1963: Partial Test Ban Treaty (PTBT)

In the years leading up to the Cuban Missile Crisis, both the United States and the Soviet Union had put forth test ban proposals. But neither was ready for such a comprehensive ban. The US Atomic Energy Commission argued against a test ban along with the Department of Defense and the Joint Chiefs of Staff. Critics of a test ban downplayed the health effects of radioactive fallout from atmospheric tests while also arguing a test ban would impinge upon US national security interests.

In the Soviet Union, opponents insisted that if inspections were part of the verification mechanism, the west would use these measures to gather intelligence. However, there was mounting public pressure both domestically and in the international arena against nuclear testing due to increased awareness of the implications for health, the environment and global security, as well as concern over the escalating nuclear arms race.

With no resolution over the OSI issue and the number of seismic stations necessary to verify compliance with a comprehensive test ban, negotiations began on a Partial Test Ban Treaty (PTBT). Signed by the United Kingdom, the United States and the Soviet Union on 5 August 1963, the PTBT banned nuclear testing in the atmosphere, underwater and in space. The treaty stipulated that signatory-states could not “carry out any nuclear weapon explosion, or any other nuclear explosion…in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas”. This treaty also included peaceful nuclear explosions (PNEs). In terms of the effects on health and the environment, PNEs were qualitatively no different from weapons tests.
The signing of the PTBT amounted to nothing less than a historic milestone in arms control. This was the first time the world witnessed real progress on a test ban between the great powers struggling for military and geopolitical superiority in the Cold War. Nevertheless, although a necessary step towards a comprehensive test ban treaty, the fundamental role of the PTBT was to address environmental issues rather than disarmament. Nuclear weapon testing not only continued, albeit underground, but also increased greatly in number through the better part of the second half of the twentieth century. Moreover, on 16 October 1964, China became the fifth country in the world to test a nuclear weapon. It is also important to note that China and France did not sign the PTBT and carried out atmospheric testing until 1980 and 1974 respectively. View a visual overview of worldwide atmospheric and underground testing.

1967: Outer Space Treaty

Following consideration by the Legal Subcommittee in 1966, the United Nations General Assembly adopted the Outer Space Treaty in resolution 2222. The Outer Space Treaty, also known as the Treaty on Principles Governing the Activities of States in the Exploration and use of Outer Space, including the Moon and other Celestial Bodies, prohibits States Parties from placing in orbit around the earth any objects carrying nuclear weapons or other weapons of mass destruction. In addition to prohibiting nuclear testing in space, the Outer Space Treaty also prohibits Parties from engaging in military maneuvers on celestial bodies, conducting nuclear tests on celestial bodies, installing weapons systems or constructing military bases on celestial bodies.

1967: The Treaty of Tlatelolco

The world’s first Nuclear-Weapon-Free Zone was created by the countries of Latin America and the Caribbean in 1967. The Parties to the Treaty of Tlatelolco committed themselves not to manufacture, acquire, test or possess nuclear weapons.

1968: Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

As early as 1959, the United Nations General Assembly adopted a resolution put forth by
Ireland calling for nuclear weapon States (NWS) to refrain from transferring nuclear weapons to non-nuclear weapon States (NNWS). As the Cold War intensified and both the United States and the Soviet Union increased nuclear testing underground in both quantity and yield, the international community together with movements in civil society sought to constrain the spread of nuclear weapons. Many observers believed that due to the strategic superiority granted by the atomic bomb, the proliferation of nuclear weapons was inevitable. President Kennedy famously predicted that by the mid-seventies, 15-20 States in the world would possess nuclear weapons.

In 1965, although the United States proposed the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), certain states argued that a comprehensive nuclear test ban would cover all related aspects of nuclear nonproliferation. The United States continued to push for an NPT and proposed a revision of the PTBT to include a verifiable underground test ban. However, it was certain the Soviet Union would not agree to the verification measures proposed by the United States that included monitoring systems and on-site inspections. The Soviet Union maintained that national detection systems should remain the only means with which to monitor underground nuclear tests. During a meeting of the ENDC, Sweden attempted to resolve the issue by proposing “challenge inspections” whereby states unable to produce satisfactory explanations of suspicious events were subjected to challenge inspections.

