**Rosetta: organic comet A-ROLL**

**10:00:00**

**ESA STING**

**10:00:10**

**[Rosetta and solar system animation]**

Now at its closest point to the Sun, the comet’s activity continues to be monitored by the Rosetta orbiter. As the mission learns more about how a comet changes during its orbit, our knowledge of its composition is increasing…

**10:00:24**

**[Animation of spinning comet from stills, close up surface]**

… thanks to new and recently published science. Not least that comet 67P/Churyumov Gerasimenko is mostly made up of space.

**10:00:36**

**[Inset clip: WLODEK KOFMAN, Principal Investigator CONSERT]**

“*The interior is full of holes and we are measuring porosity of 75 and 85% inside which means we have materials composed of ice. It’s water ice or CO2 ice and dust materials.”*

**10:00:55**

**[Lander separation animation]**

The CONSERT instrument, which has two parts – one on the orbiter and one on the lander - probes the centre of the comet nucleus using radio waves. One of its 70 centimetre long antennas can be seen here….

**10:01:07**

**[Comet surface images. Credits: ESA/Rosetta/Philae/ROLIS/DLR]**

Imaged by Rosetta’s CIVA camera, the darker patches on this cliff face are likely to be organics – compounds containing carbon.

**10:01:19**

**[Inset clip: JEAN-PIERRE BIBRING, Principal Investigator CIVA**

*“Comets are made of icy grains, refractory grains like silicates and carbon rich molecules but these molecules are really carbon grains. The organics are not only very small molecules embedded in the ice. They are material, original material, solid material, and whatever the scale we look at that we see that material all around the surface and below the surface.”*

**10:01:42**

**[Rosetta animation]**

Within 64 hours of the Philae lander separating from the orbiter, 80% of the first science sequence was complete.

**10:01:51**

**[Animation using ROLIS camera image stills during lander descent]**

Images from the lander’s ROLIS camera during a seven-hour descent, show objects ranging from a boulder-sized 5 metres to less than 10 centimetres. The final image of the first landing site was taken just 9 metres above the comet surface.

**10:02:09**

**[Lander animation on comet surface]**

After that first touchdown the PTOLEMY and COSAC instruments began analysing any gases.

**10:02:15**

**[Graphic of compounds]**

COSAC detected 16 organic compounds – including four that had never been found before on a comet.

**10:02:23**

**[Inset clip: FRED GOESMANN, Principal Investigator COSAC]**

*“It’s the typical combination of carbon, hydrogen, nitrogen, oxygen - all types of typical bonds you’d expect between these atoms. So it’s the OH, the alcohols, the aldehydes, the nitrogen bonds, the nitrile, the amide, the amine and the isocyanate even. So the typical bonds you’d expect between C H O and N were there.”*

**10:02:48**

**[Comet and comet surface stills]**

PTOLEMY detected the main gases in the comet’s coma or atmosphere – water vapour, carbon dioxide and carbon monoxide as well a small amount of formaldehyde. Some of the compounds detected by Rosetta’s instruments are key ingredients for life – showing that even though this comet is millions of kilometres away – its composition and origin shares a crucial history with our own planet.

**10:03:15**

**[ENDS]**

**B-ROLL**

**Rosetta: organic comet**

**Comet 67P orbit animation**

Animation showing the comet orbiting the sun and its journey around the solar system.

**Philae lander animation**

Separation of Philae lander from Rosetta orbiter, showing CONSERT antennae on orbiter and lander. Philae separates and lands on comet surface.

**Fred Goesmann, COSAC Principal Investigator (English)**

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**Fred Goesmann, COSAC Principal Investigator (German)**

Goesmann explains the types of compounds and bonds found on the comet in German. COSAC is the Cometary Sampling and Composition instrument on the lander.

**Jean-Pierre Bibring, CIVA Principal Investigator and Principal Investigator Philae lander (French)**

An explanation of some of the Philae science highlights in French. CIVA is the Comet Infrared and Visible Analyser, a set of panoramic cameras on the lander.

**Wlodek Kofman, CONSERT Principal Investigator (French)**

A description of the inside of the comet and its porosity in French. CONSERT is the Comet Nucleus Sounding Experiment by Radiowave Transmission).