The Challenge of Categories: Possible Paths of Solving a Problem of a Lack of a Common Definition of Non-Strategic Nuclear Weapons

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Introduction

There is no internationally agreed upon definition on what constitutes a non-strategic nuclear weapon. Although the United States and Russia have agreed to definitions for other nuclear weapons categories as part of arms control treaties,[1] it is not clear if, or to what extent, they agree on a definition for non-strategic nuclear weapons (although this doesn't mean they don't have an opinion). To complicate matters further, other nuclear weapon states do not necessarily distinguish between strategic and non-strategic nuclear weapons.

The terminology used varies depending on what is being described, where, when, and by whom. In addition to "non-strategic," frequent terms used to describe this category of weapons include "pre-strategic," "sub-strategic," "short-range," "battlefield," "tactical," and "theater" nuclear weapons. These terms sometimes help clarify but may also confuse because of uncertain about what is meant by, for example, "tactical" or "theater."

Official policy documents use different or vague definitions for non-strategic nuclear weapons – if they define them at all. The U.S. *Nuclear Posture Review Report* from April 2010, for example, allocates considerable space to non-strategic nuclear weapons but does not define them. Instead, it discusses non-strategic nuclear weapons in the context of "strengthening regional deterrence and reassuring allies and friends." The chapter describing the regional mission does not explicitly assign this to "non-strategic" weapons but rather to a mix of tactical and strategic forces.[2]

Likewise, NATO's *Strategic Review* from November 2010 does not include the term "non-strategic" at all but introduces reductions in "Russian short-range nuclear

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[1] This includes the SALT I and SALT II treaties, the INF Treaty, the START I and START II treaties, the SORT (Moscow Treaty), and the New START Treaty.

[2] U.S. Department of Defense, Office of the Secretary of Defense, *Nuclear Posture Review Report*, April 2010, pp. 31-35, http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf

weapons" as a precondition for "any further steps" but without defining what short-range means. The U.S. military defines "short-range" as up to 1,100 kilometers (600 nautical miles), but several Russian non-strategic nuclear weapons (SS-N-21 Sampson land-attack cruise missile, Tu-22 Backfire bomber, Su-24 and Su-34 fighter-bombers) have ranges in excess of that. Likewise, the U.S. nuclear Tomahawk land-attack cruise missile (TLAM/N) and dual-capable fighter-bombers have ranges in excess of 1,100 kilometers. The Strategic Review doesn't even explicitly mention the U.S. nuclear bombs stationed in Europe but instead states that the supreme security guarantee is provided by the "*strategic* nuclear forces of the Alliance, particularly those of the United States."[3] (Emphasis added).

The previous *Strategic Review* from 1999, in contrast, described non-strategic nuclear weapons is much greater detail (although it also did not explicitly call them "non-strategic"), referring to reductions of artillery and short-range missiles, and explicitly identifying "sub-strategic" nuclear forces as dual-capable aircraft and a small number of British Trident warheads.[4]

NATO's *Deterrence and Defense Posture Review* from May 2012 also does not define non-strategic nuclear weapons but refers to them generically as the U.S. nuclear weapon deployed in Europe. It states that NATO has reduced the "number, types, and readiness" of nuclear weapons stationed in Europe since the Cold War. It also refers to Russian non-strategic nuclear weapons, highlighting those "stationed in the Euro-Atlantic area," but without defining categories or whether it refers to delivery platforms or warheads.[5]

Russian and Western analysts frequently mention that Russia's non-strategic nuclear weapons are intended to compensate for NATO's superior conventional capabilities and help defend the long border with China, but Russian officials and documents are vague and unspecific about the role or characteristics of the non-strategic nuclear weapons. The importance of nuclear weapons in Russian military strategy seemed to increase somewhat in the late-1990s and early-2000s with potential use in regional scenarios, but the change appears to concern nuclear weapons in general rather non-strategic nuclear weapons per ce. The 2010 Military Doctrine does not appear to explicitly distinguish between strategic and non-strategic nuclear weapons but refers to the role of nuclear weapons in general and

