

Considerations for a US Nuclear Force Structure below a 1,000-Warhead Limit

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On 5 April 2009 in Prague, Czech Republic, President Obama committed the United States to seeking “the peace and security of a world without nuclear weapons.”¹ This move toward a world free of nuclear weapons is not a new idea. In January 2008, George P. Shultz, William J. Perry, Henry Kissinger, and Sam Nunn authored an article in the *Wall Street Journal*, “Toward a Nuclear Free World,” in which they suggested steps to “dramatically reduce nuclear dangers.” More than a dozen former senior US officials from the past six administrations endorsed these suggestions.² While these officials offered “suggestions,” they realized the challenge of achieving a nuclear-free world would be difficult. In fact, the president recognized this challenge in his Prague speech when he stated, “This goal will not be reached quickly—perhaps not in my lifetime.”³ Just as importantly, the president went on to state, “As long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee the defense of our allies.”⁴

As the president moves toward a nuclear-free world, we must ask some very important questions about that journey: (1) Are there different negotiation considerations and dynamics in play when Russia and the United States go below 1,000 strategic warheads? (2) What are the implications of nonstrategic or tactical nuclear weapons in the world security environment? and (3) Finally, what are some potential implications for the US nuclear force structure and the impact on the role of nuclear deterrence as our national arsenal moves below 1,000 strategic warheads?

New Negotiation Dynamics below 1,000 Warheads

A world free of nuclear weapons is a noble goal and a commitment we have as a nation in accordance with Article VI of the Nuclear Non-proliferation Treaty (NPT) as ratified by the United States in March 1970.⁵ Over the past 40 years, the United States has negotiated directly with the Soviets, and now the Russians, to reduce their nuclear arsenals. While negotiations were difficult, viewed from a distance

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these talks were very similar to Newton's Third Law of Motion: "For every action there is an equal and opposite reaction."⁶ This is not to say there was a one-for-one reduction in warheads between the two nations. But as one nation proposed an action to reduce weapons, the other responded with what it saw as an equal reduction while always maintaining the status quo balance of power. As we move into a period where the United States and Russian arsenals are perhaps reduced below 1,000 warheads, we leave Newtonian physics of equal and opposite actions and enter a new quantum physics world of negotiations, with additional actors affecting strategic and crisis stability with implications we don't yet completely comprehend.⁷

In this quantum physics view of nuclear arms reduction, we must look at numerous additional actors and forces—great and small—that will play important roles. These actors include current nuclear weapons states, aspiring nuclear weapon counties, other states with some nuclear technology, and US allies operating under the cover of our "nuclear umbrella."⁸ To understand the impact that these countries will have on the negotiation process as we move toward a world free of nuclear weapons, we must first have a general understanding of their current position in the world security environment and the direction these countries are moving. While it is impossible to know everything about each of these nations or to do justice to the complexity of these countries, we will look at some important factors to consider as the United States and Russia move toward nuclear arsenals below 1,000 warheads and fewer associated strategic delivery vehicles.

To start our examination of these players in the new world of ever-deeper cuts, we will first look at those countries currently possessing nuclear weapons. Only five recognized nuclear weapons nations have signed and ratified the NPT: the United States, Russia, China, France, and Great Britain. Russia, with its large nuclear arsenal, possesses the greatest potential threat to US national security.⁹ It is therefore against the Russian threat that the United States' deterrent forces must be capably and properly sized, since this force poses the greatest existential threat to the United States. The Russian government is no doubt concerned with deterring what it may perceive as a US threat to its existence. With maintaining this deterrent capability in mind, the United States and Russia are currently negotiating a follow-on agreement to the Strategic Arms Reduction Treaty (START) that expired on 5 December 2009, with the goal of significantly reducing the size of each long-range nuclear arsenal.¹⁰

Recent press releases show that Russia is working closely with the United States to reduce both countries' strategic nuclear warheads to around 1,500–1,675, while limiting their delivery systems for those

warheads to 500–1,000.¹¹ If negotiations are successful, the two countries would be at their lowest number of strategic nuclear weapons and delivery vehicles since the early 1950s for the United States and 1960s for Russia (see fig. 1), bringing both countries' arsenals much closer in number to the Chinese and other nuclear-armed nations.

