SUPER DEBUG (we'll call D-BUG) is a 1K program which runs under NAS-SYS. In order to work, it requires that NAS-DIS also be installed. D-BUG lives at C000H - C3FFH, D-BUG can therefore fill the eighth 2708 socket on the Nascom 2 CPU board, so that with NAS-DIS the whole becomes a 4K package.

The aim of D-BUG is to make it easier to examine the workings of other programs. The principle feature is a comprehensive and labelled display of all the CPU registers, as well as the eight bytes pointed to by each of the main registers. The example below gives an idea of the display:

```
SP 1000                 FF 00 FF 00 FF 00
IX FFFF DE FD C3 B1 E0 31 00 10 D7 08    IFF2 0
IY FFFF DE FD C3 B1 E0 31 00 10 D7 08     I B0
HL 0000 FD C3 B1 E0 31 00 10 D7 08 C3   HL'FFFF
DE 0000 FD C3 B1 E0 31 00 10 D7 08 C3   DE'FFFF
BC 0000 FD C3 B1 E0 31 00 10 D7 08 C3   BC'FFFF
AF 0000                 ↑               AF'FFFF
PC 0000 31 00 10        LD     SP,#1000    ;1..
```

As you can see, the next instruction to be executed has also been disassembled. This means that you can single step through a program and read each instruction in assembler at the same time. This also works with breakpoints.

D-BUG uses NAS-SYS editing in an unusual and advanced way. The cursor can be moved up and the lines of display edited, one line at a time. The memory locations pointed at by the registers can be altered, and the values of SP, IX, IY, HL, DE, BC, AF, and PC can also be altered. If the code after PC is altered, the disassembled source code appears at once. The values of IFF2, I, and the alternate registers cannot be directly altered in this way. A character representation of the flags is output when the flags are set, and these can be altered by editing the F register.

D-BUG has several commands. These are entered by typing a colon followed by the command letter. An excellent feature is the alternate video RAM command, :O. This specifies a 1K block of RAM which is spare in your system. It can be swapped with the NAS-SYS/D-BUG display by using the command :A, pressing Enter returns the display to normal. The two pages of the display are automatically swapped over during execution (E or S commands), so that use of the screen for debugging does not affect the display used by the program. This is invaluable for testing programs which output information to the display and read it back. (Don't forget to clear the alternate display before running your program! Use :A then clear the screen).

D-BUG works by trapping all output via the UOUT jump, Since this means the the UOUT jump has been used up and is no longer available, for example, for driving a parallel printer, D-BUG provides a command (:C) to set the address of your own U output routine.

A further feature is the :F command, which is used to find a string of up to eight consecutive bytes. Even more, one or more of the bytes may be specified as 'wild', for instance, if D-BUG were asked to Find 2A - 0C (the 'dash' means 'wild'), D-BUG would find every location where HL was loaded from a location between 0C00H and 0CFFH.

The only slight problem you might encounter is if D-BUG is activated while running a program which outputs a colon as the first character of a line. D-BUG instantly grabs control and obeys the "command"!

D-BUG is acivated by typing the command E C009 and can be de-activated by the N command. A Nascom 2 can be set to power up at C000H, and in this case D-BUG is activated on power up or on pressing Reset. It is necessary to re-activate D-BUG after using ZEAP