

Nuclear Weapons in Europe after the INF Treaty

By Pavel Podvig

The Intermediate-range Nuclear Forces (INF) treaty was rightly regarded as one of the most important nuclear disarmament agreements. By eliminating all ground-based intermediate- and shorter-range missiles, the treaty resolved a tense nuclear standoff in Europe and helped end the Cold War by changing the security environment on the continent. The INF treaty was probably as much a product of this change as its catalyst, but it was still a remarkable arms control achievement.

Unfortunately, thirty years later the security environment in Europe has changed again as the relationships between Russia and the United States and its NATO allies took a turn to the worse. Even though the INF treaty brought a real material change on the ground by removing an entire class of missiles, that change on its own did not provide a sufficiently strong safeguard against a serious downturn in relationships. In 2014, the United States accused Russia of violating the treaty by developing and then deploying a new ground-launched cruise missile. After attempts to resolve the dispute diplomatically failed, the United States pulled out of the agreement in February 2019 and the accord subsequently expired in August 2019.

Now that the INF treaty no longer exists, the question is how to prevent further deterioration of the security climate and reduce the risk of a new nuclear arms race in Europe. There are a number of ways to approach this problem, but it is clear that finding a solution will be a challenging task, given the low level of trust between Russia and the United States, the erosion of the traditional arms control

architecture and the emergence of new technologies and threats.¹

Missiles in Europe and the INF treaty

One challenge on the way to repairing the damage caused by the end of the INF treaty is that the treaty succeeded because it was supported by a number of other arms control and disarmament measures. The treaty itself banned only ground-launched ballistic and cruise missiles with a range between 500 and 5,500 km, leaving other systems, in particular long-range sea-launched and air-launched cruise missiles (SLCMs and ALCMs respectively), outside of its scope. This was not, however, a significant problem since ALCMs were included in the scope of the START treaty that limited strategic arsenals. As for sea-launched missiles, the United States removed all nuclear weapons from its surface fleet as part of the Presidential Nuclear Initiatives in 1991. Shortly after that, in 1994, nuclear cruise missiles were removed from attack submarines as well.² Russia had a very small number of nuclear SLCMs and by all indications kept them off its ships.³

Although nuclear weapons remained in Europe – in several NATO states as well as in Russia – their role was largely political. The United States reduced its arsenal in Europe to about 150 gravity bombs. Russia's non-strategic arsenal was estimated to be considerably larger – about 2000 nuclear warheads – but Russia insisted that all its weapons have been “concentrated at centralized storage bases.”⁴ While a significant presence, none of

these weapons posed a threat that would be comparable to that of hundreds of nuclear intermediate-range missiles deployed in Europe.

In different circumstances, the United States and Russia would have built on the progress in arms control achieved in the early 1990s to reach an agreement on non-strategic weapons and to strengthen cooperative security arrangements in Europe. Instead, most of the 1990s and the 2000s was consumed by arguments about missile defense, NATO expansion and various military interventions abroad. As a result, when Russia began to emerge from the economic downturn of the 1990s and started its military modernization program, there were not many constraints on that program or incentives to hold back.

As part of its modernization program, Russia developed and deployed a number of weapon systems that can be used to project power in regional conflicts. Among these systems were long-range cruise missiles – sea-launched Kalibr, which can be deployed on submarines as well as surface ships, and air-launched Kh-101 deployed with strategic bombers. Even though these missiles have a range of up to 2,500 km, their development and deployment was not limited by the INF treaty as they were not land-based. The emphasis of the development programs was on conventional precision-strike capability of the new weapons, which was demonstrated in 2015 during Russia's military operation in Syria. Both missiles, however, are believed to be nuclear-capable (the nuclear version of the Kh-101 ALCM is normally referred to as Kh-102).

On land, the modernization program focused on the development and deployment of the Iskander-M system that includes ballistic and cruise missiles. Since the range of these missiles is less than 500 km, their deployment was also not

limited by the INF treaty. In 2014, however, the United States publicly accused Russia of developing a long-range land-based cruise missile in violation of its INF treaty obligations. According to the United States, the 9M729 missile, which was in development since the mid-2000s, was tested to a range of more than 500 km; Russia was said to subsequently deploy “multiple battalions” of the missile.⁵ The U.S. intelligence community estimates that the 9M729 missile has a range of up to 2,350 km.⁶ Russia responded to the accusation by insisting that all its missile programs are fully treaty compliant and that 9M729 has never been tested to a prohibited range.⁷ The dispute about the missile was never resolved and the United States withdrew from the INF treaty, arguing that Russia's violation made the treaty unsustainable.

