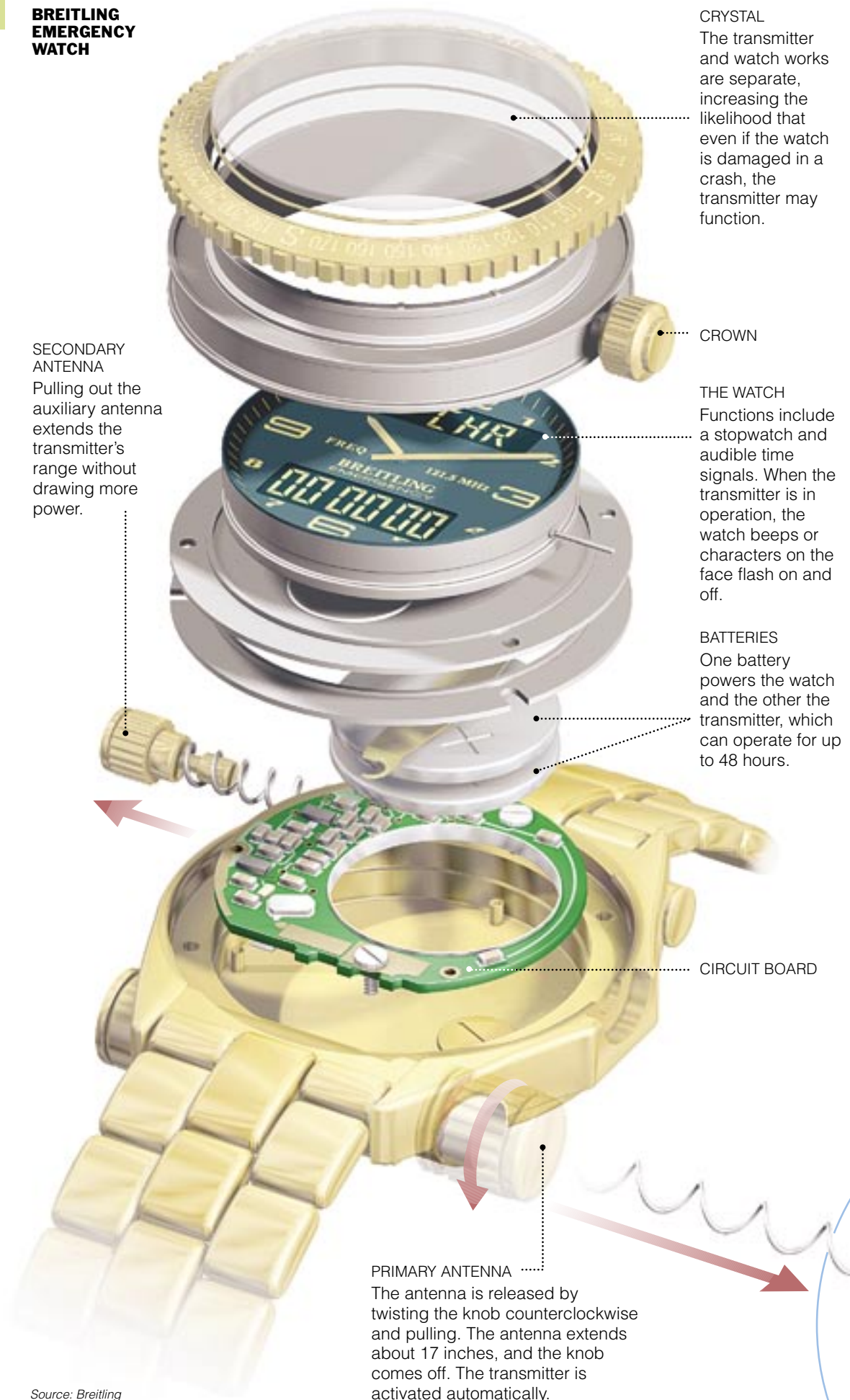


**BREITLING
EMERGENCY
WATCH**



CRYSTAL
The transmitter and watch works are separate, increasing the likelihood that even if the watch is damaged in a crash, the transmitter may function.

CROWN

THE WATCH
Functions include a stopwatch and audible time signals. When the transmitter is in operation, the watch beeps or characters on the face flash on and off.

BATTERIES
One battery powers the watch and the other the transmitter, which can operate for up to 48 hours.

CIRCUIT BOARD

SECONDARY ANTENNA
Pulling out the auxiliary antenna extends the transmitter's range without drawing more power.

PRIMARY ANTENNA
The antenna is released by twisting the knob counterclockwise and pulling. The antenna extends about 17 inches, and the knob comes off. The transmitter is activated automatically.

