

The logo for the Federation of American Scientists (FAS) is displayed in large, white, serif capital letters on a dark blue background. To the right of the logo, there is a decorative graphic featuring a globe, a portion of the periodic table (showing elements like As, Se, Sb, and Sn), and glowing white lines that resemble a DNA double helix or a network of connections.

FAS

# Maintaining and Modernizing U.S. Nuclear Delivery Vehicles

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## Overview

- Status of US nuclear forces
- NPR decisions
- Plans for modernization/replacement of
  - Intercontinental Ballistic Missiles\*
  - Heavy bombers
  - Tactical systems
  - Warheads
  - Production complex
- Effect of New START

\* Ron O'Rourke will brief on the SSBN/SLBM program.

## Status of US Nuclear Forces

### Estimated Nuclear Warheads

Weapons Category	Estimated Warheads
<i>Operational</i>	2,500
Strategic	1,968
Tactical	400
<i>Reserve</i>	2,500
<b>Total Stockpile</b>	<b>5,000</b>
Awaiting Dismantlement	~4,000
<b>Total Inventory</b>	<b>~9,000</b>

### Nuclear Delivery Vehicles

Weapons Category	Number Deployed
<i>Strategic</i>	
SLBM	288
ICBM	450
Bombers	60
	} ~800
<i>Non-Strategic</i>	
DCA	?*
TLAM/N	(300)*

\* 200 bombs in Europe;  
TLAM/N being retired

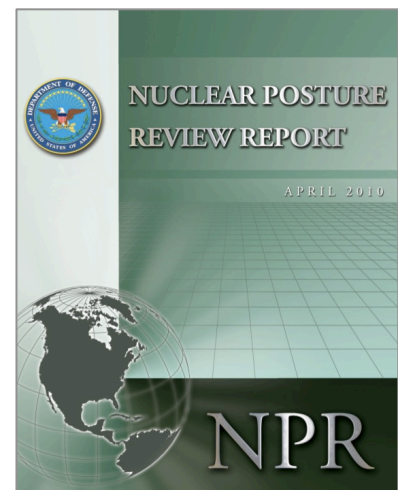
Background Information: *Status of World Nuclear Force*  
<http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html>

## Status of US Nuclear Forces

- NPR decided to continue current forces structure:
  - Retain Triad through New START period (2010-2020).
  - Retain current alert posture.
  - Retain upload capability (hedge).
  - Modernize delivery vehicles.
  - Modernize and life-extend warheads.
  - Modernize production complex.

### Pledged nuclear funding over next 10 years:

- Well over \$100 billion for DOD.
- Over \$90 billion for NNSA.



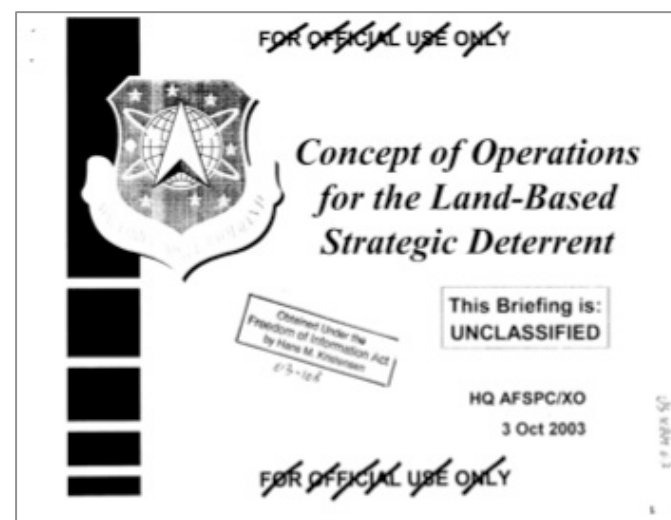
## Intercontinental Ballistic Missiles

- 450 Minuteman III (down from 500 in 2006) deployed at 3 bases: Malmstrom (MT), Minot (ND), Warren (WY).
- Nearly all ICBMs on alert.
- 500 W87/Mk21 and W78/Mk12A (W62 retired in 2010).
- NPR decided all-single warhead loading but retain MIRV for upload.
- \$6 billion modernization program underway.
- Service life extended through 2020 (NPR extends to 2030).