A moratorium instead of the treaty?

Following the U.S. withdrawal from the treaty, Russia committed to match any U.S. effort to develop intermediate-range and shorter-range missiles but pledged that it “will not deploy them in any given region until U.S.-made intermediate-range and shorter-range missiles are deployed there”.⁸ In September 2019, Russia proposed establishing a moratorium on deployment of INF-range missiles in a letter sent to NATO members and a number of other states (including China).⁹ The United States and NATO, however, did not accept the offer since in their view Russia had already deployed a system of this kind and that the moratorium would not be viable unless all 9M729 missiles are eliminated.¹⁰

It would be a mistake, however, to reject the concept of a moratorium out of hand. Although it will take effort to make the moratorium work, it is by no means impossible. There are a number of ways the issue of 9M729 deployment can be addressed, but even if that proves

impossible, the framework of the moratorium can be adapted to preserve the most important elements of the regime established by the INF treaty.

Regarding the 9M729 deployment, the new arrangement should focus on the central idea of Russia's moratorium proposal – non-deployment of intermediate-range and shorter-range missiles – and take advantage of its offer to develop new verification measures.

If Russia insists that 9M729 does not have the INF range, it will have to provide a credible proof that this is indeed the case. This will require developing new verification procedures, but there is no fundamental reason this cannot be done. Russia already publicly demonstrated the missile and said that it was ready to provide the United States with more information about its technical characteristics in a closed setting.¹¹ The United States also developed and communicated to Russia a set of verification procedures that would establish whether the missile violated the INF treaty, which apparently included close access to the missile. Russia rejected these procedures as excessively intrusive.¹² Even though the United States and Russia failed to reach an agreement at the time, both parties had their opening negotiating positions, suggesting that it should be possible to develop an adequate verification protocol.

Of course, this kind of verification arrangement could only work if the 9M729 missile does not have the INF range. If it does, Russia would have to remove the missile and its launchers from active service as part of the non-deployment commitment it suggested. The INF treaty included procedures for verified elimination of missiles, so had the treaty remained in force,

these procedures could have been adapted to support the elimination of 9M729. Without the treaty, the removal could still be verified even if only by the national technical means. That way, the question of whether the 9M729 missile was compliant with the INF treaty may never be formally resolved, but since the treaty no longer exists, it is probably more important to focus on maintaining the ban on deployment rather than on settling old scores.

When Russia suggested that the moratorium should include verification measures, it was clearly referring to its concerns about the launchers of the Aegis Ashore missile defense systems already deployed in Romania and soon to become operational in Poland. Russia claims that these systems are violations of the INF treaty because they could be used to launch Tomahawk cruise missiles. There is no reason why these launchers cannot be included in the verification regime, especially since the United States repeatedly stated that these launchers are not capable of launching cruise missiles. If this is indeed the case, the United States should be able to demonstrate functionally related observable differences between the missile defense launchers and those that are capable of launching cruise missiles. The practice of implementing U.S.-Russian arms control treaties suggests that identifying these differences is possible if the parties show the political will to reach an agreement.¹³

It may well be that U.S. and Russian positions regarding the past and present capabilities of their cruise missiles and launchers are too far apart to bridge. This should not prevent them from trying to save other elements of the INF treaty, specifically the ban on deployment of intermediate-range ballistic missiles.¹⁴

A moratorium on ballistic missiles might not require a formal agreement as long as the United States and Russia refrain from deploying missiles of that kind. An arrangement based on mutual restraint could be rather fragile, however, especially given the fact that both states have active missile development programs. Russia has already developed (but not deployed) what is essentially an intermediate-range ballistic missile, RS-26.¹⁵ The United States does not have a similar program at the moment but is planning to develop a new ballistic missile with a range of 3,000-4,000 km in the near future and is considering deploying these missiles in Asia.¹⁶ Nevertheless, given that the cost of ballistic missile deployment would probably far outweigh any potential benefits, there is a good chance that the moratorium could be maintained.

