

Myth vs. Fact:

The Truth about “Complex 2030” and the Reliable Replacement Warhead

The National Nuclear Security Administration (NNSA), the semi-autonomous nuclear weapons agency within the Department of Energy, has recently posted a fact sheet called “Myth vs. Fact: The Truth about Plutonium Aging.”¹ This is in response to a November 2006 study by independent experts that concluded plutonium pits² have reliable lifetimes of a century or more.³ That finding directly contradicts NNSA’s claimed needs for new nuclear weapons designs under the so-called Reliable Replacement Warhead (RRW) Program⁴ and “Complex 2030,” the future nuclear weapons complex it wants by that year. These two issues are inextricably linked, as the agency has declared that RRW is the “enabler” for transformation of the present nuclear weapons complex into a future “responsive infrastructure” capable of producing new-design nuclear weapons for unspecified future “changing military requirements.”⁵ Because of the significance of the related issues, NNSA’s unsubstantiated claims deserve challenge (its verbatim “Myth vs. Fact” language is italicized below).

MYTH #1: The age of plutonium equals the age of a weapon.

FACT: There are thousands of parts in a nuclear weapon and the plutonium pit is not the only part in a weapon that needs maintenance and surveillance. Although plutonium aging contributes, other factors control the overall life expectancy of nuclear weapons systems, such as aging of high explosives and other organic components in the design, or corrosion of uranium or plutonium parts. The age of plutonium is but one variable that can affect a weapon’s performance and reliability.

TRUTH: Yes, nuclear weapons require rigorous maintenance and surveillance in order to ensure long-term reliability, which NNSA has failed to diligently do.⁶ The thousands of nonnuclear components in a weapon, such as arming and fuzing devices, electromechanical switches, etc., can be thoroughly tested outside of the weapons. A decade ago, the Department of Energy said because of manufacturing data and lab tests “over time high confidence in the safety and reliability of nonnuclear components and subsystems can be established.”⁷ The conventional high explosives used to initiate the nuclear explosion in plutonium pits have been shown to grow *more* stable with age in some of their key characteristics,⁸ and also can be tested outside of the weapons. In contrast, plutonium pits cannot be full-scale tested since that would result in a nuclear explosion, currently banned under an international testing moratorium. Therefore, predicted plutonium pit performance lifetimes dominate the issue of nuclear weapons reliability. As far back as 1993 the Sandia National Laboratories concluded, “although nuclear weapons age, they do not wear out; they last as long as the nuclear weapons community (DoD and DOE) desires. In fact, we can find no example of a nuclear weapon retirement where age was ever a factor in the retirement decision.”⁹ The pit lifetime studies overwhelmingly reinforce that earlier conclusion. Instead of new designs under RRW, the prudent national security path would be to remanufacture nuclear weapons components on a strict as-needed basis while rigorously adhering to tested original designs.

MYTH #2: The age of plutonium is the primary driver for the Reliable Replacement Warhead.

FACT: Plutonium aging was not and is not the only reason for RRW. Senior officials at NNSA have on many different occasions in congressional testimony, speeches and interviews outlined the many different reasons for RRW, including ensured continued and long-term high confidence in reliability; improved manufacturability; increased safety and security; reduced likelihood of the need for future underground testing; and decreased numbers of weapons in the stockpile.

TRUTH: First, the primary driver for RRW is the Bush Administration's 2002 Nuclear Posture Review (NPR), which expanded the rationale for possible use of U.S. nuclear weapons.¹⁰ The ex-head of the NNSA testified to Congress that he no longer viewed the existing stockpile as militarily appropriate.¹¹ RRW gives NNSA the opportunity to design and produce new nuclear weapons for new military purposes, contrary to the 1970 NonProliferation Treaty's mandate for nuclear disarmament. Concerning confidence in nuclear weapons reliability, the recent plutonium pit lifetime studies have shown that existing weapons are indeed reliable for a century or more. In comparison, the oldest weapons in the planned stockpile are 28 years old.¹² According to NNSA plans, we are to trade in these existing weapons for yet-to-be-proven RRW designs. Concerning "improved manufacturability," the same experts who conducted review of the pit lifetime studies recommended in 1999 that nuclear weapons components be "remanufactured" only on an as-needed basis and as close to original design specifications as possible so that confidence in reliability could be maintained. RRW runs counter to that recommendation. Concerning safety, the three nuclear weapons labs directors have certified the stockpile as safe since 1992. The stockpile is already secure from unauthorized use because of rigorous chain-of-custody and surety mechanisms built into existing warheads. Nevertheless, NNSA officials have floated the idea of lowering funding for "guards, guns and gates" if RRW is implemented, which could lessen security. Concerning RRW lowering the future need for full-scale nuclear weapons testing, why replace the existing and already extensively tested stockpile known to be reliable with unproven RRW designs? Finally, the claim that RRW is necessary to reduce the numbers of nuclear weapons is not logical. Our existing nuclear weapons have been proven to be more reliable than previously thought; therefore we can reduce their numbers with confidence.

MYTH #3: Now that plutonium lasts for 100 years, the country does not need the RRW.

