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NONINTERFERENCE WITH NATIONAL TECHNICAL MEANS: THE STATUS QUO WILL NOT SURVIVE

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Summary

The strategic context for U.S. national security space (NSS) activities will change if the 2010 New Strategic Arms Reduction Treaty (New START) expires in February 2021. Here we examine how this change would stress the NSS community's capabilities, assumptions, and habits, and is likely to present new challenges for maintaining stability in the space domain.

Introduction

The 2010 New Strategic Arms Reduction Treaty (New START) currently in force between the United States and Russia is set to expire on February 5, 2021. When that happens, formal prohibitions on interference with national technical means (NTM) of verification expire along with limits on U.S. and Russian nuclear arms. This will mark a significant change in the strategic context within which U.S. national security space forces operate. U.S. space forces' resources will be taxed, and the stability of the space domain will face new risks.

The United States needs a comprehensive strategy to address these challenges. This paper introduces a thought experiment to identify the key factors that should be considered when such a strategy is formulated. It does this by contemplating four alternative futures. Each alternative future assesses the implications of New START's expiration for the U.S. national security space enterprise and for the strategic stability of the space domain. No alternative future foresees the existing status quo surviving after New START expires.

Table 1: Reasons NTM Are Not Defined or Identified

Protect sources of sensitive information
Protect methods used to gather information
Permit maximum flexibility in what means to use
Create uncertainty about specific capabilities to deter cheating
Allow for new technologies

What are National Technical Means of Verification and why are they important?

Formal prohibitions on interference with NTM of verification began with the 1972 Anti-Ballistic Missile (ABM) Treaty between the United States and the Soviet Union. Subsequent arms control treaties also included protections for NTM satellites used to verify treaty compliance.

However, the systems and sensors that constitute NTM for treaty verification have never been defined in the text of the arms control treaties or in the treaty

negotiating records.[1] The United States and Russia have preferred to keep the precise definition and identity of NTM purposefully ambiguous for the following reasons: to protect the sources of sensitive information; to protect the methods used to gather such information; to permit maximum flexibility in what methods are used to gather information; to create uncertainty on the other side about specific capabilities being used as a deterrent against cheating; and to allow flexibility to introduce new technological innovations.

NTM for treaty verification may include sensors based on the ground, on aircraft, or even underwater.[9] However, arms control experts consider satellites the most important type of NTM. Indeed, many different types of satellites may be considered NTM.[10] For example, various types of photoreconnaissance satellites and synthetic aperture radar satellites collect detailed imagery of things on the ground, such as inter-continental ballistic missiles (ICBMs) and aircraft. Other satellites detect electronic signals, which may provide insights into a missile's or missile launcher's performance.[11] U.S. missile launch warning satellites such as Defense Support Program (DSP) and Space-Based Infrared System (SBIRS) spacecraft detect the intense heat generated by a missile launch and may be considered NTM since they monitor Russian ICBM and submarine-launched ballistic missiles (SLBM) launch tests and can thereby reveal their capabilities.[12]

New START states:

"For the purpose of ensuring verification of compliance with the provisions of this Treaty, each party undertakes:

(a) to use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law;

(b) not to interfere with the national technical means of verification of the other party operating in accordance with this article; and

(c) not to use concealment measures that impede verification, by national technical means of verification, of compliance with the provisions of this treaty."

Substantively the same language has been included in preceding nuclear arms control agreements (no longer in force), including the 1972 Anti-Ballistic Missile (ABM) Treaty[2], the Interim Agreement on Offensive Arms (SALT 1)[3], the 1979 SALT II Treaty[4], the 1987 Intermediate-range Nuclear Forces (INF) Treaty[5], and the 1991 START I Treaty[6]. The 1996 Comprehensive Test Ban Treaty (CTBT), which the United States has signed but not ratified[7], and the multilateral Conventional Forces in Europe (CFE) Treaty[8] also use substantively the same language. However, Russia has unilaterally "suspended" its participation in the CFE Treaty.