Getting beyond land-based missiles

Although the efforts to preserve the key elements of the INF treaty are extremely important, it should be recognized that returning to the limit on deployment of land-based intermediate-range missiles would deal with only one aspect of the greater problem of the growing presence of intermediate-range missiles in Europe. Land-based missiles may stand out as particularly destabilizing, but they are not the only, and as yet not the most important, source of risk.

Deployment of the 9M729 missile is a case in point. Even assuming that the missile has the range of more than 2,000 km, its addition to the non-strategic force does not necessarily amount to a qualitatively new military capability. The deployment of “multiple battalions” of 9M729 corresponds to about 16-20 launchers that are estimated to have a total of

about 100 missiles.¹⁷ Since these missiles are deployed with the existing Iskander-M brigades, there are constraints on the number of launchers that can be deployed. This should be compared with the plan to deploy a substantially larger number of long-range cruise missiles at sea. Variants of the Kalibr SLCM have already been deployed on a range of surface ships and submarines. One estimate suggested that Russia had more than 100 missiles of this type in service in 2017 and that this number will exceed 1000 SLCMs in the next few years. These missiles are being deployed on new multi-purpose nuclear submarines, new diesel-electric submarines and a variety of surface ships.¹⁸

Other INF treaty compliant delivery systems would also add a significant capability to the Russian missile force. The range of options available to Russia was outlined in the presidential statement on the U.S. withdrawal from the INF treaty. Among these systems are “the X-101 [sic] and the Kinzhal air-launched missiles, the Kalibr sea-launched missile, as well as future weapons systems, including Tsirkon-class hypersonic systems”.¹⁹ This suggests that the role of ground-launched cruise missiles, such as 9M729, while not negligible, is probably marginal.

The United States and NATO also have a large arsenal of long-range cruise missiles that has never been constrained by the INF treaty. It includes SLCMs deployed on submarines and surface ships as well as air-launched cruise missiles, including those delivered by non-strategic aircraft.

The crucial difference between these arsenals is that almost all Russian systems are nuclear-capable. Even though Russia has focused its

Nuclear Weapons in Europe after the INF Treaty

modernization efforts on acquiring the capability to launch high-precision conventional strikes and even introduced a concept of “non-nuclear deterrence” to its military doctrine, it clearly maintains the option of deploying at least some of its non-strategic missiles with nuclear warheads.

The United States does not have a similar capability at the moment. It is, however, a self-imposed constraint – the 2018 Nuclear Posture Review already called for the development of “a modern nuclear-armed” SLCM, explicitly framed as a way to compel Russia to reverse the deployment of new ground-launched cruise missiles.²⁰ The recent deployment of low-yield nuclear warheads on some U.S. Trident D5 sea-launched ballistic missiles should also be considered in the European context. Even though Trident SLBM is a strategic delivery system, the low-yield warhead is supposed to provide the United States with flexibility in managing a potential conflict between NATO and Russia, effectively making it “a European weapon”.

These developments suggest that avoiding a potential nuclear standoff in Europe is no longer a matter of limiting the deployment of ground-based intermediate-range missiles. With or without the INF treaty, Europe is drifting in the direction of having significant presence of nuclear weapons on and around the continent. If the current trend is left unchecked, Europe is likely to find itself in a situation where most of its territory will be within reach of multiple nuclear weapon systems. This is exactly the scenario that the INF treaty was designed to prevent.

Addressing the threat

There are several ways to address the prospect of increased nuclear danger in Europe. The traditional arms control approach would call for a limit on the number of non-strategic nuclear warheads. One proposal that is often mentioned in this regard is the idea of a treaty that would limit the aggregate number of all nuclear-capable launchers, whether strategic or non-strategic. This approach, however, has been explored in the past, without much success, partly because of the differences in positions of Russia and NATO. Russia insists that substantive discussions of non-strategic weapons can begin only after all weapons are returned to national territories, while the United States emphasizes the disparity in numbers. A significant obstacle to such an agreement is the difficulty of designing a verification arrangement that could be applied to non-strategic nuclear weapons and their delivery systems.

