

# Nuclear Deterrence In a Changed World

Less than a year after the first atomic bombings, Albert Einstein warned, “Our world faces a crisis as yet unperceived by those possessing power to make great decisions for good or evil. The unleashed power of the atom has changed everything save our modes of thinking and we thus drift toward unparalleled catastrophe.” Despite Einstein’s warning, this drift continued over the next four decades, prior to the Reykjavik summit in October 1986.

The U.S.-Soviet arms race led not only to the production and deployment of tens of thousands of nuclear weapons but also to nuclear postures and strategies that brought the two sides close to nuclear war more than once. Their leaders recognized the growing risks and over time tried—sometimes succeeding and sometimes failing—to negotiate agreements to limit and reduce the numbers of these most deadly weapons and the risk that

they might be used again. At the same time, scientists, diplomats, and ordinary citizens the world over campaigned to halt nuclear testing and to stop the nuclear arms competition.

President Ronald Reagan and Soviet leader Mikhail Gorbachev addressed the nuclear challenge head-on in Reykjavik when they discussed the possibility of eliminating all nuclear weapons. Although they failed, stymied largely by

the lack of a common view on the merits of ballistic missile defenses, they did succeed in starting their two countries on a path of reducing numbers of warheads for the first time. It was a watershed year. In 1986, there were about 70,000 nuclear warheads in the world’s arsenals. Today the number has been reduced by more than two-thirds.

More recently, an important new element has been introduced into efforts to reduce nuclear dangers. It is the call to reduce the prominence of nuclear weapons in the U.S. defense strategy. When Reagan and Gorbachev discussed the elimination of nuclear weapons in Reykjavik, it was considered heretical by the nuclear mandarins, some of whom are still horrified. Yet, when four distinguished former U.S. leaders with impeccable records as Cold War hawks—George Shultz, William Perry, Henry Kissinger, and Sam Nunn—in 2007 offered a vision of a world without nuclear weapons and called for concrete steps toward that goal, the worldwide response was overwhelmingly positive. Two years later, the newly elected U.S. president, Barack Obama, gave weight to their call in his speech in Prague outlining his own strategy for

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**Soviet leader Mikhail Gorbachev (left) and U.S. President Ronald Reagan sign the Intermediate-Range Nuclear Forces Treaty in Washington on December 8, 1987, slightly more than a year after their meeting in Reykjavik.**

moving step by step toward a world free of nuclear weapons. He pledged to “put an end to Cold War thinking” by “reduc[ing] the role of nuclear weapons in our national security strategy” and to renew negotiations with Russia on further verifiable reductions in the two countries’ nuclear stockpiles.

In April 2010, the Obama administration completed its “Nuclear Posture Review [NPR] Report,” which outlined steps to reduce the role and number of U.S. nuclear weapons and emphasized that “the fundamental role of U.S. nuclear forces is to deter nuclear attacks against the U.S. and our allies and partners.”

In the same month, Obama and Russian President Dmitry Medvedev signed the New Strategic Arms Reduction Treaty (New START). Later that year, a bipartisan majority of the Senate approved the treaty, which requires verifiable reductions in deployed U.S. and Russian strategic warheads to a level of 1,550 each by 2018. Obama declared that, after New START, his administration would pursue further negotiations with

Russia that would seek to reduce and account for not only deployed strategic nuclear warheads, but also nondeployed warheads and nonstrategic warheads and associated delivery systems.

### The Road Ahead

In the years since Reagan and Gorbachev agreed that “a nuclear war cannot be won and must never be fought” and began at Reykjavik to seek nuclear disarmament, substantial steps toward reducing the nuclear risk have been taken. The conversation has evolved from “should we” pursue the elimination of nuclear weapons to include discussion of “how to” do so.

Yet, since the Prague speech and the completion of New START and the NPR, there is a sense that the momentum has slowed once again. New barriers have arisen that seem to have caused an indefinite delay in prospects for renewing U.S.-Russian negotiations. In part, the barriers are domestic politics—the change in Russian leadership and the impending presidential election in the United States—but some of the

barriers are substantive. The two sides have differing views on restraint and cooperation in proposed new ballistic missile defense systems and on whether to include shorter-range tactical weapons in addition to strategic ones in future nuclear arms reductions.

