Arms Control and Proliferation Profile: The United States

Fact Sheets & Briefs

Updated: July 2019

According to the Federation of the American Scientists, as of April 2019, the United States possesses 3,800 stockpiled strategic and non-strategic nuclear warheads and an additional 2,385 retired warheads awaiting dismantlement, for a total of 6,185 nuclear warheads. On Feb. 2, 2018, the Trump administration released its Nuclear Posture Review, detailing its strategy for the role of U.S. nuclear forces. The United States has destroyed about 90.6% of its chemical weapons arsenal as of 2017 and is due to complete destruction by September 2023. It is party to the Biological Weapons Convention and has destroyed its biological weapons arsenal, although Russia alleges that U.S. biodefense research violates the BWC.

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Major Multilateral Arms Control Agreements and Treaties

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Nuclear Nonproliferation Treaty 1968 1970

Comprehensive Test Ban Treaty 1996 - - -


CPPNM 2005 Amendment - - - 2015

Chemical Weapons Convention 1993 1997

Biological Weapons Convention 1972 1975


Export Control Regimes, Nonproliferation Initiatives, and Safeguards

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UN Security Council Resolutions 1540 and 1673 The United States has filed reports on its activities to fulfill the resolutions and volunteered to provide assistance to other states.

Nuclear Weapons Programs, Policies, and Practices

The Nuclear Arsenal, an Overview

According to the Federation of the American Scientists, as of April 2019, the United States possesses 3,800 stockpiled strategic and non-strategic nuclear warheads and an additional 2,385 retired warheads awaiting dismantlement, for a total arsenal of 6,185 warheads. In April 2019, the Defense Department stated it would no longer declassify the number of U.S. nuclear warheads.

Under the 2010 New Strategic Arms Reduction Treaty (New START), the United States can deploy no more than 1,550 treaty accountable strategic warheads on 700 deployed delivery systems until February 2021 when the treaty expires. According to the March 2019 New START data exchange, the
United States deploys 1,365 strategic nuclear warheads on 656 strategic delivery systems.

The United States also deploys an additional 150 tactical (non-strategic) nuclear warheads based in Europe. While the United States and Russia maintain similarly sized total arsenals, the United States possesses a much larger number of strategic warheads and delivery systems while Russia possesses a much larger number of non-strategic (or tactical) nuclear warheads.

The United States is the only nation to have used nuclear weapons against another country, dropping two bombs (one apiece) on the Japanese cities of Hiroshima and Nagasaki in August 1945.

**Delivery Systems**

*(For a detailed overview of current and planned U.S. nuclear modernization programs, see our fact sheet [here.](#))*

**Intercontinental Ballistic Missiles (ICBM)**

- As of April 2019, the United States Air Force deploys 400 LGM-30G Minuteman III ICBMs. The Minuteman III has a range of over 6,000 miles (9,650-13,000 km). Each missile is equipped with either one 300 kt W87 warhead or one 335 kt W78 warhead.
- Under New START, the United States reduced the number of deployed ICBMs from 450 to 400. 50 excess silos have not been destroyed but have been kept in a “warm” operational status and can be loaded with missiles relatively quickly if necessary.
- In 2015, the United States concluded a multibillion dollar, decade-long modernization program that will extend the service life of the Minuteman III to beyond 2030.
- The U.S. Air Force is also developing a new ICBM, known as the ground-based strategic deterrent (GBSD), which is intended to replace the Minuteman III between 2029 and 2035.

**Submarines and Submarine-Launched Ballistic Missile (SLBM)**

**Submarines:**

- The U.S. Navy operates 14 Ohio-class SSBNs submarines, two of which are undergoing overhaul of their nuclear reactors at any given time. The remaining 12 are available for deployment. However, since some operational SSBNs also undergo minor repairs at any given time the actual number of SSBNs at sea usually numbers at around 10.
- 7 submarines are based out of Bangor, Washington and 5 submarines are based out of Kings Bay, Georgia.
- The submarines originally had 24 missile tubes for Trident II D5 SLBMs, but under New START, the Navy deactivated 4 tubes on each submarine, finishing this process in 2017.
- The Ohio-class submarines have a life-span of 42 years.

