Computer glitch blamed for European Mars lander crash

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The ESA's Schiaparelli lander had travelled for seven years and 496mn kms (308mn miles) before a computer glitch sent it crashing onto the surface of Mars

A tiny lander that crashed on Mars last month flew into the Red Planet at 540 kilometres (335 miles) per hour instead of gently gliding to a stop, after a computer misjudged its altitude, scientists said.

Schiaparelli was on a test-run for a future rover meant to seek out evidence of life, past or present, but it fell silent seconds before its

scheduled touchdown on October 19.

After trawling through mountains of data, the European Space Agency said Wednesday that while much of the mission went according to plan, a computer that measured the rotation of the lander hit a maximum reading, knocking other calculations off track.

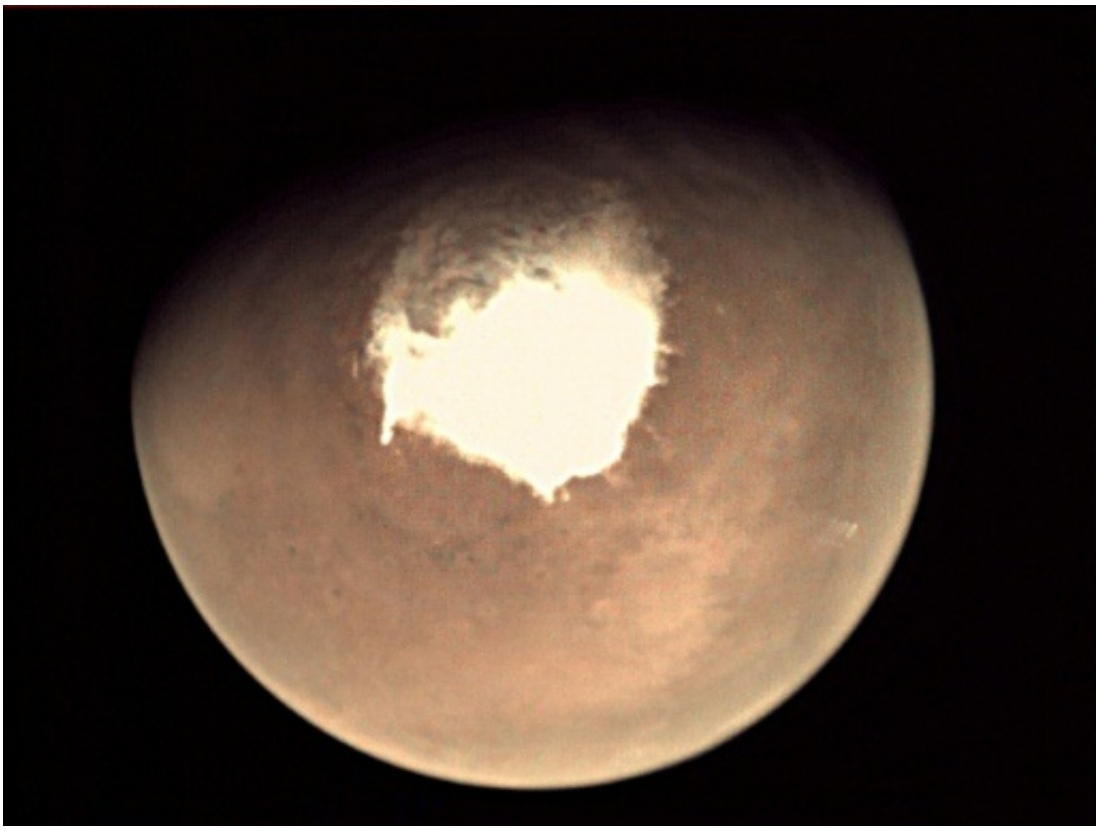
That led the navigation system to think the lander was much lower than it was, causing its parachute and braking thrusters to be deployed prematurely.

"The erroneous information generated an estimated altitude that was negative—that is, below ground level," the ESA said in a statement.

"This in turn successively triggered a premature release of the parachute and the backshell (heat shield), a brief firing of the braking thrusters and finally activation of the on-ground systems as if Schiaparelli had already landed. In reality, the vehicle was still at an altitude of around 3.7 km."

The 230 million-euro ($251-million) Schiaparelli had travelled for seven months and 496 million kilometres (308 million miles) onboard the so-called Trace Gas Orbiter to within a million kilometres of Mars when it set off on its own mission to reach the surface.

After a scorching, supersonic dash through Mars's thin atmosphere, it was supposed to glide gently towards the planet's surface.



The planet Mars as seen by the webcam on the European Space Agency's (ESA) Mars Express orbiter

For a safe landing, Schiaparelli had to slow down from a speed of 21,000 kilometres (13,000 miles) per hour to zero, and survive temperatures of more than 1,500 degrees Celsius (2,730 degrees Fahrenheit) generated by atmospheric drag.

It was equipped with a discardable, heat-protective shell to shield it, a parachute and nine thrusters to decelerate, and a crushable structure in its belly to cushion the final impact.

Sniffing for signs of life

The crash was Europe's second failed attempt to reach the alien surface.

The first attempt, in 2003, also ended in disappointment when the British-built Beagle 2 robot lab disappeared without trace after separating from its mothership, Mars Express.

Since the 1960s, more than half of US, Russian and European attempts to operate craft on the Martian surface have failed.

Schiaparelli and the Trace Gas Orbiter comprised phase one of a project dubbed ExoMars through which Europe and Russia are seeking to join the United States in operating a successful rover on the planet.

The next part of the mission is the start of the Trace Gas Orbiter's mission in 2018, sniffing Mars' atmosphere for gases potentially excreted by living organisms.

The crash of the Schiaparelli on Mars in October was the European Space

The rover will follow, due for launch in 2020, with a drill to search for remains of past life, or evidence of current activity, up to two metres deep.

While life is unlikely to exist on the barren, radiation-blasted surface, scientists say traces of methane in Mars' atmosphere may indicate something is stirring underground—possibly single-celled microbes.

European space officials have insisted that any problems encountered by Schiaparelli were part of the trial-run and would inform the design of the future rover.

"In some ways, we're lucky that this weakness in the navigation system was discovered on the test landing, before the second mission," ESA's Schiaparelli manager Thierry Blancquaert, told AFP.

The ESA said that data gleaned from the instruments aboard Schiaparelli during the entry would help to better understand the Red Planet and especially its atmosphere.

"This is still a very preliminary conclusion," David Parker, ESA's Director of Human Spaceflight and Robotic Exploration, said of Wednesday's findings.

"The full picture will be provided in early 2017 by the future report of an external independent inquiry board," he added.

"But we will have learned much from Schiaparelli that will directly contribute to the second ExoMars mission being developed with our

international partners for launch in 2020."