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CHINA'S MILITARY SPACE PROGRAM:
A THREAT TO THE UNITED STATES OR A PEACEFUL
ENDEAVOR

by

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Biography

Colonel Timothy Wulff is an Army intelligence officer assigned to the Air War College, Air University, Maxwell AFB, AL. He graduated from the University of Minnesota in 1985 with a Bachelor of Science degree in Economics, and Embry Riddle Aeronautical University in 1999 with a Masters of Business Administration. He has over 25 years of active military service to include deployments in support of Operations DESERT SHIELD/ STORM, ENDURING FREEDOM and IRAQI FREEDOM. His previous assignments include: intelligence platoon leader and infantry battalion S2 with the 101st Airborne Division at Fort Campbell, KY; intelligence company commander with the 4th Infantry Division at Fort Carson, CO; military intelligence company observer, controller and trainer at the National Training Center, Fort Irwin, CA; S2 of the 11th Armored Cavalry Regiment at Fort Irwin; military intelligence battalion executive officer and military intelligence brigade S3 in the 513th Military Intelligence Brigade, Fort Gordon, GA; commander of United States Army Garrison at Wiesbaden, Germany; G2 operations officer for United States Army Europe in Heidelberg, Germany; deputy director of the Joint Intelligence Operations Center – Afghanistan in Kabul; and G2 of the United States Army Space and Missile Defense Command/Army Strategic Command at Redstone Arsenal, AL.

Abstract

This paper examines China's growing military space program to assess if it is a threat to the national security interests of the United States. There are four possible space doctrines or combinations thereof that China can pursue – space sanctuary, survivability, control, and/or high-ground (dominance). Chinese pursuit of either of the latter two would pose a security threat to the United States. This paper assesses which doctrine China is pursuing based on recent Chinese space activities, Chinese stated space objectives, and the judgments of space experts from the United States, Russia, Japan, and India. The paper concludes that the Chinese are pursuing the doctrine of space control, and therefore their program is a threat to the United States. The Chinese consistently claim that their space program is peaceful however they have taken notable actions to weaponize space. Most visible is the 2007 anti-satellite (ASAT) test that witnessed a Chinese direct-ascent missile successfully intercepting and destroying an aging, Chinese weather satellite. In addition to anti-satellite missiles, the Chinese have also advanced other kinetic and directed-energy (e.g., lasers, high-powered microwave, and particle beam weapons) technologies for ASAT missions. The United States must be prepared for the Chinese to use these systems against U.S. space assets in a regional conflict. The most likely conflict to arise in the Pacific region would be over Taiwan. The United States should follow four strategies to mitigate China's space threat – engage in diplomatic talks with China and also with regional U.S. allies, improve intelligence collection and analysis of Chinese space programs, continuously progress the U.S. space industry, and reduce the U.S. military's reliance on space enablers.

Introduction

China's economic development over the past 30 years has been phenomenal, nearly maintaining a ten percent annual growth rate since 1980.¹ This sustained economic boom has propelled the Peoples Republic of China (PRC) ahead of Japan as the second largest economy behind the United States (U.S.) and has permitted the Chinese to increase spending on its armed forces. China's "military expenditures have more than quintupled in real terms since the late 1990s, permitting Beijing to put considerable resources into the hardware and software of military modernization."² This modernization effort began in 1991 to reduce the Chinese military technology gap with the United States.

The relative ease with which the United States-led coalition defeated Saddam Hussein's army during Desert Storm caught the attention of China's senior military leaders. They were awestruck by the technological superiority the United States possessed and recognized that the U.S. victory was enabled by space-based capabilities -- satellite communications, global positioning system (GPS) navigation that allowed pinpoint accuracy of precision-guided munitions, and real-time intelligence collection and dissemination. The Vice Chairman of the Central Military Commission, General Liu Huaqing, initiated a Chinese military modernization effort completely understanding that "sophisticated weapons would play a dominant role in future 'local' wars" and that the future battlefield would encompass "both outer space and the depths of the sea."³ Years later, Operations Allied Force and Iraqi Freedom only reinforced this lesson, thus providing continued incentive for the Chinese to modernize its military capabilities.

