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Is an Outer Space Arms Control Treaty Verifiable?

By

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Assistant Secretary of State for
Verification, Compliance, and
Implementation

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Paula A. DeSutter has an extensive background in verification and a career focus on national security and intelligence. She served for over four years as a Professional Staff Member of the U.S. Senate Select Committee on Intelligence. Ms. DeSutter was professional staff liaison to Senator Jon Kyl and was responsible for legislation and oversight of intelligence collection, analysis, and activities related to proliferation, terrorism, arms control, the Persian Gulf States, India, Pakistan, China, and Afghanistan. She has held numerous positions in the Verification and Intelligence Bureau in the Arms Control and Disarmament Agency (ACDA). Ms. DeSutter's publications include *Denial and Jeopardy: Deterring Iranian Use of NBC Weapons* (NDU Press, 1998).

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March 4, 2008

Jeff Kueter: Good afternoon, ladies and gentlemen. My name is Jeff Kueter, and I am the President of the George Marshall Institute. It is my pleasure to welcome you all here today for a discussion of arms control in outer space. For those of you that have followed the work of the Marshall Institute on national security space issues, you know that our National Security Space Project provides opportunities for formal and informal discussions of issues pertaining to national security space policy in the United States. We are pleased to host this conversation today, particularly in light of the events of the last several weeks where discussions of arms control in outer space have come back to the public's attention. Today Assistant Secretary of State for Verification, Compliance, and Implementation Paula DeSutter will deliver remarks on arms control in outer space and verification. The flyer outlines specifically some of the topics she will discuss with a particular emphasis on verifiability of space arms control.

Ms. DeSutter has an extensive background in verification and a career focus on national security and intelligence. She served for over four years as a Professional Staff Member of the U.S. Senate Select Committee on Intelligence. Ms. DeSutter was the professional staff liaison to Senator Jon Kyl and was responsible for legislation and oversight of intelligence collection, analysis, and activities related to proliferation, terrorism, arms control, the Persian Gulf States, India, Pakistan, China, and Afghanistan. She has held numerous positions in the Verification and Intelligence Bureau in the Arms Control and Disarmament Agency. She is a published author, and her works include *Denial and Jeopardy: Deterring Iranian Use of NBC Weapons*. Please join me in welcoming the Assistant Secretary of State Paula DeSutter.

Paula DeSutter: Thank you for your kind invitation once again to address the Institute. The Marshall Institute serves as an important forum for conducting serious study and facilitating public dialogue on critical foreign and national security issues.

Anyone who looks at the "Space Security and National Defense" page on the Marshall Institute's website can see the complex range of issues that the United States has addressed in space policy over the past eighteen months. These include the release of the President's National Space Policy, China's direct ascent anti-satellite

[*] The views expressed by the author are solely those of the author and may not represent those of any institution with which she is affiliated.

(ASAT) test in January 2007, and the growing international interest in transparency and confidence building measures.

Marshall's website also features an excellent article by its President, Jeff Kueter, which ran in the February 21st issue of *USA Today*. In this column, Jeff very ably responded to the paper's mistaken editorial conclusion that the recent U.S. engagement of an uncontrollable National Reconnaissance Office satellite should "reignite" interest in binding treaties to quote "prevent space from becoming the final battle ground."

As Jeff noted, "Few criticize the U.S. decision to attempt the destruction of a fully fueled, disabled spy satellite before it crashes to Earth. Using missile-defense assets to further minimize the risk of harm is commendable."

Knowing the Institute's long-standing role in promoting unbiased and scientifically accurate assessments of space security issues, I wasn't surprised when Jeff told me that Marshall was making plans for a panel discussion in the coming weeks to review the technical aspects of this engagement and possible lessons for U.S. space policy. Such expert reviews – a hallmark of the Institute's efforts to improve the use of science in making public policy – are one of the most fitting ways to carry on the legacy of Dr. Robert Jastrow and the other founders of the Marshall Institute.

Our Verification Approach

With that context, let me move to the central theme of my remarks today: the enduring challenge of verifying any outer space arms control agreement. Let me begin by saying that, as the international community continues to debate the merits of pursuing outer space arms control agreements, governments must address two fundamental questions: First, are the restraints contemplated in such agreements verifiable? Second, if not, would such agreements nonetheless enhance the security of the parties to such agreements, or actually harm their security?

In trying to reach an overall verification judgment regarding any proposed bilateral or international agreement, the United States seeks to answer two questions:

- First, we seek to determine if the proposed agreement is technically verifiable. To do so, we weigh the proposed limitations, the clarity of the language by which the limitations are expressed, and our ability to detect noncompliance in a timely fashion, using both our own national means and methods of verification and possible treaty-mandated or agreed-upon cooperative measures. The result of this process is a judgment as to the "degree of verifiability" of the agreement.

