Chinese Anti-Satellite [ASAT] Capabilities

On 17 January 2007 Craig Covault, writing in Aviation Week & Space Technology, reported that China conducted a successful anti-satellite (ASAT) weapons test at about 5:28 p.m. EST on 11 January 2007. A kinetic kill vehicle launched by a medium range ballistic missile destroyed an inactive Chinese weather satellite. The Chinese Feng Yun 1C (FY-1C) polar orbiting meterological satellite had been launched in 1999. The ASAT was launched from or near the Xichang Space Center, and intercepted the target at an altitude of variously reported as either 530 or 537 miles. This altitude is consistent with the operational altitudes of American and Japanese imagery intelligence satellites.

"The U.S. believes China's development and testing of such weapons is inconsistent with the spirit of cooperation that both countries aspire to in the civil space area," National Security Council spokesman Gordon Johndroe said. "We and other countries have expressed our concern regarding this action to the Chinese."

China does not have a publicly acknowledged dedicated anti-satellite effort. Existing Chinese launch capabilities could provide the basis for the development of such a system. The missile used for the 17 January 2007 test was not immediately identified. National Security Council spokesman Gordon Johndroe said the ASAT was launched on a ground-based medium-range ballistic missile. This would probably be the DF-21 / CSS-5 medium range ballistic missile, with a range of 1800 km carrying a 600 kg warhead.

CNN's Jamie McIntyre reported on 17 January 2007 that this successful test followed three earlier unsuccessful attempts. These prior attempts had not been previously reported in public. This would be generally consistent with the flight history of the small commercial satellite launch vehicle, called KT-1 (Kaituozhe-1), based on the solid rocket motors of the DF-31 ICBM. This system has consistently failed to place satellites into orbit, a flight profile consistent with a direct ascent ASAT test.

R&D on fundamental technologies applicable to an ASAT weapons system have been ongoing since the 1960s. Under the 640 Program, the space and missile industry's Second Academy, traditionally responsible for SAM development, set out to field a viable antimissile system, consisting of a kinetic kill vehicle, high powered laser, space early warning, and target discrimination system components. This program was abandoned in 1980.

Preliminary research on ASATs has been carried out since the 1980s, at least partly funded under the 863 Program for High Technology Development.

PLA-affiliated publications assert that while China does not yet possess the capability to destroy satellites with high-powered lasers, they are capable of damaging optical reconnaissance satellites.

The 1998 Report to Congress "Future Military Capabilities and Strategy of the People's Republic of China", states "China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. However, given China's current interest in laser technology, it is reasonable to assume that Beijing would develop a weapon that could destroy satellites in the future."

China is said to be acquiring a variety of foreign technologies, which could be used to develop an anti-satellite (ASAT) capability. Beijing already may have acquired technical assistance which could be applied to the development of laser radars used to track and image satellites and may be seeking an advanced radar system with the capability to track satellites in low earth orbit. It also may be developing jammers, which could be used against Global Positioning System (GPS) receivers. In addition, China already may possess the capability to damage, under specific conditions, optical sensors on satellites that are very vulnerable to damage by lasers. Beijing also may have acquired high-energy laser equipment and technical assistance, which probably could be used in the development of ground-based ASAT weapons.

Given China's current level of interest in laser technology, Beijing probably could develop a weapon that could destroy satellites in the future. Although specific Chinese programs for laser ASAT have not been identified, press articles indicate an interest in developing this capability and Beijing may be working on appropriate technologies.

In August 2006 there were reports that China had fired high-power lasers at American intelligence satellites flying over its territory. National Reconnaissance Office Director Donald M. Kerr told reporters that a US satellite had recently been "painted," or illuminated, by a ground-based laser in China. Some observers saw this as tests of Chinese capability to blind the spacecraft, while others took it as being tests of a laser radar for guiding a direct ascent kinetic energy ASAT. It was unclear how many times a the ground-based laser was tested against US spacecraft.

References

- Chinese ASAT and rates of change thomsona@netcom.com (Allen Thomson) 1995/12/31
- CHINA'S STRATEGIC MODERNIZATION: IMPLICATIONS FOR THE UNITED STATES Mark A. Stokes [U.S. Army Strategic Studies Institute] -- September 1999
- Future Military Capabilities and Strategy of the People's Republic of China, Report to Congress pursuant to Section 1226 of the FY98 National Defense Authorization Act) (Washington, DC: Department of Defense, November 1998)
- DoD News Briefing , November 3, 1998 -- Bill Gertz in the Washington Times cites a Pentagon report that concludes that China has weapons capable of, laser weapons capable of damaging or disabling sensors on U.S. satellites. So you're saying that your understanding of that report, which you're going to provide us a copy of, does not support the conclusion that was in that newspaper? **A:** That's correct.
- Future Military Capabilities and Strategy of the People's Republic of China, Report to Congress pursuant to Section 1226 of the FY98 National Defense Authorization Act) (Washington, DC: Department of Defense, June 2000)
- Chinese Test Anti-Satellite Weapon By Craig Covault Aviation Week & Space Technology 01/17/2007