As part of its modernization effort, China has rapidly expanded its space capabilities. The Chinese publicly claim that their objective in space remains peaceful; however they have developed a counter-space capability that includes a direct-ascent, anti-satellite (ASAT) missile

capability that was successfully tested against a Chinese satellite in 2007. This counter-space capability indicates that China's space intent is not peaceful but consistent with space control or high-ground (domination) doctrine. Because space is a critical enabler of virtually every aspect of U.S. economic, social, diplomatic and military activity, the loss of access or the freedom of access to space would threaten the very stability of the United States. China's space program is a developing threat to U.S. national security because it has already proven a capability to deny, degrade, or even destroy space systems if China deemed it necessary to protect or advance its own national interests.

This paper will first review U.S. space policy and strategy to understand what U.S. strategic principles and objectives for space will be threatened. Following this, the paper will describe both U.S. and Chinese prevailing perspectives on space doctrines for which the PRC is striving. In addition, international thoughts on this issue from Russia, India and Japan will be presented. These three countries are regional rivals with China and have national interests that might be at risk by a Chinese military space program. Next, the paper will present an analysis of what space doctrine the Chinese are pursuing, whether one of space sanctuary, survivability, control, and/or high-ground (dominance). Finally, the paper addresses what the United States must do in order to protect its national interests against a non-peaceful Chinese space program.

United States Space Policy and Strategy

The National Space Policy of the United States of America, dated 28 June 2010, identifies five space principles. The following are the first and fifth principles, the ones that could be affected by a Chinese threat:

The United States considers the sustainability, stability, and free access to, and the use of, space vital to its national interests. Space operations should be conducted in ways that emphasize openness, and transparency to improve public

awareness of the activities of government, and enable others to share in the benefits provided by the use of space.

The U.S will employ a variety of measures to help assure the use of space for all responsible parties, and, consistent with the inherent right of self-defense, deter others from interference and attack, defend our space systems and contribute to the defense of allied space systems, and, if deterrence fails, defeat efforts to attack them.⁴

The U.S. space policy was undoubtedly written with keen awareness of the growing Chinese space power. In the policy's first principle, the United States calls for nations to possess "transparency" in order to raise awareness of their space programs knowing that China has traditionally been non-transparent with its national security issues. "The growing norm for transparency has not yet led the People's Liberation Army (PLA) to reveal any details about its missile or nuclear forces – including its anti-satellite test of early 2007..."⁵ Also, according to Michael O'Hanlon, the immediate Chinese threat to U.S. interests is the "possibility of direct threat to friends and allies of the United States."⁶ This issue is addressed in the fifth and last principle of the U.S. space policy. The United States declares that it will "help assure the use of space for all," specifically its allies by defending their systems from attack and attacking those who initiated the attack. Should the Chinese decide to conduct offensive operations on the space systems of Japan and/or Taiwan, the United States has signaled its intent that it will defend them.

Furthermore, the space policy provides national security space guidelines for the Secretary of Defense and the Director of National Intelligence (DNI). A key guideline is to "develop, acquire, and operate space systems and supporting information systems and networks to support U.S. national security and enable defense and intelligence operations during times of peace, crisis, and conflict."⁷ The Chinese counter-space capability, one that is becoming more diverse and lethal, could prevent or hinder the Secretary of Defense and the DNI in achieving this endeavor. "In addition to the direct-ascent ASAT program, China is developing other

kinetic and directed-energy (e.g., lasers, high-powered microwave, and particle beam weapons) technologies for ASAT missions. Foreign and indigenous systems give China the capability to jam common satellite communications bands and GPS receivers.”⁸

Based on the guidance received from the National Space Policy, the Secretary of Defense and the DNI crafted the National Security Space Strategy, dated January 2011. The strategy states that “space, a domain that no nation owns but on which all rely, is becoming increasingly congested, contested, and competitive.”⁹ Although a Chinese counter-space capability intuitively falls under the second category of a “contested” space environment, the space strategy singles out China’s 2007 ASAT test in the first sentence of its “congested” paragraph. The test created “more than 3,000 pieces of debris” in low earth orbit (LEO); the U.S. space strategy calls such ASAT testing “irresponsible” because the resulting debris greatly increased the threat to satellites.¹⁰ With the swelling number of satellites and space debris, the potential for collisions between satellites or satellites with debris is growing. To mitigate this threat, the United States is calling for nations to act smartly and responsibly when placing new satellites and/or maneuvering existing satellites in space.

