

## No Rush To Rebuild

### America Has Time to Review US Nuclear Policy Before Rebuilding the Weapons Complex

Testimony for Public Hearings on the Department of Energy's Plans for  
Nuclear Weapons Complex Transformation

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#### Summary

The Bush administration and the US Department of Energy (DOE)'s National Nuclear Security Administration (NNSA) are proposing to spend an estimated \$150 billion<sup>1</sup> to rebuild the US nuclear weapons complex to "transform the nuclear stockpile through development of Reliable Replacement Warheads."<sup>2</sup> This renovated complex would include a major new facility—the Chemistry and Metallurgy Research Replacement (CMRR) at Los Alamos National Lab—to build 50-80 warhead cores (plutonium "pits") per year, and the future nuclear arsenal would include new Reliable Replacement Warheads (RRWs) with "enhanced safety, security, and use-control features."<sup>3</sup>

There are at least two major problems with this plan.

- 1. First, and most important, there is no rush to rebuild the complex. NNSA has time to wait for a new administration to review US nuclear policy before moving ahead. For example, there is no rush to build the new CMRR at Los Alamos—in fact, it can wait decades.**

NNSA plans to upgrade Los Alamos National Lab (LANL) to produce 50-80 plutonium pits per year, more than enough to meet future requirements—even *assuming no major reductions in US arsenal levels*. The 2007 JASON pit lifetime study confirmed that existing pits could last 100 years or more, and thus a production capacity of 50-80 pits per year could sustain an arsenal of 5,000-8,000 warheads.

This is, in fact, the number of deployed weapons in the current US arsenal, and should be considered an upper bound for the projected arsenal in 2030. It is more likely that the US will have an arsenal of 1,000-3,000 warheads by then, which would need a pit production capacity of only 10-30 per year. Thus, the CMRR is likely to be larger than we will need.

Moreover, we do not need a new CMRR anytime soon. A conservative estimate of the average age of plutonium pit types in the US arsenal is 28 years, with the oldest (the B61 bomb) at 39 years. With pit lifetimes of 100 years or more, there may be no need to replace pits for decades. In an emergency, Los Alamos can currently handle 20 pits per year. So, the CMRR—and many other proposed upgrades—can wait until a new administration comes in to set new nuclear policies.

**2. Second, there is no need to “transform” the stockpile by building RRWs.** The current nuclear arsenal meets modern safety and reliability standards. Designing and building new warheads for safety and reliability reasons is therefore unnecessary—and dangerous. In a world without nuclear testing, abandoning well-tested warhead designs in favor of new, untested designs is asking for trouble. Even if technically feasible, the deployment of new, untested warheads may over time lead to political pressures to resume testing. Instead, we should be maintaining current warheads and extending their useful lifetimes, as is being done under DOE’s Lifetime Extension Program. Indeed, Congress cancelled the \$88 million RRW program in 2007, finding that the administration should instead prepare “a comprehensive nuclear weapons strategy for the 21st century.”<sup>4</sup>

DOE’s plans for Complex Transformation put the interests of the nuclear weapons establishment over those of US national security—and put the cart before the horse. Before seeking to rebuild the complex and the arsenal, DOE and the Pentagon should review international nonproliferation efforts and current US nuclear policy and posture. Only after a fresh review of US nuclear policy by the incoming administration in 2009 would DOE have the information it needs to lead a successful restructuring of the weapons complex.

## **Alternatives To Be Considered**

There is no rush to move ahead with DOE’s plans for the nuclear weapons complex. Instead, we should take a “wait and see” approach. Rebuilding the complex sooner than necessary will only increase the chances that the complex will be larger and more expensive than necessary, wasting taxpayer dollars. To protect the taxpayer and national security to the maximum extent possible, DOE needs to consider the following alternatives to its current plans.

## 1. Review US Nuclear Policy before Rebuilding the Complex

There is no rush to build a new Chemistry and Metallurgy Research Replacement (CMRR) pit facility at Los Alamos—in fact we can wait for decades. The average age of pit types in the US arsenal today is 28 years, with the oldest (the B61 bomb) at 39 years (see *US Nuclear Arsenal: How Old in 2030?*). With pit lifetimes of 100 years or more, there may be no need to replace pits for up to 60 years. The CMRR upgrade could potentially wait decades, by which time the US arsenal may be small enough to avoid the upgrade altogether. However, in the absence of arms reductions and to avoid a ‘traffic jam’ of pit production, the CMRR upgrade may need to start sooner to maintain a steady output rate.