**Submarine-Launched Ballistic Missiles (SLBMs):**

- The Trident II D5 was first deployed in 1990 and has an operational range of 7,400-12,000 km.
- The Trident II D5 missile can hold up to eight warheads (but usually holds an average of four to five) and carries 3 variants:
  - the W88—a 475 kt Multiple Independently Targetable Reentry Vehicle (MIRV) warhead.
  - the W76-0—a 100 kt MIRV warhead.
  - the W76-1—a 100 kt MIRV warhead.
- To comply with New START, the Navy will not deploy more than 240 missiles. As of February 2018, 203 submarine-launched ballistic missiles were deployed.
An ongoing life extension program is expected to keep the Trident II D5 in service until 2042. The Trident II D5 is the only MIRV’ed (multiple independently targetable reentry vehicle) strategic missile remaining in the U.S. nuclear arsenal.

**Bombers**

- As of April 2019, the Air Force deploys 46 nuclear-capable B-52H Stratofortress bombers and 20 nuclear-capable B-2A Spirit bombers.
- The Air Force plans to deploy no more than 60 nuclear-capable strategic bombers under New START.
- An estimated 850 nuclear warheads are assigned to the strategic bombers, but only about 300 are typically deployed at bomber bases.
  - **B-52H Stratofortress bombers**: dual-capable; can carry 20 AGM-86B cruise missiles. The AGM-86B has a range of 2,500 km and is equipped with a 5-150 kt W80-1 warhead.
  - **B-2A Spirit bombers**: dual capable; can carry 16 B61-7, B61-11, or B83-1 gravity bombs.
- The United States also maintains several fighter-aircraft that serve in a dual-capable role. The F-15E and F-16C have been the cornerstone of this aspect of nuclear deterrence, carrying the B61 gravity bomb. The new stealth F-35 Lightning II, also known as the Joint Strike Fighter, will replace the F-16 as the U.S. Air Force’s primary nuclear capable fighter-aircraft.

**Ballistic Missile Defense Systems**

The United States develops and deploys several ballistic missile defense systems around the world. To learn more, see: "U.S. Missile Defense Programs at a Glance."

**Fissile Material**

### Highly Enriched Uranium (HEU)

- The United States has publicly declared that it no longer produces fissile material for weapons purposes. It stopped production of HEU in 1992.
- In March 2016, the United States announced the declassification of its national inventory of highly enriched uranium (HEU) of 585.6 tons, as of September 30, 2013.
- Estimates from 2016 place the U.S. HEU stockpile at around 600 metric tons, including 253 metric tons of military HEU and 264 metric tons of fresh and spent naval HEU.
- According to the 2015 Global Fissile Material Report, the United States has about 40 metric tons of HEU remaining to be downblended of the 187 metric tons it declared as excess to defense requirements and has committed to dispose.

### Plutonium

- At the end of 2014, U.S. military plutonium stockpiles amounted to a total of 87.6 declared metric tons (49.3 metric tons of which are declared as excess military plutonium).
- In October 2016, citing U.S. failure to meet its obligations under the agreement, Russia suspended its own implementation of the deal. Russia refuses to resume the agreement’s implementation until U.S. sanctions against Russia are lifted and NATO forces in Europe are reorganized along lines favorable to Russia. Russia contends that U.S. plans to abandon the conversion of plutonium into MOX fuel in favor of a cheaper and faster downblending method does not meet the terms of the deal because doing so would fail to change the composition of the plutonium from weapons-grade to reactor grade.
The United States possesses no separated civilian plutonium but at the end of 2014, an estimated 625 metric tons of plutonium were contained in spent fuel stored at civilian reactor sites.

Under the Plutonium Management and Disposition Agreement (PMDA), finalized with Russia in 2000, the United States committed to disposing of 34 metric tons of excess weapons-grade plutonium beginning in 2018. The agreement was amended in 2010 to change the agreed disposition methods in which Russia abandoned using mixed-oxide (MOX) fuel in light-water reactors in favor or irradiating plutonium in its fast-neutron reactors. The amendment also expressed renewed U.S. commitment to provide $400 million towards the Russian disposition program. Russia suspended cooperation with the agreement in November 2016.