Based on the “congested, contested, and competitive” nature of space, the National Security Space Strategy contains three objectives – “Strengthen safety, stability, and security in space; Maintain and enhance the strategic national security advantages afforded to the United States by space; and Energize the space industrial base that supports U.S. national security.”¹¹ It is the second objective, which corresponds to the “contested” space environment issue, to maintain and protect its “national security advantages” allowed by space that could be threatened by a Chinese counter-space program.

Chinese Space Intent: A U.S. Perspective

U.S. scholars and leaders tend to see the rise of Chinese military power as a threat to U.S. national security interests. They ascribe to a realist portrayal of China's intent and see a growing power that will naturally assert its will against the current global and Asian regional hegemon – the United States. Therefore, the views they espouse see China's space program being one of space-high ground or space control.

There are four doctrinal schools of thought on the goal of a nation's space program: space sanctuary, space survivability, space control, space high-ground or a combination of them.¹²

Space sanctuary calls for the non-weaponization and peaceful use of space. However, it allows for the "militarization" space, that is, space may be used to enable terrestrial military operations by using space-based capabilities like satellite communications and precision navigation. Therefore, space weapons are not part of a space sanctuary doctrine.

Despite China's public statements advocating for a peaceful utilization of space and a negotiation for an international treaty on the peaceful use of outer space, Ashley Tellis of the Carnegie Endowment for International Peace argues that the Chinese are not pursuing a space sanctuary policy. He states that it is not logical for them to do so. "For China to give up its emerging counter-space capabilities, whether through unilateral abnegation or a negotiated arrangement, would be to condemn its armed forces to inevitable defeat in any encounter with American power."¹³ The point is valid since the major impetus for China's space modernization effort was derived from the lessons observed in U.S. application of force since Operation Desert Storm. Reinforcing China's decision to weaponize space to counter the U.S. space capability is Chinese distrust of the United States' intentions, one of which they believe is the U.S. effort to

contain a rising China. As China's military power grows it will not accept U.S. hegemony in Asia and will counter it. "Tensions are not going to subside especially when China is so determined to build increasingly sophisticated weapons systems to counter the U.S. in particular."¹⁴

Space survivability recognizes that space systems, though effective force multipliers and enablers, are less survivable than terrestrial forces and should not be exclusively relied on in war. Adhering to this line of thought, nations would seek to protect their space assets and produce redundant capabilities within their space programs. Foreign countries' space survivability efforts alone are not a major threat to U.S. national security interests; however, when coupled with offensive counter-space capabilities, such efforts would protect hostile countries' space assets from U.S. retaliation. China is expanding its space capabilities, inherently building redundancy in its programs. Recent accomplishments include the "expansion of the indigenous Chinese Compass satellite navigation system and deployment of a range of new remote sensing satellites, such as the Yaogan series."¹⁵ China's space survivability endeavors alone are not threatening, but they can be if done in order to protect its space assets from potential counter strikes to a Chinese offensive space attack.

