**PREPARING CHEOPS**

**A-roll**

**Suggested web copy:** The space telescope CHEOPS (CHaracterising ExOPlanet Satellite) has left a clean room in Switzerland, where it was assembled and tested, and is on its way to Madrid for further launch preparations. The telescope will study hundreds of known exoplanets using the transit method - measuring the dip in light as a planet transits its parent star.

CHEOPS will herald a new era of discovery. Its precision measurements will give more detailed information about a planet’s structure, atmosphere and surface temperature. It was built at the University of Bern and the mission is a partnership between ESA and Switzerland with additional contributions from Austria, Belgium, France, Germany, Hungary, Italy, Portugal, Spain, Sweden, and the United Kingdom.

Integration and testing of the CHEOPS spacecraft is ongoing and the project is on track to reach flight readiness by the end of 2018.

This film contains soundbites from Willy Benz, CHEOPS principal investigator, ESA/University of Bern and Andrea Fortier, Cheops Instrument Scientist, ESA/University of Bern.

**[TITLE] PREPARING CHEOPS**

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

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

10:00:10

[Exoplanet animation]

Hundreds of known planets orbiting stars outside our Solar System will soon be under scrutiny by a space telescope called CHEOPS - a characterising exoplanet satellite. And its scientists want answers to a number of questions.

10:00:28

[INSET CLIP: Willy Benz, CHEOPS principal investigator, ESA/University of Bern]

*“We want to know what these planets are made of. We want to know how hot they are. We want to know their atmospheric compositions, structure. We want to know the surface temperature. We want to know if there’s water there and eventually if there’s life.”*

10:00:44

[CHEOPS instrument in clean room GVs, University of Bern]

This is the CHEOPS instrument in a clean room at the University of Bern, where it was built, assembled and tested using electrical and optical ground support equipment and a thermal vacuum chamber. Now in Madrid for further launch preparations, the telescope houses two mirrors, a CCD detector or camera, and a baffle to reduce stray light.

10:01:08

[Transit animation]

CHEOPS will measure the minute dip in light from a star when a planet transits across it. The size of the dip provides a direct measure of the ratio of the size of the planet and the star. This, combined with a knowledge of the size of the star, gives the planet’s size. Radial velocity measurements from ground observatories will supply its mass.

10:01:30

[INSET CLIP: Andrea Fortier, CHEOPS Instrument Scientist, ESA/University of Bern]

*“When you have the mass and the radius you have two very important things about an object because you can get what we call the mean density after that, and that can give you a lot of information about the composition of a planet. For example, it can immediately tell you whether the planet is mainly formed of gas or if it’s a rocky planet.”*

10:01:58

[CHEOPS clean room GVs]

The challenge was to build an extremely accurate and stable telescope that blocked signals, caused by stray light, from its electronics and instruments. The telescope will therefore be kept at minus 10 degrees C and the detector at minus 40 degrees to reduce signal noise.

10:02:18

[INSET CLIP: Willy Benz, CHEOPS principal investigator, ESA/University of Bern]

*“What makes CHEOPS unique is it’s the only follow up mission. So we are not aiming at discovering new planets we’re just aiming at going back to the ones we know, and measure their size either for the first time because it hasn’t been measured yet, or improve the measurements that have been done in the past either from the ground or from a space telescope with less precision.”*

10:02:45

[CHEOPS clean room GVs and exoplanet animation]

The CHEOPS science team is currently selecting the best target exoplanets for further study. Other scientists will also be invited to submit proposals to use the space telescope. Then, once the science mission is operational, a new era of discovery can begin.

10:03:06

[ENDS]

 **B-ROLL**

**[TITLE]**

**Willy Benz, Principal Investigator CHEOPS, ESA/University of Bern**

**[FRENCH]**

**TC : 10:03:05**

An explanation of what the CHEOPS mission will do.

An explanation of what will scientists be able to learn from drop in light from a distant star during an exoplanet transit.

**[TITLE]**

**Andrea Fortier, CHEOPS Instrument Scientist, ESA & University of Bern**

**[ENGLISH]**

**TC : 10:05:05**

*“When the planet goes in front of the disc of the star then the light that we receive from the star decreases and so this is what we want to measure: how much this light decreases when the planet goes in front of the star and this is what’s called the transit method.”*

**[TITLE]**

**Andrea Fortier, CHEOPS Instrument Scientist, ESA & University of Bern**

**[SPANISH]**

**TC : 10:05:35**

An explanation of what is CHEOPS will do.

A description of the information that can be gained about exoplanets as a result of CHEOPS’s measurements.

**[TITLE]**

**Thomas Beck, CHEOPS Engineer, ESA & University of Bern**

**[GERMAN]**

**TC : 10:07:15**

The technical challenges of the CHEOPS mission.

**[TITLE]**

**CHEOPS in clean room, University of Bern**

**TC : 10:08:23**

Uncovering of CHEOPS in a University of Bern clean room in Switzerland, where it was built and tested. Plus GVs, cutaways, and the covering of the instrument.

**[TITLE]**

**CHEOPS test equipment**

**TC : 10:11:39**

The electrical and optical ground support equipment (cylindrical padded chamber) and a thermal vacuum chamber (large black box on the right of the screen).