But even if an agreement limiting the number of non-strategic weapons were possible, it is unlikely to reduce the risks associated with the presence of nuclear weapons in Europe. The role of non-strategic weapons today is radically different from that in the past. They remain an instrument of deterrence, of course, but the primary deterrence mechanism is not an overwhelming firepower but rather the threat of nuclear escalation that is constantly present as long as these weapons are deployed. In fact, this is largely the logic behind the U.S./NATO nuclear posture in Europe. The recent U.S. decision to deploy low-yield warheads on Trident submarines follows this logic as well. The purpose of that deployment was not

to compensate for the numerical disparity between Russia and NATO but rather to provide the United States with an option of managing a potential nuclear escalation.

While Russia maintains a relatively large arsenal of non-strategic nuclear weapons, it also appears to rely primarily on the threat of nuclear escalation rather than numbers for deterrence. The prospects of nuclear weapons becoming part of a conflict, even if they remain on the background, could be an effective tool of keeping the United States and NATO from getting involved in those conflicts where their vital interests are not at stake. Ambiguity regarding nuclear capability of various weapon systems and the deployment status of nuclear weapons also plays an important role as it introduces additional uncertainty into the probability of escalation.²¹

However, the reliance on non-strategic nuclear weapons for escalation control creates an uncomfortably large space for miscalculation, misunderstanding, or an accident. Intentions can be easily misjudged, assessments of stakes in a conflict can be wrong, signals can be misread or misinterpreted. The addition of new weapons that can strike most of Europe will certainly make this situation worse by increasing the level of tensions and creating additional risks. The end of the INF treaty accelerated this trend, but it by no means initiated it.

Non-deployment of non-strategic weapons

It may well be that these dangers cannot be fully addressed as long as states continue to rely on nuclear deterrence. It should be possible, however, to substantially reduce the risks related to the inherent ambiguity of most

non-strategic weapon delivery systems by ensuring that non-strategic nuclear weapons, no matter what the range or the platform, are not deployed on a permanent basis.²²

This kind of arrangement would take advantage of the fact that most of its elements are already in place today. Russia has repeatedly stated that all its non-strategic nuclear weapons are concentrated in central storage facilities. U.S. nuclear weapons in Europe are currently deployed closer to their delivery aircraft, but they could be consolidated in a similar way. The major advantage of this arrangement is that it can be verified with the already existing tools and procedures.

There are a number of ways to verify non-deployment of nuclear weapons.²³ For delivery systems that are deployed in launchers, such as missiles launched from a ground-based launcher or sea-launched cruise or ballistic missiles, the verification approach could be based on the procedure developed in the New START treaty. That procedure allows inspectors to verify the accuracy of a declared number of deployed nuclear warheads by counting warheads on a randomly selected missile. In the non-deployment agreement, inspectors would only need to confirm that the selected missile does not carry a nuclear warhead. Procedures for confirming the non-nuclear nature of selected objects were developed in the START treaty and were included in New START as well.

The verification procedure would be different for air-delivered weapons, as they are normally not loaded to the delivery aircraft. In this case, an inspection would need to confirm that no nuclear weapons are stored in any of the facilities located at the inspected air base. A similar procedure would be required for those missile systems that

have the capability to reload, such as Iskander-M. In this case, inspectors would have to verify that no nuclear missiles or warheads are stored at the missile base. This type of inspections, however, are relatively straightforward and should not present a significant challenge.²⁴

For this arrangement to work, it is important to ensure that nuclear weapon storage facilities are separated from the bases where delivery systems, such as missiles or aircraft, are deployed. This separation already exists in Russia. The 12th Main Directorate of the Ministry of Defense, which is responsible for handling nuclear weapons, operates a network of storage sites that includes 12 national-level facilities and about 30 base-level facilities that are located near the bases where delivery systems are deployed.²⁵

In the non-deployment arrangement, nuclear weapons would be verifiably removed from all base-level sites that support operations of non-strategic delivery systems and consolidated at the 12 national-level storage facilities.

While the consolidation itself would not prevent nuclear weapons from being returned to a base, it will create a significant barrier to redeployment. Analysis of open information about the deployment procedures suggests that deployment of non-strategic nuclear weapons can include a number of steps. An intermediary step that would bring the forces to a higher degree of readiness – while still being short of actual operational deployment – would involve a transfer of weapons from national-level to base-level facilities. Weapons can also be delivered from a national-level facility directly to the units where they would be mated to the delivery systems, such as missiles or aircraft. Since the units that operate land-based ballistic or cruise missiles do not have nuclear weapon storage facilities at their bases, they would have to receive their weapons at one of the national-level sites.²⁶ As shown in Figure 1, missile bases are located at a considerable distance from these sites. This helps ensure that when verification measures applied at the bases, they can provide a high level of confidence in the absence of deployed nuclear weapons.