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[3] NATO, *Active Engagement, Modern Defence: Strategic Concept For the Defence and Security of The members of the North Atlantic Treaty Organization*, November 2010, sections 18, 19, 26, http://www.nato.int/cps/en/natolive/official_texts_68580.htm

[4] NATO, *The Alliance's Strategic Concept*, April 24, 1999, sections 62-64, http://www.nato.int/cps/en/natolive/official_texts_27433.htm

[5] NATO, *Deterrence and Defense Posture Review*, May 20, 2012, sections 11-12, 25-27, http://www.nato.int/cps/en/natolive/official_texts_87597.htm

only as a last resort.[6]

Apart from using naval, ground, and air-defense non-strategic nuclear weapons to compensate for inferior conventional capabilities, the Russian military appears to see the line blurring between non-strategic and strategic nuclear weapons. According to the former head of the Russian General Staff, General Yuri Baluyevskiy, the U.S. nuclear weapons in Europe "are for Russia acquiring a strategic nature, since theoretically they could be used on our command centers and strategic nuclear centers."[7] Russian Deputy Defense Minister Anatoly Antonov added in 2012 that while "Russian tactical nuclear weapons do not threaten U.S. military security, U.S. arms in Europe create a threat to Russia's military security."[8]

Moreover, recent threats made by Russian officials about moving nuclear weapons into the Kaliningrad district or potentially striking NATO missile defense systems underscore that some non-strategic nuclear weapons continue to have an offensive role in Europe. And government officials in some NATO countries have stated that Russia has made preparations to move nuclear weapons into the Kaliningrad enclave, although the sources all referred to nuclear *weapons* (which could mean delivery vehicles) rather than the *warheads* themselves.[9]

The terminology for non-strategic nuclear weapons tends to reflect military doctrine and strategy for how the weapons would be used. While strategic nuclear weapons were designed to be used on an intercontinental basis (long-range and large yields) with direct employment from the United States against Russia and vice versa, non-strategic nuclear weapons were designed to be used on a regional or theater basis at a forward location between military forces battling each other or against supporting facilities at short range and most often with lower yields than strategic nuclear weapons. The current version of U.S. Department of Defense

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[6] For assessments of the role of Russian nuclear forces, including non-strategic nuclear weapons, see: Nikolai Sokov, "Nuclear Weapons in Russian National Security Strategy," Monterey Institute of International Studies, June 2010, http://www.ndu.edu/inss/symposia/2010%20Russia%20Security%20Workshop/OSD_Russia_Sokov.pdf; Keir Giles, The Military Doctrine of the Russian Federation 2010," Research Review, NATO Defense College, February 2010, http://www.ndc.nato.int/download/downloads.php?icode=170; Richard Weitz, "Strategy and Doctrine in Russian Security Policy," paper presented at National Defense University symposium, June 28, 2010, http://www.ndu.edu/inss/symposia/2010%20Russia%20Security%20Workshop/OSD_Russia_Weitz.pdf

[7] Cited in: Robert S. Norris and Hans M. Kristensen, "U.S. Nuclear Forces, 2004," *Bulletin of the Atomic Scientists*, May/June 2004, p. 69, http://bos.sagepub.com/cgi/reprint/60/3/68

[8] "U.S. Tactical Nuclear Arms in Europe Jeopardize Russian Security - Defense Ministry," *Interfax*, November 8, 2012. NTIS via WNC.

