Export Controls on Satellite Technology

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By

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Chairman Sherman, Ranking Member Royce, satellites form a major part of military command, control, communications, information gathering and targeting systems (or C4SIR systems) in 21st century military operations. I will draw from conclusions in the annual reports of the U.S.-China Economic and Security Review Commission and will provide my own views in discussing how satellite export controls bear on the strength of the Chinese People's Liberation Army, or PLA.

The Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 returned control over satellite export licensing from the Department of Commerce to the State Department under the Arms Export Control Act. [1] Factors driving Congress to make this change were concerns about the rapid growth of the PLA, China's strategic intentions, potential threats to the United States and allies, and the potential for proliferation of weapons and delivery systems by China. Congress also expressed concerns that cooperation with China in space and on missiles could improve accuracy in Chinese ballistic missile programs, assist with the development of multiple independently-targeted reentry vehicles, and assist with the development of submarine-launched ballistic missiles.

I see no reason to change the decision to have satellite exports remain on the Munitions List. Satellites are now an integral part of China's military architecture. They are used to support intelligence collection, control of forces, direct precision missile strikes, and for data transfers that improve combat effectiveness. The PLA has research that suggests using ballistic missiles with maneuvering, independent reentry vehicles to attack moving U.S. aircraft carrier battle groups. A sensor architecture based on satellites would guide such attacks.[2] Right now, the PLA has only two tracking and data relay

satellites in orbit.[3] That is not enough to give them a real-time intelligence collection capability. However, it is adequate to support the PLA's plans to target American aircraft carrier battle groups with hyper-sonic cruise missiles or the nascent capability to use maneuvering ballistic missile warheads. Given the way that the satellite programs are being used in China, exports of dual-use technologies that would improve China's remote sensing satellite capabilities still require careful control.

The 2006 Annual Report to Congress of the US-China Economic and Security Review Commission concluded that China has recognized the profound effectiveness of force multipliers such as C4ISR and is enhancing its own capabilities to make the PLA a more formidable fighting force. Such improvements rely directly on satellites.[4] In 2007, the Commission's Annual Report concluded that China has developed an advanced anti-satellite program consisting of an array of weapons that could destroy, damage, or temporarily incapacitate an adversary's satellites. My own research shows that China's military strategists see the United States as the most likely potential adversary.[5] A research paper I did for the American Enterprise Institute on China's space warfare program documents that PLA strategists contemplate using maneuvering satellites in space, among other measures, as a means to degrade an adversary's C4ISR programs.[6] Mr. Chairman, I ask that copies of this research, which I provided to the Subcommittee, be ordered part of the record.

Although China has not yet successfully tested a submarine launched ballistic missile, it has fielded two new ballistic missile submarines. The House Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic

of China,[7] expressed concerns a decade ago that satellite cooperation with China could improve its submarine launched ballistic missile program.

I also recommend examining more closely how the United States controls dual-use satellite-related technology. Last week, Dr. Eugene Arthurs, CEO of the International Society for Optical Engineering, told the U.S.-China Economic and Security Review Commission that some of the dual-use technologies used in satellites, such as high power chips that support lasers, can be part of a space-based weapons system.

I urge you to keep satellite export controls in the Department of State, to conduct vigorous oversight into the export of related dual-use technologies, and to look into implementing some of the findings of the "Beyond Fortress America" report related to ensuring that export control processes are more timely and that regulations are updated to account for rapid advances in technology and foreign development.

