

## Rosetta probe has bounced away from landing site and lost contact, admit scientists

Although scientists celebrated landing probe Philae on comet this afternoon, the lander is not securely attached and has already bounced away from its landing site



By **Sarah Knapton**, Science Editor

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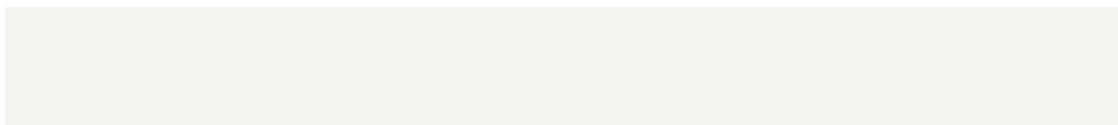
It was a day when science fiction became science fact. With minute-perfect accuracy, scientists landed a probe on a comet following a ten year journey through the solar system.

The European Space Agency predicted that the first signal would arrive back on Earth at 4.03pm confirming that the Philae lander had touched down after being detached from its mother ship Rosetta.

And at 4.03pm the instruments at control centre in Darmstadt, Germany, sparked into life as the probe made contact and furrowed brows were replaced with beaming smiles and tears.

“We are on the comet!” announced Dr Stephan Ulamec, Philae’s Lander Manager. “We are sitting on the surface and Philae is talking to us.”

However initial jubilation was followed by some anxiety after it emerged that the landing harpoons had not activated, meaning that the probe was simply sitting on the soft surface without being securely attached.



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Just hours later Dr Ulamec was forced to admit that the scientists had lost contact with the probe and did not actually know where it was.

"It's complicated to land on a comet. It's also complicated to understand what has happened during the landing. What we know is that we touched down and we landed on the comet. We had a very clear signal and we also received data from the lander. That is the very good news

"The not so good news is that the anchoring harpoons did not fire. So the lander is not anchored to the surface. Did we just land in a soft-sand box and everything is fine? Or is there something else happening. We still do not fully understand what has happened.

"Some of the data indicated that the lander may have lifted off again. It touched down and was rebounding. So maybe today, we didn't just land once, we landed twice."

Scientists had already spent a nerve-racking 24 hours prior to the landing trying to work out why Philae would not power up after its 10 year slumber in space.

They also quickly realised that the thruster jets, designed to help the comet stay on the surface before the landing anchors are deployed, were not working at all. Without the thrusters it was feared the probe would simply bounce off the surface and back into space.



*Rosetta captures Philae as it floats down to the comet*

Despite the concerns, they decided to go ahead with the detachment at 8.35am on Wednesday morning. The probe made a perfect seven hour descent onto the comet 67P/Churyumov-Gerasimenko.

But on Wednesday evening scientists were facing the agonising decision of whether to attempt to activate the anchors again and risk pushing the craft back into space, or leave the probe untethered.

“Our big concern is at the moment is whether we are standing stably. We are considering if we need to retry shooting the anchors. said a spokesman for the Philae lander in Cologne.

