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CHINA'S SECRETIVE REUSABLE TEST SPACECRAFT

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China has launched a reusable experimental spacecraft from Jiuquan Satellite Launch Centre in north-western China's Gobi Desert atop a Long March 2F rocket on 04 August 2022. The U.S. Space Force's 18th Space Defense Squadron (18 SDS) has identified the platform in a 346 by 593 kilometres elliptical orbit inclined by 50 degrees. It continues to be in the same orbital plane more than two weeks after launch.

The report by Chinese language state media Xinhua stated that the test spacecraft will "operate in orbit for a period of time" before returning to its intended landing site in China. Technical verification of reusable and in-orbit services will be carried out as planned to provide technical support for the peaceful use of space, according to a machine translation of the report. No other details or images of the launch or the payload have been disclosed by China. Speculations are based on the previous statements and activities and capabilities related to Long March 2F that usually launches China's Shenzhou crewed missions. The launch vehicle has a payload capacity of just over eight metric tons to low Earth orbit (LEO). Comparisons are being made with U.S. Air Force's X-37B spaceplane that is currently on its sixth orbital mission (which has already extended to more than 800 days in orbit), all of which have been shrouded in secrecy regarding the payload and mission objectives.

China's previous orbital test of a reusable experimental spacecraft took place in September 2020, with the spacecraft spending just under two days in orbit. It had released a small test satellite, possibly similar to the small Banxing satellites released by previous Shenzhou crewed missions to make observations, before landing back. This time also seven objects have been tracked, a couple of which could be inspector satellites to track the main spacecraft.

On 26 August 22, China Aerospace Science and Technology Corporation (CASC), the state-owned main contractor for the Chinese space program also reported having carried out a key flight test of the reusable suborbital spaceplane. This was carried out on a second platform, in addition to the one that remains in orbit. This was designed and constructed by the China Academy of Launch Vehicle Technology in Beijing and was unveiled in July last year when it performed its first lift-off and recovery. According to the company, post its maiden mission the vehicle underwent a host of examinations and maintenance work after the debut mission. As per the news release, the spaceplane started its own propulsion system and then conducted a vertical lift-off from the Jiuquan Satellite Launch Centre. After completing a pre-planned suborbital flight, the craft made a conventional landing on the runway at the Alxa Right Banner Airport in the Inner Mongolia autonomous region, the release said, noting that the test marked the first flight by a used suborbital spaceplane in China.

China's January 2022 white paper titled, "China's Space Program: A 2021 Perspective," stated that China would, "continue to strengthen research into key technologies for reusable space transport systems, and conduct test flights accordingly." had outlined space transportation development plans, which included plans to develop low-cost, reliable access to space, including reusable launch vehicles and a spaceplane. Other reusable spacecraft or spaceplane projects under consideration in China include the China Aerospace Science and Industry Corporation's (CASIC), Tengyun and plans to put it to commercial flight by 2030 and Chinese commercial firm Space Transportation's plans for a hypersonic spaceplane for which it has been able to raise more than $46.3 million. These include VTHL (Vertical Take-off Horizontal Landing), HTHL (Horizontal Take-off Horizontal Landing) and TSTO (Two Stage to Orbit) and SSTO (Single Stage to Orbit) concepts.

Spaceplanes are inherently expensive to launch, operate and maintain, although the reusability would reduce recurring costs. However, there is yet a lack of adequate clarity on their usage. As is evident with X-37B, they do provide a platform for clandestine space activities including monitoring of the space environment and potentially for anti-satellite operations.

Commercial viability includes space tourism and shortened intercontinental travel. As development of spaceplanes requires advanced technologies and engineering prowess, for China flight testing of two such experimental spacecrafts is a source of national pride. The U.S. is the only other country in the world to have demonstrated the capability to regularly operate such spaceplanes till now.