**CASSINI-HUYGENS: A SATURN SUCCESS STORY**

**A roll**

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

**VT STARTS: 10:00:10**

10:00:10

[ANIMATION CASSINI AT SATURN AND SATURN IMAGES, CREDIT NASA]

Almost 20 years after launch, the Cassini spacecraft continues to send back stunning images from Saturn. And as Cassini’s end approaches on September 15th, this joint ESA and NASA mission can recall some spectacular successes. One of its highlights remains the first ever landing on an alien moon when, in 2005, Cassini’s European probe, Huygens, made contact with the surface of Titan - Saturn’s largest moon.

10:00:46

[ANIMATION HUYGENS DESCENT]

Titan is the only moon with a thick atmosphere and Huygens took several hours to descend by parachute onto an unknown world.

10:00:57

[HUYGENS PROBE LANDING AT ESOC, ESA MISSION CONTROL, GERMANY; 14 January, 2005]

Inside a control room at the European Space Operations Centre in Darmstadt, Germany, mission scientists and the world’s press awaited confirmation that Huygens had landed.

10:01:09

[GREEN BANK TELESCOPE AND CONTROL ROOM IMAGES]

The signal was received via the Green Bank telescope in the USA, from a European spacecraft 1.2 billion kilometres away. It used the same power as a cell phone and was described as more challenging than looking for a needle in a haystack.

10:01:27

[INSET CLIP: David SOUTHWOOD, Former Director of Science, ESA]

*“With an extraordinary effort that I still frankly can’t believe. The radio astronomers of the world, the world, gathered to look at the little telephone signal, telephone level signal coming from the other side of the Solar System.”*

10:01:51

[ESOC CONTROL ROOM AND PRESS CONFERENCE GVS]

And after an anxious wait in the control room, the scientific data and images began to arrive…Meanwhile the audience was able to hear Huygens’ radar echoes gradually rise in pitch as it approached touchdown.

10:02:17

[INSET CLIP: John ZARNECKI, Huygens Scientist]

*“What is absolutely remarkable is that in that entire three hours and thirty six or thirty seven minutes of data we cannot find a single missing data frame. The link and the quality of the data was absolutely superb.”*

10:02:34

[INSET CLIP: Jean-Jacques DORDAIN, Former ESA Director General

*“We are the first visitors of Titan and the scientific data that we are collecting now shall unveil the secrets of this new world.”*

10:02:47

[TITAN IMAGES]

After releasing the first image of this new alien world, colour images showed incredible views of Titan from four altitudes: ranging from 150 kilometres… to 15 kilometres… two… and less than half a kilometre above the moon’s surface. Studying Titan has revealed a moon with many possible parallels to Earth but it took a change in season before scientists discovered that Titan rained. But it did not rain water.

10:03:19

[INSET CLIP: Jean-Pierre LEBRETON, Huygens Mission Scientist]

*“The temperature at the surface of Titan is about minus 180 degrees so it’s very cold. The landscapes of Titan look a lot like what we have on Earth. We have rivers, lakes, seas almost oceans of methane. It rains, it rains methane or a mix of ethane and methane so there are lots of meteorological phenomena or geophysical phenomena on Titan  that makes you think of what happens on Earth but the ingredients are quite different.”*

10:03:52

[ANIMATION CASSINI, SATURN AND TITAN; SATURN, TITAN IMAGES]

The Cassini spacecraft made its 127th close flyby of Titan in April this year - another opportunity to study its hydrocarbon lakes and marmalade coloured skies.

There are over 60 other moons around Saturn - each with their own surprises. But when Huygens landed on Titan’s surface, it made history. The European probe’s science instruments determined the structure of the atmosphere, made the first direct measurements of winds on the moon, and found hints of a sub-surface ocean beneath its frozen surface.

There are more mysteries to unravel but, thanks to Huygens, together with the discovery of organic molecules in the upper atmosphere by Cassini, Titan has been revealed as one of the most interesting objects in our Solar System.

10:04:46

[ENDS]

**Cassini-Huygens: A Saturn Success Story**

**B-ROLL**

10:04:46

TITLE: Jean-Pierre Lebreton, Huygens Mission Scientist, ESA [French] - soundbite

"La température à la surface de Titan est d'environ moins 180 degrés, donc c'est très froid.. Les paysages de Titan ressemblent beaucoup à ce que nous avons sur Terre - on a des rivières, on a des lacs, on a de grandes mers, presque des océans de méthane. Il pleut, il pleut du méthane, ou un mélange de méthane et de l'éthane, donc il y a beaucoup de phénomène météorologique, de phénomène géophysique sur Titan qui nous font penser à ce qui se passe sur Terre, mais les ingrédients sont très différents."

10:05:30

TITLE: Approaching Saturn animation [NASA/JPL]

Animation showing the Cassini orbiter approach Saturn from above its north pole.

10:06:16

TITLE: Huygens separation and landing on Titan animation [NASA/JPL]

Separation of the Huygens space probe from Cassini, parachuting towards Titan, Saturn’s largest moon.

10:06:37

TITLE: Huygens descent to Titan’s surface [NASA/ESA/University of Arizona]

Simulation of the view from Huygens and showing the position of other moons before its descent to Titan’s surface.

10:11:28

TITLE: Huygen’s descent radar echoes

ESA press conference, 14 January 2005

After the Huygens’ landing on Titan, an ESA press conference at the European Space Operations Centre in Darmstadt, Germany, played the rising pitch of the lander’s radar echoes as it descended to the moon’s surface.

10:12:20 black