Demonstrating the U.S. Commitment to Nuclear Disarmament

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Outline

- Reducing nuclear weapons
- Ceasing production of weapons materials
- Disposing of excess weapons materials
- Managing a smaller stockpile
- Strengthening the nuclear security enterprise
- Transparency and verification

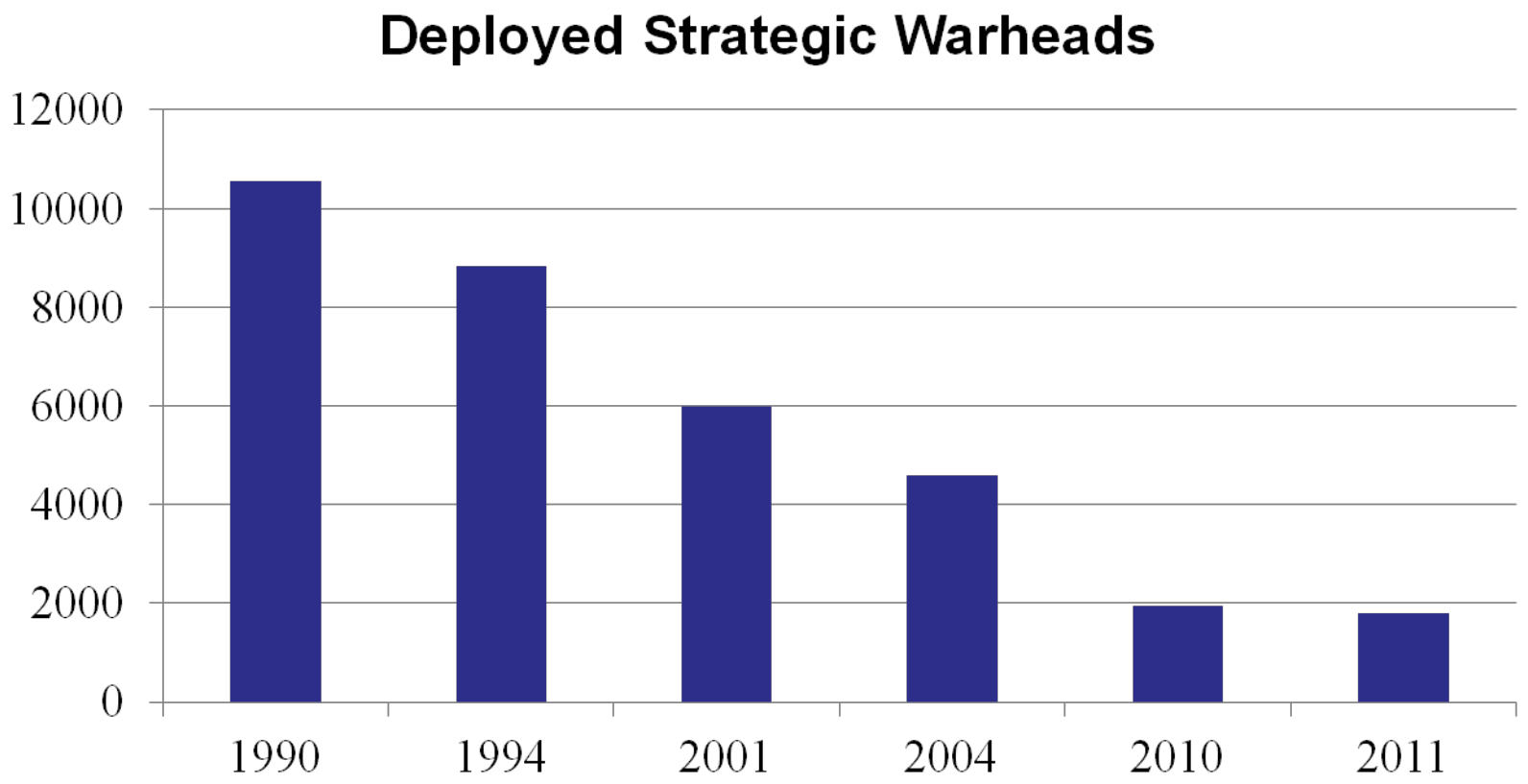
Toward a World Without Nuclear Weapons

- President Obama stated the U.S. commitment to the peace and security of a world without nuclear weapons
- Continue focus on preventing nuclear proliferation and nuclear terrorism
- Strengthen regional security architectures while placing increased reliance on non-nuclear deterrence capabilities
- Engage with Russia in negotiations aimed at achieving substantial further nuclear force reductions
- Commence negotiations on a verifiable FMCT
- Engage other nuclear weapons states, over time, in a multilateral effort to limit, reduce, and eventually eliminate all nuclear weapons worldwide
- Continue to sustain a safe, secure, and effective nuclear deterrent as long as nuclear weapons exist