China has increased its defense spending by double-digit percentages since the FY 1999 Defense Authorization Act. This led to significant improvements in strategic and space systems. With respect to satellite technology that would improve space sensor systems and assist the PLA, it is important to keep in mind that China's military can support deployed forces with remote sensing from space. A military remote sensing expert from the People's Liberation Army, Major General Wang Xiaotong, wrote in the Communist Party newspaper *Guangming Ribao* about how important it is that the PLA be able to process remotely captured images of the battlefield in real time.[8] In fact, with the launch of properly positioned tracking and data relay satellites, the PLA will be able to conduct real-time remote sensing, signals intelligence collection and imagery

collection from space, process the information, and distribute it to combat forces, ships and aircraft. All of this depends on satellite systems. PLA experts expect that as new, integrated "space-ground military remote sensing survey and mapping technology," comes on line, intelligence processing, handling and distribution for Chinese armed forces "will be more automatic, more intelligent, and more real-time."[9]

China has made considerable progress in developing and refining a nonproliferation policy, establishing internal control programs, and developing its export control system. Panelists attested to that progress at the U.S.-China Economic and Security Review Commission's May 2008 hearing to examine China's nonproliferation policies.[10] Last week, at the Commission's offices, I met with representatives from China's Arms Control and Disarmament Association, China National Aero-Technology Import and Export Corporation, and China National Machinery and Equipment Import and Export Corporation. These representatives made it clear that they understand the need for internal controls on exports and the importance the United States places on respect for intellectual property rights. Awareness of these issues is changing in China. At this time, however, I cannot recommend moving satellite export controls back to the Department of Commerce. Some satellite systems are dual-use, but they are an inherent military combat multiplier.

Congress also must monitor the space and satellite cooperation programs that the Chinese government and government-controlled industries have with other countries. The general in charge of China's strategic rocket forces has visited Brazil and Argentina in recent years. At one time both countries had serious ballistic missile programs. They are now cooperating with China on space and satellite programs.[11] In China, the missile

and space programs fall under the purview of the strategic rocket forces and the Commission of Science, Technology and Industry for National Defense. China and Iran have cooperative programs on space and satellites, as documented by the Federation of American Scientists.[12] Therefore, even if China has improved its nonproliferation practices, its cooperative efforts with other countries warrant continued examination and retaining satellite export controls on the U.S. Munitions List.

The National Research Council of the National Academies has made available a prepublication copy of its report *Beyond "Fortress America": National Security Controls on Science and Technology in a Globalized World.*[13] The report has a number of good suggestions about our export control systems that I believe deserve deeper exploration, including a coordinating center for export controls, required justifications for maintaining items on export control lists, an export appeals panel that can break logjams in the approval process, and industry-government panels to review whether the United States truly is at the cutting edge of a technology it is trying to control.

Nothing in the *Beyond "Fortress America"* report, however, changes my recommendation on managing decisions on the export of satellites. These items should remain on the Munitions List. That said, I think that there is some room for a liberalization of decisions to permit the launch of U.S. communications satellites, or allied communications satellites on Chinese rockets. I recognize that two U.S. companies, Hughes and Loral, had problems in the past with employees who allegedly exceeded the license restrictions and provided controlled data to Chinese authorities. It was those actions, among other issues, that led to House Report 105-851 by the Select Committee on U.S. National Security and Military/Commercial Concerns with the

People's Republic of China.[14] To be candid, I see this as a United States problem. No Chinese company or government official cracked open a satellite to steal secrets or technology. There might have been aggressive information collection on the Chinese side, but it was a security failure on the American side that led to the alleged unauthorized disclosures. If in the future communications satellites are licensed for launch in China, better security education for the technicians involved and more pervasive oversight should be a condition of the license. Also, Congress should consider stiffening the penalties for unauthorized disclosures of controlled information or data, including heavier fines and jail sentences.

In the Strom Thurmond National Defense Authorization Act of 1999, the sense of the Congress was that "United States business interests must not be placed ahead of national security interests," and among other matters, "due to the military sensitivity of the technologies involved, it is in the national interests of the United States that United States satellites and related items be subject to the same export controls that apply under United States law and practices to munitions." I have tried in my testimony to demonstrate that those considerations have not changed in the intervening decade. If anything, the contributions of satellites to military strength and capacity have increased in the years since the Act was passed.