- Second, we address the issue of whether the proposed agreement is effectively verifiable. This second, broader assessment aims to establish whether the "degree of verifiability" is sufficient to enable the United States to detect significant noncompliance, or a pattern of noncompliance, early enough to counter the threat presented by a violation and deny a violator the benefits of its wrongdoing. We must also evaluate the risk of undetected cheating prior to a "break out" from a regime. Such "effectiveness" judgments are informed not only by the factors considered in reaching judgments regarding the degree of verifiability, but also by the broader context, including the compliance history of the parties to the potential agreement, the risks associated with noncompliance, and the difficulty of responding to deny violators the potential benefits of their violations.

It is theoretically possible that we could determine that an agreement is "effectively verifiable" even when its degree of verifiability is quite low, because the parties have a strong track record of compliance, the risks associated with noncompliance are low, and/or the ease of detection and response is high. Similarly, there could be agreements that do not have a sufficient degree of verifiability to overcome concerns about the track record of other potential states party, the security risks of undetected cheating, and/or the difficulty, once cheating is detected, of responding on a timely basis to deny a violator the benefits of its violation.

Verification and Outer Space

So, using this calculus, let us examine the notional verifiability of potential space arms control agreements. We begin with the issues of what a possible treaty might hope to accomplish and what types of constraints might be contemplated to achieve those objectives.

With regard to objectives and constraints, efforts to pursue space arms control agreements have a long, but undistinguished, history. Most space arms control proposals have sought to accomplish one or more of four objectives: (1) prevent an arms race in outer space; (2) prevent the placement of weapons in outer space; (3) prevent the threat or use of force against objects in outer space; and/or (4) prevent the development, testing, deployment, and/or use of terrestrial-based anti-satellite weapons (ASATs). I must note that the focus of these objectives is neither to ensure that a space faring nation like the United States has secure ground stations nor to ensure that we have secure communications between our space assets and ground stations. Nor is the focus to ensure that our space assets -- both commercial and governmental -- are protected from attack.

To achieve one or more of the four objectives most often posited for space arms control, the vast majority of proposed constraints have sought to ban the deployment,

use, and even the threat of use, of certain capabilities, while explicitly permitting other activities, such as research, development, testing, production, and storage.

There are many scope problems with such proposals, including the fact that there is no -- I repeat, no – on-going space arms race. However, from strictly and solely a verification perspective, we have to begin with a fundamental issue, which is a definitional question – that is, which objects and activities are to be defined as covered by the proposed ban or limitation?. Absent such definitional clarity, it is exceedingly difficult -- indeed, probably impossible -- to ascertain whether a given object or activity is compliant with the agreement's terms.

Let me offer a few examples.

- First, when is an object to be considered to be a covered – and prohibited – outer space weapon?

One possible definition would include only space-based devices that were produced or converted specifically to damage or destroy other space-based objects. Such a definition, however, immediately raises the question of intent. How could one determine that an object <u>was</u> specifically produced or converted for that purpose? Also, how could one verify, in the event of damage or destruction to a space object, that the cause of the damage or destruction was the result of genuine error or malfunction, and not deliberate?

Another approach could be to define "outer space weapon" to mean any object in, or transiting through, space that could destroy or damage another object in space. The problem with this approach is that it would need to include all objects in or transiting space, since any such object could, at least theoretically, have the inherent capability to strike another object and cause damage to it or destroy it. Moreover, would it be permissible to attack a ground tracking station, which performs a critical role in providing access to space and in the use of space, but which is not itself located in space?

Such an approach obviously would be unworkable. It would constrain – if not force the end of – legitimate uses, such as defense, civil, commercial, intelligence, and non-weapon military satellite functions that are critical not only to the United States, but also to global security, commerce, science, and research. In this regard, it easily could capture and prohibit the deployment of ground-launched, non-weapon systems such as, for example, an unmanned replacement for the U.S. Space Shuttle, which is a workhorse of the International Space Station. Furthermore, it would capture important systems designed for other, non-counterspace missions, due to their inherent anti-satellite capabilities. These would include missile defense systems whose purpose is to

destroy ballistic missiles launched from the ground at other objects on the ground, and terrestrial-based ballistic missiles.

- Second, what activities would constitute either the use of or threat to use force?

Again, we are faced with a definitional issue. How are the terms "use of force" and "threat of force" to be defined? How does intent enter into the definition? Is action against one's own space-based object considered to be hostile – or covered – action if it destroys or alters that object, because it would confirm a capability to destroy or alter any object in space? What if the action is simply a close pass-by?

Clearly, the fact that a space-based object has been destroyed, or has sustained damage or injury, or that its parameters have been altered is detectable with high confidence by the satellite owner and, in some instances, by the National Technical Means (NTM) of other states. The attribution of such an action to another state may be possible with high confidence in the case of a direct intercept or of a collision with an object known to belong to that other state. However, identification (as an attack) may not be possible if the other state denies that its action was deliberate. Further, identification (as an attack) and/or attribution (to a state) may not be possible in other instances – e.g., if there were no observable intercept or collision, as in the case of a remote, covert telemetric attack on the software of the object's operating system or if the damage were caused by "space debris." Attribution also could be a challenge with certain types of launches, e.g., from locations at sea.

