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Major test for new type of rocket engine completed

By ZHAO LEI
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China's rocket scientists and engineers carried out a major test on Saturday on a new type of engine, which will be the most important component in the nation's attempt to land astronauts on the moon.

The multiple-ignition test, which took place at an engine testing facility in Fengxian county in Shaanxi province, successfully verified the engine's operating procedures, according to the Xi'an, Shaanxi-based Academy of Aerospace Propulsion Technology, China's major manufacturer of liquid-propellant rocket engines.

The test's results will be used to finalize the engine's design and improve its reliability, the academy, a subsidiary of China Aerospace Science and Technology Corp, said in a news release on Sunday.

Zhou Xianqi, a researcher at the Xi'an academy's 165th Institute who took part in the test, said it proved the engine's working stability and provided a great deal of useful data.

He said there will be several tests of the new engine in the coming months to check its capability.

According to its designers, the new engine consumes liquid oxygen and kerosene, has a thrust of 130 metric tons and is reusable. Incorporating advanced technologies such as the continuous variable thrust system, the machine will be the main propulsion on the first core stage and side boosters of the Long March 10 carrier rocket, which will be tasked with taking astronauts to the moon.

So far, the engine has undergone seven ignition tests, accumulating a working period of nearly an hour.

Considering the engine's important mission, designers said it must have excellent capability and reliability, and therefore must be comprehensively tested.

Wu Peixin, an aerospace industry observer, said designers want the new engine to be not only powerful but also reusable, so it must be capable of withstanding extreme heat, high pressure and ultrafast speed during a launch and be able to return safely to Earth.

"Making such engines is a real challenge to Chinese scientists and engineers, but I am sure they will make it because the engine is the key to whether this nation can realize its goal of landing Chinese on the moon," he said.

China is determined to land its astronauts on the moon before 2030 and plans to establish a crewed science outpost in the foreseeable future.

To achieve this goal, the China Manned Space Agency has arranged research and development of a host of new-generation space hardware like a new crewed spaceship and lunar rover.

According to the China Academy of Launch Vehicle Technology, the nation's major rocket maker, the moon-mission rocket — the Long March 10 — will be 88.5 meters tall, which is roughly the height of a 31-story residential building. The gigantic rocket will have a liftoff weight of 2,187 metric tons and will be capable of transporting spacecraft weighing at least 27 tons to an Earth-moon transfer trajectory.

China's first flexible solar array satellite launched

By ZHAO LEI
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China launched on Sunday the country's first satellite equipped with a flexible solar array.

Developed by GalaxySpace, a private satellite maker in Beijing, the Lingxi 03 is a plate-shaped communications satellite. It is equipped with a millimeter-wave multibeam digital payload, which has a transmission capacity of tens of gigabits per second.

Together with three remote-sensing satellites, the Lingxi 03 was carried into space by a Long March 2D rocket that lifted off at 10:50 am from the Taiyuan Satellite Launch Center in Shanxi province.

The satellite is designed to verify a next-generation low-Earth-orbit broadband communication system and other satellite technologies, including an ultra-large energy system and active thermal control, GalaxySpace said in a news release.

Its launch also marked the first in-orbit verification of China's multisatellite stack deployment method, which will be used when a rocket needs to put a number of plate-shaped satellites into orbit. The method will play a major role in the rapid deployment of multiple communication satellites in low orbit, the company said.

Zhu Zhengxian, chief technology officer of GalaxySpace, said the Lingxi 03 is the first satellite in China to use a flexible solar wing.

"Its flexible solar wing is extremely thin — each layer on it is only about 1 millimeter thick, and when the wing is folded inside the rocket (before the launch), its overall thickness is only 5 centimeters," he said.

"When fully unfolded in space, the array stretches to about 9 meters in length and above 2.5 meters in width. It is characterized by its small folded size, light weight and modular design."

Zhu said that his company will continue to develop new types of mobile phone-connected phased array antennas, massive satellite-mounted power systems and data processors and will apply them to its next plate-shaped satellites to speed up the development of China's space-based internet.

Sunday's space mission was China's 30th rocket launch this year and the 479th flight of the Long March rocket family.