## Intercontinental Ballistic Missiles

- Initial Study of Alternatives (SoA) in FY2011-FY2012 for a replacement missile.
- NPR directs “exploring new modes of ICBM basing” to “enhance survivability,” including mobile options.
- Will probably build on 2003 Concept of Operations for the Land-Based Strategic Deterrence (see right):
  - Extended range, heavier payloads, real-time remote targeting, in-flight guidance updates, improved accuracy.
  - Innovative basing: mobile; fixed/mobile; new silo.
  - Tailored: increased effectiveness; decreased collateral damage.
  - Full range of adversaries/targets.



## Heavy Bombers

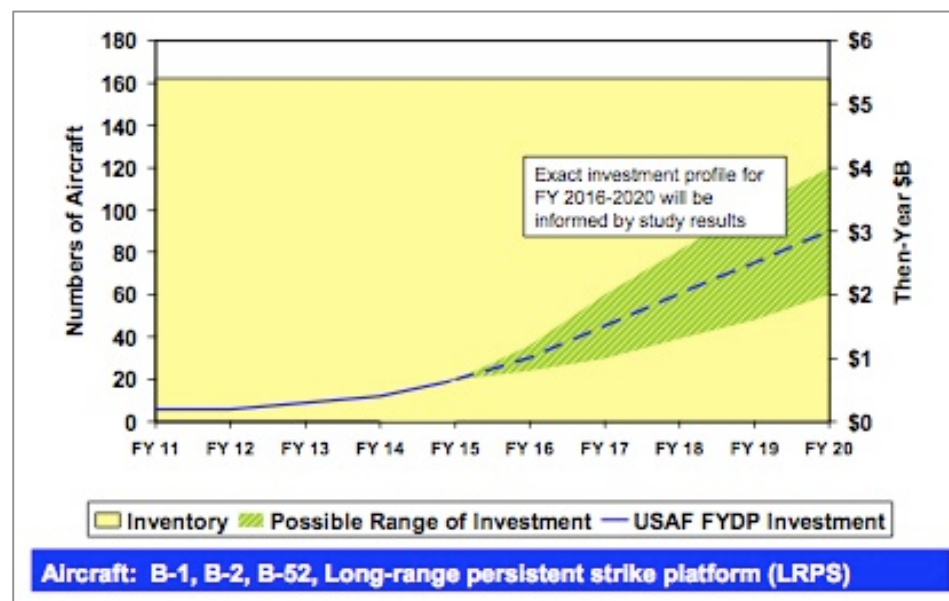
- 20 B-2 and 93 B-52 bombers at 3 bases:
  - Barksdale AFB (LA): B-52.
  - Minot AFB (ND): B-52.
  - Whiteman AFM (MS): B-2.
- Only 60 are nuclear tasked:
  - 16 B-2: B61-7/11, B83.
  - 44 B-52H: ALCM/W80-1, B61-7, B83.
  - Only a few hundred bombs/ALCMs left on bases; rest in storage.
- B-1 withdrawn from nuclear mission in 1997 and is officially conventional-only. Nuclear Re-Role Plan was canceled by the 2001 NPR, but some B-1s are still counted under New START as nuclear-capable.
- Unlike ICBMs and some SLBMs, bomber are not on alert.