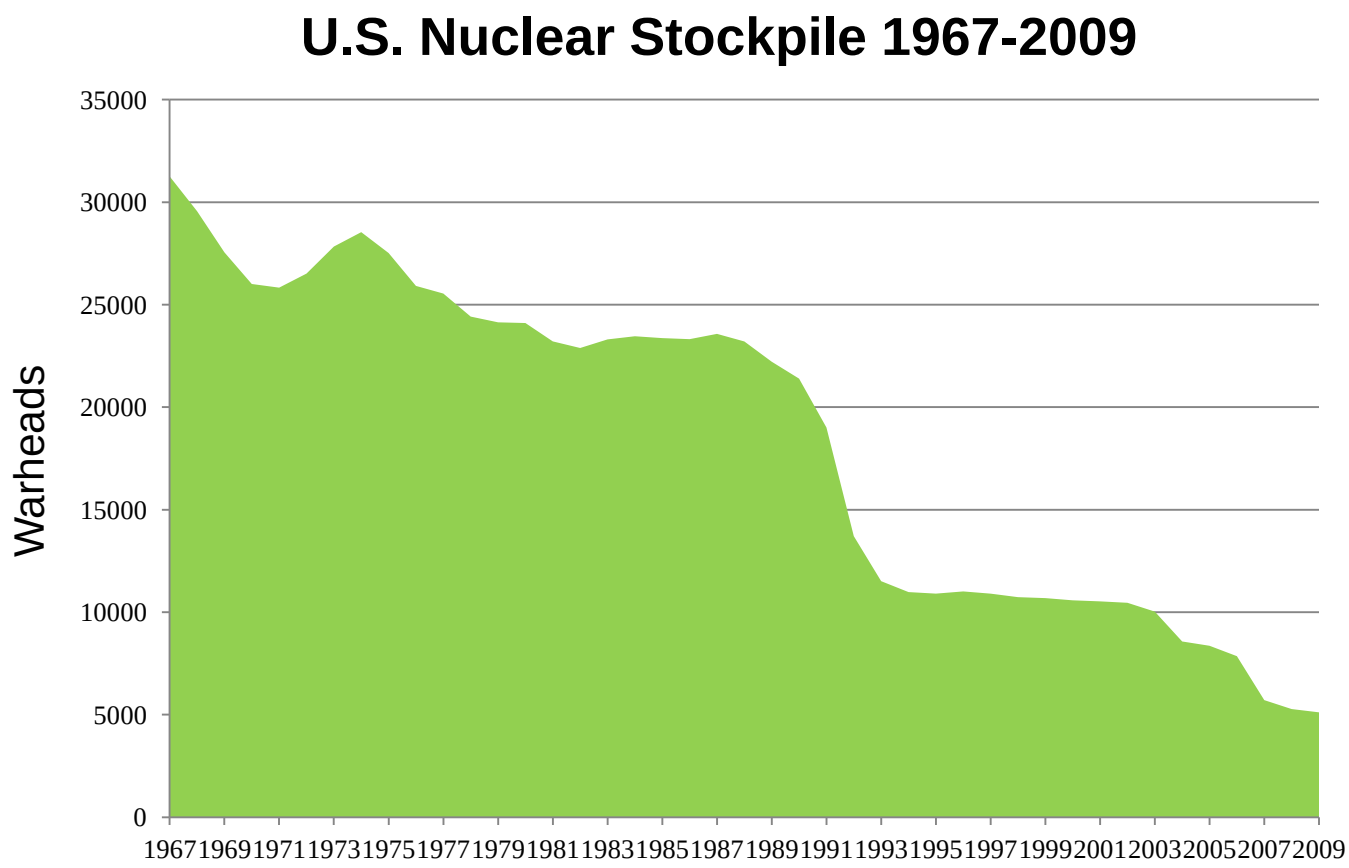
Concrete Steps Toward Disarmament

- **Reductions** in deployed nuclear weapons and total stockpile
  - U.S. stockpile reduced 84% from Cold War peak in 1967.
  - New START limits U.S. and Russia to 1,550 deployed strategic warheads each
- **Dismantlement** of nuclear weapons
  - More than 8,748 nuclear weapons dismantled since 1994
  - On track to eliminate all warheads declared in 2009 for dismantlement by 2022
- **Transformation** of the nuclear security enterprise
  - Capabilities-based infrastructure to enable greater stockpile reductions
  - Consolidating activities and functions; implementing a broad national security mission
- **Significant efforts to dispose of fissile materials** from national security stocks continue
- **Cessation of New Fissile Material Production:**
  - No production of fissile material for weapons since late 1980s; support FMCT negotiations
- **Nuclear testing moratorium continues**
  - 19 years since last U.S. test; continue to support ratification and entry into force of CTBT
- **Reduced reliance on nuclear weapons** in U.S. security strategy

Reductions in U.S. Deployed Strategic Nuclear Warheads



Reductions in U.S. Nuclear Stockpile



Fissile Material Production for Weapons Stopped

Hanford's F Reactor – completely dismantled in 2003

- No production of Highly Enriched Uranium (HEU) for weapons since 1964 and HEU production plants closed
- No production of plutonium for U.S. weapons since 1988
  - Last U.S. plutonium reactors shut down in 1989

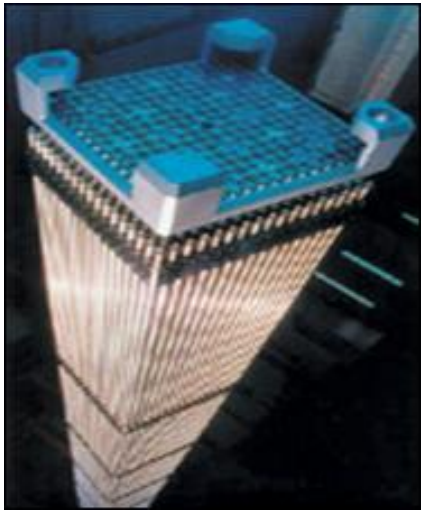
HEU Removed from National Security Stocks

- **In 1994, the United States declared 174 MT of HEU excess to defense needs**
- **In 2005, the United States withdrew an additional 200 MT of HEU from use in nuclear weapons**