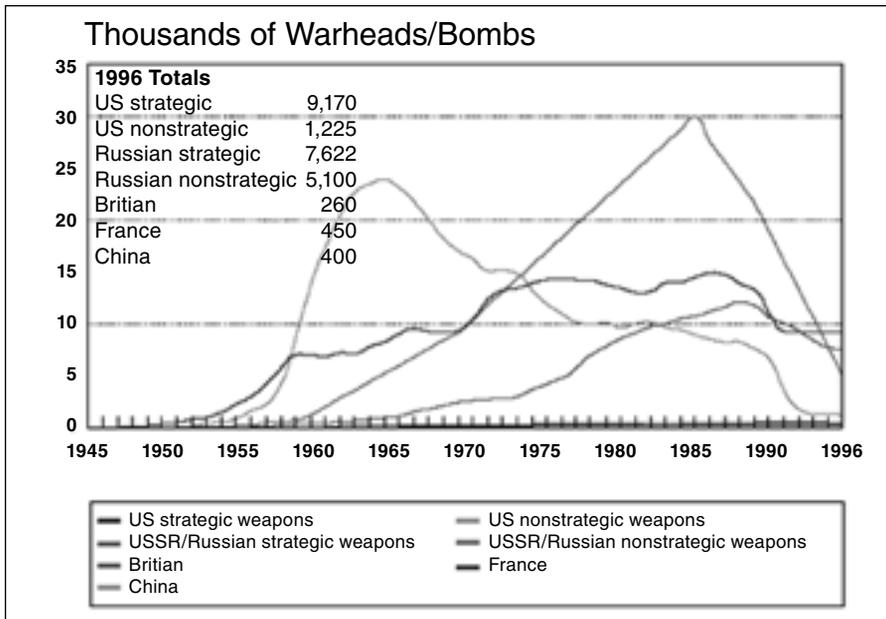


Figure 1. Global nuclear stockpiles, 1945–1996. These figures show active nuclear weapons. They do not include inactive but intact weapons awaiting dismantlement. For the United States, these warheads are estimated as follows: 241 (1988), 642 (1989), 752 (1990), 2,330 (1991), 5,261 (1992), 5,789 (1993), 4,916 (1994), 3,635 (1995), and 2,542 (1996). For the USSR/Russia, these are estimated as follows: 4,277 (1986), 4,141 (1987), 3,670 (1988), 3,183 (1989), 3,485 (1990), 5,394 (1991), 6,744 (1992), 8,215 (1993), 9,933 (1994), 11,385 (1995), and 12,278 (1996). It should be noted that there is a great deal of uncertainty as to the exact number of USSR/Russian nonstrategic nuclear weapons. South Africa (not shown) secretly built six nuclear weapons between 1979 and 1989; these were subsequently dismantled between July 1990 and July 1991. Israel (not shown) is assumed to have at present approximately 100–150 nuclear weapons. (Reprinted from Robert S. Norris and Thomas B. Cochran, *US and USSR/Russian Strategic Offensive Nuclear Forces, 1945–1996*, Nuclear Weapons Databook Working Paper 97-1 [Washington, DC: Natural Resources Defense Council, January 1997]; Robert S. Norris, “Nuclear Arsenals of the United States, Russia, Great Britain, France and China: A Status Report,” Presented at the 5th ISODARCO Beijing Seminar on Arms Control, 12–15 November 1996; Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook*, vol. 5, *British, French, and Chinese Nuclear Weapons* [Boulder, CO: Westview Press, 1994]; and Robert S. Norris and William M. Arkin, “NRDC Nuclear Notebook [Global Nuclear Stockpiles, 1945–1997],” *Bulletin of the Atomic Scientists*, November/December 1997, 67.)

While publicly committing to a world free of nuclear weapons, Russia continues to replace its strategic nuclear warheads with new designs and delivery systems.¹² In recent defense budgets, it has allocated resources to procure new dual-capable strategic bombers while also attempting to reinvigorate its fleet of nuclear submarines.¹³ In addition, it is building new land-based RS-12M1/2 Topol-M intercontinental ballistic missiles (ICBM) with a multiple reentry vehicle capability.¹⁴ Most importantly, Russia is placing more emphasis on its large stockpile of tactical nuclear weapons in its national defense strategy.¹⁵ Its shift to a “first use” strategy is a counterbalance and cost-savings move while it is downsizing and modernizing its conventional military forces.¹⁶ With this increased reliance on nuclear weapons in a first-use capacity, it will be difficult for the Russians to reduce their nuclear arsenal below START Follow-on levels until they feel their conventional forces are equal or greater in capability to North Atlantic Treaty Organization (NATO) and Chinese conventional forces on their borders.