The lack of clarity around which space systems are considered NTM of verification also suggests that other satellite systems that aid in the detection of treaty violations can be considered NTM for treaty purposes. For example, the nuclear detection capability of global positioning satellites (GPS), which detect the flash and radiation of nuclear detonations, may be considered NTM for verification of compliance with the Limited Test Ban Treaty (LTBT) and the Comprehensive Test Ban Treaty (CTBT).[13] Furthermore, the CTBT's International Monitoring System (IMS) is part of a verification regime detecting nuclear explosions and includes a global infrastructure for satellite communications from IMS stations to an international data center (IDC), which processes and distributes data to state parties. In that regard, even commercial telecommunication satellites may be considered NTM for treaty verification.[14]

In this milieu of purposeful ambiguity, the United States and Russia extended the ban on interference to be effectively a de facto ban on interfering with the entire national security space constellation of the other.[15] In short, for treaty verification purposes NTM include all military and intelligence satellites,

broadly defined. Despite this intentional vagueness concerning what NTM are, arms control treaty language for the last 50 years has consistently included protections for NTM because they remain critical to the overall compliance verification process and for detecting cheating against treaty requirements.

Arms control treaties have long included protections for NTM satellites used to verify treaty compliance.[16] As such, noninterference with NTM has always been linked tightly to arms control, forming a key component of the strategic context in which U.S. and Russian behavior in space has taken place for nearly five decades.

Since prospects for New START's extension are dim, consideration should be given to what the change in strategic context may entail. For example, New START's expiration could have negative implications for the legitimacy of NTM overflight. The formal prohibition on interference with NTM of verification, beginning with the 1972 ABM Treaty, was key to establishing NTM overflight legitimacy. The Eisenhower administration began the process of legitimizing overflight by not objecting to Sputnik's overflight of the United States. Indeed, many observers believe that NTM overflight was legitimized in Russian minds with the launch of Sputnik, but that is not completely true.[17] Overflight was considered legitimate when done for peaceful purposes. However, while the United States asserted that peaceful means "nonaggressive" beginning in the early 1960s, the Soviets did not recognize that definition and continued to object to overflight of "spy" satellites as a form of espionage. In 1962, the Soviet Union submitted to the United Nations a "Draft Declaration of Basic Principles Governing the Use of Outer Space," which asserted "use of artificial satellites for the collection of intelligence information in the territory of foreign states *is incompatible with the objectives of mankind* in its conquest of outer space [emphasis added]."[18] Some Soviet officials continued to object to U.S. spy satellite overflights into the late 1970s, even after the ABM Treaty came into force.[19]

Eventually, with the ABM Treaty, the Soviets accepted the legitimacy of NTM overflight for treaty verification purposes, but it is not clear if they (or Russia) ever accepted the legitimacy of overflight for intelligence collection. For example, in 1979, a member of the Institute of State and Law of the USSR Academy of Sciences argued that NTM overflight activities are unlawful if they go beyond treaty compliance monitoring to gather information for intelligence purposes.[20] Although the United States consistently rejected these objections, the United States also kept U.S. spy satellites' existence secret from 1962 until 1978,

The Outer Space Treaty (OST) prescribes broad principles rather than detailed regulations. The most relevant obligations regarding noninterference are found in Article IX: "In the exploration and use of outer space…States Parties to the Treaty…shall conduct all their activities in outer space…with due regard to the corresponding interests of all other States Parties to the Treaty."

This obligation is significantly less explicit than the prohibitions against interference with NTM in New START and its predecessor agreements. Even so, many scholars take the view that intentional interference with the satellite of another country would run afoul of this "due regard" obligation.

Article IX also requires "appropriate international consultations" rather than outright prohibiting activities that would cause interference. However, it would be surprising if a State targeting NTM carried out advance consultations with the target State, and failure to conduct such consultations would constitute a breach of Article IX.

The dispute resolution mechanism in either of these cases is not defined, however, making these OST protections less clear and specific compared to the bilateral noninterference protections in New START.

when President Carter publicly acknowledged the existence of photo-reconnaissance satellites in the context of their importance as NTM for monitoring arms control agreements.[21]

With this history in mind, the current trends and rhetoric toward a conception of space as a warfighting domain may also contribute to undermining NTM overflight's legitimacy in international law, since the U.S. position from the 1960s—that overflight is a "peaceful use" of outer space—is difficult to reconcile while avowedly preparing for warfighting in, through, and from space. Again, the Soviet Union accepted the "nonaggressive" definition for what peaceful use means *only in connection with NTM use to verify compliance* with arms control treaties. But Russia's continued acceptance of that definition in lieu of New START and in the face of a more aggressive U.S. posture in space should not be taken for granted. Indeed, active interference with NTM might not be considered illegitimate when NTM are used for finding, tracking, and fixing targets in a crisis or conflict. And perhaps other countries also will begin to question the legitimacy in international law of NTM overflight.