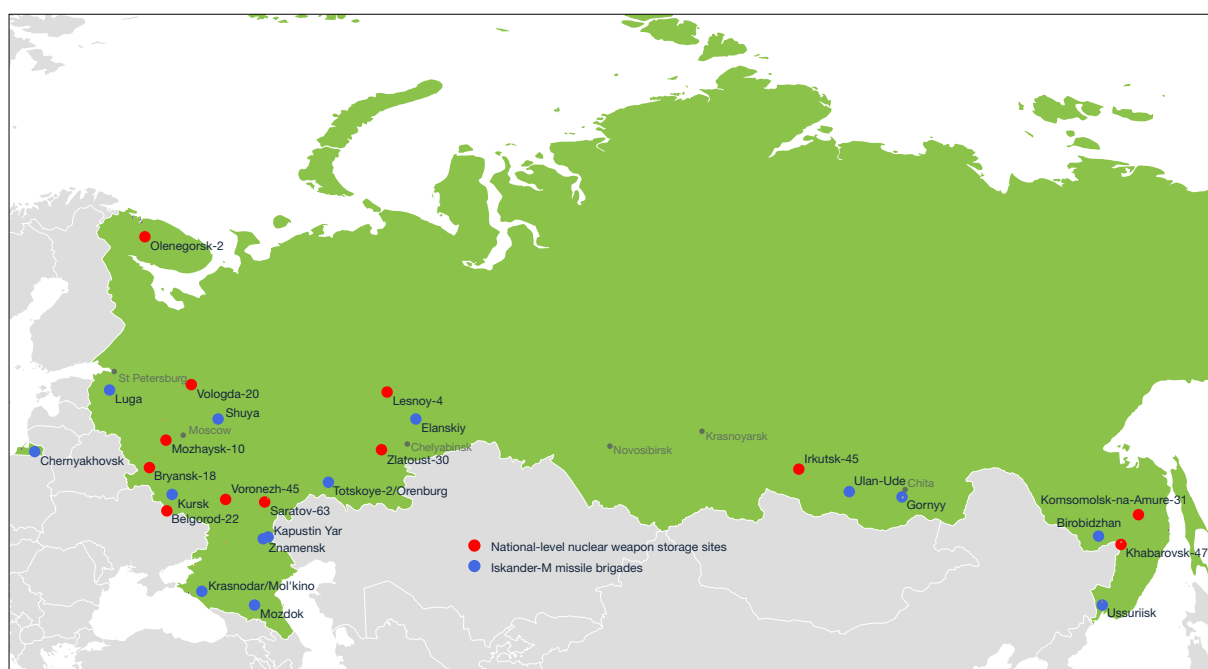


FIGURE 1. Locations of Russia's national-level nuclear weapon storage facilities and Iskander-M missile brigades.

One example is the Iskander-M missile brigade stationed in the Kaliningrad region. The region has a base-level facility, Kolosovka, that would store nuclear weapons assigned to all delivery systems deployed there. However, once weapons are removed to the national-level facility, Vologda-20, which is located more than 1,000 km away, relatively simple verification measures can reliably confirm that none of the missiles in Kaliningrad are nuclear-armed.

Nuclear weapons storage arrangements implemented at NATO bases in Europe that support operations of NATO dual-capable aircraft are different. In most cases, nuclear bombs assigned to NATO bombers are stored in vaults in aircraft shelters, ready for immediate deployment. Implementation of the non-deployment arrangement in this case would probably require consolidating the weapons in dedicated storage facilities. While this measure could present certain challenges, practical as well as political, none of them seems unsurmountable.

Conclusions

Containing the damage caused by the demise of the INF treaty will be a difficult task. Some elements of the treaty, such as non-deployment of intermediate-range ballistic missiles, could still be preserved, whether by a mutual agreement or by voluntary restraint. Reinstating the ban on ground-based cruise missiles would present a more serious challenge as it requires developing a new set of verification measures. While not impossible, this adds a level of complexity to any potential solution.

