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Nuclear Posture Review and Stockpile Stewardship Management Plan

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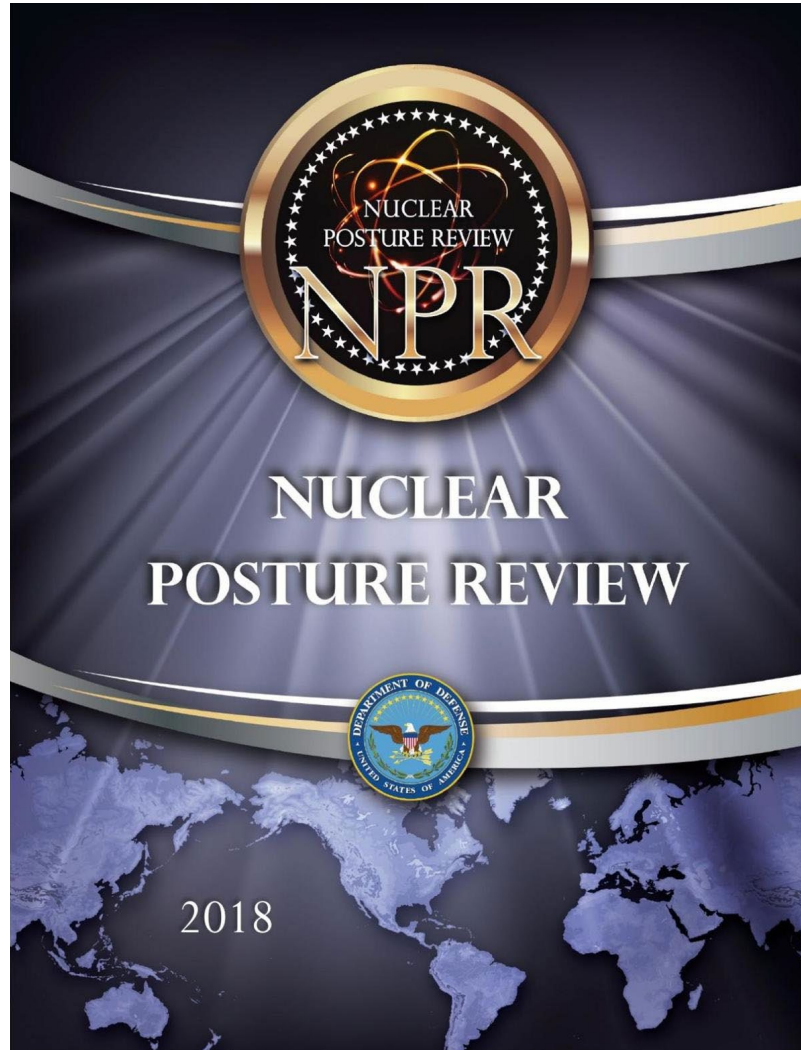
Nuclear Posture Review and Stockpile Stewardship Management Plan

Presentation Overview:

- 2018 Nuclear Posture Review (NPR)
- Stockpile Stewardship and Management Plan (SSMP)
- Nuclear Posture Review and Stockpile Stewardship Management Plan Group Project
- Questions



2018 Nuclear Posture Review (NPR)



2018 Nuclear Posture Review (NPR)








































- Since the end of the Cold War the United States reduced the overall stockpile by more than 85%
- Other countries including Russia and China moved in the opposite direction by expanding and modernizing their nuclear stockpiles and capabilities
- World security environment has changed drastically
 - Proliferation Threats
 - Challenges to established borders
 - Return of great power competition



