Briefing to Scottish Parliament Members

On modernization of U.S. nuclear weapons, some dangers and opportunities ahead, and the value and promise of a ban treaty

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with help from Trish Williams-Mello
References available at lasg.org or upon request

Now, more than ever, technological, social, and political interdependence urgently calls for an ethic of solidarity..., which encourages peoples to work together for a more secure world, and a future that is increasingly rooted in moral values and responsibility on a global scale.

Pope Francis

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Pascal’s wager redux

CLIMATE SUMMIT

WHAT IF IT'S A BIG HOAX AND WE CREATE A BETTER WORLD FOR NOTHING?

- ENERGY INDEPENDENCE
- PRESERVE RAINFORESTS
- SUSTAINABILITY
- GREEN JOBS
- LIVABLE CITIES
- RENEWABLES
- CLEAN WATER, AIR
- HEALTHY CHILDREN
- ETC. ETC.
First off, THANK YOU for this opportunity. Now, in brief:

- U.S. nuclear weapons operational and procurement costs, including modernization, will be at least $355 billion (B) over the coming decade (Congressional Budget Office)

- Known costs are ~ $1 trillion over 30 years, not including the final planned Ohio-class submarines.

- Modernization is seen as continuous and unending.

- Nuclear weapon modernization is in part contested by the military and other parties within and outside government, is unevenly justified, and is subject to tremendous managerial, financial, political, and other risks.
In brief (continued):

• The future of U.S. NW modernization depends heavily on overall levels of military spending and the priority given to the military in society.

• Long delays may be tantamount to cancellations.

• Appropriators differ in approach from armed services committees in Congress.

• Submarine procurement is at the moment on track for success, as are submarine warheads. Air Force programs as a whole – less so. “Interoperable” warheads, even less so.

• Management issues loom very large vis-à-vis warheads, and in the Air Force.
In brief (continued):

• There will be no good-faith NW disarmament negotiations by the U.S. for the foreseeable future. Treaty-based arms control efforts will fail.

• There will be no strong or effective popular movement for nuclear disarmament in the U.S., ever.

• U.S. policies will change only from magisterial forces, foreign and domestic, beyond the control of foreign policy and economic elites. “Democratic” efforts can assist but not replace these.

• U.S. geopolitical ambitions are extensive and the U.S. is willing to incur and accept very great risks at this time for a variety of reasons – which risks it neither understands nor can control.
In brief (continued):

• A treaty banning NWs would be, in contrast to essentially all other approaches, an effective and realistic measure for nuclear disarmament.

• Current efforts toward a ban treaty can be very positively distinguished from recent prior approaches.

• Efforts toward a ban are supportive and complementary to disarmament approaches within domestic politics.

• Explicit support, in various possible forms, for a ban may serve other useful political agendas.

• Independently, it is important for security and development to oppose, not support, U.S./U.K. aggression.
This assumes all goes reasonably well and there are no resource crises. Right...

<table>
<thead>
<tr>
<th>Program/Element</th>
<th>Annual Cost (Billions)</th>
<th>30-Year Cost (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Triad</td>
<td>$8-9</td>
<td>$240-270</td>
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<tr>
<td>NNSA weapons activities</td>
<td>$11.66</td>
<td>$350</td>
</tr>
<tr>
<td>Command, control, and communications</td>
<td>$4</td>
<td>$120</td>
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<tr>
<td>Minuteman follow-on</td>
<td>N/A</td>
<td>$20-120^13</td>
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<tr>
<td>Long Range Standoff missile</td>
<td>N/A</td>
<td>$10-20</td>
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<tr>
<td>Ohio-class ballistic missile submarine</td>
<td>N/A</td>
<td>$77-102</td>
</tr>
<tr>
<td>Long Range Strike Bomber</td>
<td>N/A</td>
<td>$55-100^14</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>$872-1,082</strong></td>
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</table>
Figure 8–11. Estimate of out-year budget requirements for Weapons Activities of the NNSA in then-year dollars
(This figure updates Figure 8–12 in the FY 2014 SSMP.)
Red boxes = 4 new-design warheads plus 1 renewed bomb with great accuracy, stealth delivery platforms, low- and high-yield options
Obama’s 2014 Retrenchment in Warhead Modernization Aspirations (2)
LEP funding peak dropped by $1.3 B (45%) in coming decade

FY 2014 SSMP

FY 2015 SSMP

Legend:
- W76
- B61
- W88 Alt 370
- CW = CM Warhead
- IW = IW-2

Key:
- W76 = plutonium pit
- CM = cruise missile
- IW = interoperable warhead
Figure 8–25. Total U.S. projected nuclear weapons life extension costs for fiscal years 2013 through 2038.
Figure 8–21. Total U.S. projected nuclear weapons life extension costs for fiscal years 2014 through 2039 (then-year dollars)

(This figure updates Figure 8–25 in the FY 2014 SSMP.)
Keeping the labs and production plants busy and in funds: the “15-year touch” for the B61-12 (from NNSA FY2014 SSMP). This fantasy has already failed.

![Image of bar chart showing projected costs for fiscal years 2014 through 2038 for B61 LEPE and Production engineering costs.]

