

Burroughs 

B 1000 Systems
B 500 Interpreter

REFERENCE MANUAL

Copyright © 1981, Burroughs Corporation, Detroit, Michigan 48232

PRICED ITEM

“The names used in this publication are not of individuals living or otherwise. Any similarity or likeness of the names used in this publication with the names or any individual, living or otherwise, is purely coincidental and not intentional.”

Burroughs believes that the information described in this document is accurate and reliable, and much care has been taken in its preparation. However, no responsibility, financial or otherwise, is accepted for any consequences arising out of use of this information.

The information contained herein is subject to change without notice. Revisions may be issued to advise of such changes and/or additions.

Correspondence regarding this publication should be forwarded using the Remarks form at the back of the manual, or may be addressed directly to TIO West Documentation, Burroughs Corporation, 1300 John Reed Court, City of Industry, California 91745, U.S.A.

LIST OF EFFECTIVE PAGES

Page	Issue
Title	Original
ii	Original
iii	Original
iv	Blank
v thru vi	Original
1-1 thru 1-5	Original
1-6	Blank
2-1 thru 2-4	Original
3-1 thru 3-11	Original
3-12	Blank
4-1 thru 4-17	Original
4-18	Blank
5-1 thru 5-5	Original
5-6	Blank
Index-1 thru Index-2	Original

TABLE OF CONTENTS

Section	Title	Page
1	INTRODUCTION	1-1
	General	1-1
	Interpreter Features	1-2
	Organization	1-2
	Related Documents	1-2
	Syntax Conventions	1-3
	Required Items	1-3
	Optional Items	1-4
	Loops	1-4
	Bridges	1-5
	Names	1-5
2	INSTRUCTIONS INTERPRETED	2-1
	General	2-1
	Arithmetic Instructions	2-1
	Editing Instructions	2-1
	Control Instructions	2-2
	Interrogate	2-2
	Card Reader and Card Punch	2-2
	Line Printer	2-3
	Magnetic Tape	2-3
	Console Printer	2-3
	Disk File	2-3
	B 500 Panel	2-3
3	B500/IEP	3-1
	General	3-1
	Syntax Notation	3-1
	Syntax of the B500/IEP	3-1
	Main Syntax	3-1
	Card Reader Declaration	3-2
	Line Printer Declaration	3-3
	Card Punch Declaration	3-4
	Hardware Declaration	3-5
	Disk Declaration	3-5
	Tape Declaration	3-7
	Optional Declarations	3-8
	Compilation	3-9
4	INTERPRETER OPERATION	4-1
	B 500 Interpreter Commands	4-1
	Send Console Printer Data to B 500 Program	4-2
	Clear B 500 Virtual Machine	4-3
	Clear and Continue	4-4
	Clear and Load B 500 Memory	4-5
	Continue B 500 Execution	4-6
	Display B 500 Sense Switches	4-7
	Simulate End of File On Device	4-8
	Terminate	4-9
	Stop B 500 Execution	4-10
	Load B 500 Memory	4-11

TABLE OF CONTENTS (Cont)

Section	Title	Page
4 (Cont)	Read B 500 Memory	4-12
	Reset B 500 Sense Switches	4-13
	Set B 500 Memory to a Single Character	4-14
	B 500 Single Instruction	4-15
	Set B 500 Sense Switches	4-16
	Write B 500 Memory	4-17
5	MCP INTERFACE	5-1
	General	5-1
	Environment Parameter Changes	5-1
	Tape Assignment	5-3
	B 500 Instruction Tracing	5-3
	B 1000 Program Switches	5-5

LIST OF ILLUSTRATIONS

Figure	Title	Page
5-1	Trace Output	5-4

SECTION 1 INTRODUCTION

GENERAL

The B 500 Interpreter allows original B 100/B 200/B 300/B 500 (hereafter referred to as B 500) users to take object programs, data, pertinent operating instructions, and all B 500 system software to a B 1000 system and to execute the program as if the B 1000 were a B 500 system. Multiprogramming, given sufficient memory, is possible in an environment with several B 500 system emulations or with mixed B 500 emulations and B 1000 programs.

Emulation is the process of creating a foreign systems environment in a central processor through the use of a hardware-assisted program, or in the case of a fourth-generation processor, through the use of variable micrologic. The B 500 Interpreter allows B 500 object programs to execute on a B 1000 system under the control of the B 1000 Master Control Program II (MCP).

The microcoded B 500 Interpreter resides in the B 1000 memory. The B 500 Interpreter provides a soft interface between the B 500 object program and the B 1000 I/O system and the MCP, and also interprets the B 500 instruction set.

The operating procedures normally used for the B 500 object program have been changed slightly because the B 500 object program is executed under control of the B 1000 MCP. The normal, full range of operator procedures of B 500 systems are now performed by entering B 1000 Operator Display Terminal (ODT) messages. This provides an audit of the operator functions, which is an additional aid to management.

The peripheral units are, in most cases, common to the B 500 and B 1000 systems. This allows continuity from an operational standpoint. If a change in peripherals is desired, such as exchanging a 700-LPM for a 1040-LPM printer, it is completely "transparent" to the B 500 Interpreter. In the case of switching from 7-channel tapes to NRZ or PE 9-channel tapes, it is only necessary to copy the tapes using a B 500 copy program executed by the B 500 Interpreter.

B 500 disk files have to be transferred from the B 500 system to the B 1000 system. To accomplish this they must be dumped to tape on the B 500 system, converted to 9-track tape if the B 1000 system is configured with only 9-track tape drives, and then reconstructed under emulation on the B 1000 system using available B 500 tape-to-disk utility programs.

INTERPRETER FEATURES

The B 500 Interpreter provides the following features:

- The same B 500 operating environment as defined for the original B 500 object program is used.
- The operator is allowed to continue, clear and continue, and start at another B 500 system location if a halt occurs.
- A B 500 program can start at a location other than 000.
- A dump of B 500 system memory is included, to be used if required.
- The B 500 system arithmetic logic is maintained during execution.
- The B 500 system comparison indicator logic is maintained during execution.
- The following hardware configuration represents the maximum configuration that can be emulated in a single environment:

Quantity	Item
1	80-column card reader
1	80-column card punch
2	Line printers
6	Magnetic tape units
10	Disk file (240-character segment EU's)
1	Console printer
1	4.8K, 9.6K, or 19.2K memory.

If the hardware configuration of the B 1000 site does not contain adequate hardware to support the full requirements of the emulated system, a limited device equation may be made by means of the B 1000 MCP. B 500 tape units cannot be file equated to any device other than tape.

- An optional trace of the B 500 system instructions is included.
- Sense switches 1 through 6 are emulated.

ORGANIZATION

A brief description of the contents of the individual sections of the manual follows:

Section 1 is the introduction and describes the format of the syntax diagrams.

Section 2 describes the B 500 instructions that are emulated.

Section 3 describes the function of the B500/IEP program.

Section 4 describes the B 500 Interpreter commands.

Section 5 describes some of the special features available through the B 1000 MCP to the B 500 Interpreter.

RELATED DOCUMENTS

B 1000 Systems System Software Operation Guide, Volume 1, form number 1108982.

B 1800/B 1700 Systems System Software Operation Guide, Volume 2, form number 1108966.

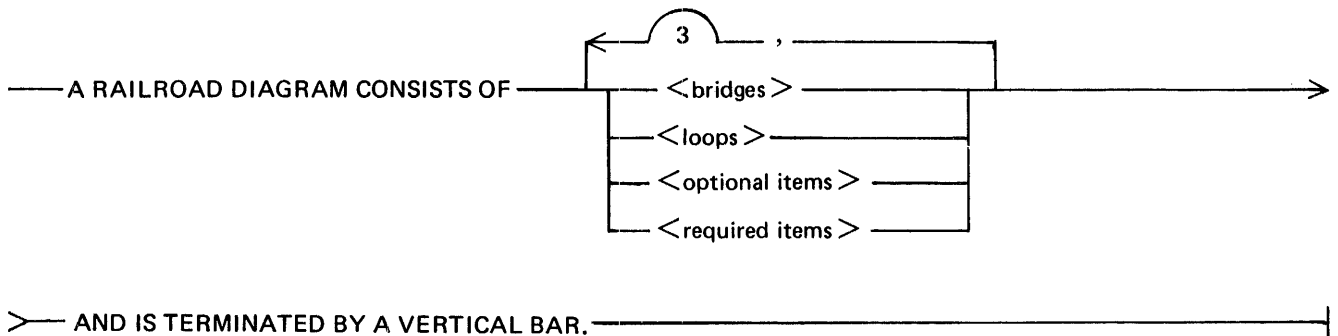
SYNTAX CONVENTIONS

Railroad diagrams show how syntactically valid statements can be constructed.

Following a railroad diagram from left to right, or in the direction of the arrow heads, and adhering to the limits illustrated by bridges will produce a syntactically valid statement. Continuation from one line of a diagram to another is represented by a right arrow appearing at the end of the current line and the beginning of the next line. The complete syntax diagram is terminated by a vertical bar (|).

Items contained in broken brackets (< >) are syntactic variables which are further defined in the text, and which require the user to supply the requested information.

Upper-case items must appear literally.



G50051

The following syntactically valid statements may be constructed from the above diagram:

A RAILROAD DIAGRAM CONSISTS OF <bridges> AND IS TERMINATED BY A VERTICAL BAR.

A RAILROAD DIAGRAM CONSISTS OF <optional items> AND IS TERMINATED BY A VERTICAL BAR.

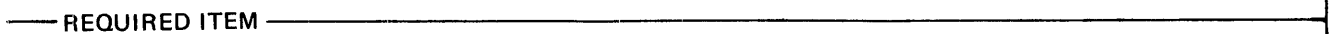
A RAILROAD DIAGRAM CONSISTS OF <bridges>, <loops> AND IS TERMINATED BY A VERTICAL BAR.

A RAILROAD DIAGRAM CONSISTS OF <optional items>, <required items>, <bridges>, <loops> AND IS TERMINATED BY A VERTICAL BAR.

REQUIRED ITEMS

No alternate path through the railroad diagram exists for required items or required punctuation.