NY Times China Building in
the South China Sea



2018 Nuclear Posture Review (NPR)

	Ground-Launched	Sea-Launched	Air-Launched
RUSSIA 	 SS-27 Mod 2 ICBM  SS-X-28 ICBM  SS-X-29 ICBM  SS-19 Mod-X-4 ICBM  SSC-08 GLCM	 Borei SSBN  Yasen SSGN  SS-N-32 SLBM  SS-N-30 SLCM  Status-6 AUV	 Kh-102 ALCM  Kh-32 ALCM  PAK-0A Bomber  PAK-F A DCA
CHINA 	 CSS-4 Mod 2/3 ICBM  CSS-10 Mod 1/2 ICBM  CSS-5 Mod 6 MRBM  DF-26 IRBM  CSS-X-20 ICBM	 Type 094 SSBN  JL-2 SLBM  Type 096 SSBN  JL-3 SLBM	
NORTH KOREA 	 SCUD C-SRBM  ER SCUD MRBM  Hwasong-12 IRBM  Hwasong-14 ICBM  Pukguksong-2 MRBM  Nodong MRBM  Musudan IRBM  Hwasong-13 ICBM  Hwasong-15 ICBM	 Gorae SSB  Pukguksong-1 SLBM	
UNITED STATES 			 F-35A

2018 Nuclear Posture Review (NPR)

Examples of Russian New Nuclear Modernization



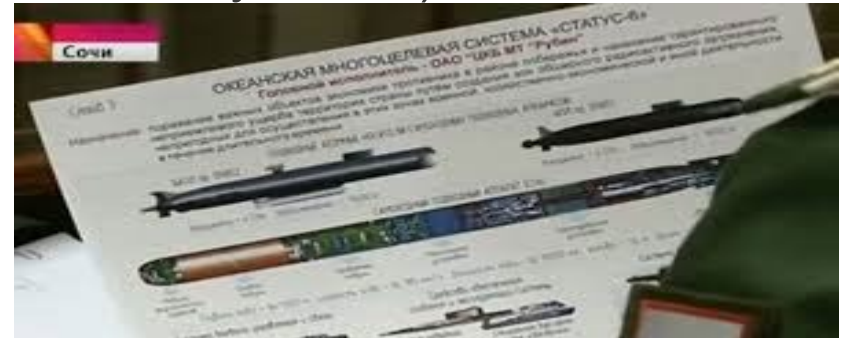
Satan II RS-28-Sarmat 24 Warhead Capable ICBM



9M729 SSC-8 Intermediate Range Missile (INF Treaty Violation before the treaty ended)



Kh-47M2 Kinzhal Air-Launched Ballistic Missile (ALBM)



Kanyon (Status-6) Nuclear Powered & Nuclear-Armed Torpedo

2018 Nuclear Posture Review (NPR)

▪ Roles of U.S. Nuclear Weapons

- Deter nuclear and conventional attack
- Assure U.S. allies and partners
- Achieve U.S. objectives if deterrence fails
- Hedge against future uncertainty



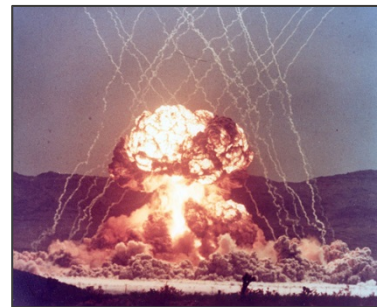
- **Negative Security Assurance:** The U.S. will only consider nuclear weapons use in extreme circumstances. Extreme is defined as significant:
 - Attacks against U.S./ allied/ partner civilian populations or infrastructure
 - Attacks against U.S. or allied nuclear forces, NC3, or warning capabilities

2018 Nuclear Posture Review (NPR)

■ What is Deterrence?