**Figure 8–13. B61 gravity bomb projected costs for fiscal years 2014 through 2038**

- 2003 to 2013 average cost data for sustainment only obtained from actual prior year appropriation in DOE Congressional budget request. Prior year average LEPE costs are not shown.
- 2014 to 2018 cost data obtained from Future Years Nuclear Security Program, DOE Congressional budget request.
- 2014 to 2025 B61 LEPE cost projections based on the completed Weapons Development Cost Report.
- Other program monies represent the incremental costs to other programs to execute the LEPE.
- Stockpile sustainment costs refer to the stockpile systems appropriation in the Directed Stockpile Work budget without LEP 6.2-6.2A costs.
- 2019 to 2038 sustainment cost projections escalated at 2 percent per year from 2018 funding levels.
- The LEPE shown starting in 2033 is a follow-on to the ongoing B61-12 LEPE. Cost projections were obtained from an internal cost model based on W76 LEPE actual costs, subject to change.

Key:

- LEP = Life Extension Program
Figure 3–11. Computational milestones and objectives led by the Advanced Simulation and Computing Campaign

Key:
2D = two-dimensional
3D = three-dimensional

HDBT = Hardened, Deeply Buried Target
NEP = Nuclear Explosive Package
NIF = National Ignition Facility
SFI = Significant Finding Investigation
### Comparing 1251/1043 Commitments to Appropriations and President’s Budget Request for NNSA Weapons Activities

<table>
<thead>
<tr>
<th>All Numbers ($ Billion)</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
<th>FY19</th>
<th>FY20</th>
<th>FY21</th>
<th>FY22</th>
<th>FY23</th>
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<tbody>
<tr>
<td>Feb 2011 &quot;1251 Report&quot; NNSA Weapons Activities</td>
<td>7.6</td>
<td>7.9</td>
<td>8.4</td>
<td>8.7</td>
<td>8.9</td>
<td>9.2 - 9.3</td>
<td>9.4 - 9.6</td>
<td>9.4 - 9.8</td>
<td>9.5 - 10.1</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Difference:</td>
<td>-0.39</td>
<td>-0.95</td>
<td>-0.68</td>
<td>-0.39</td>
<td>0.01</td>
<td>0.26</td>
<td>0.18</td>
<td>0.10</td>
<td>0.76</td>
<td>1.01</td>
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*Source: Mr. Rogers, Chairman, Strategic Forces Subcommittee, House Armed Services Committee*

Decrease of $2.0B over FY12 to FY14 (i.e., "real money")

### NNSA Delays

<table>
<thead>
<tr>
<th>Program</th>
<th>Projection in 1251 Report</th>
<th>Status as of 2014</th>
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<tbody>
<tr>
<td>W76-1 LEP</td>
<td>Completed in FY2017</td>
<td>2 year delay: completed in FY2019; reduced number of warheads</td>
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<tr>
<td>B61-12 LEP</td>
<td>First Production Unit FY2017</td>
<td>3 year delay: FPU FY2020</td>
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<tr>
<td>W88 alt 370</td>
<td>No date specified</td>
<td>In development engineering phase; delay likely</td>
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<tr>
<td>TW-1 LEP</td>
<td>1251 report addressed intent to study a common W78-W88 warhead</td>
<td>Delayed at least 5 years</td>
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<td>LRSO warhead</td>
<td>Low-rate initial production of LRSO to begin c. 2025; no mention of FPU of warhead</td>
<td>Delayed up to 3 years; FPU FY2025-FY2027 timeframe</td>
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<tr>
<td>CMRR-NF</td>
<td>Functionality attainable by FY2020; completion in FY2023</td>
<td>Project terminated; new modular concept under consideration, with perhaps some operational capability by 2027</td>
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<tr>
<td>UPF</td>
<td>Functionality attainable by FY2020; completion in FY2024</td>
<td>Delayed at least 4 years; reduced to 1/3 of original capability; Red Team investigating alternatives to UPF</td>
</tr>
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*Source: SASC Minority Staff with CRS & CAO*
Obama’s 2014 Retrenchment in Warhead Modernization Aspirations (3)

| Fiscal Year | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| W76-1 Production |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| W88 Alt 370 Development |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| B61-12 Development |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cruise Missile Warhead Development |   |   |   |   |   |   |   |   |   |   |   |   |   |   | Production |   |   |   |   |   |   |   |   |   |   |   |   |   |
| IW-1 (W78/88-1) Development |   |   |   |   |   |   |   |   |   |   |   |   |   |   | IW-2 Development |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Mk21 and Mk5 Production |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

1 year delays

3, 5, 3, & 3 year delays

Key:
Alt = alteration
IW = Interoperable warhead
Red indicates change from FY 2014 SSMP
Gray indicates Postponed

1 Cruise missile warhead production will be coordinated with Air Force cruise missile development and could occur as early as FY 2025.

Notes:
IW-2 and IW-3 planning dates may be adjusted when the Nuclear Weapons Council publishes the Requirements and Planning Document.
Production overlaps have been assessed to be executable at the major production facilities involved, based on current life extension program scope assumptions and plans.

Figure 2–2. National Nuclear Security Administration life extension activities
(This figure updates Figure 2–8 in the FY 2014 SSMP.)
Obama’s 2014 Retrenchment in Warhead Modernization Aspirations (4)

Pit production milestones deferred five years

Table 2–4. Pit development timeline

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WR = war reserve

Table 2–3. Pit development timeline to achieve 30 pits per year (This table updates Table 2–4 in the FY 2014 SSMP.)

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