

# B61 LIFE EXTENSION PROGRAM Costs and Policy Considerations

BY BARRY BLECHMAN AND LAICIE HEELEY

While the United States plans to make minor reductions in the number of warheads deployed on its long-range missiles and bombers, consistent with the terms of the new Strategic Arms Reduction Treaty (START), it also plans to develop a wide range of new delivery systems, nuclear weapons, and nuclear production facilities. This unprecedented modernization program, which will recapitalize all three legs of the nuclear triad as well as the underlying infrastructure, is estimated to raise the cost of the nuclear triad to as much as \$1 trillion over the next 30 years.<sup>1</sup>

The B61 Service Life Extension Program (SLEP) is a particularly egregious example of waste in this comprehensive nuclear buildup. The B61 is one of two nuclear-armed gravity bombs currently in the US active stockpile. Nine of 14 total variations of the B61 have been retired or canceled, and five remain. The B61-3, -4, and -10 are considered “tactical,” meaning they are designed to be delivered by short-range fighter aircraft. The B61-7 and -11 are considered “strategic,” as they are intended to be delivered by long-range bombers.

The life extension program for the B61 is ambitious, with plans to consolidate all the weapon’s variations into one, known as the B61-12, which will be deliverable by either fighter planes or long-range bombers, and thus able to function in both strategic and tactical roles. In addition to replacing key components with modern versions of these parts, the B61-12 will be fitted with a special “tail kit” to

improve its accuracy. Development and procurement of the tail kit will be funded by the Defense Department, and the lion’s share of the program will be funded by the Department of Energy. On August 1, 2016, the Department of Energy’s National Nuclear Security Administration (NNSA) announced that it had formally authorized the production engineering phase of development.<sup>2</sup> Actual production of the modernized B61-12 is planned to begin in 2020 and end in 2025.

The NNSA plans to extend the service lives of an estimated 480 of the approximately 800 total B61 bombs now in the inventory, at a projected total cost of more than \$8 billion.<sup>3</sup> An independent Defense Department assessment, however, concluded that the total cost could exceed \$10 billion. These costs are shown in Table 1.

TABLE 1. B61 Life Extension Program Actual and Projected Costs (in millions of US dollars)

	FY 2015 Appropriation	FY 2016 Appropriation	FY 2017 Request	TOTAL REMAINING PROGRAM COST
Department of Defense	148	212	138	458+
Department of Energy	643	643	616	9,186 <sup>4</sup>
<b>Total</b>	<b>791</b>	<b>855</b>	<b>754</b>	<b>9,644+</b>

## POLICY ISSUES

The extraordinary cost of this program alone should cause legislators and interested citizens to delve deeply into the rationale for the B61 SLEP. More importantly, a number of serious questions about the purposes of the weapon – its roles in US national security policies – suggest the program may not be necessary, in whole or at least in part.

### 1. Is it necessary or desirable to deploy B61s in Europe?

Although most US tactical weapons were withdrawn from Europe during the early 1990s, 180 of the tactical versions of the B61s remain at six bases in Europe – in Belgium, Italy, Germany, the Netherlands, and Turkey – as symbols of US nuclear commitments to NATO. All the bases, except the one in Turkey, have US or Allied fighter jets equipped to deliver the bombs; the Turkish base does not have a permanent fighter wing but essentially operates as a nuclear storage depot. The United States first deployed tactical nuclear bombs in Europe in the late 1950s and early 1960s, when NATO planned to offset the huge Soviet tank armies deployed in Eastern Europe by initiating nuclear conflict. However, NATO never figured out how to fight such a nuclear war without killing millions of civilians in European nations. A Stimson Center simulation of nuclear wars in the Baltic region, moreover, estimated that four nuclear strikes against military targets in Estonia would kill 100,000 people, while a larger regional war in which 20 weapons were used would result in nearly 1 million prompt fatalities.<sup>5</sup>

Furthermore, the political value of the weapons is highly questionable. Today it is difficult to imagine the German government, or the Belgian or Dutch or Italian governments, authorizing their crews to drop nuclear weapons on Russian forces invading a nation in Eastern Europe. Nonetheless,

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the NATO communiqué issued at the Warsaw Summit in July renewed the Alliance’s emphasis on these forward-deployed weapons, urging “the broadest possible participation of Allies concerned in their agreed nuclear burden-sharing arrangements.”<sup>6</sup> While official statements like this one have been made for years, virtually all the governments involved prefer to avoid discussion of these weapons in their parliaments or with the public at large. This is partly because they fear that the presence of the weapons in Europe, if brought to the public’s attention, would create political fallout so negative that it could lead to the fall of a government.