In 2008, the estimated number of warheads in the deployed stockpile is about 5,200. This number will decline to about 2,600 by 2012 under the terms of the Strategic Offensive Reductions Treaty (SORT) signed between the US and Russia in 2002. (In addition to the deployed arsenal, thousands of warheads will be held in reserve. This reserve can be used to replace warheads in the deployed arsenal if necessary, further reducing the capacity of the production complex.) By 2030, the deployed arsenal could reasonably be expected to drop to around 1,000 warheads. At this level, the current capacity of TA-55 at Los Alamos—20 pits per year—would be enough to support the arsenal.

Current trends point to a future with fewer nuclear weapons and growing support for a nuclear-weapons free world. For example, in January 2008, George Shultz (secretary of state from 1982 to 1989), Bill Perry (secretary of defense from 1994 to 1997), Henry Kissinger (secretary of state from 1973 to 1977) and Sam Nunn (former chairman of the Senate Armed Services Committee) reiterated their bipartisan call for moving “toward a nuclear-free world.” In their words, “In some respects, the goal of a world free of nuclear weapons is like the top of a very tall mountain. From the vantage point of our troubled world today, we can’t even see the top of the mountain, and it is tempting and easy to say we can’t get there from here. But the risks from continuing to go down the mountain or standing pat are too real to ignore. We must chart a course to higher ground where the mountaintop becomes more visible.”<sup>5</sup>

DOE’s plan to rebuild the US nuclear weapons complex to produce a new generation of weapons unnecessarily risks undermining US nonproliferation efforts and ultimately hurting US national and global security. This effort will send the message to the world that America, with the strongest conventional military forces in the world, still sees its nuclear arsenal as central to its security. At the same time, the US government is seeking to convince Iran, North Korea and others not to produce nuclear weapons. The Bush administration is essentially saying, “do as we say, not as we do,” which will have predictable results.

Before committing to new nuclear weapons and a new complex to produce them, the US government needs to conduct a new review of US nuclear policy. The last US Nuclear Posture Review was conducted in 2001 and is now out of date. Primary among the questions that need to be answered is: how many nuclear weapons do we need? An arsenal of 5,000 weapons has greater maintenance needs than one with 1,000 weapons. Another key question: what are US nuclear weapons for? If they are intended for a first strike or a rapid response, they must be kept ready to go at all times. But if the mission is to deter the use of nuclear weapons against America and its allies, the weapons could be kept at a low state of readiness and deployment. If we rebuild the weapons complex before we know the answers to these and other questions, we will undoubtedly end up with a larger and more active complex than we really need.

This 2006 statement by DOE makes the point:

"...We seek an ability to design, develop, certify, and begin production of refurbished or replacement warheads within 48 months of a decision to begin engineering development. In both cases, these timelines would restore us to a level of capability comparable to what we had during the Cold War."<sup>6</sup>

The Cold War ended in 1989, and there is no reason to restore the weapons complex to its glory days. DOE needs to bring its plans back to reality.

The good news is we have time to review US nuclear policy before rebuilding the complex. There is no rush. And since we have the luxury of enough time to make sound policy decisions, we should use it.

DOE should, however, be congratulated for canceling its plan to build a new 125-pit-per-year Consolidated Plutonium Center (CPC). Thomas D'Agostino, then deputy-head of DOE's National Nuclear Security Administration (NNSA), made this case for the Consolidated Plutonium Center in April 2006:

"The production capacity that can be established at TA-55—about 30-50 pits per year—is not sufficient to meet anticipated future needs. There are three reasons why we believe this to be true..."<sup>7</sup>

**a. Warhead aging.** D'Agostino: "First, our best estimate of minimum pit lifetime is 45-60 years. That estimate is under review at our national laboratories. Nonetheless, we must anticipate that, as the stockpile ages, we will need to replace substantial numbers of plutonium pits in stockpiled warheads."

