China Missile Launch May Have Tested Part of a New Anti-Satellite Capability

by

Craig Murray,
Senior Policy Analyst, Military and Security Affairs

Disclaimer: This paper is the product of professional research performed by staff of the U.S.-China Economic and Security Review Commission, and was prepared at the request of the Commission to support its deliberations. Posting of the report to the Commission’s website is intended to promote greater public understanding of the issues addressed by the Commission in its ongoing assessment of U.S.-China economic relations and their implications for U.S. security, as mandated by Public Law 106-398 and Public Law 108-7. However, the public release of this document does not necessarily imply an endorsement by the Commission, any individual Commissioner, or the Commission’s other professional staff, of the views or conclusions expressed in this staff research report.
China Conducts Missile Launch

China on May 13 fired a missile into space, according to a U.S. Department of Defense (DOD) spokesperson\(^1\) and official Chinese press reports.\(^2\) Launched on a ballistic trajectory from the Xichang Satellite Launch Center in western China, the missile reportedly reached an altitude of over 6,000 miles, and possibly over 20,000 miles, before it fell back and burned up while reentering the atmosphere over the Indian Ocean. DOD did not detect the “insertion of any objects into orbit,” and “no objects associated with this launch remain in space,” said the spokesperson. This launch is the world’s highest known suborbital launch since the U.S. Gravity Probe A in 1976 and China’s highest known suborbital launch to date, according to Jonathan McDowell of the Harvard-Smithsonian Center for Astrophysics.\(^3\)

Scientific Experiment or Anti-Satellite Test?

Beijing claims it was testing a sounding rocket as part of a high-altitude scientific experiment to collect atmospheric data for China’s National Space Science Center.\(^4\) However, U.S. defense agencies reportedly assess the launch was the first test of a new anti-satellite (ASAT) capability, according to two U.S. press reports citing unnamed U.S. officials.\(^5,6\) DOD has yet to officially comment on the relationship between China’s May missile launch and its ASAT program.

A Chinese Ministry of Foreign Affairs spokesperson claimed he was “not aware” of an ASAT test, and then reiterated “it is China’s longstanding stance to make peaceful use of the outer space and oppose weaponization and arms race in the outer space.”\(^7\)

While it is difficult to make a solid assessment about the nature of the missile test without more information from DOD or China, available data suggests it was intended to test at least the launch vehicle component of a new high-altitude ASAT capability.\(^8\) This also would be consistent with previous reports that China had developed a new ASAT weapon system and was preparing to test it.\(^8,9,10,11,12,13,14\)

If the test is part of China’s ASAT program, Beijing’s attempt to disguise it as a scientific experiment would demonstrate a lack of transparency about its objectives in space. Furthermore, such a test would signal China’s intent to develop an ASAT capability to target satellites in an altitude range that includes U.S. Global Positioning System (GPS) and many U.S. military and intelligence satellites. In a conflict, this could allow China to threaten the U.S. military’s ability to detect foreign missiles and provide secure communications, navigation, and precision missile guidance. Beijing’s destruction of an aging Chinese FY-1C weather satellite in January 2007 demonstrated it has the capability to target U.S. satellites orbiting in low Earth orbit, such as remote sensing satellites.

It is not clear what type of attack mechanism the new ASAT capability is designed to employ. For example, it could use a “kinetic kill vehicle” to disable or destroy a satellite through the force of a direct collision. The new ASAT capability also could employ electronic warfare or directed energy weapons to temporarily degrade a satellite’s capabilities without permanently destroying or damaging it.\(^15\)

China’s Counterspace Capabilities and Strategy

China is pursuing a flexible, “multi-dimensional” developmental program to “improve its capabilities to limit or prevent the use of space-based assets by adversaries,” according to a DOD report.\(^16\) In addition to ASAT kinetic kill vehicles, China is developing and fielding other methods...
and technologies to attack satellites while improving its space surveillance coverage. Beijing appears to be developing this array of capabilities to deter U.S. strikes against China’s expanding satellite infrastructure; challenge U.S. information superiority in a conflict; and deny, degrade, disrupt, disable, or destroy U.S. satellites if necessary. These objectives probably are driven by Beijing’s assessment that U.S. military space doctrine advocates for militarizing space and attacking an adversary’s space assets in a conflict.

PLA doctrinal publications22 and other military writings on space warfare23 suggest China’s counterspace strategy has coalesced around the concept of “space deterrence.” This concept calls for China to develop a strong counterspace capability to deter an adversary’s use of its own counterspace systems. PLA strategists likely consider counterspace weapon systems to be more valuable deterrents than nuclear or conventional capabilities because the threshold for use is lower.24,25

There is little publicly available information on China’s plans to employ counterspace weapons in a conflict, though some operational principles and elements of its strategy can be gleaned from PLA doctrine and authoritative Chinese documents.26 Beijing probably recognizes an unrestricted space war would quickly escalate,27 encourage other countries to become involved, and create debris that could damage its own satellites. This suggests Beijing during a conflict likely would not conduct preemptive kinetic strikes against U.S. satellites and initially would use disruptive, reversible counterspace systems, such as electronic jammers. If Beijing judged a conflict had developed to the point where destructive, irreversible attacks were necessary, it probably would attempt to destroy a limited number of satellites to degrade specific U.S. capabilities, rather than seek to destroy all U.S. satellites.

---

1 DOD’s full statement: “We detected a launch on May 13 from within China. The launch appeared to be on a ballistic trajectory nearly to geosynchronous Earth orbit. We tracked several objects during the flight but did not observe the insertion of any objects into orbit and no objects associated with this launch remain in space. Based upon observations, we assess that the objects reentered the atmosphere above the Indian Ocean. We defer any further questions to the government of China.” Andrea Shalal-Esa, “U.S. sees China launch as a test of anti-satellite muscle: source,” Reuters, May 15, 2013. http://www.reuters.com/article/2013/05/15/us-china-launch-idUSBRE94E07D20130515. Also see The Space Report, “Kunpeng-7.” http://planet4589.org/jsr.html.

2 Xinhua’s full statement: “This test used a high altitude space probe rocket, which carried a payload of multiple scientific detectors such as Langmuir probes, high energy particle detectors, magnetometers, and barium powder release test devices, etc. to perform original state detection of high energy particles and electromagnetic field strength in the ionosphere and near earth space.” Xinhua, “China Successfully Carries out a High Altitude Scientific Measurement Test,” May 14, 2013. OSC ID: CPP20130514003004.


8 For an overview of the different classes of orbit, see NASA Earth Observatory, “Three Classes of Orbit.” http://earthobservatory.nasa.gov/Features/OrbitsCatalog/page2.php.