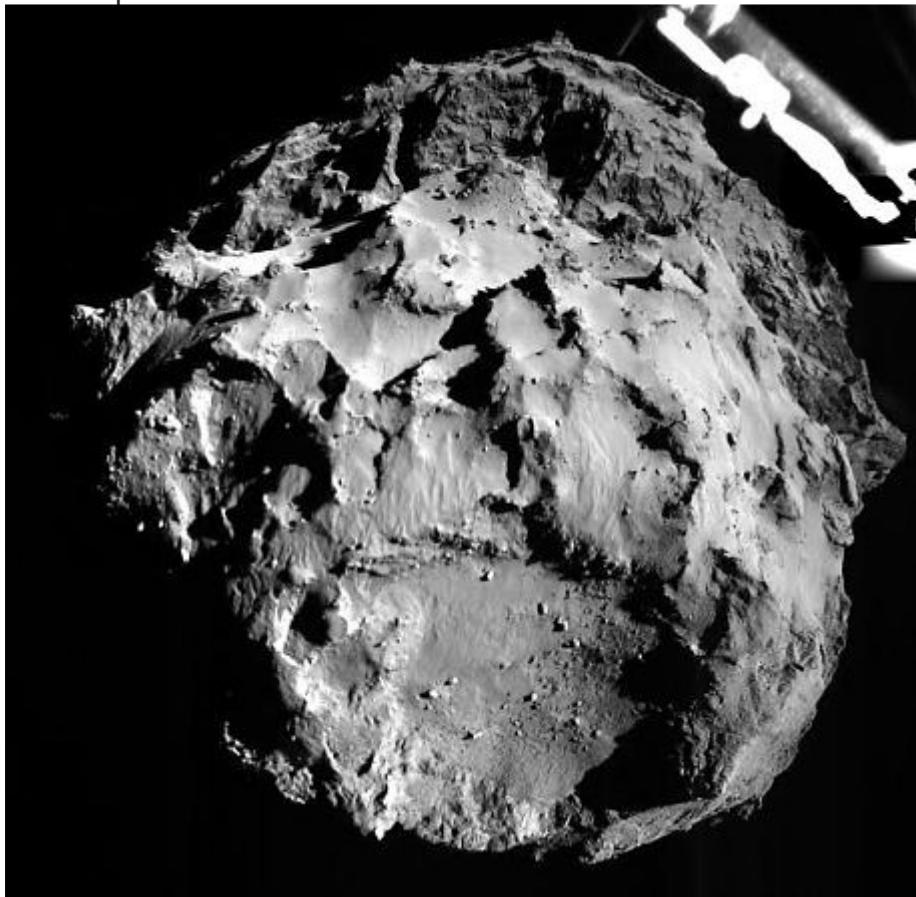
Yet the science community was in firm agreement that the £1.3 billion mission had been an incredible success and a huge leap forward for astrophysics.

“It is a milestone for space exploration,” said Prof Tom Marsh of the University of Warwick’s Astronomy and Astrophysics group.

“An incredibly difficult task successfully accomplished at a distance of 520 million miles. It does not get much better than this.

“To think that we have landed on an object often thought in the past to be harbingers of doom is remarkable to me. **I am looking forward to what we will now learn from Philae. A truly fabulous achievement.**”

The first pictures from Philae began to emerge showing a stark, rocky landscape.



Prof Martin Barstow, Professor of Astrophysics & Space Science, of the University of Leicester added: "The riskiest part, landing the Philae spacecraft

on the surface of the comet, has never been done before and I would like to send my congratulations for this amazing achievement.”

Since it was launched in 2004, Rosetta has travelled four billion miles in its quest to find out, among other things, whether comets could have sparked life on Earth by bringing water and amino acids. To reach the speed needed to catch the comet, it needed to slingshot round Earth and Mars, meaning it had to travel seven times further than the distance of its target.

Now that the probe is fixed to the comet it can begin to analyse the ice, organic material and chemicals present in the comet’s nucleus, and later, as it gets closer to the Sun and begins to heat up, the emissions of gases such as carbon dioxide.

“After more than 10 years travelling through space, we're now making the best ever scientific analysis of one of the oldest remnants of our Solar System,” said Dr Alvaro Giménez, the ESA’s Director of Science and Robotic Exploration.

“Decades of preparation have paved the way for today's success, ensuring that Rosetta continues to be a game-changer in cometary science and space exploration.”

The comet is orbiting at 34,000 miles per hour. It is 360 million miles away from Earth, about half way between the orbits of Mars and Jupiter.

While Philae is on the surface, Rosetta will continue flying in formation with the comet at a distance of about 18 miles.

“ESA and its Rosetta mission partners achieved something extraordinary,” said Jean-Jacques Dordain the Director General of the European Space Agency.

“Our ambitious Rosetta mission has secured another place in the history books: not only is it the first to rendezvous with and orbit a comet, but it is now also the first to deliver a probe to a comet's surface.”

Rosetta has already been travelling for more than a decade. The craft was launched on March 2, 2004, from Kourou, French Guiana.

It is named after the Rosetta Stone, which provided the key to deciphering hieroglyphics. Scientists hope the spacecraft will provide a similar breakthrough in our understanding of the past.

The Philae probe is named after the island in the Nile where an obelisk was found which also displayed inscriptions in two ancient languages and helped with deciphering the Rosetta.