  - 125 MT of HEU from these two declarations has already been down-blended to low-enriched uranium (LEU) reactor fuel, and another 12 MT has been delivered to a commercial site for near-term down-blending
  - HEU from these two declarations has been used to provide LEU to a number of programs, including the American Assured Fuel Supply and fuel for Research Reactors around the world converted from HEU

374 MT of HEU made unavailable for weapons use – equivalent to nearly 15,000 nuclear weapons

Plutonium Removed from National Security Stocks

- **In 1994, 52.5 MT of plutonium declared excess to national security requirements**
- **Plutonium Disposition Agreement with Russia commits both sides to dispose of at least 34 MT each of weapons-grade plutonium**
  - Construction of U.S. MOX facility started in 2007
  - U.S. and Russia agreed upon a technically and financially credible program for Russian plutonium disposition
  - Protocol on implementation signed in April 2010
  - Agreement entered into force in July 2011
- **In September 2007, declared an additional 9 MT of weapons-grade plutonium removed from national security stocks**



Mixed oxide fuel assembly

61.5 MT of plutonium removed from U.S. stocks – equivalent to more than 15,000 nuclear weapons

U.S.-Russia Weapons-Grade Plutonium Cessation

- **1997 Plutonium Production Reactor Agreement**
- Requires cessation of weapons-grade plutonium production for use in nuclear weapons in United States and Russia
- Monitoring provisions provide confidence that:
  - Shut down reactors in both countries do not resume operation
  - Plutonium produced by the last three reactors that operated in Russia is stored securely and not used in nuclear weapons

