



Philae lander back in contact with Earth

28 March 2014

More than two and a half years – this is how long the Philae lander has been hibernating while travelling through space on board the European Space Agency ESA Rosetta spacecraft. On 28 March, the lander was successfully reactivated and broke its planned radio silence by sending data to Earth from a distance of about 655 million kilometres. At 15:40 CET, packet after packet of data started to arrive for the team in the Lander Control Centre (LCC) at the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR). The result: "Philae is operational and ready for the next few months," said lander project manager Stephan Ulamec of DLR. In November, the lander will be deployed onto the target comet, 67P/Churyumov-Gerasimenko, while the Rosetta spacecraft continues to orbit the comet. The orbiter and lander will be the first to witness a comet's 'awakening' as it approaches the Sun first hand.

The command to wake up the Philae lander was sent to the spacecraft by the engineers at 07:00 CET. Upon knowledge that this procedure had been successful, the team and the scientists involved had to wait in the control room of the DLR Microgravity User Support Center (MUSC) for the time window, between 14:00 and 15:40 CET, when a NASA antenna in California began listening for the signal.

Under way for a decade

The Rosetta spacecraft, with the Philae lander on board, has been making its way through space since March 2004 to investigate Comet 67P/Churyumov-Gerasimenko. At present, planetary researchers know their target only through images acquired by the Hubble Space Telescope from a great distance. The comet has an average diameter of about four kilometres and is shaped rather like a potato. The comet rotates about its axis once every 12.6 hours. What exactly is to be expected on arrival in August 2014 and landing in November 2014 is still not known. With a total of 21 instruments, from a drill to a spectrometer, the Rosetta mission will carefully examine the structure and properties of the comet. Its frozen state gives a snapshot of the past of the Solar System, because the material has been preserved almost unchanged from the time of its formation, 4.6 billion years ago. The fact that the spacecraft will orbit the comet and deploy a lander onto the comet's surface to make in-situ measurements are both firsts in planetary research.

After the lander itself has satisfactorily passed its first fitness check with the data sent back to the controllers, the instruments will be activated and tested. The OSIRIS camera on the Rosetta spacecraft has already completed this test and returned its first image of the comet after hibernation. Comet 67P/Churyumov-Gerasimenko is still more than four million kilometres away and occupies only a fraction of a pixel in the camera. Once Rosetta is in orbit around the comet, the search will begin for a suitable landing site for Philae. The selected site must allow a safe landing, but at the same time provide a location that the scientists find exciting to study. Philae is prepared to deal with the various surface materials it might encounter – harpoons and ice screws will be used to anchor the lander to the landing site before it begins taking measurements.

The mission

The European Space Agency (ESA) is responsible for this international mission with contributions from its member states and NASA, including major participation by Germany. In addition to DLR, the Max Planck Institute for Solar System Research (MPS), the Technical University of Braunschweig and the Universities of Cologne and Mainz are all conducting experiments on board the orbiter or lander. The DLR Space Administration is using funds from the Federal Ministry of Economic Affairs and Energy (Bundesministerium für Wirtschaft und

Energie; BMWi) to sponsor the participating German companies and scientists. The Philae lander has been financed by a consortium including DLR, MPS, the French space agency, CNES, and the Italian space agency, ASI. Overall responsibility for the Philae project rests with DLR, which is where the lander control centre is located.

