

Briefing Memorandum

**The United States Facing Military Challenges in the Space Domain
— Limits of “Tacit Agreement” and Responses of the Obama Administration —**

(an English translation of the original manuscript written in Japanese)

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Introduction

The space domain is the realm that has been in support of global economic, social, and military activities of the United States, together with the maritime and cyber domains. Although the United States could previously regard its use of the space domain as given, such a situation is getting outdated. In this regard, the Obama Administration demonstrates their recognition in the National Security Space Strategy (NSSS) submitted to Congress in January 2011 that the space domain is increasingly contested and space systems face growing military challenges. This briefing memorandum explains the background of that recognition from the aspect of limits of “tacit agreement,” and reviews the corresponding responses of the Obama Administration.

The United States Depending on Space Systems

Generally, there is a strong impression that the space domain is the forum of scientific explorations, and it tends to be regarded as a space that has little to do with daily life. However, as a result of vigorous space activities by human beings over the past half century, the use of space has become more closely connected to daily economic, social, and military activities. In particular, the United States, the world’s largest space-faring nation, enjoys its current prosperity by utilizing the space domain. For example, the U.S. Government operates the Global Positioning System (GPS) that offers positioning, navigation, and timing services, and opens its civil signals to the public. Those signals are utilized for a wide variety of uses ranging from automotive navigation system to aerial and ship navigations, as well as to time stamping for settlements of financial transactions.

The use of space also penetrates deeply into the United States’ military activities. In addition to the traditional roles including underlying support of nuclear deterrent force and provision of means to conduct technical verifications under the arms control treaties, the space domain has been proactively utilized in actual military operations since the Gulf War. The United States has introduced the GPS-based bomb guidance device as typified by Joint Direct Attack Munition (JDAM), and now can actualize precision guidance bombing that is not affected by weather. By utilizing satellite communications, the United States also performs global command and control and,

more recently, operates remotely piloted airplanes. With respect to such deepened dependence on the use of space, Robert J. Butler, the then Deputy Assistant Secretary of Defense for Cyber and Space Policy, demonstrated his recognition in the April 2010 congressional testimony that space capabilities have changed from “nice to have” to “must-have” capacities in deploying military operations.

Limits of “Tacit Agreement”

As discussed above, the United States has deepened its dependence on space systems in military and civil aspects, and current situation in which stable use of space is going to be in danger is a serious concern to them. The Obama Administration conducted the Space Posture Review (SPR) under the FY2009 National Defense Authorization Act, and submitted the results of SPR to Congress in January 2011 in the form of NSSS. NSSS identifies the space domain as a strategic environment that is increasingly contested.

There exists a change in the strategic environment involving the use of space behind such recognition of the Obama Administration. In an interview by *Defense News* in May 2010, Gary E. Payton, the then Deputy Under Secretary of the Air Force for Space Programs, said that “the tacit agreement that we shared with the Soviet Union doesn’t apply anymore.” A “tacit agreement” is an unwritten rule that if you do not interfere with us in the use of space, we will not interfere with you in the use of space.

Behind the existence of this unwritten rule is the fact that both the United States and the Soviet Union shared the recognition that the space systems played essential roles in maintaining the strategic stability between the two countries. In particular, when the U-2 high-altitude reconnaissance aircraft of the United States was shot down over the Soviet Union in 1960, which made it very difficult for either nation to fly surveillance planes over the territory of the other nation, the reconnaissance satellites that appeared at that time became a necessity to identify the deployment of the nuclear capability and conventional military forces by the other country. The fact that either nation could more exactly identify the military power of the other nation would have led to a reduction of the arms race based on excessive estimates. Moreover, the reconnaissance satellites played pivotal roles as the means to help the United States and the Soviet Union to verify compliance of the arms control pacts signed between the two countries by the other party. The U.S.-Soviet arms control pacts after the SALT I interim agreement in 1972 contained the use of “national technical means of verification” (NTM), and the important pillar of which was the utilization of reconnaissance satellites. At the same time, the United States and the Soviet Union specified prohibition of interference with NTM in those arms control pacts, and undertook to limit testing and deployment of counterspace systems.

On the other hand, nearly two decades have now passed since the end of the Cold War, and the

United States can no longer depend on the “tacit agreement” for stable use of space. Potential adversaries do not necessarily maintain the mutual nuclear deterrence with the United States. The Obama Administration rather keeps a vigilant watch for the possibility of such potential adversaries taking advantage of the vulnerability of space systems on which the United States depends.

It should be noted that the more serious situations include the progressive proliferation of counterspace systems and related technologies. In particular, prominent proliferation occurs to jamming devices, which have been distributed on the marketplace and have reportedly been utilized by organized crime. More recently, North Korea put GPS jamming devices into operation several times in 2010 and 2011, the effect of which would have reached around Seoul.