Example:

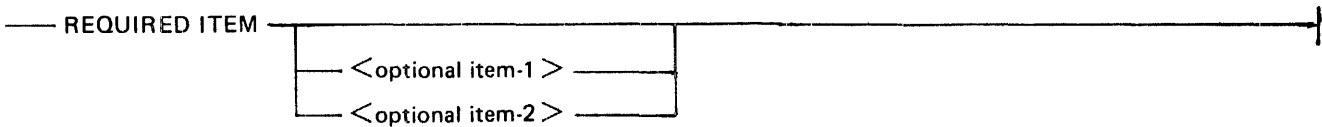


G50052

OPTIONAL ITEMS

Items shown as a vertical list indicate that the user must make a choice of the items specified. An empty path through the list allows the optional item to be absent.

Example:



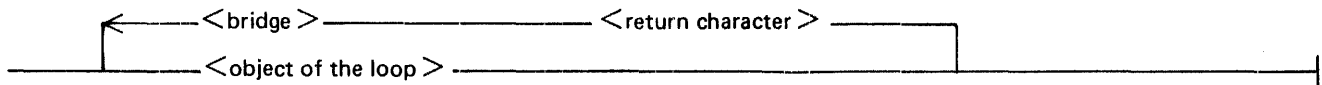
G50053

The following valid statements may be constructed from the above diagram:

```
REQUIRED ITEM
REQUIRED ITEM <optional item-1>
REQUIRED ITEM <optional item-2>
```

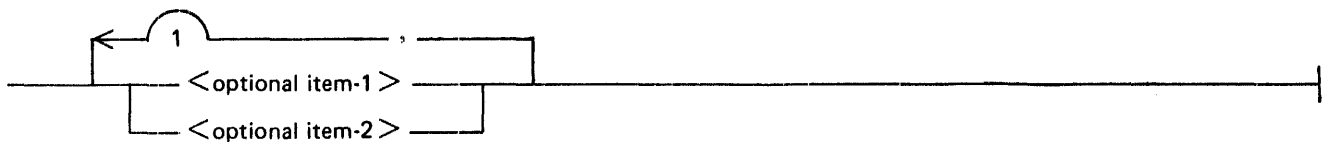
LOOPS

A loop is a recurrent path through a railroad diagram and has the following general format.



G50054

Example:



G50055

The following statements can be constructed from the railroad diagram in the example.


```
<optional item-1>
<optional item-2>
<optional item-1>,<optional item-1>
<optional item-1>,<optional item-2>
<optional item-2>,<optional item-1>
<optional item-2>,<optional item-2>
```


A loop must be traversed in the direction of the arrow heads, and the limits specified by bridges cannot be exceeded.

BRIDGES

A bridge illustrates the minimum or maximum number of times a path may be traversed in a railroad diagram.

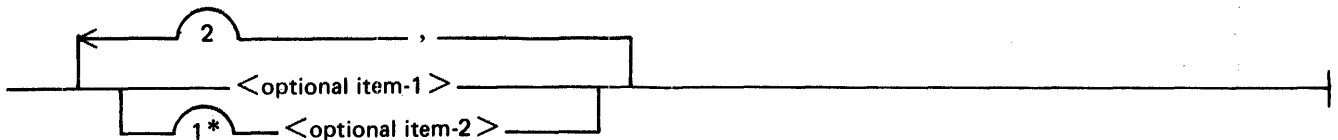
There are two forms of bridges.

 n is an integer which specifies the maximum number of times the path may be traversed.

 n* is an integer which specifies the minimum number of times the path must be traversed.

G50056

Example:



G50057

The loop may be traversed a maximum of two times; however, the path for <optional item-2> must be traversed at least one time.

The following statements can be constructed from the railroad diagram in the example.

<optional item-1>, <optional item-2>
<optional item-2>, <optional item-2>, <optional item-1>
<optional item-2>

NAMES

A name consists of one to ten alphanumeric characters. In the syntax diagrams, <pack-name>, <family-name>, <file-name>, and <environment-name> are regarded as names. A slash character (and no embedded blanks) is used between <pack-name>, <family-name>, and <file-name> when multiple names are used. Refer to the B 1000 Systems System Software Operation Guide, Volume 1, form 1108982, for a complete description of <pack-name>, <family-name>, and <file-name>.

SECTION 2

INSTRUCTIONS INTERPRETED

GENERAL

The following types of B 500 instructions are interpreted by the B 500 Interpreter:

- Arithmetic
- Editing
- Control
- Interrogate
- Card reader and card punch
- Line printer
- Magnetic tape
- Supervisory printer
- Disk file

The following types of B 500 instructions are not interpreted:

- Paper tape
- Sorter reader
- Lister
- Data communication
- Data transmission

I/O operation codes are recognized by the B 500 Interpreter and are handled by the B 1000 MCP. Except for B 500 tape, error recognition and recovery routines are performed by the B 1000 MCP. If automatic recovery from I/O errors cannot be accomplished by the MCP, an error message is displayed on the operator display terminal (ODT), or the B 500 error branch is taken. The operator can then take the necessary steps to proceed.

ARITHMETIC INSTRUCTIONS

The following B 500 arithmetic instructions are interpreted:

- Addition (ADD)
- Subtraction (SUB)
- Multiplication (MUL)
- Division (DIV)

The B 500 comparison indicator is maintained as a result of the arithmetic process.

EDITING INSTRUCTIONS

The following B 500 editing instructions are interpreted:

- Transfer (TFR)
- Transfer and Branch (TCB)
- Transfer Zone (TFZ)
- Transfer Zone and Branch (TZB)
- Mask (MSK)
- Data Compress (DCC)
- Data Expand (DEC)

B 1000 Systems B 500 Interpreter Reference Manual Instructions Interpreted

Fiscal, fiscal inverted, and alphanumeric mask commands are emulated, as are the comparison indicators.

The following B 500 edit command is NOT interpreted:

Transfer and Translate (TT1, TT2, TT3)

CONTROL INSTRUCTIONS

The following B 500 control instructions are interpreted:

Address Modification (ADM)
Branch Conditional (BRC)
Branch Unconditional (BRU)
Compare Alpha Equal and Unequal (CAE, CAU)
Compare Zone Equal and Unequal (CZE, CZU)
Compare Numeric Equal and Unequal (CNE, CNU)
Halt (HLT)
No Operation (NOP)

All comparison indicators are maintained.

INTERROGATE

The following B 500 interrogate instructions are interpreted:

Interrogate Card Reader (ICR) (Not Ready only)
Interrogate Card Punch (ICP) (Ignored)
Interrogate Line Printer (ILP) (Ignored)
Interrogate Console Printer (ISP) (Ignored)
Interrogate Magnetic Tape Unit Ready (IMR) (Ignored)
Interrogate Magnetic Tape Unit Write (IMW) (Ignored)
Interrogate Sense Switches (TSS)
Branch Bit Equal (BBE)
Branch Bit Unequal (BBU)
Set Bit (SBT)
Reset Bit (RSB)

The following B 500 interrogate instructions are NOT interpreted:

Paper Tape Reader (IPR)
Paper Tape Punch (IPP)
Lister (IPL)

CARD READER AND CARD PUNCH

The following B 500 card instructions are interpreted:

Card Read (CRD)
Card Punch (PCH) (BCL only)
Card Read/Branch busy (CRI) (When the M-variant equals 1)

LINE PRINTER

The following B 500 line printer instructions are interpreted:

Print on Printer (PRT)
Skip on Printer (SKP)

MAGNETIC TAPE

The following B 500 magnetic tape instructions are interpreted:

Magnetic Tape Read (TRD)
Magnetic Tape Write (TWR)
Magnetic Tape Erase (TER)
Magnetic Tape Backspace (BSP)
Magnetic Tape Rewind (RWD)
Magnetic Tape Binary Read (BRD)
Magnetic Tape Binary Write (BWR)

CONSOLE PRINTER

The following B 500 console printer instructions are interpreted:

Console Printer Read (SPR)
Console Printer Write (SPO)

DISK FILE

The following B 500 disk file instructions are interpreted:

Disk File Write (DFW)
Disk File Read (DFR)
Disk File Check (DFC)
Disk File Interrogate (DFI)

B 500 PANEL

The following B 500 control panel indicators and switches are emulated by the B 1000 operator display terminal:

Sense switches 1 through 6
SINGLE INSTRUCT
READ MEMORY
WRITE MEMORY
CLEAR
HALT
LOAD
CONTINUE

B 1000 Systems B 500 Interpreter Reference Manual
Instructions Interpreted

The B 1000 operator display terminal also performs functions comparable to the following switch and indicator functions:

Instruction
Memory Display
Memory Address
Instruction Address

The following switches and indicators present on the B 500 control panel are NOT emulated:

POWER ON
POWER OFF
EMERGENCY OFF
CONSOLE PRINTER
DISK FILE/DATA COMM
TAPE
PRINTER
PUNCH
READER 2/SORTER
READER 1
CENTRAL PROCESSOR
BIT RESET

SECTION 3 B500/IEP

GENERAL

The B 500 Interpreter Environment Program (B500/IEP) is used to establish an environment codefile for execution under control of the B 1000 MCP. This environment codefile is also used by the B 500 Interpreter in its processing. Establishing an environment file parallels the compilation of a B 1000 programming language except that there is no object code produced, B 500 or otherwise.

Input to the B500/IEP describes such items as B 500 memory size, peripheral configuration, B 500 Interpreter special options, and B 1000 file information.

SYNTAX NOTATION

The B500/IEP specifications are shown using railroad diagrams. The specifications are in free-form format and are located in the input record positions 1 through 72, with positions 73 through 80 used for program identification or sequence numbers.

A percent sign (%) delimits the scanning of the record; text following the “%” is ignored. The “%” can be used to precede comments.

