to this absolutizing process, locking up the system until the task was completed.

With the Mark 12.0 release, this disk pack housekeeping is handled by the SYSTEM/PANDA program. The SYSTEM/PANDA program is now a required system file. A new name table entry, labeled PAN, has been added for the SYSTEM/PANDA program. All MCP commands that implicitly invoke the SYSTEM/PANDA program now use this name table entry. The SYSTEM/PANDA program must be on the system disk.

When a user disk becomes ready, or is found to be ready during Clear/Start, and disk integrity is in doubt, the current SYSTEM/PANDA program is executed to check the disk integrity. Once disk integrity is checked, the SYSTEM/PANDA program absolutizes the pack if necessary, removes temporary files, and generates correct end of file pointers for protected files.

If the SYSTEM/PANDA program finds a fatal error, the SYSTEM/PANDA program waits for an ACCEPT from the operator. The operator can override this warning, but it is strongly recommended that the pack not be updated, and that all the files be copied to another medium.

MCPII (continued)

Modify Header (MH) and Set Switch (SW) Improvements

Improvements have been made to the responses from the MH and SW commands. A valid SW command will now be acknowledged. An MH command with no subparameters will result in a diagnostic message. Other diagnostic messages from within the MH command have been clarified.

MCPII (continued)

New Options For The SM System Command

Three new options are provided in the Mark 12.0 system command.

Status Option

The SM system command currently allows interaction with DMS database globals. An additional Query Only, option (STATUS) has been added to allow query of other global flags. These are:

1. NORMAL = No abnormal status exists.
2. RECOVERY REQUIRED = Although database is currently closed, it was not closed normally. A Clear/Start or Fatal Error occurred at the end of the last update run.
3. WRITE ERROR = There has been an irrecoverable I/O error on the dictionary itself.
4. RECOVERY IN PROCESS = DMS/RECOVERDB has been initiated on the database, but has not yet completed. It may currently be running, or have been DS'ed.
5. REORGANIZATION = Reorganization has been initiated on the database. It may currently be running, or have been DS'ed.
6. STRUCTURE WRITE ERROR = At least one of the structures has had a Write error. DMS/DBMAP should be executed to identify the structure.

SUPPRESS-WARNINGS Option

The SUPPRESS-WARNINGS or SUPPRESS keyword may be used to query, set or reset the DM\_SUPPRESS\_WARNINGS flag in the DMS globals. This flag controls whether the message "DMS ACCESSROUTINES HAVE BEEN HUNG FOR 30 SECONDS WAITING FOR A SYSTEM LOCK" is displayed.

MCPII (continued)

FATALERROR-ENABLED Option

The FATALERROR-ENABLED or FATALERROR keyword may be used to query, set or reset the DM\_FATALERROR\_ENABLED flag in the DMS globals. This flag controls whether a job that has been DSed should generate a DMS FATALERROR if it cannot obtain a system lock needed to complete its operation. If this flag is reset (by default) then the job will remain in the mix and be un-DSable. If the flag is set, then a DS of the job will cause a FATALERROR, closing the database for all users.

The new Syntax for the SM command is:

```

SM <database name> ----->
    !-----ON <family name> ----!

>-----+-----+-----+-----+-----+-----+-----+-----+-----+
|         !-----SYNCPPOINT-----!  !--<integer>--!  |--;--!
|         !-----CONTROLPOINT--!
|         !-----MAXWAIT-----!
|
|         !-----AUDIT-----+-----+-----+
|         !-----KEYCOMPARE---!  !--SET----!
|         !-----STATISTICS---!  !--RESET--!
|         !-----SUPPRESS-WARNINGS---!
|         -----!
|         !-----FATALERROR-ENABLED---!
|         -----
|
|         !-----STATUS-----!
|
|         !-----ACR-----+-----+-----+
|         !---ACCESSROUTINES--!  !-- = --<file-name>---!
    
```

MCPII (continued)

Improved Processor Time Statistics

The TI command will now display the Interpreter, MMCP, and SMCP times for each environment. It will also still display the total Elapsed Time.

Job processor times recorded in the System Log will be higher than before. These times will now include the MMCP and SMCP service times for each job.

Jobs which run with the TIME program attribute will be affected by this additional processor time accumulated by the program. The integer <time in minutes> may have to be increased for running on the Mark 12.0 release.

Improved Disk I/O Statistics

GISMO now keeps statistics concerning disk I/O's. For each disk unit, GISMO records the number of I/O's, the number of bytes transferred, and the time the unit was "busy", i.e., unable to respond to another I/O request. For each disk channel, GISMO now records the time the channel was "busy", i.e., unable to respond to another I/O request, and the number of I/O's that caused a disk "slip".

Improved Blocking For Backup Files

In order to utilize disk space more efficiently for backup files, the Records Per Block is now set to:

1. What the user specifies or what the MCP calculates based upon the record size.

OR

2. Eight records per block.

"Hard" ODT Screen Refresh

The SPCFY key now causes a screen refresh on a "hard" ODT, exactly as does any zero or single-character input.

MCPII (continued)

UPL2CODE and UPL2SYMBOL File Types

Two new file types have been added for the Mark 12.0 release. They are:

1. UPL2CODE - FILETYPE = 131
2. UPL2SYMBOL - FILETYPE = 86

New DL System Command

The BD command is being replaced by the Disk Location (DL) command. The DL command allows independent designation of the backup and dump familynames. The BD command will continue to work on the 12.0 release, but will result in a warning to use the DL command. Effective with the 13.0 release, use of the BD command will result in an error.

The syntax for the DL command is:

```
--- DL -----!
      |         |         |         |         |
      |-- BACKUP --|         |----- <family-name> ---|
      |         |         |         |         |
      |-- DUMP ----|         |----- ON  --|
```

See B1000 Systems Software Operations Guide, volume 1, section 5 for further details.

New Mix Limit (ML)

The maximum value for Mix Limit, which controls the number of jobs with priority less than 9 that are allowed into the mix, has been increased from 63 to 255.

The total number of active tasks allowed in the mix has been increased from 63 to 1000. The number of programs running with one DMSII data base is still limited to 63.

MCPII (continued)

Expanded HALT System Command

The HALT system command causes a B1000 system to come to an orderly, push-through halt. Upon receipt of the HALT command the MCP updates the unit and pack IO and error tables for all online disk drives, makes an entry in the ELOG, and makes a request to GISMO to halt the system. GISMO waits until inprocess IOs are complete and then halts the system. This wait time will be approximately 1.5 seconds.