According to open sources, China possesses approximately 240 nuclear warheads, with approximately 186 operationally ready for employment on aircraft and ballistic missiles.¹⁷ With such a small force, China appears to have adopted a minimum deterrence strategy. Of these warheads, approximately 20 CSS-4 ICBMs are able to reach the United States.¹⁸ The remaining warheads are programmed to be delivered by aircraft along with short- and medium-range missiles.¹⁹ The Chinese have publicly declared a “no first use” policy, with a self-defense nuclear strategy.²⁰ China has taken the route of defense against attack by developing underground facilities to house its nuclear weapons, providing for maximum survival of its arsenal from a first strike and guaranteeing a robust retaliatory capability.²¹ Maintaining a secure second-strike retaliatory force rather than an insecure and vulnerable nuclear force is also better for crisis stability.²²

When we include the Chinese at the arms control negotiation table, we must first consider their strategic situation of being surrounded by such nuclear-armed countries as the United States, Russia, India, North Korea, and Pakistan and within striking distance of Iran. While China has formidable conventional forces, as long as surrounding countries have nuclear weapons, the Chinese are unlikely to reduce their nuclear arsenal. Indeed, all countries with nuclear arms need to be included in future nuclear arms control treaty negotiations, including the United Kingdom and France.

The UK currently maintains approximately 160 nuclear warheads configured to be delivered by submarine launched ballistic missiles (SLBM) from four *Vanguard*-class Trident fleet ballistic missile sub-

marines (SSBN).²³ The UK currently only has the ability to deliver nuclear weapons from its submarines. Researchers at the Stockholm International Peace Research Institute (SIPRI) believe that some of the UK missiles only contain one warhead and are configured for a “low yield” by using only the “fission primary.” The UK Ministry of Defense believes this “provides a ‘sub-strategic’ role to the Trident Fleet.”²⁴ Britain has reduced its reliance on nuclear weapons since the end of the Cold War, and, from recent comments made by Prime Minister Gordon Brown, it appears it is willing to reduce its number of new nuclear submarines purchased by 25 percent, from four to three.²⁵

France possesses approximately 300 nuclear weapons that are widely dispersed on four SSBNs and 84 tactical aircraft.²⁶ While the French have recently rejoined NATO’s Integrated Military Command after 43 years, they still pride themselves on a nuclear capability that could be used independently of the NATO command structure.²⁷

While the UK, France, Russia, and China are all important players as nuclear powers and permanent members of the United Nations (UN) Security Council, when the United States goes below 1,000 strategic nuclear warheads, it and all other states that possess nuclear weapons will need to be included at the negotiations table. These additional countries—India, Pakistan, North Korea, and Israel—are not signatories to the NPT but already have or, in the case of Israel, are believed to have, nuclear weapons.

India currently maintains an arsenal estimated at approximately 60–70 tactical nuclear weapons delivered by aircraft along with short- and medium-range missiles.²⁸ India and its rival, nuclear-armed Pakistan, have fought three wars and continue to threaten each other, suggesting these two states must, at some point in the near future, be included in multilateral nonproliferation and nuclear arms control talks.

Pakistan is estimated to possess 60 tactical nuclear weapons along with enough plutonium and highly enriched uranium to produce 40 more.²⁹ It sees India’s larger and technologically more advanced conventional military as an existential threat.³⁰ Pakistan will not give up its nuclear weapons, seen as equalizers, as long as it sees India as a threat. In addition, as the only Muslim nation with nuclear weapons, Pakistani leaders and citizens take pride in the prestige conferred by their nuclear arsenal. While India and Pakistan should be essential players in future negotiations, we must also consider crafting agreements to take into account and limit other states that have or are pursuing nuclear weapons, such as North Korea, Iran, and Israel.

North Korea has twice demonstrated the ability to detonate a nuclear weapon while it refines its ICBM capabilities. Iran, already with a proven short- and medium-range missile capability, continues to

defy UN mandates as it develops its uranium enrichment technologies. Israel has chosen a nondeclaratory policy toward nuclear weapons, but some analysts estimate that Israel maintains approximately 100 nuclear warheads.³¹ These three states, with their nuclear ambitions, influence and threaten the security of countries around them that either already have some nuclear technology or have the funding to acquire nuclear technology and weapons.

