Low Numbers and the Role of Verification

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"A prudent ruler cannot keep his word, nor should he, where such fidelity would damage him, and when the reasons that made him promise are no longer relevant."

Niccolò Machiavelli

Arms control treaties deal with sensitive issue of national security. States that come to an agreement through a compromise balancing their interests want to make sure that the other party is fulfilling its obligations and that fulfilling your own obligations does not put you at a relative disadvantage. That is why arms control agreements are rarely self-executing. Even though it is generally believed that states enter international treaties in good faith and are expected to abide by their commitments, contracting parties usually verify that the obligations are observed. A negotiated verification regime becomes an integral part of an arms control agreement. In this context, verification can be described as the "process of gathering and analysing information to make a judgement about parties' compliance or non-compliance with an agreement."[2] In the absence of a verification regime, such treaties can become a mere declaration of intent.

This article takes a deeper look at the issue of arms control verification and its role in deep reductions of nuclear weapons. It starts with outlining the main elements of verification regime and its objectives. In the second part, it analyses reasons behind violations of arms control agreements, considers militarily significant violations and US-Russian experience from their bilateral arms control. Finally, it attempts to define the role of effective verification regime in the pursuit of low number of nuclear weapons.

Elements of Verification Regime

Effective monitoring and verification is based on a complex set of rules and procedures spelled out in the text of the treaty. An interlocking web of limitations and provisions devised to deter cheating, to make it more complicated and expensive or to make its detection more timely makes the treaty verifiable. Regardless of the content and complexity of the treaty its

[1] Responsibility for the information and views set out in this article lies entirely with the author.
[2] United Nations Institute for Disarmament Research and the Verification Research, Training and Information Centre (VERTIC), Coming to Terms With Security: A Handbook on Verification and Compliance (London: VERTIC, 2003), p. 1.

corresponding verification regime has five main elements: treaty language, monitoring, analysis, evaluation, and resolution.[3]

Treaty language establishes foundation for the verification regime. It spells out constraints and prohibitions for treaty items, rights and responsibilities of the parties, thus, establishing benchmarks for activities that must comply with the conditions of the treaty. These benchmarks indicate what a party to the treaty should pay attention to when monitoring other country's forces and activities. Treaty language usually also contains measures designed to facilitate collections of information required to verify that activities and forces are in accordance with limits and obligations imposed by the treaty. These measures can include prohibition of activities interfering with information collection about items and activities restricted by the treaty; specific obligations designed to facilitate collection of information; and confidence building and transparency measures.

Provisions describing monitoring set out legal ways to verify compliance with the treaty. First arms control agreements, such as the Partial Test-Ban Treaty or bilateral Strategic Arms Limitations Treaties (SALT), relied exclusively on national technical means of verification (NTM). The NTMs enable monitoring without access to the other country's territory and the United States and Russia would still deploy them even in the absence of a treaty for intelligence purposes. As the countries moved from limitations to reductions (START) and complete prohibition (INF, CTBT) on-site inspections and continuous monitoring through in-country visits by inspection teams, permanent presence of personnel and surveillance equipment at or near relevant facilities were included in the verification toolbox. These cooperative measures, however, are subject to certain limitations (managed access) since they have to balance the requirement of verifying compliance with the treaty without compromising sensitive military information and secrets.

In this regard, information required to verify compliance with specific treaty obligations may differ from detailed data on specific weapons characteristics, which countries attempt to collect by intelligence means. While the latter could useful to evaluate levels and capabilities of the opposing forces, such level of detail may not be necessary to verify compliance with treaty limits. Therefore, verification regime should be tailored to the specific limitations set out by the treaty, while data collected through monitoring within the treaty framework could be more discrete and specific only to the extent that it helps to verify compliance. Finally, the scope of monitoring provisions should correspond to the basic limits and restrictions.

Data and information collected through monitoring undergoes analytical process in the hands of an analyst who processes them into a more usable form. By interpreting images and transmissions such as telemetry data collected by the NTMs, analyst develops a picture of the other country's forces and activities in order to access their compliance with treaty provisions. Analytical process includes assessment of information as far as its relevance and reliability are concerned, as well as resolving ambiguities and inconsistencies in the data by comparing, contrasting and combining information from different sources. Despite the best efforts,

[3] Amy F. Woolf, "Monitoring and Verification in Arms Control," Congressional Research Service, 23 December 2011, https://www.fas.org/sgp/crs/nuke/R41201.pdf, p.3.

however, not all uncertainties may be resolved. Just as the additional information may be helpful in determining the precise meaning of observed activities and items, it may also complicate analysis by presenting some unclear and uncertain conclusions.