The National Defense Authorization Act for Fiscal Year 2000 expressed the sense of the Congress that cooperation on space and satellite launches with Russia improve. The Congress did this without seeing a need to move satellite export controls back to the Department of Commerce.[15]

Also, the National Defense Authorization Act for Fiscal Year 2000 required the Department of Defense to submit an "Annual Report on Military Power of the People's Republic of China."[16] The recently released Office of the Secretary of Defense *Military Power of the People's Republic of China 2009*[17] report noted that the PLA is pursuing comprehensive transformation to a military "capable of fighting and winning short-duration, high conflicts along its periphery against high-tech adversaries." The DoD report also noted that China's armed forces "continue to develop and field disruptive military technologies, including those for anti-access/area-denial, as well as for nuclear, space, and cyber warfare, that are changing military balances and that have implication beyond the Asia-Pacific region." The report quotes a PLA analysis of U.S. military operations as reinforcing the notion that "space is the commanding point for the information battlefield. Battlefield monitor and control, information communications, navigation and position, and precision guidance all rely on satellites and other sensors."[18] All of this validates the earlier sense of Congress that satellite export controls should stay with the Munitions Control list and the Department of State.

Mr. Chairman, members of the Subcommittee, thank you for the invitation to testify today. I have tried to carefully parse my personal views from the conclusions or recommendations of the U.S.-China Economic and Security Commission, where I serve. The agreed judgments of the appointed commissioners are contained in our annual reports. If there are questions, I am happy to respond.

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[1] 22 U.S.C. 2778.
[2] Wortzel, "China's C4ISR and Targeting Architectures," pp. 209-211, 212-216.

[3] An excellent chart on China's current satellite inventory is available in Richard D. Fisher, Jr., *China's Military Modernization: Building for Regional and Global Reach*, Westport, CN: Praeger Security International, 2008, Table 5.6, "PLA Emerging Space Satellite Information Architecture," pp. 113-114.
[4] This and other U.S. China Economic and Security Review Commission Reports to Congress are archived on the Commission website, <www.uscc.gov>. This conclusion is paraphrased here for brevity.
[5] *The Chinese People's Liberation Army and Space Warfare.* Washington, DC: American Enterprise Institute, 2007. (Reprinted in *Astropolitics,* Vol. 6, Number 2 (May-August 2008), pp. 112-137). "China's C4ISR and Targeting Architectures," in *The Right Size of the People's Liberation Army.* Eds. Roy Kamphausen and Andrew Scobell. Carlisle, PA: National Bureau of Asian Research and Strategic Studies Institute, 2007.
[6] Wortzel, *The Chinese People's Liberation Army and Space Warfare*, Pp. 7-8.
[7] House Report 105-851.
[8] Wang Xiaotong, "Military Survey and Mapping: The Three-Dimensional Expansion of Combat Operations Support," *Guangming Ribao*, January 4, 2006, in Open Source Center, www.opensource.gov.
[9] Tan Yanqi, Yan Jianbo, and Ding Jianmin, "Operating on [a] Network that Measures the Sky and Maps the Ground—On Site Report about a Certain Jinan Military Region mapping Information Center Enhancing Informationization Building," *Jiefangjun Bao*, October 31, 2005, at www.chinamil.com.cn.
[10] U.S.-China Economic and Security Review Commission, *2008 Report to Congress*, 110th Congress, Second Session, Washington, DC: U.S. Government Printing Office, November 2008, p. 125. Archived at www.uscc.gov.
[11] http://harbin.china.com.cn/e-white/8/20-5.htm
[12] http://www.fas.org/nuke/guide/iran/missile/iris.htm
[13] National Research Council of the National Academies, *Beyond "Fortress America": National Security Controls on Science and Technology in a Globalized World*, Washington, DC: National Academies Press, 2009, available at www.nap.edu
[14] See Volume II of the Cox Commission Report, at http://www.gpo.gov/congress/house/hr105851-html
[15] http://thomas.loc.gov/cgi-bin/bdquery/z?d106:SN01059:@@@D&summ2=m&
[16] P.L. 106-65, Section 1202.
[17] http://www.defenselink.mil/pubs/pdfs/China_Military_Power_Report_2009.pdf
[18] Ibid. p. 13.

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