

# The New “Low-Yield” Submarine-Based Nuclear Warhead

The Trump administration plans to produce a new “low-yield” nuclear warhead to be launched from existing Trident submarines. The new warhead—dubbed the W76-2—reportedly has an explosive power (or yield) of 6.5 kilotons (one kiloton has the explosive power of 1,000 tons of TNT), and will replace some existing W76 warheads, which have a yield of 100 kilotons. For comparison, the nuclear bomb that destroyed Hiroshima, killing some 100,000 people, had a yield of roughly 15 kilotons.

## Deployment by 2019

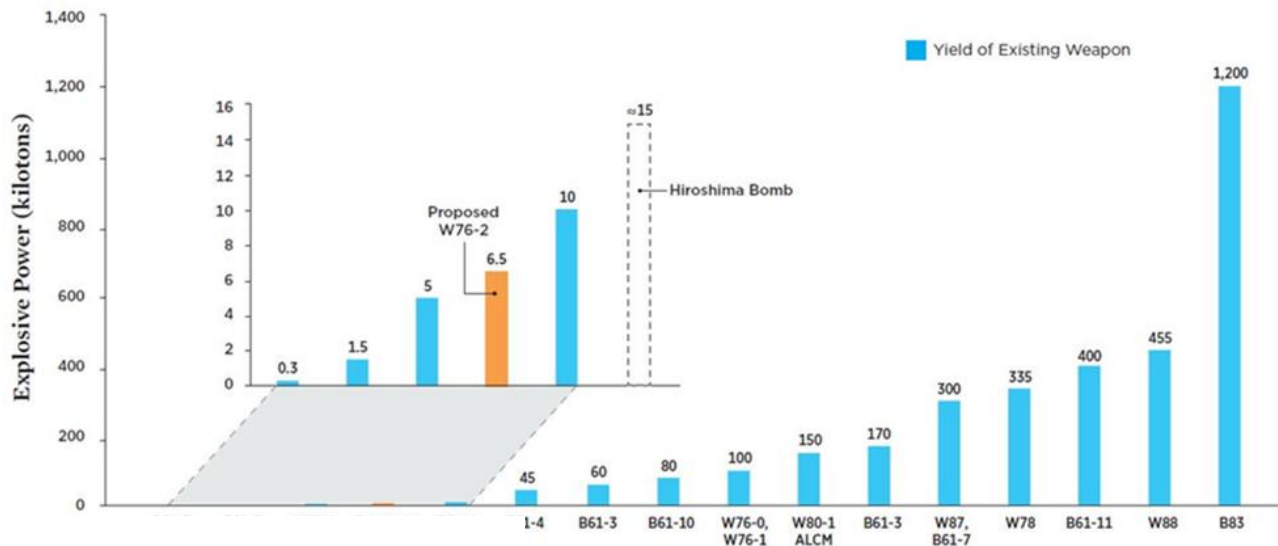
To produce the new W76-2 warheads, the United States will modify a small number of existing W76 warheads. Doing so is relatively straightforward and the new warheads could be produced in less than 18 months. The W76 warhead is currently undergoing a life extension program in which the warheads are dismantled, refurbished and reassembled. The United States will modify some of these warheads as part of this ongoing work, which is scheduled to conclude by September 2019—before the end of President Trump’s term.

## The W76-2 would Join a Suite of Other “Low-yield” Weapons

As the chart shows, current US nuclear weapons have an astonishingly wide range of explosive yields—from 0.3 kilotons (50 times smaller than the Hiroshima bomb) to 1.2 megatons (80 times greater). On the low-yield end of the spectrum, the United States deploys bombs and air-launched cruise missiles with yields of 0.3, 1.5, 5, and 10 kilotons. Adding a new weapon with a yield between 5 and 10 kilotons is unnecessary on any grounds.

However, the administration’s February 2018 Nuclear Posture Review (NPR) argues that the United States needs the new W76-2 warhead because Russia perceives a gap in US low-yield nuclear capabilities and might mistakenly believe this means it could use its low-yield nuclear weapons in a conventional conflict without risking a US nuclear response. Leaving aside whether this is an accurate assessment of Russian beliefs, there is simply no meaningful gap that another US low-yield warhead could fill, as the chart above makes clear.