Moreover, it is costly to ensure the security of the bombs stored at the European bases, and their presence overseas raises the risk that they could fall into hostile hands or become targets for terrorist attacks. The costs for security cannot be found in unclassified sources, but they likely total in the hundreds of millions of dollars each year.<sup>7</sup>

The security issues are serious. Breaches at some of the sites, such as a 2010 incident in Belgium at Kleine Brogel Air Base in which activists climbed the base fence, have illustrated the risk posed by the storage of these weapons. (Up to 20 nuclear bombs are stored there.) Turkey’s Incirlik Air Base

has been the subject of even greater concern given its close proximity to war-torn Syria. The base is less than 70 miles from Syria’s border, which prompted the evacuation of the dependents of US service members; yet it is also the site of approximately 50 US tactical nuclear weapons.<sup>8</sup> During the failed coup in Turkey in July, power to the base was cut off and the Turkish government prohibited US aircraft from flying in or out. Eventually, the base commander was arrested and implicated in the coup planning. Whether the US could have maintained control of the weapons in the event of a protracted civil conflict in Turkey is an unanswerable question.

**2. Is it necessary to maintain any nuclear weapons for use by tactical aircraft?**

Indeed, the question of how B61s might be used by fighter aircraft for tactical purposes remains unclear. For example, General James Cartwright, former vice chairman of the Joint Chiefs of Staff, wrote in a 2012 report, “All US tactical nuclear weapons [i.e., the B61 nuclear bomb] would be eliminated over the next ten years. Their military utility is practically nil. They do not have assigned missions as part of any war plan and remain deployed today only for political reasons within the NATO alliance. The obligation to assure US allies in Europe ... would fall to US strategic nuclear and conventional forces, which are amply capable of fulfilling it.”<sup>9</sup>

In short, if the weapons have no military value, and either conventional forces or US strategic forces could carry out their assumed political purposes, why produce any B61s for “tactical” uses, whether based in Europe or in the United States? Sustaining the weapons and maintaining the readiness of aircraft and crews to deliver nuclear weapons is itself very costly, detracting money and training time from the designated squadrons’ preparations for conventional warfare. Table 2 summarizes some of the costs involved.

In addition to the spending for developing and sustaining the bombs, the Congressional Budget Office (CBO) estimates that it will cost approximately \$350 million to finish developing the modifications to make the new F-35 Joint Strike Fighter (which will carry the B61-12) nuclear-capable. The CBO’s estimate does not include the cost of implementing those modifications. Additional costs will come from making existing nuclear-capable fighters (the F-15E, F-16, and Tornado) capable of delivering the B61-12.

**3. Are B61s necessary for use by long-range bombers?**

Finally, there is the question of what unique purpose is served by extending the lives of B61s for use by long-range bombers. As part of its comprehensive nuclear modernization program, the US is also building a new long-range stand-off weapon (LRSO) for use by existing aircraft and

TABLE 2: B61 Sustainment Costs (in thousands of US dollars)

<b>B61 Life Extension Program</b>	<b>DOE Stockpile Systems<sup>10</sup></b>	<b>DOD Dual-Use Costs<sup>11</sup></b>	<b>TOTAL</b>
FY 2017 Request	57	629	686
FY 2018 Request	52	642	694
FY 2019 Request	49	702	751
FY 2020 Request	51	759	810
FY 2021 Request	52	774	826
<b>Total FY 2017-FY 2021</b>	<b>261</b>	<b>3,506</b>	<b>3,767</b>

TABLE 3. Potential Savings (in millions of US dollars)

Options	FY 2017	FY 2017-2021	Lifetime <sup>12</sup>
Do not procure B61s intended for delivery by fighter aircraft. <sup>13</sup>	0	727	2,522+
Do not procure B61s intended for delivery by fighter aircraft and remove from Europe immediately. <sup>14</sup>	0	3,679	6,201+
Cancel the program completely. <sup>15</sup>	0	4,406	8,723+

the proposed B21 long-range bomber. The LRSO is justified by projections of Russian and Chinese air defense capabilities, and the assumption that eventually even modern US bombers with advanced stealth characteristics will be unable to penetrate these defenses without grave dangers. If that is the case, and the US continues to develop and eventually acquires the LRSO, then why also acquire a nuclear bomb that could only be delivered by a penetrating bomber?

### ALTERNATIVES

In view of the questionable utility of the B61, particularly those stored in Europe, and in view of the many competing programs for defense dollars, it makes sense to consider alternatives to the program as now configured. Table 3 shows the potential savings from three options: (a) cancelling only procurement of B61s intended for delivery by tactical aircraft, (b) cancelling procurement of those B61s that would be stored in Europe, and removing current versions from European bases, and (c) cancelling the program completely. In the latter two, we assume that most research and development costs would still be incurred, although there might be minor savings. We are also assuming that one-half of the planned buy of 480 B61s would be acquired for use by US long-range strategic bombers.

