

WMD COMPLIANCE & ENFORCEMENT SERIES

PAPER FIVE

MONITORING, VERIFICATION, &
**COMPLIANCE
RESOLUTION**
IN US-RUSSIAN
ARMS CONTROL

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UNIDIR UNITED NATIONS INSTITUTE
FOR DISARMAMENT RESEARCH

ACKNOWLEDGEMENTS

Support from UNIDIR core funders provides the foundation for all of the Institute's activities. This project is supported by the Government of Norway.

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ABBREVIATIONS AND ACRONYMS

ABM Treaty	Anti-Ballistic Missile Treaty
ICBM	intercontinental ballistic missile
INF	Intermediate-Range Nuclear Forces Treaty
NTM	national technical means
SALT	Strategic Arms Limitation Talks
SCC	Standing Consultative Commission (SALT I)
START	Strategic Arms Reduction Treaty

SUMMARY

- In US–Soviet/Russian bilateral treaties, parties agreed to rely on their national technical means of verification—their satellites and other remote sensing technologies—and, eventually, a range of cooperative measures, such as data exchanges and on-site inspections, to monitor the forces and activities of the other party.
- These treaties established consultative bodies where the two parties could meet to review implementation issues and address questions about compliance. The consultation mechanisms have allowed the parties to resolve numerous technical issues that inevitably arise during treaty implementation. These mechanisms have also demonstrated the capability to develop technical solutions that opened political space for resolving more serious disputes—a process that works best when both parties want to avoid a political dispute and are willing to work together toward a resolution.
- Their experiences resolving compliance concerns under the ABM Treaty, the Strategic Arms Reduction Treaty, and the INF Treaty shows that the prospects for successfully raising and resolving these issues often turns on political, rather than technical, considerations. The primary factor is the commitment of parties to arms control as a way of addressing their national security concerns.

1 INTRODUCTION

The United States and Soviet Union began to negotiate arms control agreements that limited their nuclear forces in the late 1960s. They signed five agreements before the Soviet Union collapsed in 1991. The United States and the Russian Federation signed three additional agreements between 1993 and 2010.¹ When crafting these agreements, the parties agreed to rely on their national technical means (NTM) of verification—their satellites and remote sensing technologies—and, eventually, a range of cooperative measures, such as data exchanges and on-site inspections, to monitor the forces and activities of the other party. They would then determine, for themselves, whether the data collected by these systems indicated that the other party was complying with its obligations under the treaty.

Unlike many multilateral and international arms control conventions, these treaties and agreements did not establish an autonomous organization that would collect data, adjudicate disputes, and enforce compliance if the parties' weapon programmes diverged from the agreements' requirements. Instead, the treaties established consultative bodies where the United States and Soviet Union (and later the Russian Federation) could meet to review implementation issues and address questions about compliance. This consultative approach has proven effective over the years because the parties can share technical data and devise compromise solutions to vexing problems.

But compliance resolution is not just a technical process. Political leaders must review the data, decide whether it provides evidence of compliance or violation, and accept compromise solutions that allow treaty implementation to continue. Moreover, the presence of political support for the arms control process can help the parties craft compromise solutions, even in the absence of agreement on the technical parameters of the case. However, if political leaders lack the will to identify and accept these compromises, the process will falter. In other words, treaty verification and the compliance resolution process is as much a search for political agreement as it is an effort to identify technical solutions.

Analysts often refer to the long record of US–Soviet and US–Russian arms control engagement to argue that the arms control process has changed the course of nuclear competition between the two States, stabilized the nuclear balance, and reduced the risk of

¹ The US–Soviet agreements considered here are the Interim Agreement on the Limitation of Strategic Offensive Arms (SALT) and the Treaty on the Limitation of Anti-Ballistic Missile Systems (the ABM Treaty), which were the result of the first strategic arms limitation talks (SALT) concluded in 1972; the second Strategic Arms Limitation Treaty (SALT II), which was signed in 1979, but never came into force; the Intermediate-range Nuclear Forces (INF) Treaty signed in 1987; and the first Strategic Arms Reduction Treaty (START), signed in 1991. US–Russian agreements are START II, which was signed in 1993, but never came into force; the Strategic Offensive Reductions Treaty (SORT), signed in 2002; and New START, signed in 2009.