Moreover, in the absence of documentary evidence or public statements to that effect, it would be extremely difficult, if not impossible, to determine with certainty that such action was deliberate, i.e., that it was intentional, as noted previously. Neither NTM nor cooperative measures, such as data exchanges or on-site measures, can be depended upon to shed any light on the issue. (Indeed, the acquisition of information to shed light on this issue from <u>any</u> source is likely to be fortuitous, at best, and subsequent independent confirmation in most instances will be unachievable, at least in a timely fashion.) Most, if not all, detected actions that affect the objects in space of another state likely would be alleged by the suspected state to be the result of an error, malfunction, or unintended consequence of a legitimate act; determining in a timely fashion that the actions in question were deliberate would be virtually impossible. Even patterns of action likely would be explainable in this way. For example, if one of the 2,600 pieces of trackable space debris of the nearly 100,000 estimated pieces of debris resulting from the Chinese ASAT test of January 2007 were to strike or destroy the satellites of other states, would such an event be considered to be an unintended consequence of a legitimate action or a prohibited use of force?

With respect to defining an action as a prohibited threat to use force, the challenge is even greater. Verifying straightforward, verbally communicated threats is easy. Determining and getting international agreement that other actions constitute a threat to use force because they demonstrate a capability to put space-based assets at risk, however, is far more problematic. The challenge is likely to be quite high, given the definitional issues that I already have raised, which affect judgments as to intent and as to whether particular actions are covered, as well as the inability of verification means and methods to overcome determined efforts to obscure capability as well as intent.

For example, did the January 2007 Chinese ASAT interception constitute a threat to use force against other states' objects in space? It clearly demonstrated a capability to destroy an object in space, and other states clearly viewed it as such. Depending on the language in a treaty text, though, such a test might fail to meet the criteria for constituting a threat, since it involved only testing against a satellite belonging to the launching state. Furthermore, would the deployment of long-range ballistic missiles be construed to demonstrate a threat to assets in space, since the Soviet Union demonstrated such a capability with a co-orbital ASAT launched from a space launch variant of its SS-9 ICBM in the 1970s and 1980s?

Means and Methods

I am suggesting that current verification means and methods do not enable us to overcome determined efforts to obscure capabilities and intent. Fair questions, then, would be: what are these means and methods and how well can they detect noncompliance, and are there other means and methods that can solve the verification problems? And, are there other means and methods that can solve the verification challenge?

Let me begin by noting that virtually all space arms control proposals call for verification, but none has identified specific tools envisioned for the "verification toolbox" that could be used for this purpose. This, to me, suggests that no one has been able yet to identify tools that could do the job effectively. Given the definitional challenges and questions of intent, this is reasonable.

Presumably, any reasonable approach to verifying a space arms control treaty would anticipate that NTM would be among the permitted verification tools. These are sensor capabilities that sometimes are deployed on satellites for the remote observation of ground-based activities; other NTM may be deployed in other modes. Other tools that some have suggested include data declarations and on-site inspections of satellites, their payloads, and the locations where they are produced, stored, and/or launched -- assisted, where appropriate, with technical sensors that on-site inspectors might carry with them or permanently emplace.

We know that NTM capabilities would, in most instances, enable states to detect the fact of a launch and monitor its trajectory. We also know that data exchanges could provide basic information that states are willing to share on the numbers, types, and locations of permitted systems, thereby possibly enabling a state to have an "order of magnitude" assessment of the breakout potential of other states. Further, on-site inspections may be able to help confirm this information, although protecting legitimate commercial proprietary and national security equities might mean that they could never be intrusive or detailed enough to go beyond providing a general confirmation of data.

However, even with the most intrusive and extensive on-site inspections, a key question remains: what would one look for to verify intent? How could one construct an inspection regime that would provide definitive information on whether activities and items visited or observed were to be used for hostile purposes or were explicitly deployed for prohibited hostile purposes? It is not even necessary to consider how exceedingly difficult this task would be, were a state intent on cheating. This is an exceedingly difficult task in any event, given the dual-use nature of many space assets and activities. In the world of arms control, in the absence of definitive information, it is exceedingly difficult -- indeed, many would argue, virtually impossible -- to reach actionable conclusions in a timely fashion.

I mentioned earlier that most space arms control proposals have permitted research and development into the very kind of activities whose deployment would be banned. The breakout potential for permitted R&D to support banned deployment activities is obvious. However, it also is worth noting that verifying the fact of research and development and the purposes for which R&D were undertaken also present huge challenges, particularly if that R&D has few, if any, external signatures, such as a test. A very real concern, even when indications or evidence of R&D can be acquired, is whether sharing that information would expose sensitive sources and methods. Even if that hurdle could be crossed, given the dual-use nature of these technologies, confirming that such activity is acquired or developed to support a banned program is highly problematic – especially in closed societies.

Is Undetected or Undetectable Cheating Possible?