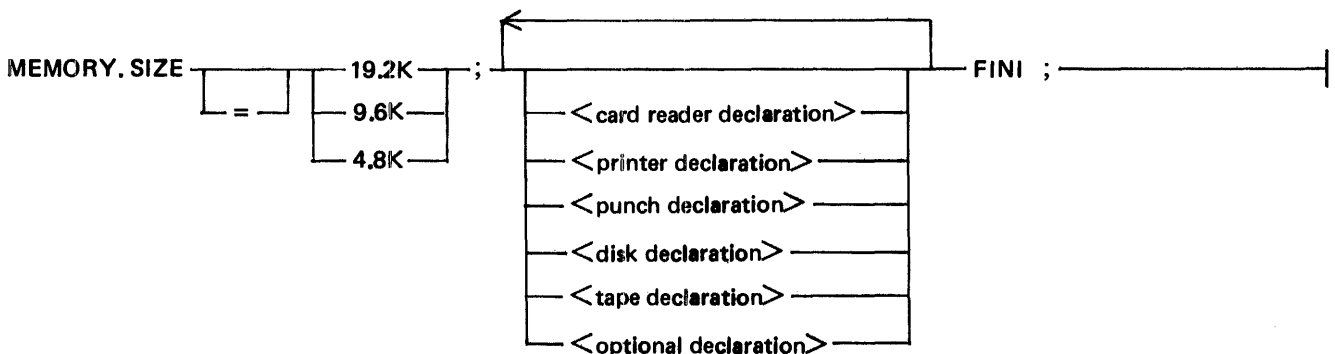
SYNTAX OF THE B500/IEP

The paragraphs that follow describe the syntax of the B500/IEP. Examples that show the use of each declaration are included.

MAIN SYNTAX

The main syntax consists of the memory size declaration, optionally followed, in any order, by one or more of the peripheral or optional declarations.

Syntax:



G49975

The declarations are terminated by the keyword FINI.

The MEMORY.SIZE declaration indicates the B 500 machine memory size. Memory size may be 4.8K, 9.6K, or 19.2K.

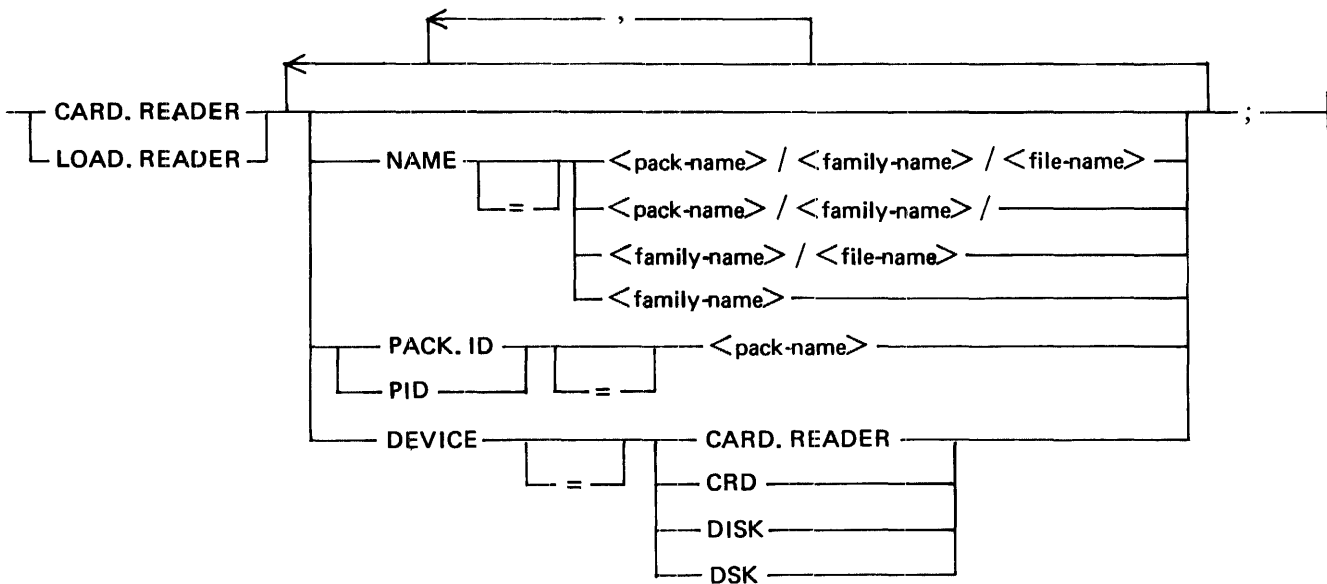
An example of a MEMORY.SIZE declaration follows:

```
MEMORY.SIZE = 19.2K;
```

CARD READER DECLARATION

The card reader declaration may be used to specify the name and type of a B 1000 device for the B 500 card input.

Syntax:



G49976

There are two types of card input to the B 500: object program decks read when the LOAD button is pushed on the B 500, and data decks read by B 500 card read operations. These decks are separate files on the B 1000. LOAD.READER specifies the attributes of the object program decks. CARD.READER specifies the attributes of the data decks.

The NAME specifies the B 1000 file name of the B 500 card file. If the B 500 card input is from a B 1000 card reader, the name is used on the B 1000 label (DATA) card that must precede the card deck. The card deck is terminated by a B 1000 END card. If the B 500 card input is a B 1000 disk file, then the name is the B 1000 disk file name. The default name is B500.CARDS.

When the B 500 card input is a B 1000 disk file, the PACK.ID or PID may be used to specify the B 1000 user pack identification.

The DEVICE specifies the B 1000 device that the B 500 card file is to be read from. CARD.READER or CRD specify a B 1000 card reader. DISK or DSK specifies B 1000 disk. B 500 card files can be loaded to B 1000 disk with B 1000 system utility programs, as described in the B 1800/B 1700 Systems System Software Operation Guide, Volume 2, form number 1108966.

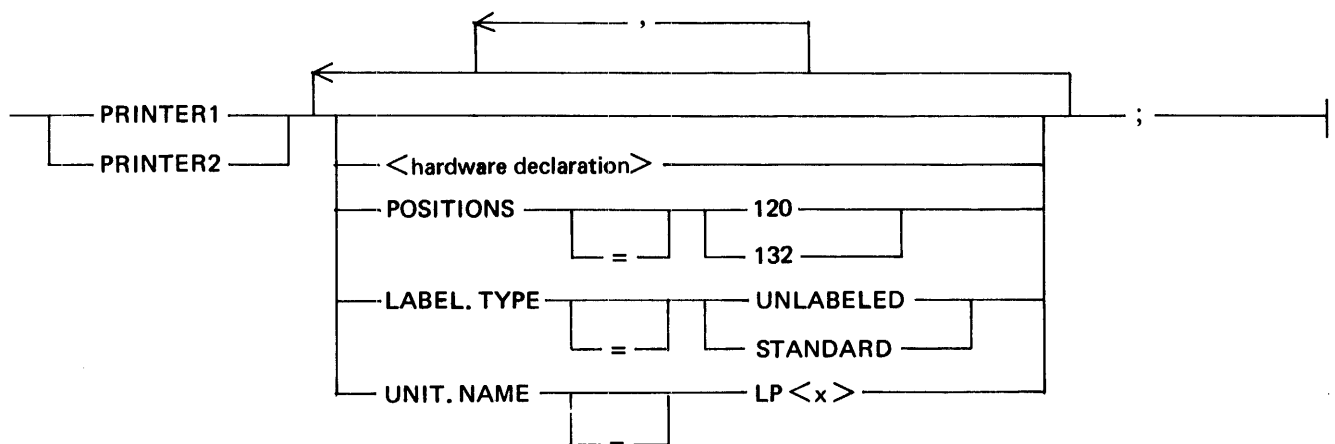
Examples:

```
LOAD.READER NAME = USER1/B500/OBJECT, DEVICE = DISK;
CARD.READER NAME = CARDS, DEVICE = CARD.READER;
CARD.READER PACK.ID = USER1;
```

LINE PRINTER DECLARATION

The line printer declaration can specify the number of characters on the B 500 line printer line (120 or 132), the B 1000 backup status, the B 1000 printer label type, and the desired B 1000 line printer.

Syntax:



G49977

PRINTER1 and PRINTER2 specify which printer is to be used, as specified in the M variant of the B 500 print or skip operand.

The <hardware declaration> is described under Hardware Declaration in this section.

POSITION specifies the number of characters in the B 500 print line. The default is 132 characters.

The LABEL.TYPE of STANDARD means to print a B 1000 label page at the beginning and end of the B 500 line printer output. LABEL.TYPE of UNLABELED suppresses the B 1000 label. The default is STANDARD.

The UNIT.NAME specifies the desired B 1000 line printer to use (such as LPA). The <x> is the B 1000 unit letter.

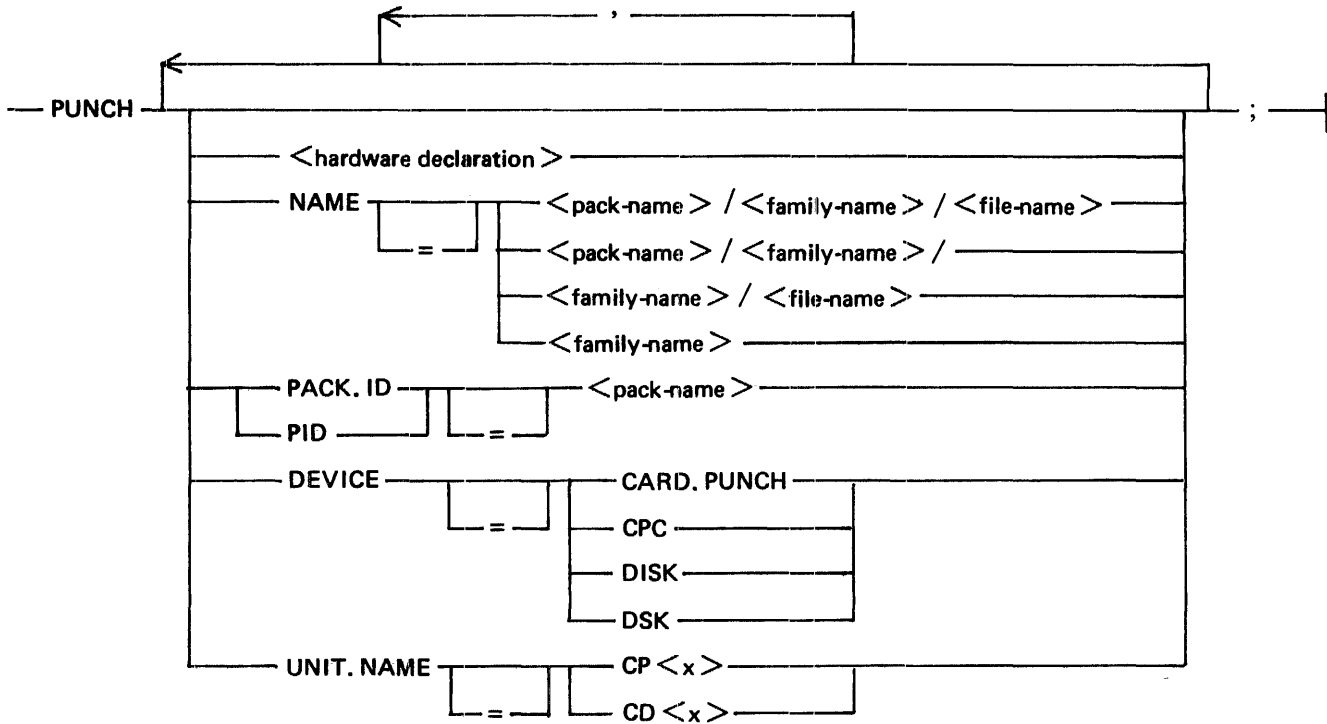
Example:

```
PRINTER1 POSITIONS = 132, LABEL.TYPE = STANDARD, UNIT.NAME = LPA;
```

CARD PUNCH DECLARATION

The card punch declaration specifies the B 1000 backup status, the B 1000 label card name, the desired B 1000 device, and the desired B 1000 unit.