Following the halt, the L register contains @0D0010@. Entering GO on the console (pressing the start button on non B1990 systems) causes the system to continue.

New DATE Warning Message

If a DATE system command is entered with a date value less than the previous system date, and the Date System Option is set, a warning message will be generated. The warning message will also be generated under this condition if the LOG System Option is set.

New TIME Warning Message

If a TIME system command is entered with a time value less than the previous system time, and the Time System Option is set, a warning message will be generated. The warning message will also be generated under this condition if the LOG System Option is set.

KB HELP Function

The new KB HELP keyword provides the operator with a help-screen of all the KB options and a brief description of each option. A KB HELP <KB Option> will display the proper syntax for the option.



MCPII (continued)

MCPII Work Flow Enhancements

IB (Instruction Block)

The IB system command displays the requested Instruction Block for a job.

The Instruction Block is displayed in the following format:

```
INSTRUCTION <instruction number>: text of instruction
```

The syntax for the IB command is:

```
-- <mix number> -- IB -----!
                        |
                        | -- <instruction number> -- |
                        |
```

The <instruction number> must be an integer constant in the range of 1 to 63 inclusive.

If no <instruction number> is given, the message corresponding to the most recently executed <INSTRUCTION statement> is displayed. If no <INSTRUCTION statement> has been executed, you will be notified of that fact.

Examples:

```
2657 IB 1
```

```
JOB2657 =2657 INSTRUCTION 1: TESTTAPE IS IN TAPE RACK 3.
```

```
3178 IB
```

```
IB/JOB =3178 INSTRUCTION 7: IF T17 OR T17A WERE NOT COPIED
FROM TESTTAPE TO USER5, PLEASE DS THIS JOB
AN LEAVE A NOTE.
```

See INSTRUCTION Statement in the WORK FLOW LANGUAGE section for an example of a WFL job containing an Instruction statement.

MCPII (continued)

MCPII Work Flow Enhancements (continued)

WFL System Option

The processing of the CHANGE, COMPILE, MODIFY, and REMOVE commands is handled differently by the MCP and WFL. The WFL program uses file titles rather than file names. It also uses standard program and file attributes whereas the MCP uses B1000 program and file attributes. WFL acts as an aid in preparing for upward migration in that it does not allow abbreviations to be used. Finally, the WFL syntax has the added advantage of having you supply a Pack name only once for an entire file list.

A new system option, WFL, has been added for the Mark 12.0 release. The WFL option specifies whether the MCP or WFL will process these four commands.

If the WFL option is reset, these commands will use the MCP Control Card syntax unless they are preceded by WFL.

If the WFL option is set, these commands will use the WFL syntax unless they are preceded by CC. The CC system command is no longer ignored by the MCP. It now tells the MCP that the command immediately following it is to be interpreted with Control Card syntax rather than WFL syntax.

The WFL option is set by default when you Coldstart the 12.0 System. If you do not wish to run in this mode, you may RO WFL after the first Clear/Start following a Coldstart of the 12.0 System. The option will then remain reset until the system is Coldstarted again.

WFL RUN and COMPILE as system commands

RUN and COMPILE system commands, in WFL syntax, can now be entered from the ODT or from a Remote ODT.

Initiate Error Messages Added to JOBL0G

Error messages which are generated when attempting to initiate a Task are now put into the JOBL0G.

MCPII (continued)

MCPII Work Flow Enhancements (continued)

Syntax Errors In Job Summary

The number of syntax errors is now included in the EOJ log record. This will be used by SYSTEM/BACKUP and included in WFL Job Summaries.

## NDL

### Introduction

The network controller processes and supervises the flow of messages between application programs and remote network stations. Through the NDL generated network controller, the application program can handle communication devices in the same manner as more conventional peripheral devices (card readers, printers, disk, or tape).

### New Features and Enhancements

#### ELOG Error Logging

An NDL generated network controller can now enter hardware line errors in the ELOG, from which SYSTEM/ELOGOUT produces a report of the errors. The standard CANDEPOLTD, CANDESELTD, CANDEFSLTD< C74CANDESEL, C74CANDFSL, RJEHOST, SYCOMREQ, RJE377ORQST, BISYNC3270INPUT, and BISYNC3270OUTPUT standard request procedures now enter errors in the ELOG.

A new boolean STATION variable (STATION(TRANSLATIONREQUIRED)) has been defined. This variable conditions the invocation of the special alphabet (and dual alphabet) message conversion routines. The variable is set initially to true if either special alphabet or dual alphabet routines have been defined for the station. The variable may be referenced and/or assigned a value in request or control procedures. If conversion routines are associated with this station, then a true value causes invocation of the routines and a false value inhibits any translation of a message. If conversion routines have not been associated with the station, then the value of STATION(TRANSLATIONREQUIRED) is irrelevant.

Enhanced QUEUE INPUT request statement

The syntax and semantic of the QUEUE INPUT statement has been enhanced to include an optional maximum message size (which may range from 0 to 8191 bytes). The syntax is :

```
--- QUEUE INPUT -----<>
                    !                               !
                    -- ( <text size expression> ) --
```

This option when executed will queue up to <text size expression> characters into the relevant remote file. A 'text pointer' is updated so that successive QUEUE INPUT statements queue the parts of the text in a 'left to right' manner. It is the NDL request procedure writer's responsibility to indicate in the message (via tallies and toggles) whether the message is a partial message and whether a message is the first, intermediate, or last part of a large message.

New LOG ERROR request statement

The LOG ERROR statement will cause an entry to be put in the SYSTEM/ELOG. This statement should be executed after a FINISH TRANSMIT or INITIATE RECEIVE statement particularly if the EXCEPTION flag is set. The entry is then available for printout by the SYSTEM/ELOGOUT utility. The syntax of the statement is :

```
LOG ERROR ----- . -----<>
```

The descriptor of the last read or write operation on the line which completed with an exception will be entered into the system elog. If no error descriptor is available, this statement has no effect.

## PACK/INIT

### Introduction

The PACK/INIT program, a standalone utility, labels and formats a disk prior to use on the B 1000 system.