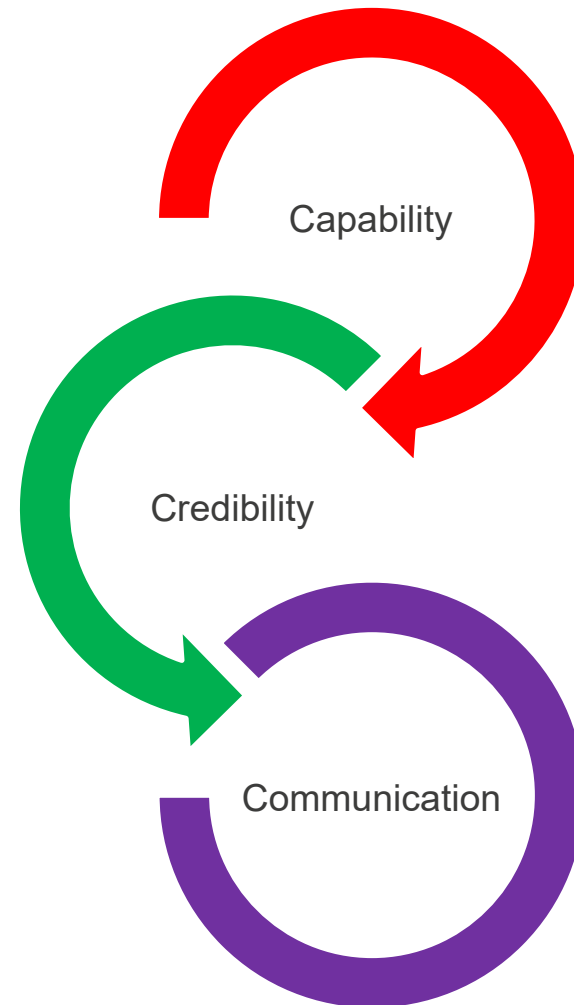
- To “deter” is to stop people from doing something by frightening them
- The maintenance of military power for the purpose of discouraging attack
- The prevention of action by the existence of a credible threat of unacceptable counteraction and/ or the belief that cost of action outweighs perceived benefits

The 2018 NPR acknowledges that in nuclear deterrence; no “one-size fits all”



2018 Nuclear Posture Review (NPR)

- **Deterrence: Elements of the deter phase**
- **Capability**
 - Having the means to influence behavior
- **Credibility**
 - Believability that proposed actions will be employed
- **Communication**
 - Transmitting the intended message to the desired audience