Syntax:



G49978

The <hardware declaration> is described in the following subsection.

The NAME specifies the B 1000 file name of the B 500 card punch file. If the B 500 card punch is to be a B 1000 card punch, the name is punched on the B 1000 label (DATA) card that precedes the card deck. The card deck is terminated by a B 1000 END card. If the B 500 card punch is to be a B 1000 disk file (not a backup punch file), then the name is the B 1000 disk file name. The default name is B500.CARDS.

The PACK.ID or PID may be used when the B 500 card punch is to be a B 1000 disk file, to specify the B 1000 user pack identification.

The DEVICE specifies the B 1000 device for the B 500 card file. CARD.PUNCH or CPC specifies a B 1000 card punch. DISK or DSK specifies a B 1000 disk file. This is a B 1000 disk file, not a backup punch file.

The UNIT.NAME specifies the desired B 1000 card punch, such as CPA or CDA. CP<x> specifies a B 1000 card punch. CD<x> specifies a B 1000 multifunction card unit. The <x> is the B 1000 unit letter.

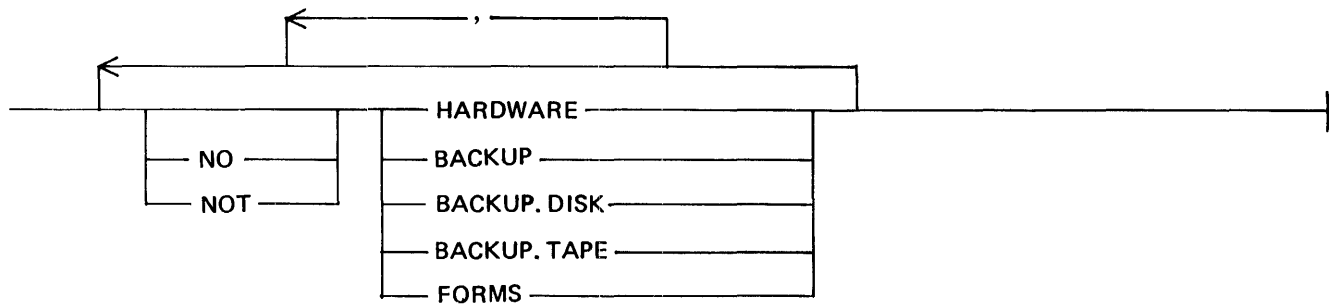
Examples:

```
PUNCH NAME = USER/B500/OUTPUT, DEVICE = DISK;  
PUNCH NAME = B500.CARDS, DEVICE = CARD.PUNCH, UNIT.NAME = CPA;
```

HARDWARE DECLARATION

The hardware declaration specifies the backup status and forms option of the line printer or card punch file.

Syntax:



G49979

Specifying **HARDWARE** allows the output to go to the line printer or card punch automatically if a line printer or card punch is available.

Specifying **BACKUP** causes the file to go to a B 1000 line printer or card punch backup disk or tape.

Specifying **BACKUP.DISK** allows the file, if backup, to be sent to disk. Specifying **BACKUP.TAPE** allows the file, if backup, to be sent to tape.

Specifying **FORMS** causes the printing or punching of the output to follow operator intervention, allowing special forms to be mounted on the line printer or the card punch.

A **NO** or **NOT** before any option negates that option. For example, **NO HARDWARE** prevents printing or punching of the file, allowing it to go to backup only.

The default is set to **HARDWARE**, with **NOT BACKUP**, and **NOT FORMS**.

Examples:

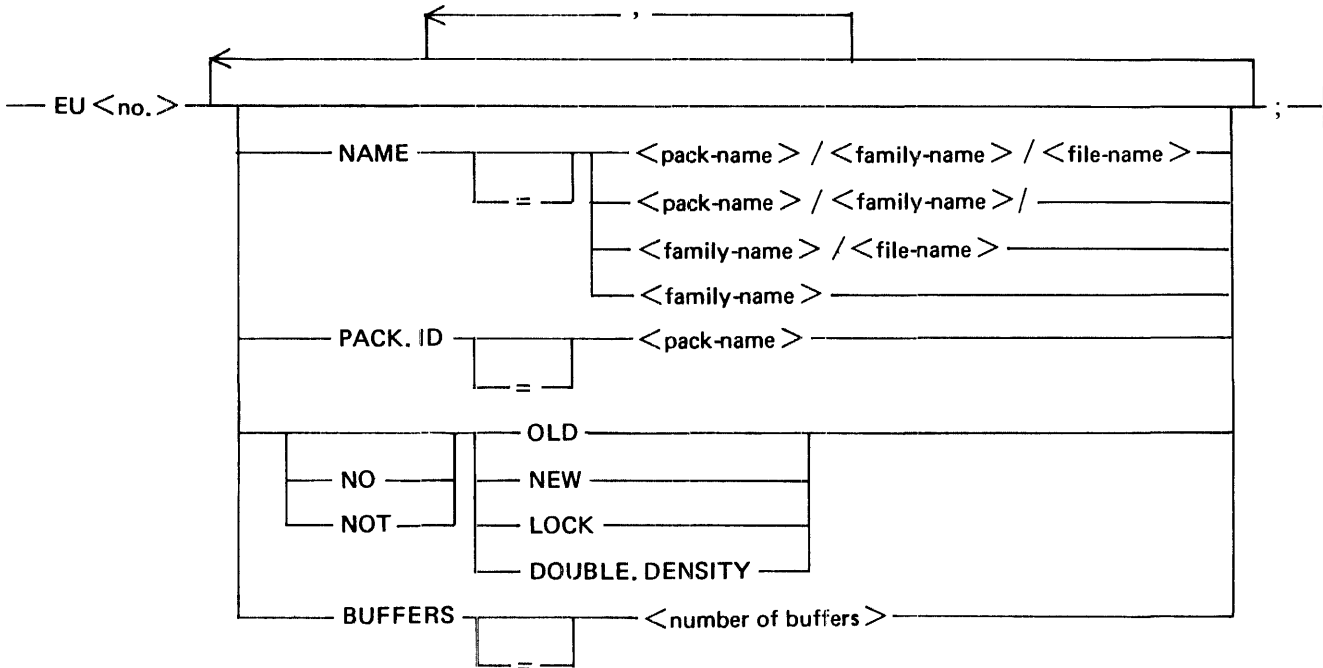
```
PRINTER1 HARDWARE, NO BACKUP;
```

```
PUNCH DEVICE = CARD.PUNCH, NO HARDWARE, BACKUP.DISK;
```

DISK DECLARATION

The disk declaration is used to specify each B 500 electronic unit (EU) attached to the B 500 system. If the B 500 EU is not specified, it is assumed not to exist on the emulated B 500 system. Each B 500 EU is considered to be a B 1000 disk file by the B 1000 MCP, and is handled as such. The specifications in the disk declaration pertain to the way the B 1000 MCP handles the file and the B 1000 filename.

Syntax:



G49980

The <no.> in the EU<no.> is a digit from 0 to 9 which represents the B 500 EU, as specified by the first digit of the B 500 disk address.

The NAME specifies the B 1000 file-name of the B 500 EU. The default B 1000 file-name is B500/EU<no.>, where <no.> is a digit from 0 to 9 that represents the EU number.

The B 1000 disk file is, by default, considered an OLD (already on B 1000 disk) file by the B 1000 MCP. Specifying NEW causes a new file to be created. If LOCK and NEW are specified, the new file is saved after the B 500 environment has gone to a B 1000 end of job. A NO or NOT preceding the NEW, OLD, or LOCK causes the opposite of that option.

Specifying DOUBLE.DENSITY indicates that the B 500 EU is a double-density EU (400,000 B 500 disk segments as opposed to 200,000).

The BUFFER specification indicates how many B 1000 I/O buffers to allocate to the B 1000 disk file. Specifying <number of buffers> causes the B 1000 MCP to allocate that number of I/O buffers to the disk file. Specifying more buffers may increase the execution speed of B 500 programs, but it does require additional B 1000 memory for the buffers. The <number of buffers> can be from 1 to 15. The default is 1.

A B 500 EU is regarded as a random disk file by the B 1000 MCP. The B 1000 file has a B 1000 record size of 180 characters, with 10 records per block. The B 1000 file has 250 blocks per area (500 if DOUBLE.DENSITY), with 80 areas. A disk area is allocated only when the area is first written. Each B 1000 record is regarded as one B 500 disk segment because 180 times eight bits equals 240 times six bits. The B 500 disk address is used as the random key into the B 1000 disk file.