[9] For an unclassified assessment of the Kaliningrad situation, see: "Case Story: The Kaliningrad District," in Hans M. Kristensen, *Non-Strategic Nuclear Weapons*, (Federation of American Scientists, May 2012), pp. 70-75, http://www.fas.org/_docs/Non_Strategic_Nuclear_Weapons.pdf

Dictionary of Military and Associated Terms defines non-strategic nuclear forces as:

> "Those nuclear-capable forces located in an operational area with a capability to employ nuclear weapons by land, sea, or air forces against opposing forces, supporting installations, or facilities. Such forces may be employed, when authorized by competent authority, to support operations that contribute to the accomplishment of the commander's mission within the theater of operations."[10]

Using range as a criterion might work for the United States and Russia, but most nuclear weapons states call their nuclear weapons "strategic" even though they do not have intercontinental range.

Another criterion might be that non-strategic nuclear weapons are those that are not covered by arms control agreements. *The Nuclear Matters Handbook*, published by the Office of the Secretary of Defense in 2011, for example, defines "non-strategic" in relation to the strategic nuclear triad by declaring: "All other nuclear weapons are non-strategic." According to this definition, non-strategic nuclear weapons include dual-capable aircraft, atomic demolition munitions, ground-launched cruise missiles, ground-launched ballistic missiles with ranges less than 5,500 kilometers, artillery, air-defense weapons, as well as nuclear weapons for surface ships, general-purpose attack submarines, and naval aviation.[11]

By this definition, French cruise missiles; all Indian, Israeli, and Pakistani nuclear weapons; and most Chinese nuclear weapons (except DF-4, DF-5, DF-31, DF-31A, and JL-2) would be non-strategic. But France, Israel, Pakistan, and China consider their weapons strategic.

Part of the ongoing confusion about definition stems from the fact that most nuclear terminology is still derived from the Cold War and the US-Soviet relationship. As military doctrine evolves in response to changes international conditions and new capabilities, the terminology has changed as well – and continues to change. So old definitions may no longer be appropriate for today's world. But old habits die hard, and "non-strategic" may still be deemed relevant and useful to US-Russian nuclear talks.

Indeed, after the ending of the Cold War, some government officials and analysts have argued that it no longer makes any sense to distinguish between strategic and non-strategic nuclear weapons but that all nuclear weapons are by their very nature

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[10] Joint Chiefs of Staff, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, November 8, 2010 (As Amended Through April 15, 2012), p. 228, http://www.dtic.mil/doctrine/new_pubs/jp1_02.pdf

[11] U.S. Department of Defense, *Nuclear Matters Handbook (Expanded Edition)*, 2011, p. 290, http://www.acq.osd.mil/ncbdp/nm/nm_book_5_11/index.htm

strategic.

An extension of this perspective is the recommendation by some that a future U.S.-Russia arms control treaty should count all nuclear weapons categories in a "big pot" rather than distinguishing between strategic and non-strategic, or deployed and non-deployed. The advantage of such an approach is that it would bring under control nuclear weapons that have never been regulated by treaties and bring greater transparency that could help dispel mistrust and rumors. It could also help simplify the expansion of the arms control process from bi-lateral U.S-Russian relations to incorporating more nuclear weapon states that have different postures and terminologies.

Related to the "big pot" concept is the idea that the United States should not unilaterally reduce its inventory of non-deployed warheads because it needs them to trade for reductions in Russian larger inventory of non-strategic nuclear weapons.

Such a negotiating strategy is logical when thinking about overall warhead numbers, but might be less attractive to some because different weapons categories have very different missions and therefore values. Put simply, why would the United States trade a Trident W76 missile warhead for a Russian torpedo warhead? Or from Russia's perspective, why would it trade reductions in naval non-strategic nuclear weapons that it considers necessary to compensate for NATO's superior conventional capability for a withdrawal of U.S. non-strategic nuclear weapons from Europe?

The challenges are many and the work to come to terms with non-strategic nuclear weapons has a long way to go. It therefore seems appropriate to first briefly outline how non-strategic nuclear weapons capabilities differ across the spectrum of nuclear weapons states.