### New Features and Enhancements

#### Memorex Disk Handling

PACK-INIT can run with the Memorex 677 removeable pack drive (B9484-12) and the Memorex 659-1 fixed disk drive (B9494-5). A convert feature is available to convert a Memorex 659-1 from the factory delivered format to the B 1000 native mode format. Thus, a full initialization is not required to install these drives. The conversion is performed in approximately 7 minutes.

#### Relocate Feature

A relocate feature, RR , is available to relocate bad sectors on disk. This feature is primarily intended to relocate sectors that an ELOG inspection suggests should be relocated. PACK/INIT can also undo relocated sectors. This feature does not require that the bad sector and its associated cylinder be available. This feature is only available for Memorex disk drives.

#### ETX Display on System ODT

Pressing the SPCFY key modifies PACK/INIT's screen handling method. The default display method assumes that a CRT ODT's firmware is configured to not display a received ETX. This method provides a more readable screen. If a received ETX is displayed, then press the SPCFY key and the display method will be altered to provide a screen that is more readable. The SPCFY key toggles the display method so that pressing the key again returns the display method to the default display method. The screen modification occurs when PACK/INIT expects an operators ODT response.

## PASCAL

### Introduction

Available in Mark 12.0

Software release Mark 12.0 provides the initial release of the B 1000 PASCAL compiler.

### High-Level Programming Language

Pascal is a high-level programming language developed by Niklaus Wirth, based on the block-structured nature of ALGOL-60 and the data structuring innovations of C. A. R. Hoare. Because Pascal is an easy-to-learn, general-purpose language, its popularity has increased dramatically in the last several years, particularly in the university and personal computer markets.

### ANSI Standard PASCAL

The American National Standards Institute (ANSI) has adopted the International Standards Organization (ISO) standard 7185 Level 0 as their standard definition of Pascal. The purpose of the ANSI standard is to increase the portability of Pascal programs from one system to another. The Burroughs B 1000 Pascal Compiler complies with this standard with certain restrictions. These restrictions are described in the B 1000 Systems PASCAL Language Manual, form number 1152048.

B 1000 System Software Release  
Mark 12.0.000

QWIKLOG

Introduction

The QWIKLOG program, a normal-state utility, prints information from the current or past system log files in a convenient and compact manner.

New Features and Enhancements

Time Information

New processor time information, such as interpreter, and SMCP and MMCP times for the primary, DMS, and IBASIC environments are now listed for each job. The code and data overlays for each environment are also listed.



RD

Introduction

The Remote Display (RD) program displays system status information on a remote display terminal. The information available includes file and program attributes and the system configuration. Inquiry is made by using the standard B 1000 system commands.

New Features and Enhancements

UP

The UP <family-name> command causes the RD program to display files that are in use on the specified pack.

UF

The UF <file-identifier> command causes the RD program to display the users of the specified file.

B 1000 System Software Release  
Mark 12.0.000

REMOTE/LISTER

The REMOTE/LISTER program is a normal-state utility which displays data files or printer backup files on a terminal. Compiler printer backup file listings can be scanned for error messages or warnings.

New Features and Enhancements

PROTECTION Option

When the PROTECTION option is set to PROTECTED, a backup file can be printed while it is being created.

## REMOTE/PRINT

### Introduction

The REMOTE/PRINT program is a normal-state utility which reads B 1000 printer backup files and writes to a remote printer in the required format. The printer backup files must have been created by the Mark 9.0 or later software release.

### New Features and Enhancements

#### AP 1350 Remote Printer Qualified

The AP 1350 remote printer is qualified for use with the REMOTE/PRINT program in the 11.0.009 and 12.0.000 releases.

In the network controller symbolic file, the AP 1350 remote printers are assigned a terminal type of 74.

The following options are valid with the AP 1350:

1. CHARSPERINCH of 10, 12, or 16.
2. LINESPERINCH of 6, or 8.
3. FONT of E7 and S7 (E9 and S9 are not valid for the AP 1350)

In addition, the GRAPHICS option is added to translate unprintable characters to a question mark.

#### PROTECTION Option

When the PROTECTION option is set to PROTECTED, a backup file can be printed while it is being created.

RPG

Introduction

Burroughs RPG (Report Program Generator) is a machine-independent programming language suitable for implementation in a wide variety of data processing applications.

New Features and Enhancements

\$ Cards

Two \$ Cards have been added to allow greater control of the sign digit in output of right-signed data.

\$ CSIGN forces positive signs to the hexadecimal C value.  
\$ FSIGN forces positive signs to the hexadecimal F value.

Alpha Arrays

The code generated by the compiler for the input and output of alphanumeric arrays has been optimized. Alphanumeric arrays are moved with a move instruction, replacing previously generated code that moved each element individually in a loop.

ODT Messages

Matching record errors, record identification errors, and sequence errors no longer cause the ODT to display spurious screen messages. The buffer displayed is examined for control characters, and a question mark (?) character is substituted for any non-graphic character.

996 DMS Structures

The RPG compiler processes the new 996 DMS structures limit.

## RJE3770

### Introduction

RJE3770 supplies B 1000 users with a remote job entry interface to an IBM host. RJE3770 accomplishes this by sending IBM formatted job files to an IBM system and returning the results to the B 1000 system. The protocol used for data transfer is IBM's SDLC/SNA (Synchronous Data Link Control/System Network Architecture).

### Special Features

RJE3770 is designed to provide several special features.

First, this new B 1000 product is easy to use. There are few, but powerful commands with several default options available. Plus, a HELP query system is always available to display a description of RJE3770 commands.

Second, a migration from HASP, a similiar program that uses the BISYNC protocol, only requires executing RJE3770 and creating a parameters file. This file contains site descriptions and an adapter pool -- information RJE3770 needs to connect to a site. The parameters file is built according to specifications given to RJE3770, and is a requirement for all users of RJE3770 that want to connect to a site.

Another design feature of RJE3770 is the efficient use of the communication medium. RJE3770 recognizes that it is not necessary to assign switched adapters to a particular site. Instead, several switched adapters can form an adapter pool. Then, RJE3770 selects any available adapter from the pool to dial any site. This method avoids the problem of having an available switched adapter that can only dial one site when another site is desired. The option of assigning an adapter to one site is available.

RJE3770 (cont.)

Operation

Depending upon the values of its switches at B0J, RJE3770 takes one of two initialization paths:

Display Path

If the RJE3770 program is executed with SWITCH 1 equal to 0, then a list of all site identifiers and switched adapters is displayed before entering the Parameter File Initialization Phase.