In addition, counterspace systems have been utilized in actual fighting and anti-satellite experiments have been conducted in orbit. In the Iraqi War in 2003, Iraq deployed GPS jamming devices in actual fighting. In 2007, China first succeeded in the experiment of destroying a satellite in orbit through the use of a missile launched from the ground. This experiment violated the moratorium under which the United States and Russia (Soviet Union) had consistently refrained from conducting the same kind of experiment in orbit since the latter half of the 1980s. Against a backdrop of the connection of certain actors with whom the United States does not share such a “tacit agreement” to the counterspace systems, the Obama Administration recognizes that the United States is facing military challenges in the space domain.

Responses of the Obama Administration: Deterrence of Multilayer Approaches and Increase of Resilience

How is the Obama Administration trying to cope with military challenges in the space domain? Briefly speaking, the Obama Administration is trying to deter attacks against space systems through the combined use of multilayer deterrence approaches, and maintain the functions by which they can continue to perform their duties even in a “degraded environment” in which they are prevented from utilizing space systems by increasing the resilience of their architectures.

According to the current Deputy Assistant Secretary of Defense for Space Policy Gregory L. Schulte, the multilayered deterrence approach has four layers. The first layer of deterrence is the establishment of norms of responsible behavior. More specifically, the United States will promote transparency and confidence-building measures. The focal point of the issue is the treatment of the EU-led draft code of conduct for outer space activities. The draft code of conduct stipulates the behaviors that are desirable for space activities, such as prior notification of a satellite launch and data sharing for avoiding a crash. Although the Obama Administration has not concluded whether the United States should sign that draft code of conduct or not and whether it is necessary to make prior amendments to that draft code of conduct or not, they recognize it, at this point of time, as a positive approach to urge responsible behavior in the space domain and reinforce national security.

The second layer of deterrence is the establishment of partnerships with allies and enterprises. By proceeding with the joint use of space systems with those actors, the United States tries to create a situation in which adversaries must face off against not only the United States but also several nations and enterprises when they attack space systems. This contemplates to raise the threshold of attack against space systems used by the United States. The United States has already started to set up those partnerships. The representative example of this is the cooperation between the United States and Australia for the U.S. Air Force's Wideband Global SATCOM (WGS) system, in which both the nations have reached an agreement that Australia will fund the cost of manufacturing the sixth WGS satellite and, in return, will gain access to the system, and they are proceeding with the work with the goal of launching that satellite in 2013.

The third layer of deterrence is to increase the capabilities to conduct operations in a "degraded environment" by increasing the resilience as described below. This contemplates not only to construct a posture that will enable them to operate even under the circumstances where the use of space is denied but also to force an adversary to reduce its incentive to attack their capabilities. And, the fourth layer of deterrence is a readiness to intentional interference and capability to respond in self-defense, and not necessarily in space. This contemplates to make the calculus of an adversary considering an attack on space assets of the United States more complicated.

In addition, foundational to all of these layers is space situational awareness (SSA). The Obama Administration strives to improve SSA, and is improving space surveillance capabilities and sharing of SSA data with other nations and enterprises. In particular, the United States and Australia are considering setting up a joint space surveillance facility in Australia in order to reinforce the SSA capabilities in the southern hemisphere.

While the Obama Administration strives to discourage adversaries from attacking space systems through such multilayer deterrence, they are also getting prepared when it fails in deterrence. What is positioned as a key for that is to increase the resilience of the overall architectures necessary to operate, not individual systems, and the United States aims to maintain the capabilities with which it can operate even in a "degraded environment" in which the use of space is denied. It is noteworthy that the Obama Administration recognizes the limits of protecting space systems and tries to utilize any other multiple means. The Obama Administration is seeking cross-domain solutions including the land, sea, air and cyberspace, as well as the space domain, and is proceeding with researches on telecommunications relaying by long-endurance aerial vehicles, and positioning and navigation through the use of image gyro. They are also proceeding with placing hosted payloads on the satellites owned and/or operated by its allies and enterprises. The U.S. Air Force commercially hosted infrared payload (CHIRP) was launched in September 2011. CHIRP is the U.S. Air Force's first commercially hosted payload. Moreover, the use of space systems of other nations and enterprises, and prompt utilization of responsive space systems to launch an alternative spacecraft

quickly are positioned to increase resilience.

Conclusion

This briefing memorandum has pointed out the limits of “tacit agreement” as a background of the United States facing military challenges in the space domain, and reviewed the responses of the Obama Administration. The responses of the Obama Administration clearly reflect the recognition that threats to space systems have come to the surface, as well as the recognition of the difficulty in coping with those threats. The Obama Administration recognizes that the use of the space domain, which has supported the prosperity of the United States together with the maritime and cyber domains, is no longer regarded as given, and now is the time when they must go ahead with responses assuming the situations in which the use of space might be hampered, as the case may be. Japan depends indirectly on space systems that are in use by the United States through its defense cooperation with the United States, and attempts to more aggressively proceed with the use of space under the Basic Space Law. With this in mind, it would be necessary to continue to watch the responses of the Obama Administration. (Completed on November 6, 2011)

The purpose of this paper is to respond to reader interest in security issues while promoting better understanding of NIDS. A "briefing," of course, is a background explanation. Our hope is that this paper will help readers to better understand the complex security issues. Note that the views expressed in this paper do not represent the official opinion of NIDS.

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