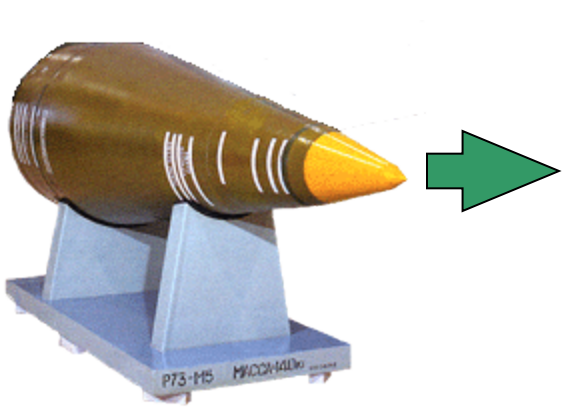
- **Elimination of Weapons-Grade Plutonium Production**
- Programs in Zheleznogorsk and Seversk to refurbish and build heat and electricity plants to facilitate the shutdown of the last three weapons-grade plutonium production reactors in Russia
  - All three Russian reactors are now shut down
  - The last reactor at Zheleznogorsk shut down in April 2010

Computer simulation of Zheleznogorsk plant

Reusing HEU from Dismantled Russian Weapons

1993 U.S.-Russia HEU Purchase Agreement

- Provides for the conversion of 500 MT of HEU from dismantled Russian weapons into low enriched uranium (LEU) to fuel U.S. nuclear power plants
- U.S. transparency monitoring provides confidence that 30 MT Russian HEU are converted into LEU every year and eliminated from Russian stockpiles. (IAEA equivalent to 1,200 nuclear weapons destroyed annually)
- By the end of 2013, 500 MT Russian HEU converted to LEU (20,000 weapons)



433 MT of HEU removed from Russian stockpiles to date and converted into LEU for nuclear fuel -- equivalent to destroying over 17,300 nuclear weapons

Managing a Smaller Stockpile

Principles to sustain a safe, secure, and reliable stockpile include:

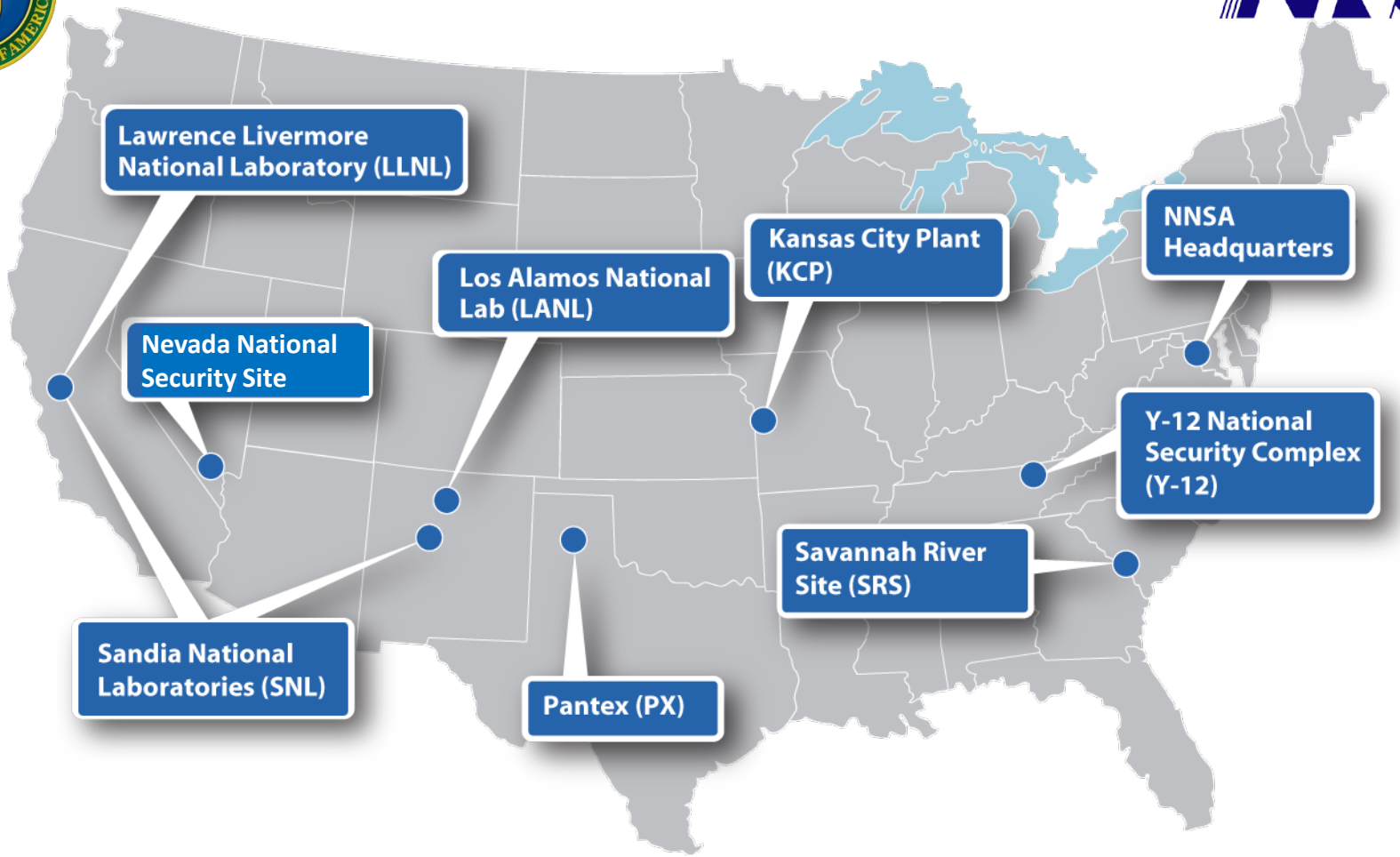
- Life extension of existing warheads instead of new warhead development
  - No nuclear testing
  - No new military missions
  - No new military capabilities
- Priority given to enhancements to safety, security and use control
- Potential for reducing the number of warhead types
- New START Treaty sets the stage for further reductions in the stockpile