## Heavy Bombers

- NPR decided to retain nuclear role for B-2 and B-52 through 2020, but reduce number of B-52s.
- More than \$1 billion for upgrade of B-2 in 2010-2015.
- NPR decided to study a replacement of the B-52.
- \$1.7 billion in FY2011-15.
- FY2012 decision on replacement of ALCM with Advanced Long Range Standoff (ERSO) cruise missile. Production ~2025.
- \$800 million RDT&E through 2016





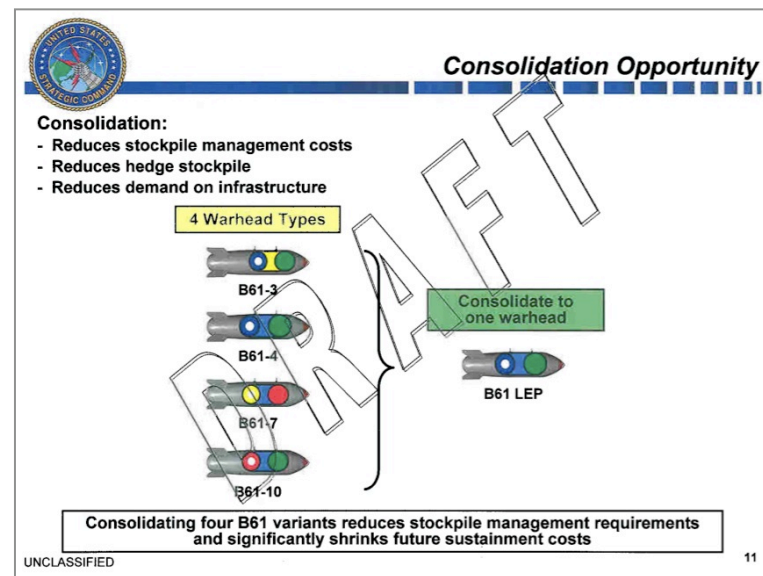
## Tactical Nuclear Systems

- NPR retired nuclear sea-launched cruise missile (TLAM/N).
- Part of F-35 Joint Strike Fighter program will replace nuclear F-15Es and F-16s.
- Nuclear F-35 version (Block IV) funding from FY2012 (\$339 million).
- First deployment in FY2017-18.
- Possible nuclear F-35 use by NATO allies: Italy, Netherlands and Turkey.
- New B61 gravity bomb version: B61-12.



## Nuclear Warheads

- Full production of W76 LEP (W76-1 for Mk4A RB on Trident II SLBM):
  - First Production Unit in 2008.
  - Timeline shortened from 2021 to 2017.
  - Numbers reduced from 2,000 to ~1,600 warheads.
  - \$2.3 billion through 2017.
- B61 LEP study of “cut and paste” warhead:
  - Combine components from B61-3/4/7/10 into B61-12 for B-2, B-52, F-35, “B-3”
  - Nuclear explosive package based on B61-4.
  - First production unit in 2017.
  - \$4 billion through 2022.
- W78 LEP study (for new ICBM):
  - \$4.2 billion in 2011-2026.
  - Possible combined W78-W88 warhead.

