

The CONTROL Paragraph

The CONTROL paragraph is optional and rarely used. You can use it to reset commands to their default values, specify the number of columns of instructions read by the program, control how carefully the program checks for errors in instructions, access macro files of instructions, limit the amount of storage allocated for a job, and (on a few systems) specify interactive use of BMDP. CONTROL also shares with the PRINT paragraph some commands to control the verbosity of computer output and to print diagnostics for debugging programs.

You must specify the CONTROL paragraph in the first line of your instructions and follow it with an END paragraph, before any other instructions. Your other paragraphs (INPUT, VARIABLE, etc.) begin on the next line and are followed as usual by another END paragraph.

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9.1 Controls for BMDP instruction reader

It is possible to submit multiple sets of instructions (multiple problems) to any program. However, option choices set up by the first run usually carry over to the next run. The RESET command is used to return all options to their default values. Simply state between problems:

Resetting commands to
their defaults: RESET

```
/ CONTROL RESET.  
/ END
```

CONTROL

Number of columns to read: COLUMN

By default the BMDP instruction reader reads up to 80 columns of information. If you use a text editor (e.g., FSE on IBM) to create your instruction file, the editor may insert sequence numbers in columns 73 through 80. If these sequence numbers are all digits, there is no problem because the instruction reader knows how to deal with them. However, some editors may insert other characters that can interfere with the interpretation of the instructions. You can avoid this problem by specifying the number of columns (characters) in each line that the BMDP program should read and interpret. For example, if the unwanted characters begin in column 73, then state

```
/ CONTROL COLUMN = 72. / END
```

You may also want to read only part of a line, reserving the remainder for comments (see also the comment feature in Chapter 10). COLUMN affects both instruction and data reading. See also RECLen in the INPUT paragraph to limit the number of columns of data read.

Number of errors to allow: ERRLEV

The ERRLEV command controls how the program checks your instructions for errors. Normally, the program scans the instructions for paragraphs and commands specific to the current program, and ignores extraneous information, such as a paragraph not used in the current program. If you specify

```
ERRLEV = STRICT.
```

the program stops when it finds extraneous information and prints an error message. During an interactive run, the program queries you about whether to stop or continue.

Accessing stored instructions: MACRO

MACRO permits you to insert frequently used commands (a macro) into your current BMDP instructions by specifying the system file name or unit number where the macro is stored. Insert the instruction

```
/ CONTROL MACRO = 'mymacro.txt'. / END
```

before the problem in which you want to use the file. Specify a file name for VAX, IBM PC, etc., or specify a unit number for IBM mainframes and other machines. See Chapter 11 for a detailed description of how to use macros.

Location of an instruction file: FILE or UNIT

The FILE and UNIT commands in the CONTROL paragraph are a simpler but less flexible version of the MACRO capability explained above. MACROS can be inserted anywhere in your instructions, but FILE and UNIT can only be used to access the instructions to start a run. Use FILE or UNIT to access instructions stored in another file and then return to your original file for the remainder of the input.

For example, when you analyze the same data repeatedly, it may be convenient to have a BMDP instruction file containing the common paragraphs in a standard configuration. Assume that a file named STANDARD.INP contains instructions for the INPUT, VARIABLE, and TRANSFORM paragraphs. On the current run you state

```
/ CONTROL FILE = 'STANDARD.INP'. / END
```

followed by the remainder of your instructions. The program reads the instructions from STANDARD.INP, and then returns to the current file or to the terminal for more input. See the BMDP line editor, Chapter 11, for an easier way to store and retrieve files of instructions when running interactively.

9.2 Limiting storage space: LENGTH

If you plan to run the same job or very similar jobs several times, you may want to tailor the number of available words of storage to fit your program. By specifying LENGTH you can limit allocated storage to the amount your job uses so the job will run more efficiently. To determine the proper LENGTH, run the program once, and check the last output page for the number printed after the phrase

"number of integer words used in preceding problem"

Specify a LENGTH slightly larger than the number printed, N(used), but no larger than the number N(allocated) printed at the beginning of the program, in the first panel after the phrase

"number of integer words of memory for storage"

N(allocated) is the amount of storage the program allocates automatically. Note that the amount of storage specified in LENGTH must be significantly smaller (say 30% or more) than N(allocated) if you are to affect any economy.

On some systems you can increase the number of integer words allocated for storage when your job is large; see Appendix A.

CONTROL Commands

/CONTrol

Optional. The CONTROL paragraph is stated before any other BMDP instructions and must be followed by an END paragraph. The other paragraphs (INPUT, VARIABLE, etc.) follow after END.

COLumn = #.

COL = 72.

Specify the maximum number of characters per line that contain BMDP instructions or data. You may wish to read only part of a line, reserving the remainder for comments. Some system editors (e.g., FSE on IBM mainframes) may use the last seven character positions on a line for sequence numbers; you should specify COL = 72 to avoid reading those numbers. Default: 80 characters, 72 in interactive mode. **Example:** Columns 73 through 80 are not read.

ERRlev = (*one only*)

ERR = STRICT.

NONE, INTeractive,
NORMAl, STRict.

Controls how carefully the program checks your instructions for errors. Default: NORMAL.

- NONE** – The program will stop only if it is unable to continue because of a system error (not recommended).
- INTeractive** – The program will stop if calculations cannot be executed or if the instructions make it impossible to continue (e.g., an empty VARIABLE USE list).
- NORMAl** – The program will stop if there is a serious error. Extraneous instructions are ignored.
- STRict** – The program will stop if there is a warning. For example, the program stops when it finds extraneous information (e.g., when your instructions contain a paragraph from another program).

MACro = name or #.

MAC = 'MACRO1.TXT'.
MAC = 9.

Specify the system file name or unit number where a macro file is stored. See Chapter 11 for a definition of macro files. Insert the instruction / CONTROL MACRO = name. / END before the problem in which you want to use the file.

Summary Table (continued)

Paragraphs Commands	Defaults	Multiple Problems	See
DEBUg = <i>(one only)</i> NONE, TEST, INFO, ALL.	NONE	●	Chap. 7
LEVel = <i>(one only)</i> NORMAL, BRIEF, MINimal.	NORMAL (batch); MIN (interactive)	●	Chap. 7
RESET.	defaults not reset	-	Cmds
■ / END			
Key: <ul style="list-style-type: none"> ■ Required paragraph or command ● Value retained for multiple problems - Default reassigned 			