Site Identifier Path

If the RJE3770 program is executed with SWITCH 1 not equal to 0, then the RJE3770 program uses the switch's value as a site identifier and attempts to connect to that site.

After initialization, user communication is continued with DISPLAY and ACCEPT messages. Once connection to an IBM host is established, RJE3770 expects all commands to be preceded by a period. A brief outline of RJE3770's capabilities follows:

Inquiry

- .WHAT displays the status of job decks and LU's (Logical Units).
- .DISPLAY displays configured sites and adapters.
- .HELP displays RJE3770 commands and their descriptions.

Job Deck Input

- .STARTDISK transmits an IBM formatted job deck from disk.
- .STARTTAPE transmits an IBM formatted job deck from tape.
- .STARTREADER transmits an IBM formatted job deck from cards.
- .EOF stops transmission of a job deck to an IBM host.

SMCS

Introduction

The Supervisory Message Control System (SMCS) program is the supervisor program for the data communications software system which includes CANDE, RJE, and HASP.

New Features and Enhancements

Command Changes

The CHANGE command has been changed to MAKE, the REMOVE command has been changed to CLEAR, and the PASSWORD command has been changed to SYSTEM PASSWORD.

SMCS/JOBS File

The SMCS/JOBS file may now be named anything that the user specifies.

B 1000 System Software Release  
Mark 12.0.000

STANDALONE/DISK-DUMP

Introduction

The STANDALONE/DISK-DUMP program, a stand-alone utility, copies files from a disk pack or cartridge to another disk pack or cartridge of the same or greater capacity.

New Features and Enhancements

Memorex Disk Handling

STANDALONE/DISK-DUMP can run with the Memorex 677 removable pack drive (B9484-12) and the Memorex 659-1 fixed disk drive (B9494-5).

ETX Display on CRT ODT

Pressing the SPCFY key modifies STANDALONE/DISK-DUMP's screen handling method. The default display method assumes that a CRT ODT's firmware is configured to suppress a received ETX. If this is not the case, then press the SPCFY key and the display method will be altered to provide a screen that is more readable. The SPCFY key toggles the display method so that pressing the key again returns the display method to the default display method. The screen modification occurs when STANDALONE/DISK-DUMP expects an operators ODT response.



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Mark 12.0.000

SYCOM

Introduction

The System Communication Module (SYCOM) program permits users of the B 1000 data processing system to communicate with other Burroughs computer systems including B 1000, B 5000/B 6000/B 7000, and CMS systems.

LIST FILE Option Removed

The LIST FILE option is not supported in the Mark 12.0 SYCOM release. The listing of files is better handled by the DMPALL program.

B 1000 System Software Release  
Mark 12.0.000

SYSTEM/BUILDTRAIN

Introduction

The SYSTEM/BUILDTRAIN program is a normal-state program that creates character translation tables for the B 1247-4 train printer.

New Features and Enhancements

The following describes the change for the Mark 12.0 release of the "SYSTEM/BUILDTRAIN" program.

Name Change For Input File

The input file, INPUT/PC5TABLES, is named INPUT/PC5-TABLES for the Mark 12.0 release.

## SYSTEM/COPY

### Introduction

The SYSTEM/COPY program is a normal-state utility which can copy and/or compare files from tape or disk to tape or disk.

### New Features and Enhancements

#### Multiple Copy Requests

Multiple copy requests can be included in a copy statement. This allows the files on a tape to be spread across several packs.

#### Example:

```
COPY A, C FROM T1 (KIND=TAPE) TO P1 (KIND=DISK),  
B, D FROM T1 (KIND=TAPE) TO P2 (KIND=DISK);
```

Prior to this change multiple copy statements had to be used and multiple passes of the tape resulted.

The meaning of the existing copy statements has not changed.

For more information refer to the new syntax of the copy command, the semantics of the FROM and TO clauses, and examples in the B 1000 Systems System Operation Guide, Volume 2 or the B 1000 Systems Work Flow Language Reference Manual.

#### Dates

The access date of a source file is not altered because of a SYSTEM/COPY copy. Also, the update and access date of a file created by SYSTEM/COPY match those of the source file.

#### TASKVALUE Attribute

SYSTEM/COPY sets TASKVALUE to 0 if the copy completed successfully. SYSTEM/COPY sets TASKVALUE to -1 if a COPY AND COMPARE was requested and a file split a reel boundary, which means the file was not compared and the rest of the copy completed successfully. Otherwise, TASKVALUE is set to 1. To complete successfully, all files must have been copied and, optionally, compared without error. This value can be queried by a WFL job.

SYSTEM/COPY cont.

**Mandatory Option Change**

The MANDATORY option in a COPY, ADD, or COMPARE statement now means the copy program will either successfully complete the entire statement, including the comparison phase of a COPY or ADD statement, or it will be abnormally terminated. For errors, such as missing files or packs, that an operator can correct, the copy program will request operator assistance. The operator will have only two choices; correct the situation so that the request can continue or abnormally terminate (DS or DP) the program. For errors, such as hard I/O errors or comparison errors that the operator cannot correct, the copy program will abnormally terminate without operator intervention. If MANDATORY is set, the copy program will no longer hang "no file" if an input tape is missing. The operator will be asked to make the tape present and respond with <mix#>AX OK. An IL will not be allowed by the MCP because the program is not waiting for a file. The MCP will allow a DY but SYSTEM/COPY will change the name of the tape back to the originally requested tape name before re-attempting the open, thus negating a DY of the tape name. If MANDATORY is set and the operator enters an MR in response to a "duplicate file" situation, the copy program will be abnormally terminated.

A COPY and COMPARE cannot compare a file if it crosses a reel boundary. This will not be considered an error when MANDATORY = TRUE.

Refer to B1000 Systems System Software Operation Guide, volume 2, chapter 31, "SYSTEM/COPY" for further details.

**Summary Listings**

The reel number, except reel one, is now included in all summary listings and copy messages. Also, the time and date of the copy is included in the summary listing.

**STATUS**

The STATUS command has been expanded to display the name of the tape or disk that the file is copied to, as well as where the file is copied from.

**IN USE Message**

An attempt to copy and/or compare a file in use results in the message "<file name> NOT COPIED; FILE OPEN OUTPUT OR LOCKOUT".

## SYSTEM/DISK-INIT

### Introduction

The SYSTEM/DISK-INIT program, a normal-state utility, initializes disk packs and disk cartridges prior to use on the B 1000 system. SYSTEM/DISK-INIT verifies the integrity of the data on a disk.