Four Alternative Futures

As a thought experiment, consideration of four alternative futures helps predict how the strategic context will be different when New START expires. The scenarios represent a spectrum of possibilities. They are (a) *noncodified*, bilateral mutual restraint; (b) *codified*, bilateral mutual restraint; (c) *multilateral* restraint; and (d) *no* mutual restraint. These are by no means the only potential futures—many variations are possible—but the alternatives offered here serve to highlight some key challenges.

Each alternative future contemplates two key issues: changes in demand on U.S. NTM collection capabilities when New START is no longer in force and how the strategic stability of the space domain may be affected. Borrowing from a recent definition of what strategic stability means in the nuclear context, strategic stability in space is the *peacetime* management of strategic relationships to avoid conflict extending into space. Strategic stability is facilitated through processes, mechanisms, and agreements, which, combined with the deployment of military forces, minimize any incentive for first-use of offensive space capabilities.[22] When these instruments for managing strategic relationships erode, are absent, or are misapplied, the likelihood for miscommunication, misunderstanding, and miscalculation leading to conflict increase. There is less crisis stability and, in turn, less strategic stability.

To subjectively assess how strategic stability of the space domain may be affected, each scenario evaluates how the legitimacy of NTM overflight might be affected; how interference with NTM may increase (or not); how the end of legally binding U.S.–Russian prohibitions on interference with NTM may shape other nations' attitudes, beliefs, and behavior in space; how military space control strategies might be influenced; and how the cumulative effect of these factors influences crisis stability. Table 2 captures the differences among the scenarios and compares them to the current status quo, with the light green color indicating no expected change in the status quo for that factor under each scenario.

Scenario A: Noncodified, Bilateral Mutual Restraint

In Scenario A, the United States and Russia each decide separately that it is in their national interest to continue current practices regarding noninterference with NTM, even in the absence of a bilateral agreement and without direct, bilateral engagement on the issue. Overall, they decide unilaterally that exacerbating tensions in the space domain is not in their national interest.

Nevertheless, as Table 2 illustrates in light pink, Scenario A still presents new challenges for the U.S. national security space community and is not conducive to the stability of the space domain. First, the United States will have to rely, to the greatest degree in a generation, on space-based observations to persistently track Russia's strategic nuclear forces when New START provisions for onsite inspections of Russia's nuclear forces end. Regular bilateral warhead counts, notifications, exhibitions, and telemetric and information data exchanges will also end with New START's demise. As a result, demand on NTM for tracking Russian nuclear weapons development, testing, and deployments will intensify. Commercially available space-based remote sensing imagery may augment NTM but will not be a substitute for NTM exquisite capabilities. With competing requirements for limited NTM resources, such as monitoring China, North Korea, Iran, and terrorist organizations, any decisions to shift attention and scarce resources to more persistently track Russian nuclear forces impose an opportunity cost.[23] Furthermore, the end of prohibitions on concealment at ICBM and SLBM test ranges will make the task of monitoring Russian nuclear developments from space more complicated as Russian denial and deception efforts surrounding test ranges intensify. NTM satellite systems, ground systems, and the workforce will need to be scaled to accommodate these new strategic requirements.

Challenges for the stability of the space domain in this scenario are more nuanced but also differ from the status quo. In this case, NTM overflight's legitimacy in international law is not challenged by either party and the incidence of interference between the United States and Russia remains at the same level as the current status quo, as reflected in light green in Table 2, Scenario A. However, the loss of the sole legally binding treaty-based prohibition on interference with NTM between the two traditional major space powers could negatively shape the attitude, beliefs, and behaviors of other nations regarding interference. Although the United States and Russia practice noncodified, bilateral mutual restraint in this scenario, other countries such as China may see an opening to practice less restraint themselves once interference with NTM is no longer explicitly proscribed anywhere in international law. The U.S. national security space community and U.S. diplomats may have to make additional efforts to counter such an impression.