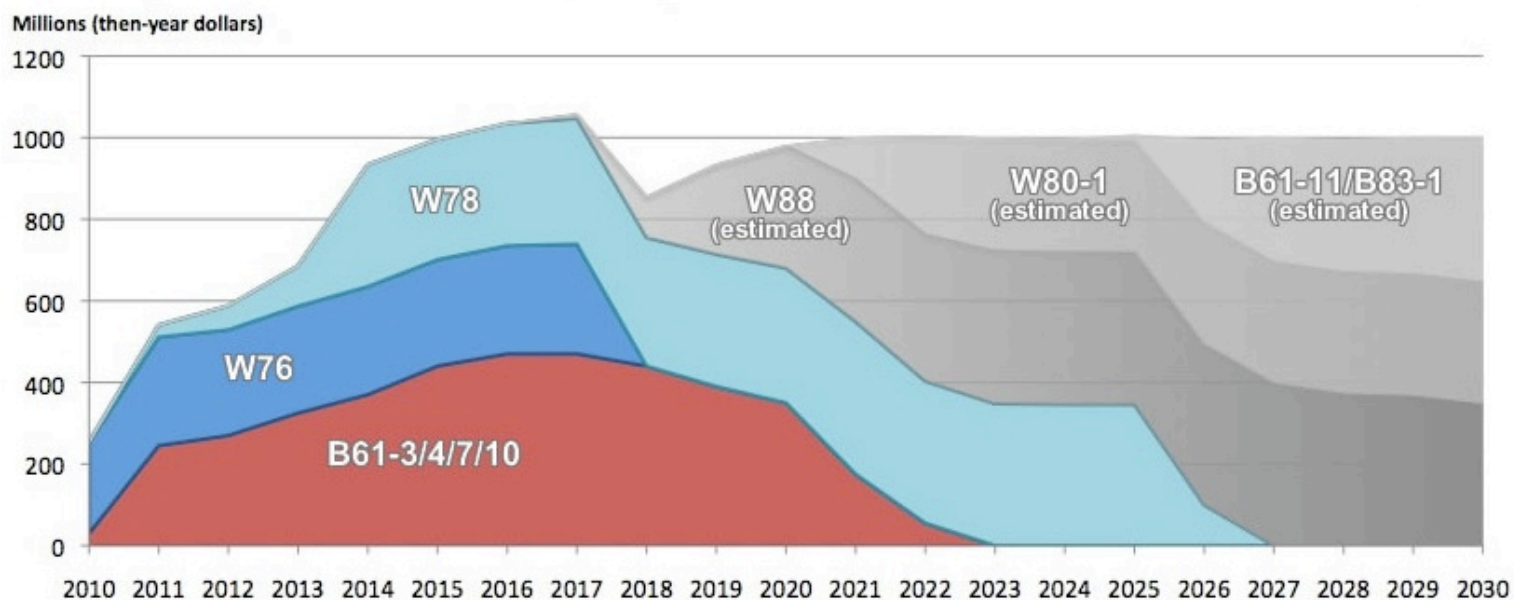


## Nuclear Warheads

Extensive life-extension/modernizations: ~9 billion through 2020.

Cost increases due to new fuzes (AF&F) and surety features added.

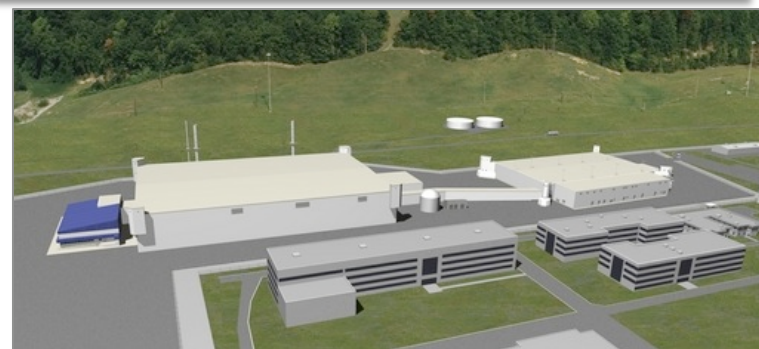
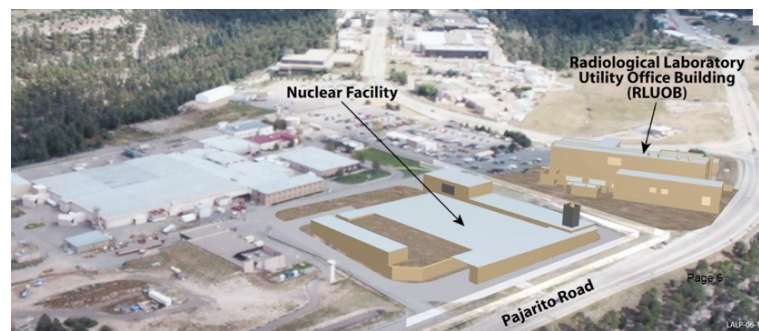
### U.S. Projected Nuclear Weapons Life-Extension Costs 2010-2030



Graphics: FAS/UCS, based on NNSA, FY2011 Stockpile Stewardship Management Plan Summary, May 2010, figures S-2, S-3, and S-4, pgs. 11-12.