For example, North Korea's nuclear ambitions affect the Republic of Korea and Japan. These are two of 30-plus countries under the United States' nuclear umbrella.³² Japan has the technological knowledge to build nuclear weapons if it chooses.³³ On the other side of Asia, Iran's drive to acquire nuclear weapons has inspired other Middle Eastern countries such as Saudi Arabia, Egypt, and Turkey to consider pursuing their own enrichment capabilities.³⁴

Prestige is another important consideration in future nuclear negotiations. Many countries, such as the UK, France, India, Pakistan, Iran, and North Korea, see nuclear weapons not only as part of their national security policy but also as important status symbols providing them influence in the international community and a seat at the table with the United States, Russia, and China. Asking these countries to give up their nuclear weapons and perceived political status in international relations will complicate all future nuclear arms negotiations directed toward that end.

While prestige is a factor to consider, ironically, democracy will add one of the biggest unknown variables to all future negotiations. With elections held at periodic intervals throughout the various democratic countries around the world, internal politics of the moment can almost instantly change the direction that country takes concerning nuclear weapons. Some examples include the US election with the change in direction between the Bush and Obama administrations. The various NATO allies can easily change their stance on nuclear weapons and forward deployment of US nuclear weapons within their countries. The recent Japanese election demonstrates how an administration can take a significantly different approach to nuclear weapons, as demonstrated by their recently launched probe into reported "secret nuclear pacts" with the United States.³⁵ While all states, democratic and autocratic, can be reversed by their opponents taking power, this is more likely to occur within democracies.

Another potential problem is that verification of compliance by nine to 10 different nuclear-armed countries will slow the progress and complicate nuclear disarmament talks. Current bilateral US and Russian negotiations have yielded an accepted inspection protocol

that works in the current negotiation environment. However, future multinational negotiations may present numerous new questions:

- Can 10 different states agree upon a rigorous and adequate verification regime?
- What kind of international inspectorate can be formed?
- Will each state be willing to open its country to adequate types of inspections?
- What is the role that the UN will play in treaty execution?
- How does the United States manage and verify stockpiles to ensure other nuclear states do not reweaponize?
- How do we prevent countries from nuclear weapons breakouts from their treaty obligations and, thereby, gaining strategic advantages denied to others?
- As we disarm further, can we ensure the protection to our allies currently under our nuclear umbrella?
- Will these countries pursue their own nuclear weapons as the US nuclear force shrinks?
- Will their foreign policies change in favor of nuclear neighbors, making us less secure?
- Is there some alternative other than nuclear protection that the United States can substitute?

This discussion identifies some of the players and future questions that must be considered in forging new nuclear arms reduction agreements, along with the dynamics in play within and among these nations. It is easy to understand why President Obama does not see a world free of nuclear weapons as happening within his lifetime. With the rapid spread of nuclear energy and weapons technology, we are about to enter a new world of arms negotiations much different from those we have practiced with the Russians. What this means is that we may be on a path to reduce our weapons and delivery systems to numbers closer to other nuclear-armed countries around the world in the next decade or so. If this happens, we will then enter a period in history with multiple countries possessing relatively equal numbers of nuclear weapons, while others still seek to acquire nuclear weapons.

When we negotiate with these multiple nuclear powers in the future in bringing our warhead numbers below 1,000 to around 500, we will be negotiating less from the position of superior numbers and

relative strength and more from relative parity. This will require a dramatic shift in our national security outlook. Indeed, should such deep cuts be taken, we will have fewer warheads and delivery vehicles than we have had since the 1950s, and more countries will possess or be seeking to acquire nuclear weapons.

