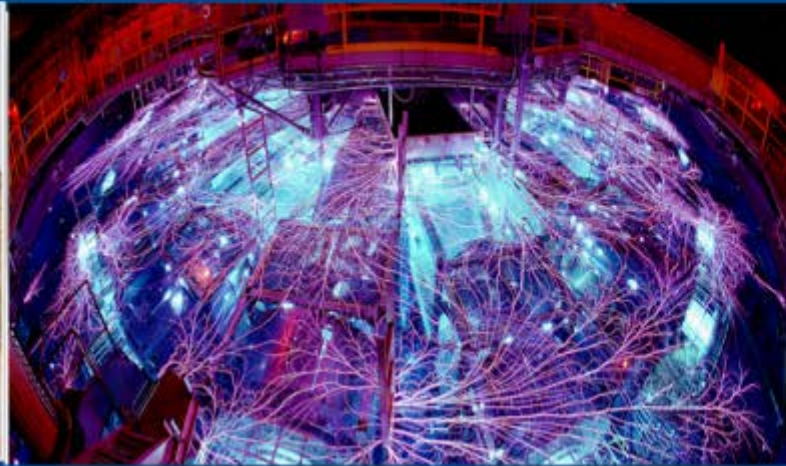




Bridging Deterrence and Disarmament



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NATIONAL NUCLEAR SECURITY ADMINISTRATION



Origins of Science-Based Stockpile Stewardship and the U.S. Commitment to CTBT



- During the early 1990s, international calls for an end to nuclear explosive testing helped establish the global norm against this practice.
- In 1992, the U.S. Congress enacted a 9-month testing moratorium.
- The following year, President Bill Clinton extended the U.S. testing moratorium, and in 1996 the United States became the first nation to sign the Comprehensive Nuclear-Test-Ban Treaty.

“A comprehensive test ban is the right step as we continue pulling back from the nuclear precipice...it moves us one step closer to the day when no nuclear weapons are detonated anywhere on the face of the Earth.”

— President Bill Clinton, August 11, 1995



Demonstrated Longtime Commitment to Reducing the Role of Nuclear Weapons



- United States has pursued a “world without nuclear weapons” for decades – the basis for the NPT
- In the early 1990s the United States and Russia took steps to reduce weapons through the Presidential Nuclear Initiatives
- George W. Bush Administration continued trend by negotiating the Moscow Agreement – reduced US and Russian stockpiles to 2200 deployed strategic warheads

The US will continue to help shape the nonproliferation environment



Demonstrated Longtime Commitment to Reducing the Role of Nuclear Weapons (Cont'd)

