PHYSICISTS COALITION FOR NUCLEAR THREAT REDUCTION

Resources for Understanding President Trump's Order to Resume Nuclear Weapon Testing

November 11, 2025

On 30 October 2025, President Trump announced "Because of other countries testing programs, I have instructed the Department of War to start testing our Nuclear Weapons on an equal basis. That process will begin immediately."[1] In an interview with CBS News he claimed "Russia's testing, and China's testing … And certainly North Korea's been testing. Pakistan's been testing … they test way under -- underground where people don't know exactly what's happening with the test. You feel a little bit of a vibration. They test and we don't test. We have to test."[2]

No evidence has been offered for the claim that these other countries currently are "testing" nuclear weapons. Other than North Korea, which last tested a nuclear weapon in 2017, the only nuclear explosive tests after the Comprehensive Test Ban Treaty was opened for signature in September 1996 were by India and Pakistan in May 1998. It is widely agreed that the treaty is a "zero-yield" treaty and prohibits all nuclear test explosions that produce a transient supercritical chain reaction and result in even a very low yield.[3] The United States and other nuclear armed states conduct zero-yield sub-critical nuclear weapons tests to maintain and modernize their nuclear weapons.

US claims of Russian violation of zero yield testing threshold

Senator Tom Cotton (chair of the Senate Intelligence Committee) has supported Trump, claiming that "After consultations with Director Ratcliffe and his team, they have confirmed to me that the CIA assesses that both Russia and China have conducted super-critical nuclear weapons tests in excess of the U.S. zero-yield standard."[4] To support this view, Senator Cotton cited reports from 2019, during the first Trump Administration, by General Ashley of the US Defense Intelligence Agency that "Russia probably is not adhering to the nuclear testing moratorium."

In fact, when asked publicly in 2019 about Russian violation of the zero-yield test threshold, General Ashley said "our understanding and belief is they are set up in such a way that they are able to operate beyond what would be necessary for a zero-yield. And so the facilities that they're

[1] Trump tells Pentagon to resume testing US nuclear weapons, Reuters, Oct. 30th, 2025, https://www.reuters.com/world/china/trump-asks-pentagon-immediately-start-testing-us-nuclear-weapons-2025-10-30/

[2] President Donald J. Trump interview with Norah O'Donnell, CBS News, October 31, 2025, https://www.cbsnews.com/news/read-full-transcript-norah-odonnell-60-minutes-interview-with-president-trump/

[3] US State Department Bureau of Arms Control, Verification, and Compliance ,"Scope of the Comprehensive Nuclear Test-Ban Treaty, , Fact Sheet 2013, https://2009-2017.state.gov/t/avc/rls/212166.htm and "Key P-5 Public Statements on CTBT Scope", Fact Sheet 2011, https://2009-2017.state.gov/t/avc/rls/173945.htm

[4] Tom Cotton, X.com, Nov 3, 2025, https://x.com/SenTomCotton/status/1985494966693470214

operating have that capacity to operate in something other than zero-yield."[5] Asked directly "do you think they're actually doing it?" Ashley replied: "I'll have to say I believe they have the capability to do that."

The April 2025 Annual State Department report "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments" finds "no new adherence issues related to nuclear testing moratoria were identified" for Russia or China." [6] There were similar findings of "no new adherence issues related to nuclear testing moratoria" in these reports going back to 2020. The 2020 compliance report on Russia claimed only that "some of its activities since 1996 have demonstrated a failure to adhere to the U.S. zero-yield standard, which would prohibit supercritical tests."[7]

The worldwide monitoring network operated by the Comprehensive Test Ban Treaty Organization can detect, with high confidence, nuclear tests with yields as low as 100 tons TNT equivalent. No seismic ("vibration") evidence has been reported for nuclear tests at Russia's test site, located on the Arctic island of Novaya Zemlya. The National Academy of Sciences in its 2012 report "The Comprehensive Nuclear Test Ban Treaty—Technical Issues For The United States" assessed that the threshold for detection of a test at Novaya Zemlya was estimated at less than 100 tons of TNT equivalent (see Figure 2-8).[8]