Examples:

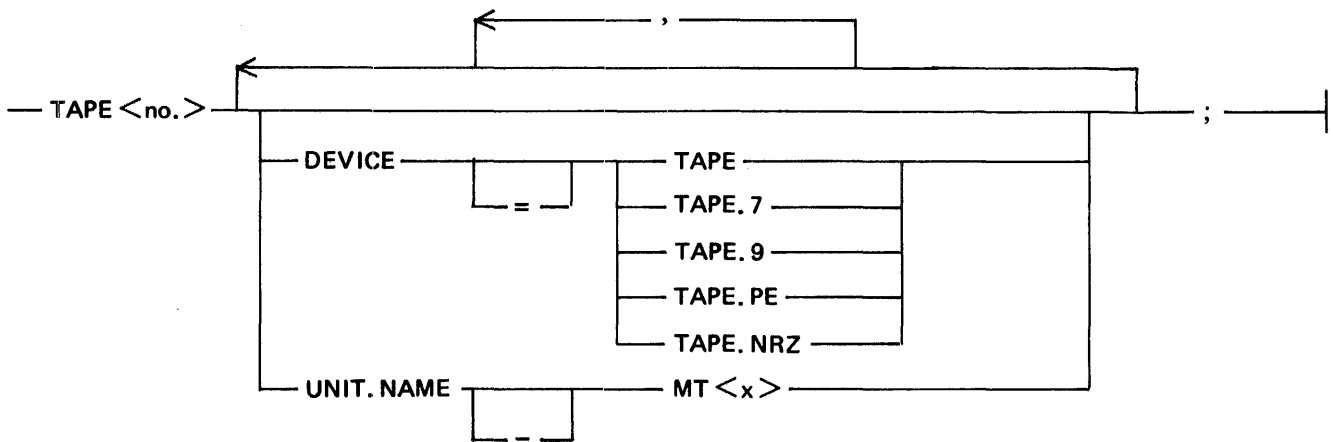
EU0 NAME = USER/B500/EU0, OLD, BUFFERS = 5;

EU4 NAME = USER/A/B, NEW, LOCK, DOUBLE.DENSITY, BUFFERS = 3;

TAPE DECLARATION

The tape declaration is used to specify each B 500 tape drive that is attached to the B 500 system. If the B 500 tape drive is not specified, it is assumed not to exist on the emulated B 500 system.

Syntax:



G49981

The <no.> in TAPE<no.> is a digit from 1 to 6 that represents the B 500 tape drive, as specified in the N variant of the B 500 tape operand.

DEVICE indicates which type of B 1000 tape drive is requested: 7-track (TAPE.7), 9-track (TAPE.9), 9-track NRZ (TAPE.NRZ), 9-track PE (TAPE.PE), or any type of tape (TAPE). Default is 7-track (TAPE.7) tape. B 500 tape files must be on tape on the B 1000 system; they cannot be file-equated to B 1000 disk or any other type of B 1000 device.

The UNIT.NAME specifies which B 1000 tape drive to use (such as MTA). The <x> is the B 1000 unit letter. The DEVICE specification is ignored if UNIT.NAME is specified. If UNIT.NAME is omitted, a scratch tape on a valid tape device (such as a 9-track tape if the DEVICE is specified as TAPE.9) is used. If a scratch tape cannot be found, the B 1000 MCP asks the B 1000 system operator for an assignment to a tape drive. A discussion of tape assignment by means of the B 1000 messages UL or OU, or by the MODIFY, EXECUTE, and DYNAMIC statements can be found in Section 5 under Tape Assignment.

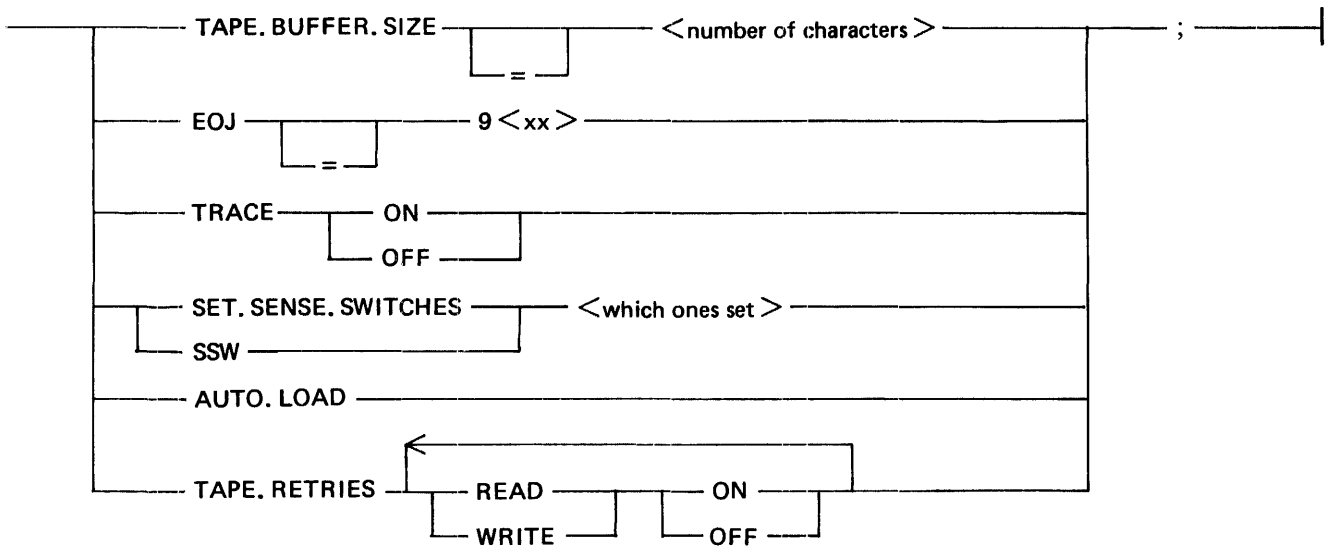
Example:

TAPE1 DEVICE = TAPE.7, UNIT.NAME = MTB;

OPTIONAL DECLARATIONS

Optional declarations are for specifying special B 500 Interpreter options.

Syntax:



G49982

The TAPE.BUFFER.SIZE option specifies the number of characters of the largest B 500 tape block to be read or written (includes binary read and writes also). The <number of characters> is a number from 0 to 19200, and represents the tape buffer size in characters. If the tape buffer is too small, the B 500 Interpreter is not able to execute the B 500 tape instruction. Specifying too large a tape buffer wastes memory on the B 1000 system. If a tape buffer size is not specified and tape drives are included in the environment, the TAPE.BUFFER.SIZE is set to 2400 characters.

If EOJ is specified, the environment goes to a B 1000 end of job when the B 500 Interpreter executes a B 500 halt instruction with the M and N variants of the B 500 halt instruction equal to the <xx>.

The TRACE option specifies to the interpreter to trace and print on the line printer the B 500 instructions as they are executed. The default is TRACE OFF. TRACE sets the trace option at the B 1000 beginning of job. The TRACE option can be set or reset at any time. Refer to Section 5 for details on tracing B 500 instructions.

The SET.SENSE.SWITCHES or SSW options are used to set the B 500 sense switches specified at B 1000 beginning of job. The <which ones set> is a series of digits from 1 to 6 representing the B 500 sense switches. The sense switches may be set or reset by the operator at any time during execution. The default is no switches set.

The AUTO.LOAD option specifies that the B 500 Interpreter is to do the B 500 sequence of CLEAR, LOAD, CLEAR, and CONTINUE automatically at B 1000 beginning of job. The B 500 object program is loaded into B 500 memory, and B 500 execution is begun (at B 500 memory address 000). This option sets the B 1000 program switch 0 (refer to Section 5 for details on B 1000 program switch 0).

The TAPE.RETRIES option indicates how B 500 tape errors are to be handled. TAPE.RETRIES is separated into two classes of B 500 tape operands: READ and WRITE. READ specifies all B 500 tape read operands. WRITE specifies all B 500 tape write operands. ON specifies that tape retry is to be handled by the B 1000 MCP, and OFF specifies that the B 500 program is to handle the error (the B 500 tape error branch is taken). If ON is specified and the B 1000 MCP is unable to correct the tape error, the environment is abnormally terminated (DSed) by the B 1000 MCP. The default is OFF for both READ and WRITE.

Examples:

```
TAPE.BUFFER.SIZE = 24000;  
EOJ = 999;  
TRACE OFF;  
SET.SENSE.SWITCHES = 1245;  
AUTO.LOAD;  
TAPE.RETRIES READ OFF WRITE ON;
```

COMPILATION

The B500/IEP creates an environment file using the standard B 1000 compiler control statements plus the specification statements. Normally, this file contains the following statements: COMPILE, DATA, the specifications, and END. The COMPILE statement may be entered on the B 1000 ODT or on a card with an invalid character punched in the first column. The DATA statement normally follows the COMPILE statement, and the DATA and the END statement must have invalid character punches in the first column.

The following is an example of a card deck for creation of a B 500 Interpreter environment called B500/TEST. The B500/TEST environment has 9.6K of memory, 132-character line printer, a card punch, and terminates B 500 processing upon execution of a B 500 999 halt. It is desirable to create this environment on B 1000 disk (to library) for later execution.

```
?CO B500/TEST WITH B500/IEP TO LIBRARY  
?DATA CARDS  
MEMORY.SIZE = 9.6K;  
PRINTER1 POSITIONS = 132;  
PUNCH;  
EOJ = 999;  
FINI;  
?END
```

The specification file may be a disk file that is file-equated at compile time. This may be accomplished by entering the following statement:

```
?CO B500/TEST WITH B500/IEP TO LIBRARY  
?FILE CARDS NAME <disk-file-name> DISK;
```

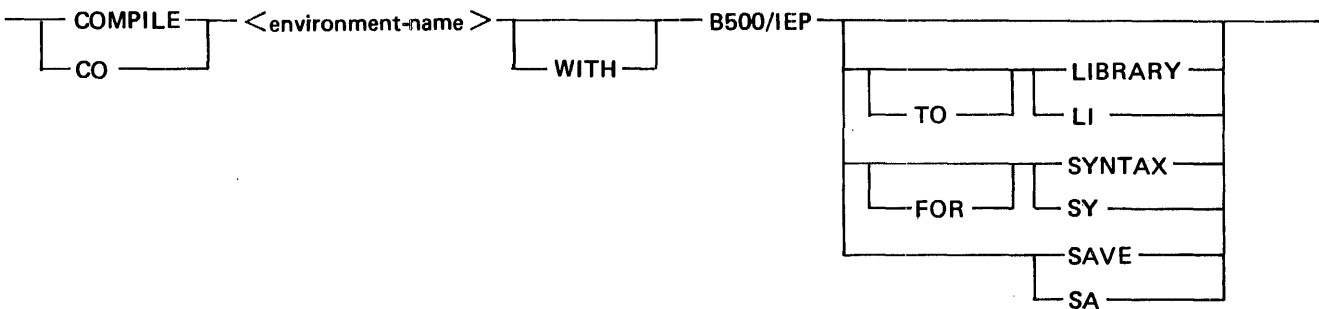
The specifications may be made through B 1000 ACCEPT messages on the B 1000 operator display terminal (ODT), by setting program switch 0 of the B500/IEP at the beginning of job.