Significance of Tactical Nuclear Weapons

While most other nuclear nations around the world are upgrading their delivery systems and replacing their old warheads, the United States has placed a self-imposed freeze on the replacement of our nuclear stockpile.³⁶ In addition, due to our geographic location in the world and historical context, we are sitting on a stockpile of what are considered strategic nuclear weapons, while the preponderance of other nuclear weapons around the world are considered tactical. This is an important factor to consider as the START Follow-on talks with the Russians only address strategic nuclear weapons, allowing Russia to retain an advantage in tactical nuclear weapon inventory to defend its borders.³⁷

The simple difference between strategic and nonstrategic or tactical nuclear weapons, as defined by the United States and Russia, is the difference in the range of delivery vehicles. ICBMs, SLBMs, and long-range bombers with the intercontinental range to destroy military, industrial, and leadership targets in each other's homelands are considered strategic nuclear weapons. Nuclear weapons that do not have the ability to reach the United States' or Russian heartlands when launched from their homelands are considered tactical nuclear weapons.³⁸ While there are some exceptions to this definition, it is important to realize that under the Strategic Arms Limitation Talks (SALT) I, SALT II, START, START II, the Strategic Offensive Reduction Treaty (SORT), and START Follow-on treaties, only strategic warheads and delivery systems (ICBMs, SLBMs, long-range bombers) are considered. This leaves out of the negotiations Russia's large nonstrategic weapons arsenal estimated at 2,000 to 6,000 tactical nuclear weapons.³⁹

The actual number of Russian nonstrategic or tactical nuclear weapons is difficult to pinpoint. In its 2009 yearbook, *Armaments, Disarmament and International Security*, SIPRI places Russian operational numbers at the low end of 2,047 deployed tactical warheads. Of these, 701 tactical nuclear weapons are assigned to missile-defense interceptors. The remainder of the nonstrategic weapons is offensive, including 648 weapons for delivery by land-based bombers like the Tu-22M Backfire and Su-24 Fencer. Further, the Russian Navy pos-

sesses 237 tactical nuclear weapons to be delivered by naval aircraft and 276 on sea-launched cruise missiles to be launched from ship platforms. Another 185 tactical nuclear weapons are dedicated to antisubmarine warfare and surface-to-air missiles.⁴⁰

These numbers are in contrast to the 400 US operational non-strategic weapons—all B61 gravity bombs delivered by fighters and bombers.⁴¹ Excluding missile-defense warheads, the Russians have a three-to-one numerical advantage over the United States in tactical nuclear weapons. However, these shorter-range weapons, if based on Russian soil, cannot reach the continental United States. Tactical nuclear arms would primarily be the concern, therefore, of states along Russia's periphery in Asia and Europe.

While the United States and Russia have their understanding and definition of strategic nuclear weapons worked out by negotiations, it is difficult for most countries in Europe and Asia to distinguish between Russia's strategic and tactical nuclear weapons. To countries like Estonia, South Korea, or Japan, one low-yield "tactical" nuclear weapon delivered by a missile or fighter aircraft would have devastating strategic implications.

These tactical nuclear weapons present additional challenges to negotiations and proliferation. First, tactical nuclear weapons are, on average, smaller than strategic weapons. Yields can vary anywhere from subkiloton to the strength of a strategic nuclear weapon. Smaller-sized weapons present multiple challenges. First, these weapons are easier to hide, complicating verification of treaty limits. In addition, unlike a bomber, ICBM, or SLBM force, tactical nuclear weapons are easily moved, contributing to counting and verification problems. Finally, the relatively low yield of some of these weapons may increase the likelihood of use in certain crisis contingencies. In some cases, this can improve deterrence effects versus an adversary but also might tempt decision makers to use them more readily. These tactical nuclear weapons spread around the world will put the United States in a difficult strategic position. If moved forward nearer the United States either clandestinely or on mobile platforms, these "tactical" weapons could become "strategic."

Impact on the United States and the Air Force in the Near Future

As START Follow-on Treaty negotiations continue and as we strive for a nuclear-free world in perpetuity, the United States will find itself in a unique situation. Unlike Russia and China who have chosen to modernize their nuclear arsenals, or countries like India, Pakistan,

and Iran who have recently developed or are developing new weapons, the United States has chosen a path of “life extension” for its weapons.⁴² This life extension approach can be complicated, as some components originally developed for these weapons are no longer manufactured.⁴³ This new paradigm of parity in numbers, more nuclear nations around the world, and an aging US arsenal will present numerous challenges to the United States over the next few decades.

