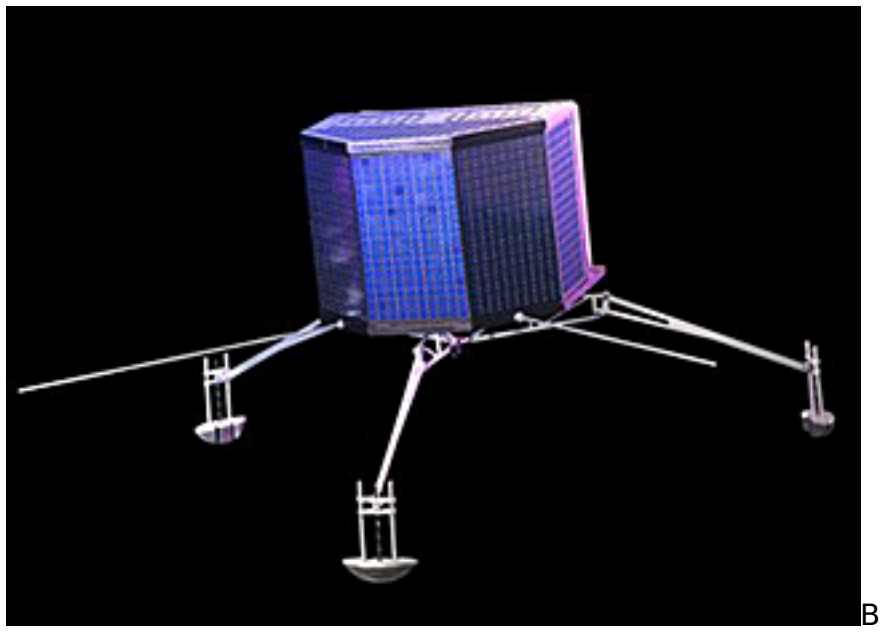
Comet-chasing Probe Wakes Up, Signals Earth

Frank Jordans, Associated Press



BERLIN (AP) — Waking up after almost three years of hibernation, a comet-chasing spacecraft sent its first signal back to Earth on January 20, 2014, prompting cheers from scientists who hope to use it to land the first space lander onto a comet. The European Space Agency received the all-clear message from its Rosetta spacecraft at 7:18 p.m. (1818 GMT; 1:18 p.m. EST) — a message that had to travel some 800 million kilometers (500 million miles).

In keeping with the agency's effort to turn the tense wait for a signal into a social media event, the probe triggered a series of "Hello World!" tweets in different languages.

Dormant systems on the unmanned spacecraft were switched back on in preparation for the final stage of its decade-long mission to rendezvous with the comet named 67P/Churyumov-Gerasimenko. Systems had been powered down in 2011 to conserve energy, leaving scientists in the dark about the probe's fate until now.

Because of the time it took Rosetta to wake up, and the long distance between the spacecraft and Earth, the earliest possible hour for a signal to arrive was 6:30 p.m.

"I think it's been the longest hour of my life," said Andrea Accomazzo, the spacecraft's operations manager at ESA's mission control room in Darmstadt, Germany. "Now we have it back."

Scientists will now take control of Rosetta again, a procedure slowed by the 45 minutes it takes a signal to travel to or from the spacecraft, he said.

The wake-up call is one of the final milestones for Rosetta before it makes its rendezvous with comet 67P in the summer. The probe will then fly a series of complicated maneuvers to observe the comet — a lump of rock and ice about four kilometers (2.5 miles) in diameter — before dropping a lander called Philae onto its icy surface in November.

The lander will dig up samples and analyze them with its instruments.

Although the spacecraft was launched almost a decade ago, the instruments aboard Rosetta and the Philae lander are still considered cutting edge, said Joel Parker of the Southwest Research Institute in Boulder, CO. The institute developed a specialized camera called ALICE that can detect different chemicals in the comet.

Rosetta is named after a block of stone that allowed archeologists to decipher ancient Egyptian hieroglyphs. Scientists hope the space mission will help them understand the composition of comets and thereby discover more about the origins and evolution of our solar system.

Comets are regarded as flying time capsules because they are essentially unchanged for the last 4.6 billion years. Scientists have speculated that comets may be responsible for the water found on some planets. And like asteroids, comets also pose a theoretical threat to life on Earth.

"Over the millennia, comets have actually affected our evolution," said Paolo Ferri, head of mission operations at the European Space Agency. "There are many theories about comets hitting the Earth and causing global catastrophes. So understanding comets is also important to see in the future what could be done to defend the Earth from comets."

The mission is different from NASA's Deep Impact, a spacecraft that fired a projectile into a comet in 2005 so scientists could study the resulting plume of matter. NASA also managed to land a probe on an asteroid in 2001, but comets are much more volatile places because they constantly release dust and gas that can harm a spacecraft.

NASA is planning another space rock mission between 2019 and 2021. The agency is looking into sending a robotic spaceship to lasso a small asteroid and haul it close to the moon, where spacewalking astronauts would explore it.

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