B 1000 Systems B 500 Interpreter Reference Manual
B500/IEP

Example:

```
?CO B500/TEST WITH B500/IEP TO LIBRARY; SW 0 = 1
  B500/IEP : B500/TEST = 1234 BOJ ...
  B500/IEP : B500/TEST = 1234 ACCEPT.
1234AXMEMORY.SIZE = 9.6K;
1234AXPRINTER1 POSITIONS = 132;
1234AXPUNCH;
1234AXEOJ = 999;
1234AXFINI;
```

The COMPILE statement designates the type of compilation to be performed. The format of the COMPILE statement is:



G49983

The COMPILE statement has four options: COMPILE, COMPILE TO LIBRARY, COMPILE SAVE, and COMPILE FOR SYNTAX.

The COMPILE option is for a “compile and go” operation. If the specifications are error-free, the B 1000 MCP schedules the environment for execution. The environment-name is not entered into the B 1000 disk directory, and must be recompiled to be used again. The “compile and go” is the default option of the COMPILE statement.

The COMPILE TO LIBRARY leaves the environment on disk and enters the environment-name into the B 1000 disk directory for later execution, if there are no errors in the specifications.

The COMPILE SAVE combines the execute and LIBRARY options. If there are no errors in the specifications, the B 1000 MCP enters the environment-name into the B 1000 disk directory and leaves the environment on disk. It also schedules the environment for execution. The environment remains on the B 1000 disk.

The COMPILE FOR SYNTAX provides a diagnostic listing as the only output. This option does not enter the environment-name into the B 1000 disk directory or leave the environment on disk. It is used primarily as a debugging tool, for a first-time compilation, or for a new source listing.

B 1000 Systems B 500 Interpreter Reference Manual
B500/IEP

To execute the environment file after it has been compiled to library, the B 1000 EXECUTE control statement is entered on either the B 1000 ODT or on a card that has an invalid character punched in the first column. The format of the EXECUTE statement is:



G49984

For further information on the COMPILE and EXECUTE statements, refer to the B 1000 Systems System Software Operation Guide, Volume 1, form number 1108982.

SECTION 4 INTERPRETER OPERATION

B 500 INTERPRETER COMMANDS

Through the B 1000 operator display terminal, the user can send commands to the B 500 environment in order to emulate B 500 console control functions, to modify B 500 programs, or to send data to B 500 programs.

The commands sent through the operator display terminal use the standard MCP ACCEPT command. For a complete discussion of the MCP ACCEPT command, refer to the B 1000 Systems System Software Operation Guide, Volume 1, form number 1108982. The B 500 environment command and the format is shown in this section using railroad diagrams. The syntax consists of the B 1000 job number (<job-number>), followed by AX, followed by the command and any parameters to the command. Embedded blanks are taken literally. Unless the embedded blank is specifically desired, no embedded blanks should occur in the command syntax.

In the command examples given in the following section, it is assumed that the environment name is A/B and the B 1000 environment job number is 1234.

B 1000 Systems B 500 Interpreter Reference Manual
Interpreter Operation

?

SEND CONSOLE PRINTER DATA TO B 500 PROGRAM

Syntax:

— <job-number> AX ? <message> ————— |
G49985

Function:

The ? command is used to send console printer data to B 500 programs. The entire <message> field is sent to the B 500 program on the next occurrence of a B 500 SPO READ operation. The <message> field may be up to 71 characters in length and must immediately follow the question mark.

NOTE

The ? separates messages that are directed to the user program as opposed to messages directed to the B 500 Interpreter.

Example:

1234AX?THIS IS A B500 PROGRAM MESSAGE

CL

CLEAR B 500 VIRTUAL MACHINE

Syntax:

— <job-number> AX — CL —————|

G49986

Function:

The CL command is used to emulate the CLEAR button on the B 500 console. It sets the B 500 comparison indicator to EQUAL, resets all B 500 disk indicators, and sets the B 500 Instruction Address to 000.

Example:

1234AXCL

CLC

CLEAR AND CONTINUE

Syntax:

— <job-number> AX — CLC —————
 └─── <memory location> ───┘

G49987

Function:

The CLC command is used to emulate the B 500 sequence of pushing the CLEAR button and then pushing the CONTINUE button.

If the <memory location> field is omitted, the B 500 starts execution at B 500 location 000. If the <memory location> field is a valid, 3-character B 500 memory address, the B 500 starts execution at the given B 500 <memory location>. If the <memory location> is not a valid B 500 memory location, an INVALID SPO INPUT message is displayed on the B 1000 operator display terminal.

Examples:

1234AXCLC
1234AXCLCA00

CLL

CLEAR AND LOAD B 500 MEMORY

Syntax:

— <job-number> AX — CLL —————|
G49988

Function:

The CLL command is used to emulate the B 500 sequence of pushing the CLEAR button and then pushing the LOAD button.

The B 500 memory is loaded from cards beginning at B 500 memory location 000 and continuing until either the cards are exhausted or the end of B 500 memory has been reached. If there are more cards available than needed to fill memory, the extra cards are not used.

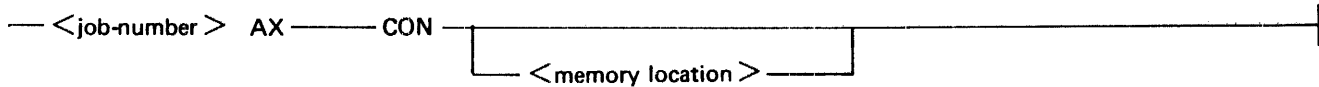
Example:

```
1234AXCLL
% A/B = 1234 MEMORY LOADED FROM 000 TO 04@
A/B = 1234 ACCEPT.
```


CON

CONTINUE B 500 EXECUTION

Syntax:



G49989

Function:

The CON command is used to emulate the B 500 CONTINUE button.

If the <memory location> field is omitted, the B 500 starts execution at the location at which it has been stopped. If the <memory location> field is a valid, 3-character B 500 memory address, the B 500 starts execution at the given B 500 <memory location>. If the <memory location> is not a valid B 500 memory location, an INVALID SPO INPUT message is displayed on the B 1000 operator display terminal.

Example:

1234AXCON
1234AXCONB00

DSW

DISPLAY B 500 SENSE SWITCHES

Syntax:

```
— <job-number> AX — DSW —————|  
G49990
```

Function:

The DSW command is used to display the current B 500 sense switch settings.

The B 500 sense switches are displayed in numerically descending order on the B 1000 operator display terminal unless there are no sense switches set, in which case the message NO SWITCHES SET is displayed.

Examples:

```
1234AXDSW  
% A/B = 1234 SW = 6431  
1234AXDSW  
% A/B = 1234 SW = -NO SWITCHES SET-
```

EOF

SIMULATE END OF FILE ON DEVICE

Syntax:

— <job-number> AX — EOF <mnemonic> —————|

G49991

Function:

The EOF command is used to free a B 1000 device for use by another B 1000 program. The EOF command generates a B 1000 file close on the file. The EOF command is useful when multiprogramming the B 500 environment with other B 1000 jobs or other B 500 environments which require the B 1000 peripheral devices in use by the B 500 environment. An EOF on the B 1000 card reader requires the use of a B 1000 DATA card to re-establish that card reader as a device to be used by that B 500 environment.

The following devices may be freed by the EOF command:

Device	Mnemonic
CARD.READER	CRD
PUNCH	PCH
PRINTER1	PR1
PRINTER2	PR2
TAPEn	TPn

where
n = 1-6

Examples:

1234AXEOF CRD
1234AXEOF TP6

EOJ

TERMINATE

Syntax:

— <job-number> AX — EOJ ————— |
 | 9 <xx> |

G49992

Function:

The EOJ command is used to terminate the B 500 environment in a normal B 1000 fashion.

If 9<xx> is omitted, the environment goes to an immediate B 1000 end of job.

The <xx> are any two alphanumeric characters representing the M and N variants of the B 500 halt operand. If EOJ9xx is specified, the environment goes to B 1000 end of job when the B 500 executes a B 500 halt 9xx, with the M and N variants equal to the xx.

The EOJ command may be entered at any time, except when the B 500 Interpreter is in a state corresponding to a B 500 processor halt waiting for an I/O device to be ready. When the B 500 Interpreter is in this state, it is characterized by the B 1000 MCP message:

<environment name> <device> NOT READY

In order to terminate the B 500 environment in this case, it is necessary to enter <job-number>DS on the operator display terminal.

Example:

1234AXEOJ
1234AXEOJ999

HLT

STOP B 500 EXECUTION

Syntax:

— <job-number> AX — HLT ————— |
 └───┬───┘
 <memory location>

G49993

Function:

The HLT command is used to emulate the B 500 HALT button.

If <memory location> is present, the B 500 Interpreter stops processing B 500 instructions after executing the B 500 instruction at the B 500 <memory location>.

If <memory location> is omitted, the last executed B 500 instruction and its location is displayed, and the B 500 Interpreter stops processing B 500 instructions and waits for a B 1000 ACCEPT MCP command.

After the B 500 Interpreter has stopped processing B 500 instructions, the last B 500 instruction executed is displayed with three leading blanks and is followed by “@<location>”. The instruction at the <location> B 500 memory location has already been executed at the time it is displayed.

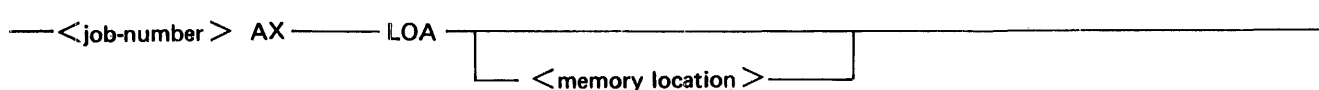
Example:

```
1234AXHLTA00
% A/B = 1234 A10 000 B00 000 @ A00
1234AXHLT
% A/B = 1234 A10 000 B00 000 @ 100
```

LOA

LOAD B 500 MEMORY

Syntax:



G49994

Function:

The LOA command is used to emulate the B 500 LOAD button. This command is used to load B 500 memory with a B 500 object program.

