**SOLAR ORBITER: MISSION READY**

**A-ROLL SCRIPT - FINAL**

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

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

10:00:10

[SOLAR ORBITER LAUNCH ANIMATION, CREDIT: ESA]

When ESA’s Solar Orbiter launches from Cape Canaveral on an Atlas 5 rocket, its mission team will be more than ready - they will be ready for anything.

10:00:21

[EXT. GVS ESA, ESOC, DARMSTADT, GERMANY]

At the European Space Operations Centre in Darmstadt, Germany, crucial parts of the spacecraft’s journey have been rehearsed over a period of five months inside the Main Control Room.

10:00:34

[INT. GVS MAIN CONTROL ROOM (MCR) ESA ESOC, DARMSTADT, GERMANY]

This mission simulation is the final one before the dress rehearsal and the launch itself. Two teams, in 8 hour shifts, take turns to provide spacecraft control from launch onwards around the clock. But the simulation is deliberately designed to not always go like clockwork - as problems and last minute changes will be introduced to ensure that the team will be prepared for anything - no matter how unexpected.

10:01:03

[INSET CLIP:SYLVAIN LODIOT

SPACECRAFT OPERATIONS MANAGER, SOLAR ORBITER]

*“So failures range from spacecraft issues. For example, after separation you don’t have the signal from the spacecraft, or failures on board our prime units - we have to be ready to react - down to we have to make sure all our ground stations are ready for us to be able control the spacecraft. So we can get control system errors on ground or antenna issues. So the antennas which allow us to talk to the spacecraft. We can also have sick people as failures so we need to be able to react to any contingency. Or, for example, to evacuate the main control room in case of whatever issue. We have a back up room in another building here. So all these things are trained and sometimes all together at the same time so I guess it’s quite interesting.”*

10:01:46

[SOLAR ORBITER FAIRING SEPARATION AND RELEASE ANIMATION, CREDIT: ESA]

Today’s simulation rehearsed the first day of the mission from the separation from the launcher onwards.

10:01:54

[SET UP SHOTS, ESOC]

The trajectory required to get from the Earth to observethe Sun has been designed and optimised by the mission analysts. Solar Orbiter will use a ballistic trajectory - which means directing its orbit by using gravity assists.

10:02:05

[INSET JOSE MANUEL SANCHEZ PEREZ (can we shorten this?)

MISSION ANALYST, SOLAR ORBITER

[VENUS FLYBY AND TRAJECTORY ANIMATION, CREDIT: ESA]

*OUT OF VISION: “A gravity assist is flying by very close to a planet in order to use the gravitational pull of this planet to change the orbit. This we do repeatedly with Venus, seven times, and with the Earth one time. IN VISION: By doing so we can finally achieve an orbit that is elliptic, gets close to the Sun and then goes up to the ecliptic - the ecliptic is the plane in which all the planets are orbiting the Sun - and by going out of the ecliptic we get to high latitudes and can we get very clear observations of the Sun’s poles.”*

10:02:46

[ANIMATION SOLAR ORBIT BESIDE SUN]

These high latitudes means Solar Orbiter will provide the first images of the Sun’s poles as well as investigating the heliosphere and the solar wind.

10:02:57

[MCR GVS]

And these simulations play an important role in ensuring that not only will its team be mission ready, but that Solar Orbiter and its science will be a success.

10:03:09

[ESA CLOSING STING]

10:03:14

[ENDS]

**SOLAR ORBITER: MISSION READY**

**B-ROLL**

**ESA STING**

**10:03:13:17**

**[TITLE: ANIMATION OF SOLAR ORBITER LAUNCH ON AN ATLAS V]**

CREDIT:ESA

10:03:35:18

**[TITLE: ANIMATION OF SOLAR ORBITER FAIRING SEPARATION]**

CREDIT: ESA

10:04:05:01

**[TITLE: Animation of Solar Orbiter facing the sun]**

10:04:29:01

**[TITLE: ANIMATION OF SOLAR ORBITER’S JOURNEY TO THE SUN]**

Animation shows trajectory of Solar Orbiter including seven flybys of Venus and one of Earth from the launch in February 2020 onwards]

10:06:42:08

**[TITLE: ANIMATION OF SOLAR ORBITER’s FLYBY OF VENUS]**

10:07:07:18

**[TITLE: SYLVAIN LODIOT**

**SPACECRAFT OPERATIONS MANAGER, SOLAR ORBITER [FRENCH]]**

1. The purpose of the final mission simulations.

2. The importance of mission simulations.

3. The types of problems that may be introduced to the mission simulations.

10:10:13:11

**[TITLE: JOSE MANUEL SANCHEZ PEREZ**

**MISSION ANALYST, SOLAR ORBITER [ENGLISH]]**

*“A gravity assist is flying by very close to a planet in order to use the gravitational pull of this planet to change the orbit. This we do repeatedly with Venus, seven times, and with the Earth one time. By doing so we can finally achieve an orbit that is elliptic, gets close to the Sun and then goes up to the ecliptic - the ecliptic is the plane in which all the planets are orbiting the Sun - and by going out of the ecliptic we get to high latitudes and can we get very clear observations of the Sun’s poles.”*

10:11:05:03

**[TITLE: JOSE MANUEL SANCHEZ PEREZ**

**MISSION ANALYST, SOLAR ORBITER [SPANISH]] An explanation**

The trajectory design of Solar Orbiter.

The most challenging part of Solar Orbiter’s trajectory.

10:13:05:21

**[TITLE: SOLAR ORBITER MISSION SIMULATION**

**MAIN CONTROL ROOM**

**EUROPEAN SPACE OPERATIONS CENTRE [ESOC]**

**DARMSTADT, GERMANY]**

Interior GVs from the Main Control Room on 23.01.20 in one of the final simulations for the Solar Orbiter mission. This one concentrated on launch and early orbit phases of the mission.

10:16:07:17

**[TITLE: ESOC EXTERIOR GVS]**

**DARMSTADT, GERMANY]**

Exterior GVs of ESA’s ESOC (European Space Operations Centre)