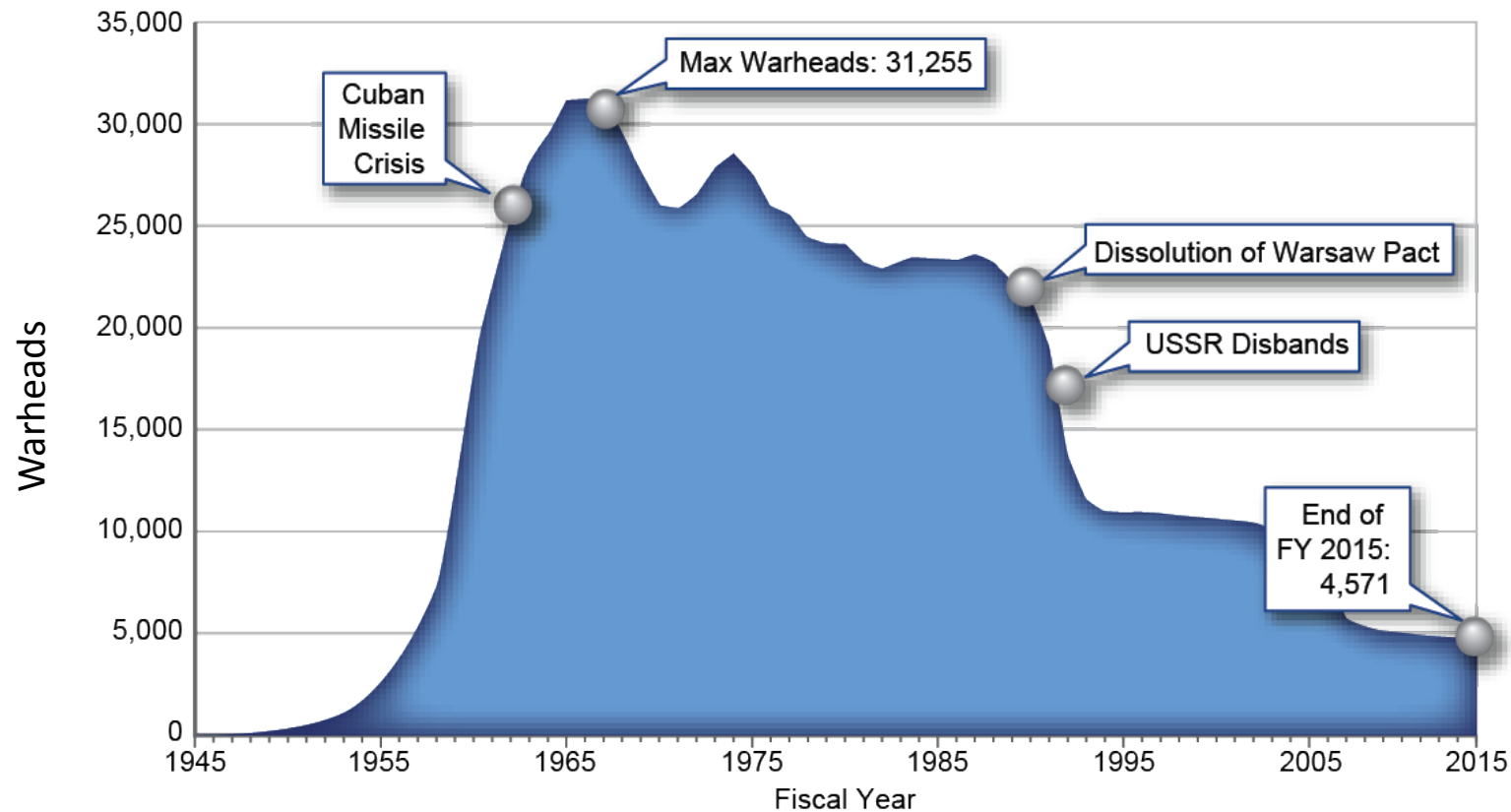


- President Obama emphasized “reducing the role and number of nuclear weapons” and completed the New START Treaty with Russia – further reductions to 1550 operationally deployed strategic nuclear weapons
- President Obama’s Berlin speech in 2013 invited Russia to join us in additional reductions of up to one third additional operationally deployed strategic weapons (to 1000) and to discuss nonstrategic weapons
- Secretary Kerry announced at the NPT RevCon that we would accelerate dismantlement of warheads retired prior to 2009 – today we have approximately 2500 awaiting dismantlement

The US will continue to help shape the nonproliferation environment



Evolution of the Stockpile



Note: Includes active and inactive warheads. Several thousand additional nuclear warheads are retired and awaiting dismantlement.

Key: USSR = Union of Soviet Socialist Republics

Size of the U.S. nuclear weapons stockpile 1945–2015



Strengthening Regional Deterrence and Reassurance of U.S. Allies and Partners



- U.S. is committed to working with allies and partners to strengthen regional deterrence
 - Continue to enhance conventional capabilities, field regional missile defenses, and improve counter-WMD capabilities
 - Provide assurance to allies so there will be no need to develop their own nuclear deterrent
- Key regional security architectures retain a nuclear component as long as nuclear threats to U.S. forces and allies remain
 - Continue close consultations with allies and partners to ensure the credibility and effectiveness of the U.S. extended deterrent



Sustaining a Safe, Secure, and Reliable Stockpile



U.S. stockpile management principles:

- No nuclear-explosive testing – maintain the stockpile with the science-based Stockpile Stewardship Program (SSP)
- Sustain the Stockpile
 - No new nuclear warheads. Life Extension Programs (LEPs) will only use previously tested designs and not support new military missions or provide for new military capabilities
 - LEPs enable reductions in the overall stockpile
- Annual assessment process assures a credible deterrent



Sustaining a Safe, Secure, and Reliable Stockpile (Cont'd)

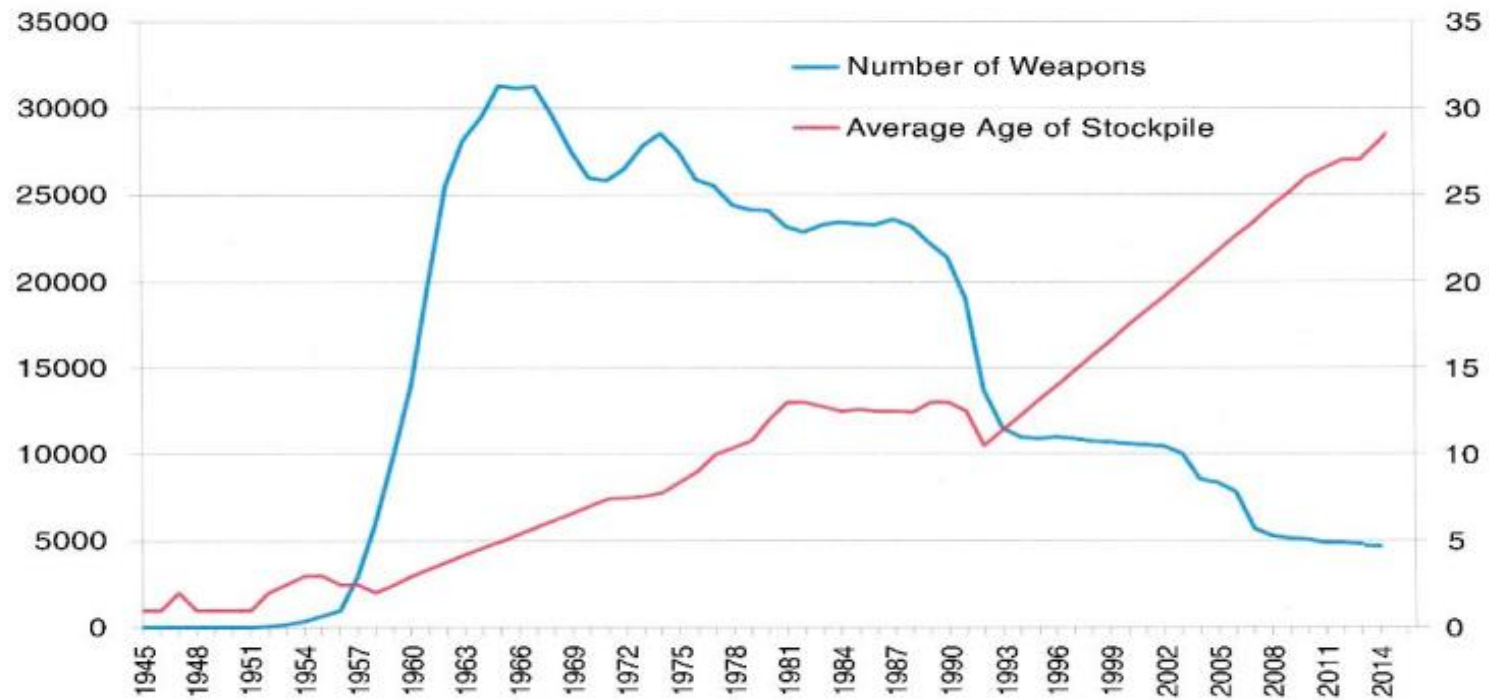


Revitalize the nuclear weapons complex:

- Address aging infrastructure while downsizing footprint
- Support Science, Technology, and Engineering
- Recruit and retain key human capital in DoD and DoE
- Continued leadership focus on the nuclear mission