nuclear war. It is easy to see this effect when comparing the arms build-ups of the 1970s and 1980s with the deep reductions achieved since the Intermediate-Range Nuclear Forces Treaty (INF) and Strategic Arms Reduction Treaty (START) entered into force in the late 1980s and early 1990s. But analysts sometimes debate whether the arms control process was the *source* or the *result* of the political changes that are evident in the history of US–Soviet and US–Russian nuclear competition. Some of the treaties did little to reduce nuclear forces and often simply ratified force structure choices the parties would probably have made in the absence of arms control agreements.² In this environment, where the limits in the treaties had little effect on existing and planned nuclear capabilities, violations—specifically force deployments that exceeded or evaded the limits—would likely have had little military utility. Evidence of non-compliance would certainly have political repercussions, but the nuclear balance remaining after treaty implementation was possibly stable and robust enough to withstand some ambiguous or non-compliant activities.

The 1987 INF Treaty and 1991 START provide an interesting contrast to this narrative. Both mandated significant changes in the nuclear forces of the United States and Soviet Union. The INF Treaty eliminated thousands of warheads on intermediate-range ballistic and cruise missiles and banned their future deployment; START mandated sharp reductions in the numbers of long-range missiles and bombers. It resulted in close to a 50 per cent reduction in the number of warheads carried by those systems. Most experts agree, however, that changes in the US–Soviet relationship preceded changes in both States’ approach to the arms control negotiations. The treaties were, therefore, the result, not the cause, of the change in the course of the US–Soviet political and military competition. Because a more benign political environment eased efforts to negotiate these treaties, it should not be a surprise that the growing tensions between the United States and the Russian Federation since the 2013–2014 period, when the United States first declared the Russian Federation to be in violation of the INF Treaty, have complicated efforts to identify and agree on technical solutions that might preserve the treaty.

This paper reviews three cases in which the United States and Soviet Union or the Russian Federation have identified potential violations of their arms control agreements.³ These include two cases in which the parties successfully addressed their concerns: the construction of the Krasnoyarsk radar under the Anti-Ballistic Missile (ABM) Treaty in the 1980s, and the development of a new multi-warhead missile under START in the 2000s. It also includes one case in which the parties failed to address their concerns—the Russian

² For example, while the 1972 Anti-Ballistic Missile Treaty limited each side to two sites for ballistic missile defences, both the United States and the Soviet Union had already recognized the limited utility of anti-ballistic missile systems due to their high costs and limited capabilities. The US Senate had nearly voted to eliminate funding for anti-ballistic missile deployments years before the treaty was signed and the Soviet Union restructured and substantially curtailed its anti-ballistic missile programme in the late 1960s.

³ The cases considered here constitute a subset of US–Soviet/Russian compliance disputes. Being illustrative, this subset does not include all the cases and, in particular, those in which the concern was raised by the Soviet Union or Russia. The general conclusions of this analysis, however, would apply to those cases as well.

Federation's deployment of a ground-launched cruise missile in possible violation of the INF Treaty. These cases highlight both the consultative nature of the compliance resolution process and the way in which political will can either assist or override technical efforts to resolve compliance concerns.

2 THE VERIFICATION PROCESS

During the Cold War, arms control played a key role in the relationship between the United States and Soviet Union, when the formal negotiations were often one of the few channels for communication between the two States. Although the agreements rarely forced either side to accept significant changes in its planned nuclear forces, both sides apparently believed that the limits and restrictions mandated by the treaties could provide transparency and predictability that strengthened stability and reduced the risk of nuclear war. The verification regimes built into these treaties contributed to this outcome by providing each State with a measure of confidence in the other's compliance by demonstrating evidence that they were complying with limits and obligations in the treaty.

