

AT THE EDGE OF A NEW NUCLEAR ARMS RACE

The U.S.'S Moves To Resume Nuclear Testing, Also Signalling The Demise Of

The Ill-Fated CTBT, Could Be The First Signs

In mid-April, a report issued by the United States State Department on “Adherence to and Compliance with Arms Control, Non-proliferation, and Disarmament Agreements and Commitments (Compliance Report)” raised concerns that China might be conducting nuclear tests with low yields at its Lop Nur test site, in violation of its Comprehensive Nuclear-Test-Ban Treaty (CTBT) undertakings.

The U.S. report also claims that Russia has conducted nuclear weapons experiments that produced a nuclear yield and were inconsistent with ‘zero yield’ understanding underlying the CTBT, though it was uncertain about how many such experiments had been conducted.

Russia and China have rejected the U.S.’s claims, but with growing rivalry among major powers the report is a likely harbinger of a new nuclear arms race which would also mark the demise of the CTBT that came into being in 1996 but has failed to enter into force even after a quarter century.

What does CTBT ban mean?

For decades, a ban on nuclear testing was seen as the necessary first step towards curbing the nuclear arms race but Cold War politics made it impossible. A Partial Test Ban Treaty was concluded in 1963 banning underwater and atmospheric tests but this only drove testing underground. By the time the CTBT negotiations began in Geneva in 1994, global politics had changed. The Cold War had ended and the nuclear arms race was over. The Union of Soviet Socialist Republics, or the USSR, had broken up and its principal testing site, Semipalatinsk, was in Kazakhstan (Russia still had access to Novaya Zemlya near the Arctic circle). In 1991, Russia declared a unilateral moratorium on testing, followed by the U.S. in 1992. By this time, the U.S. had conducted 1,054 tests and Russia, 715.

Negotiations were often contentious. France and China continued testing, claiming that they had conducted far fewer tests and needed to validate new designs since the CTBT did not imply an end to nuclear deterrence. France and the U.S. even toyed with the idea of a CTBT that would permit testing at a low threshold, below 500 tonnes of TNT equivalent. This was one-thirtieth of the “Little Boy”, the bomb the U.S. dropped on Hiroshima on August 6, 1945 — its explosive yield was estimated to be the equivalent of 15,000 tonnes of TNT. Civil society and the non-nuclear weapon states reacted negatively to such an idea and it was dropped. Some countries proposed that the best way to verify a comprehensive test ban would be to permanently shut down all test sites, an idea that was unwelcome to the nuclear weapon states.

Eventually, the U.S. came up with the idea of defining the “comprehensive test ban” as a “zero yield” test ban that would prohibit supercritical hydro-nuclear tests but not sub-critical hydrodynamic nuclear tests. Once the United Kingdom and France came on board, the U.S. was able to prevail upon Russia and China to accept this understanding. After all, this was the moment of the U.S.’s unipolar supremacy. At home, the Clinton administration in the U.S. satisfied the hawks by announcing a science-based nuclear Stockpile Stewardship and Management Program, a generously funded project to keep the nuclear laboratories in business and the Pentagon happy. Accordingly, the CTBT prohibits all parties from carrying out “any nuclear weapon test explosion or any other nuclear explosion”; these terms are neither defined nor elaborated.

Why it lacks authority

Another controversy arose regarding the entry-into-force provisions (Article 14) of the treaty. After India’s proposals for anchoring the CTBT in a disarmament framework did not find acceptance, in June 1996, India announced its decision to withdraw from the negotiations. Unhappy at this turn, the U.K., China and Pakistan took the lead in revising the entry-into-force provisions. The new provisions listed 44 countries by name whose ratification was necessary for the treaty to enter into force and included India. India protested that this attempt at arm-twisting violated a country’s sovereign right to decide if it wanted to join a treaty but was ignored. The CTBT was adopted by a majority vote and opened for signature.

Of the 44 listed countries, to date only 36 have ratified the treaty. China, Egypt, Iran, Israel and the U.S. have signed but not ratified. China maintains that it will only ratify it after the U.S. does so but the Republican dominated Senate had rejected it in 1999. In addition, North Korea, India and Pakistan are the three who have not signed. All three have also undertaken tests after 1996; India and Pakistan in May 1998 and North Korea six times between 2006 and 2017. The CTBT has therefore not entered into force and lacks legal authority.