SIGHTINGS

Felice Frankel

Imagine being handed a gizmo and asked to come up with a clean visual description of what it looks like, what it does and how it works, all fitting neatly into a prescribed space. At the New York Times, Frank O'Connell does just that. I asked Frank about how the illustrations for the paper's popular "How It Works" technology feature come together.

F. F. Tell us, how does the process begin? Is it collaborative between you and the editors or writers?

F. O'C. The process is very much a collaborative effort between myself and Henry Fountain, who is the editor of this feature. Henry has a great design sense.

Once we decide on a subject, I'll contact the vendor, explain what we're planning to do and ask the vendor to send us the product. Sometimes this is impractical because of the device's size or value. In that case, I'll request line drawings or digital photographs instead. I always prefer to take apart the object myself, since it gives me a better understanding of how the parts fit together. This way I can assure myself of the accuracy of my illustration. I'll also ask for any technical manuals and media kits the vendor has, so that I can familiarize myself with how the product works.

When the materials arrive, Henry and I meet to discuss which aspects of the product we want to show. In the case of an exploded-view graphic, I often find it preferable to disassemble the device and get the 3-D illustration well under way first. That way I'll know exactly which components I'll have to draw, and I can experiment to find the best positioning and lighting before committing to a layout.

I'll then render the illustration at a low resolution and design my final layout around it, using blocks of dummy

text with relevant labels, and go over these with Henry, who writes the captions.

When I first started doing this feature, the story had usually already been written before I began my illustration. I would interact a great deal with the writers and often use their sources. But over the years, the procedure has changed, and more often than not, I do my own reporting, and the graphic is well under way before the story is filed.

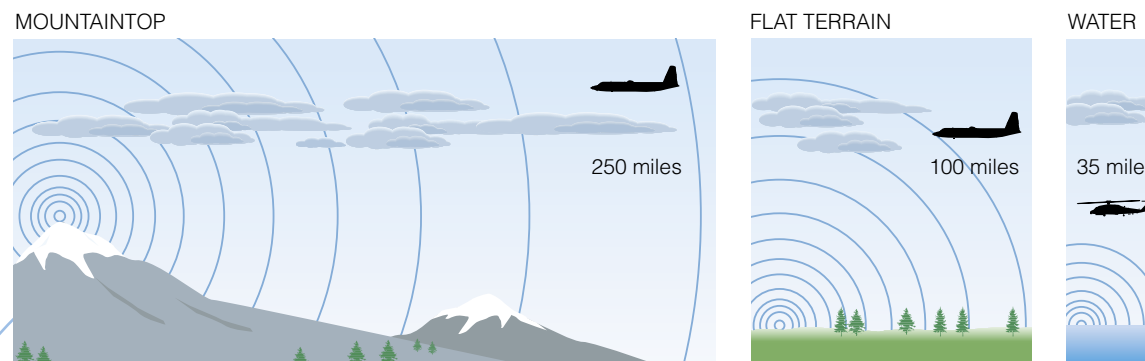
F. F. Tell us about your editing process. Do you first create a hierarchy of information?

F. O'C. Henry and I first decide which element will be the main focus. Then we discuss any step-by-step or closeup graphics that will be needed. Because of the amount of space we have to work with, we're able to have a fairly large disparity in size between the main and secondary elements, yet still have the secondary elements large enough to convey useful information.

Not all of our graphics are exploded views or cutaways. Several have involved large outdoor scenes, as when we explained how a bridge de-icing system works. We've also done views of Earth from space, as when we featured the Global Positioning System. But even in these cases, the overall hierarchy of a large dominant visual supplemented by smaller graphics was the same.

Picking up the signal

Rescue aircraft monitor the 121.5-megahertz band for the watch signal, homing in on the pilot as the signal strength increases. The signal range varies according to the terrain and the altitude of the aircraft.



ANTENNA ORIENTATION
For best range, the antenna should be vertical and must not be submerged in water. Cutting the antenna or wrapping it around the watch body deactivates the signal.

Felice Frankel is a science photographer and research scientist at the Massachusetts Institute of Technology. She is now at work organizing Image and Meaning 2, an MIT conference to be held in Los Angeles in June (<http://web.mit.edu/i-m>). Address: c/o American Scientist, P. O. Box 13975, Research Triangle Park, NC 27709-3975. Internet: felicef@mit.edu

Frank O'Connell's illustration of the Breitling Emergency Watch was selected as one of the Best Infographics in History by the Society for News Design. It was published under the headline "The Watch That Roars: Pilots Can Strap on Some Life Insurance" in the New York Times Circuits section on October 12, 2000. (Reprinted by permission.)

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