The INF crisis presents an opportunity to re-evaluate the nature of risks associated with the presence of nuclear weapons in Europe and offers a chance to address these risks by going beyond the scope of the INF treaty. Instead of

limiting just one category of weapons or the number of warheads, a new arrangement should aim at the withdrawal of non-strategic nuclear weapons from operations.

The non-deployment arrangement could not, of course, eliminate all nuclear risks in Europe, especially since it will not address strategic nuclear weapons. Neither would it make nuclear escalation impossible. It could, however, significantly raise the threshold for involvement of nuclear weapons in a security dispute or a conflict. It would also reduce the risk of miscalculation or inadvertent escalation by addressing the ambiguity that is inherent in many delivery systems that can reach Europe.

It is important to emphasize that the non-deployment arrangement can be fully verifiable and that it can use the verification tools and procedures that are already in place today. For the most part, these procedures have been developed and successfully used during the implementation of the START and New START agreements. The focus on verifying the absence of weapons also means that the verification arrangements will not have to deal with the difficult issues of access to nuclear weapons and protection of information about them. Moreover, the consolidation of nuclear weapons at a small number of storage facilities could be a step toward their verified elimination.²⁷

It is true that today's political environment is not particularly conducive to nuclear disarmament. A progress in this area will probably require a serious change in the U.S.-Russian relationship and active support of other states. To bring it closer, it is important to recognize that, if left unchecked, nuclear risks can reach a dangerous level. Addressing these risks is as important today as it was back at the time the INF treaty was negotiated.

Endnotes

- ¹ For a discussion of potential solutions, see e.g. Greg Thielmann, Oliver Meier, and Andrei Zagorski, “Rising from the Ashes: Securing and Expanding Past Achievements in INF Arms Control,” Deep Cuts Working Paper #13 (Deep Cuts Commission, July 2019), https://deepcuts.org/images/PDF/DeepCuts_WP13.pdf; and Edward Ifft, “Dealing with the INF Crisis,” European Leadership Network, March 13, 2020, <https://www.europeanleadershipnetwork.org/commentary/dealing-with-the-inf-crisis/>.
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- ³ When the START treaty was signed, the United States and the Soviet Union made a commitment to provide annual declarations about their plans to deploy nuclear long-range SLCMs. Both states exchanged these declarations until 2009, while the treaty was in force. The U.S. consistently declared zero deployed SLCMs and Russia apparently declared no plans to deploy nuclear SLCMs as well. Pavel Podvig, “Do Russian Attack Submarines Carry Nuclear Weapons?,” Russian Strategic Nuclear Forces, September 15, 2006, http://russianforces.org/blog/2006/09/do_russian_attack_submarines_c.shtml.
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- ¹¹ “Russian Defence Ministry Briefs Military Attaches with Presentation of 9M729 Missile of Iskander-M Complex,” Ministry of Defence of the Russian Federation, January 23, 2019, http://eng.mil.ru/en/news_page/country/more.htm?id=12213705@egNews.
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- ²⁴ There are additional steps that could increase confidence in the absence of deployed nuclear weapons, such as the dismantlement of infrastructure required to store nuclear weapons or the removal of nuclear capability from the delivery systems. See Podvig, Snyder, and Wan.

- ²⁵ Pavel Podvig and Javier Serrat, “Lock Them Up: Zero-Deployed Non-Strategic Nuclear Weapons in Europe.” Almost half of the base-level facilities support strategic nuclear forces – 11 storage sites service the Strategic Rocket Forces, two are located at the strategic bomber bases, and one supports the missile defense system deployed around Moscow. Naval storage facilities at the Northern and Pacific Fleet probably have the capability to store strategic as well as non-strategic weapons.
- ²⁶ This is the procedure that apparently was used in a recent exercise that involved simulated deployment of nuclear weapons with an Iskander-M missile brigade based in Ulan-Ude. During the exercise, the transporter-loaders of the brigade drove to a storage facility and then delivered the missiles received there to launchers dispersed in pre-designated deployment areas. “В Бурятии военнослужащие ракетного соединения ВВО отработали вопросы доставки специальных боеприпасов в условный район,” Министерство обороны Российской Федерации, January 22, 2020, https://function.mil.ru/news_page/country/more.htm?id=12271891@egNews.
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