So, unfortunately, even with all of these tools, undetected and undetectable cheating remains quite possible. Neither National Means and Methods of Verification (NMM) – which include but go beyond NTM -- nor negotiated cooperative measures (including declarations and on-site inspection of satellites and their payloads prior to their launch) would enable verifiers to determine with confidence whether an activity circumvented or exploited loopholes in the definition of banned activities, or could be rapidly converted for prohibited uses. For example, the rendezvous and docking opera-

tions conducted by an automated cargo transfer vehicle could be used to conceal the development of a co-orbital ASAT guidance, navigation, and control subsystem. Similarly, a test to confirm the ability to hit a target in space could be concealed in a launch that resulted in a close fly-by of a target satellite or a point in space.

Moreover, neither NMM nor negotiated cooperative measures (including declarations and on-site inspection of satellites and their payloads prior to use) would enable verifiers to determine with confidence whether observed changes in orbiting satellites or payloads were due to malfunctions, or deliberate actions as a result of either covert modifications or inherent capabilities. Even the most intrusive of on-site measures prior to launch – measures whose acceptability, for commercial or national security reasons, to *any* nation is highly doubtful – could do no more than indicate the maneuvering capability of a given system and the degree of sophistication of that capability. Additionally, maneuvering capabilities are the norm for satellites, so neither NMM nor negotiated cooperative measures would enable verifiers to determine with more than low-to-very low confidence whether the intent of that capability extended beyond normal operating and safety requirements. Even then, it would be highly possible for a state to hide its true intent or change it quickly, and to take the necessary actions to exploit a latent or covert capability.

One plausible cheating scenario would be to develop seemingly peaceful satellites with a sufficient latent maneuvering capability that they could, upon command, leave their specified orbits and kinetically attack other satellites. Such a capability might require only modifications that either might not be detectable or could reasonably be explained as logical safety or operational improvements, e.g., to enable maneuvering to avoid space debris. If a satellite routinely received encrypted commands and suddenly veered off-orbit, it would be impossible to determine whether the loss of orbit was due to a malfunction or was a deliberate plan to test or exercise a capability to attack another satellite.

Next, we have to address the questions of whether there are legal means by which constraints can be circumvented and whether those legal avenues provide reasonable or effective means for breakout?

There would be a high potential for rapid and effective breakout in any treaty that focused its prohibitions exclusively on space-based activities. Under such a scenario, a country could develop, produce, and maintain a supply of ground-based direct-ascent ASAT interceptors, as well as co-orbital interceptors in storage. At the same time, such a space-based approach would preclude precisely those U.S. programs that are intended to protect the peaceful use of space and other security threats.

In this regard, it is important to remember that a relatively small number of countries already are exploring and acquiring capabilities to counter, attack, and defeat the space systems and the ground-based components of such systems of other nations. These include capabilities for jamming satellite links and blinding satellite sensors; anti-satellite systems designed to destroy or damage satellites in orbit; and capabilities for interfering with or destroying the ground relay stations, communications nodes, and satellite command-and-control systems that support and/or operate space-based assets.

One argument often given for multilateral space arms control agreements is that the international community then would be better positioned to respond to threatening activities. This raises the question of whether viable response options exist in the event that cheating or breakout is detected.

Before response options can be pursued, there first needs to be agreement that cheating or a plan for breakout has occurred and warrants response. Even in cases where a party to a legally-binding agreement might have a history of employing denial and deception techniques or a spotty compliance record, achieving agreement on identifying certain actions as noncompliant would be uncertain. There is a correspondingly high risk, therefore, that it would be difficult or impossible to garner the necessary support for countering those risks in a timely fashion to deny violators the potential benefits of their violations. Moreover, many proposals for additional space arms control measures would prohibit some of the most promising defensive response options.

As noted in the President's Space Policy, an attack on our space assets would be an attack on a vital U.S. national security interest. Would our options for response be any greater if we could also note that such an event might be a violation of an arms control agreement?

Conclusions

After considerable review, my government has concluded that it does not support additional arms control restrictions on our space activities. Only part of the reason we have come to this conclusion has to do with the foregoing verification issues. Put broadly, we have reached this conclusion for two reasons: First the types of restrictions that have been suggested by some states and some non-governmental groups are not verifiable. Second, even if they could be made verifiable, which we believe they could not, they would unduly constrain legitimate self-defense, commercial, and other activities.

As our National Space Policy makes clear, the United States will oppose the development of new legal regimes or other restrictions that prohibit or limit U.S. access to or use of space. Proposed arms control agreements or restrictions must not impair

the rights of the United States to conduct research, development, testing, or other operations or activities in space for U.S. national interests. Thus, we do not support such binding arms control agreements.