### New Features and Enhancements

#### Memorex Disk Handling

SYSTEM/DISK-INIT can handle the Memorex 677 removable pack drive (B9484-12), and the Memorex 659-1 fixed disk drive (B9494-5). A convert feature, FC, is available to convert a Memorex 659-1 from the factory delivered format to the B 1000 native mode format. Thus, a full initialization is not required to install these drives. The conversion is performed in approximately 9 minutes.

#### Relocate Feature

A relocate feature, RR, is available to relocate bad sectors on disk. This feature is primarily intended to relocate sectors that an ELOG inspection suggests should be relocated. SYSTEM/DISK-INIT can also undo relocated sectors. For Memorex disks, this feature does not require that the bad sector and its associated cylinder be available. This feature is only available for Memorex disk drives.

#### Switches

If SW1 = 0 then a printer listing of the SYSTEM/DISK-INIT session is provided. Previously, a listing was provided only if all the switches were 0.

If SW2 is = 1 then SYSTEM/DISK-INIT remains in the mix. Instead of going to EOJ, SYSTEM/DISK-INIT asks for another disk unit mnemonic after completing a request. This is the way the SYSTEM/DISK-INIT worked previously by default. Now the default, SW2 not equal to 1, causes the program to go to EOJ after a request is completed.

B 1000 System Software Release  
Mark 12.0.000

SYSTEM/DISK-DUMP

Introduction

The SYSTEM/DISK-DUMP program, a normal-state utility, performs a full disk copy. The copy can be file-by-file or sector-by-sector.

New Features and Enhancements

Memorex Disk Handling

SYSTEM/DISK-DUMP has the capability to run with the Memorex 677 removable pack drive (B9484-12) and the Memorex 659-1 fixed disk drive (B9494-5).

SYSTEM/ELOGOUT

Introduction

The SYSTEM/ELOGOUT program is a normal-state utility which analyzes and prints the System maintenance log.

New Features and Enhancements

Disk Error Rates

Disk pack and unit error information statistics as logged by the operating system are now reported.

## SYSTEM/IDA

### Introduction

The SYSTEM/IDA program is the Interactive Dump Analyzer Program. It is used as an aid in locating the causes of system halts, hangs, and performance problems. It enables the user to determine the state of the processor, the software, and the input/output operations at the time the dump was taken.

### New Features and Enhancements

#### Analyze Program Dumps

The SYSTEM/IDA program provides analysis of both System memory dumps and Program memory dumps. All analyzing functions that were provided by the DUMP/ANALYZER program are now provided by the SYSTEM/IDA program.

#### New DUMPFILe Naming Convention

SYSTEM/IDA now packages Dumpfiles as DUMPFILe/PMnnnnnnnn where "nnnnnnnn" is the next Backup Number. This can be overridden if the PM file is equated to other than DUMPFILe/PM.

#### Analyze DMS Structures

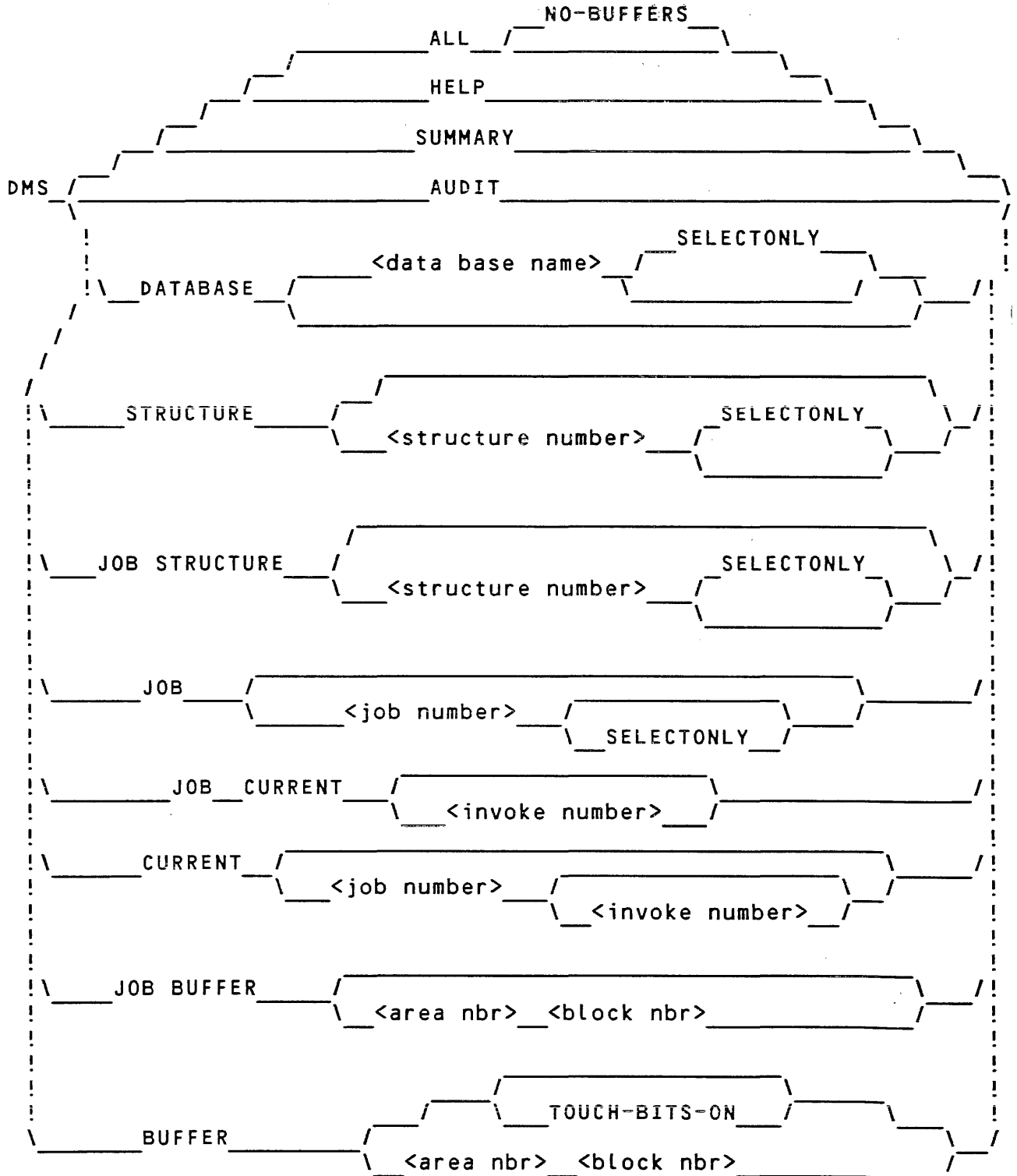
The SYSTEM/IDA program now allows the interactive analysis of DMS Structures. The following information is available:

1. Databases that are open
2. Jobs that are using a data base and their associated states
3. Buffers that are assigned to a particular structure
4. Structures that are open for a data base or for a job
5. Currents for any DMS job or structure

The syntax and a brief description of the new commands follows.