Space control involves protecting the capability to use one's space assets while denying its adversary access to and use of its space capabilities. "This might be done on an as-needed, where-needed basis or on an ultimate control (i.e., space superiority) basis."¹⁶ Hence, space control doctrine looks very similar to space high-ground doctrine, the only difference being the scope of effort, i.e., regional versus global control. Larry Wortzel of the American Enterprise Institute argues that China is pursuing such a program and bases his assessments on PLA doctrine and writings. According to Wortzel, the PLA clearly understands the importance of

controlling space. “One of the major proponents of integrated space power for the PLA, Major General Cai Fengzhen, believes that control of portions of outer space is a natural extension of other forms of territorial control, such as sea or air control.”¹⁷ Having studied the U.S. tactical successes from Operations Desert Storm to Enduring Freedom, the PLA understand that controlling space is a key to defeating U.S. military might. Space assets that enable the U.S. military force are relatively vulnerable to hostile attack using kinetic and non-kinetic means. Therefore, the Chinese see U.S. reliance on space assets as its “Achilles heel.”¹⁸

Space high-ground (dominance) presents the view that space forces will dominate all warfare. Space weapons will provide the ability to strike adversaries globally at will, making the weaponization of space a requirement in order to destroy the enemy. Dean Cheng of the Heritage Foundation advocates the Chinese are pursuing this course with their space weapons. “For the PRC, the ability to secure space dominance and to deny it to an opponent will likely become an increasingly important part of their national security planning.”¹⁹ As China continues to grow economically, its demand for natural resources has increased in order to maintain its growth. The need for resources, especially oil and natural gas, has forced China to expand its energy imports from countries in Central Asia, Southeast Asia, Africa, the Middle East, Latin America and South America.²⁰ Therefore, China’s national interests have clearly expanded beyond its borders; according to Cheng, the Chinese will naturally increase their military capabilities to protect their expanded worldwide interests. In order to accomplish this, “the PLA must be able to exploit space at times and places of its own choosing and, equally important, be able to deny an opponent the same freedom of action.”²¹

Chinese Space Intent: A Chinese Perspective

Chinese leaders and scholars generally portray the Chinese military growth as peaceful and defensive in nature. They posit that the Chinese are simply expanding their space program to increase national prestige and gain economic benefit from the associated technology that comes with space research and innovation. They further claim that any space Chinese weaponization of space is done in reaction to U.S. efforts to dominate space as the Chinese are fearful of U.S. intentions in Asia and therefore building space weapons to deter possible U.S. aggression.

On 15 October 2007, Chinese President Hu Jintao addressed the Seventeenth Party Congress. His primary subject was advancing socialism and maintaining the growth of the Chinese economy and the associated benefits that result from it to include the growth of its military technical capabilities. However, Hu Jintao made it clear that China is a peaceful country and looks to promote and maintain world peace. Therefore, no nation should worry about China's growing regional and global stature but instead look to China to help grow global prosperity and stability. "China's peaceful rise will further open its economy so that its population can serve as a growing market for the rest of the world, thus providing increased opportunities for -- rather than posing a threat to -- the international community."²²

Chinese journalist Zhong Sheng claims that the United States is over-reacting to a potential threat of a more powerful China. He claims that China's rise is also peaceful due to the Chinese nature and that "China has long been committed to contributing to the well-being of the mankind."²³ Zhong indicates that the U.S. perception that China is a threat is dangerous and may indeed lead to the Chinese and Americans seeing themselves as enemies. He states, "Instead of being worried about China's rising power, foreign countries should pay attention to

how China uses its power. It would be unwise to regard the Tiangong-1 (China's space lab) as a space threat because China's peaceful development strategy determines that it stands against the weaponization or any arms race in outer space.”²⁴

The PLA leadership also portrays their growth as peaceful despite the PLA doctrine that Wortzel found to be indicative of an offensive-minded space program. “Xu Qiliang, a member of the Central Military Commission and commander of the Air Force, indicated that China's policy towards outer space had always been consistent, it supported that outer space should be used completely for peace purposes, it opposed carrying out an arms race or weaponization in outer space, and China also followed the principle of peace, development, cooperation and peaceful exploration and utilization.”²⁵ The Chinese claim they are producing space weapons for defensive purposes in reaction to U.S. space capabilities that can threaten Chinese security interests. They are striving for a balance with U.S. power in space and are seeking a capability robust enough to serve as deterrence to possible U.S. aggression. If deterrence fails, the Chinese military doctrine of “Active Defense” calls for the use of space weapons to help in defending China. The doctrine calls for a peaceful and defensive military posture until attacked.