Similarly, international efforts to develop norms of behavior for responsible use of outer space may lose momentum should the two leading space powers abandon their clear, legally binding restraint. Why make the effort internationally to develop nonlegally binding, voluntary "rules of the road" when the two traditional major space powers abandon existing, legally binding treaty constraints? Likewise, the lack of a U.S.-Russia agreement may have a chilling effect on the development and implementation of international, voluntary Transparency and Confidence Building Measures (TCBMs) for space.

While U.S. and Russian space forces practice noncodified, bilateral mutual restraint in routine, peacetime operations in this scenario, the space domain at large will be less stable because in a crisis, or in the gray zone between peacetime and conflict, the threshold for initiating active interference will be lower due to the absence of the usual treaty check on military offensive space operations. In other words, military commanders will not be delayed by their staff judge advocate lawyers raising treaty compliance issues. In addition, the lack of an agreement to drive regular dialogue between the United States and Russia, either military-to-military or between diplomats, also makes the strategic environment less stable. In combination with accelerated planning for warfighting in space, such an environment raises the chances of miscommunication, misunderstanding, and miscalculation. For these reasons, even noncodified mutual restraint will lead to a comparatively less stable space domain.

Treaties, conventions, and other types of agreements that are in force (signed and ratified by participating states) are considered "legally binding" agreements between governments in international law. In contrast, unratified instruments are considered "nonlegally binding" agreements between governments in international law. Such agreements are still politically binding, and, while breaching such an agreement may increase political tension, breaches are not considered violations of international law. Examples of nonbinding agreements may include voluntary guidelines and norms, codes of conduct, and other instruments such as nonbinding memorandums of understanding (MOUs) and memorandums of agreement (MOAs).

Table 2, Scenario A, illustrates that ultimately, noncodified mutual restraint dampens some negative impulses, but also presents some concerns. NTM overflight remains legitimate, and the level of interference remains at status quo levels. However, the demand for NTM collection rises along with the difficulty of observing Russia's nuclear weapons development, testing, and deployments. The stability of the space domain weakens due to the undermining of existing processes for developing international norms of behavior and TCBMs for space, the risk that other countries feel less restrained in the absence of U.S.–Russia formal restraint, and the fact that military forces face a lower threshold for initiating the first-use of offensive space control capabilities, resulting in less crisis stability.

Scenario B: Codified, Bilateral Mutual Restraint

In Scenario B, the United States and Russia sign a bilateral agreement to continue noninterference with their respective space-based NTM. This bilateral, noninterference agreement stands on its own, unconnected to other arms control treaties. Since prospects for new, broader arms control treaties are dim, noninterference with NTM by itself provides the basis for a narrower agreement and provides a way forward in preserving stability in the space domain.

A bilateral agreement between the United States and Russia that simply prohibits interference with NTM is feasible, given that all it does is maintain the status quo as it has been since the 1970s. Moreover, the United States finds the agreement meets U.S. prerequisites to enter into a new arms control agreement as required in the 2010 U.S. National Space Policy; i.e., such an agreement must be equitable, effectively verifiable, and enhance the national security of the United States and its allies.[24] Also, the Russians find it difficult to argue convincingly against reestablishing the 50-year-old status quo in space. Indeed, the United States, chided internationally for years over its opposition to the Russian "No First Placement of Weapons in Outer Space" (NFP) initiative and the Russian and Chinese draft "Treaty on the Prevention of Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects" (PPWT), could offer an agreement on noninterference with NTM as an alternative to Russia and, eventually, to China and the international community. A formally ratified agreement may be difficult to achieve, given the troubled nature of the current U.S.–Russia strategic relationship and with the high hurdle of U.S. Senate consent. If so, such an arrangement might be accomplished through a nonlegally binding MOU that does not necessitate ratification.

As in Scenario A, the collection requirements for tracking Russia's nuclear forces grow due to the lack of onsite inspections, while at the same time the Russian concealment of their activities makes monitoring their nuclear forces more challenging. However, the stability of the space domain would be unaffected in Scenario B, and the challenges arising from the increasing contested nature of the space domain would not be exacerbated. The bilateral U.S.–Russian agreement means NTM overflight's

legitimacy in international law would not be challenged by either party, and the incidence of interference between the United States and Russia would remain at the same level as the current status quo (reflected in light green in Table 2, Scenario B).