If the <memory location> field is omitted, the B 500 Interpreter begins loading B 500 memory at B 500 location 000; otherwise, B 500 memory is loaded at the B 500 memory location given in the <memory location> field.

Memory is loaded from cards until either the cards are exhausted or the end of B 500 memory is reached. If there are more cards available than needed to fill memory, the extra cards are not used.

Examples:

```
1234AXLOA
1234AXLOAB00
```

REA

READ B 500 MEMORY

Syntax:

— <job-number> AX — REA <memory location> —————|

G49995

Function:

The REA command is used to display the contents of B 500 memory beginning at the B 500 memory location given by the <memory location> field and continuing for 12 succeeding locations.

If the <memory location> field is omitted or is not a valid B 500 memory location, an INVALID INPUT message is displayed.

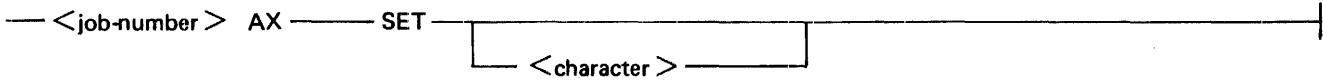
Examples:

```
1234AXREAA00
% A/B = 1234 A00 = A10C00B00000
```


SET

SET B 500 MEMORY TO A SINGLE CHARACTER

Syntax:



G49997

Function:

The SET command is used to set all B 500 memory locations to the single character given in the <character> field. If the <character> field is omitted, all B 500 memory locations are set to the character "blank."

Examples:

1234AXSET
1234AXSET9

B 500 SINGLE INSTRUCTION

Syntax:

— <job-number> AX — SIN —————
 └───┬───┘
 <memory location>

G49998

Function:

The SIN command is used to execute the next B 500 instruction and allows the operator to examine the instruction and memory location after execution. The instruction and its location are displayed on the B 1000 operator display terminal, and the environment waits for a B 1000 ACCEPT MCP command. The B 500 instruction is displayed with three leading blanks and is followed by @<location>. The instruction is executed before it is displayed.

If the <memory location> field is omitted, the next sequential B 500 instruction is executed; otherwise, execution of the single B 500 instruction at the B 500 <memory location> is executed.

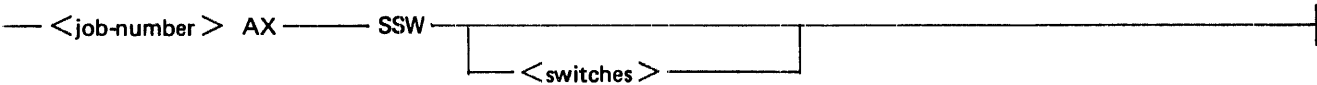
Examples:

```
1234AXSINA00  
1234AXSIN
```

SSW

SET B 500 SENSE SWITCHES

Syntax:



G49999

Function:

The SSW command is used to set or display the current B 500 sense switch settings.

When the <switches> field is omitted, the B 500 sense switches are displayed in numerically descending order on the B 1000 operator display terminal. When the <switches> field contains valid B 500 sense switch numbers, each of the switches specified is then set. When the <switches> field contains an invalid B 500 sense switch number, an INVALID INPUT message is displayed, and none of the switches are changed.

Examples:

1234AXSSW
1234AXSSW1325

WRI

WRITE B 500 MEMORY

Syntax:

— <job-number> AX — WRI <memory location> <new contents> ————— |
G50000

Function:

The WRI command is used to write the <new contents> at the B 500 memory location given by the <memory location> field.

The <memory location> field is a 3-character B 500 address.

The <new contents> field may be from 1 to 48 characters in length. The B 500 memory is written starting at the B 500 address given in the <memory location> field and continuing until the <new contents> field is exhausted.

If the <memory location> field contains a B 500 address such that the end of the B 500 memory is reached before the <new contents> field is exhausted, memory wrap around occurs and writing continues at B 500 memory location 000.

Example:

1234AXWRIA00A10C00B00000

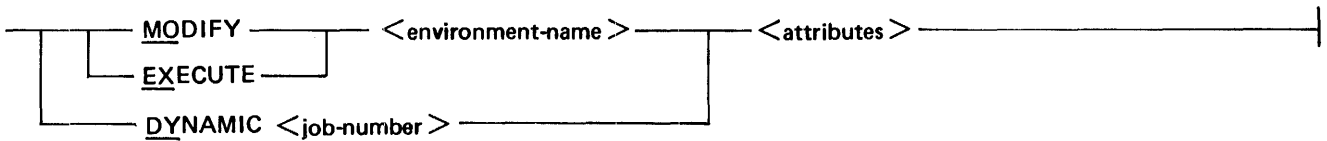
SECTION 5 MCP INTERFACE

GENERAL

Some of the features and options available through the B 1000 MCP are discussed in this section. These features and options are further discussed in the B 1000 Systems System Software Operation Guide, Volume 1, form number 1108982.

ENVIRONMENT PARAMETER CHANGES

Some specifications made in the B 500 environment can be changed after compilation. These specifications include external B 1000 file-names for the card reader, card punch, and disk EU's, B 1000 tape unit assignment and device type for the tape files, and the NEW and LOCK functions of the B 1000 disk files. The three B 1000 MCP commands that can change the specifications are the MODIFY, EXECUTE, and DYNAMIC statements. The statements may be entered on the B 1000 operator display terminal or on cards with invalid punches in column one. The statements are formatted as follows:



G50001

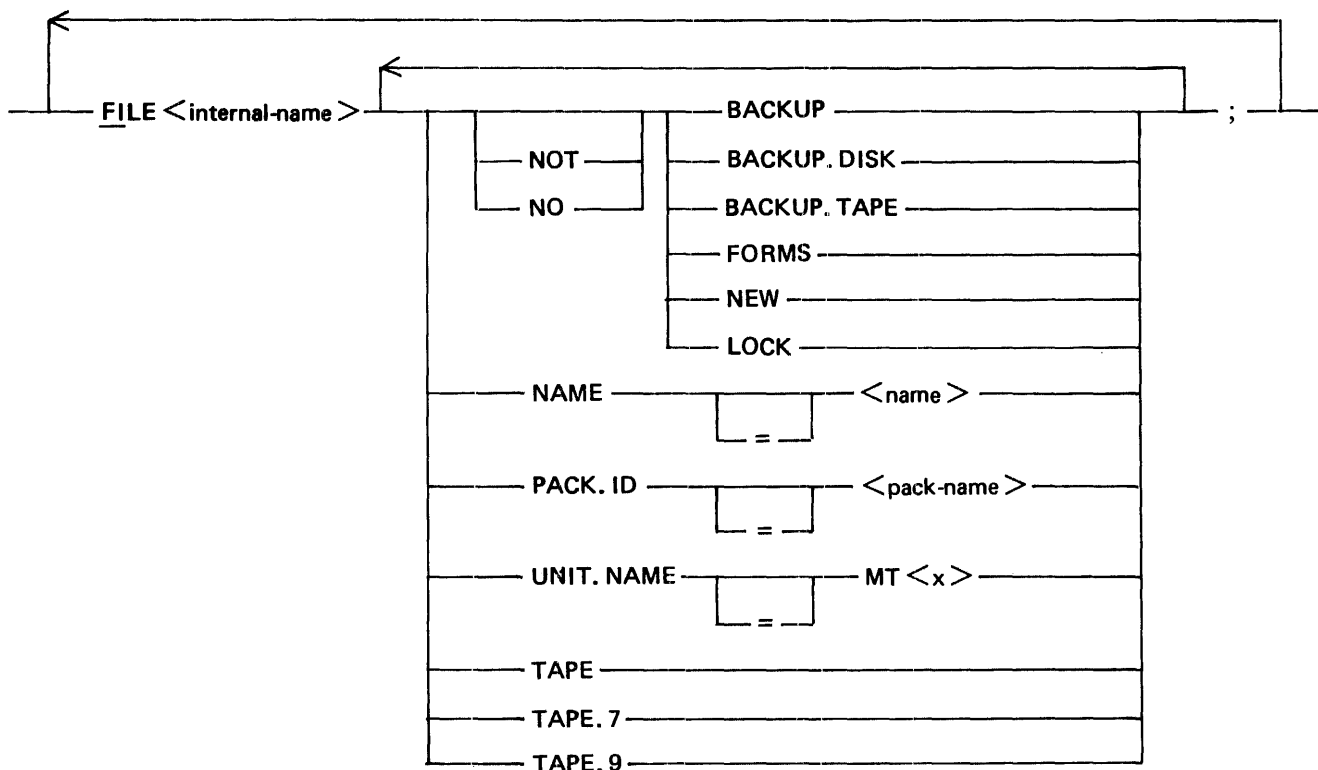
The MODIFY statement changes the attributes of the <environment-name> specified, but does not effect any environments currently executing with that name. The new attributes are in effect with the next execution, unless subsequently overridden.

The EXECUTE statement executes the environment, and the attributes are in effect for that execution only. These attributes override conflicting attributes in the permanent environment codefile.

The DYNAMIC statement changes the attributes only on the environment specified by the B 1000 job number (<job-number>) associated with its current execution.

B 1000 Systems B 500 Interpreter Reference Manual
MCP Interface

Some of the attributes available are specified as follows:



G50002

Subsequent file statements may follow, separated by semicolons. The <internal name> of the B 1000 files associated with the environment are as follows:

B500/IEP Syntax	Internal Name
LOAD.READER	LOAD
CARD.READER	CARDS
PRINTER1	PRINTER1
PRINTER2	PRINTER2
PUNCH	PUNCH
EU <digit>	EU <digit>
TAPE <digit>	TAPE <digit>

The meanings and functions of the parameters of the MCP file statement shown are identical to those of the B500/IEP specifications. For a more complete discussion of these MCP statements, refer to the B 1000 Systems System Software Operation Guide, Volume 1, form number 1108982.