That is why, in part, the Bush Administration has concluded that additional arms control restrictions on space activities beyond the existing Outer Space Treaty are not necessary. In our view, the Outer Space Treaty is sufficient to meet today's and tomorrow's needs. It establishes guiding principles for space operations by all nations: that space shall be free for all to explore and use; that space activities shall be carried out in accordance with international law, including the Charter of the United Nations, which guarantees the right of self-defense; that weapons of mass destruction shall not be put into orbit; that States Party shall not interfere with the assets of other states; and that States Party shall bear responsibility for the activities carried on by governmental and non-governmental entities in territories and locations under their jurisdiction and control. These are the principles according to which space faring nations have and should continue to conduct themselves.

The President's Space Policy highlights our national and, indeed, the global dependence on space. The Chinese interception only underscored the vulnerability of these critical assets. Calling for arms control measures can often appear to be a desirable approach to such problems. Unfortunately, "feel good" arms control that constrains our ability to seek real remedies to the vulnerabilities that we face has the net result of harming rather than enhancing U.S. and international security and well-being.

Thus, we do not need to enter into new agreements. Rather, we need universal adherence to the existing Outer Space Treaty and to the other existing international conventions designed to provide for cooperation in space and to promote an understanding of the obligations associated with being responsible space faring nations. It is for these reasons that the United States will continue to encourage others in the international community to examine the prospect of space arms control with a critical eye.

Thank you for your attention.

Questions and answers.

Question: I look forward to seeing a transcript of your remarks because I would love to respond to all of your substantive comments in great detail. But short of that, I wonder if you would respond to my general observation about the character of your arguments, which is, first of all, it is very hard to define what we are talking about. It is going to take a lot of work. After all, it is very hard to define what a weapon is. A hammer can be used to kill somebody, so where are you going to draw that line? And of course, if people want to hide things, they can be very clever and find many ways of

hiding things. And of course, international negotiations and treaties deal with cases of possible non-compliance. It has always been very difficult. It seems to me that these are generic arguments that can be applied against any arms control initiative in any field. They are generic arguments about the difficulty of international relations, and it is really hard and may not work to have international organizations that try to cooperate with people and have transparency and have standards for cooperation and do things openly so that we know what people are up to and we are not really afraid that they are secretly doing dangerous things. All of that is just too difficult to do, and it seems to me that you could apply that in any area of arms control, certainly with nuclear weapons. We would have to conclude that all arms control is impossible: I don't know how we made it through the Cold War because we just couldn't do it; it is just impossible. It seems to me that all the arguments that you are making are of a character that can be applied to just about any arms control initiative.

DeSutter: Thank you. First, you will be delighted to know that there are copies of my remarks out front. I didn't want to have everybody have them ahead of time because I hate that sound when everybody is flicking the pages while someone is talking. But the other point that you raise is a good one, and it is one that is not all that well understood. Why is it that the United States continues to support some existing arms control agreements, like the Biological Weapons Convention, for example, that has, by any measure, a very low degree of verifiability? Why is it that the United States is supporting, and in fact has tabled, a draft Fissile Material Cut-Off Treaty at the Conference on Disarmament in Geneva and tried to push for a negotiating mandate to get started on that, having said that we do not believe that such an agreement is effectively verifiable? The difference has to do, again, with going back to the question of what it constrains. In the case of the Fissile Material Cut-Off Treaty, the United States and all of the other nuclear weapons states, other than China, have made a unilateral commitment to give up fissile material production a number of years ago. So while we believe that it may be useful to have a normative agreement that really isn't verifiable, that sort of sets a standard, it is not going to go to the core of U.S. national security. We are not going to be giving up something that is absolutely essential.

In the Biological Weapons Convention, President Nixon had decided to give up our biological weapons program – thank God! – and we took the lead, along with the Soviet Union and the United Kingdom, in pushing the negotiation of that agreement. The United States was very up front in congressional testimony in saying that it has a low degree of verifiability. However, we thought it was useful, and I can tell you, having worked on the compliance assessments of most of these agreements, it is indeed a tremendous challenge to verify compliance or non-compliance with the Biological Weapons Convention. It takes a lot of circumstantial evidence over a long period of time, and countries have an incentive to hide the evidence. But by the same token, the United States was not prepared to support a transparency protocol that we believed

would give a false sense of confidence that people had addressed the verification problem on something that was a core threat to us. We have had biological weapons used in the United States. I was in the Senate at the time of the anthrax attack. In the case of the BWC, we believed that there was another approach (other than a transparency protocol) that was necessary, so we have had a series of annual events where we have talked about different ways that could contribute to reducing the threat of biological weapons.

In the case of space, the United States has identified our critical dependence on space, not just for governmental activities but for the ongoing commerce of the United States. The international community, I think, especially after the Chinese ASAT interception, recognized that dependence as well, but also a vulnerability. With all due respect to my Pentagon colleagues, we don't have a solution. We are vulnerable. We need to do something, but the question is, what? How do we make our communications and space assets more secure and less vulnerable to the kinds of attacks that are out there? This is something that the United States has to struggle with. When we don't know an answer, but we do know we have a vulnerability, and we do know that there are threats out there, we cannot constrain ourselves to an unverifiable regime that is going to constrain us, but not constrain the very activities that we need to be able to address.