Obama soon will make decisions that might open the way for progress if the Russians are ready, and that is a big “if.” The review of the post-NPR implementation options developed by the National Security Council staff and the Pentagon over the past several months could lead to fundamental changes in Cold War-inspired presidential guidance on nuclear employment policy, nuclear targeting, and the size and structure of U.S. nuclear forces. In a March 26 speech, Obama said,

My administration’s nuclear posture recognizes that the massive nuclear arsenal we inherited from the Cold War is poorly suited for today’s threats, including nuclear terrorism. Last summer, I therefore

directed my national security team to conduct a comprehensive study of our nuclear forces. That study is still underway. But even as we have more work to do, we can already say with confidence that we have more nuclear weapons than we need. I firmly believe that we can ensure the security of the United States and our allies, maintain a strong deterrent against any threat, and still pursue further reductions in our nuclear arsenal.

### A Need to Rethink

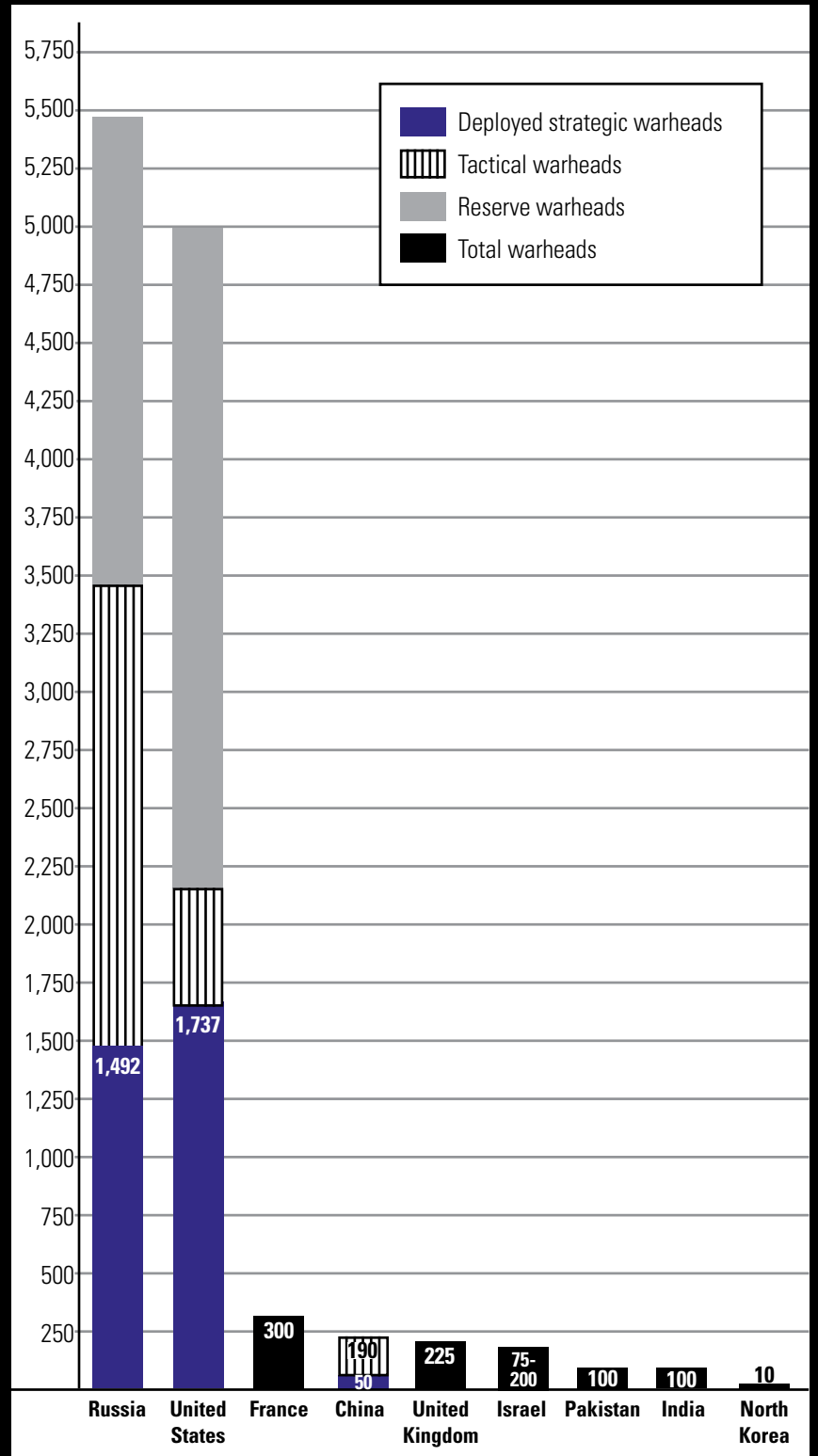
Unfortunately, many policymakers and planners in the United States, Russia, and elsewhere are still caught in a nuclear deterrence trap, believing, wrongly, that security can be maintained by fielding large stockpiles of nuclear weapons. U.S. tactical nuclear weapons deployed in western Europe and Russia's much larger holdings of tactical warheads are good examples. Policymakers need to rethink their assumptions about the kinds of threats nuclear weapons actually can help deter and how many of those weapons are needed to do that.