Once all the information has been collected and analysed, it is used as a basis for evaluation of compliance with the treaty. As noted above, it is likely that some degree of uncertainty will be present in the results and not all issues will be clarified in the analysis phase. Additionally, ambiguities in the treaty language may prevent from clearly identifying the activities that comply with or violate the treaty. Hence, the evaluation becomes more of a political process rather than a matter of scoring the results against the pre-set criteria. In other words, statement of compliance or non-compliance becomes a matter of judgement affected by predispositions of the political leadership regarding matters of national security, relations between the states and general international situation. In the process of evaluation, it is up to the political leadership to judge how significant the uncertainties are, whether the detected activities indicate violation and if such violation presents a significant threat to security of their country.

The last stage of the verification process is resolution stage, which becomes crucial if it was judged during the evaluation that treaty obligations had been violated. The state making non-compliance accusations against its counterpart has to decide what to do with the indicators of a suspected violation. All US-Russian bilateral arms control treaties include provision that allows one party to raise its concern with its counterpart. The other country has an opportunity to clarify its activities and/or correct the violation. It is a long process that may not necessarily lead to the resolution of the issue. It should be noted, however, that no arms control treaty has been abrogated in a response to a perceived violation. While abrogation is possible, a more likely outcome, if a violation poses a new security threat, would be a set of measures to deny any benefits achieved by the counterpart through a violation or to influence the calculation of the counterpart making the violation more costly.

Verification and Violations

A state considering violating its obligations under the treaty, realist theory posits, would weigh costs of being caught, benefits of not being caught and probability of being caught. Thus, if the purpose of the verification regime is to assure each state that its counterpart is complying with the treaty obligations, it has to accomplish several interrelated objectives. First of all, the verification system should enable the states to detect violations if they occur and to collect evidence to this effect. Together with the limitations set by a treaty this point is crucial in timely identifying violations that could create threat to national security. If the verification regime is robust it could deter deliberate violations of the treaty adding to the calculations that the benefits it might gain with the activity were overshadowed by the possible costs, including the financial expense, negative publicity and the possible consequences if the activity were detected. Finally, implementation of the treaty overtime, when confirmed through the procedures built into the verification regime, should help build confidence between the parties as well as in the viability of the arms control treaty.

At the same time, reliability of compliance depends not only on verification and deterring violations, but also on precision and clarity of the basic prohibitions. As noted previously, for verification regime to be effective, its provisions should correspond to the basic prohibitions under a treaty. Just as the record of compliance promotes trust and confidence, lack of compliance can cause suspicions and lead to undesired consequences, which the arms control agreement attempted to avoid in first place.

Violations of treaties can surely happen. Aside the most dangerous intentional violation of the key provision of the Treaty (material breach), there can be a range of minor violations, which can arise for various reasons, including ambiguity and indeterminacy of treaty language and limitations on the capacity of parties to carry out their undertakings. While detecting and promptly addressing all kinds of non-compliance is ideal, the most important task of the verification regime is to ensure that the key provisions of the treaty affecting national security are adhered to.

At the same time, 100% detection of violations is not possible. A verification regime ensuring detection of every violation of every time would require enormous resources and access that may be hard to acquire because states are concerned with protecting their military secrets. For these reasons, a concept of adequate verification is applied to arms control.

The most commonly used analogy to describe adequate verification is acceptable level of compliance demonstrated on the example of driving speed limits. A speed limit on the highway can be set at 60 miles per hour but some cars would drive at speeds 5 to 10 miles higher. However, the police would not stop every car going over 60 miles per hour because the level of compliance with the speed limit is acceptable and it assures safe-enough standards on the road. At the same time, raising the speed limit to 70 miles per hour would effectively lead to more cars driving over the speed limit. Similarly, arms control treaties set up specific limits, against which compliance is measured.

Using the speed limit analogy the verification regime should detect violations above certain limit. In this context, during Nixon term adequate verification was used. It meant that military significant violations should be detected in time to permit an appropriate response.