No treaty has a perfect verification regime; each carries some risk that non-compliant activities may go unnoticed, either entirely or until they become problems for either the viability of the treaty regime or the security of the treaty participants. Consequently, beginning with the Strategic Arms Limitation Talks (SALT) in the 1970s, the United States and Soviet Union sought to develop monitoring and verification provisions that would provide them with the ability to detect evidence of militarily significant violations *in time* to respond to the violations and offset any potential security risk they might create. For example, when testifying in support of the INF Treaty in 1988, Paul Nitze, who had served as an arms control advisor and negotiator in the Reagan Administration, stated:

I am confident that, in the INF agreement we have succeeded in working out measures which give one high confidence, not perfect confidence, but high confidence that it would be impossible for them to deploy a militarily meaningful military component for any period of time without our having the very real prospect that we would be able to get some indication thereof.⁴

This does not mean that either party would ignore evidence or accept the existence of violations that did not create a militarily significant risk. Both the United States and Soviet Union would likely call out and seek explanations in these cases as well. However, the standard of detecting militarily significant violations in a timely manner offered guidance in the development of a treaty's verification regime.

Moreover, treaty language forms the core of the verification regime. By describing the limits and obligations that parties must observe, it establishes the baseline description of compliant forces and activities and helps focus subsequent monitoring activities. As

⁴ US Senate, Committee on Foreign Relations, *The INF Treaty: Hearing before the Committee on Foreign Relations*, 100th Congress, 2nd session, 1 February 2008, pp. 80–81.

Ambassador Nitze noted in his testimony about the verifiability of the INF Treaty, his endorsement was due not only to the monitoring and inspection regime in the treaty, but also to the clarity of the treaty text and the associated restrictions on forces and facilities. The value of a well-crafted treaty became evident early in the US–Soviet arms control experience, when many of the compliance concerns derived from vague or ambiguous treaty language.

Although the United States and the Russian Federation have increasingly relied on cooperative measures, such as data exchanges and on-site inspections, to collect the data needed to monitor compliance, each State conducts its own analysis and evaluation of that data to determine whether the other party is in compliance with the terms of a treaty. This process is not perfect as data may be ambiguous and the picture presented by the analysis may display some unclear and uncertain results. In some cases, the treaty language may not clearly identify the activities that comply with or violate the treaty; in others, the information about the other State’s activities may remain ambiguous even after careful analysis. Consequently, compliance assessments are almost always a matter of judgment, and can sometimes be based on political, rather than technical considerations. Regardless, the parties can identify concerns with the treaty implementation process even if they do not conclude that the other side has violated the treaty.

Each of the US–Soviet and US–Russian arms control treaties has established a formal commission where the two parties can raise and resolve concerns about implementation. For the SALT I accords this was the Standing Consultative Commission (SCC); in INF it was the Special Verification Commission; in START it was the Joint Compliance and Inspection Commission; and in New START it is the Bilateral Consultative Commission. Most of the issues raised in these meetings are relatively technical in nature and can be resolved with explanations of the ambiguous activities or adjustments to the treaty’s implementation procedures. They are also the venue where the parties can raise, and, if possible, resolve more substantial accusations of noncompliance—either to offer the other State an opportunity to explain its activities or to agree on steps that will correct the violation. This dialogue could also take place outside the formal bodies, through normal diplomatic channels or between senior political leaders. In the extreme, if the parties cannot resolve the compliance questions, one or both could withdraw from the treaty.

2.1 THE ABM TREATY AND THE KRASNOYARSK RADAR

The history of the Krasnoyarsk radar provides an example of a compliance dispute that was resolved when the violating party, the Soviet Union, admitted the violation and returned to compliance with the treaty.

The United States and Soviet Union signed the ABM Treaty, as a part of SALT I, on 26 May 1972. The treaty permitted the United States and Soviet Union to deploy missile defence

systems, which would include interceptors as well as battle-management radars and other supporting elements, at two sites, one centered on the nation's capital and one containing ICBM silo launchers (a 1974 Protocol reduced this to one site on each side). The ABM Treaty also obligated each party not to develop, test, or deploy ABM systems for the "defense of the territory of its country" and not to provide a base for such a defence. As a part of this prohibition, the Treaty mandated that large phased-array radars that could detect and identify a missile attack be constructed on the periphery of a party's territory, facing outward. This would preclude their use as battle-management radars for a nation-wide missile defence system because they could not track attacking missiles as they flew over a party's territory or guide interceptors.