Examples:

```

FILE LOAD.READER NAME = USER1/B500/OBJECT;
FILE PRINTER NO HARDWARE;
FILE TAPE1 UNIT.NAME = MTB;
  
```

TAPE ASSIGNMENT

Tape assignments to B 1000 tape drives can be made three ways. They may be specified at B500/IEP compilation time by the typical specification:

```
TAPE1 UNIT.NAME = MTA;
```

Tape assignment can be modified or changed by the MODIFY, EXECUTE, or DYNAMIC statements:

```
EXECUTE A/B FILE TAPE1 UNIT.NAME = MTA;
```

Tape assignment can also be made when the tape drive is actually required, when requested by the B 1000 MCP:

```
A/B = 1234 TAPE UNIT NEEDED FOR TAPE1
```

The operator can then respond with the B 1000 <job-number>UL or <job-number>OU messages:

```
1234ULMTA
```

To change B 1000 tape drives (changing TAPE1 to use MTB instead of MTA) after the environment has been assigned the original B 1000 tape drive, the following command is required.

```
1234AXEOFTP1
```

After entering this command, the tape can be reassigned by the DYNAMIC statement, or by the UL message.

To interrogate which B 1000 tape drive is being used by a particular B 500 tape drive, enter the following B 1000 QP MCP command on the B 1000 operator display terminal:

```
QP <job-number> FILE TAPE<digit> UNIT.NAME
```

The B 1000 MCP responds with a message that indicates which B 1000 tape drive the file is assigned to. Multiple file interrogation can be entered with one QP message, separated by semicolons:

```
QP <job-number> FILE TAPE1 UNIT.NAME; FILE TAPE2 UNIT.NAME;
```

B 500 INSTRUCTION TRACING

B 500 instructions can be traced, either by specifying TRACE ON in the B500/IEP compilation, or by the special B 1000 MCP input command GT. To start tracing, enter the command:

```
<job-number>GT1
```

To stop the trace, enter the command:

```
<job-number>GT0
```

The <job-number> is the environment B 1000 job number.

The trace output is interspersed with the B 500 line printer output associated with PRINTER1. One line is printed for each B 500 operand executed. An example of trace output is shown in Figure 5-1.

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
000	D96030040400	EQ	922		933	000000000000	EQ	922		933	7!6126050016
010	544406026000	EQ	05001661 060	LTSC	922	D96030040400	HI	05001661 060	LTSC	922	D96030040400
090	D96030040400	HI	922		933	7!6126050016	EQ	922		933	*OVR*M/PC01
010	544406026000	EQ	M/PC01701416	LTSC	922	D96030040400	HI	M/PC01701416	LTSC	922	D96030040400
000	D96030040400	HI	922		933	*OVR*M/PC01	EQ	922		933	*OVR*OPNF01
010	544406026000	EQ	OPNF01719369	LTSC	922	D96030040400	HI	OPNF01719369	LTSC	922	D96030040400
000	D96030040400	HI	922		933	*OVR*OPNF01	EQ	922		933	*OVR*CLSF01
010	544406026000	EQ	CLSF01706369	LTSC	922	D96030040400	LO	CLSF01706369	LTSC	922	D96030040400
000	D96030040400	LO	922		933	*OVR*CLSF01	EQ	922		933	*OVR*REJC01
010	544406026000	EQ	REJC01701416	LTSC	922	D96030040400	HI	REJC01701416	LTSC	922	D96030040400
000	D96030040400	HI	922		933	*OVR*REJC01	EQ	922		933	*OVR*IOFD01
010	544406026000	EQ	IOFD01703416	LTSC	922	D96030040400	LO	IOFD01703416	LTSC	922	D96030040400
000	D96030040400	LO	922		933	*OVR*IOFD01	EQ	922		933	*OVR*SPFD01
010	544406026000	EQ	SPFD01501382	LTSC	922	D96030040400	HI	SPFD01501382	LTSC	922	D96030040400
000	D96030040400	HI	922		933	*OVR*SPFD01	EQ	922		933	*OVR*EOPG01
010	544406026000	EQ	EOPG01701416	LTSC	922	D96030040400	LO	EOPG01701416	LTSC	922	D96030040400
000	D96030040400	LO	922		933	*OVR*EOPG01	EQ	922		933	*OVR*SEOF01
010	544406026000	EQ	SEOF01501412	LTSC	922	D96030040400	HI	SEOF01501412	LTSC	922	D96030040400
000	D96030040400	HI	922		933	*OVR*SEOF01	EQ	922		933	*OVR*RLD01
010	544406026000	EQ	RLD01706363	LTSC	922	D96030040400	HI	RLD01706363	LTSC	922	D96030040400
000	D96030040400	HI	922		933	*OVR*RLD01	EQ	922		933	*OVR*EOJF01
010	544406026000	EQ	EOJF01702416	LTSC	922	D96030040400	LO	EOJF01702416	LTSC	922	D96030040400
000	D96030040400	LO	922		933	*OVR*EOJF01	EQ	922		933	*OVR*
010	544406026000	EQ	DCKF01541412	LTSC	922	D96030040400	LO	DCKF01541412	LTSC	922	D96030040400
000	D96030040400	LO	922		933			922		933	
		EQ	NDAF01501416								

The circled numbers on Figure 5-1 correspond to the following numbered descriptions.

1. The B 500 instruction address.
2. The B 500 Operand.
3. The value of the B 500 comparison indicator before the operand was executed.
4. Contents of B 500 memory pointed to by the AAA address of the operand before the operand was executed.
5. Contents of B 500 memory pointed to by the BBB address of the operand before the operand was executed.
6. Contents of B 500 memory pointed to by the CCC address of the operand before the operand was executed.
7. The value of the B 500 comparison indicator after the operand was executed.
8. Contents of B 500 memory pointed to by the AAA address of the operand after the operand was executed.
9. Contents of B 500 memory pointed to by the BBB address of the operand after the operand was executed.
10. Contents of B 500 memory pointed to by the CCC address of the operand after the operand was executed.

Asterisks are printed if the contents of memory pointed to by the AAA, BBB, or CCC values are invalid B 500 memory addresses.

Figure 5-1. Trace Output

B 1000 PROGRAM SWITCHES

The B 1000 program switches in the environment have special significance to the B 500 Interpreter.

Switch 9 conditions the B 1000 end of job on a B 500 halt operand. If switch 9 is greater than zero, the B 500 environment goes to B 1000 end of job when it has executed a B 500 halt operand with the M and N variants equal to the specifications in the B500/IEP EOJ specification, or the environment EOJ command parameters. If switch 9 is equal to zero, it does not go to B 1000 end of job on executing the B 500 halt operand. If the EOJ specification or command was not given, then the specifications default to 99 (B 500 halt 999).

Setting switch 0 to non-zero causes an automatic B 500 load, clear, and continue at B 1000 beginning of job without operator intervention. This is identical to specifying AUTO.LOAD in the specifications to the B500/IEP. When this sequence is desired, and the environment is already running, the LCC command may be used to initiate the sequence.

The B 1000 switches may be set in two ways: by the EXECUTE or MODIFY statements, or by the job number when the environment is running.

Examples:

```
MO A/B SW 0 = 1
EX A/B SW 0 = 1; SW 9 = 1;
```

```
1234SW 9 = 1
1234SW 9 = 0
```

INDEX

- ? Command, 4-2
- ACCEPT Command, 4-1
- Arithmetic Instructions, 2-1
- AUTO.LOAD Declaration, 3-8
- AX Command, 4-1
- B 1000 Program Switches, 5-5
- B 500 IEP, 3-1
- B 500 Panel Instructions, 2-3
- B 500 Single Instruction, 4-15
- Bridges, 1-5
- Card Punch Declaration, 3-4
- Card Punch Instructions, 2-2
- Card Reader Declaration, 3-2
- Card Reader Instructions, 2-2
- CARD.READER, 3-2
- CL Command, 4-3
- CLC Command, 4-4
- Clear and Continue, 4-4
- Clear and Load B 500 Memory, 4-5
- Clear B 500 Virtual Machine, 4-3
- CLL Command, 4-5
- Compilation, 3-9
- Compile Statement, 3-10
- CON Command, 4-6
- Console Printer Instructions, 2-3
- Continue B 500 Execution, 4-6
- Control Instructions, 2-2
- Disk Declaration, 3-5
- Disk File Instructions, 2-3
- Display B 500 Sense Switches, 4-7
- DSW Command, 4-7
- Dynamic Statement, 5-1
- Editing Instructions, 2-1
- Environment-name, 1-5
- EOF Command, 4-8
- EOJ Command, 4-9
- EOJ Declaration, 3-8
- EU, 3-5
- Execute Statement, 3-10, 5-1
- Family-name, 1-5
- File Statement, 5-2
- File-name, 1-5
- Hardware Declaration, 3-5
- HLT Command, 4-10
- Instruction Tracing, 5-3
- Instructions Interpreted, 2-1
- Interpreter Commands, 4-1
- Interpreter Features, 1-2
- Interpreter Operations, 4-1
- Interrogate Instructions, 2-2
- Line Printer Declaration, 3-3
- Line Printer Instructions, 2-3
- LOA Command, 4-11
- Load B 500 Memory, 4-11
- Load Reader Declaration, 3-2
- LOAD.READER, 3-2
- Loops, 1-4
- Magnetic Tape Instructions, 2-3
- Main Syntax, 3-1
- MCP Interface, 5-1
- MEMORY.SIZE, 3-1
- Modify Statement, 5-1
- Names, 1-5
- Optional Declarations, 3-8
- Optional Items, 1-4
- Pack-name, 1-5
- PRINTER1, 3-3
- PRINTER2, 3-3
- PUNCH, 3-4
- Railroad Diagrams, 1-3
- REA Command, 4-12
- Read B 500 Memory, 4-12
- Related Documents, 1-2
- Required Items, 1-3
- Reset B 500 Sense Switches, 4-13
- RSW Command, 4-13
- Send Console Data Command, 4-2
- Set B 500 Memory to a Single Character, 4-14
- Set B 500 Sense Switches, 4-16
- SET Command, 4-14
- SET.SENSE.SWITCHES Declaration, 3-8
- Simulate End of File on Device, 4-8

INDEX (Cont)

SIN Command, 4-15
SSW Command, 4-16
SSW Declaration, 3-8
Stop B 500 Execution, 4-10
Syntax Conventions, 1-3
Syntax of the B500/IEP, 3-1

TAPE, 3-7
Tape Assignment, 5-3

Tape Declaration, 3-7
TAPE.BUFFER.SIZE, 3-8
TAPE.RETRIES Declaration, 3-8
Terminate, 4-9
TRACE Declaration, 3-8
Tracing, 5-3

WRI Command, 4-17
Write B 500 Memory, 4-17