Under Reagan administration such approach was judged as not sufficient. In addition to a list of perceived Soviet violations of arms control treaties and regimes outlined in the National Security Decision Directive Number 121 "Soviet Noncompliance with Arms Control Agreement" issued in January 1984[4], the US policy shifted from adequate verification to effective verification. Director of Arms Control and Disarmament Agency Kenneth Adelman described adequate verification as "our ability to detect major violations early enough to respond in time to preserve our security." He argued, "'effective verification' now means having the ability to detect any Soviet violation, regardless of its military significance."

[4] National Security Decision Directive Number 121 "Soviet Noncompliance with Arms Control Agreement," January 1984, http://www.reagan.utexas.edu/archives/reference/Scanned%20NSDDS/NSDD121.pdf?bcsi_scan_159355fb1f8edb02=0&bcsi_scan_filename=NSDD121.pdf

During the initial years of Reagan administration, however, such approach was not conducive to negotiating any arms control agreements as it was simply impractical and could be used to prevent any negotiations coming to fruition. Only gradually, Reagan's early opposition to US-Soviet arms control process gave way to a more conciliatory approach that was consistent with his growing concern about the threat posed by nuclear weapons. As far as verification is concerned, the terminology preferred by the Reagan administration remained but the concept behind it returned to "adequate verification" of earlier years. In this regard, Ambassador Paul Nitze in a testimony in front of the Senate on the 1987 Intermediate Nuclear Forces (INF) Treaty argued that an effective verification system must be able to detect a violation in which a party "moved beyond the limits of the treaty in a militarily significant way."[5]

Militarily Significant Violations and US-Russian Bilateral Arms Control

As mentioned above, concept of verification is closely linked to the notion of militarily significant violations. While the latter lies at the core of procedures and provisions of a verification regime, it is not an objective number. It depends on the context, in which arms control treaty is concluded, i.e. force levels of the contracting parties. The type of relations between the states can also affect it. If one believes that the other party is not to be trusted and that it would use every opportunity to violate an agreement in attempt to gain a military or political advantage, then additional requirements will be placed on the robustness of the verification regime.

In 1958, when nuclear weapons systems were less diverse and when the United States and the Soviet Union had 7345 and 869 nuclear warheads respectively[6], it was suggested that in the context of global nuclear disarmament regime (which would include limitations on conventional weapons), production within a two-year period of 200 to 400 large missiles with nuclear warhead would constitute a "critical act of evasion" as it would permit amassing an arsenal that can "destroy some or all major population centers as well as critical industrial facilities" of the adversary.[7] But even then, the authors concluded, it was possible to design a regime combining declarations of inventories, national technical means and on-site inspections capable of timely detecting such scenario.

The growth the US and Soviet arsenals, however, did not lead to lower acceptable levels of compliance. On the contrary, tolerance for violation levels decreased. In the above-mentioned testimony, Ambassador Paul Nitze suggested that if the Soviet Union kept 50 undetected SS-20 mobile intermediate-range ballistic missiles (IRBM), it would constitute a militarily

[5] Office of Technology Assessment, US Congress, Verification Technologies: Cooperative Aerial Surveillance in International Agreements (Washington DC: US Government Printing Office, July 1991), p. 104, Box C-1, footnote 1, http://www.princeton.edu/~ota/disk1/1991/9114/9114.PDF

[6] Norris, Robert, Hans M. Kristensen, "Global nuclear weapons inventories, 1945−2010", *Bulletin of the Atomic Scientists*, July 1, 2010.

[7] "Inspection for Disarmament", edited by Seymour Melman, New York: Columbia University Press, 1958, p.10, http://globalmakeover.com/sites/economicreconstruction.com/static/SeymourMelman/archive/disarm/inspection.pdf

significant violation. In practice, it meant that up to 150 additional nuclear warheads would make a difference despite over 23000 warheads in the US arsenal at the time and some 43000 in the Soviet arsenal. It, however, testifies not to the military but to the political significance of such a violation. From the verification point of view, the procedures were designed in such a way to make sure that the Soviet Union had fewer than 50 SS-20s and that, in the worst-case scenario, the violation of treaty limits by at least over 50 IRBMs would be reliably detected. Taking into account that by the treaty's deadline of 1 June 1991, 654 SS-20s (out of 1846 treaty-prohibited Soviet ground-launched ballistic missiles and ground-launched cruise missiles) were destroyed, the verification standard set by the United States seems rather high.