The possible Russian tests being referred to may be so-called "hydronuclear" tests in large containment vessels for which the nuclear yields are less than 0.1 tons of TNT equivalent (see the table below). Evidence for the "capacity" for such low-yield supercritical tests could include satellite sightings of large containment vessels at the Russian test site. Such "hydronuclear" tests were carried out by the US for nuclear weapon safety reasons during the 1958-1961 nuclear testing moratorium, with the official understanding, approved by the President, that "this type of experiment was 'not a nuclear weapon test' under the terms of the moratorium."[9]

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[5] Lt. Gen. Robert P. Ashley, Jr., "The Arms Control Landscape", Hudson Institute, May 29, 2019, https://s3.amazonaws.com/media.hudson.org/Hudson%20Transcript%20-%20The%20Arms%20Control%20Landscape.pdf

[6] US State Department, "Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments" April 2025, https://www.state.gov/wp-content/uploads/2025/04/2025-Arms-Control-Treaty-Compliance-Report_Final-Accessible.pdf

[7] US State Department, Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments, June 2020, https://2021-2025.state.gov/wp-content/uploads/2020/06/2020-Adherence-to-and-Compliance-with-Arms-Control-Nonproliferation-and-Disarmament-Agreements-and-Commitments-Compliance-Report-1.pdf

[8] National Academy of Sciences, "The Comprehensive Nuclear Test Ban Treaty—Technical Issues For The United States, 2012, https://nap.nationalacademies.org/catalog/12849/the-comprehensive-nuclear-test-ban-treaty-technical-issues-for-the

[9] Robert N. Thorn and Donald R. Westervelt, "Hydronuclear Experiments," Los Alamos National Laboratory, LA-10902, 1987, https://www.osti.gov/biblio/6646692

Timelines for the United States to resume nuclear weapon testing

President Trump says he ordered "testing our Nuclear Weapons [to] begin immediately." Nuclear weapons testing at significant yields could not begin immediately, however.

The US Department of Energy reported in its FY2014 Stockpile Stewardship and Management Plan [SSMP, page 4-4] that "The Strategic Advisory Group Special Task Force, which included all three NNSA national security laboratory directors, concluded in March 2010 that a very limited test to signal the readiness of the U.S. nuclear deterrent or to respond to another Nation's test could be conducted in 6 to 10 months."[10]

Appendix C in this DOE report explains that "In response to the need for clarity on U.S. posture on test readiness, a special task force was convened by the United States Strategic Command, Strategic Advisory Group. This special task force included the directors of NNSA's three national security laboratories. The task force concluded that assessments of the readiness for an underground nuclear test should be made on a technical basis and should assume such a test would be conducted *only when the President has declared a national emergency or similar contingency* and after any *necessary waiver of applicable statutory and regulatory restrictions (e.g., relating to health, safety, and the environment)*.On this basis, the group concluded, albeit without a structured mechanism to validate specific estimates, that while a fully instrumented test to address a complex stockpile issue would take 24 to 36 months, tests to develop a new capability might take up to 60 months. The task force also concluded that a very simple test for political purposes could be conducted in as little as 6 to 10 months. (The Threshold Test Ban Treaty requires a 200-day notification of a test.)"

The DOE FY18 SSMP [page 3-26] states: "As required by the 1993 Presidential Decision Directive (PDD-15, "Stockpile Stewardship") NNSA has to maintain the capability to conduct a nuclear test within 24 to 36 months… General testing estimates based on these considerations, NNSA interpretation of PDD-15, and needs and conditions are as follows:

- 6 to 10 months for a simple test, with waivers and simplified processes
- 24 to 36 months for a fully instrumented test to address stockpile needs with the existing stockpile
- 60 months for a test to develop a new capability."[11]

These options are not listed in subsequent Stockpile Stewardship and Management Plans.

[10] Department of Energy, "Fiscal Year 2014 Stockpile Stewardship and Management Plan", https://www.lasg.org/documents/SSMP-FY2014.pdf.
[11] Department of Energy, "Fiscal Year 2018 Stockpile Stewardship and Management Plan" https://www.energy.gov/sites/prod/files/2017/11/f46/fy18ssmp_final_november_2017%5B1%5D_0.pdf

What can be learned by nuclear weapons testing at low supercritical yields?