## THE EXPLOSIVE POWER OF US NUCLEAR WEAPONS



Note: One kiloton = 1,000 tons of TNT.

*Deployed US nuclear weapons vary in both yield and delivery method. They include several bombs that would be dropped from aircraft: the B61-3, -4, -7, and -10, which each have multiple yield options and the B61-11 with a single yield of 400 kT; two land-based missile warheads: the W78 and W87; two submarine-based missile warheads: the W76 and W88; and one air-launched cruise missile warhead: the W80-1, which also has multiple yield options.*

SOURCE: THE NUCLEAR WEAPON ARCHIVE, FEDERATION OF AMERICAN SCIENTISTS, HANS M. KRISTENSEN (VARIOUS)

## Designed for Nuclear Warfighting

A renewed interest in nuclear warfighting is evident throughout the NPR, which calls for tighter integration of US nuclear and conventional forces, including training and exercising with integrated units, so US forces can fight “in the face of adversary nuclear threats and employment” (NPR 2018). In other words, US and NATO forces should prepare to fight even if Russia and/or the United States use low-yield nuclear weapons. The new policy deliberately blurs the line between nuclear and conventional forces and eliminates a clear nuclear fire break. Doing so is not in US security interests.

As a number of security experts, including former Secretary of Defense William Perry and former Secretary of State George Shultz, state in a letter to Congress opposing new low-yield nuclear weapons, “Perhaps the biggest fallacy in the whole argument is the mistaken and dangerous belief that a ‘small’ nuclear war would remain small.” Instead, they say, “These so-called ‘low-yield’ nuclear weapons are a gateway to a nuclear catastrophe” (Brown, Shultz, Perry, et al. 2018). Even Trump’s own Defense Secretary, James Mattis, has said “I don’t think there’s any such thing as a tactical nuclear weapon. Any nuclear weapon used at any time is a strategic game changer” (Sisk 2018). (“Tactical” weapons are short-range weapons intended for use in a regional war, where “strategic” weapons have a range long enough to directly attack the other country.)

## The Risk of Unintended Nuclear War

The new lower yield warhead would also introduce complications that could lead to dangerous miscalculations. Currently, all US sub-launched missile warheads have a yield of 100 or 455 kilotons. There is no way to distinguish a missile carrying a lower yield warhead from one carrying the standard

high-yield warheads, so Russia would not know whether an incoming missile was the first move in a large-scale nuclear attack or a response to a conventional conflict in Europe. Russia could well respond assuming the worst case—potentially leading to an unintended large-scale nuclear war.

## Costs will Be Low

Other planned nuclear weapon programs—to build new systems and to replace existing ones—will each cost many billions of dollars and will face scrutiny by Congress and be vulnerable to budget cuts that could slow or eliminate them. However, the W76-2 is a straightforward modification of an existing warhead, and its cost is quite low compared to that of other new nuclear weapon systems— meaning its budget will not provide a lever for constraining the program. The FY19 budget request is \$88 million, which includes funding for the Department of Energy, which would produce the new warhead, and the Department of Defense, which would be responsible for mating the warheads to the missiles and making any necessary changes to its training programs and/or operations.

## REFERENCES

- Brown, E.G., Shultz, G.P., Perry, W.J., et al. 2018. Experts write letter to Congress to stop low-yield nuclear warheads. May 23. Online at <http://www.wjperryproject.org/notes-from-the-brink/letter-to-congress-stop-low-yield-nuclear-weapons>
- Nuclear Posture Review* (NPR). 2018. Washington, DC: Office of the Secretary of Defense. February. Online at <https://www.defense.gov/News/SpecialReports/2018NuclearPostureReview.aspx>.
- Sisk, R. 2018. Mattis: There is no such thing as a ‘tactical’ nuke. *Defense Tech* blog. Military.com. February 6. Online at <https://www.military.com/defensetech/2018/02/06/mattis-there-no-such-thing-tactical-nuke.html>.



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