**[FINAL 19-4-17]**

**ExoMars: Six Months in Orbit**

Six months after its arrival at Mars (on 19 October 2016), Mission controllers of ESA’s Trace Gas Orbiter have begun the challenging process of adjusting the spacecraft’s orbit. This involves using the shifting Martian atmosphere to gradually slow the satellite, in a process known as aerobraking.

Meanwhile, as the final design of the rover nears completion, the team developing the ExoMars 2020 mission has shortlisted two final landing sites, in areas where they believe traces of life are most likely to be found.

This report contains new animations showing aerobraking orbits of the Trace Gas Orbiter, and designs for the final configuration of the 2020 rover. It also shows the ExoMars control workstation at ESOC and includes interviews recorded at ESA centres of ESOC and ESTEC.

**A-ROLL**

**10:00:10**

**ESOC control room Oct 19 2016**

From: <http://www.esa.int/esatv/Videos/2016/12/ExoMars_-_A_promising_future/ExoMars_mission_control_19_October_2016>

The scene at mission control on the 19th of October 2016 when ESA’s first ExoMars mission – consisting of the Trace Gas Orbiter and Schiaparelli lander – arrived at Mars.

**10:00:22**

**Animation of ExoMars TGO and lander**

From: <http://www.esa.int/esatv/Videos/2016/10/ExoMars_Science/Animation_ExoMars_arrival_and_lander_separation>

Unfortunately, the lander received unexpected sensor data during the last stage of the landing which caused it to crash into the surface.

But, with its instruments successfully tested, the Trace Gas Orbiter is in good shape. Its mission is to study the planet’s atmosphere - particularly methane, which was first discovered by ESA’s Mars Express.

**10:00:47**

**Jorge Vago, ExoMars Project Scientist**

*The trace gas orbiter is really looking at active processes going on Mars today by studying the atmosphere. And life, present life, is one of the possible explanations. So it will really be Sherlock Holmes work to try to put together a case for whether it’s geological or biological activity that is responsible for the methane.*

**10:01:16**

**ESOC Mission control set-up shots (ESOC 31 March 2017)**

Before the Trace Gas Orbiter can begin that investigation, mission controllers need to manoeuvre the spacecraft from its highly elliptical orbit into a circular orbit…and that’s not easy.

**10:01:28**

**Silvia Sangiorgi, Deputy Spacecraft Operations Manager**

*We have to slow down, we have to brake. And since we haven’t enough fuel to brake with our engine, we use the atmosphere to brake.*

**10:01:38**

**Animation of orbit change from elliptical to circular (new animation)**

The aerobraking process to gradually adjust the spacecraft’s orbit will take more than a year. It is complicated by the changing nature of the Martian atmosphere – which expands and contracts – slowing the spacecraft by differing amounts.

**10:01:53**

**Silvia Sangiorgi, Deputy Spacecraft Operations Manager**

*We have to take a lot of margin to be sure that even if we go through a moment where the atmosphere is more dense at the altitude we’re flying, we are still safe with the spacecraft.*

***10:02:06***

**Animation of rover into set-up shots of Jorge Vago at his desk looking at them**

Meanwhile, plans are well advanced for the ExoMars 2020 mission…with the final design of the rover nearing completion. As well as a sophisticated vision system and next-generation analytical instruments, it will be able to drill two metres beneath the surface.

And scientists have shortlisted two possible landing sites to put it to use…

**10:02:28**

**(includes cutaway of landing sites:** <http://www.esa.int/Our_Activities/Space_Science/ExoMars/Final_two_ExoMars_landing_sites_chosen> **)**

**Jorge Vago, ExoMars Project Scientist**

*We want a landing site that is ancient because the hypothesis is that conditions on the surface of Mars 4.3 to 3.9 billion years ago were similar to those on Earth when life started here… …the second condition is that we want a site where we had liquid water present over hundreds of millions of years and we want this liquid water to be, what we call, low energy – or slow flowing water, like the canals in Amsterdam.*

**10:03:02**

**Animation of landing site area:**

<http://www.esa.int/esatv/Videos/2016/10/ExoMars_at_the_Red_Planet/ANIMATION_OF_LANDING_SITE_AREA>

Together, the two ExoMars missions offer the best chance yet of answering the question – was there ever life on Mars?

**[ends @ 10:03:12:01]**

**B-ROLL 002 - 10:03:12:02**

1. Jorge Vago, ExoMars Project Scientist (English)

**B-ROLL 003 - 10:04:39:23**

2. Silvia Sangiorgi, Deputy Spacecraft Operations Manager (English)

**B-ROLL 004 - 10:05:50:00**

3. Silvia Sangiorgi, Deputy Spacecraft Operations Manager (Italian)

**B-ROLL 005 - 10:06:36:16**

4. Jorge Vago’s set-up shots (his office at ESA ESTEC)

**B-ROLL 006 - 10:07:47:00**

5. ExoMars spacecraft operations workstation at ESA ESOC

**B-ROLL 007 - 10:08:38:00**

6. ExoMars rover design animation

**B-ROLL 008 - 10:11:11:24**

7. TGO Change of orbit animation (aerobraking)

**[ends] - 10:13:55:10**