Country Categories

The categories of non-strategic nuclear weapons in nuclear weapon states vary considerably, both in terms of capability and doctrine (see table below). Only Russia and the United States have nuclear weapons that are officially characterized as non-strategic, but all except Britain have nuclear weapons systems with capabilities that place them in the non-strategic category if using range as definition. Yet France, China, and India all characterize their nuclear weapons as strategic regardless of range or mission. Pakistan is beginning to describe sub-strategic missions for some of its short-range nuclear weapons.

Russia has a wide range of categories of non-strategic nuclear weapons covering air, naval, ground, air-defense, missile defense, and coastal defense missions. Of Russia's estimated 2,000 non-strategic nuclear warheads, most (730) are for tactical aviation, 700 for naval forces, 430 for defensive forces (mostly air-defense), and approximately 170 for ground forces. There are also categories within each

category, for example in the case of naval weapons that include land-attack cruise missiles, anti-ship cruise missiles, anti-submarine rockets, anti-air (surface-to-air) missiles, torpedoes, and depth bombs.

There are some gray areas in the Russian categories, including whether Tu-22M3 Backfire medium-range bombers and SS-N-21 Sampson land-attack cruise missiles are considered non-strategic, and naval aviation strike aircraft which are organized under tactical aviation. But neither Tu-22M3 nor SS-N-21 are included in the New START Treaty or have intercontinental range and should be considered non-strategic.[12]

Non-Strategic Nuclear Weapons Categories*

Category	Russia	United States	Britain	France	China	Pakistan	India	Israel
Air Force	yes	yes	no	(yes)[a]	(yes)[b]	(no)[c]	(no)[d]	(no)[e]
Navy	yes	(no)[f]	no	(yes)[g]	no	no	(no)[h]	(no)[i]
Army	yes	no	no	no	(yes)[j]	yes	(no)[k]	(no)[l]
Air Defense	yes	no	no	no	no	no	no	no
Missile Defense	yes	no	no	no	no	no	no	no
Coastal Defense	yes	no	no	no	no	no	no	no

* Parenthesis indicates that the status is changing or ambiguous.
[a] France characterizes its 500-km ASMPA cruise missile as a strategic weapons.
[b] Chinese H-6 medium-range bombers have carried out numerous live nuclear bomb test drops. China also tested a nuclear bomb from a tactical aircraft in 1972 and might have retained a secondary nuclear capability for non-strategic aircraft.
[c] Some of Pakistan's F-16 and Mirage fighter-bombers are thought to have a secondary nuclear role.
[d] Some of India's Jaguar and Mirage fighter-bombers are thought to have a secondary nuclear role.
[e] Some of Israel's F-16 (and possibly F-15) fighter-bombers are thought to have a secondary nuclear strike role.
[f] The last remaining naval non-strategic nuclear weapon, the Tomahawk sea-launched land-attack cruise missile (TLAM/N), is being retired.
[g] The 500-km ASMPA cruise missiles for the Charles de Gaulle aircraft carrier is considered strategic by the French government.
[h] The 350-km Dhanush is a naval conversion of Prithvi III short-range ballistic missile.
[i] Rumors of a nuclear cruise missile for Israeli submarines has not been confirmed.
[j] The Chinese short-range DF-15 might have a secondary nuclear capability. Several of the nuclear tests conducted in the 1990s reportedly were related to non-strategic nuclear weapons technology. Rumors of other non-strategic nuclear weapons have not been substantiated or confirmed.
[k] India's short-range Prithvi and medium-range Agni are officially characterized as strategic.
[l] Israel's medium-range Jericho II missiles are thought to be nuclear-capable..

