**Philae facing eternal hibernation.**

**TAPE STARTS: 10:00:00**

**A-ROLL STARTS: 10:00:10**

10:00:10

[ROSETTA MISSION CONTROL AT ESOC, DARMSTADT, GERMANY 2014 & AUDIENCE SHOTS DURING LANDING]

On the 12th of November 2014, the world watched as the Rosetta mission team attempted something breathtakingly audacious.

10:00:21

[ANIMATION PHILAE DESCENDING TO AGILKIA LANDING SITE PLUS MOVIE FROM LANDER DESCENT IMAGES TO COMET]

Philae was about to make history by performing the first ever controlled landing on a comet.

10:00:27

[CONTROL ROOM CELEBRATIONS]

10:00:35

[FIRST IMAGES FROM COMET SURFACE AND MOVIE OF COMET 67/P]

The lander sent back the first ever images from the surface of a comet and undertook 60 hours of science. Philae then went into hibernation and, apart from several brief periods of contact last summer, since July the 9th the lander has been silent. Philae’s legacy is enormous.

10:00:54

[STEPHAN ULLAMEC

Philae lander manager, ESA]

“*It gave us the ground truth. It gave us really the data from the surface itself. Physical properties, also chemical properties with the mass spectrometers. Also it allowed the radar measurements so if embed it into the overall Rosetta data and results, as we have, it has revolutionised our understanding of comets and in some sense also our understanding of the history of solar system and it gave us new input for understanding the origin of life.”*

10:01:29

[PHILAE ANIMATION, STILLS SHOWING MULTIPLE LANDINGS]

It wasn’t all plain sailing. The harpoons didn’t fire on landing. As Philae wasn’t anchored, it bounced across the surface of the comet. When the lander finally rested, its position meant Philae couldn’t drill into the soil to collect samples for the different instruments. Instead they went into sniffing mode - analysing the gases surrounding the comet and from scattered dust grains. Eighty per cent of its planned science was completed with measurements from multiple landings, across several locations, providing unexpected benefits.

10:02:05

[NICOLAS ALTOBELLI

Rosetta planetary scientist, ESA]

*“This kind of investigation, comparing measurements, in particular of the magnetic field of the nucleus and of the tensile strengths of the surface would not have been possible if Philae would have conducted its operation exactly as planned. So in a sense this rebound was an opportunity for an investigation which we had not even thought about.”*

10:02:26

[ANIMATION OF COMET INTERIOR IMAGING BY CONSERT INSTRUMENT, STILLS SHOWING SMALL LOBE AND LANDING SITES, PLUS COMET]

By working with the orbiter, Philae helped scientists understand how the comet’s interior is formed. Radio waves were transmitted between the lander and the orbiter to see how they were reflected and transmitted through the comet’s nucleus. And the small lobe - the head of the duck shaped comet where Philae rests - was found to be fairly homogeneous. This sort of information, especially knowing how hard the surface is, is crucial for any future missions which may involve a sample return.

10:02:58

[PATRICK MARTIN

Rosetta Mission Manager]

*“For me the Philae mission has been a great success. Not only because it was the first landing on a comet, in 2014, but also because it has acquired great scientific data which are now published in various scientific papers so the success of Philae is already there and it will be for posterity.”*

10:03:26

[REVOLVING COMET MOVIE, ROSETTA ORBITER ANIMATION, COMET TAILS STILL]

Philae has always been the cherry on the cake in this mission. The main aim was to map and monitor the changes of a comet as it approached the Sun, reached its closest point and greatest activity at perihelion, and then follow the comet as it moves away from the Sun - including flying through the comet’s tails. This crucial work is being done by the orbiter.

10:03:50

[ROSETTA CARTOON ANIMATION]

But even children have been captivated by the lander through the cartoon activities of a tiny robot on a small comet far away from home. The orbiter continues its work until the end of its mission in September when Rosetta will join its lander on its final resting place. The plan is to send the orbiter directly onto the comet with its instruments collecting the last pieces of scientific data from comet 67P/Churyumov-Gerasimenko.

10:04:25

[ENDS]

**Philae facing eternal hibernation.**

**B-Roll**

**STEPHAN ULAMEC (ENGLISH)**

**PHILAE LANDER MANAGER, DLR**

*“By the first landing on a comet we learned of course also about the physical properties of the nucleus. We found out it is a very hard surface, almost like ice, porous ice. And this of course is important information for whatever future mission we would plan which would land either on a comet or even go a step further and try to get samples, maybe even a core from the surface, in order to return it back to Earth.”*

“*Philae of course being a lander gave us the ground truth, so really the data from the nucleus, from the bulk material of the comet. For instance, we could measure the surface strength and surprisingly the comet was very hard, that’s a measurement you cannot do from the orbiter. We also made analysis of the chemical composition with the mass spectrometers of both Ptolemy and COSAC on the organic compounds in the cometary material on the surface. We were able to get a scan with the radar instrument CONSERT through the nucleus determining the global internal properties and porosity of the comet. We were able while Philae was jumping to measuring the magnetic properties identifying with ROMA indeed that there is no magnetisation of the material which was also quite interesting and of course we got the images, hi-resolution from the surface, very close by indicating structures that were again different than expected, resembling or looking a bit like rocks, it’s not rocks but it’s different to the loose regolith dusty surface some people may have expected before we landed.”*

10:06:28

**STEPHAN ULAMEC (GERMAN)**

**PHILAE LANDER MANAGER, DLR**

Two soundbites in German.

10:07:38

**PATRICK MARTIN (FRENCH)**

**ROSETTA MISSION MANAGER, ESA**

A soundbite describing Philae’s mission as a success.

10:08:13

**NICOLAS ALTOBELLI (ENGLISH)**

**ROSETTA PLANETARY SCIENTIST, ESA**

*“One of the most major findings for me was the tomography of the nucleus, to manage to understand how the interior is formed by propagating radio waves between the orbiter and Philae and see how those waves get reflected and transmitted through the body nucleus. It was found actually that the small lobe of the comet is fairly homogeneous down to just a few tens of metres scale and being able to sound the interior of the comet is probably one of the most exciting achievement of Philae and Rosetta.”*

10:08:57

**NICOLAS ALTOBELLI (FRENCH)**

**ROSETTA PLANETARY SCIENTIST, ESA**

Soundbite on the most important findings for Philae.

Soundbite on how Philae has changed our understanding of a comet.

10:10:10

**ANIMATION IMAGING COMET INTERIOR**

Animation showing the CONSERT instrument imaging the interior of the comet by bistatic radar between the Rosetta orbiter and the Philae lander.

10:11:02

**PHILAE DESCENT SEQUENCE**

Philae’s descent in images as seen from the Rosetta orbiter

10:11:17

**PHILAE MULTIPLE LANDING ANIMATION**

10:13:13

**END**