A close examination of today's global security threats, whether in the Middle East, Afghanistan, or Northeast Asia, reveals that they cannot be effectively addressed with the use or threat of use of nuclear weapons. The weapons have little or no effect in coercing states, insurgent groups, or terrorists to abstain from actions that threaten international peace and security.

The range of actions that nuclear weapons might deter never was very great. During the Cold War, one declared purpose for U.S. nuclear weapons was to prevent a Soviet land invasion of NATO Europe and the use of nuclear weapons by the Soviet Union against U.S. allies. Yet, nuclear deterrence did not prevent the Soviets from taking aggressive actions on their side of the Iron Curtain. Two major wars involving the United States broke out in Asia despite nuclear deterrence. Nuclear deterrence did not affect the decisions of a number of governments to acquire or attempt to acquire nuclear weapons despite the intense desire of successive U.S. administrations to prevent that from happening.

**Figure 1: Global Nuclear Stockpiles, 2012**

This table provides estimates for the nine countries that possess nuclear weapons. Russia and the United States have strategic, tactical, and reserve warheads. Both countries also have thousands of warheads that have been retired and are planned for dismantlement; those are not included here. China's nuclear warheads are believed to be stored separately from delivery vehicles.



Sources: Arms Control Association; Federation of American Scientists; International Panel on Fissile Materials; U.S. State Department.

Today, it is difficult to come up with realistic scenarios that would justify the use of nuclear weapons by the United States, but nuclear deterrence still elicits a mystical faith. Speak of a world without nuclear weapons, and the reaction of some is akin to removing a magical spell that prevents the United States from being victimized by its enemies, real or

a nuclear war or counter conventional military threats.

### **Deterring Nuclear Attack**

Five years ago, we wrote a report entitled "What Are Nuclear Weapons For?"<sup>1</sup> It argued that because the Cold War is over and China's strategic nuclear arsenal is relatively small (about 50 warheads),

be 1,000 strategic deployed warheads by 2018, instead of the 1,550 that the current version of the treaty requires. Beyond that, the best way to proceed with reductions of nuclear weapons would be to include warheads designed for use with short-range delivery systems in the program of reductions, as well as strategic warheads.

## **It is obvious to nearly everyone that containment and nuclear deterrence have lost the meaning they had during the Cold War.**

imagined.

"Containment," "nuclear deterrence," and "strategic stability" all were useful guides to U.S. policy during the Cold War. They contributed to the notion that nuclear weapons should be held in reserve for use in worst-case contingencies. These concepts, however, did not translate well into guides for common international action. The ideas never were fully or comfortably shared in actual practice between the United States and the Soviet Union, and they are even less likely to become guides to joint action in the current multipolar world, marked as it is by regional rivalries, asymmetric warfare, and threats posed by organizations outside the control of states. It is obvious to nearly everyone that containment and nuclear deterrence have lost the meaning they had during the Cold War. Strategic stability also has a broader meaning, beyond the imperative of avoiding incentives for a first strike.

In order to advance the nuclear disarmament process to its next stages, including further U.S. and Russian nuclear reductions involving all types of nuclear weapons and engagement of the world's other nuclear-armed states in this joint enterprise, the purpose of nuclear weapons in the 21st century must be clarified and updated. In addition, nuclear forces must undergo concrete changes to reflect the fact that the fundamental purpose and, ultimately, the sole purpose of nuclear weapons is to deter nuclear attack, not to wage

there is no need for the large numbers of strategic nuclear weapons that the United States and Russia possessed and deployed then. The same comment holds true for the numbers that Russia and the United States possess and plan to have even after New START expires in 2021.

Today, it is even clearer that it is possible and feasible to maintain a credible U.S. deterrent at lower levels of nuclear weapons than are stipulated in New START. It is clearly very difficult to escape from the mind-set that nuclear-dominated deterrence is required for strategic stability even though conditions have changed very considerably from Cold War days. Thus, although it may have been reasonable to err on the high side while in the early days of the "reset" policy with Russia, there is no reasonable justification today for such high numbers of nuclear weapons. The United States and Russia, the two countries that still possess more than 90 percent of the world's nuclear weapons, can do better in reducing their weapons stockpiles.