U.S. seeks to retain the smallest possible nuclear stockpile consistent with our need to deter adversaries, reassure our allies, and hedge against technical and geopolitical surprise.

Transforming the Nuclear Security Enterprise

- Consolidate activities while addressing an aging infrastructure
  - Chemistry and Metallurgy Research Replacement Project and new Uranium Processing Facility
  - Support the needed recapitalization of the nuclear infrastructure
- Support Science, Technology, and Engineering (ST&E)
  - A strong ST&E base is the foundation of the full range of national security missions, including: nuclear nonproliferation and enhanced verification, counterterrorism, and emergency response
  - Investment in NNSA infrastructure provides the tools to tackle a wide range of national and international challenges – everything from climate change to HIV modeling
- Recruit and retain key human capital in DoD and DOE to build the next generations of safeguards and stockpile safety/stewardship experts

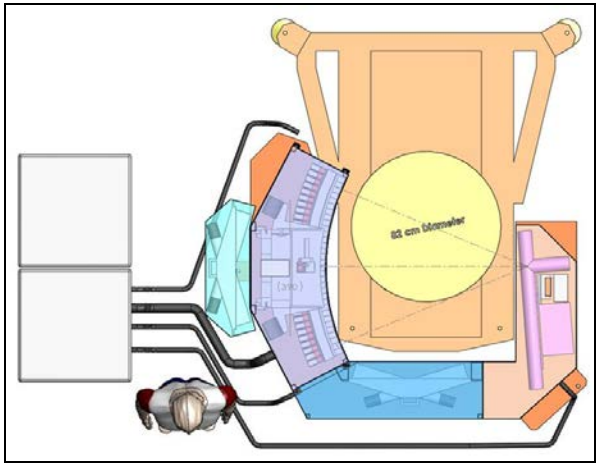
Nuclear Security Enterprise



"By modernizing our aging nuclear facilities and investing in human capital, we can substantially reduce the number of nuclear weapons we retain as a hedge against technical or geopolitical surprise, accelerate dismantlement of retired warheads, and improve our understanding of foreign nuclear weapons activities." – 2010 NPR

Transparency and Verification for the Future

- Sustained commitment to research, development, analysis and implementation of measures to:
  - Address current verification requirements
  - Develop and demonstrate capabilities to meet future challenges, including warhead verification measures
  - Increase transparency across the Nuclear Security Enterprise
- Collaboration with international partners to:
  - Augment understanding and perspective
  - Develop potential joint approaches



Schematic of ORNL Fieldable Nuclear Materials Identification System (NMIS).

Conclusion

- The United States has a demonstrated record of reducing and eliminating nuclear weapons, disposing of weapons-usable fissile materials, and consolidating the nuclear security enterprise
  - Pace and progress of reductions in the U.S. arsenal have been extraordinary
  - Partnership with Russia facilitating great progress on reducing nuclear materials
- The United States has negotiated and implemented significant steps toward disarmament, consistent with its commitments under NPT Article VI
- The United States continues to reduce the number and role of nuclear weapons
- President Obama has rededicated the United States to the goal of a world without nuclear weapons
- Contributions of all states needed to achieve this goal