**Proliferation Record**

- A close relationship exists between U.S. and British nuclear weapons programs. The United States supplies the United Kingdom with the Trident II D5 SLBM.
- Belgium, Germany, Italy, the Netherlands, and Turkey all host U.S. tactical nuclear gravity bombs as part of NATO nuclear sharing agreements. The estimated 180 weapons remain under U.S. custody during peacetime, but some may be released to U.S. allies for delivery in times of war.
- Beginning with President Dwight Eisenhower’s 1953 “Atoms for Peace” initiative, the United States has engaged in extensive worldwide trading and exchanging of fissile materials and technical information for nuclear science research and the peaceful use of nuclear technology. In 1954, an amendment to the Atomic Energy Act allowed bilateral nuclear agreements with U.S. allies to proceed, with the intent of exporting only low enriched uranium (LEU) fuel; however, this soon expanded to include HEU.
- Under the “Atoms for Peace” program a number of former, aspiring, and current nuclear-weapon states such as South Africa, Iran, India, Pakistan, and Israel all received, directly or indirectly, training and technology transfers utilized in their nuclear weapons programs. For example, in 1967, the United States supplied Iran with a 5 megawatt nuclear research reactor along with HEU fuel. Iran admitted to using the reactor in the early 1990s for the production of small amounts of Polonium-210, a radioactive substance capable of starting a chain reaction inside a nuclear weapon.
- Since the end of the Cold War the United States has tried to mitigate the adverse effects of the “Atoms for Peace” initiative and returned exported HEU and plutonium to the United States.

**Nuclear Doctrine**

Then-Deputy Defense Secretary Patrick Shanahan, in a Feb. 2, 2018 press briefing, claimed that the 2018 NPR “reaffirms that the fundamental role of U.S. nuclear policy is deterrence.” Critics of the 2018 Nuclear Posture Review (NPR) argue that the NPR reverses previous policy to reduce the role and number of U.S. nuclear weapons.

**Declaratory Policy**

The NPR dictates that the use of nuclear weapons will only be considered under “extreme circumstances” to defend the “vital interests” of the United States and its allies. It defines “extreme circumstances,” which the 2010 NPR did not, to include “significant non-nuclear strategic attacks” against “U.S., allied or partner civilian population or infrastructure, and attacks on U.S. or allied nuclear forces, their command and control, or warning and attack assessment capabilities.” For more on declaratory policy, see: Nuclear Declaratory Policy and Negative Security Assurances.

**Negative Security Assurance**

The NPR also includes a negative security assurance that the United States will not use nuclear weapons against non-nuclear-weapons states that are “party to the nuclear Nonproliferation Treaty and are in compliance with their nuclear nonproliferation obligations.” The review caveats this negative security assurance by retaining “the right to make any adjustment in the assurance that
may be warranted by the evolution and proliferation of non-nuclear strategic attack technologies and U.S. capabilities to counter that threat.” For more on negative security assurances, see: U.S. Negative Security Assurances at a Glance.

Testing

The United States has conducted 1,030 nuclear weapons tests. The first test was conducted on July 16, 1945 and the last test occurred on Sept. 23, 1992. The United States was the first country to conduct a nuclear test.

Biological Weapons

- In the early 1970s, the United States destroyed its entire stockpile of biological weapons, which had been developed between 1943 and 1969.
- The United States ratified the Biological Weapons Convention in 1975. However, in 2001, the Bush administration opposed and killed an effort dating back to 1995 to augment the Biological Weapons Convention with a legally binding verification protocol. U.S. officials said the protocol would be too burdensome on legitimate governments and private biodefense programs, while at the same time failing to deter cheaters.
- According to a 2016 State Department report, “In December 2015 at the annual Meeting of States Parties to the BWC, the delegation of the Russian Federation asserted that the United States had knowingly transferred live anthrax spores to a foreign country for use in open-air testing, and that this constituted a ‘grave violation’ of Articles III and IV of the BWC [Biological Weapons Convention].”
- The United States maintains that these transfers were a blunder. The report also notes that, “All U.S. activities during the reporting period were consistent with the obligations set forth in the BWC. The United States continues to work toward enhancing transparency of biological defense work using the BWC confidence-building measures.”