In the early 1980s, the United States detected the construction of an early-warning radar near the city of Krasnoyarsk in Siberia. The radar was not located on the periphery of the country facing outward and therefore its construction violated the terms of the treaty. For the Soviet Union, the location of the radar was a matter of convenience, which apparently took precedence over considerations of compliance with the ABM treaty.⁵ The Soviet Union, however, defended its decision to build the radar, by arguing that it was a space-surveillance radar, which would be permitted by the treaty, and by suggesting a definition of 'periphery of the country' that would make the radar in Krasnoyarsk treaty-compliant.⁶

The military significance of the violation was questionable. The radar was clearly built as part of the early-warning network, it was unsuitable for the role of a battle-management radar, and even if it were, could not meaningfully contribute to the defence of the Soviet territory.⁷ Accordingly, the violation would not have required any specific steps that the United States would have to take to deny the Soviet Union the benefits of the violation. At the same time, the violation raised legitimate questions about Soviet compliance with its other arms control obligations, so it is understandable that the United States made a political decision to pursue the matter in full force. The US administration first raised the issue of the Krasnoyarsk radar during a meeting of the SCC in 1983. It also reported its findings about the radar in the 1984 version of the US State Department Compliance Report.

It is also worth noting that the accusation was made public shortly after US President Ronald Reagan's administration unveiled their plan to begin work on the Strategic Defense Initiative (SDI). SDI was a missile defence programme intended to provide defence of US territory and which was therefore not compatible with the ABM Treaty. The SDI programme was rather controversial, and the Soviet Union strongly opposed it. In this situation, the accusation of

⁵ Savel'yev, Alexander G., and Nikolay N. Detinov. 1995. *The Big Five: Arms Control Decision-Making in the Soviet Union*. pp. 95–110.

⁶ Podvig, Pavel. 2002. "Interview with Victor S. Koltunov, Russia's representative at the Standing Consultative Commission". Moscow, 28 November.

⁷ Gordon, Michael. R. 1985. "CIA Is Skeptical That New Soviet Radar Is Part of an ABM Defense System". *National Journal*. 1985. <https://www.cia.gov/library/readingroom/document/cia-rdp90-00965r000302430036-4>.

non-compliance provided the US administration with an argument that helped it to counter the opposition to the SDI programme. It was also part of a larger US effort to exert political pressure on the Soviet Union by questioning its compliance with various arms control obligations.⁸

The United States continued to raise its concerns about the Krasnoyarsk radar throughout the 1980s, notably in SCC meetings, during the 1988 ABM Treaty review conference, and during high-level diplomatic meetings. The Soviet Union denied that the radar violated the ABM Treaty, claiming that it was a space-surveillance radar not limited by the provisions in the treaty. The Soviet Union also raised the issue of US compliance, arguing that the construction of new early-warning radars located in Thule, Greenland, and Fylingdales-Moor in the United Kingdom violated the terms of the treaty.⁹ While this concern appeared to have some technical merit, the Soviet Union never succeeded in using it to counter US accusations or to achieve a resolution that would cancel out the competing claims.

The Soviet Union also attempted to demonstrate that the Krasnoyarsk radar was built to track objects in space rather than to provide early warning of a missile attack. In 1987, three members of the US Congress travelled to Krasnoyarsk and visited the radar site. The results of the visit, however, were inconclusive as the members of the delegation pointed out that the location and orientation of the radar were indeed in conflict with the ABM Treaty requirements even though they largely agreed that it would not be suitable for the role of a missile defence battle-management radar.¹⁰ The delegation also questioned the utility of the radar as a space surveillance tool, undermining the key Soviet argument. This point was also discussed in the formal SCC setting, where the Soviet representatives had to concede that the radar would be poorly suited for tracking space objects.¹¹

The United States continued to insist that the radar had to be fully dismantled, arguing that a freeze in construction or reorientation of the radar for non-defensive purposes, as the Soviet Union suggested at some point, would not be sufficient. The issue was also part of a broader political context as the United States and the Soviet Union continued to pursue negotiations on the INF Treaty and START. US officials reportedly informed their Soviet counterparts that the United States would find it difficult to conclude START and win the consent of the Senate to its ratification if the Krasnoyarsk issue remained unresolved. Since

⁸ Duffy, Gloria. 1986. "Administration Redefines Soviet 'Violations'". *Bulletin of the Atomic Scientists* 42 (2): 13–17. <https://doi.org/10.1080/00963402.1986.11459321>.