Contrary to noncodified mutual restraint outlined in Scenario A, a new formal U.S.–Russian agreement reduces the impetus for China, India, and other countries to change their attitudes, beliefs, and practices regarding interference with NTM. This finding is based on a key assumption that runs throughout all the scenarios: that the United States and Russia, as the traditional space powers, influence what other countries consider legitimate, acceptable behavior in space. It is reasonable to predict that more antagonistic behavior in space by the United States and Russia will likely lead to more antagonistic behavior in space by other nations and a less stable space domain. Conversely, U.S.–Russian mutual restraint, especially codified bilateral mutual restraint, will ideally shape the strategic environment toward restraint among all spacefaring nations and build a more stable space domain. The international community's development of norms of behavior for outer space will be shaped correspondingly.

The United States and Russia approach space control activities more cautiously than in Scenario A, due to the codified agreement raising the threshold for initiating active interference with the others NTM. The agreement also drives regular dialogue between the United States and Russia, further supporting stability. The opportunity for miscommunication, misunderstanding, and miscalculation remains at today's level, as well as the level of risk to crisis stability.

The United States and Russia, as the traditional space powers, influence what other countries consider legitimate, acceptable behavior in space.

The Scenario B row in Table 2, with six of the seven columns showing light green (status quo), reflects the idea that a bilateral, codified, noninterference agreement between the United States and Russia is as close to maintaining the status quo as possible. Despite increased demand for NTM collection and the difficulty of observing Russian nuclear weapons development, the stability of the space domain remains at status quo levels. The bilateral noninterference agreement bolsters existing processes for developing international norms of behavior and TCBMs for space, and there is no change from the status quo regarding the risk of first-use of offensive space operations capabilities, keeping crisis stability level.

Scenario C: Multilateral Mutual Restraint

In Scenario C, multilateral mutual restraint could develop along a couple of paths. A bilateral agreement between the United States and Russia, as outlined in Scenario B, could be widened to include other countries. With the United States and Russia setting the example, other countries would be welcome to sign on. Alternatively, in the interest of global strategic security, the United Nations Security Council (UNSC) five permanent members (P5) could move to formalize prohibitions on interference with space-based NTM.

A group of like-minded nations, such as the United States, the United Kingdom, and France could provide the impetus for a wider agreement or a UNSC resolution that proscribes interference with NTM. The UNSC's interest in maintaining international peace and security and reducing the chance of miscalculation leading to war could drive the development of this alternative. UNSC resolutions carry the force of codified, international

law so such a UNSC resolution would carry great weight. In either case, the Russians would find it difficult to argue convincingly against simply reestablishing the 50-year-old status quo in space as such an agreement would do. Presented as an alternative to the Russian NFP initiative and the PPWT, an NTM noninterference proposal might gain traction within the international community.

As in Scenarios A and B, even if one of these paths came to fruition, the demands on NTM for tracking Russia's nuclear forces would still grow and be more difficult than today. Any path to multilateral restraint in Scenario C, however, strengthens space domain stability more than Scenario B (as reflected by the predominately dark green cells in the Scenario C row of Table 2). In this scenario, NTM overflight legitimacy is not questioned and the amount of interference remains as expected given the status quo. However, other countries' attitudes, beliefs, and practices regarding interference with NTM are shaped toward more restraint, driven by the combined diplomatic signaling and subsequent political impetus created by the United States, Russia, and other countries acting in concert. Scenario C also fosters an environment conducive to norms development and the establishment of TCBMs for space.

A multilateral agreement significantly raises the stakes for taking offensive space control actions, as military commanders would have to check with their staff judge advocate lawyers to weigh the implications of violating a multilateral agreement or a UNSC resolution (i.e., international law) before initiating offensive space operations. In turn, crisis stability is strengthened since the increased decision time raises the threshold for military action and reduces the opportunity for miscommunication, misunderstanding, and miscalculation.