Chemical Weapons

- Behind Russia, the United States has declared the second-largest stockpile of chemical agents.
- As of 2017, the United States had destroyed about 25,154 metric tons, or about 90.6 percent, of its declared Category 1 chemical weapons stockpile. The United States has completed destruction of all its Category 2 and 3 chemical weapons.
- The United States received several extensions on its initial deadline for chemical weapons destruction under the Chemical Weapons Convention, and it now due to destroy its chemical weapons arsenal by September 2023.
- Destruction of the United States’ largest remaining stockpile of chemical weapons began in 2016 at Colorado’s Pueblo Chemical Depot. Upon completion, the Blue Grass Army Depot in Richmond, Kentucky will have the last remaining chemical agent stockpile in the United States.

Other Arms Control and Nonproliferation Activities

Intermediate-Range Nuclear Forces (INF) Treaty

The 1987 INF Treaty between the United States and the Soviet Union requires the United States and Russia to eliminate and permanently forswear all of their nuclear and conventional ground-launched ballistic and cruise missiles with ranges of 500 to 5,500 kilometers. The treaty resulted in the United States and the Soviet Union destroying a total of 2,692 short-, medium-, and intermediate-range missiles by the treaty’s implementation deadline of June 1, 1991.
However, in July 2014 the U.S. State Department officially assessed Russia to be in violation of the agreement citing Russian production and testing of an illegal ground-launched cruise missile. The State Department reiterated this conclusion in 2015, 2016, 2017, and 2018. In February 2019 the United States announced its intention to suspend its obligations and withdraw from the treaty, beginning a six-month withdrawal period that will end in August. For more information on the INF Treaty visit our "INF Treaty at a Glance" fact sheet.

**New START**

In April 2010, the United States and Russia signed a successor agreement to the original Strategic Arms Reduction Treaty (START) accord. The 2010 agreement, known as New START, commenced on Feb. 5, 2011. It requires that both sides reduce their arsenals to 1,550 deployed strategic nuclear weapons on no more than 700 ICBMs, SLMBs, and bombers by Feb. 5, 2018 and both sides met the limits by the deadline. In addition, it contains rigorous monitoring and verification provisions to ensure compliance with the agreement. President Donald Trump has repeatedly questioned the value of New START, calling it a “one-sided” agreement.

New START allows for a five-year extension subject to the agreement of both parties. The Trump administration has begun an interagency review on whether to extend the treaty and is weighing several factors, including the lack of China’s participation in the agreement, Russia’s new and developing strategic systems, and Russian tactical delivery systems currently not covered by the treaty. Though no official decision has been made yet regarding the Trump administration’s decision to extend, National Security Advisor John Bolton called it “unlikely” in June 2019.

**Nuclear Reduction Beyond New START**

In February 2013, President Obama announced that the United States intended to engage with Russia to further reduce deployed strategic warheads by one-third below the New START limit to around 1,100 to 1,000 deployed warheads. However, there has been little progress toward achieving such reductions due to the deterioration of U.S.-Russia relations in the aftermath of Russia’s annexation of Crimea and Russia’s insistence that other issues, such as limits on U.S. missile defenses, be part of negotiations on further reductions. In the spring of 2019, the White House told reporters that the administration is seeking a new trilateral arms control agreement that limits all types of nuclear weapons and includes China in addition to the United States and Russia.

**Conference on Disarmament (CD)**

The Conference on Disarmament was established in 1979 as a multilateral disarmament negotiating forum by the international community. At the 65-member CD, the United States has expressed support for continuing discussions on the CD’s core issues: nuclear disarmament, a fissile material cut-off treaty (FMCT), prevention of an arms race in outer space (PAROS), and negative security assurances. The United States has been a prominent supporter of a proposed FMCT.

In March 1995, the CD took up The Shannon Mandate which established an ad hoc committee directed to negotiate an FMCT by the end of the 1995 session. A lack of consensus over verification provisions, as well as desires to hold parallel negotiations on outer space arms control issues, prevented negotiations from getting underway. Later, in May 2006, the United States introduced a draft FMCT along with a draft mandate for its negotiations. However, following an impasse in negotiations on a FMCT in 2010, the United States (and others) signaled its desire to look at alternative approaches outside the CD and called for negotiations to be moved to the United Nations General Assembly where the agreement could be endorsed by a majority vote. However, the United States no longer makes comments to this effect.

