

The microprocessor saves the current program counter and status byte on the stack when an interrupt occurs and then jumps to the routine whose address is stored in \$FFFE and \$FFFF. The sequence of operations performed by the microprocessor is as follows:

1. It finishes executing the current instruction if an IRQ is encountered. (If a BRK instruction is encountered, the current instruction is already finished.)
2. It pushes the high byte of the program counter onto the stack.
3. It pushes the low byte of the program counter onto the stack.
4. It pushes the processor status byte onto the stack.
5. It executes a JMP (\$FFFE) instruction.

### The interrupt vector at \$FFFE

Three separate regions of memory contain address \$FFFE in an Apple IIe with an Extended 80-Column Text Card: the built-in ROM, the bank-switched memory in main RAM, and the bank-switched memory in auxiliary RAM. The vector at \$FFFE in the ROM points to the built-in interrupt handling routine. You must copy the ROM's interrupt vector to the other banks yourself if you plan to use interrupts with the bank-switched memory switched in.

### The built-in interrupt handler

The enhanced Apple IIe's built-in interrupt handler records the computer's current memory configuration, then sets the computer's memory configuration to a standard state so that your program's interrupt handler always begins running in the same memory configuration.

Next the built-in interrupt handler checks to see if the interrupt was caused by a break instruction, and handles it as just described under "Interrupt Handling on the 65C02 and 6502." If it was not a break, it passes control to the interrupt-handling routine whose address is stored at \$3FE and \$3FF of main memory. Normally, that would be the operating system's interrupt handler, unless you have installed one of your own.

After your program's interrupt handler returns (with an RTI), the built-in interrupt handler restores the memory configuration, and then does another RTI to return to where it was when the interrupt occurred. Table 6-8 illustrates this entire process. Each of these steps is explained later in this chapter.

Interrupt-handler installation is described in the *ProDOS Technical Reference Manual* and the *Device and Interrupt Support Tools Manual*, which is part of the Apple II Device Support Tools package (A2W0014).