First, as we move below 1,000 strategic warheads and toward 500 or fewer delivery systems, the Department of Defense will be forced to make difficult force structure decisions.⁴⁴ Just a reduction to the numbers Russian president Dmitry Medvedev proposed in September 2009 would force the United States to look seriously at reconfiguring its current strategic nuclear weapons triad of ICBMs, SLBMs, and long-range bombers of B-52s and B-2s, while considering the inefficiencies of maintaining three separate weapon systems in small quantities.⁴⁵

The United States might take numerous approaches when apportioning its nuclear weapons and delivery systems. An in-depth study will be required to optimize deterrence effects of the US nuclear arsenal following any future arms treaties, but two general approaches will most likely be considered. The first is an across-the-board reduction in all weapon systems to include ICBM's, bombers, and SLBMs. Another more likely approach will be to completely eliminate one leg of the triad. Each leg of the triad possesses strengths and weaknesses, and each adds a certain element of deterrence that translates into retaliatory strength. If we look at other nations, such as Great Britain, that have trimmed their nuclear arsenals over the years for an indication of the direction we may go, it appears SLBMs would be the weapon systems of choice to maintain. The primary advantage of the SLBM force is its likely survivability from a rival's surprise first strike. The downside is the “all of your eggs in one basket” syndrome. Advances in antisubmarine warfare by our adversaries may materialize in the future, threatening the survivability of our submarines. If so, then the preponderance of our nuclear capability could be lost. Indeed, a single submarine malfunction might instantaneously bring its 24 missiles off alert.⁴⁶ If there were a defect in a missile or warhead type, then all US SLBMs could possibly be rendered useless. Therefore, it would be prudent for the United States to maintain some semblance of diversity in its nuclear arsenal.

Unfortunately, the Air Force, as has been documented in several recent studies, for a time had neglected its maintenance, security, funding, and advocacy for nuclear weapons, thereby somewhat eroding its ability to carry out its mission of strategic deterrence.⁴⁷ Atrophy of our capabilities over the past 17 years has produced a genera-

tion of leaders who are not well versed in the nuclear mission and who are unable to advocate properly the advantages and necessity of the Air Force's role in nuclear deterrence.⁴⁸ As a service, we continue to look to the future for the next new thing while sometimes forgetting our heritage.

This loss of mission focus may regrettably cause the Air Force to lose much of the nuclear mission it fought the Navy so hard for.⁴⁹ As the Air Force revitalizes the nuclear enterprise, part of the price of neglect might be the eventual loss of the nuclear strategic bombing mission. US bombers are dual capable and can easily be used in conventional-only missions, much like the B-1 transition made in the early 1990s. This would be an easy force structure modification, leading to a dyad of US nuclear weapons rather than a triad. Removal of the bombers from our nuclear arsenal would eliminate an important signaling capability. Unlike other legs of the triad, bombers can be both launched and recalled. By scrambling our bomber forces, getting them airborne poised to strike, the country can signal its willingness (an important part of deterrence) to use nuclear weapons. Yet US decision makers can still recall the bombers once launched. Without bombers to put on alert, this traditional signaling mechanism could be lost.

Recent revitalization of the nuclear enterprise is not limited to the bomber force; it also includes the ICBM career field. As the Air Force strives to provide those who work with ICBMs a sense of purpose and mission in a post-Cold War era, it will be faced with increased reductions, as the ICBMs will be the second most likely delivery system in the US nuclear arsenal to be reduced, if not eliminated.

These reductions in USAF resources and missions, if taken, would exacerbate the nuclear culture problems it currently faces. With fewer nuclear billets in the Air Force at fewer locations, there would be an even smaller numbers of officers and senior noncommissioned officers to call upon to fill important command-and-control and critical nuclear-related staff and leadership positions. With a continued decrease in emphasis within the Air Force on the nuclear mission, it would be even more difficult to draw the best and brightest young Airmen into this dying career field, causing many to pursue other career opportunities. On the other hand, while it looks like there may be a reduction in Air Force strategic nuclear weapon delivery systems, there may be an associated increase in the deterrence role for the Air Force's fighter community.

To maintain some semblance of a triad to provide the necessary deterrence effects and security for our allies, the fighter community could ultimately pick up more of the aircraft nuclear weapons deliv-

ery mission formerly provided by heavy bombers. With the new Joint Strike Fighter becoming the Air Force's weapons system of choice, its mandated nuclear weapons delivery capability will be a vital part of its mission.⁵⁰

With a world moving toward a preponderance of tactical nuclear weapons (see fig. 2), it will be important for the United States to demonstrate its tactical nuclear capability. This capability could be a critical element of our future deterrence posture. It can be used in a show of force and national resolve when the aircraft are forward deployed and placed on airborne alert.