While China claims its space program to be peaceful and non-threatening, there are regional neighbors that feel differently.

Chinese Space Intent: A Regional Perspective

Russia sees China's growth in space as inevitable due to its growing power in Asia. The 2007 Chinese ASAT test signaled to the Russians that the Chinese were not pursuing a peaceful use of space despite the Chinese rhetoric to the contrary. “What is surprising though is how many people both here in Russia and outside it still believe that Beijing is peace-loving,” says Aleksandr Khramchikhin, a Russian space pundit and department head at the Political and

Military Analysis Institute.²⁶ He claims that talking peace while building its military power is traditional Chinese behavior in accordance with their stratagem to "Hide a dagger behind a smile."²⁷ While recognizing the Chinese space threat, the Russians realize that if they do not take advantage of the economic opportunity to work with China on space programs other countries will. However, Russian uneasiness with China's space intentions has resulted in Russia not sharing all of its space expertise with China.²⁸ Although a possible threat to Russia, Khramchikhin sees the Chinese space threat primarily directed towards the United States, but more as an instrument of coercion and deterrence with respect to Taiwan. He asserts that the Chinese believe that their space weapons "will guarantee Washington's non-intervention in the process of the 'reunification of China', that is, seizure of Taiwan."²⁹

Japan has historically advocated for the peaceful use of space in large part due to its pacifist constitution. So it was no surprise when the Japanese Prime Minister quickly condemned the 2007 Chinese ASAT test accusing the Chinese of violating the United Nations' 1967 Outer Space Treaty.³⁰ Prior to the test, Japan had growing concerns over North Korean and Chinese ballistic missile developments and was looking at space capabilities to monitor and counter the threat. Most importantly to the Japanese, the Chinese ASAT test identified a viable threat to Japanese remote sensing satellites in LEO. As a result of North Korean and Chinese military activity, in 2007, "Japan adopted a law allowing for the use of space for military purposes" in order to better defend itself.³¹

India's reaction to the 2007 Chinese ASAT test was the realization that they should improve their own space capability. "When China conducted its controversial anti-satellite (ASAT) test in early 2007, India lit up immediately."³² The Indians did not see the Chinese ASAT capability as an immediate threat and were more concerned with Chinese assistance to the

Pakistani space program. Jasjit Singh, an Indian military expert, stated that China's "cooperation with Pakistan in developing multi-mission satellites...will increase Pakistan's surveillance capabilities" while "China's anti-satellite weapon capability makes India's emerging space-based surveillance system more vulnerable."³³ Subsequently, in response to a Chinese and Pakistan threat, the Indians are developing their own ASAT and ballistic missile defense systems. An Indian military officer realistically summed up that "with time we will get sucked into a military race to protect our space assets, and inevitably there will be a military contest in space."³⁴

These three regional countries are in agreement with the United States that the Chinese space program is not benign but a threat to their security interests. What space doctrine is China assessed to be adopting that warrants such a judgment?

Assessment: Chinese Space Control for Regional Conflicts

China is adhering to space control doctrine, augmented by space survivability efforts, in order to protect its ability to use space assets while denying the enemy access to and use of space. China is pursuing a weaponization of space as seen by its development of ASAT weapons. The Chinese, using a ballistic missile, kinetically destroyed an aging Chinese satellite in a January 2007 ASAT test. Additionally, they conducted a mid-course ballistic missile intercept test in January 2010 and, according to the Director of the National Reconnaissance Office, have illuminated U.S. satellites with ground-based lasers.³⁵ These lasers are designed to blind, temporarily or permanently, optics on U.S. remote sensing satellites. Even though the Chinese claim that any counter-space efforts are purely defensive in nature, the fact remains that China has produced a space weapons capability and has used it.