Question: Just for clarification, you are not saying that a major anthrax attack would not be a threat that goes to the core of the country's national security, are you?

DeSutter: No, but because it *is* a major threat for us, we are not prepared to take Potemkin village approaches. We are not prepared to do "feel-good;" we are prepared to do things that we think are reasonable and smart in cooperation with others, as we are doing in the BWC Intersessional.

Question: Given that orbital debris is a concern for everyone who operates in space and given that orbital debris is persistent and is dangerous to all in the case of a future ASAT interchange, why would the U.S. not support an agreement to bar the testing and use of debris-creating ASATs, given that you could verify such an agreement?

DeSutter: You are still going to have to get to the question of intent. Did something happen that was unintentional? One of the questions that came up not long after the Chinese ASAT interception was how do we, under the Outer Space Treaty, try to figure out, if there is debris that hits us, how we can verify that that piece of debris was caused by the destruction of that satellite? The answer was, we don't know. We don't have that solution. We believe that the Outer Space Treaty would say don't hit somebody else's satellite. In the recent "assertive deorbiting" of the NRO satellite, the United States did undertake efforts to try to make sure that there was as little debris as

possible and that it would be eliminated, if possible. My understanding is that China, in its interception, did not undertake reasonable efforts to try to reduce the amount of debris that was created. But there is a lot of debris in space. Some of it is accidental. Some of it is not from us. But it is a problem and identifying and doing attribution will remain an ongoing challenge.

Question: You seem to say no to "rules of the road" when you said no to negotiated cooperative measures.

DeSutter: I don't think I said that, but one of the things that is almost always true is that when confronted with something that can't be verified, people want to go to confidence-building measures. A lot of time there are confidence-building measures that can be useful and productive. The question for the United States is to examine those that are productive and say, "What is it you are trying to achieve? Does it achieve that? What are the constraints it imposes on the United States and are those things acceptable?" The United States is pretty open. The United States was very open about the fact that we were going to have to deorbit the satellite. Those of us who knew what it was going to do knew a long time ago that it was broken and those of us who are verifiers wept. But at the same time, we are very transparent. But there are some things that we don't share. There are some things that for commercial or national security purposes that we are not going to reveal. I think that is going to be pretty common. Whatever confidence-building measures people want to propose, we are going to examine them with a critical eye, and we are prepared to say no to things if we think that they don't make sense and won't really contribute to national security. If they are harmless, maybe. If they would help, probably. If they are unhelpful and hurt our flexibility and our ability to secure ourselves, we are not interested.

Question: At least in principal, are you willing to consider some of the guidelines that some in industry have been shopping around recently?

DeSutter: Well, we have some representatives here from our missile defense and space policy office and the international security non-proliferation office. They are working on those. I am a little bit more impressed with the work that the Committee on the Peaceful Uses of Outer Space does than are most people in the arms control world. It is interesting. There are two separate worlds; one has been ongoing for a long time and having discussions about these types of things and then the arms control community got started again saying, "Let's do it as arms control" and wanted to do a whole other approach. The United States will consider things, but they will be examined and they will be examined with a critical eye, especially in cases like this, when we know that we are dependent and we know that we are vulnerable.

Question: I would like to preface my comments by saying that I agree with you and that a PAROS treaty is not the way we should be going in the international community. However, the whole discussion you are talking about, the verifiable regimes, from the United States' point of view, is in lots of way fallacious. There is no way that the United States is ever going to put itself in a position where it could be verified in terms of the space picture as it stands today, being the major space power in the international community. So is not talking about verifiable regimes, with the balance of power resting as it does today, almost beside the point? And secondly, on your points of questions of attribution, questions of liability, questions of whose fault it is if space debris goes crashing into somebody's satellite, is it intentional, is it not, we have fifty or sixty years of case law on these kinds of questions in the international legal realm. These aren't new questions. There was a 1930s legal case about attribution of mines in international waters and questions where these kinds of problems have faced the international community for a long time. So defining armed attack, defining attribution, defining all of these elements has a strong basis in the international community and in international law. Is this not something we should be building on in a greater schematic, as opposed to saying we are suddenly focused on space and it doesn't apply to this greater international legal realm?

DeSutter: Well, let me take the Biological Weapons Convention again. I know that I am probably not in a room full of BWC geeks like I am, but you will get over it. There are two problems in trying to verify the Biological Weapons Convention. One is trying to verify that a country has a program and then again there is the intent problem. Intent problems are always the most difficult for verifiers, but you deal with it. Most arms control regimes have that difficulty. Not everything is going to be as easy as verifying the number of fixed silos in other countries, which are really big. But the other problem is use, which, if you establish that a country has used a biological weapon, then you have established that they have an offensive program, and so it goes back to that as well as the Geneva Protocol. One of the problems is how do you know what the source of an attack is? It is a real problem. Attribution is a huge challenge for us. So even though you can have sixty years of case law, that case law may not help you. Those experiences may not address all the problems that you are having. One of the things that you evaluate as part of doing an effectiveness of verifiability assessment is what is the risk and how can you respond to it. It is very difficult.