⁹ Thomas K. Longstreth and John E. Pike. 1985. "U.S., Soviet Programs Threaten ABM Treaty", *Bulletin of the Atomic Scientists* 41 (4): 11–15; Gel, Leslie H. 1985. "Moscow Proposes to End a Dispute on Siberia Radar". *The New York Times*, 20 October.

¹⁰ Broad, William J. 1987. "The Secrets of Krasnoyarsk; Soviet Eye on the Sky: Questions of Trust". *The New York Times*, 20 September 1987.

¹¹ Podvig, Pavel. 2002. "Interview with Victor S. Koltunov, Russia's representative at the Standing Consultative Commission". Moscow, 28 November.

the success of nuclear disarmament was an important part of the Soviet leadership's political agenda at the time, the Soviet Union eventually conceded the violation. In September 1989, President Gorbachev agreed, in a letter to President Bush, to dismantle the radar.

The Krasnoyarsk issue demonstrates the role of the formal dispute resolution mechanisms as well as that of the broader political considerations in resolving compliance issues. While the United States and Soviet Union did not resolve the issue through the compliance resolution process established by the ABM Treaty, they did use that process to initiate and pursue discussions. It was important that both parties had a common understanding of the substance of the compliance concerns, even if they had different positions on whether these constituted a treaty violation. It also helped that the nature of the violation made it possible for the United States to present its case clearly and convincingly. The visit by the US Congressional representatives provided a valuable opportunity to move the discussion forward by providing a public technical review and assessment of the radar's location and potential capabilities. Ultimately, the evidence of the violation presented publicly as well as in the context of SCC discussions was strong enough to convince the Soviet Union to admit the violation and take corrective actions.

The political context of the compliance dispute also played an important role in its resolution. The issue became a prominent factor in the US–Soviet relations partly because it was part of a broader political effort to challenge the Soviet Union's record of compliance with its international obligations. Later, it became clear that a successful resolution of the issue was vital for preserving the existing arms control agreements, specifically the ABM Treaty, and for advancing the nuclear arms control agenda. The conclusion of the INF Treaty in 1987 and the progress toward the conclusion of START that was achieved by 1989 provided the Soviet Union with a strong incentive to address the issue. The United States also helped protect the nascent nuclear disarmament process as it did not respond to the radar's construction by withdrawing from the ABM Treaty. Moreover, while it can be argued that US demands regarding return to compliance may have been excessively harsh, the firm position of the US administration on the issue probably helped protect the ABM Treaty and secure ratification of the INF Treaty and START. In the end, the two States were able to resolve the problem because both wanted to preserve and advance the broader arms control relationship.

2.2 THE START TREATY AND THE RED BOX

The consultation mechanisms established in US–Soviet and US–Russian arms control treaties have allowed the parties to resolve numerous technical issues that inevitably arise during their implementation. They have also used these mechanisms to develop technical solutions that address more serious disputes—a process that works best when both parties want to avoid a political dispute and are willing to work together towards a resolution. One example of this cooperation is the history of the introduction of a new multiple-warhead

intercontinental ballistic missile, RS-24 Yars, to the Russian Federation's strategic force in the 2000s.

START, which was in force between 1994 and 2009, established a number of restrictions on the modernization of existing strategic systems. In particular, it prohibited an increase in the number of warheads attributed to or carried by existing types of ICBMs. It also specified that any missile of a new type should be substantially different from the existing types, so parties could not circumvent the ban on the increase in the number of warheads by simply declaring that the missile with more warheads was a new type of missile. However, this is in effect what the Russian Federation did when it introduced the RS-24 missile. This step did not become a treaty compliance issue since the United States and the Russian Federation worked together to develop a procedure that took advantage of the flexibility in the treaty provisions.

In the early 2000s, the Russian Federation had two types of single-warhead intercontinental ballistic missile (ICBM)—an older missile known as the SS-25 or Topol and a new one, the SS-27 or Topol-M. The latter was the only missile that the Russian Federation was producing while START was in force, and it was replacing older multiple-warhead ICBMs that had to be withdrawn from service as they aged. As a result, the Russian Federation faced the prospect of a dramatic decline in the number of its deliverable ICBM warheads. For a variety of reasons, the Russian Federation was determined to maintain the numerical strength of the ICBM component of its strategic triad; the only practical option available at the time was to equip the Topol-M with multiple warheads. In 2007, the Russian Federation conducted the first flight test of a Topol-M with multiple warheads, which it declared as a new type of missile, the RS-24.