The PLA is pragmatic and realizes its capabilities are limited when compared to U.S. capabilities, and therefore would not attempt to engage the United States in a global space high-

ground effort. The Chinese military, although growing rapidly, is still decades behind in reaching parity with the U.S. military. However, the Chinese do believe that they can conduct space control operations in a limited, local conflict such as Taiwan. “Given U.S. military advantages, China’s best chance of success in a conflict over Taiwan would be to delay the arrival of U.S. forces until after it forced Taiwan to capitulate, presenting Washington with a fait accompli.”³⁶ Accordingly, China has a strong national security reason to achieve a space control capability – Taiwan.

The Third Session of the Tenth National People’s Congress, on 14 March 2005, adopted the “Anti-Secession Law” to prevent the secession of Taiwan from China. Article 8 of that law states:

In the event that the "Taiwan independence" secessionist forces should act under any name or by any means to cause the fact of Taiwan's secession from China, or that major incidents entailing Taiwan's secession from China should occur, or that possibilities for a peaceful reunification should be completely exhausted, the state shall employ *non-peaceful* means and other necessary measures to protect China's sovereignty and territorial integrity.³⁷

Ideally, China wants to keep Taiwan from declaring independence by intimidating it with superior military might, hence the large Chinese build-up across the straits from Taiwan, but then be sufficiently strong enough to invade Taiwan if it does declare independence.

A Chinese space control program with an ASAT capability serves to deter the United States from advocating an independent Taiwan knowing that China would most likely respond using military force. A Chinese space control capability would make defending Taiwan more costly for the United States. “If deployed, Chinese anti-satellite weapons would pose immediate threats to a range of U.S. military capabilities that rely on space assets and would have significant consequences for a Taiwan contingency.”³⁸ China’s potential “capability to deny the United States the power to utilize satellites and other communications or command and control

systems that are space-based, not to mention GPS for precision-guided munitions and tracking, reconnaissance satellites, and radar would be vital to any prospect for Chinese success in a Taiwan conflict.”³⁹

Taiwan remains a primary national security issue for both countries that could lead to a China-United States military engagement. Both countries have passed a law or an act with regard to Taiwan; hence, China is legally bound by their 2005 Anti-Secession Law to prevent the secession of Taiwan while the United States is obligated under the 1979 Taiwan Relations Act to maintain the security of Taiwan. Granted, the argument that war is remote due to the economic interdependency of China, Taiwan, and the United States and that a war would be too costly is sound. However, it only tempers the potential for war, not eliminating it.

There are no absolutes when it comes to assessing human behavior in contingencies. Taiwan is a highly emotional issue for the Chinese who will not accept a declaration of independence by Taiwan, an issue that historically arises consistently during recurring Taiwan elections from conservative Taiwanese politicians. Such rhetoric will keep the Chinese on edge. The United States wants to avoid a war with China but cannot guarantee that a future Taiwanese leader would not declare independence. As an example, the United States did not desire Kosovo to unilaterally declare independence from Serbia in 2008, but preferred the United Nations to negotiate a solution to the Kosovo issue. However, Kosovo leaders did what they felt they had to do and declared independence. This unilateral declaration did not produce a Russian or Serbian military response, but a Taiwan declaration would assuredly prompt a Chinese military response. Therefore, the United States must be prepared for the unexpected and view the Chinese military space program as a threat with space control ambitions.

As far as achieving space high-ground, although the PLA would like to achieve this over the United States, it is highly unlikely that they will provide the resources necessary to do so by the Chinese Communist Party in the near term. The resources necessary to overtake the U.S. military and space capability would be extremely costly. China's growing military capabilities still "pale in comparison with U.S. military forces – which possess sophisticated weapons platforms such as the Nimitz-class nuclear-powered aircraft carrier."⁴⁰ Moreover, with China's ability to influence countries using Chinese economic clout, military and corresponding space dominance is not a necessity. A space control capability will suffice to regionally counter a U.S. military threat.

What the United States Should Do

The United States, at a minimum, should undertake four strategies to mitigate the Chinese space control capability – engage in diplomatic talks with China and also with regional U.S. allies, improve intelligence collection and analysis of Chinese space programs, continuously progress the U.S. space industry, and reduce the U.S. military's reliance on space enablers.