SYSTEM/IDA (continued)



(SYS)SYSTEM/IDA (continued)

If "DMS" with no parameters is entered, the only valid DMS command in 11.0, the following message is displayed:

"\*\*WARNING\*\* the DMS command is no longer valid. Try DMS HELP".

DMS HELP

This command displays the syntax diagram on the screen.

DMS ALL

This command has the same semantics as DMS in 11.0. You should be aware that for such a command, switch 2 has a special meaning. (As it did in 11.0). If switch two equals zero then the DMS buffers and the relevant buffer descriptors are displayed. If switch two equals one or two, then only the DMS buffer descriptors are displayed. If switch two is greater than two, then neither the DMS buffers nor the relevant buffer descriptors are displayed. The display of the buffers is also controlled by the NO-BUFFERS option of the ALL command.

For each database the ALL command displays:

- \* the DMS globals.
- \* the audit FIB
- \* the two I/O descriptors belonging to the audit FIB.
- \* for each opened structure, the following is displayed:
  - \* the structure record
  - \* all the current records
  - \* if SWITCH2 is less than three, all the buffer descriptorsMoreover, if the structure is an index (index seq or index random) the tail part of each buffer is displayed.
- \* if SWITCH2 equal zero and if "NO-BUFFERS" wasn't specified the command and you have asked for a print ("PRINT DMS ALL" then all the buffers are printed in hex.

SYSTEM/IDA (continued)

DMS DATABASE

In order to know which data bases are opened, enter "DMS DATABASE". For each data base the name is listed, and all the jobs using that data base are listed. For each job listed, the full name (pack id, mfid, fid) and the job number are displayed. Example:

```
"          ***** Data base <database name> *****
"
"                      user count : 5
"                      update user count : 3
"                      updated : YES
"                      programs ok : YES
"                      recovery in process : NO
"                      reorganization running : NO
"                      globals lock : NO
"                      audit lock : YES
"                      transaction lock : YES
"                      recovery in process : NO
"                      reorganization in process : NO
"<----job name-----> job nbr
"-----
" a/b/c                1234
" d/e/f                4321
```

In order to select a data base and gain more information about it, enter "DMS DATABASE <data base name>". (There is no need to specify the pack name because DMS doesn't allow two data bases with the same name even if they are on different packs.) The named data base is selected as context for following commands. The DMS globals record is displayed.

If you wish to select a data base without seeing the DMS globals, enter "DMS DATABASE "<data base name>" SELECTONLY". SYSTEM/IDA will respond with: "DATABASE <dbname> SELECTED".

SYSTEM/IDA (continued)

DMS JOB

In order to use this command, you must have already selected a data base. Enter "DMS JOB" to see which jobs are using your selected data base and the status of those jobs. For each job, the full name (pack id, mfid, fid), job number, actual environment, job status, and relevant flags are displayed. Example:

```

"          fatal error                               "
"          in transaction                            "
"          I am aborting                             "
"          aborted                                   "
"          backing out                               "
"          updating                                  "
"          opened update                             "
"          V V V V V V V V                          "
" name nbr  env  <--status-->                       "
"-----"
" a/b/c 1234 usr waiting DS/DP  Y N N N N N N N     "
" d/e/f 4321 dms executing      Y Y Y Y Y Y Y Y     "
" g/h/i 0123 mcp executing      Y N Y N Y N Y Y     "
  
```

The headings appear only at the beginning of the list.

In order to select a job and get further information about it enter: "DMS JOB <job number>". The numbered job is selected and the DMS interface area is displayed.

If you wish to select a job but don't want to see its interface record, then enter "DMS JOB <job number> SELECTONLY". SYSTEM/IDA will respond with: "JOB <job number> SELECTED".

SYSTEM/IDA (continued)

DMS STRUCTURE

In order to use this command, you must have already selected a data base. In order to know which structures have been opened enter "DMS STRUCTURE". All the opened structures are displayed. For each structure the structure number, user count, update user count, structure type parent and object structure numbers are displayed. Example:

```
"<-----structure-----> <--users--> <-----locks----->"
" type  nbr object parent all      upd  memory buffer cur_link currents"
"
"  MSS   4   1023   1022  10       3     Y     Y     N     N
"  RSDDS 7   1021   1020   0       0     Y     Y     Y     Y(EX)
"  EDS   1   1019   1018  11      11     N     N     N     Y(12)
"  IDXSEQ 6   1017   1016   3       1     N     Y     N     Y(O2)
```

"Y(EX)" means exclusive lock, "Y(xx)" means non-exclusive lock with xx users.

In order to have a structure selected and be provided with more information about it, enter: "DMS STRUCTURE <structure nbr>". The structure record, file record, and disk file header are displayed.

If you wish to select a structure without receiving information about it, enter "DMS STRUCTURE <str nbr> SELECTONLY". SYSTEM/IDA will respond with "STRUCTURE <str nbr> SELECTED".

SYSTEM/IDA (continued)

DMS JOB STRUCTURE

In order to use this command, you must have already selected a data base and a job. Structure is selected as a context for following operations. Basically, this command performs the same as the "DMS STRUCTURE" command; but, it works in a different context. In order to know which structures are in use by this job, enter: "DMS JOB STRUCTURE". All the structures used by the job are displayed. For each structure, the structure number, user count, update user count, structure type, parent and object structures are displayed.

To gain more detail about a structure, enter "DMS JOB STRUCTURE <str nbr>". The numbered structure is selected as a context for following commands. The structure record, file record and disk file header are displayed.

If you wish to select a structure and do not want more detail, enter "DMS JOB STRUCTURE <str nbr> SELECTONLY". SYSTEM/IDA will respond with "STRUCTURE <nbr of str> SELECTED".