Experience from implementing the INF Treaty and its many verification provisions had been applied to START I and START II. While no specific level of violation had been defined, most experts agreed that the verification regime is sufficient to detect virtually any militarily significant violation.[8] Although START II has never been implemented as Russia withdrew from the treaty in response to the US abrogation of the ABM Treaty in 2002, the two parties already agreed to lower numbers for a follow-on START III.

With the Bush administration, however, the logic of arms control changed. The parallel verifiable process was not viewed as important as before. The Bush administration stated that it would structure its nuclear arsenal as it sees most fit to address new threats and challenges levels and regardless Russia's nuclear force structure. It was also argued that Russia was no longer the enemy, against which the deterrence had to be benchmarked. Nevertheless, in 2002 the two states concluded SORT with deployed warhead limit but no restrictions on strategic delivery systems unlike its predecessors. In a more striking departure from the previous treaties, SORT did not include any verification procedures. Instead, it relied on verification provisions of START I, which was to last until December 2009. In itself, however, philosophy behind SORT demonstrated that verification might not be necessary if compliance is not viewed as an important issue.

Yet, the New START concluded in 2010, despite relatively modest reductions, was praised for the extension of verification measures in the context of the bilateral US-Russian arms control. Ratification of the New START was also considered by US Senate vis-à-vis the strength of its verification provisions. While some critics pointed out that the verification regime was weaker than that of START I, it has to be noted that the New START is also less complex in its limitations and, thus, its verification provisions correspond to the subject matter of the agreement. Interestingly, the Russian negotiating team used the argument that the United States and Russia were no longer strategic enemies to successfully remove limitations on new ICBM capabilities as well as to avoid extension of continuous portal monitoring at the Russian missile production facility in Votkinsk.

Verification has played an important role in the process of the US-Russian bilateral strategic arms reductions. Despite US reservations about Soviet compliance, verification procedures

[8] "The Nuclear Turning Point: A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons", edited by Harold Feiveson, Brooking Institution Press, 1999, p.241.

have contributed to building trust between the two parties and assured strategic predictability in the development of their nuclear arsenals. It can also be noted that the 1991 Presidential Nuclear Initiatives, which substantially limited and destroyed tactical nuclear weapons in the US and Russian arsenals, were pursued as unilateral measures without verification or transparency mechanisms. Although the United States and Russia agreed in March 1997 to explore measures relating to tactical nuclear weapons, nothing came of this effort. Despite Russian statements that it has fulfilled its obligations, the United States remains skeptical. In its resolution of advice and consent to the New START ratification, US Senate required the US administration to "seek to initiate, following consultation with NATO allies but not later than one year after the entry into force of the New START Treaty, negotiations with the Russian Federation on an agreement to address the disparity between the non-strategic (tactical) nuclear weapons stockpiles of the Russian Federation and of the United States and to secure and reduce tactical nuclear weapons in a verifiable manner."[9] While the official Russian position is that the United States should first withdraw all of its tactical nuclear weapons to its national territory, it is hard to imagine the next round of reductions in the current political atmosphere.

Verification and Low Numbers

Although Russia (mostly) and the United States, as well as the non-nuclear-weapons states have called on other nuclear-weapons states to join reduction efforts, most experts agree that the next round of reductions could still be bilateral if it goes to the levels of around 1000 deployed warheads. However, the round after next could see reductions to the lower number of nuclear weapons. The most common range for the low numbers is between 200 and 500 total warheads.[10] While it is up to the leadership to define levels with which deterrence requirements could still be met, it is clear that for the United States and Russia to agree to 500 nuclear weapons each the other states possessing nuclear weapons would have to freeze their levels to assure the United States and Russia that they would not try to sprint to parity. Political difficulties aside, reductions to low numbers would put verification in the spotlight.

When US and Russian (Soviet) nuclear weapon stockpiles were in the tens of thousands, 100% verification levels assuring complete compliance were neither necessary nor cost effective. Even if verification procedures were circumvented and a country would exceed treaty limits, such gains would be marginal compared to the overall level of nuclear arsenals. In other words, there were little incentives to cheat. Paul Nitze described this notion in the context of SALT, stating, "I personally take the verification issue less seriously than most because the limits are so high that what could be gained by cheating against them would not appear to be strategically significant."[11]

[9] New START Treaty: Resolution Of Advice And Consent To Ratification, December 22, 2010, http://www.state.gov/t/avc/rls/153910.htm

[10] James Acton, Deterrence During Disarmament: Deep Nuclear Reductions and International Security, Adeplhi Books, Institute of International and Strategic Studies, 2011.