Nevertheless, an international organisation to verify the CTBT was established in Vienna with a staff of about 230 persons and an annual budget of \$130 million. Ironically, the U.S. is the largest contributor with a share of \$17 million. The Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO) runs an elaborate verification system built around a network of over 325 seismic, radionuclide, infrasound and hydroacoustic (underwater) monitoring stations. The CTBTO has refrained from backing the U.S.'s allegations.

Competition is back

The key change from the 1990s is that the U.S.'s unipolar moment is over and strategic competition among major powers is back. The U.S. now identifies Russia and China as 'rivals'. Its Nuclear Posture Review asserts that the U.S. faces new nuclear threats because both Russia and China are increasing their reliance on nuclear weapons. The U.S., therefore, has to expand the role of its nuclear weapons and have a more usable and diversified nuclear arsenal. The Trump administration has embarked on a 30-year modernisation plan with a price tag of \$1.2 trillion, which could go up over the years. Readiness levels at the Nevada test site that has been silent since 1992 are being enhanced to permit resumption of testing at six months notice.

Russia and China have been concerned about the U.S.'s growing technological lead particularly in missile defence and conventional global precision-strike capabilities. Russia has responded by exploring hypersonic delivery systems and theatre systems while China has embarked on a modernisation programme to enhance the survivability of its arsenal which is considerably smaller. In addition, both countries are also investing heavily in offensive cyber capabilities.

The new U.S. report stops short of accusing China for a violation but refers to "a high level of activity at the Lop Nur test site throughout 2019" and concludes that together with its lack of transparency, China provokes concerns about its intent to observe the zero-yield moratorium on testing.

The U.S. claims that Russian experiments have generated nuclear yield but is unable to indicate how many such experiments were conducted in 2019. It suggests that Russia could be testing in a manner that releases nuclear energy from an explosive canister, generating suspicions about its compliance.

The New Strategic Arms Reduction Treaty (New START) limits U.S. and Russian arsenals but will expire in 2021 and U.S. President Donald Trump has already indicated that he does not plan to extend it. Instead, the Trump administration would like to bring China into some kind of nuclear arms control talks, something China has avoided by pointing to the fact that the U.S. and Russia still account for over 90% of global nuclear arsenals.

Current context

Both China and Russia have dismissed the U.S.'s allegations, pointing to the Trump administration's backtracking from other negotiated agreements such as the Iran nuclear deal or the U.S.-Russia Intermediate-Range Nuclear Forces (INF) Treaty. Tensions with China are already high with trade and technology disputes, militarisation in the South China Sea and most recently, with the novel coronavirus pandemic. The U.S. could also be preparing the ground for resuming testing at Nevada.

The Cold War rivalry was already visible when the nuclear arms race began in the 1950s. New rivalries have already emerged. Resumption of nuclear testing may signal the demise of the ill-fated CTBT, marking the beginnings of a new nuclear arms race.

Meanings of Difficult Words:

1. **on the edge of** (phrase) – on the brink of, on the verge of a situation; at a crucial or critical point.
2. **nuclear arms race** (noun) – an arms race competition for supremacy in nuclear warfare between the United States, the Soviet Union, and their respective allies during the Cold War.
3. **demise** (noun) – end, disintegration, fall/ruin.
4. **ill-fated** (adjective) – unfortunate, hapless, unlucky; cursed.
5. **Comprehensive Nuclear-Test-Ban Treaty (CTBT)** (noun) – it is a multilateral treaty established (in 1996) to ban all nuclear tests in all places for all time. The CTBT is a “zero-yield” treaty, but it has failed to enter into force even after a quarter century.
6. **compliance (with)** (noun) – adherence to, accordance with, conformity to.
7. **nonproliferation** (noun) – the action of preventing the spread of something (particularly of nuclear weapons by the countries).
8. **disarmament** (noun) – demilitarization, limitation or reduction of arms, deactivation of military weapons.
9. **nuclear weapon explosive yield** (noun) – a nuclear weapon (bomb) is measured in terms of its explosive yield, which is referenced in terms of “tons,” “kilotons,” and “megatons” of the TNT explosive power they put off. For example, the explosive yield from a conventional bomb would be about 500 pounds (250 kilograms). The largest conventional weapon in the U.S. arsenal “Mother of all Bombs,” or MOAB is around 11 tons, about 44 times the size of a conventional bomb.
10. **low-yield** (noun) – low yield nuclear weapons (bombs) can range from .1 kilotons to 10, 20, or 50 kilotons. A low-yield nuclear weapon is equivalent to 1,000 MOABs. That is equivalent to the sizes of bombs dropped by the U.S. over Nagasaki (Fat Man Bomb of about 20 kilotons) and Hiroshima (Little Boy bomb of about 15 kilotons) at the end of World War II.
11. **TNT (trinitrotoluene)** (noun) – TNT is one of the most popular explosive compounds. The energy released in an explosion of 1 gram of TNT is approximately 4000 Joules. It is common to measure the power of an explosion by asking how much TNT would be needed to produce an explosion as powerful.
12. **undertaking** (noun) – pledge/promise, agreement, commitment.
13. **inconsistent with** (adjective) – in disagreement with, conflicting with, in opposition to.
14. **zero yield** (noun) – it refers to a nuclear test where there is no explosive chain reaction of the sort caused by an atomic bomb nuclear warhead.
15. **understanding** (noun) – agreement, deal, undertaking, pledge/promise.
16. **underlie** (verb) – be fundamental, be basic, be essential.
17. **uncertain** (adjective) – unsure, doubtful, dubious.
18. **growing** (adjective) – increasing, intensifying, amplifying.
19. **rivalry** (noun) – opposition, conflict, stifle/friction.
20. **harbinger** (noun) – sign, indicator, indication, signal.
21. **mark** (verb) – indicate, signify, identify.
22. **curb** (verb) – restrain, control, contain, stifle, check.
23. **the Cold War** (noun) – The Cold War was a state of political and military tension after World War II between powers in the Western Bloc and powers in the Eastern Bloc.
24. **atmospheric** (adjective) – relating to the atmosphere of the earth.
25. **drive** (verb) – propel, move, push.
26. **unilateral** (adjective) – relating to a method of taking decisions (on international relations) by a state (country) individually without considering other states (countries).
27. **moratorium** (noun) – a temporary suspension of an activity; embargo, ban, prohibition.

28. **contentious** (adjective) – controversial, disputable, debatable.
29. **far fewer** (phrase) – much less (with a large difference).
30. **validate** (verb) – to check the accuracy of (something) and approve/certify.
31. **imply** (verb) – suggest, indicate, implicate, signal.
32. **nuclear deterrence** (noun) – the strategic concept of deterrence aims to prevent war. It is the justification virtually every nuclear state uses for maintaining nuclear arsenals (weapons) to deter (& intimidate/threaten) an enemy from attacking it.
33. **toy with** (verb) – have thoughts about, consider an idea (casually).
34. **threshold** (noun) – lower limit, starting point, the level (to react to something).
35. **comprehensive** (adjective) – all-inclusive, complete, full.
36. **shut down** (phrasal verb) – discontinue, cease activity, close.
37. **eventually** (adverb) – in the end, in due course, after some time.
38. **come up with** (phrasal verb) – put forward, suggest, recommend, propose.
39. **comprehensive test ban** (noun) – it is defined as “zero yield” test ban that would prohibit supercritical hydro-nuclear tests but not subcritical hydrodynamic nuclear tests.
40. **supercritical** (adjective) – (in nuclear physics) involving more than the critical mass.
41. **hydro-nuclear testing** (noun) – In hydro-nuclear testing (nuclear weapon tests), fissile isotopes, such as uranium-235, uranium-233 and plutonium-239, are subjected to explode to deliver “full” nuclear yield. It is called “supercritical” because there will be critical mass formed, i.e., self-sustaining nuclear fission chain reaction will occur.
42. **sub-critical** (adjective) – (in nuclear physics) involving less than the critical mass.
43. **hydrodynamic testing** (noun) – In hydrodynamic testing, non-fissile isotopes, such as uranium-238 and plutonium-242, are subjected to enough pressure. It is called “subcritical” because there will be no critical mass formed, i.e., no self-sustaining nuclear fission chain reaction will occur. (Hydrodynamics refers to the physics involved when solids, under extreme conditions, begin to mix and flow like liquids).
44. **on board** (phrase) – as a member (on to a team).
45. **prevail upon** (verb) – persuade, induce, influence, prompt.
46. **unipolar** (adjective) – (in international politics), relating to a distribution of power in which one state (country) exercises most of the cultural, economic, and military influence.
47. **supremacy** (noun) – dominion, power, influence.
48. **hawk** (noun) – a person who supports an aggressive policy. “Dove” means a person who supports peaceful policy.
49. **generously** (adverb) – plentifully, amply, largely.
50. **carry out** (phrasal verb) – conduct, perform, execute.
51. **entry-into-force provisions** (noun) – provisions of the treaty determine the date on which the treaty enters into force, often at a specified time following its ratification or accession by a fixed number of states.
52. **anchor** (verb) – connect, bind, attach.
53. **framework** (noun) – structure, system, organisation.
54. **ratification** (noun) – an act by which a State (Country) signifies an agreement to be legally bound by the terms of a particular treaty. To ratify (approve) a treaty, the State first signs it and then fulfils its own national legislative requirements. Once the appropriate national organ of the country (e.g. Parliament) follows domestic constitutional procedures and makes a formal decision to be a party to the treaty.
55. **arm-twist** (verb) – pressurize, push, force.
56. **sovereign** (adjective) – independent, autonomous, self-governing; having independent authority and the right to govern itself.
57. **nevertheless** (adverb) – in spite of that, even so, however.
58. **ironically** (adverb) – paradoxically, unexpectedly, strangely.