SYSTEM/IDA (continued)

DMS CURRENT

In order to use this command, you must have already selected a data base and a structure. In order to know which currents are in memory, enter "DMS CURRENT". All currents are displayed. For each current the job number, invoke number, entry number, record number and user lock are displayed. Example:

```

"                                     restart lock ___
"                                     record lock ___
"                                     user lock  _!
"                                     _!
"                                     _!
"                                     V V
"          <-----user current-----><---working current----->
"          <-----address-->points at<---address----->points at
"job invoke area blk rec entry          area blk rec entry
"-----
"1234 64 101 345 - 256 nothing 001 001 - 123 next Y N
"4321 63 001 001 010 - current 101 345 123 - prior N Y
  
```

Record number is relevant for lists and datasets only. Entry number is relevant for indexes and lists only.

If you wish more information about a current, enter "DMS CURRENT <job nbr> <invoke nbr>". All the current will be displayed.

DMS JOB CURRENT

In order to use this command, you must have already selected a data base, a job and a job structure. This command performs the same as the DMS CURRENT command; but, it works in a different context. In order to know what current belongs to the selected job, enter: "DMS JOB CURRENT". All the currents are displayed. For each current, the invoke number, the logical address (area number, block number, record number), entry number and user lock are displayed.

If you want more detail about a current, enter "DMS JOB CURRENT <invoke number>". All the current detail will be displayed.

(SYSTEM/IDA (continued))

DMS BUFFER

In order to use this command, you must have already selected a data base and a structure. In order to know which buffers are in memory, enter: "DMS BUFFER". All buffers belonging to the selected structure are displayed. For each buffer, the logical address, the touch bits, the user count and the status flags (I/O error, to be written, media -i.e Bd\_in\_memory- and control point) are displayed. Example:

```
"          to be written control point      "  
"          media _____ !! I/O error      "  
"<--addr--> touch _____ !! !! !! !!      "  
"area block bits-user V-V V V              "  
"-----"                                     "  
"123 12345 @11@ 16 Y N Y N                  "  
"012 01234 @01@ 01 N N N N                  "  
"001 00123 @00@ 03 Y Y Y Y                  "  
"-----"                                     "
```

If you are interested only by the most currently used buffers, enter: "DMS BUFFER TOUCH-BITS-ON". All the buffers with touch bits <> 0 are displayed as in the DMS BUFFER command.

If you wish to see what is in a buffer descriptor, enter: "DMS BUFFER <area nbr> <block nbr>". The buffer's memory address, the front part of the buffer (Buffer descriptor), the buffer itself (in character) and the tail part of the buffer (Buffer end descriptor) are displayed. If you prefer to have it displayed in hex, enter: "MEMORY <buffer's memory address>".



SYSTEM/IDA (continued)

DMS JOB BUFFER

In order to use this command, you must have already selected a data base, a job, and a job structure. This command performs the same as the DMS BUFFER command; but it works in a different context. In order to have a display of all the buffers belonging to the currents for the selected job and to the selected job structure, enter: "DMS JOB BUFFER". For each buffer, the logical address, the touch bits, the user count, the flags, the entry number are displayed. For indexes, only the entry number is relevant; for lists, both record number and entry number are relevant.

If you wish to see what is in a buffer, enter "DMS JOB BUFFER <area number> <block number>".

DMS AUDIT

The audit command displays the audit FIB, the memory address of the buffers and the disk file header (if the media for audit file is a disk).

(beusystem)IDA1(continued)

DMS SUMMARY

XXXXXXXXXX

If you wish to see an overview of what was going on when the dump was taken enter "DMS SUMMARY". The SUMMARY command displays the summary information for databases, structures and currents. It displays each data base name with the user count and the locks (global, audit, transaction). For each database, it displays all of the structures in memory. For each structure it displays the locks (buffer lock, current lock, current link lock), the type, user count, update user count, object and parent structure and the incumbents. For each current, it displays the job and invoke number, the logical address and the user lock. Here is an example:

```

" ***** Data base <database name> *****
"
"           user count : 5
"           update user count : 3
"           updated : YES
"           element (B) programs lock : YES
"           a/b recovery in process : NO
"           reorganization running : NO
"           globals lock : NO
"           audit lock : YES
"           transaction lock : YES
"
"           ** Structure <structure number> **
"           type= INDX RANDOM user cnt=12 update user count=10
"           buffer lock=Y current lock=Y(EX) current link lock=Y
"           object structure = 7 parent structure = -
"           * Currents *
"
"                                           restart lock ___
"                                           record lock ___
"                                           user lock ___!
"                                           !
"                                           !
"                                           V V
"           <-----user current-----><---working current----->
"           <-----address-->points at<---address----->points at
" job invoke area blk rec entry          area blk rec entry
"-----
"1234 64 101 345 - 256 nothing 001 001 - 123 next Y N
"4321 63 001 001 010 - current 101 345 123 - prior N Y
  
```

The value "Y(EX)" means exclusive lock. The value "Y(xx)" means non exclusive lock with xx users.

SYSTEM/LOGOUT

Introduction

The SYSTEM/LOGOUT program is a normal-state utility which analyzes and prints the operating system LOG file.

New Features and Enhancements

Time Information

New processor time information, such as interpreter time, and SMCP and MMCP times for the primary, DMS, and IBASIC environments are now listed for each job. The code and data overlays for each environment are also listed.

## SYSTEM/PACKCOPY

### Introduction

The SYSTEM/PACKCOPY program provides the B 1000 user with a fast means of backing up user disk packs. The operator, through an ACCEPT to SYSTEM/PACKCOPY, uses syntax similar to SYSTEM/COPY to specify the copy parameters.

The entire user disk is dumped to tape in the SYSTEM/COPY format. Retrieval of the files, all or selectively, is accomplished with SYSTEM/COPY. SYSTEM/PACKCOPY was originally made available as a special Mark 11.0 patch release.

### New Features and Enhancements

#### COPY AND COMPARE Option

A COMPARE option is now available in the COPY statement. Using the COPY AND COMPARE statement causes the SYSTEM/PACKCOPY program to write a reel of tape, rewind the tape, compare the tape to disk, and then proceed in the same manner with additional tape reels until all files on the user disk are copied and compared.

