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**AEROSPACE**

A M E R I C A

# Ready, set **EXPORT**

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# Jade Rabbit explained

China's lunar rover mission ran into technical troubles in January, troubles that space experts say have put the mission at risk. Here are 8 facts to know about the mission, no matter how things turn out:

■ The 1,200-kilogram lander touched down in December on a plain called Mare Imbrium, an area that forms the right eye of the “man in the Moon.”

■ The mission is called Chang'e 3, which is also what Chinese scientists call the lander. The rover that rolled out of the lander is called Yutu, which means Jade Rabbit, a mythical pet that in Chinese legend traveled to the Moon with the goddess Chang'e (pronounced “Chong-euh”). The rover's first drive on the lunar surface took it about 18 meters from the lander.

■ The lunar night lasts for two weeks. During these bitterly cold, dark periods, the Yutu rover and Chang'e 3 lander must hibernate.

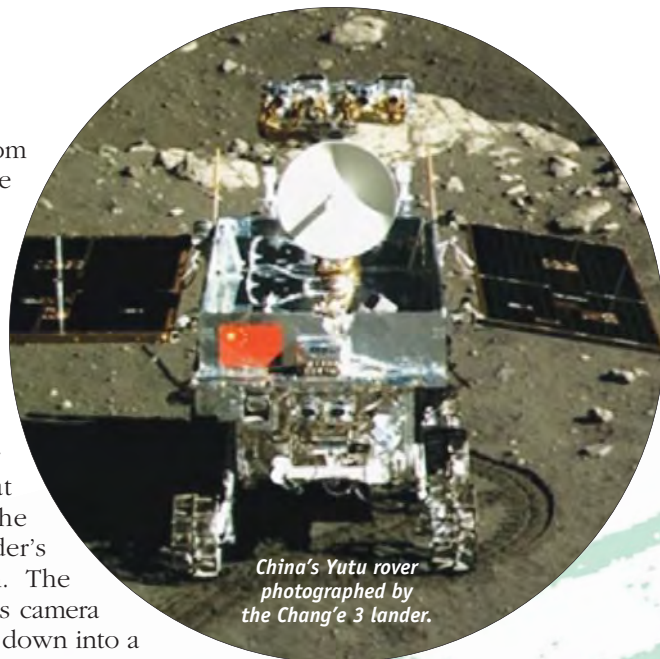
■ Meters away from each other, the rover and lander survived their first night, lasting about 14 Earth days. This was a crucial test for the multi-layer insulation and radioisotope heater technology that must keep the Chang'e 3 lander's electronics warm. The Yutu rover folds its camera mast and antenna down into a box that has a radioactive heat source and is covered by a solar panel. The rover's other solar panel tilts down to catch the rays of the rising sun.

■ The mission's landing site is roughly 1,750 kilometers from Tranquility Base, where Neil Armstrong and Buzz Aldrin put humanity's first footprints on the moon during Apollo 11.

■ China plans to return a lunar sample in 2017 on a future Chang'e mission.

■ Chinese experts quoted in press reports wonder if lunar materials that are scarce on Earth will spark a new space race for mining the Moon.

■ On Jan. 25, the Yutu rover experienced a “mechanical control abnormality,” according to Chinese news services. As another long night began, engineers were trying to solve the problem, which was caused by the “complicated lunar surface environment,” said the news reports. As the lunar day returned, the mission team waited to see if Yutu would come back to life. They say the rover has already provided much useful scientific information and imagery. ▲



China's Yutu rover photographed by the Chang'e 3 lander.

Chinese Academy of Sciences



NASA/GSFC/Arizona State University

## The landing zone:

The Chang'e 3 lander (large arrow) and rover (small arrow) as seen by the Lunar Reconnaissance Orbiter.



by Leonard David



*China's Chang'e 3 lander, photographed by the Yutu — Jade Rabbit — rover.*

Chinese Academy of Sciences

*The Yutu rover's tracks are visible in this panorama taken by the Chang'e 3 lander.*



Chinese Academy of Sciences