The Scenario C row in Table 2 illustrates how multilateral mutual restraint improves stability in space compared to the status quo. Stability improves due to the multilateral agreement creating new, broad processes and mechanisms that reduce the risk of miscalculation leading to crisis. Also, the multilateral agreement accelerates processes for developing international norms of behavior for space. And the threshold for first-use of offensive space control capabilities is raised, resulting in improved crisis stability.

Scenario D: No Mutual Restraint

Scenario D is the most pessimistic scenario on the spectrum of possible futures. In this scenario, the United States and Russia each decide separately that it is in their national interest to disregard restraint. Each begins interfering regularly with each other's NTM satellites, even in the absence of crisis or conflict, undermining the stability of the space domain and eventually even threatening strategic nuclear stability. Scenario D contemplates a new era where the entire concept of noninterference with space-based NTM is rendered obsolete due to various factors, including (a) the lack of an arms control treaty that provides legitimacy in international law for NTM overflight;[25] (b) the availability of commercially available, ubiquitous, space-based remote sensing; (c) the fact that the United States and other countries now identify space as a warfighting domain; (d) rising tensions and mutual distrust between the United States and Russia; and (e) China's and other countries' growing assertiveness in space.

In this unrestrained scenario, highlighted in dark red in Table 2, the U.S. national security establishment faces increasing challenges in tracking Russian nuclear arms. Demand on NTM surges with the end of New START onsite inspections, data exchanges, and notifications. At the same time, fulfilling NTM collection requirements becomes especially difficult as unrestricted Russian denial and deception activities accelerate and interference grows. In turn, U.S. confidence erodes in regard to its understanding of Russian nuclear forces. In such a

future, the United States and Russia face the danger of miscalculation leading to greater risk of nuclear conflict.

Even in the absence of crisis or conflict, as the United States and Russia alter their operations toward routine, everyday interference with NTM, it follows that China, India, and other countries also feel less restrained compared to the status quo. They alter their attitudes, beliefs, and practices in a very negative direction as interference with space-based NTM is no longer proscribed by any treaty, the international legitimacy of NTM overflight is weakened, and they mirror U.S. and Russian changes of behaviors in space. Hence, Scenario D also represents the demise of good faith efforts to develop norms of behavior for outer space. In this scenario, an unfettering of offensive space operations amplifies the risk that miscommunication, misunderstanding, and miscalculation could lead to confrontations spinning out of control, making crisis management much more difficult.

Scenario D in Table 2 portends a future with no mutual restraint and deviates the furthest and most dramatically from the current status quo. Tracking Russia's nuclear forces becomes increasingly difficult. The stability of the space domain deteriorates severely due to the absence of mutual restraint and the degradation of existing processes for developing international norms of behavior for space. The danger of miscommunication, misperception, and miscalculation swells along with the risk of conflict quickly extending into space. Current threats to stability in the space domain are greatly exacerbated, resulting in its full destabilization.

Table 2: A Thought Experiment—Analysis of the Four Alternative Futures

	NTM Collection Requirements	Stability of the Space Domain						Disruptive Policy Change Opportunity
	Amount and Difficulty	Overflight Legitimacy	Interference with NTM	Shaping 3rd Country Behavior	Norms Development	Space Control Aspects	Crisis Stability	
A. Noncodified bilateral, mutual restraint	Increase amount	Status quo	Status quo	Less restraint	Discouraged	Formal check removed	Difficult	Yes[2,3]
B. Codified bilateral, mutual restraint	Increase amount	Status quo	Status quo	Status quo	Status quo	Status quo	Status quo	Yes[1]
C. Multilateral mutual restraint	Increase amount	Status quo	Status quo	More restraint	Encouraged	Greater check	Improvement	Yes[1]
D. No mutual restraint	Increase amount and difficulty	Delegitimized	Large increase	Much less restraint	Unattainable	No check	More difficult	Yes[2,3]

1. Break synergistic relationship between arms control agreement and noninterference with NTM.
2. The United States begins calling out bad behavior by attributing interference to shape strategic environment and bolster deterrence.
3. The United States reveals its NTM spacecraft to enable attribution of interreference and to bolster deterrence.