Normally, development of the RS-24 missile would be considered a violation of START's terms. It could also be argued that the violation would be militarily significant, as it allowed the Russian Federation to deploy hundreds of strategic nuclear warheads that it would not have been able to deploy otherwise. However, the United States apparently made a political decision not to pursue this matter, so the issue was never raised to the level of a compliance concern.

The consultation mechanism established by the treaty, the Joint Compliance and Inspection Commission, developed an approach that ensured that the development of the RS-24 missile complied with the letter of the treaty, even though by all indications the parties were fully aware that the missile could be considered a treaty violation. Normally, a new type of missile would be required to have "functionally-related observable differences" that would allow inspectors to distinguish it from the old type. Since the RS-24 missile was essentially identical to Topol-M and no differences of this kind existed, the parties agreed that the RS-24 launcher "will be distinctively marked with paint or in a similar manner" and the RS-24

missile container would be distinguished from that of Topol-M by the presence of a red-painted box attached to the front section of the container.¹²

This example demonstrated that while the formal treaty compliance requirements can be fairly strict, they could be flexible enough so that the parties can resolve a dispute provided they are willing to make a political decision to do so.

2.3 THE INF TREATY AND THE 9M729 CRUISE MISSILE

Unlike the Krasnoyarsk radar issue, which was resolved by the Soviet Union returning to compliance, or the RS-24 episode that was settled on the technical level, the non-compliance allegations regarding the Russian Federation's development of the 9M729 cruise missile led to the dismantlement of one of the landmark arms control agreements, the INF Treaty.

The United States and the Soviet Union signed the INF Treaty on 8 December 1987. It entered into force on 1 June 1988. Under the INF Treaty, the United States and Soviet Union agreed that they would ban all land-based ballistic and cruise missiles with ranges between 500 and 5,500 kilometres. The ban applied to missiles with nuclear or conventional warheads but did not affect sea-based or air-delivered missiles. The launchers associated with the controlled missiles were also destroyed, and the treaty stated that neither party could produce or flight-test any new ground-launched intermediate-range weapons in the future.

The United States and the Soviet Union completed the elimination of all missiles and launchers covered by the treaty in 1991. The INF Treaty was the first US–Soviet treaty to employ intrusive monitoring mechanisms in its verification regime as it permitted on-site inspections of selected missile assembly facilities and all storage centres, deployment zones, and repair, test, and elimination facilities. The two sides also agreed to participate in an extensive data exchange and operate a continuous monitoring system outside one assembly facility in the other country, to confirm the absence of new INF missile production. These inspections continued for 10 years after the eliminations were complete, ending in May 2001. After that, the parties could only rely on national technical means to verify compliance with the treaty provisions.

In 2014, the United States openly accused the Russian Federation of being “in violation of its obligations under the INF Treaty not to possess, produce, or flight-test a ground-launched cruise missile (GLCM) with a range capability of 500 km to 5,500 km, or to possess

¹² The technical term that was used is “a removable technological section on the forward end of the launch canister, which is painted red”. See US Department of State. 2007. “*JCIC Coordinated Plenary Statement on Conversion Procedures and the Manner of Accountability for the One Road-Mobile Test Launcher of the RS-24 ICBM Prototype*”. Unclassified Annex to US Closing Plenary Statement. 5 December 2007. <https://2001-2009.state.gov/s/l/2007/112730.htm>.

or produce launchers of such missiles".¹³ According to the US State Department, the United States first raised its concerns about INF compliance in diplomatic meetings with the Russian Federation in 2013, before the release of the Compliance Report that made the accusation public. In addition, President Obama sent a letter to President Putin in 2014 notifying him of the US finding; the letter suggested that the two States meet to discuss the issue. However, the first formal meeting of the Special Verification Commission to have an opportunity to exchange information and technical details about the weapons systems that had raised concerns would not be held until late 2016.¹⁴