The United States only has one category of deployed non-strategic nuclear weapons left: gravity bombs for delivery by dual-capable fighter-bombers. The 2010 Nuclear

[12] For an overview of Russian non-strategic nuclear forces, see: Hans M. Kristensen, *Non-Strategic Nuclear Weapons* (Federation of American Scientists, May 2012), http://www.fas.org/_docs/Non_Strategic_Nuclear_Weapons.pdf

Posture Review decided to retire the last remaining naval non-strategic nuclear weapon; the nuclear Tomahawk land-attack cruise missile (TLAM/N). The system has not been active for years and is thought to have been retired by now (or in the process of retiring), completing a 25-year process of retiring all naval non-strategic nuclear weapons. The Army and Marine Corps have also been denuclearized.[13]

France does not officially have non-strategic nuclear weapons but nonetheless deploys a cruise missile (ASMPA) for delivery by air force and naval aircraft that appears to have similar capabilities (although it is a more modern weapon) as the Russia AS-4 Kitchen air-to-surface cruise missile on the Tu-22M3 Backfire bomber. Some of the ASMPA are for delivery by naval aircraft from the Charles de Gaulle aircraft carrier, which potentially brings France into the naval non-strategic nuclear weapons category as well.

China has deployed nuclear weapons with true intercontinental range since the early 1980s and is adding new long-range ICBMs and SLBMs. In addition to these, however, several nuclear-capable missiles have short- (DF-15) and medium-ranges (DF-21). China has also started deploying a ground-launched cruise missile (DH-10) that might be dual-capable, although the evidence for nuclear capability is vague. Moreover, several of China's atmospheric nuclear tests were carried out using medium- and short-range aircraft. And U.S. Intelligence believes that some of the underground nuclear tests conducted in the 1990s might have been related to warheads for short-range missiles, cruise missiles and artillery.[14]

Pakistan and India both have weapons that fall into the non-strategic category in terms of range. Both countries have typically characterized all their nuclear weapons strategic, although the term "strategic" probably refers to importance rather than category. Yet both have air-delivered weapons of the same category that Russia and the United States describe as non-strategic. As relatively young nuclear powers, both are working on extending the range of their deterrent, but Pakistan is developing two new missiles with very short ranges that appear to have unique missions. The 60-km NASR (Hatf-9) is characterized as a "quick response system" with "shoot and scoot attributes" to "add deterrence value" to the posture "at shorter ranges" in order "to deter evolving threats"[15] Similarly, the 180-km- Abdali

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[13] For an overview of Russian non-strategic nuclear forces, see: Hans M. Kristensen, *Non-Strategic Nuclear Weapons* (Federation of American Scientists, May 2012), http://www.fas.org/_docs/Non_Strategic_Nuclear_Weapons.pdf

[14] For a description of U.S. intelligence assessments of Chinese nuclear tests, see: Robert S. Norris and Hans M. Kristensen, "Chinese nuclear forces, 2008," *Bulletin of the Atomic Scientists*, July/August 2008, p. 44, http://bos.sagepub.com/cgi/reprint/64/3/42

[15] Inter Services Public Relations, Week View, No. PR94/2011-ISPR, Tuesday, April 19, 2011, < www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1721>.

is said to provide "an operational level capability, additional to the strategic level capability."[16]

None of Israel's nuclear weapons have intercontinental ranges, yet most probably serve a strategic (versus tactical) mission. Nonetheless, Israeli air-delivered weapons are similar to those that Russia and the United States describe as non-strategic. Moreover, there are unconfirmed rumors that Israel might have developed a nuclear capability for cruise missiles carried on its new attack submarines. If so, they would constitute a land-attack category similar to (but with shorter range) the Russian SS-N-21 and American TLAM/N.

Britain is the only nuclear weapons state that has completely eliminated its non-strategic nuclear weapons and declared so. It used to operate the WE-177 bomb/depth bomb for use by tactical aircraft and naval helicopters, but the WE-177 has been retired and dismantled. Starting in 1995, Britain assigned a portion of strategic Trident warheads to a "sub-strategic mission" in support of NATO, but in 2006 stopped attributing a "sub-strategic" mission to the Trident submarines.