F-35s picking up the nuclear deterrence role from the bombers will present its own set of problems to the Air Force. Tactical nuclear weapons may not be regularly deployed to Asia and Europe due to the constantly changing political environments. However, if F-35s are to play a nuclear deterrent role, it would be wise to continue to deploy most of the estimated 200–350 forward-based nuclear bombs and air-to-ground missiles in NATO countries (see table 1).⁵¹ Otherwise, the F-35 community will face the challenges of keeping fighter crews, maintainers, security forces, and support personnel associated with

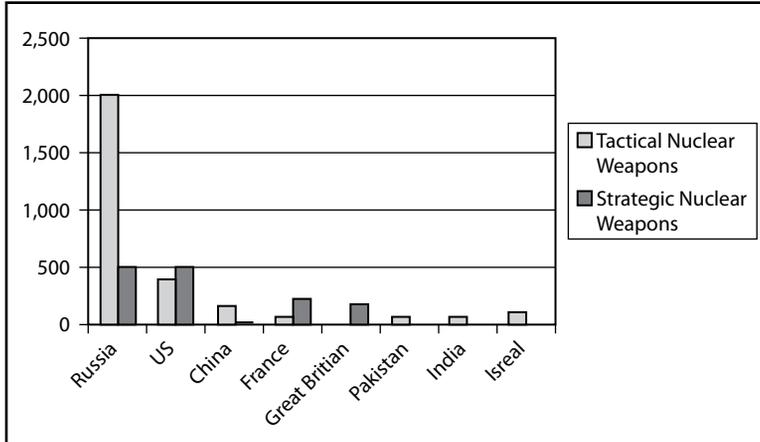


Figure 2. Future US/Russian strategic warhead limit of 500 with current tactical nuclear weapons. Strategic numbers are based on any future agreement between Russia and the United States that limit strategic nuclear weapons to 500 warheads each. Strategic nuclear weapons for China, France, and Great Britain along with all tactical nuclear weapons numbers are based on current strategic nuclear weapons and tactical nuclear weapons as reported by the Stockholm International Peace Research Institute. (*Reprinted from SIPRI, SIPRI Yearbook 2009, Armaments, Disarmament and International Security* [Oxford, UK: Oxford University Press]).

Table 1. Status of US nuclear weapons in Europe, 2008

Country	Air Base	Custodian	Delivery	Deployment	
				W53 vaults	Est. Weapons
Belgium	Kleine	701st MUNSS ^a	Belgian F-16s	11	10–20
Germany	Brogel Büchel	702d MUNSS	German Tornadoes	11	10–20
Holland	Volkel	703d MUNSS	Dutch F-16s	11	10–20
Italy	Aviano Ghedib	31st Fighter Wing 704th MUNSS	US F-16s Italian Tornadoes	18 11	50 20–40
Turkey	Incirlik ^c	39th Air Base Wing	Rotational US aircraft from other wings	25	50–90
UK	Lakenheath	48th Fighter Wing	US F-15Es	33	50–110
				<i>Total</i>	200–350

Source: Hans M. Kristensen, "USAF Report: 'Most' Nuclear Weapons Sites in Europe Do Not Meet U.S. Security Requirements," Federation of American Scientists, Strategic Security Blog, <http://www.fas.org/blog/ssp/2008/06/usaf-report>, 19 June 2008.

^aMunitions Support Squadron

^bRumored decision to withdraw 704 MUNSS and consolidate weapons at Aviano.

^cNo permanent fighter wing at base. National Turkish nuclear strike mission in doubt.

nuclear weapons fully qualified and capable of completing the nuclear mission while not actually having nuclear weapons at their forward locations. This shift to the F-35 as the primary airborne delivery system would provide enhanced deterrence for our nation at the cost of a cultural shift among the fighter community as it takes on this important role.

Conclusion

In April 2009, President Obama set the nation on the path toward the eventual long-term goal of zero nuclear weapons. Nuclear disarmament has been a worldwide goal since the Nuclear Non-proliferation Treaty was opened for signature in 1970. Over the years, states have taken numerous positive steps toward that end. Now the United States finds itself in negotiations with Russia to further reduce our nuclear arsenal. Perhaps in later rounds, after the current START Follow-on negotiations, the sides may agree to levels below 1,000 warheads. Once we cross the 1,000 threshold, we will be entering a new, more complicated world of nuclear arms negotiations.