The operator, through an ACCEPT to SYSTEM/PACKCOPY, uses syntax similar to SYSTEM/COPY to specify the COPY AND COMPARE parameters.

#### Example:

```
111AX COPY AND COMPARE = FROM MYDISK TO MYTAPE (KIND=TAPE)
```

The entire user disk is copied and compared to tape.

SYSTEM/PANDA

INTRODUCTION

The SYSTEM/PANDA program (PANDA stands for "Package of Algorithms for Normal-state Directory Analysis") accesses the disk directory and disk management tables on a specified on-line disk to produce various tabulations and printed reports about disk usage.

New Features and Enhancements

USER File

The number of chunks, largest chunk, and total segments available is now available in the USER file header record.

Required System File

The SYSTEM/PANDA program is a required system program and must be on the system disk. The mnemonic PAN has been added to the name table entry to identify the SYSTEM/PANDA program. All MCP commands that implicitly invoke the SYSTEM/PANDA program use the PAN name table entry.

When a user disk becomes ready, or is ready during clear/start, and the disk integrity is in doubt, the current SYSTEM/PANDA program is executed to check the disk integrity. Once the disk integrity is checked, the SYSTEM/PANDA program absolutizes the pack if necessary, removes temporary files, and generates correct end of file pointers for protected files.

If the SYSTEM/PANDA program finds a fatal error, the SYSTEM/PANDA program waits for an accept from the operator. The operator can override this warning, but it is strongly recommended that the pack not be updated and all the files be copied to a safe medium.

The MCP still cleans up the system disk directory after a clear/start, but the SYSTEM/PANDA program is initiated to check the disk directory and handle protected files.

## WORK FLOW LANGUAGE

### Introduction

Work Flow Language describes the requirements of tasks to the B-1000 system. A task is the execution of a program. Using WFL system commands or statements, the user can easily describe a complex system of programs for execution. For example, the user can state before execution how a group of interrelated programs are to be run, what their requirements are to be, and in what order they are to be run.

### New Features and Enhancements

#### START Statement

The START statement, which is used to initiate an independent job from within another job, has a parameter list like the START system command. Previously, only the START system command permitted a parameter list.

#### PASSWORD Command

The PASSWORD command can be entered as a system command to permanently change a password associated with a usercode. The command is faster than writing a WFL job to change the password. The PASSWORD command has the same security measure as the PASSWORD statement - the user must enter both the old and the new password.

### Full Expressions

Full expressions, that is, the use of more than one operator and reordering of precedence using parentheses, are available in WFL. Typical arithmetic and logical precedence rules are used to evaluate the expression. Thus, expressions are simplified and the need for temporary variables is reduced. If temporary variables were created to simulate full expressions in WFL programs, a conversion to take advantage of this new feature may be desired, but is not required.

### MODIFY Statement

The MODIFY STATEMENT has been added to WFL to permanently change the attributes of a program's object file from within a WFL job or by using an ODT command.

### Data Decks

Data decks permit input data in the job file, thus eliminating the need for a separate input file. Data can be added directly after the COMPILE or RUN statement with a data specification statement. More efficient job files are produced because of the decreased number of input files and the elimination of input files that are used only once. For example, instead of having a separate input file for DMPALL commands, the input data follows the RUN statement.

```
BEGIN JOB J;  
RUN *DMPALL;SW3;  
DATA SPEC  
LIST FILENAME A SKIP 50  
? END JOB
```

## INSTRUCTION Statement

The INSTRUCTION statement displays job information on the ODT. Each INSTRUCTION statement is assigned a unique number that is used to request an instruction with the System IB command.

### Example:

```
BEGIN JOB COMPILE;  
INSTRUCTION 1 TESTTAPE IS IN TAPE RACK X.;  
COPY & SET (COMPARE) =  
FROM TESTTAPE (KIND=TAPE) TO USERS (KIND=DISK);  
END JOB
```

During execution of the above job, the system will need tape TESTTAPE. The operator can ask for instruction number 1 with the MCP IB command. For example, if the operator enters <jobnumber> IB1, the job displays, "TESTTAPE IS IN TAPE RACK X."

## TIMEDATE And SYSTEM Functions

The time, date, system type, and operating system release level are now accessible from a WFL job by using the TIME intrinsic.

## RUN and COMPILE system commands

The COMPILE and RUN statements within the WFL job are extended to the system command level. The syntax for both is the same, except that the system commands do not permit:

1. Task Variables. Refer to the B 1000 Systems WFL Reference Manual, page 8-4, for a full description of Task Variables.
2. Data Specifications. See the preceding Data Decks paragraph, for an example of a Data Specification.
3. Expressions that are not constants, i.e., expressions with variables or arithmetic operations are not permitted. In the following example, note the way a priority is established for the RUN system command.

```
RUN *DMPALL; PRIORITY = 7;
```



### Multiple Copy Requests

Refer to the SYSTEM/COPY notes in this document for a description of multiple copy requests.

### COPY Date Option

Within the Copy Options List, the Date syntax has been changed to allow an optional <string primary>.

### KIND and DENSITY Statements

All occurrences of <string expression> in the <copy statement> KIND and DENSITY assignments have been changed to <string primary>. If a syntax error is received for a formerly working WFL job because of this change, place the <string expression> in parentheses.

### Portability Warnings

Many WFL portability warnings have been removed with the implementation of those constructs in the B5000/6000/7000 3.5 release.

### B1000AUDITED Attribute

This attribute is type BOOLEAN. If the attribute B1000AUDITED is TRUE, the user program is held waiting until each I/O operation to this file is complete. The B1000AUDITED attribute may be set only when the file is closed. The default value is FALSE.

### TASKVALUE Attribute

The task attribute TASKVALUE is available in WFL and COBOL74B. This attribute allows for communication between WFL and COBOL74B programs. Both WFL and COBOL74B programs can set or query this attribute. The attribute has a range of -8388607 to +8388607.

### Terminating WFL

The SYSTEM/WFL program can be terminated by entering WFL EOJ, WFL END, or WFL STOP as an ODT command. The SYSTEM/WFL program no longer reads AX messages.

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FILEKINDS

A number of new FILEKINDS have been added to WFD. They are:  
SDLSYMBOL, UPLSYMBOL, IBASICSYMBOL, SDL2SYMBOL, UPL2SYMBOL,  
SDLCODE, UPLCODE, IBASICCODE, SDL2CODE, UPL2CODE, B1000LOG,  
B1000DUMP.

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