

What are Subcritical Nuclear Tests?

Subcritical nuclear tests are nuclear experiments designed to explosively bombard small amounts of weapons-grade plutonium-239. Carried out by the National Nuclear Security Administration (NNSA) periodically in an underground alcove in the State of Nevada, the experiments, also dubbed 'subcrits,' do not reach a self-sustaining "critical" fission chain reaction. However, several critical problems remain.

Since the U.S. inaugurated its subcritical nuclear testing program at the Nevada Test Site in 1997 with 'Rebound,' questions keep swirling over why the NNSA—which oversees the nation's nuclear weapons stockpile and the U.S.'s dormant nuclear test site in Nevada—conducts subcritical nuclear tests **underground**—indeed at the *same* underground facility where fully critical underground nuclear weapons tests were conducted decades ago. The choice to *not* place its experimental vessels for its 'subcrits' where *verification* is facilitated (e.g., on the surface) fuels speculation and worry of the actual purpose of these experiments b/c below-ground preparations for subcritical tests look very similar to preparations for what would be a fully critical test in breach of the CTBT and testing moratoriums.

Since 'Rebound' in 1997, the government's reason given for the necessity of conducting 'subcrits' has bounced around from (a) maintaining the readiness of the test site & preparing for resumption of nuclear explosive tests, to (b) studying plutonium's aging quality to ensure the reliability of the nation's nuclear stockpile -- the most consistent rationale given since 1997 by the NNSA/Dept. of Energy -- to (c) vertical proliferation (i.e., redesigning nuclear weapons). In 2019, under President Trump, the NNSA called for increasing the rate of subcritical testing and expenditures under a diagnostics program named "Enhanced Capabilities for Subcritical Experiments," or ECSE (whose total cost will approach \$1 billion by fiscal year 2024). Data acquired from this ECSE program will be used for re-

designing warheads, per budget documents. According to a recent watchdog [analysis](#):

'...these activities that make changes to weapons create pressure to consider resumption of nuclear explosive testing in order to certify them.'

RECENT NEWS: The NNSA carried out its 29th subcrit, 'Ediza,' on Feb. 13, 2019--just prior to the U.S.-DPRK summit in Hanoi--that leaked radioactivity in an alcove when a containment vessel breached. On Nov. 3, 2020, the NNSA carried out its most recent subcrit, 'Nightshade A,' the first in a series of 3 tests. Per a NNSA lab

spokesperson, 'Nightshade B' is planned for Spring 2021--and 'Nightshade C' will follow in the fall. The Biden administration has yet to announce any changes to the rapidly growing and underscrutinized U.S. subcritical test program at the Nevada National Security Site.

We urge President Biden to heed the call of global hibakusha and end subcritical nuclear tests.

THINKING OUTSIDE THE BOMB TALK

-----SCALED-----

In the last decade, the NNSA's subcritical nuclear tests have quickly grown from primitive explosive-shock experiments involving tiny shapes of plutonium to their surprising execution in scale models of (mock) nuclear warhead primaries. The U.S. carried out its first 'scaled' subcritical nuclear test on Dec. 5, 2012.

-----CTBT-Approved?-----

Subcritical tests, while not technically violating the Comprehensive Test Ban Treaty (CTBT), which the U.S. has signed but not ratified, undermine the spirit of the treaty. Critics and a few nation-states charge that the CTBT must become *more comprehensive* in light of subcrits.

-----A NUCLEAR TEST?-----

What has dogged treaty drafters of the CTBT (Comprehensive Test Ban Treaty) and the Treaty on the Prohibition on Nuclear Weapons is the seeming impossibility of defining the term 'nuclear explosion.' But achieving a non-critical mass of plutonium does *not* preclude an experiment from also being categorized as a 'nuclear test' or 'nuclear explosion.'

-----LEGACY-----

Pouring money into perpetuating nuclear weapons' role at the birthplace of so many mushroom clouds and lying in Nevada ('There is no danger') makes a statement, especially when nothing meaningful is being done to own up to the intergenerational health damages inflicted on unsuspecting U.S. communities by the fallout—made worse by the AEC's negligent public safety responses in the 1950's/1960's.