Since D'Agostino made these remarks, the JASON group and DOE have determined that plutonium pits can last up to 100 years or longer—*essentially twice as long as they had been assuming*. According to DOE, "We can, therefore, conclude that pit lifetimes

do not at present determine warhead lifetimes.”<sup>8</sup> So, in fact, substantial numbers of plutonium pits will not need to be regularly replaced and existing pits can be reused over again. If we assume, for planning purposes, that pits can last 100 years, then the current US arsenal of 5,000 deployed weapons would need a replacement capacity of 50 per year (steady state), which is the planned minimum capacity for the CMRR upgrade.<sup>9</sup>

**b. RRW program.** D’Agostino: “Second, even if pits were to live forever, we will require substantial production capacity in order to introduce, once feasibility is established, significant numbers of RRW warheads into the stockpile by 2030. We should not assume that RRW could employ pit reuse and still provide important efficiencies for stockpile and infrastructure transformation.”

Even if pits don’t wear out, D’Agostino claimed they would need to be replaced as new warheads are built as part of the RRW program. However, the RRW program does not serve the interests of either arsenal reliability or US national security and should be scrapped (see RRW section below). But even if warheads were to be rebuilt, there is no obvious reason why new warheads could not use existing pits. D’Agostino states we should not assume this *can* be done, and we would reply that he should not assume that it *can’t* be done. Pits have been reused before. For example, the W89 warhead for the cancelled SRAM-II missile was designed to use pits from retired W68 Poseidon warheads. Since all RRW warheads will be essentially new designs, they can be designed to use existing pits. If this proves impossible in some cases, new pits could be made at Los Alamos.

**c. New threat.** D’Agostino: “Finally, at significantly smaller stockpile levels than today, we must anticipate that an adverse change in the geopolitical threat environment, or a technical problem with warheads in the operationally-deployed force, could require us to manufacture and deploy additional warheads on a relatively rapid timescale.”

It is near-impossible to imagine a scenario where the US would be unable to deter some “adverse change in the geopolitical threat environment” with 1,000 deployed nuclear weapons. Russia is reducing its nuclear forces as well, and the next largest nuclear arsenals belong to France and China, with roughly 400 weapons each. Nuclear warheads can be lost, stolen or sold, but not in large numbers. And a terrorist with a nuclear weapon—although a scary prospect—cannot be deterred with the threat of nuclear retaliation since we would not likely know where or even who they were.

As for discovering a new technical problem with the arsenal, which is unlikely, the best response would be to keep it quiet and rebuild warheads as needed at Los Alamos (in a crisis, TA-55 could be run with double shifts, effectively doubling its capacity). The

chances of arsenal reliability problems will be reduced if DOE does NOT pursue the RRW program.

It should be noted that the other major nuclear component of warheads—uranium secondaries produced at the Y-12 Plant in Oak Ridge, TN—also do not appear to wear out and can be used over again. Yet DOE wants to build the new Uranium Processing Facility (UPF) for uranium component production with a capacity of 125 units per year. This is larger than any conceivable need, and the UPF should be cancelled and all nuclear component production work consolidated at Los Alamos.

## **2. Cancel the RRW program**

DOE has stated that “The ‘enabler’ for [complex] transformation is our concept for the RRW.”<sup>10</sup> In others words, if there were no need to build new warheads under the RRW program, there would be no need to rebuild the nuclear weapons complex. Although DOE is now backing away from this position, in fact there is no need to “transform” the stockpile or the complex by building RRWs.

The stated rationale for the RRW program is to replace existing nuclear warheads and bombs with new ones that will be “re-designed for long-term confidence in reliability and greater security, and ease of production and maintenance.”<sup>11</sup>

As good as it may sound, the RRW program is a solution in search of a problem. The current arsenal meets modern safety and reliability standards, and has been so certified by DOE and the Pentagon for the past 11 years. Why mess with success? Presumably because DOE thinks new warhead designs will be ‘better.’ But so far DOE has been unable to convince its external review group that this will be the case.

The JASON group reviewed the RRW program and reported in August 2007 that the ability to certify that RRW designs will meet performance goals “is not yet assured.”<sup>12</sup> They went on to say that “it is not yet possible to quantify how well excursions from a tested design can be modeled and predicted.” In other words, it is dangerous to stray too far from the well-tested designs we already have by trying to ‘improve’ the arsenal with new designs that deviate from past test experience. In fact, the JASONS go out of their way to point out that they were “not asked to assess the merits of the RRW program relative to other options, such as life extension programs.”