As previously noted, it will take time to understand the different players, motives, and issues that each of the new players brings to the negotiation table. The challenge is to coordinate the step-by-step disarmament of the nine current members of the nuclear weapons state club while simultaneously attempting to persuade others from “going nuclear.” New challenges on the path to zero may emerge as allied nations consider acquiring nuclear weapons to make up for a perceived loss of US umbrella protection or as other nations see an opportunity to increase their relative military/political power and prestige.

To counter these unintended consequences, it is important to bring into negotiations all of the world’s nuclear-armed nations as soon as possible. However, even if we were to bring all other nuclear-armed nations into negotiations today, it would likely be a long time, if ever, before all parties would be able to agree on total disarmament or even on the next steps to be taken. During this protracted period of negotiations, we are going to find ourselves in a world with a group of countries that possess a relatively large and growing number of nuclear weapons.

The preponderance of weapons in this new environment will be so-called nonstrategic nuclear weapons, which will present a different dimension to our national security posture and force structure. The United States will have to make some tough choices as negotiations further limit delivery vehicles and warheads. With the most likely losses to the strategic retaliatory forces being first the bombers and then, possibly later, a reduction of ICBMs, the Air Force will need to focus more on its tactical nuclear mission. This proposed shift to tactical nukes would have a dramatic impact on the Air Force’s efforts to reinvigorate its nuclear enterprise.

As the Air Force endeavors to recapture the pride and discipline of Strategic Air Command (SAC) without actually resurrecting SAC, it will be faced with the additional challenges of a nuclear force structure so small that it will be even more difficult to maintain and inspire those to join and work with high energy and commitment. In addition, if the United States shifts to F-35s as the foundation of its nuclear airborne arsenal, the service will experience a cultural shift among aircrews as fighter pilots more fully join the nuclear enterprise by taking on the traditional role of the bombers.

The United States is committed to a path of a nuclear-free world. Meanwhile, the Air Force is committed to reinvigorating its nuclear enterprise. The first is a noble goal fraught with unknown challenges, numerous new actors, and dynamics that will yield surprises. The latter will reinvigorate the USAF nuclear force while simultaneously

downsizing that arsenal, reducing the role of nuclear weapons in the US national security strategy. This downsizing may ultimately result in a shift of focus on the Air Force's nuclear deterrence role from the strategic bomber community to tactical fighters.

Notes

1. "Remarks by President Barack Obama, Hradcany Square, Prague, Czech Republic," Office of the Press Secretary, The White House, 5 April 2009, http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.

2. George Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "Toward a Nuclear-Free World," *Wall Street Journal*, 15 January 2008, http://online.wsj.com/public/article_print/SB12003642267358_9947.html.

3. "Remarks by President Barack Obama."

4. *Ibid.*

5. US Department of State (DOS), "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," entered into force 5 March 1970, *United States Treaties and Other International Agreements*, vol. 757, no. 10485, <http://www.state.gov/t/isn/trty/16281.htm>.

6. Isaac Asimov, *Understanding Physics* (New York: Walker, 1966), 34.

7. The Heissenberg uncertainty principle simply states that you can't know the position and momentum of an atom at the same time; similarly, under the current international environment no country or entity completely knows the "nuclear position" or the "direction and speed" (momentum) a country is moving with regards to nuclear weapons. Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon & Schuster, 1986), 130.

8. James Schlesinger, chairman, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management: Phase I: The Air Force's Nuclear Mission* (Washington, DC: Department of Defense, 2008).

9. US DOS, "Treaty on the Non-Proliferation of Nuclear Weapons."

10. US DOS, "START II Treaty," 1997, <http://www.state.gov/www/global/arms/starthtm/start2/st2intal.html>.

11. RIA Novosti, "Russia, U.S. to Slash Nuclear Delivery Vehicles—Medvedev," 24 September 2009, <http://en.rian.ru/world/20090924/156243233.html>.

12. Schlesinger, *Report of the Secretary of Defense*, 18.

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Abbreviations

ICBM	intercontinental ballistic missile
LOW	launch on warning
LUA	launch under attack
NATO	North Atlantic Treaty Organization
NPT	Nuclear Non-proliferation Treaty
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SIPRI	Stockholm International Peace Research Institute
SLBM	submarine launched ballistic missile
SORT	Strategic Offensive Reduction Treaty
SSBN	fleet ballistic missile submarine
START	Strategic Arms Reduction Treaty
UN	United Nations