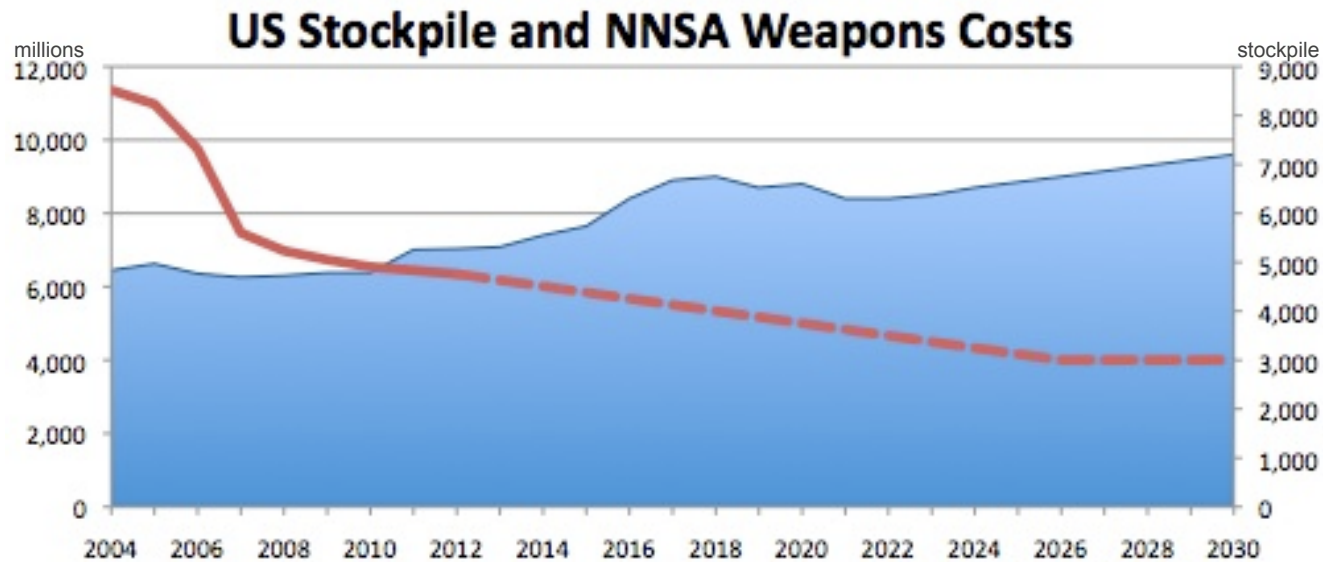
## Weapons Production Complex

- NPR decided to continue modified version of Complex 2030, including:
  - Chemistry and Metallurgy Research Replacement (CMR-R) at LANL
  - Uranium Processing Facility (UPF) at Oak Ridge)
  - Kansas City Plant
- \$3.7-\$5.8 billion for CMRR.
- \$4.2-\$6.5 billion for UPF.
- Expect additional increases through 2022.
- Increase warhead production capacity from 10 to 80 per year (only 7 warheads lost in destructive tests each year).



## NNSA Nuclear Weapons Costs

Despite significant stockpile reductions (red) NNSA weapons activities costs increase:



\$92 billion in 2010-2020; \$181 billion projected through 2030.



## Effect of New START and Modernizations

Spend almost \$200 billion, including \$14 billion to “buy” Senate votes for New START.

Limits of 1,550 deployed strategic warheads and 800 delivery vehicles (700 deployed). No direct effect on stockpile size; some effect on deployed delivery vehicles:

- Deployed SLBMs reduced from 288 to 240: 4 launch tubes on each SSBN emptied now; 2 SSBNs probably retired by end of decade (no reduction in warheads). Significant warhead upload capability retained (hedge).
- Deployed ICBMs reduced from 450 to 420: downloading of remaining MIRVed missiles, but upload capability retained (hedge).
- Nuclear-capable bombers reduced to 60: Already “actual” nuclear force. Reduction via denuclearization of some B-1s still considered “nuclear capable” but not nuclear tasked, and some extra nuclear-capable B-52s may lose capability.

No limits on modernization of remaining force or new systems as long as they stay below overall ceilings.

Modernizations likely to test international support for strengthening nonproliferation regime.

## Questions?

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