2018 Nuclear Posture Review (NPR)

U.S. Nuclear Triad



ICBMs

LGM-30G Minuteman

III



Bombers

B52H; B2



SLBMs

Ohio-class submarine

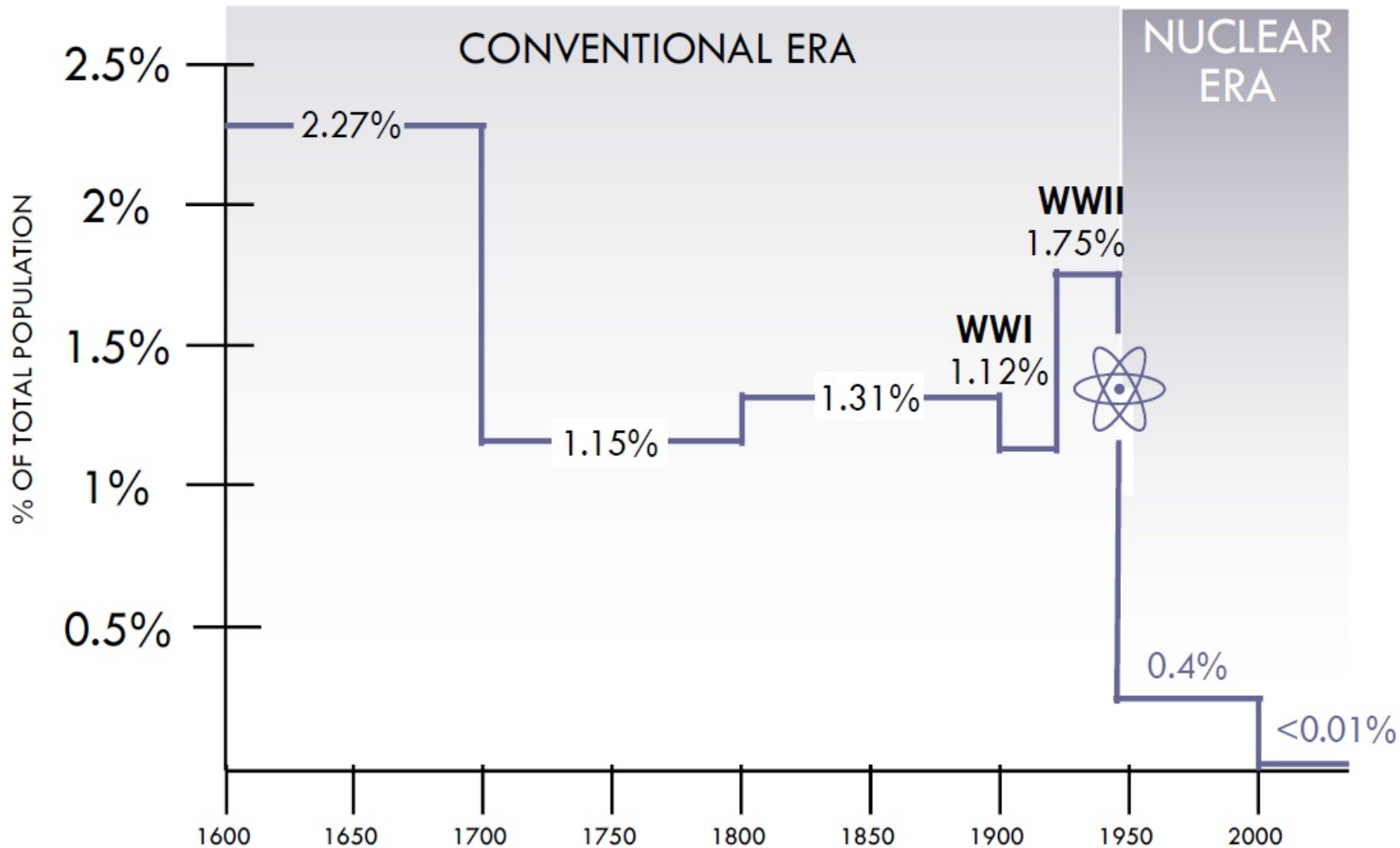
- Most responsive
- Bolsters stability
- Sovereign basing
- Low vulnerability to air defenses

- Visible
- Recallable
- Flexible / agile

- Most survivable
- Continuously at sea
- MIRVed
- Least time-to-target

2018 Nuclear Posture Review (NPR)

Wartime Fatalities/Percentage of World Population



2018 Nuclear Posture Review (NPR)

What does this mean for LANL?

- Completing the W76-1 Life Extension Program (LEP) by Fiscal Year (FY) 2019
- Completing the B61-12 LEP by FY2024
- Research into a low-yield submarine-launched ballistic missile and a nuclear-armed Sea-Launched Cruise Missile (SLCM)
- Completing the W88 alterations by FY2024
- Advancing the W78 warhead replacement one year to FY19 to support fielding on Ground Based Strategic Deterrent (GBSD) by 2030
- Exploring future ballistic missile warhead requirements

Stockpile Stewardship Management Plan



Fiscal Year 2020 Stockpile Stewardship and Management Plan

Report to Congress
July 2019

National Nuclear Security Administration
United States Department of Energy
Washington, DC 20585

Report delivered from DOE to Congress

Stockpile Stewardship Management Plan

- The annual SSMP lays foundation for meeting nuclear deterrent objectives laid out in the National Security Strategy and the 2018 NPR
- Maintaining range of flexible nuclear capabilities needed to ensure effective nuclear deterrent can only be realized through enduring world-class science, technology and engineering expertise and a responsive and resilient nuclear infrastructure



“Nuclear deterrence has been, and remains, the cornerstone of our Nation’s security posture.”