The Russian Federation consistently denied the US accusation, stating that it had never tested a ground-launched cruise missile to a range prohibited by the INF Treaty. It also pointed out that the United States had provided no evidence to support its claim. The United States insisted that it had provided "more than enough information for the Russian side to identify the missile in question".¹⁵ While it is virtually certain that the Russian Federation was indeed able to identify the missile, the United States had not formally provided the Russian Federation with details such as the designation of the missile in question or the nature of the alleged violation. It was only in the late 2017 that the Trump administration identified the Russian system concerned as the Novator 9M729 ground launched cruise missile. The nature of the violation was publicly described a year later, in November 2018.¹⁶

In response to the US accusations, the Russian Federation insisted that all its programmes were fully compliant with the INF Treaty and said that it also had concerns about US compliance with treaty terms. The Russian Federation's concerns included the use of intermediate-range missiles as targets during tests of US missile defence systems, the use of drones (uncrewed aerial vehicles) as weapons delivery vehicles, and the deployment of missile defence interceptors on land in the Navy's MK-41 missile launchers.¹⁷ In this last case, the Russian Federation contended that, because the US Navy deploys Tomahawk cruise missiles in MK-41 launchers on naval vessels, it could convert them to carry cruise missiles

¹³ Bureau of Arms Control Verification and Compliance. 2014. "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments". US Department of State. <https://2009-2017.state.gov/t/avc/rls/rpt/2014/230047.htm>.

¹⁴ Bureau of Arms Control Verification and Compliance. 2019. "Timeline of Highlighted U.S. Diplomacy Regarding the INF Treaty Since 2013". US Department of State. <https://www.state.gov/timeline-of-highlighted-u-s-diplomacy-regarding-the-inf-treaty-since-%202013/>.

¹⁵ Bureau of Arms Control Verification and Compliance. 2017. "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments". US Department of State. <https://www.state.gov/documents/organization/270603.pdf> pp. 13-14.

¹⁶ Coats, Daniel. 2018. "Director of National Intelligence Daniel Coats on Russia's INF Treaty Violation". Office of the Director of National Intelligence. <https://www.dni.gov/index.php/newsroom/speeches-interviews/speeches-interviews-2018/item/1923-director-of-national-intelligence-daniel-coats-on-russia-s-inf-treaty-violation>.

¹⁷ These concerns predate the dispute about the 9M729 missile and the Russian Federation raised some of them (missile defence tests and uncrewed aerial vehicles) as early as 2000–2001. See, for example, Khromov, Gennady. 2000. "The Use of 'Hera' Missile Violates the INF Treaty". Center for Arms Control, Energy and Environmental Studies. <https://www.armscontrol.ru/start/exclusive/gkk1120.htm>.

on land as well. The United States insisted that none of these programmes violated the terms of the INF treaty.

As the Russian Federation continued to deny that it violated the INF Treaty and the United States failed to assuage the Russian Federation's concerns about the MK-41 launcher, the United States announced in December 2018 that it had found the Russian Federation to be in material breach of the treaty. The US submitted a formal six-month notice of withdrawal on February 2, 2019. Accordingly, the treaty terminated on August 2, 2019.

Throughout the dispute, the United States and the Russian Federation insisted that they remained committed to the INF Treaty and yet they failed to preserve it. This failure can be attributed to a number of factors, some of which are political in nature, while others are related to the nature of the violation and the lack of verification procedures that would help resolve the dispute.

At the core of the US accusation was the claim that the 9M729 ground-launched cruise missile that the Russian Federation developed and subsequently deployed has a range capability that exceeds 500 km. While the United States agreed that 9M729 has never been tested to the INF range from the mobile launcher that it is deployed with, it assessed that the missile was tested to that range from a fixed launcher in a series of tests conducted at early stages of the development programme. The Russian Federation apparently insisted that the missile that was tested to INF range from a fixed launcher was not the 9M729. The treaty does not prohibit such tests for sea-launched or air-launched cruise missiles, but it does prohibit subsequent tests or deployment of these missiles on road-mobile launchers. By all indications the United States had convincing evidence that the missiles tested from fixed and mobile launchers are identical, which would indeed make the deployment of 9M729 a violation of the INF treaty. That evidence, however, had never been released, either to the Russian Federation or to the public.¹⁸

Although the United States claimed that it had provided the Russian Federation with enough information to understand its concerns, the piecemeal and opaque process it followed when raising this issue complicated its resolution. The United States and the Russian Federation never had an agreed understanding of the underlying facts, unlike in the case of the Krasnoyarsk radar described earlier. The fact that the issue was first raised and for a long time discussed outside of the formal consultation channel established by the treaty, the Special Verification Commission, also hindered constructive discussion of the US allegation.