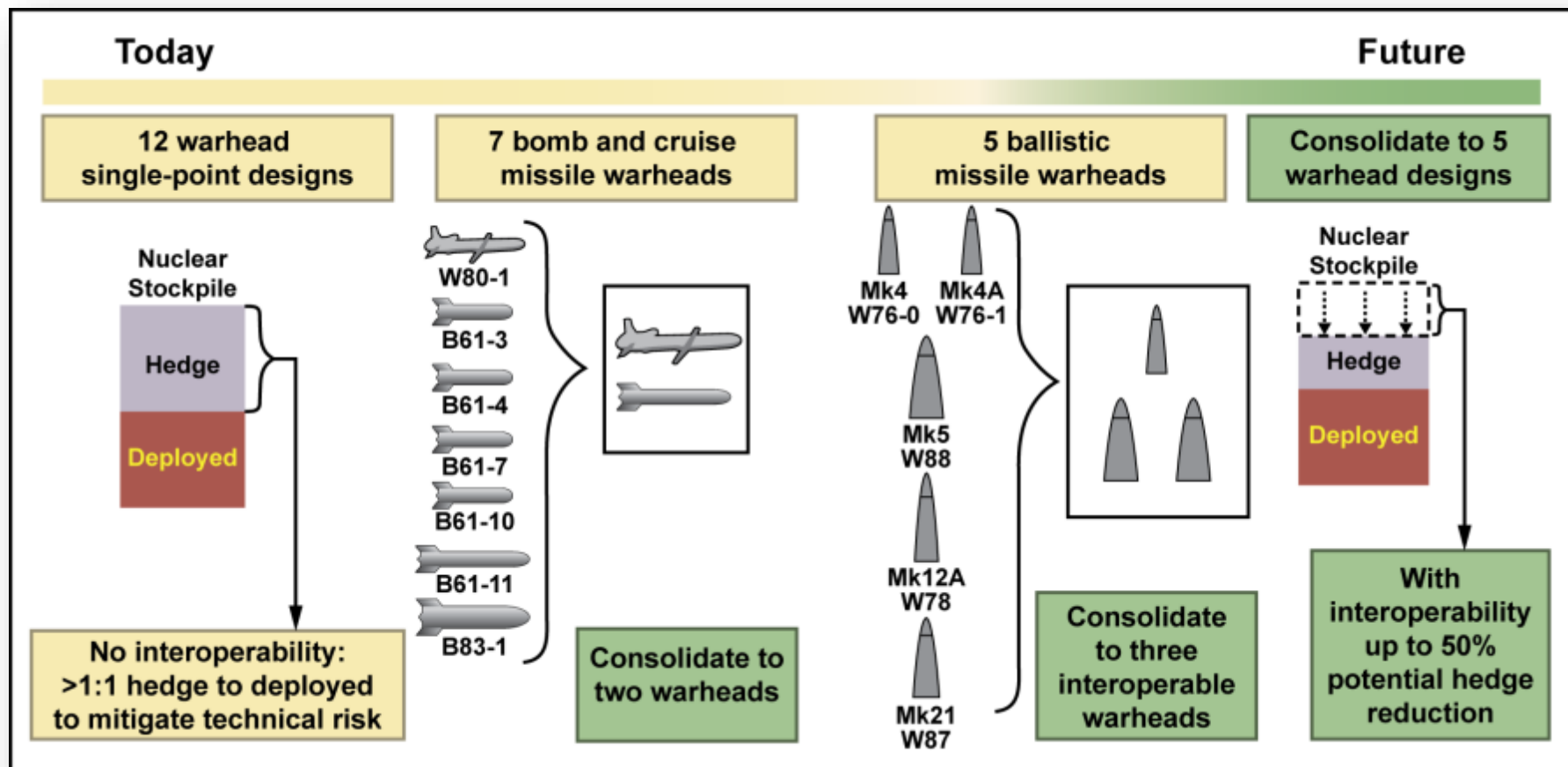


Historical U.S. Stockpile: Numbers and Average Age





3+2 Strategy





Continuing Efforts to Reduce the Role and Numbers of Nuclear Weapons



Life Extension Programs enable further reductions:

- W76-1 LEP will, when completed in 2019, allow significant stockpile reductions
- Delivery of the B61-12 First Production Unit will lead to the retirement of the last megaton weapon, the B83 gravity bomb



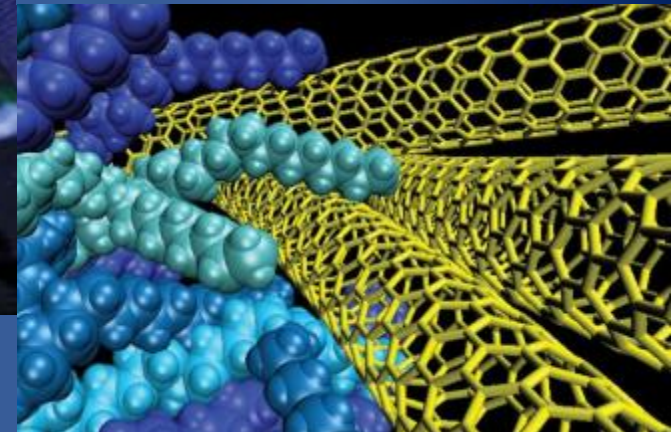
Stockpile Stewardship Capabilities Have Allowed the U.S. Moratorium to Remain in Place For Almost 24 Years



