

North Korea's January 6, 2016, Nuclear Test

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North Korea [announced](#) that it successfully tested a "hydrogen bomb" (its fourth nuclear test) on January 6, 2016. The official statement also called the device an experimental or "pilot H-bomb." It emphasized that North Korea would continue its policy of both building up its nuclear weapons program and developing its economy in parallel, and said that North Korea would not proliferate nuclear weapons to others. The statement reiterated that North Korea would not suspend or dismantle its nuclear weapons program unless the United States changed its "hostile policy" toward the country. Observers have been anticipating a new nuclear test by North Korea since a December 2015 [statement](#) by North Korean leader Kim Jong Un claimed that the country had a hydrogen bomb. Earlier statements by North Korean scientists cited fusion technology development, the basis for a hydrogen bomb, in the country.

The [U.S. Geological Survey](#) detected a non-earthquake seismic event with a magnitude of 5.1 near the Punggye-ri nuclear test site in North Korea. The Comprehensive Test-Ban Treaty Organization (CTBTO) said in a January 6 [statement](#) and [press briefing](#) that its monitors had detected a seismic event at the same North Korean location as the February 2013 nuclear test, and that the "seismic signals are largely consistent with those picked up during the last announced nuclear test on 12 February 2013." The U.S. government has said that it was a nuclear test, but a White House spokesman said that initial data was "[not consistent](#)" with North Korean claims of detonating a hydrogen bomb. The Air Force deployed a WC-135 [Constant Phoenix](#) "sniffer" aircraft to test for any atmospheric radiation. Many countries around the world, including China and Russia, have condemned the test as a violation of several U.N. Security Council resolutions.

North Korea has tested a nuclear explosive device [three other times](#) since 2006. Each test produced progressively somewhat-higher yields (ranging up to several kilotons). These devices were fission bombs. The [U.S. intelligence community](#) has said that the prime objective of North Korea's nuclear weapons program is to develop a nuclear warhead that is "miniaturized" or sufficiently small to be mounted on intermediate-range and long-range ballistic missiles. Observers debate the extent to which North Korea's nuclear tests have improved Pyongyang's ability to produce nuclear weapons, but since even unsuccessful nuclear tests give scientists useful information, the January 6 test could assist in that goal.

A "hydrogen bomb" refers to [a thermonuclear device](#), or a two-phase explosion that includes a nuclear fission trigger to initiate a fusion reaction. A plutonium pit at the core of the device causes the larger, fusion reaction using hydrogen isotopes. This is considered to be technically challenging and only the United States, Russia, France, and China have tested thermonuclear devices. Many experts [doubt](#) that North Korea has achieved this technical step. Others argue that the January 6 test was probably not a hydrogen bomb test because of the [low yield](#) relative to other hydrogen or thermonuclear tests.

Another possibility discussed by technical experts is that the January 6 test was a "boosted" fission weapon. Generally, countries would test a boosted fission weapon as the next step after testing fission weapons, on the path to developing a hydrogen bomb (or as its own end). This [type of nuclear weapon](#) includes a fission device plus a small amount of hydrogen isotopes (tritium and deuterium gas) which undergo fusion and whose resulting energy release sustains the fission reaction for longer, causing a larger blast. This type of device would also be lighter in weight and smaller in size and may explain the North Korean claim that they have tested a "mini H-bomb." In order to be delivered on longer-range ballistic missiles, nuclear warheads need to be of a lower-weight and size than the most simple nuclear fission bomb design would allow.

It is also possible that the device was a fission bomb, but that the North Korean government [claimed](#) it was a hydrogen bomb for other purposes such as domestic political support, deterrence impact on its neighbors, or possibly an exaggerated claim by scientists to the leadership. Intelligence agencies and the international scientific community are still collecting data from the test, which could reveal more information about the nature of the nuclear material used, and whether the explosion involved fusion. These details may take days or weeks to be detected and may or may not be released to the public. Following past tests, the Director of National Intelligence has released statements with the intelligence community's conclusions. However, DNI has not always confirmed the material used in the test or the exact yield. Although seismic monitoring data should reveal the estimated yield of the device, the material used can be [detected](#) by radionuclides released into the atmosphere. If North Korea has successfully designed the test site so that little to no release or venting occurs, it may prove more difficult for intelligence agencies to detect and draw strong conclusions.