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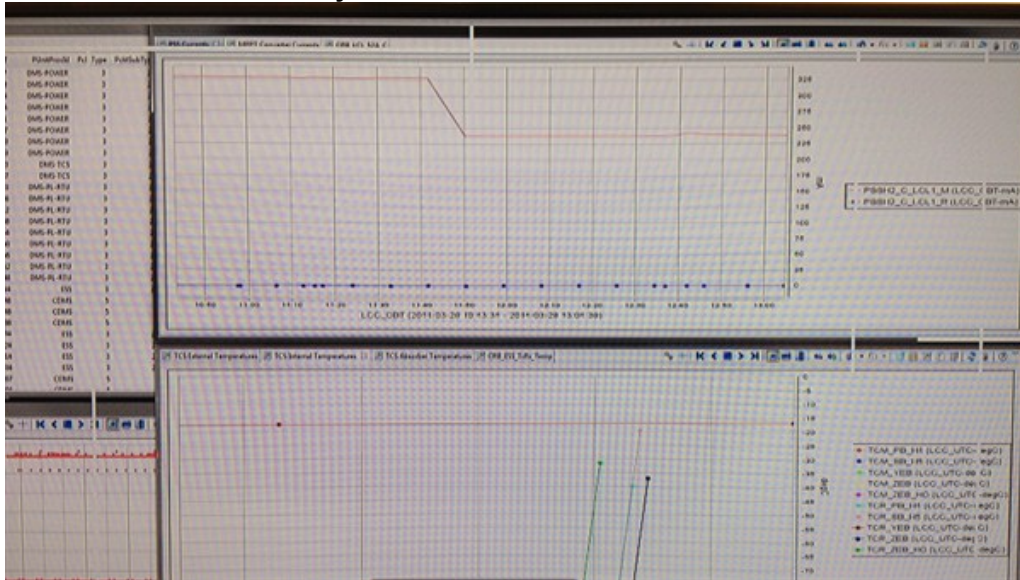
Rosetta spacecraft with Philae lander on board



The Philae comet lander has been travelling on board the European Rosetta spacecraft since 2 March 2004. The lander is scheduled to touch down on the comet 67P/Churyumov-Gerasimenko in November 2014. The operation of the lander and its 10 experiments will be conducted from the Microgravity User Support Center (MUSC) of the German Aerospace Center (DLR).

Credit: ESA.

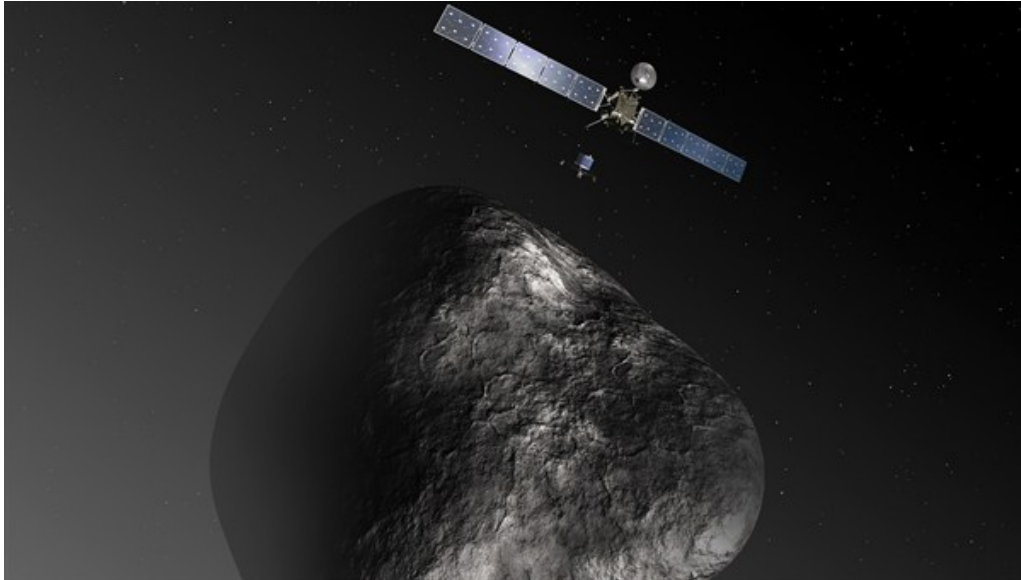
Philae is on - first telemetry data has been received



First telemetry data has been received from Philae on Friday, 28 March 2014.

Credit: DLR (CC-BY 3.0).

Rosetta at the comet



Artist's impression of the Rosetta spacecraft at its destination, Comet 67P/Churyumov-Gerasimenko. The picture is not to scale; the spacecraft's solar arrays have a span of 32 metres; the diameter of the nucleus is about four kilometres.

Credit: ESA-C. Carreau/ATG medialab.

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