Senior U.S. military and civilian defense officials apparently think so too. According to "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," the Pentagon's January 2012 strategy document, "It is possible that our deterrence goals can be achieved with a smaller nuclear force, which would reduce the number of nuclear weapons in our inventory as well as their role in U.S. national security strategy."

New START could be amended in the next year or two so that the goal would

The general line of thinking in Washington seems to be to consider both types of warheads as being in one basket with "freedom to mix." Another method, which would be preferable, is to adapt the procedure used in the case of the Intermediate-Range Nuclear Forces Treaty negotiations, where strategic and intermediate-range systems were negotiated in separate but parallel sets of talks. The issues are rather different, and limits on short-range systems have not been attempted previously.

In a separate but parallel negotiation on short-range systems, the objectives should be as follows: first, to consolidate U.S. and Russian warheads in secure facilities deep within the respective countries; second, for the two countries to provide full transparency to each other regarding numbers and types of warheads in the secure facilities; and third, to begin the process of gradually eliminating the warheads in stages in which the numbers of weapons eliminated are roughly proportional to the total holdings of each side so that the two countries will reach zero at the same time.

In parallel with this process, negotiations on strategic forces should be taking place in a separate forum, but the talks on reductions in short-range weapons should receive priority. These weapons are threats to everyone because the portability of many of them makes them ideal for terrorist operations. This does not mean that all warheads in this category should be eliminated prior to any reductions in strategic forces, but

that all the short-range warheads should be eliminated by the time that the intermediate ceiling of 1,000 deployed strategic warheads has been achieved. Those not so eliminated in this process would have to be counted as strategic.

In the context of a joint nuclear risk-reduction enterprise among many countries, the United States and Russia could set a ceiling of 500 operationally deployed strategic warheads, with another 500 constituting a responsive force. With the other nuclear powers joining in initiating steps toward nuclear force reductions, agreement on cuts to this level could be reached by 2021, the year New START expires. The approach described here assumes that Russian nuclear forces will decrease in numbers comparable to those proposed for the U.S. force. The contingency of a hostile government taking power in Russia in the future can be met by maintaining the responsive but not operationally deployed force. This need not be available in a matter of days or weeks, but months or even years. Emphasis on adaptive planning—generating war plans quickly in time-critical situations—also will be required to meet possible contingencies. This will require continual upgrading of U.S. command and control capabilities.

Under these assumptions and taking into account the present U.S. relationship with Russia, a U.S. strategic force of about 500 operationally deployed warheads would be more than adequate to deter any nuclear attack against the United States or its allies from any current or future adversary and would provide enough flexibility to take into account changes in the international security environment. As described in the 2007 report, this number is large enough to deal with major command facilities and military targets, numbering between 200 and 300. The size of the operationally deployed force of strategic warheads was set at 500 for reasons of operational conservatism. The excess allows for force readiness concerns, multiple targeting where needed, and the possibility of unexpected events from Russia, for example, a breakdown in its military command and control structure caused by technical failures or a takeover by renegades.

The responsive force would be



U.S. Air Force

**An unarmed Minuteman III intercontinental ballistic missile is launched during an operational test at Vandenberg Air Force Base in California on February 25.**

configured in two parts, the first able to respond to a rapidly building crisis—a ready responsive force—and a second able to respond to strategic warning signals on a longer time scale—a strategic responsive force. This underscores the need for sustaining an infrastructure for supporting it as well as the need to provide this force with appropriate hardening. A few years after it is established, the total responsive force should have 400–500 warheads, a number comparable to the one the operationally deployed force has.

This number is of the order of what

would be adequate to target roughly 200 additional Russian sites. This category would include assets affecting industrial recovery, such as the major nodes in the electric power grid and air, ground, and rail transportation systems, as well as major industrial sites. These targets and the forces to attack them should be viewed as only temporary remnants of the Cold War policy of assured destruction.

Potential Chinese targets are likely to cover the same generic list as for Russia, cited above, including Beijing's strategic strike forces, command and control centers, major military bases, and ports



in the vicinity of Taiwan. China's long-range nuclear forces, as long as they remain at anything like their present levels, should not generate U.S. force requirements in addition to the numbers proposed above for hypothetical emergencies involving Russia. The same warhead can be aimed at multiple designated targets.