In addition, even if the parties had been ready to engage in a detailed discussion, the terms of the treaty would have made this discussion difficult. The INF Treaty was built to address

¹⁸ The United States shared the evidence with some of its NATO allies, which supported the US conclusion.

a very specific problem of eliminating ground-based intermediate-range missiles that were deployed in the 1980s. The verification procedures included in the treaty adequately supported the elimination of the systems that existed at the time but were not designed to verify the characteristics of potential new systems. For example, the definition of the range capability of a cruise missile was rather vague. In any event, the cooperative verification provisions of the treaty expired in 2001. Also, since the INF Treaty did not ban development and tests of sea-launched or air-launched cruise missiles, it created the conditions for exactly the kind of compliance concerns that led to the US accusation about the 9M729 missile.

In the absence of technical details that could be discussed at the Special Verification Commission, the issue was elevated to the political level. Although the Obama administration indicated that its goal was to engage in diplomacy to convince the Russian Federation to return to compliance with the Treaty, that engagement was apparently contingent on the Russian Federation's admitting the violation, even if the violation was inadvertent, and committing to corrective actions. That was a political decision the Russian Federation leadership was not prepared to make, especially in a situation in which it claimed to have no detailed information about the nature of US concerns and accordingly did not know what steps toward a return to compliance that the United States would consider acceptable.

This dispute also ushered in a difficult period in the US–Russian arms control dialogue. While the Obama administration was committed to pursuing an arms control agenda, some in the administration understood that any initiative in this area would not gather sufficient domestic support as long as the INF compliance issue remained unresolved. As for the Russian Federation, the general downturn in the US–Russian relations resulted in its leadership expressing unwillingness to engage in substantive discussions of arms control with the Obama administration. Adding to that, the Russian Federation had expressed reservations about the INF Treaty in the past, so it was not clear if it was truly committed to the treaty's preservation. The new US administration under President Donald Trump was much more skeptical of arms control in general and the INF Treaty in particular. In the end, neither party was in a position to defend the INF Treaty let alone resolve the issue through dialogue.

3 LESSONS LEARNED

There are a number of lessons that can be drawn from the experience of US–Soviet and US–Russian arms control processes. Even if arms control and disarmament agreements do not provide a formal procedure for resolving compliance concerns, let alone for enforcing compliance, they can still create a framework for effective settlement of compliance disputes and ensure adherence to treaty obligations. Some of the conditions that make it possible are outlined below.

Given the lack of enforcement mechanism, US–Russian treaties are normally designed to be robust so that they can withstand a significant violation and still provide the parties with enough lead time to mount an adequate response. It is also important that the capability to respond to potential violations serves as an essential element of the stability of an agreement. The verification system incorporated in the treaty, as well as the ability to monitor the situation with national technical means, are also essential for the successful implementation of a treaty, as they provide the parties with confidence that any significant violation of the agreement will be detected in time. Cooperative verification mechanisms are especially important since they can help create trust between the parties and therefore increase confidence in the commitment to successful implementation of the treaty.

The existence of a working body that is entrusted with discussing technical issues related to the implementation of a treaty and which provides a forum for consultations also emerged as an essential element of a successful compliance resolution mechanism. It is important, however, that this forum is focused on establishing agreed understanding of the facts, exchanging information, and developing technical options for resolving the issues that came before it. This is evident in the record of success of the START Joint Compliance and Implementation Commission, where the United States and the Russian Federation worked through compliance differences and reached agreed resolutions on numerous issues over the years.

A technical discussion forum works most effectively when a treaty includes detailed provisions that could serve as a basis for a discussion. Ambiguity in terms and definitions could provide an opening for a compliance dispute and complicate the resolution of the issue. At the same time, excessively rigid conditions could make a compromise more difficult to achieve. Another consideration that should be taken into account is the adaptability of a treaty to change, whether political or technological.

Ultimately, the experience shows that the strategy of dealing with compliance issues is largely a matter of a political choice. The primary factor is the commitment of parties to arms

control as a way of addressing their national security problems. At the same time, the conditions outlined above could expand the range of political options available to States and help to support and strengthen that commitment.

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