59. **seismic** (adjective) – relating to vibrations produced artificially by explosions.
60. **radionuclide** (adjective) – relating to a radioactive nuclide, radioisotope or radioactive isotope; is an atom that has excess nuclear energy, making it unstable (nuclide is a type of atom whose nuclei have specific numbers of protons and neutrons).
61. **infrasound** (adjective) – referred to as low-frequency sound, describes sound waves with a frequency below the lower limit of audibility (generally 20 Hz).
62. **hydroacoustic** (adjective) – relating to the study of sound waves in the water and its applications. Hydroacoustic monitoring involves recording signals that show changes in water pressure generated by sound waves in the water.
63. **refrain from** (verb) – stop oneself, abstain, desist from, hold back.
64. **back** (verb) – support, endorse, uphold.
65. **allegation** (noun) – charge, accusation, indictment.
66. **assert** (verb) – declare, maintain, state.
67. **reliance** (noun) – dependence; trust/confidence on something.
68. **diversified** (adjective) – having a variety of something (weapons).
69. **arsenal** (noun) – range/line-up/collection of (military) weapons & equipment are made and stored in a place.
70. **embark on** (phrasal verb) – start, begin, initiate/commence.
71. **(nuclear) modernisation** (noun) – the total renovation of the nuclear weapon arsenal or nuclear forces.
72. **go up** (phrasal verb) – rise or increase.
73. **resumption** (noun) – restarting, recommencement, reopening.
74. **explore** (verb) – examine, evaluate.
75. **hypersonic** (adjective) – relating to speeds of more than five times that of sound (mach 5).
76. **survivability** (noun) – the ability to remain alive (or active) or continue to exist.
77. **considerably** (adverb) – noticeably, significantly.
78. **transparency** (noun) – clarity, straightforwardness, unambiguity.
79. **canister** (noun) – metal container.
80. **suspicion** (noun) – misgiving, doubt/qualm, distrust, scepticism.
81. **The New Strategic Arms Reduction Treaty (New START)** (noun) – an agreement for nuclear arms reduction between the United States and Russia, establishing a limit on deployed strategic warheads.
82. **account for** (phrasal verb) – constitute, make up, comprise, form.
83. **point to** (verb) – indicate, suggest, signal/signify.
84. **backtrack** (verb) – retract, take back, go back on, disclaim/disavow.
85. **Intermediate-Range Nuclear Forces (INF)** (noun) – this treaty required the United States and the Soviet Union to eliminate and permanently agree to give up/renounce all of their nuclear and conventional ground-launched ballistic and cruise missiles with ranges of 500 to 5,500 kilometers.
86. **militarisation** (noun) – the process by which a society organizes itself for military conflict and violence.
87. **prepare the ground** (phrase) – to pave the way, plan/organize, make it easier for future (development).