Stockpile Stewardship Management Plan

- **The SSMP addresses four areas:**
- Maintain the safety, security and effectiveness of the Nation's nuclear deterrent
- Strengthen key science, technology and engineering capabilities
- Modernize the nuclear security infrastructure
- Challenges in executing the Stockpile Stewardship and Management Plan

Stockpile Stewardship Management Plan: 2020

- **Maintain the safety, security and effectiveness of the Nation's nuclear deterrent**
- Deliver the B61-12 gravity bomb
- Deliver the W88 Alt 370 with a refresh of the conventional high explosive
- Support fielding the GBSB by FY2030
- Deliver the W76-2 initial operational capability warheads to the Navy
- Provide the enduring capability and capacity to produce plutonium pits at a rate of no fewer than 80 pits per year (ppy) by 2030 by expanding plutonium pit production capabilities

Stockpile Stewardship Management Plan: Pu Infrastructure at LANL

- **Modernize the nuclear security infrastructure**
- Recapitalize existing infrastructure to implement a plan to produce no less than 80 ppy by 2030
 - Produce no fewer than 30 ppy at the Plutonium Facility (PF-4) at LANL in Los Alamos, New Mexico, beginning in 2026
 - Repurpose the Mixed Oxide Fuel Fabrication Facility at the Savannah River Site near Aiken, South Carolina as part of the Savannah River Plutonium Processing Facility to produce at least 50 ppy by 2030
- Ensure long-term actinide chemistry and materials characterization and deliver the Chemistry and Metallurgy Research Replacement (CMRR) project
- Provide modern office and laboratory spaces to support the world-class workforce

Stockpile Stewardship Management Plan: Challenges in Executing



- Reinstating production of components and materials
- High Explosives Production / Increasing tritium production
- Restoring plutonium pit production capability
- Restarting lithium processing capabilities
- Re-establishing uranium production capabilities
- Depleted uranium and binary capabilities / Developing domestic uranium enrichment capability

Nuclear Posture Review and Stockpile Stewardship Management Plan Group Project

- Participants will work in teams of 3 to 5 people to research answers to provided questions on the NPR or SSMP. Each team will report out to the overall group. Large group discussion will follow.
- **2018 NPR Questions: Group 1**
 - What is the international security landscape according to the NPR?
 - How does this landscape impact overall US nuclear policy or strategy?
 - What is “tailored deterrence”? Give one example of a tailored deterrence strategy for a particular nation/contemporary threat.
 - What is the nuclear triad? What does each leg of the triad provide to deter nuclear and non-nuclear attack?
 - How does the 2018 NPR impact the work performed at LANL?

Nuclear Posture Review and Stockpile Stewardship Management Plan Group Project

- Participants will work in teams of 3 to 5 people to research answers to provided questions on the NPR or SSMP. Each team will report out to the overall group. Large group discussion will follow.
- **SSMP Questions: Group 2**
 - Describe one of the following aspects of surveillance: disassembly and inspection, testing or annual assessment.
 - Select a cross-cutting program that supports stockpile stewardship. How does this program support the advancement of the nuclear weapons mission?
 - Strategic components require special materials. Choose one of the seven material classes and describe its use, a challenge and a strategy.
 - What is the strategy for stockpile modernization? Give one example of a specific modernization program and what it entails.

Nuclear Posture Review and Stockpile Stewardship Management Plan

Group Discussion!

Nuclear Posture Review and Stockpile Stewardship Management Plan

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- Fiscal Year 2020 Stockpile Stewardship and Management Plan, Biennial Plan Summary Report to Congress. Retrieved on 11 September 2019 from <https://www.energy.gov/nnsa/downloads/stockpile-stewardship-and-management-plan-ssmp>
- Nuclear Posture Review 2018. Retrieved on 11 September 2019 <https://dod.defense.gov/News/SpecialReports/2018NuclearPostureReview.aspx>

Thank you!

Questions?