Non-Weapons Categories

In addition to the weapons themselves, categories can also relate to the way weapons are postured. One example of a non-weapon category is storage, including where and how the weapons are located. The Russian government says that "all Russian non-strategic nuclear weapons are concentrated in centralized storage bases exclusively ob [sic] the national territory."[17]

The location of Russian nuclear weapons appears to be a concern of some NATO countries, but it is unclear if the concern is about the delivery vehicles or the warheads. There are about nine Russian nuclear weapon storage sites west of the Urals, located tens or hundreds of kilometers from bases with delivery vehicles.

NATO's nuclear weapons storage system is very different, with the weapons stored in underground vaults inside protective aircraft shelters with operational aircraft. The bombs would have to be readied before they could be used and the aircraft are not on alert, but the close proximity of weapons and aircraft is a significant different compared with Russia's deployment.

Options and Recommendations

How to move forward on managing non-strategic nuclear weapons? It is always possible to find reasons why non-strategic arms control is hard and potentially risky. And Russia, the United States and NATO now appear to be pinned down under

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[16] Inter Services Public Relations, Press Release No. Pr62/2011-ISPR, March 11, 2011, < http://www.ispr.gov.pk/front/main.asp?o=t-press_release&id=1689#pr_link1689

[17] President of the Russian Federation, *Practical Steps of the Russian Federation in the field of nuclear disarmament*, May 2010, p. 8.

the burden of preconditions and comprehensive demands precipitated by increased suspicion and bickering. After two decades of decisive and unilateral reductions of non-strategic nuclear weapons and elimination of entire categories, NATO and the United States appear to have reversed back into a cautious 1980ish arms control approach preconditioned on Russian reciprocity. Russia, for its part, has replaced implementation of the Presidential Nuclear Initiatives with an approach that appears to demand integration of all major security issues before non-strategic nuclear weapons can be addressed.

Yet past arms control agreements on strategic and intermediate-range nuclear forces, and the Presidential Nuclear Initiatives, clearly demonstrate that where there is a will there is a way. Not everything has to be perfect before something can be done. Yet for anything constructive to happen beyond cautious incremental steps, it requires a concerted interest and direction from the presidential level.

Verification of non-strategic nuclear weapons are often said to be harder because they are small and easier to hide.[18] Many non-strategic weapons types are indeed small compared with strategic weapons, but many others are not. Non-strategic nuclear bombs and cruise missiles, for example, are approximately the same size as strategic bombs and cruise missiles. Instead, the issue of size relates mainly to *delivery platforms* because strategic delivery platforms are bigger than non-strategic platforms. But while there are some differences in size and shape, strategic *warheads* are not much bigger than non-strategic warheads.

Others have already made elaborate proposals on possible first steps in expanding arms control to non-strategic nuclear weapons,[19] so this paper will not try to repeat that. Rather than being comprehensive, this paper attempts to focus on areas where there is some compatibility between Russia and the United States. Such a category appears to involve air-delivered non-strategic nuclear weapons. There are several reasons for why initially focusing on this category might be a good area to begin.

First, air-delivered weapons represent the only category of non-strategic nuclear weapons where Russia and the United States have some degree of parity. They both operate such forces, they are structure in similar (but not identical) ways, and they

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[18] See for example: Rose Gottemoeller, Acting Under Secretary of for Arms Control and International Security, U.S. Department of State, "Science, Scientists, and International Security," Remarks to the Committee on International Security and Arms Control, National Academy of Sciences, Annual Meeting, Washington, DC, April 29, 2012, http://www.state.gov/t/us/188962.htm

[19] For proposals of possible steps in addressing non-strategic nuclear weapons, see: Steven Pifer and Michael E. O'Hanlon, *The Opportunity: Next Steps in Reducing Nuclear Arms* (Brooking Institution Press, 2012), pp. 81-112; Alexei Arbatov, "A Russian Perspective on the Challenge of U.S., NATO, and Russian Non-Strategic Nuclear Weapons," in Steve Andreasen and Isabelle Williams (ed.), *Reducing Nuclear Risks in Europe: A Framework for Action*, Nuclear Threat Initiative, 2011, pp. 152-171, http://www.nti.org/media/pdfs/NTI_Framework_Chpt8b.pdf; Euro-Atlantic Security Initiative , *Addressing Nonstrategic Nuclear Forces* (Carnegie Endowment for International Peace, February 2012), http://carnegieendowment.org/files/WGP_AddressingNSNW_FINAL.pdf

are estimated to include roughly the same number of nuclear warheads. (500 U.S. and 730 Russian).