There were still disagreements over collective security arrangements; in particular, how the NPT would affect US controlled nuclear weapons in NATO countries, but both the United States and the Soviet Union recognized a Treaty on nuclear non-proliferation was a shared interest. After a series of private talks between the United States and the Soviet Union, the negotiations could be concluded. The United States, the Soviet Union, the U.K. and 58 other countries signed the NPT on 1 July 1968. The Treaty defined nuclear weapon States (NWS) as those countries that tested nuclear weapons before 1967 and all others as non-nuclear weapon States (NNWS). There are three pillars of the NPT: nuclear nonproliferation, nuclear disarmament and the peaceful use of nuclear energy. The Treaty prohibits NWS from transferring nuclear weapons, other nuclear explosives or nuclear weapon technology to NNWS. Likewise, NNWS are obligated to refrain from acquiring nuclear weapons or other nuclear explosive devices. Each NNWS undertakes to accept safeguards agreement with the IAEA. At the same time, NNWS have an inalienable right to nuclear energy for peaceful purposes.

On the more contentious issue of nuclear disarmament, Article VI of the treaty, as well as the preamble, highlighted disarmament obligations. Article VI of the NPT obligates States signatories to “pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament...” The preamble of the NPT recalls the determination expressed by the Parties to the PTBT to “seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue
negotiations to this end.” The nuclear test ban was early on seen by the NNWS as the litmus test of whether NWS would live up to their end of the bargain and disarm their nuclear weapons.

The NPT lays the foundation of the international nuclear non-proliferation regime. However, the Treaty made no explicit means for which to ensure that NWS would abide by their obligations on disarmament. Therefore, although observers regard the low number of countries that possess nuclear weapons as a great success, NWS continued testing and stockpiling nuclear weapons decades after the Treaty entered into force. To date, there are still an estimated 27,000 nuclear weapons in the world.

1974: Threshold Test Ban Treaty (TTBT)

Between the years of 1969 and 1974, bilateral arms limitations talks took centre stage of disarmaments negotiations. In May 1972, the Soviet Union and the United States signed the Anti-Ballistic Missile (ABM) Treaty and the Strategic Arms Limitation Talks (SALT) Interim Agreement. The Soviet Union again stated in 1974 that a CTBT was achievable granted all testing was banned and national technical means were used to verify the ban. With the United States still uncertain about adequate verification of a test ban that relies only on national technical means, the Soviet Union suggested a threshold test ban to limit the yield of nuclear weapons tests. Under the bilateral Threshold Test Ban Treaty (TTBT), nuclear testing could not exceed yields of 150 kt. Although it did little to curb nuclear testing, one critical aspect of the Treaty was the agreement between parties to share technical details on geophysical data from designated test sites.

1974: India tests

Following India’s defeat in the 1962 war with China and the latter’s nuclear test in 1964, Indian Prime Minister Lal Bahadur Shastri authorized theoretical work on the Subterranean Nuclear Explosion for Peaceful Purposes (SNEPP). India had acquired dual use nuclear technology under the “Atoms for Peace” programme, a Cirus 40 Megawatt heavy-water-moderated research reactor purchased from Canada and heavy water acquired from the United States. The Trombay reprocessing facility, commissioned by India in 1964, separated out the plutonium produced by the Cirus research reactor. The SNEPP project culminated in the test of a fission device described as a peaceful nuclear explosion (PNE). Conducted in the Rajasthan desert, the test resulted in a 12-kiloton yield.
1963-77: Limits on nuclear testing

1976: Peaceful Nuclear Explosions Treaty (PNET)

The Soviet Union and the United States engaged in peaceful nuclear testing for economic reasons during the 1970s and 1980s. The Soviet Union used a nuclear test to create a dam, and the United States considered using several hydrogen bombs to create an artificial harbor at Cape Thompson, Alaska. In aggregate, these nuclear explosions could exceed the TTBT maximum test yield of 150 kt. Therefore, the TTBT included an agreement to negotiate a Peaceful Nuclear Explosions Treaty (PNET).

The PNET, negotiated and signed by the Soviet Union and the United States in 1976, obligated the parties: not to carry out any individual nuclear explosions having a yield exceeding 150 kilotons; not to carry out any group explosion (consisting of a number of individual explosions) having an aggregate yield exceeding 1,500 kilotons; and not to carry out any group explosion having an aggregate yield exceeding 150 kilotons unless the individual explosions in the group could be identified and measured by agreed verification procedures. Although both the United States and the Soviet Union signed the Treaty in 1976 and announced their intention to observe the testing limitations, ratification was still years away. Negotiations began in 1987 on additional verification measures that would make it possible for the United States to ratify the Treaty. The parties reached an agreement on 11 December 1990, and subsequently both the TTBT and the PNET entered into force, rendering them virtually useless.

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