First, the United States should embark on diplomatic efforts in Asia. As advocated by Abraham Denmark, the United States should negotiate with China a "no first use" agreement of space weapons. The agreement would encompass kinetic kill vehicles, jamming systems, and blinding systems that could destroy or adversely affect satellites. By negotiating such an agreement, the United States would maintain its current superiority in space with no peer competitor. Another benefit to U.S. negotiations is the open communications with the Chinese on national security interests that are shared by both nations such as maintaining the sovereignty of space for all to use and the reduction in risk of creating more debris with ASAT testing.

In addition to bilateral efforts with China, the United States would profit from diplomatic engagements and alliances with like-minded allies in Asia such as Japan, South Korea, and India. Being able to integrate these countries' space capabilities with those of the United States would result in a pooling of space assets that would increase space asset redundancy and capacity for alliance use. Such an organization would serve as a deterrent to Chinese aggression due to the increased assets that China would need to affect in order to successfully sever U.S. access to space enablers.

Second, the United States must improve its intelligence effort with regard to China's space program. Dean Cheng rightfully argues that the intelligence community should grow its analytical capability of Chinese space programs in "original language." Understanding the language provides greater insight and meaning of Chinese writings and doctrine. Technical collection of Chinese space capabilities must also improve in order to develop better U.S. systems to counter their impacts. Space situational awareness (SSA) efforts must also expand to provide exacting targeting data for U.S. space weapons in the event the United States has to respond to a foreign space attack.

Third, the United States must maintain and expand its space industry in order to maintain U.S. technical superiority. Such superiority will guarantee that the United States will remain competitive in space without having to rely on other nations to do so. Gregory Metzler articulates that it is essential for the United States space community to "improve survivability" of space capabilities by building rapidly deployable replacement satellites and developing alternative air-breathing systems. Metzler states, "We must develop, build, and train with replacement technology such as meshed unmanned aerial systems or other communications and

surveillance aircraft that will enable U.S. forces to dominate the battlefield even if our satellites are disrupted.”⁴¹

Last, the U.S. military must reduce its reliance on space enablers. In a conflict with the United States, the Chinese will execute their “anti-access/area denial” campaign and potentially deny U.S. forces access to space enabling capabilities such as GPS navigation, satellite communications and imagery intelligence. Per Dean Cheng, the U.S. military must train in a “degraded information environment” in order to be prepared for such a contingency. The military may have to resort to “antiquated” practices, such as navigating with a map and compass, in order to accomplish its mission in a war without the availability of space assets. Also, as mentioned in the previous paragraph, the development of air assets that can replicate space capabilities will serve to further the reduction of reliance on space.

Conclusion

China is pursuing a space control capability to deny enemy use of space assets while protecting Chinese space capabilities. The PLA has developed a formidable counter space capability that includes direct-ascent, laser, particle beam, and microwave weapons. There is no question that China has the capability now to destroy or hinder some U.S. satellite operations, but do they have the intent to use them?

Beijing continues to advocate the peaceful use of space stating that their space weapons are for defensive purposes and would only be used in retaliatory strikes against an attacking enemy. In other words, they claim to have no intent to use space weapons unless attacked. The issue here is what is the definition of being “attacked”? Would the Chinese wait for a U.S. preemptive first strike before responding? That is doubtful. More likely, China will react to a non-kinetic action, corresponding to a Chinese “red-line” that they feel threatens their national

security interests. Due to the lack of transparency of Beijing's military intent, a Chinese "red-line" could be unknowingly crossed by the United States prompting a Chinese military reaction as demonstrated in the Korean War when the United States crossed the thirty-eighth parallel. The resulting PLA attack caught the United States by surprise. Such a misunderstanding could happen with regard to Taiwan.

The Chinese would have good reason in their view to use their space weapons to counter a possible U.S. defense of their "renegade state." Taiwan provides Beijing the intent to use space weapons; and coupled with its known ASAT capabilities, forces the United States to take seriously China's space control program. The United States must continually monitor and assess this threat and take actions to mitigate its impact on U.S. national security interests.



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