[11] Paul H. Nitze, "Assuring Strategic Stability in an Era of Détente," Foreign Affairs, Vol. 54, No. 2 (Jan., 1976), https://www.foreignaffairs.com/articles/united-states/1976-01-01/assuring-strategic-stability-era-d-tente

While it can be argued that reductions to low numbers is return to normalcy as only the United States and Russia amassed thousands of nuclear weapons when the other states were satisfied with levels of low hundreds, assuring that the levels of reductions are stable will not be easy. The verification of agreed reductions and procedures should enhance predictability and transparency. Verification will also be crucial in defining force levels. Henry Kissinger and Brent Scowcroft noted that "particularly important is a determination of what level of uncertainty threatens the calculation of stability. At present, that level is well within the capabilities of the existing verification systems. We must be certain that projected levels maintain - and when possible, reinforce - that confidence."[12]

It is usually assumed that numerical imbalance in the levels of nuclear weapons could lead to the strategic advantage of the country with a larger arsenal over a state with fewer nuclear weapons. At a minimum, such advantage "could somehow translate into political leverage."[13] Hence, as nuclear reductions proceed to low numbers, the strategic and military significance of cheating increases. The above-described example of the militarily significant violation of the INF as viewed by the United States could have had more of a political importance but little strategic significance given the overall number of the arsenals at the time. However, when the world moves to the 500-warhead limit not to mention low hundreds, evasion at the level of 5-10% could have both political and military dimensions. If reductions happened within deterrence framework and the levels are carefully calculated deterrence requirements, than even a dozen additional nuclear weapons can have a significant strategic impact.

For the reductions to low number to be sustainable, the probability of detection must be higher to deter cheating. Thus, to increase the robustness of verification, it will have to be more intrusive. The confidence requirements may necessitate intrusiveness at the level of the entire nuclear weapons complex and the ability to monitor nuclear material through the entire nuclear fuel cycle and on nuclear weapons throughout their lifecycle, i.e. "cradle to grave" chain of custody verification regime.[14] Before that, baseline declarations will have to be verified, possibly through inspections and nuclear archaeology[15], in order to reduce degree of uncertainty as much as possible. The requirements will be even higher if the destruction of warheads is included in the scope. Verifying the destruction of warheads will need technologies enabling inspectors to confirm that the item is in fact a warhead without simultaneously revealing classified information. All this would place substantial financial and operational requirements on the verification regime of low numbers.

[12] Henry A. Kissinger and Brent Scowcroft, "Nuclear weapon reductions must be part of strategic analysis," The Washington Post, April 22, 2012, https://www.washingtonpost.com/opinions/nuclear-weapon-reductions-must-be-part-of-strategic-analysis/2012/04/22/gIQAKG4iaT_story.html

[13] James Acton, "Low Numbers: A Practical Path to Deep Nuclear Reductions," Carnegie Endowment for International Peace, 2011, p.22.

[14] Jacob Benz, Paul Booker, and Benjamin McDonald, "Verification Challenges at Low Numbers," in "A Collection of Papers from the 2012 Conference Series", Project on Nuclear Issues, Center for International and Strategic Studies, p.20-21.

[15] Steve Fetter, "Nuclear Archaeology: Verifying Declarations of Fissile Material Production," Science and Global Security 3, (1993), pp. 237-259.

From the verification point of view, proceeding to low numbers would also require negotiating a regime for non-deployed and tactical nuclear weapons, which could prove especially difficult. As noted above, previous bilateral treaties dealt with launchers, delivery systems and deployed warheads at times employing creative counting rules to circumvent political, military and verification challenges. A verification regime for non-deployed and tactical nuclear weapons would require unprecedented access to military installations, which would run counter secrecy requirements and secrecy culture prevailing in the military when it comes to nuclear weapons. It has been noted that "Russia in particular has historically been reluctant to increase transparency of warheads besides those that are already in place on deployed strategic delivery vehicles" with most recent example being the New START negotiations when it objected to inspections to verify the number of warheads stored at bomber bases.[16]