The United States does not support negotiations on PAROS, deeming it unnecessary because there are no weapons yet deployed in outer space. China and Russia continue to articulate a desire to hold parallel negotiations, a point which has further stalled efforts to begin FMCT negotiations.

**Nuclear Weapons Free Zones**

The United States has ratified a protocol to the Latin America and the Caribbean Nuclear Weapons Free Zone (NWFZ) treaty pledging not to use or threaten to use nuclear weapons against the contracting parties. The U.S. has declined to ratify similar additional protocols to any of the
remaining NWFZ treaties for Africa, Central Asia, Southeast Asia, and the South Pacific.

Nuclear Security Summits
In April 2010, the United States hosted the first Nuclear Security Summit (NSS) in Washington, DC. Participants included 47 countries, 38 of which were represented at the head of state or head of government level, and the heads of the United Nations, the International Atomic Energy Agency, and the European Union. At the summit, the participants unanimously adopted the goal of securing all vulnerable nuclear material in the next four years. The United States also attended the NSS in Seoul, South Korea, on March 26-27, 2012 and the third NSS on Mar. 24-25, 2014. Washington hosted a fourth summit in the Spring of 2016 where attendees developed action plans for five global organizations to continue the work of the summits.

Joint Comprehensive Plan of Action (JCPOA)
Under the Obama administration the United States played the central role in the brokering of the July 2015 JCPOA, better known as the “Iran deal,” which limits and rolls back Iran’s nuclear program in exchange for lifting economic sanctions. Congress in September 2015 debated a resolution that would have blocked implementation of the accord, but it failed to receive enough votes to pass the Senate. In January 2016, sanctions on Iran, including those targeting the financial and oil sectors, were lifted and $100 billion worth of frozen Iranian assets were released after international inspectors confirmed that Iran had rolled back large sections of its nuclear program and met more intrusive monitoring requirements.
On May 8, 2018 President Trump violated the JCPOA by reimposing sanctions on Iran that were lifted by the agreement, despite the U.S. intelligence community’s assessment that Iran was adhering to its commitments under the deal and over objections from the remaining parties to the agreement. Since the U.S. decision to withdraw, the remaining parties to the deal have reiterated their commitment to the JCPOA and taken steps to bypass U.S. sanctions and preserve legitimate trade with Iran.

Syrian Chemical Weapons
In September 2013, in the aftermath of the large-scale use of chemical weapons by the Syrian government, United States reached an agreement with Russia to account, inspect, control, and eliminate Syria’s chemical weapons. Before the deal was reached, the United States was planning to use airstrikes to punish the perpetrators of the attack, which the United States blamed on the Syrian government. By July 2014, Syria’s declared chemical weapons stockpile had been successfully removed from the country and flagged for destruction following a broad multilateral operation. However, the United States has raised concerns about the accuracy of Syria’s declaration.

In September 2014, the Organisation for the Prohibition of Chemical Weapons (OPCW) confirmed that chlorine gas was being used in Syria. The UN Security Council adopted a resolution on Mar. 6, 2015 condemning the use of chlorine gas in Syria. Secretary of State John Kerry was quick to suggest that the Assad regime was the likely perpetrator of the chlorine gas attacks; Russia, however, was hesitant to assign blame. In August 2016, the third report of the OPCW-UN Joint Investigative Mechanism was released, finding that the Syrian government was responsible for chemical weapons attacks.

In April 2017, another chemical weapon attack was carried out in the Syrian town of Khan Shaykhun where Syrian government warplanes were accused of spreading a nerve agent via bombs, killing dozens. U.S. President Donald Trump responded by immediately blaming the regime of Bashar Assad and launching 59 Tomahawk missiles targeting the airfield that had allegedly launched the attack. Following the launches, Trump stated that “It is in this vital national security of the United States to prevent and deter the spread and use of deadly chemical weapons.” As a justification for the U.S. response, Secretary of State Rex Tillerson stated that “If you violate international agreements, if you fail to live up to commitments, if you become a threat to others, at some point a response is likely to be undertaken.”

(For a detailed timeline on Syrian chemical weapons, see our fact sheet here.)