When Fred Iklé testified to the Senate Foreign Relations Committee, something about the Biological Weapons Convention upset everyone. He was very upfront about the fact that it had a low degree of verifiability. But he said there are three reasons why we want to go ahead and have this convention. First, we are not giving up anything that we have or want to have. Second, we have done an examination and we believe that these are not useful battlefield weapons. Now reflect back that, many years ago, you would not have anticipated the biological threat from terrorism. It just was

not part of the conceptual framework. And third, he said, these weapons are so heinous that should a country violate the agreement, the weight of world opinion will come down upon their heads. Now the United States verified that the Soviet Union was violating the Biological Weapons Convention; we knew that for a long time. I worked in the Arms Control and Disarmament Agency at the time, and I am partly responsible, maybe, for not doing more about that and making it more public. Because I think that other countries looked at that case and said, "Look, you can get away with it. Even if you get caught, there is no response." And so the response issue is a huge one.

If a country has a direct-ascent ASAT capability, you don't have time to maneuver between the time that they launch and the time that they are going to hit your satellite. You don't have that capability. And so again, yes, there was a mine problem; yes, international law can address those; yes, there are things that we always want to be wiser about. I am proud to say that at the Verification, Compliance and Implementation Bureau we proudly consider ourselves to be the geekiest bureau in the State Department. We had, for example, seminars that some of our staff, actually some who are here today, helped set up. We looked back at the question of detecting noncompliance and responding to it and how you do that. We looked at the German military buildup after World War I. These are problems that are fairly enduring. I acknowledge that freely. It doesn't mean that the solutions are always going to be adaptable to the current problems, especially in the current period of time.

Question: Just to re-emphasize the point you just made about whether or not an activity is discovered and what you can do about that: in the 1990s, former Congressman Curt Weldon cited publicly thirty-eight violations by Russia and presented these to the executive branch, and the executive branch didn't do anything about it. In fact, in some instances he stated that they weren't even looking into it. Year after year they would say they would look into it, but they didn't. So my question is, what is the utility for the United States government to enter into these arms control agreements if they in fact are not going to take appropriate actions on violations?

DeSutter: One thing that I would say with respect to my Russian colleagues who are here is that those were Soviet violations. We still have some compliance problems with Russia, but for those of you who really like compliance stuff, the 1984 General Advisory Committee Report to the President on Soviet Noncompliance is really a good historical review, and I think we are going to have the classified version declassified pretty soon, because it has been enough time. The linkage between verification efforts, compliance assessment, and response is something that the international community is grappling with, perhaps for the first time, in a very real way. That is, in the cases of both North Korea and Iran, where everyone had assumed that if somebody was caught violating the Non-Proliferation Treaty (NPT), which everybody in the international

community agrees is a critical proliferation tool; we extended it indefinitely just fifteen years ago. Yet what we have is new information that Iran has been violating that agreement for about twenty years. Now some of it was more difficult to detect, but there has been an international discussion about this for, I think, five years now. It is hard.

There are two types of violations, intentional and unintentional. With unintentional ones, generally you can anticipate that, when you go talk to the other country, you are going to be able to get it fixed. It may take a while and there will be back and forth, but, generally speaking, that can happen. And those are going to happen. I mean, they happened in the INF treaty. The United States had an unintentional violation of the INF treaty. Some guys in Texas found a concrete-filled P-1. They were really upset, because they knew that it hadn't been declared and eliminated. Well, what we did was we called the Soviet Union and said that we found this and we have another problem, which is that the existing elimination procedures don't work because it is filled with concrete. Come and watch, and we will figure out a way to do it. So those are going to happen, but those can be fixed.

When it is intentional noncompliance, generally speaking, countries have at least the manners to try and hide violations of arms control agreements. It goes as a part of it. If they are caught, there are supposed to be consequences. Those consequences have to be imposed by the countries who have said, "I am going to comply with that; I am going to accept that regime as a means of managing a particular set of national security problems." Well, suddenly those who have been complying have to change their policies, their programs. Maybe they have to take investment actions that they don't want to do. So the original costs are almost always going to come to those who have already been complying and are going to have to try to respond. It is difficult. People get frustrated because they think that the international community may not have responded assertively enough; we certainly haven't got Iran to get back in compliance with the NPT. It is hard, and the international community is confronting this in a very, very real way. So it should be expected to be difficult. But it is true that if countries aren't prepared to "belly up to the bar" in terms of thinking ahead of time about what they are going to do in the face of intentional non-compliance that you are able to detect, putting aside the question of non-detected violations, if you detect it, what are you going to do? If you are not prepared to confront those questions, then you really ought to think about whether it is an important regime or is it worth it to you to bother verifying it at all. If I don't really care that much if people don't comply, why am I going to have a verification regime? Many people like verification regimes. It is always easy for people to say that it is better to do something than to do nothing. For me, in looking at the history of compliance that I know of, it isn't always better to do something than to do nothing. It is better to do the right thing than just to put a band-aid on a tumor. It just won't work. So now that you all understand Verification Theology 101, write

back to your graduate programs and tell them that you ought to get an extra degree out of it!