FACT: Regardless of the age of plutonium, RRW is needed to ensure confidence in the reliability of the nuclear weapons stockpile well into the future. The U.S. nuclear stockpile is aging – the average age of most weapons is more than 20 years. In short, as a warhead is refurbished to extend its service life, small changes accumulate, which take it farther and farther away from the original configurations that were confirmed with underground nuclear tests - this results in decreasing confidence in warhead reliability and performance. An RRW would be much less sensitive to these changes and assure greater long-term confidence. In an RRW, NNSA would replace the parts and components that are hard to manufacture and difficult to maintain with ones that are safer, more secure and easier to sustain and replace. With RRW, NNSA will be able to reduce the likelihood that underground nuclear tests will be needed in the future and, most importantly, eventually be able to reduce the number of weapons in the stockpile even further.

TRUTH: Not only does the country not need RRW, our national security could be harmed by it. NNSA plans to pay for RRW by cutting maintenance and "Life Extension Programs" programs for existing tested nuclear weapons.¹³ As one eminent and critical nuclear weapons scientist has said, "There are concerns that the Life Extension Programs – LEP – if carried out as planned will make the RRW unnecessary, at least for 30 years or more. This raises the danger that LEPs will be dropped, in order that the RRW should appear essential."¹⁴ Since the plutonium pit lifetime studies, NNSA has increasingly used the accumulation of small changes introduced through Life Extension Programs as a rationale for RRW. The simple answer is to rigorously avoid changes, which NNSA has not studiously followed. RRW cannot be validated by full-scale tests since that would have profound global nonproliferation impacts, so how can it have a testing pedigree better than that of existing weapons already tested? Instead, new RRW designs could increase future pressures to test should the military be skeptical of accepting unproven designs for stockpile deployments. The claim that RRW is necessary for further stockpile reductions is without basis. It is the existing stockpile that has been proved to be reliable, therefore it can be reduced.

MYTH #4: The plutonium aging study derails NNSA's Complex 2030 plan as well as RRW.

FACT: We need Complex 2030 with or without RRW and regardless of plutonium aging. Complex 2030 is about transforming and modernizing the Cold War-era nuclear weapons infrastructure into a smaller, more efficient complex that is better able and more suited to respond to future national security challenges. It will include

increased dismantling of retired warheads; consolidating special nuclear materials; eliminating duplicative capabilities; establishing a consolidated plutonium center; and implementing more efficient and uniform business practices throughout the complex.

TRUTH: The plutonium aging study does derail Complex 2030 and RRW. While it says that it needs Complex 2030 with or without RRW, the central and most important facility that NNSA proposes is the Consolidated Plutonium Center, explicitly designed for a minimal production rate of 125 RRW pits per year. Moreover, NNSA wants a “continuous design/deployment cycle that exercises design and production capabilities” indefinitely on into the future.¹⁵ Concerning a “smaller” complex, NNSA plans to close none of its eight nuclear weapons design, production and testing sites under Complex 2030. With respect to efficiency, NNSA plans to completely replace the existing tested and reliable nuclear weapons stockpile with unproven RRW designs, while it has under-funded and underperformed in routine stockpile maintenance programs for existing weapons. Complex 2030 is not needed to increase dismantlements - - instead building RRWs could hinder dismantlements because the facilities that assemble bombs are the same facilities needed to take bombs apart. To imply that only NNSA’s Complex 2030 could eliminate duplication, consolidate plutonium operations and implement better business practices is illogical. All those things can and should be done now, without Complex 2030. Finally, concerning “respond[ing] to future national security challenges,” the proliferation of weapons of mass destruction remains our gravest military threat. NNSA should augment its existing nonproliferation expertise and provide the country with improved global monitoring, nuclear materials accounting and verification techniques, and not undermine the international nonproliferation regime by building new-design weapons.

MYTH #5: NNSA does not need the Consolidated Plutonium Center (CPC) now that plutonium will last longer than expected.

FACT: Of the five nuclear weapons states recognized by the Nuclear Nonproliferation Treaty [NPT], the United States is the only one without a dedicated facility to manufacture plutonium pits. This is a national security risk, and it ties the hands of future presidents. Additionally, the CPC will do more than just produce pits. This center will consolidate all plutonium activities, including surveillance, fabrication, research and development, into one secure location. Right now, plutonium activities are spread out across the country at several different sites. By building one center, NNSA will reduce security costs and significantly improve its efficiency.

TRUTH: The Consolidated Plutonium Center (CPC) is not needed not only because plutonium pits last longer, but also because NNSA states the CPC is explicitly meant for a minimal production rate of 125 RRW pits per year,¹⁶ which are not needed. To say that the U.S. is the only NPT nuclear weapons power that doesn’t have a “dedicated” plutonium pit production facility is disingenuous when there is an existing pit production facility at the Los Alamos National Laboratory (LANL), currently planned for expanded production of up to 80 pits per year. That facility is not “dedicated” to pit production only in the sense that it has plutonium missions other than just pit production. But for that matter, NNSA says that the CPC would have other plutonium missions as well. The real issue is that LANL’s currently sanctioned production level of 20 pits per year is more than enough to maintain stockpile reliability. Moreover, because plutonium pits last longer than originally expected and RRW is not needed, nuclear weapons-related plutonium operations can be ceased at other NNSA sites, thereby dramatically lowering security costs. For efficiency’s sake, why manufacture more plutonium pits than needed, if any are needed at all? Finally, the reference to the NonProliferation Treaty is ironic, given that the U.S. should strengthen the Treaty’s nonproliferation regime and not undermine it with the new nuclear weapons design and production specifically proposed under Complex 2030.