Disruptive Policy Changes

As the end of New START approaches, U.S. national security decisionmakers will have the opportunity to make some disruptive policy changes, shaping the post-New START strategic context toward or away from the scenarios laid out above. For example, Scenario B and Scenario C depend on breaking the symbiotic relationship between noninterference with NTM of verification and U.S.–Russia arms control agreements. U.S. decisionmakers will have to decide if negotiating a new bilateral or multilateral NTM noninterference agreement that stands on its own (i.e., unconnected to other arms control treaties) will encourage stability in the space domain and be in U.S. interests.

Enabling the bilateral or multilateral agreements on which Scenario B and C are based may also require decisionmakers to identify NTM satellites. As noted earlier, the United States and Russia have preferred to keep the precise definition and identity of NTM purposefully ambiguous. Nevertheless, reaching a separate agreement on noninterference with NTM seems more likely if specific satellites, on all sides, are identified as NTM. That does not mean specific NTM spacecraft capabilities would need to be revealed, but removing the ambiguity over which satellites are NTM might be judged worthwhile in order to proactively shape the future strategic context in space.

Today, deterring aggression in space is more important than ever, so decisionmakers might also judge that revealing the identity of NTM spacecraft may strengthen deterrence, benefiting stability in space across all four future scenarios. In September 2019, during a discussion on space and deterrence, the commander of U.S. Air Force Central Command, Lieutenant General Joseph Guastella, implied that some senior leaders need to make tough decisions about which NTM capabilities should be revealed in order to make deterrence credible, explaining that adversaries have to know about one's capability to be deterred by it. "At some point," he said, "we have to reveal some things."[26]

Table 3: Potential Disruptive Policy Changes Post-New START

Negotiating a standalone NTM noninterference agreement
Revealing the identity of NTM satellites
Publicly attributing interference with U.S. satellites

In parallel, New START's end may provide the United States the opportunity to reconsider the current policy of not attributing interference against U.S. satellites. The current reasons for not publicly attributing incidences of interference has been the concern that attributing interference may divulge U.S. technological capabilities. Also, attributing interference could subject the United States to criticism by other countries. Senior leaders will need to weigh those concerns and balance them against the needs of the alternative futures. For example, decisionmakers may judge that such a policy change makes a lot of sense in the context of verifying compliance with the notional agreements on which Scenarios B and C are based. In addition, General Guastella noted that a key component of deterrence is being able "to call them out" when an adversary acts threateningly. He said, "Attribution has kind of become the new deterrence." In that light, New START's end could provide a catalyst for the U.S. government to set in place a new policy for the public attribution of attacks on, and interference with, U.S. government satellites—for the sake of deterrence—even in lieu of any noninterference agreement.

Public attribution of bad behavior could also shape the strategic environment by reinforcing noninterference as an international norm of

behavior. Indeed, the national security space enterprise could follow in the vein of the cybersecurity community, in which incidences of cyber interference and attacks are publicly "named and shamed" comparatively aggressively.

New START's end presents an opportunity for decisionmakers to carefully weigh updating a half century's worth of entrenched security space policy. The cost-benefit calculus of the current policies and strategies, which have held over that period, may need to be recalculated with the end of New START and the increasingly contested nature of the space domain.

Conclusion

The strategic context for U.S. national security space activities is about to change with the expiration of New START. This change will stress the national security space community's capabilities, assumptions, and habits, and is likely to raise new risks for the stability of the space domain. U.S. national security space leaders should proactively consider the challenges and opportunities this looming change in the strategic environment presents, and act now to develop a comprehensive post-New START strategy.

Each alternative future contemplated how the demand on U.S. NTM collections would increase when New START is no longer in force and how the stability of the space domain would be affected in that scenario. In all foreseeable cases, demand on NTM collections increases. In Scenario A, if key assumptions ring true, the stability of the space domain would be marginally worse than today. In contrast, Scenario D shows that if NTM overflight legitimacy is broadly challenged, space stability will be significantly worse than today. On the other hand, Scenarios B and C show that a formalized mutual restraint agreement may prevent stability in space eroding at a greater pace than the status quo. Importantly, all scenarios represent clear opportunities for U.S. policymakers to proactively shape the new strategic context with a variety of disruptive policy changes. With the growing threats to the stability of the space domain presented by China and Russia and the increasingly contested nature of the space domain, the national security space community should consider how the demise of New START may exacerbate these challenges.

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