Second, information exchange and verification procedures could build on and benefit from those already established and used by both countries for heavy bombers under the New START Treaty.

Third, air-delivered weapons most resemble strategic weapons due to range and offensive capability, both of which appears to be important to NATO and the Russian military. Range is evident in the Russian military's concern over the strategic-like capability of dual-capable aircraft in Europe, a concern that is likely to deepen when the stealthy Joint Strike Fighter (F-35) deploys to Europe with guided B61-12 nuclear bomb in the early 2020s,[20] which might harden Russia's precondition[21] that U.S. nuclear weapons must be withdrawn from Europe before reductions of Russian non-strategic nuclear weapons can be negotiated. Range is also apparent in NATO's concern over Russian storage locations expressed by the Strategic Concept goal of seeking to "relocate these weapons away from the territory of NATO members."[22]

Fourth, verification of air-delivered weapons would also benefit from aircraft being relatively easy to detect with national intelligence means such as satellites. And strategic bomber warheads are not verified under existing arms control agreements, only the aircraft themselves. So for air-delivered non-strategic weapons, verification could initially be very similar to well-established verification of strategic bombers. This could help build experience and confidence that could benefit expansion of non-strategic nuclear arms control to other categories.

Fifth, nuclear weapons storage sites are similar (but not identical), involving bunkers or vaults on the bases, regional depots, and national storage sites. This could help the process of establishing on-site verification.

Sixth, starting with air-delivered non-strategic weapons might also be useful when trying to lay the groundwork for later expanding the arms control agenda beyond Russia and the United States to other nuclear weapons states such as France and China. French air-delivered cruise missiles are similar (yet different) to Russia's AS-4 Kitchen, and China's air-delivered nuclear weapons (to the extent they exist) are all bombs.

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[20] For an unclassified assessment the F-35/B61-12 programs, see: Hans M. Kristensen, "B61 LEP: Increasing NATO Nuclear Capability and Precision Low-Yield Strikes," *FAS Strategic Security Blog*, June 15, 2011, http://www.fas.org/blog/ssp/2011/06/b61-12.php

[21] "Russia, USA Can Discuss Tactical Nukes Only From Equal Positions – Lavrov," *Interfax*, April 19, 2012, http://www.russialist.org/russia-lavrov-tactical-nuclear-843.php

[22] NATO, *Active Engagement, Modern Defence: Strategic Concept For the Defence and Security of The members of the North Atlantic Treaty Organization*, November 2010, sections 26, http://www.nato.int/cps/en/natolive/official_texts_68580.htm

There are of course many challenges in addressing air-delivered weapons. One of the most important is that it involves U.S. nuclear weapons deployed in Europe. But NATO has stated that it wants additional reductions and reduced reliance on U.S. non-strategic nuclear weapons in Europe. Another challenge is that the Russian air-delivered mission is not only directed against NATO but also involves missions in Asia against China, and that the U.S. mission also includes operations in support of allies in the Pacific.

Moreover, as mentioned earlier, the process would need to resolve whether the Russian Tu-22M3 Backfire bombers are non-strategic or strategic (they are not covered by the New START Treaty), and whether the future U.S. B61-12 will be a strategic or non-strategic bomb (it will be carried by both the B-2 bomber tactical fighter-bombers).

Despite these challenges, the relative compatibility of U.S. and Russian air-delivered non-strategic nuclear weapons and the interest of the two countries in limiting nuclear weapons in Europe suggest that this category might be a productive place to start when seeking to expand arms control to non-strategic nuclear weapons.