Question: Hasn't arms control in general crossed into a new regime when the signers of most arms control treaties of any kind, biological or other, are usually nation states, whereas this era of terrorism has now introduced methods by which many things, biological and chemical, are used? Even in space, we have commercial people who are attempting and succeeding in developing commercial launches which in the end will rendezvous with the International Space Station. That could be a weapon.

DeSutter: Good point. Back when I first started at the Arms Control and Disarmament Agency a million years ago, it was viewed as really obnoxious to imply in any way that a country would sign on to an agreement with the intention of violating it. We have come a long way since then, and people understand that there is a possibility of non-compliance and that a country could try to hide that non-compliance, making detection and verification more difficult. One of the things that this administration has done, and has taken a lot of heat for, is to say, "Look, we don't think that arms control is a sufficient tool to address national security problems in and of itself. Our tool kit is insufficient. We have got to come up with new approaches and try to be as creative as possible in addressing the problems that we have." The President's Proliferation Security Initiative is a good example of that. We are the only country that has a formal process for writing compliance assessments. We have that because it is in the law. Nobody would go through the process that we have been going through if it wasn't mandated by law. We know that there are ways to do things that are more creative, but when I talk to other countries about it, there has been an interesting overlap, because U.N. Resolution 1540, which directs countries to do more to try to control what is going in and out of their countries, [to declare] what non-governmental programs are happening in their own states. That is a very interesting approach, and it is something new. It is something that may help square some of the circles. The United States still believes that there are arms control agreements that are important. The Non-Proliferation Treaty we think is important. The Biological Weapons Convention, yes. The verifiability challenges are very much there, but we believe that it does set a norm that is valuable. I am a fan of the INF Treaty; I think that it did a good job. It was probably one of the more verifiable arms control agreements, and even then it had big challenges. It wasn't perfect, but over time I think it has done a good job. So there are number of agreements that we think are valuable, but do we think those agreements are enough? No. So we want to explore new approaches, we want to try to be creative, and we want to look beyond the arms control approach as a tool. Because we know that it is not always going to solve our problems.

Question: The challenges of verification, particularly for attribution and determination of intent, may also apply to the Defense Department in responding to possible attacks.

So when the Defense Department and the technology have developed to the point that we can respond, attribute and identify intent, perhaps at that point, we will have a verifiable technological means for a treaty?

DeSutter: I mentioned that the reason we write our – it is supposed to be annual – non-compliance report is that we are mandated by law to do so. There are also provisions in law that require the Defense Department to ensure that all of their programs and activities are conducted in strict compliance with all international arms control obligations. It is there. One of the things that we have to include, by law, in our compliance report is whether there are questions of U.S. compliance that need to be addressed. We are an open and transparent country, far more so than most people imagine. Having worked on the Hill, I think that maybe what we ought to do when people call for more U.S. transparency is belly up and spend the money to send them transcripts of every hearing that happens on the Hill with regard to questions of interest. Then they would know an awful lot more than they do. They ought to have to read the Defense Authorization Bill! So it is not that the United States has something to hide; the United States had an anti-satellite program a long time ago but we shut it down. We had it and we stopped it. Anybody can go and check to see if there is anything happening in our program or if it is in the Defense Authorization Bill. It isn't there. It is pretty open and transparent.

Question: What about black programs? We have something to be transparent about, like they tested an ASAT last week. They tested an ASAT; we didn't keep it a secret. The whole world knows it; the whole world saw it. So, yes, we are open, but…

DeSutter: We didn't test an ASAT.

Question: We showed that we have the capability, and we also have a black budget. We don't know what is in the black budget, but I think we do know that there is anti-satellite or anti-space, counter-space stuff in the black budget. I think we know that.

DeSutter: What I have said is that we don't have an ASAT program. We did demonstrate a capability, thank God. Imagine what kind of hue and cry there would have been if the United States, knowing that we had a satellite that could potentially hurt people that was coming down, didn't do everything in our capability to deorbit it. We don't do "black" anymore, really, not very well, anyhow. We do have classified budgets; we have classified intelligence budgets. Those are important, and we do want to keep some of our capabilities classified. On the other hand, one of the things that I learned after I came to Washington and started working for the U.S. government – and any of you who have worked for the U.S. government for any period of time can probably attest to this – when people have conspiracy theories about the United States, they probably haven't worked in the U.S. government.

Question: So saying there is a black budget is a conspiracy theory? Saying that we have demonstrated an ASAT capability is a conspiracy theory? I have just one more question: is there any counter-space activity in the black budget?

DeSutter: I think it would be a good idea for you to go to the Pentagon for that one. For those of the rest of you who have probably heard more than you wanted about space verification and verification in general, compliance assessment, response policy, and enforcement, I thank you.

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