SPACE ARMS RACE AS RUSSIA, CHINA EMERGE AS 'RAPIDLY GROWING THREATS' TO US

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CNBC (30 March 2017)
U.S. satellites may be vulnerable to attacks that could make our whole way of fighting war riskier, according to experts.

"Every major space-faring nation that can track a satellite and launch into outer space has the means to mess up a satellite," said Michael Krepon, a space security expert and co-founder of the Stimson Center think tank in Washington, D.C.

A space arms race of sorts is underway with weapons under development or in the arsenals of China, Russia and the U.S. Space weapons include satellite jammers, lasers and high-power microwave gun systems.

"My guess is that our capabilities to carry out a war in space are a lot better than the Chinese and Russians," said Krepon.

According to analysts, space weapons could be used to compromise navigation, surveillance, communications and other functions in a wartime scenario or national emergency.

"Our military space systems are critical to the way we fight war today," said Todd Harrison, director of the aerospace security project at the Center for Strategic and International Studies (CSIS), a Washington-based think tank.

The U.S. uses satellite technology in advanced weapons systems aboard aircraft and warships to carry out precision-strike capabilities. At the same time, infrared satellites provide key intelligence systems used as part of the early warning system to track and detect nuclear warheads and other threats to the homeland.

"Not surprisingly, nations are now actively testing methods to deny us continued use of space services during conflict," said retired Air Force Gen. William Shelton, the former commander of the U.S. Air Force Space Command, in testimony Wednesday to the House Armed Services Subcommittee on Strategic Forces. The subcommittee heard about the role space-based capabilities play in emergencies and the threats to U.S. space systems.

Experts say the biggest threats seen today are non-kinetic threats such as jamming of satellite-based capabilities such as GPS and communications. And the threat isn't limited to space-faring countries since the satellite jamming technology is relatively inexpensive.

North Korea has previously used ground jammers, impacting both military and civilian aircraft and ships. Harrison said there's evidence that insurgents in Afghanistan and Iraq also have used

jamming.

As for lasers, they can blind imagery satellites and high-power microwave guns could knock out circuitry on targeted satellites.

Some have speculated the U.S. Air Force might be using the Boeing-built X-37B unmanned military space plane to test space weapons. The military has always denied the small robotic craft is a kind of space weapon.

Boeing declined comment for this story and referred questions to the Air Force.

"The primary objectives of the X-37B are twofold: reusable spacecraft technologies for America's future in space, and operating experiments, which can be returned to, and examined on Earth," said an Air Force spokesperson.

Last week, Navy Vice Admiral Charles Richard, deputy commander of U.S. Strategic Command, warned in a speech at a CSIS space security conference about offensive space capabilities and weapons being developed by China and Russia.

"While we're not at war in space, I don't think we can say we are exactly at peace either," the admiral said. "With rapidly growing threats to our space systems, as well as the threat of a degraded space environment, we must prepare for a conflict that extends into space."

Analysts say after the Soviet Union crumbled and a weakened Russia emerged there was a view that the U.S. didn't have to worry about an adversary knocking out satellites.

"We took it for granted and kind of ignored the vulnerabilities," said Harrison. Through the 2000s, we started to realize that this might be an issue."

Russia has sent micro-satellites into space and covertly maneuvered a small spacecraft close to commercial satellites. Experts believe the small satellites could be used for a kamikaze-type mission to ram another satellite or to snoop on it for data collection or jamming to interfere with its capabilities.

As for China, a decade ago the communist nation tested an anti-satellite missile and destroyed one of their weather satellites, a move criticized because of the debris field created in space. China also is moving ahead into manned-spacecraft technologies as well as lunar and Mars exploration missions.

"China has shown the whole world that they can do something about our space capabilities," said Harrison. "The Russians have pretty advanced space capabilities as well."

Some of the U.S. military's newer satellites are designed to overcome enemy jamming and withstand other potential offensive actions.

Even so, some of the technology that allows micro-satellites to attach to other satellites is still believed to be capable of rendering targets useless.

"Threats to our use of military, civil and commercial space systems will increase in the next few years as Russia and China progress in developing counterspace weapon systems to deny, degrade, or disrupt U.S. space systems," according the Worldwide Threat Assessment of the U.S. Intelligence Community report released last February by then-Director of National Intelligence

James Clapper.

Clapper said in the 2016 report that "Russian defense officials acknowledge they have deployed radar-imagery jammers and are developing laser weapons designed to blind U.S. intelligence and ballistic missile defense satellites. Russia and China continue to pursue weapons systems capable of destroying satellites on orbit, placing U.S. satellites at greater risk in the next few years."

One way Harrison suggests the U.S. can reduce vulnerability of some sensitive satellite systems is to build more of them "to make the system more resilient and less vulnerable to attack." For example, he said the military could put up six large satellites to sit in geosynchronous orbit as a missile warning system or go to a system with "dozens of smaller satellites that in aggregate provide the same level of capability [and] would be much harder for someone to attack."

He believes there's been "institutional resistance" within the military to go to smaller satellites and stick with the larger satellite technology. The small number of big, expensive and complex satellites — that's what they like to build."

Countering the argument, Krepon said the U.S. government is diversifying through information sharing by reaching out to utilize "this tremendous surge of commercial capability." So instead of having a handful of satellites he said there's now the potential for many more by teaming up with commercial observation satellite companies.

Actually, the admiral spoke about the information-sharing strategy last week indicating that the U.S. Strategic Command the unified command that deters military attacks on the U.S. and allies — now has agreements with 58 international companies as well as a dozen nations.

" We share a number of common interests with out partners and allies ," said Richard, the deputy commander of the U.S. Strategic Command. "We are not the only people who have assets. And I think there is great opportunity for us to collaborate for mutual benefit in this area."

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