Controls on the nuclear weapons complex or at least some kind of transparency regime are important from the point of view of reconstitution capability in case of an open breakout from the treaty.[17] Just as unaccounted nuclear weapons nuclear weapons beyond the treaty limits can open a country to nuclear blackmail, so an unchecked capability of an adversary to rebuild its arsenal quicker could make the country vulnerable politically and strategically. Breakout capabilities would be more limited if the warheads and launchers are verifiably dismantled. However, even with an upload potential controlled, possibility of rebuilding warheads and delivery systems from scratch could not be excluded. A transparency regime combined with a verifiable cap on maximum production capabilities could provide early warning indicators of rearmament and allow responding in kind to a possible violation, thus, reducing incentive to pursue unilateral advantage that could be negated by the opponent.[18]

Conclusion

While no verification system is 100% proof and some violations (whether international or not) may fall below the radar, it is not an end in itself. Effective verification regime should deter cheating by employing techniques that have a high probability of detecting a violation and by providing timely warning of a violation and convincing evidence of a violation.

Effective verification regime and monitoring procedures capable of detecting militarily significant violations are crucial in a world with low numbers of nuclear weapons. However, the definition of a militarily significant violation depends on the context. So far, Russia and the United States have had very little incentive to pursue unilateral advantage through clandestine cheating given the large weapons and fissile-material stockpiles in each country. Unilateral reductions also demonstrate that even without a risk of detection, incentives are not very high.

[16] James Acton, "Low Numbers: A Practical Path to Deep Nuclear Reductions," p.10.
[17] Brad Roberts, "On Order, Stability, and Nuclear Abolition," in Abolishing Nuclear Weapons: A Debate, edited by George Perkovich and James M. Acton, Carnegie Endowment for International Peace, 2009, www.carnegieendowment.org/files/abolishing_nuclear_weapons_debate.pdf, p.166.
[18] James Acton, "Low Numbers: A Practical Path to Deep Nuclear Reductions," p.24.

To certain extent, due to the assured second-strike capability by both the United States and Russia, "the actual standard of verification required has been rather low."[19]

For the low levels of nuclear weapons, however, the verification standards will have to be higher. Countries will have to open themselves to level of intrusiveness never attempted in the previous rounds of nuclear reductions. In this regard, the verification will have to play a dual role of verifying that the treaty obligations are met and ensuring that that the reductions levels are sustainable. In other words, it should contribute to preventing not only clandestine violations of the treaty limits but also reducing incentives for breaking out of the treaty openly, which will be particularly important in the regime of low numbers. Effectively, verification becomes a strategic enabler for deep reductions. By collecting clear evidence that the parties are complying with the treaty it can contribute to further reductions.

The opposite is also possible as cheating cannot be eliminated completely. There will always be a chance that a party willl choose not to abide by its obligations. In this regard, the current situation with the INF Treaty is symptomatic. Lauded as the agreement that eliminated the entire class of nuclear weapons it is now under stress. During the 2007 Munich Security Conference, President Putin suggested that Russia might reconsider its obligations, as many countries are actively pursuing weapons the United States and Russia pledged to refrain from. While it may have been tied to the US plans on deploying ballistic missile defence in Europe and the overall level of US-Russian relations at the time, in July 2014 the US State Department officially declared Russia being in non-compliance with its obligations.[20] The United States continues to raise its concerns, which Russia dismisses and points to the perceived violations on the side of the United States. The resolution of the issue is nowhere in sight. Neither is the joint US-Russian proposal to make the INF Treaty global.

If anything, the situation with the INF Treaty highlights that although a country can enter an agreement in good faith, its calculation of the benefits of adhering to the negotiated limits may change in response to international situation and perceived threats to its security. It, therefore, becomes paramount to address the factors that may have lead to the re-assessment of its position. Dialogue should also aim to reassure a party suspected of pursuing banned capabilities that the status quo continues to serve its security best and that the logic expressed in the epigraph to this article cannot be applied. As far as verification is concerned, reductions to low numbers will rely on the willingness of nuclear-armed states in pursuit of cooperative security where everyone benefits from a decreased reliance on nuclear weapons.

[19] George Perkovich and James M. Acton, "Abolishing Nuclear Weapons: A Debate," Carnegie Endowment for International Peace, 2009, www.carnegieendowment.org/files/abolishing_nuclear_weapons_debate.pdf, p.50.
[20] Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments, US State Department, July 2014, http://www.state.gov/documents/organization/230108.pdf, p.8.