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Endnotes

- 1 Available at <http://www.nnsa.doe.gov/docs/factsheets/2006/NA-06-FS-08A.pdf>, which NNSA dates as December 2006. However, based on our own frequent visits to the NNSA website, we believe it was not posted until mid-February. Additionally, the file creation date for this PDF document is February 8, 2007.
- 2 Pits are the atomic “triggers” for modern thermonuclear weapons, and they are the crucial components. The significance of any impact of aging on their performance and reliability cannot be over-emphasized.
- 3 “Most primary types [pits surrounded by high explosives] have credible minimum lifetimes in excess of 100 years as regards aging of plutonium; those with assessed minimum lifetimes of 100 years or less have clear mitigation paths that are proposed and/or being implemented.” *Pit Lifetime*, JASON, November 20, 2006, http://www.nukewatch.org/facts/nwd/JASON_ReportPuAging.pdf
- 4 RRW is a program created by Congress in 2005 with the intent of ensuring the future reliability of the U.S. nuclear weapons stockpile. NNSA and the three nuclear weapons designs labs have seized upon the program as an opportunity to develop and produce future new designs. For more, please see http://www.ananuclear.org/dc_days06/RRW2006.pdf
- 5 *Speech to the East Tennessee Economic Council*, Linton Brooks, ex-NNSA Administrator, March 3, 2006, <http://www.eteconline.org/presentations.html>
- 6 “The surveillance program’s role in assessing and ensuring confidence in the reliability of the weapons stockpile is increasingly important as the nuclear weapons stockpile ages. However, as a result of the continuing backlog of surveillance tests, the Department lacks vital information about the reliability of the stockpile.” *Follow-up Audit on Stockpile Surveillance Testing*, DOE Inspector General, DOE/IG-0744, October 2006, cover letter, [http://www.ig.energy.gov/documents/IG-0744\(2\).pdf](http://www.ig.energy.gov/documents/IG-0744(2).pdf)
- 7 *Stockpile Stewardship and Management Programmatic Environmental Impact Statement*, DOE, 1996, Summary p. 19, <http://www.eh.doe.gov/NEPA/eis/eis0236/eis0236.htm>
- 8 “Surprisingly, however, the high explosive used in U.S. weapons has been found to improve systematically with age in key measures of performance, such as yielding characteristics and detonation-front velocities.” *Science-Based Stockpile Stewardship*, Dr. Raymond Jeanloz, *Physics Today*, December 2000, p. 5, <http://www.physicstoday.org/pt/vol-53/iss-12/p44.html>
- 9 *A Summary of the SNL Stockpile Life Study*, Sandia National Laboratories, 1993, first page, parentheses in the original, http://www.nukewatch.org/facts/nwd/Sandia_93_StockpileLife.pdf
- 10 For more, please see <http://www.nukewatch.org/watchdawg/newsletters/nprbulletin.pdf>
- 11 *Statement of Ambassador Linton F. Brooks Before The Senate Armed Services Committee Subcommittee on Strategic Forces*, NNSA Administrator, April 4, 2005, http://www.nnsa.doe.gov/docs/congressional/2005/2005-04-04_Brooks_SASC_testimony.pdf
- 12 See *The Ages of U.S. Nuclear Weapons*, <http://www.nukewatch.org/facts/nwd/WeaponsAge.pdf>
- 13 “Complex 2030 Budget Preparation Approach... Relies on reductions in legacy weapon requirements (e.g., number of future life extensions and stockpile size/composition) to pay, in part, for RRWs.” *Report on the Plan for Transformation of the NNSA Nuclear Weapons Complex*, NNSA, January 31, 2007, p. 24, parenthesis in the original. “Complex 2030 Near-Term Schedules and Milestones,” *ibid.*, p. 23, depicts “Last Legacy Weapon Refurbished” by 2022, the same year “RRW Full Production” is to begin.
- 14 *Replacement Warheads Without Testing?*, Richard Garwin, March 23, 2006, http://www.nukewatch.org/facts/nwd/Garwin_ReplaceWithoutTest.pdf
- 15 *Complex 2030 Infrastructure Planning Scenario*, NNSA, October 2006, p. 9, http://www.nnsa.doe.gov/docs/Complex_2030_Infrastructure_Planning_Scenario.pdf
- 16 *Complex 2030, A Preferred Infrastructure Planning Scenario*, NNSA viewgraphs, May 2006, slide 17, www.doeal.gov/LLNLCompetition/BriefingAndSiteTourInfo/03TransformationComplex2030BriefWithLLNLActivities.ppt