While cancellation of the program might be preferable, most of the required research and

development funding has already been spent. For this reason, it makes sense in our view to procure a limited number of weapons for use on long-range bombers. With this option, the assumed political benefit of having tactical aircraft with nuclear weapons deployed in Europe could be maintained by periodic deployments of US long-range bombers to European bases as a way to reassure allies that the United States remains committed to NATO’s security, even if it requires nuclear weapons.

We feel strongly, moreover, that there is a case to be made for the immediate removal of all tactical nuclear weapons from Europe and freeing the squadrons designated to deliver them for use strictly in conventional roles. First and foremost, the tactical weapons have no military utility, and, because the likelihood of their use is extremely low, their presumed political value is a chimera. This option might have made sense during the Cold War, but is unrealistic in today’s security environment. Second, if Russian and Chinese air defenses are improving significantly enough to justify building a new penetrating long-range bomber, as well as a new long-range stand-off missile, there is little reason to believe that existing or new tactical fighters would be able to penetrate the improved air defenses. Third, the continued presence of these weapons at five sites in Europe, particularly in Turkey, raises serious risks of their seizure by terrorists or other hostile forces.

For these reasons, we recommend that the US forgo the procurement of B61s intended for delivery by fighter aircraft and remove the weapons from Europe immediately – the second option detailed above. This would save approximately \$3.7 billion from FY 2017-2021 and just over \$6 billion during the lifetime of the program, resources that could be used more productively to strengthen conventional forces. §

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## ENDNOTES

1. Todd Harrison and Evan Montgomery, “The Cost of US Nuclear Forces: From BCA to Bow Wave and Beyond,” Center for Strategic and Budgetary Assessments, August 2015.
2. NNSA, Public Affairs, “NNSA Reaches Important Milestone with B61-12 Life Extension Program,” August 2016.
3. Hans Kristensen, “General Cartwright Confirms B61-12 Bomb ‘Could Be More Useable,’” Federation of American Scientists, November 2015.
4. The “high” estimate for FY 2016 to FY 2025 is from the NNSA’s FY 2017 Stockpile Stewardship and Management Plan.
5. Barry Blechman, Alex Bollfrass, and Laicie Heeley, “Reducing The Risk of Nuclear War in the Nordic/Baltic Region,” Henry L. Stimson Center, December 2015.
6. Warsaw Summit Communiqué, July 2016, [http://www.nato.int/cps/en/natohq/official\\_texts\\_133169.htm](http://www.nato.int/cps/en/natohq/official_texts_133169.htm).
7. Hans Kristensen, “NATO Nuclear Weapons Security Costs Expected to Double,” Federation of American Scientists, March 2014.
8. James Cartwright, et al., “Global Zero US Nuclear Policy Commission: Modernizing US Nuclear Strategy, Force Structure and Posture,” Global Zero, May 2012.
9. The “high” estimate for FY 2016 to FY 2025 is from the NNSA’s FY 2017 Stockpile Stewardship and Management Plan.
10. Funding for “Stockpile Systems” directly executes sustainment activities for all enduring weapons systems in the stockpile. B61 totals are from NNSA budget documents.
11. This attributes 10 percent of F-16 and F-15E O&M and MILPERS costs to the nuclear mission, consistent with the assumption in the Congressional Budget Office’s *Projected Costs of US Nuclear Forces, 2015 to 2024*. We assume in this analysis that these costs would decline if the nuclear mission were eliminated, since the aircraft and flight crews would not need to maintain nuclear certification and training. This further assumes 10 percent of F-35A O&M and MILPERS costs, along with the full cost of making the F-35A dual-capable. Data obtained via the accompanying spreadsheet in Harrison and Montgomery, “The Cost of US Nuclear Forces,” August 2015, <http://csbaonline.org/publications/2015/08/the-cost-of-u-s-nuclear-forces-from-bca-to-bow-wave-and-beyond/>
12. Sustainment costs beyond FY 2021 are not included in the total.
13. Assumes no savings in FY 2017, FY 2018, and FY 2019. Assumes 50 percent of DOE funds in FY 2020 and FY 2021. Lifetime savings of up to half of the NNSA’s “high” estimate of remaining program costs, minus FY 2017-FY 2019 costs.
14. Assumes 40 percent of total DOE Stockpile Systems funding and 10 percent of F-16 and F-15E O&M and MILPERS costs, along with the full cost of making the F-35A dual-capable for FY 2017-FY 2021.
15. Assumes 40 percent of total DOE Stockpile Systems funding and 10 percent of F-16 and F-15E O&M and MILPERS costs, along with the full cost of making the F-35A dual-capable for FY 2017-FY 2021. Also assumes 50 percent of DOE funds in FY 2020 and FY 2021. Lifetime savings up to half of the NNSA’s “high” estimate of remaining program costs, minus FY 2017-FY 2019 costs.