If there were drastic changes in the worldwide strategic picture, such as a major buildup of Chinese strategic forces, the United States presumably would begin a major buildup of its own. This would take time, but so would a major Chinese buildup. The interim force configuration of "500+500" proposed above provides a ready basis for such U.S. action. The warhead delivery capacity of the U.S. force of Trident submarine-launched ballistic missiles can be doubled above the level at which the original proposal would set it. In addition, as described above, the United States would maintain a functioning nuclear infrastructure.

Regarding potential targets in Iran or North Korea, the list would be much shorter because the territories are smaller and the numbers of defense-related installations are much smaller than in Russia and China. That list would very likely be limited to single digits in each country. Again, it must be stressed that this analysis is aimed only at determining "how much is enough" under traditional deterrence planning procedures.

### Structuring the Forces

The following is a force structure that would correspond to the approach proposed in this article, taking into account the targeting and other requirements cited above. It would be survivable and would not present first-strike incentives. The operationally deployed force would consist of

- three Trident submarines on station at sea, each loaded with 24 missiles and 96 warheads (a mix of low-yield and high-yield ones). Reducing the D-5 missiles' full complement of eight warheads to four per missile will substantially increase their maximum operating areas.<sup>2</sup> Alternatively, the same

numbers of missiles and warheads could be distributed on a larger number of Trident submarines in the interest of greater operational flexibility and survivability, albeit at higher operational costs.

- 100 Minuteman III intercontinental ballistic missiles in hardened silos, each with a single warhead; and
- 20 to 25 B-2 and B-52H bombers configured for gravity bombs or air-launched cruise missiles.

The responsive force would consist of

- three Trident submarines, each loaded with 96 warheads, in transit or being replenished in port for its next missions as part of a ready responsive force for a rapidly building crisis, plus two or three unarmed boats in overhaul, and
- 50 to 100 Minuteman III missiles taken off alert and without warheads, and 20 to 25 bombers, unarmed, in maintenance and training, all of which would comprise a strategic responsive force, for a more slowly building confrontation.

In sum, based on targeting, force readiness, and other requirements for a nuclear deterrent, the proposed U.S. force structure would encompass 500 operationally deployed warheads, plus 288 warheads in a rapid responsive force, and delivery systems in a strategic responsive force capable of deploying up to 212 additional warheads. The United States and Russia should work toward achieving such an agreement before New START expires in 2021.

Achieving the vision of a world free of nuclear weapons clearly would require fundamental changes in current political conditions. The steps described above could lead to changed circumstances and changed political and security relationships. This initiative can help pave a path toward realizing a vision that has been embraced by many U.S. presidents and other world leaders since 1945.

The force structure outlined above

is a conservative one in terms of target coverage, allowing for the fact that the door is closing too slowly on the Cold War orthodoxy of assured-destruction thinking by the United States and Russia. After a transition stage of surely less than a decade, a further halving of the total warhead levels should follow, with all remaining warheads being assigned to a responsive force.

These 500 warheads would cover for deterrence purposes all potential targets in other countries, assuming, as a precondition for such progress, nuclear restraint elsewhere in the world. This underscores the imperative of a nuclear joint enterprise.

Pre-planning and adaptive planning can make use of deployed warheads for a variety of contingencies. Massive pre-planned attack options are relics of the past and should be recognized as such.

To insure against the possibility of negotiated force reductions being rapidly reversed and to provide confidence to the rest of the world, the United States and Russia should negotiate verifiable procedures for destroying excess warheads and delivery systems. Other countries could then adopt these procedures.

Hesitation about a world without nuclear weapons is not exclusively a U.S. phenomenon. It is shared in many countries, Russia included. Overcoming that resistance will require assurance that other states are accompanying Russia and the United States on the road to zero.

This task is not easy, but what stands in the way is not physical or technical barriers but the fact that "everything has changed except our way of thinking."

### ENDNOTES

1. Sidney D. Drell and James E. Goodby, "What Are Nuclear Weapons For? Recommendations for Restructuring U.S. Strategic Nuclear Forces," Arms Control Association, October 2007, [www.armscontrol.org/pdf/20071104\\_Drell\\_Goodby\\_07\\_new.pdf](http://www.armscontrol.org/pdf/20071104_Drell_Goodby_07_new.pdf).
2. With reduced numbers of warheads, the Trident submarine-launched ballistic missiles will have significantly larger maximum flight ranges. See John R. Harvey and Stefan Michalowski, "Nuclear Weapons Safety: The Case of Trident," *Science and Global Security*, Vol. 4, No. 3 (1994): 261-337.