There are other reasons to think that the JASON group is not on board with the RRW concept. An earlier JASON report found that the US could maintain a safe and reliable arsenal without nuclear testing or developing new weapons. In fact, they specifically warned that in the absence of testing the laboratories should not try to modify existing weapons: “Greatest care in the form of self-discipline will be required to avoid system modifications, even if aimed at ‘improvements,’ which may compromise reliability.”<sup>13</sup>

The bottom line is that designing and building new warheads for safety and reliability reasons is not only unnecessary—it is dangerous. In a world without nuclear testing, abandoning well-tested warhead designs in favor of new, untested designs is asking for trouble. Even if technically feasible, the deployment of new, untested warheads may over time lead to political pressures to resume testing.

The RRW program is a bad idea. Instead, DOE should continue to extend the life of the existing arsenal while pursuing arsenal reductions.

The US Congress agrees. In late 2007, Congress rejected the Bush administration's request for \$88 million for the RRW program and directed it instead to prepare "a comprehensive nuclear weapons strategy for the 21st century."

"Moving forward on a new nuclear weapon is not something this nation should do without great consideration," said Rep. Peter J. Visclosky (D-Ind.), chairman of the House Appropriations subcommittee that handles funding of the nuclear weapons program. With the end of the Cold War and a new threat from terrorists seeking nuclear materials, Visclosky said, "the U.S. needs a comprehensive nuclear defense strategy, and a revised stockpile plan to guide the transformation and downsizing of the complex . . . to reflect the new realities of the world."<sup>14</sup>

It is unclear if DOE has now given up on the RRW program or if it will renew its funding request to Congress in 2008.

## **Conclusion**

Given that:

- + There is no urgent need to move ahead with DOE's plans for complex transformation at this time, and
- + There is a compelling reason to wait for the new administration to conduct its own review of US nuclear policy,

2020 Vision Education Funds recommends that the entire process be placed on hold until a new administration is in place and decides how to move forward.

## US Nuclear Arsenal: How Old in 2030?

Weapon system/ Warhead	First Prod.	Est. 2008 Arsenal (Deployed)	Proj. 2012 Arsenal (SORT)	Projected 2030 Arsenal	Max. Age in 2008 (Years)	Max. Age in 2030 (Years)
<b>ICBMs</b>						
Minuteman III Air Force						
W62	1970	325	0	0	38	60
W78	1979	550	200	0	29	51
W87	1986	50	300	100	22	44
<b>SLBMs</b>						
Trident II D5 Navy						
W76	1978	1344	768	0	30	52
W88	1988	384	384	400	20	42
<b>Bombers</b>						
B-52 and B-2 Air Force						
B61-7, 11 Bomb	1969	235	140	100	39	61
B83 Bomb	1983	323	100	100	25	47
W80-1 Cruise Missile/AF	1982	1452	300	300	26	48
<b>Tactical Forces</b>						
B61-3, 4 Bomb AF, NATO	1979	400	400	0	29	51
W80-0 Cruise Missile/Navy	1982	100	0	0	26	48
<b>Warhead Totals</b>		5,163	2,592	1,000		
Ave. maximum (oldest) age of current deployed stockpile in 2008					<b>28.4</b>	
Ave. maximum (oldest) age of current deployed stockpile in 2030						<b>50.4</b>

Method: We count the years from first production to 2008 and 2030, assuming that the **oldest** warheads of each type would be retained—which is unlikely—to get a conservative number. Thus the actual arsenal in 2030 will be 'younger' than 50, on average, but not older.

Source: "The US Nuclear Stockpile, Today and Tomorrow," *Bulletin of the Atomic Scientists*, Sept/Oct 2007, p. 63.