President Trump offered no technical basis for his order to resume nuclear testing, only the political reason that some other nuclear armed states were testing their nuclear weapons. This is despite the fact that the United States has conducted 1054 nuclear tests, more than half of the estimated total of 2056 nuclear tests ever carried out.[12]

In 2002, the National Academy of Sciences reviewed what information states with various levels of prior nuclear weapon testing experience might plausibly gain regarding nuclear weapon design and performance from tests at different explosive yields, including low supercritical yields.[13] The table below is reproduced from that report (Table ES-1 Purposes and Plausible Achievements for Testing at Various Yields).

Yield	Countries of lesser prior nuclear test experience and/or design sophistication*	Countries of greater prior nuclear test experience and/or design sophistication
Subcritical testing only (permissible under a CTBT)	• Equation-of-state studies • High-explosive lens tests for implosion weapons • Development & certification of simple, bulky, relatively inefficient unboosted fission weapons	same as column to left, plus • limited insights relevant to designs for boosted fission weapons
Hydronuclear testing (yield < 0.1 t TNT, likely to remain undetected under a CTBT)	• one-point safety tests (with difficulty)	• one-point safety tests • validation of design for unboosted fission weapon with yield in 10-ton range
Extremely-low-yield testing (0.1 t < yield <10 t, likely to remain undetected under a CTBT)	• one-point safety tests	• validation of design for unboosted fission weapon with yield in 100-ton range • possible overrun range for one-point safety tests
Very-low-yield testing (10 t < yield < 1-2 kt, concealable in some circumstances under a CTBT)	• limited improvement of efficiency & weight of unboosted fission weapons compared to 1st-generation weapons not needing testing • proof tests of compact weapons with yield up to 1-2 kt (with difficulty)	• proof tests of compact weapons with yield up to 1-2 kt • partial development of primaries for thermonuclear weapons
Low-yield testing (1-2 kt < yield < 20 kt, unlikely to be concealable under a CTBT)	• development of low-yield boosted fission weapons • eventual development & full testing of some primaries & low-yield thermonuclear weapons • proof tests of fission weapons with yield up to 20 kt	• development of low-yield boosted fission weapons • development & full testing of some primaries & low-yield thermonuclear weapons • proof tests of fission weapons with yield up to 20 kt
High-yield testing (yield > 20 kt, not concealable under a CTBT)	• eventual development & full testing of boosted fission weapons & thermonuclear weapons	• development & full testing of new configurations of boosted fission weapons & thermonuclear weapons

[12] The Nuclear Testing Tally, Arms Control Association, January 2024, https://www.armscontrol.org/factsheets/nuclear-testing-tally

[13] National Academy of Sciences, "Technical Issues Related to the Comprehensive Nuclear Test Ban Treaty," 2002, https://www.nap.edu/catalog/10471/technical-issues-related-to-the-comprehensive-nuclear-test-ban-treaty

Additional Resources from the Physicists Coalition for Nuclear Threat Reduction:

Frank von Hippel, Protecting the global nuclear test moratorium, Expert Policy Paper, Physicists Coalition for Nuclear Threat Reduction, 25 August 2023.

This paper provides additional background on:

- The history of the CTBT and the testing moratorium
- The annual review President Clinton committed to and Congress subsequently required by law to determine the level of confidence that all U.S. warheads remain safe and reliable without testing
- The "science-based stockpile stewardship program on which assessments of the continuing reliability of the US warhead stockpile are based
- Allegations of Russian cheating
- Arguments that have been made against the CTBT based on concerns about the safety and long-term reliability of current US warheads and about the verifiability of the treaty.

Nuclear Threat Reduction: Resuming Nuclear Testing is Unnecessary and Would Undermine the Nuclear Non-Proliferation Treaty, statement by the Physicists Coalition for Nuclear Threat Reduction (2020) calling for Congress to prohibit funding in the FY 21 National Defense Authorization Act to prepare for or conduct a nuclear weapon test.