**Computing &
Information Sciences**



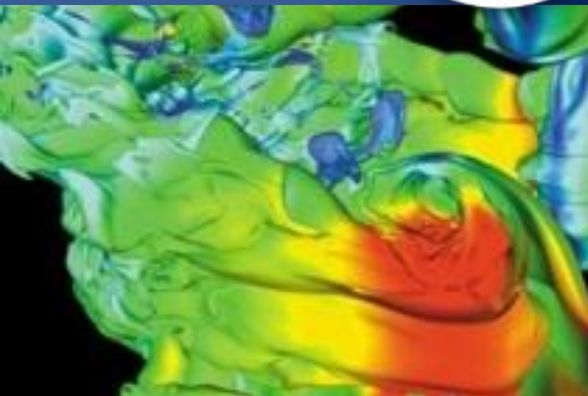
Materials Sciences



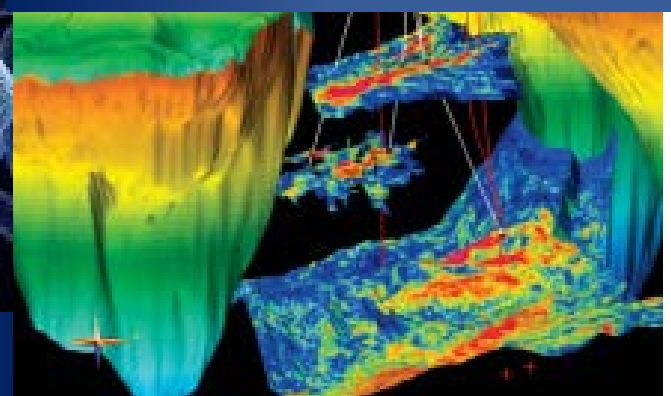
High Energy Density Science



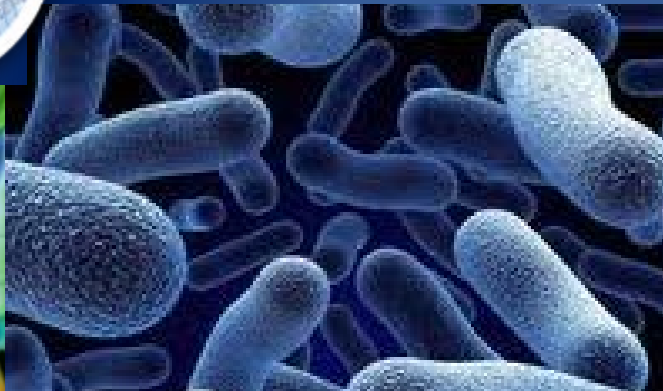
Engineering Science



Geoscience



Bioscience





SSP Science Advancements Support Other Missions

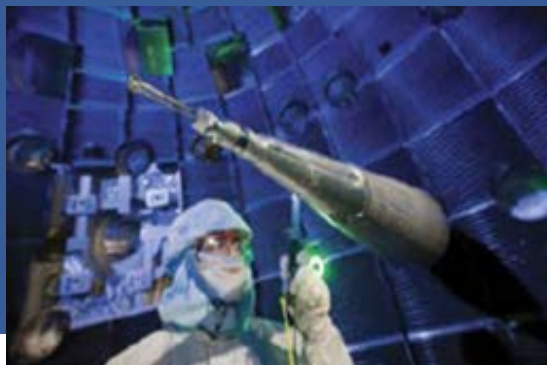


Computing & Information Sciences



- Cosmology
- Climate Monitoring
- Geographic Mapping
- Precision Medicine

High Energy Density Science



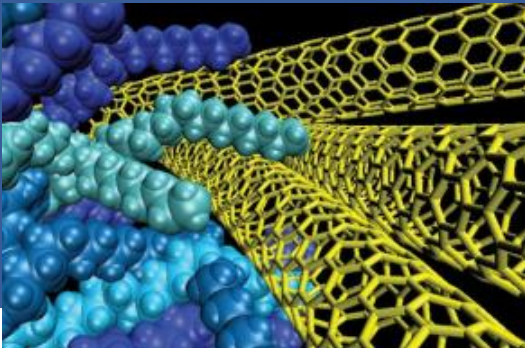
- National Ignition Facility (NIF)
- Precision Optics



SSP Science Advancements Support Other Missions (Cont'd)

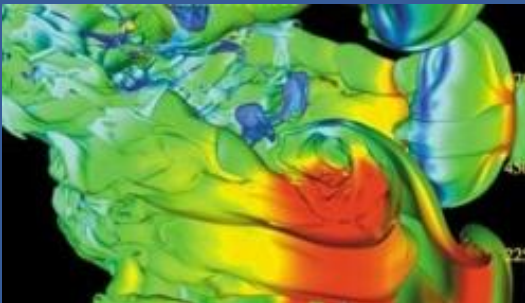


Materials Sciences



- Laser-Induced Breakdown Spectroscopy: Chem Cam Laser Unit on Mars Curiosity Rover
- Nuclear Fuel

Engineering Sciences



- Design Blades for Wind Turbines
- Designing Aerodynamic Large Trucks



SSP Science Advancements Support Other Missions (Cont'd)

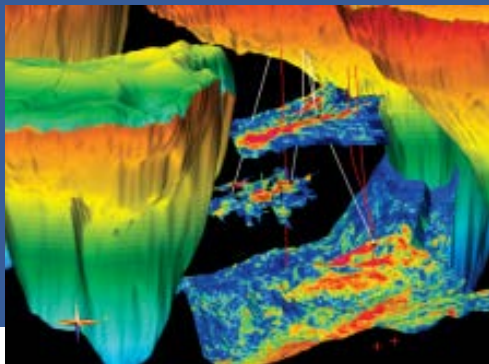


Biosciences



- Human Genome Project
- Human Health

Geo Sciences



- Modeling Global Water Temperatures
- Measure Wind Farm Effectiveness



Sharing Science with Our Partners



“It is a sobering thing to visit a place where so many nuclear explosions were conducted, and I appreciate this tremendous opportunity. I applaud the United States for foregoing nuclear explosive testing for over 23 years and I hope that will continue, along with the U.S. support for our efforts to make a global ban on nuclear explosions the international norm. I was greatly impressed by what I saw in Nevada, and it has given me a renewed motivation to make nuclear explosions a thing of the past for all nations.”

Dr. Lassina Zerbo, November 2015



DARHT at LANL (above) NNSA visit in 2015 (below)