<http://thebulletin.metapress.com/content/3605g0m20h18877w/fulltext.pdf>

## US Nuclear Weapons Complex: Why the Rush?

Facility/Purpose	Current Status	DOE/NNSA Plan	2020 Vision Plan
<b>Savannah River Site, SC (SRS)</b> Tritium extraction and handling. No new SRS tritium since K Reactor closed in 1988.	DOE plans to produce new tritium from commercial reactor (TVA). New Tritium Extraction Facility operational in 2007.	Continue tritium recycling. Use commercial reactor for new tritium (Watts Bar at Tennessee Valley Authority).	Delay new tritium production, depending on future arsenal reductions. Reuse current supply.
<b>Oak Ridge Y-12, TN</b> Uranium and lithium components (canned subassemblies)	Operating.	Build new Uranium Processing Facility (UPF) for 125 components per year.	Cancel UPF; consolidate at LANL
<b>Pantex Plant, TX</b> Warhead assembly, disassembly, pit reuse	Operating.	Upgrade and modernize.	Use for dismantlement, pit reuse
<b>Nevada Test Site, NV (NTS)</b> Nuclear weapons testing, R&D	On standby. No nuclear tests since 1992. Conducting sub-critical tests.	No testing, but sustain capability to test. Device Assembly Facility (DAF) as backup for Pantex.	Ratify CTBT. Reduce test readiness, use DAF for dismantlements as needed.
<b>Lawrence Livermore National Lab, CA (LLNL)</b> Weapons R&D	Operating.	Move special nuclear materials (SNM) out by 2013.	Focus on stockpile maintenance
<b>Los Alamos National Lab, NM (LANL)</b> Plutonium pit production, R&D	Operating. Produced first new pit (W88) since 1989 in July 2007. Has capacity to produce 20 pits per year (PF-4 at TA-55).	Build new Chemistry and Metallurgy Research Replacement (CMRR) to build 50-80 pits per year. Replace most weapons with new Reliable Replacement Warhead (RRW) designs.	Delay CMRR--no need to build it for decades. Maintain small-scale pit production capacity at TA-55. Cancel RRW program. Continue Life Extension Program (LEP), reuse nuclear components as necessary.
<b>Sandia National Lab, NM (SNL)</b> Non-nuclear production, R&D	Operating. Producing neutron generators	Remove SNM by end 2008	Consolidate non-nuclear production work from Kansas City Plant
<b>Kansas City Plant, MO</b> Non-nuclear component production	Operating.	Outsource to commercial suppliers. Build new, smaller facility by 2012.	Outsource, eventually consolidate with National Labs

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- <sup>1</sup> U.S. General Accounting Office, *Suggested Areas of Oversight for the 110<sup>th</sup> Congress*, Nov. 17, 2006, p. 15.
- <sup>2</sup> U.S. Department of Energy, National Nuclear Security Administration, *Complex 2030*, October 2006, p. 2.
- <sup>3</sup> U.S. Department of Energy, National Nuclear Security Administration, *Complex 2030*, October 2006, p. 9.
- <sup>4</sup> “Spending Bill Blocks Plans for New Nuclear Warhead,” by John M. Donnelly, *CQ TODAY*, Dec. 18, 2007.
- <sup>5</sup> “Toward a Nuclear-Free World,” by George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, *Wall Street Journal*, January 15, 2008.
- <sup>6</sup> Statement of Thomas P. D’Agostino, April 5, 2006.
- <sup>7</sup> Statement of Thomas P. D’Agostino, Deputy Administrator for Defense Programs  
National Nuclear Security Administration, Before the House Armed Services Committee, Subcommittee on Strategic Forces, April 5, 2006.
- <sup>8</sup> Letter from Linton Brooks, Administrator for Defense Programs  
National Nuclear Security Administration, to Senator John Warner, November 26, 2006.
- <sup>9</sup> DOE proposes a Los Alamos capacity of 50 “certified” pits, and 80 pits overall, annually. See *Federal Register*, Vol. 71, No. 202, October 19, 2006, p. 61734.
- <sup>10</sup> Statement of Thomas P. D’Agostino, April 5, 2006
- <sup>11</sup> U.S. Department of Energy, National Nuclear Security Administration, *Complex 2030*, October 2006, p. 1.
- <sup>12</sup> Reliable Replacement Warhead Executive Summary, JASON, August 29, 2007, p. 1.
- <sup>13</sup> *JASON Nuclear Testing Study: Summary and Conclusions*, JASON Report JSR-95-320, 1995.
- <sup>14</sup> “Nuclear Warhead Cut From Spending Bill; Congress Instead Seeks ‘Weapons Strategy,’” by Walter Pincus, *Washington Post*, December 18, 2007, A02